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## QUALITY VS. QUANTITY DEBATE: IS SCHOOLING A NECESSARY CONDITION FOR ECONOMIC GROWTH?

*Kalite ve Miktar Tartışması: Eğitim Ekonomik Büyüme İçin Gerekli Bir Şart mıdır?*

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### ABSTRACT

There has yet to be a consensus on using the right tools to measure human capital levels of countries. With the advent of growth accounting models such as Solow&Swann, Romer, and Schumpeter, there is now a vociferous debate on what accounts for the knowledge capital of nations. While various economists used school attainment figures to capture the effect on human capital, emerging views from scholars on the other side of the spectrum such as Hanushek percolated in academia. He adduced the conduciveness of using cognitive skills over average year of schooling in order to consolidate the statistical significance of these measurements. In despite of a tumult of this ongoing academic debate, both sides criticize each other and claim that their evidence for their theories is meager. With that being said, do Hanushek and other quality supporters' research debunk the conventional claims of economists on focusing on the quantity side of the debate? Is schooling a necessary condition for economic growth? This paper stresses the importance of cognitive skills, which are acquired by quality education, is vital for long-term economic growth; and the ones that go with the quantity heresy might find it difficult to improve their long run economic performance.

### ÖZ

Ülkelerin beşeri sermaye düzeylerini ölçmek için doğru araçların kullanılmasına ilişkin bir görüş birliği bulunmamaktadır. Solow & Swann, Romer ve Schumpeter gibi büyüme muhasebesi modellerinin ortaya çıkmasıyla birlikte, ulusların bilgi sermayesinin hesaplanmasına ilişkin tartışmalar farklı bir boyutta devam etmektedir. Çeşitli ekonomistler, okul başarısı figürlerini insan sermayesi üzerindeki etkisini yakalamak için kullanırken, akademide Hanushek'in oluşturduğu yelpazenin tarafındaki akademisyenlerin görüşleri de ortaya çıktı. Hanushek, bu ölçümlerin istatistiksel önemini sağlamlaştırmak için bilişsel becerileri, ortalama eğitim yılı boyunca kullanma konusundaki kararlılığı vurguladı. Bu devam eden akademik tartışmalara rağmen, her iki taraf da birbirlerini eleştiriyor ve teorilerine ilişkin kanıtlarının yetersiz olduğunu iddia ediyor. Sözü edilen ile Hanushek ve diğer kalite destekçilerinin araştırması, ekonomistlerin geleneksel iddialarını tartışmanın niceliğine odaklanarak tartışıyor mu? Okullaşma, ekonomik büyüme için gerekli bir şart mıdır? Bu makale, kaliteli eğitimle kazanılan bilişsel becerilerin önemini vurguluyor; uzun vadeli ekonomik büyüme için hayati önem taşıdığını belirtiyor.

## 1. INTRODUCTION

*"If a man neglects education, he walks lame to the end of his life"*

—Plato (Zeyl 2013)

Education is broadly accepted as a key indicator for human development. Theoretically, constituting a fiscal policy towards increasing people's years in school will eventually help incomes to grow, and therefore in the long run, that public investment will be amortized. For highly developed countries, there is a conventional belief that education investments will contribute to the attempts of fostering technological innovation and leading to generate more income growth. (Vandenbussche, 2009)

Most policies were structured around the idea of proving accessible education, particularly to primary education. (Duflo, 2001). In her work, Duflo finds that each primary school constructed per 1,000 children led to an average increase of 0.12 to 0.19 years of education, as well as a 1.5 to 2.7 percent increase in wages in Indonesia. This implies estimates of economic returns to education ranging from 6.8 to 10.6 percent. Even NGOs such as UNDP (One of UNDPs 2030 Sustainable development goals is to provide universal primary education) and non-profit organizations such as the Clinton Global Initiative (Hult Prize \$1M Social Entrepreneurship Challenge in 2015 was to provide primary education for 10 million kids in urban-slum areas) jumped on the "quantity" wagon, showing efforts with such largesse to promote the importance of education accessibility.

Although the profound impact of availability of education on human capital is inevitable, the quality of education is tantamount to, if not, even more important than the prior one. Problems associated with lack of quality education are slowly emanating in labor markets in both developing and developed economies. In 1965, France had a labor force that averaged less than five years of schooling and a per capita income of \$14,000 (at 2005 prices). In 2010, countries with a similar level of education had a per capita income of less than \$1,000 (Hausman, 2015). Even in highly industrialized countries such as England, cognitive skills are more preferable by companies than college degrees. Recently, the world's leading accounting and finance firm, Ernst & Young, removed degree classification from their job entry criteria as they find no evidence to conclude that "previous success in higher education is correlated with future success in subsequent professional qualifications undertaken (Sherriff, 2015).

## 2. QUALITY VS QUANTITY DEBATE

Historical hindsight has been conducive to disprove majority of the claims from the quantity side of the debate. A recent book published by Hanushek and Woessmann "The Knowledge Capital of Nations: Education and the Economics of Growth (2015)" is based upon the plight of Latin America today. They find that in 1960, the average income in Latin America exceed that in the sub-Saharan and MENA regions, and both the Latin American and the African averages exceeded that in East Asia. In those days Latin America had schooling levels higher than those of the MENA and East Regions, whose levels were roughly equal. Today East Asia has moved far ahead of Latin America in growth and income. The MENA region has also jumped ahead, if not as much, leaving only Latin America and sub-Saharan Africa at the bottom with very low long-term growth rates and commensurate low income per capita. Their ultimate message is that "In the long run, a nation's prosperity is directly related to the skills of its population." Surprisingly, large proportion of students completing nine years of schooling is uncompetitive in terms of international skill levels. They believe that instead of using indicators to measure human capital such as average years of schooling, new indicators such international math and science assessments should be used in order to measure relevant cognitive skills that enhances human capital levels. In his early research in 2013, Hanushek actually finds no evidence of school attainment having an independent impact on growth once cognitive skills are incorporated into empirical growth models.

Quality side of the debate, with Hanushek leading the pack, has had further statistical evidence in recent years. Bils and Klenow critique the "schooling drives growth" supporters such as Barro et al by emphasizing the problems associated with their research such as omitted variable issues (Bils, M., & Klenow, P. 1998). Their empirical models do not display faster human-capital growth in countries with higher enrollment rates from 1960-1990; in fact, pure growth in human capital accounts for a minority of the deserved relation between schooling and income growth. They underline that better enforcement of property rights or greater openness will induce both faster TFP growth, which is the only indicator for higher-steady state levels in Solow&Swann labor augmented model, and higher school enrollments. Another human capital based theory, returns to investment in education now

behaves in more or less similar manner as investment in physical capital. In advanced industrial countries, the returns to human and physical capital tend to be equated at the margin (Psacharopoulos and Patrinos, 2004).

Further studies conducted on improving the quality of university education yield to similar, if not better results mentioned above. A study on a large-scale education reform launched in Senegal in 2000 find that rather than improving access to education, these sorts of modern reforms in quality of higher education led to significant increases in the employment rate within the region. (Boccanfuso, Larouche and Trandafir, 2015). Improving quality of education not only consolidated employability rates, also was helpful to lowering the discount rate and on university attendance. By aiming to align the skill requirements of employers to the training of university graduates, governments can potentially improve the labor market outcomes of these high-skilled individuals on dimensions such as jobs of better quality, higher wages, and more job security. The study adduced that after the reform, young high-skilled workers experienced a nine percentage-point employment gain relative to older workers. Although this research focuses on short-term effects of an education reform in Senegal, the results are fulfilling.

The impact of education on human capital and economic growth has not yielded expected results due to measurement errors up until the early 2000s (Hanushek and Woessman, 2008)(hereafter HW). Many regression analyses based on neoclassical growth models used school-attainment figures as means to measure human capital, which HW (2008) argue that school attainment does not explain much of the variation in year-over-year (YOY) income per capita. They assert that a year of schooling in high performing countries in international test scores such as Japan is not analogous to a year of schooling in Mexico. In their first bivariate model (See *Table 1*), year of schooling is ran against the Y variable (average annual growth rate in GDP/capita) and it only explains 25% of the variation; however when they incorporate other dependent variables such as international test scores, openness, and Protection Against expropriation, their multivariate model explains 78% of the variation in the Y variable, which brings them to the conclusion that "the prosperity of a nation is directly linked to its nations skills in the long-run." (Hanushek and Woessman, 2015)" Although the most prevalent of measuring human capital via international test scores, Breton (2011) state that educational attainment has a significant impact on economic growth in non-developed and developing countries, he states that the empirical results in his paper are consistent with Hanushek and Woessman's contention that increases in cognitive skills drive economic growth and account for income per capita differences across regions.

After theorizing and testing the effects of incorporating international test scores in human capital models, some of the points in HW (2015)'s overall conclusion are:

**Table 1:** Education as a determinant of growth of income per capita, 1960–2000 (Y= average annual growth rate in GDP/capita).

	1	2	3	4
GDP Per Capita 1960 *	-0.379 (4.24)	-0.302(5.54)	-0.277(4.43)	-0.351(6.01)
Years of Schooling 1960	0.369 (3.23)	0.026(0.34)	0.052(0.64)	0.004(0.05)
Test Score 1964-2003		1.980(9.12)	1.548(4.96)	1.265(4.06)
Openness 1960-1998				0.508(1.39)
Protection Against expropriation 1985-1995				0.388(2.29)
R <sup>2</sup>	0.25	0.73	0.74	0.78
Observations	50	50	50	50

**Source:** HW (2008)

t-stats are in parentheses

\* GDP Per Capita in 1960 is used as a dependent variable to capture the error terms of the independent variable to preclude the regression from serial correlation.

1. In the long run, a nation's prosperity is linked with the skills of its population.
2. The relevant cognitive skills can be measured well by performance on international math and science assessments.
3. Relatively modest improvements in skills can be worth multiples of a country's current GDP.
4. Nations that successfully reform will systematically pull away in economic terms from those that do not.

### 3. COUNTRY ANALYSIS: TURKEY

Turkey's education policy is steered by the Ministry of National Education where schools have little autonomy and limited capacity to respond their needs. Although education is publicly funded, schools can receive contributions from parents. In 2012, Turkey introduced a new legislation where the number of compulsory years was raised from eight to twelve (OECD, 2013) however, both secondary and tertiary education attainment in Turkey remain lower than the OECD average, although both have increased significantly across generations and more than in most OECD countries.

According to OECDs Education Policy Outlook (OECD, 2015), Turkey's 15-year-olds achieve lower-than-average scores in the PISA 2015 reading assessment. Their performance in both mathematics and science, which Hanushek believes it is a tool to measure the level of cognitive skills of a country's population, is also below the OECD average in PISA 2015. Low quality education, which led to undertrained employees, indeed had its profound repercussions on Turkey's economy. Out of top 500 richest companies in Turkey (ISO, 2014), only twelve are in the business of producing high technology products.

The role of quality education on economic growth is unquestionable—in fact, it is the only variable that brings constant positive returns on economic growth in the long-run. In any concept of impact, it is at utmost importance to consider the quality over quantity at the first place. A good comparative example can be made on Turkey vs Israel. Table 2 reflects that majority of the share on growth in Turkey was driven by physical capital, almost four times of that from human capital. Although the country grew at 7.4% in 2017 (*Turk Stat* 2018), 70% of the growth came from consumer spending—propped up by credit growth. By taking a mere “growth” approach, Turkey is now facing the biggest currency crisis in its history, with inflation rate sitting at 24.52%, highest since 2000. On the contrary, Israel, declaring its independence only in 1948 (*National Legislative Bodies*), has taken a total human-capital and innovation approach and now, with only 8.7 Million people (World Bank 2018), has produced more start-up companies than Canada, India, Japan, Korea and the UK (Senor, Singer, & Peres, 2011), and enjoys a GDP per capita (nominal) almost 4 times more (\$40,270.25) than Turkey (\$10,540.62) (World Bank 2018). This vast per capita income level disparity can be reasoned through educational data. While Israel has higher harmonized test scores\* (503) than both the world (408) and MENA (408) and has the highest Human Capital Index (HCI)<sup>†</sup> (0.73) in its region; Turkey has lower test scores (459) than Europe and Central Asia (495) and a lower HCI (0.63) than Israel.

**Table 2:** Turkey's Economic Growth Accounting: HC Augmented Model

	<b><u>TURKEY</u></b>
GDP Growth Rate	<b>4.98%</b>
Labor Input Contribution	0.55 %
Total Factor Productivity(TFP) Contribution	1.57 %
Human Capital Contribution	0.60 %

\* “Harmonized test scores combine data from major international student achievement testing programs into common units, where 300 represents minimal attainment, and 625 represents advanced attainment.” (*World Bank HCI*, 2018)

<sup>†</sup> Human capital “units represent productivity relative to a benchmark of complete education and full health, on a scale of 0 to 1.” (*World Bank HCI*, 2018)

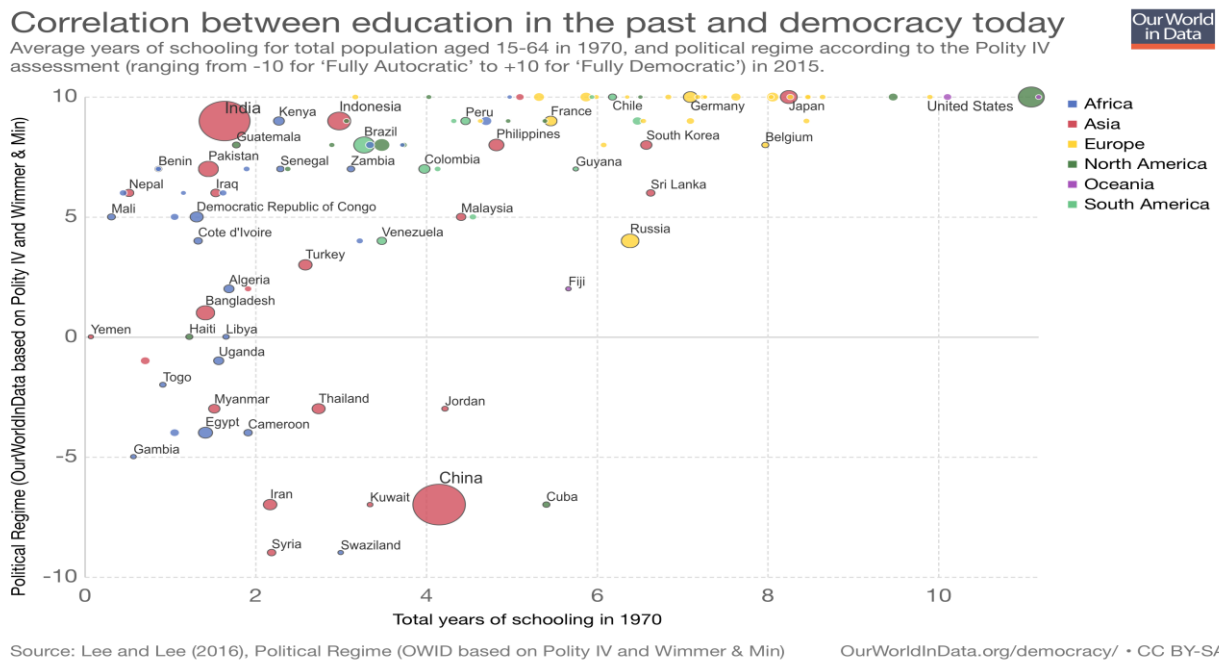
Physical Capital Contribution	2.28 %
Growth from Labor& Physical Capital	56.80%
<b>Growth from Human Capital &amp; TFP</b>	<b>43.20%</b>

Equation Used \*:  $Y(t) = K(t)^\alpha H(t)^\beta [A(t) L(t)]^{1-\alpha-\beta}$  (Brumm 1996)

Data †: Penn World Tables (Fenestra 2015), (Zeileis (2017)).

As witnessed both through theory and data, creating an inclusive ecosystem with robust institutions and sustainable economic growth is directly linked with quality education and “the knowledge capital of nations” (Hanushek 2015). In the context of creating inclusive societies and building effective, accountable and inclusive institutions at all levels, the role of education is one that could not be avoided. In his research, Roser (2018) state that “countries with higher educational attainment in the past are more likely to have democratic political regimes today.” As seen in Figure 2, countries in which the citizens have higher levels of education scored higher on the political regime index and have democratic political regimes.

**Figure 1:** Education and Democracy (Roser 2018)



**4. CONCLUSION**

“If I have seen further, it is by standing on the shoulders of giants,” Newton once said. Each generation learns from previous generations and builds on the human capital of one’s elders. Recent research built upon the previous has rectified the conventional ideologies. The impact of education is inevitable, but if it only is allocated and practiced in the right way. Many countries around the world are still suffering from their mistakes on their education policies. One important point to keep in mind is that encouraging education rather than forcing is the key to the heart of this problem. Universal compulsory education systems, like the one we have seen in Turkey, has its long-run implications. This is not saying providing education to citizens is bad, instead, what matters the most is the kind of education citizens are receiving.

\* Physical capital (K), Human capital (H), and productivity-augmented labor (AL)



Many authors also claim that empirical models solely based upon Mincerian equations (Lemieux, 2003) have a proclivity to overstate or understate the effect of skills on earnings. Painting many elaborate aspects en route to create sound education policies with a broad brush, as the quantity theory does, is a recipe for disaster for developing nations. Simply relating to number of years spent in school as the mere measurement for human capital while not taking important details such as in school performance, attendance, etc. into an account does not yield to satisfactory results.

A mere growth approach without focusing on quality education will not yield auspicious results in the long-run as seen in evidence from Turkey. Attempting to create economic growth with lack of focus on quality education will lead to the creation of unsustainable disposal jobs with low salaries and while the economy might grow, benefits will be far from reaching to the society holistically and rather might serve only to a certain segment.

Inclusive growth is a grueling task—even harder to achieve amidst educational inequalities. This systemic problem precludes countries endeavoring to build more inclusive societies, and heretofore, it has only led them to insidious cul-de-sacs such as high levels of income inequality, polarized living standards, and further sui generis problems. Since the problems associated with educational inequalities derail the growth trajectory of a country and lurch the societal infrastructure, this issue must be addressed to ensure that the stigmas emanated from delinquent public policies move from being acute to solved rather than acute to chronic.

Improving the quality should not mean making education available to only the advantageous segment of the population. Education policies should be shifted towards allocating the best minds and talents, rather than the brethren of 'elites.' More studies towards social benefits of education, and the impact of quality education that is available and affordable to citizens need to be conducted. Maybe the cure for cancer is trapped inside the mind of someone who cannot afford education.

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