

## **UNDERSTANDING THE ECONOMIC PERSPECTIVE OF IMPACT OF HIGHER EDUCATION: REVIEW OF LITERATURE**

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### **ABSTRACT**

The contribution of higher education in long run is directly linked to economic growth, human capital development, factor productivity, and subsequently overall development of a country. In economic outlook, higher education is projected to foster productivity by concentrating on new knowledge and skills to the production practice. They are essential drivers of innovation and diffusion of technology. The changing face of production techniques, skill requirements and competitiveness has furthered the requisite for an improved higher education system. It has been acknowledged that the impact of higher education on earnings are positive. The present paper looks at the available literature on the role of higher education in economic growth, earnings, and technological capabilities as well as collaborations.

### **Introduction**

The concept of human capital has been well acknowledged for economic growth in terms of increased output, earnings and other benefits (Schultz, 1961; Becker, 1962; Barro and Lee, 2013). The majority of the studies carried out in 1980s, based on rate of return to investments in education argued for greater priority to primary education. But with globalization and subsequent visibility of knowledge economy need, the role of higher education progressively came in light (Kwiek, 2001; Marginson and Wende, 2007). Besides the economic and monetary return (Psacharopoulos, 2009), the indirect benefits to society of higher education have also been considered (Owens, 2004). In economic outlook, higher education is projected to foster productivity by concentrating on new knowledge and skills to the production practice. They are essential drivers of innovation and diffusion of technology, which explicate a great share of cross-country variances in economic growth as well as income (Benhabib and Spiegel, 2005; Nelson and Phelps, 1966; Romer, 1990). The changing face of production techniques, skill requirements, and competitiveness has furthered the requisite for an improved higher education

system. It has been acknowledged that the impact of higher education on earnings are positive. The role of higher education in production of new knowledge and technology, innovation, and its appropriate dissemination through collaborations is significant. The present paper looks at the selected available literature in the above context.

### **Higher Education and Earnings**

The relationship between education and development has been widely studied through earnings function. In empirical economics, it is primarily linked with Mincer (1974) and emphasizes on the relation between the individual earnings and investment in human capital (Teal, 2011). The earlier assumption of this relationship being linear has been challenged and found to be non-linear while considering the primary and secondary education grounding bond with the higher education (Teal, 2011; Gyimah-Brempong et al., 2006).

A significant and considerable discussion in the available literature is regarding the shape of the relationship between education and earnings. There are conflicting results, one stating that the returns are higher for lower levels of education (Psacharopoulos, 1994; Psacharopoulos and Patrinos, 2004), other showing higher returns for higher levels of education (Schultz, 2004; Teal, 2011). The private wage returns for higher education have been found to be higher than the primary education returns in several developing countries which include Vietnam, India, Pakistan, the Philippines etc. (Kristensen and Verner, 2008; Schady, 2003; Azam, 2010; Diagne and Diene 2011; Asghar and Zahra 2012). Similarly, a positive upward trend was observed for lower income countries (Fasih et al. 2012; Glewwe et al. 2002). Some of studies have also considered the link between higher education and earnings in context of wage differentials by gender, within particular sector, differential in returns for workers in urban and rural location, and workers in formal and informal sector (Agesa et al., 2013; Dutta, 2006; El-Hamidi, 2006).

There are also studies that have discussed the income equality/inequality as outcome due to subsidized higher education (McMahon, 199; Keller, 2006). The studies that look at the effects higher education on poverty and inequality reduction, provide both optimistic and pessimistic results (Fasih et al., 2012; Akita and Miyata, 2008; Tilak, 2010).

The numerous research show that higher education has a strong impact on the earnings of graduates. There is ample evidence that higher education has a stronger impact on growth, which has been largely assumed. The inconsistencies in outcome reflect the variations in methodology and data consideration, therefore making it challenging to categorize causal relationships.

### **Higher Education and Economic Growth**

Higher education has a stronger impact on growth. Various studies like Browne Report (2010) have emphasized for the expansion of higher education in consideration of its prospective effect on economic growth. Schultz (1961) and Denison (1962) revealed that education contributes

directly to economic growth through enhancement in productive capabilities of the labour workforce. The research by Hicks (1980), Wheeler (1980) and Easterlin (1982) endorsed the significance of education in economic growth. Mankiw, Romer and Weil (1992) undertake that the standard neoclassical production function can be enlarged to embrace the stock of human capital stock in an identical fashion as that in case of physical capital stock. But these studies did not present a disaggregated picture at the different levels of education.

The earlier studies observed different results (Nadiri, 1972), but the subsequent revealed different perspectives (Hanushek and Woessmann, 2008), and strengthened the relation (Bloom et al., 2005). There are studies that have shown that the lower levels of education have more influence on economic growth than higher education (Keller, 2006; McMahan, 2003). One study concluded that higher education had a robust causal impact on economic growth in selected developed nations like Sweden, France and Japan but not on other developed nations like Australia and Italy (Meulemeester and Rochat, 1995).

While considering the Sub-Saharan Africa, where the enrolment rates were found to be at the lowest level in comparison to the world average, evidence of the impact of higher education in economic growth along with poverty reduction were explicitly affirmed (Bloom et al. 2005). A research on Nigeria did not find substantial relationship between the number of graduates and economic growth of the nation (Ndiyo, 2007). Self and Grabowski (2004) while using Granger causality analysis for India established that only the first two levels of school education had a causal impact on growth.

The role of externalities in higher education have also been emphasized with regard to their impact on economic growth (Bloom et al., 2006). There is ample literature that envisages that the returns to higher education is associated with the level of development of each country. While looking at the productivity impacts of higher education compared to other levels of education, the higher education do not necessarily always lead to a positive result (Holmes, 2013; de Bloom et al., 2013; Canton, 2007).

Wolff and Gittleman (1993) studied the data of less-developed countries for a period from 1960 to 1985, and arrived at a similar conclusion that the impact of primary and secondary level education was significant, but not in case of higher education. It was also envisaged that aid to low income countries for post-primary school level do not lead to growth, but such aid to higher education in middle income countries definitely foster growth (Asiedu and Nandwa, 2007). In view of a 'general equilibrium' model, a study to measure the impact of higher education on South Africa showed positive results of investment in higher education for income and employment (Heerden et al. (2007). A relationship between level of education and productivity levels have been affirmed, and a study had concluded that the workers with higher education were more productive, and thus contributed more to the growth (Jones, 2001).

Agiomirgianakis et al. (2002) studied 93 countries using panel data to understand the long run effect of education on growth. They arrived at the conclusion that the effect was significant and its contribution enhanced with the level of education. The World Bank (2008) advocated that by raising the level of education and its quality, countries in Sub-Saharan Africa were likely to improve in many sectors and achieve higher growth rate. An analogous study (Gyimah-Brempong et al., 2006) of African countries considering panel data for a period of 1960-2000, concluded that all levels of education had a statistically significant impact on the growth measured in terms of per capita income. Further, it was also found that an increase in the average number of years by 1% led to increase in per capita income growth by about 0.09 percentage annually. Several similar studies support this view that higher education plays a noteworthy role in economic growth (Tilak, 2003; Stengos and Aurangzeb, 2008; Ramos et al. 2012).

Some of the studies also show the existence of two way causal relationship, expressing that correlations between economic growth and higher education enrolments also possess a reverse causal pathway, meaning that economic growth is also likely to enhance the higher education enrolments (Wolff and Gittleman, 1993; Teal, 2011; Dahal, 2010). On the other hand, McMahon (2003) and Tilak (2010) constructed time lags in their growth equations, whereby they avoided coinciding bias in coefficients so that the effect of higher education may not be overstated due to both way causation.

### **Higher Education, Technology Capabilities, Technology Transfer, and Collaborations**

The classical theory holds that a country's economic progress depends chiefly on capital growth, labor growth, human capital growth, and technological progress. The role of higher education is significant for increase in human capital. In the discourses on globalization of higher education, the place for innovation and technological progress is eminent. Transfer of knowledge and technology have been put in forefront. There are several studies that show correlations between higher education and innovation, but these studies don't take into account the chief factors that influence higher education or are influenced by higher education (Ca, 2006; Pillay, 2011, Oketch et al., 2014). Harding et al., (2007) show that in an increasingly globalized world, the role of higher education in producing new knowledge and its dissemination has increased. Majority of the scientific papers are output of universities and the function of universities in addressing the country's competitiveness too is being promoted through research in selective strategic areas (Adams et al., 2013; Lee & Song, 2007). A report (Lester 2005) on 'Local Innovations System Project' of MIT explicitly stated out the way in which higher education institutions through their contributions in industrial innovation processes support the economic development of the region.

The importance of investment in research and Development have been studied in context of relation between national income and expenditure on research and development. It has been

found that low levels of investment in R&D is associated with low levels of economic growth, besides low research citations and patents (de Ferranti et al. 2003; di Gropello et al. 2012).

Ca (2006) and Loening (2005) in their separate studies of Vietnam and Guatemala find very meagre evidence that support a strong relationship between higher education and transfer of research/innovation at firm level. In case of Vietnam, the firms with high level of technology were giant in size and had collaborations with foreign firms for technological innovation as well as knowledge transfer. The contribution of local higher education institutions were not substantial.

The advancement of innovation through various intervention policies and engagements across varied sectors concentrate on regulating and expediting the transfer of technology and knowledge among numerous stakeholders which includes higher education institutions, state and industry (Jofre and Andersen, 2008; Etzkowitz et al. , 2008; Grimpe and Fier, 2010).

The widespread notion of National Innovation System (NIS) which reflect the innovation-system approach was in the beginning established at the national level. This aimed at flow of knowledge, information and technology among the R&D institutions, industry and community, thus shaping the innovation performance of a nation. The agents within NIS for innovation consist of industry, research institutes, universities and other stakeholders associated with them (Freeman, 1987; Nelson, 1993; OECD, 2007). Etzkowitz and Leydesdorff (2000) in their model advocate that higher education institutions, governments and industry have equal significant part, and that their interaction outlines the results of the innovation system over the period of course.

The higher education has experienced two foremost changes, according to Etzkowitz (1998). The first change is research, making it a function of higher education institutions. The second change is the amalgamation of economic function into the academic setup. Higher education institutions are striving to be more entrepreneurial and business oriented. The relationships between universities and industry is becoming more influential, with involvement of both, leading to mutual development (Powell et al., 1996; Blumenthal, 1986).

Several studies show a great disparity in gross expenditure on research between the developed and developing countries, therefore, subsequently resulting in disparity in technological output as measured by patents developed (Michaela, 2000). Thus, the technology transfer models don't remain pragmatic. The role of higher education is significant as this transfer takes multiple forms such as spin-offs, contract research, academic consultancy, research parks etc. (Menon, 1987; Kenney, 1986; Rothwell, 1985; Moe, 1983). But the question of assessing or measuring these interactions remain complex. Despite ample literature on innovation-system, the principal dynamics of technology and knowledge transfer are yet to be comprehended (Grimpe and Fier, 2010), although patents and licenses can be easily documented in frame of research by higher education institutions and R&D endeavors of firms (Motohashi, 2008). Research has displayed

that a nation's capability to produce and employ new and innovative technologies for development is basically determined by the level of its research undertakings in higher education institutions, research institutions and industry, besides its strategies and programmes that stimulate research and technology transfer (Porter and Scott, 2001).

The collaborations in higher education in various forms like university-industry linkages, university-research institutions collaborations, university-university collaborations etc. have changed the shape and purposes of higher education. The universities through research and consultancy are playing vital role in innovation and technology development. The triple helix notion of associating higher education institutions, the government and the business sector is enlarging its space (Pillay, 2011; Etzkowitz et al., 2000; Etzkowitz & Leydesdorff, 1997).

It has been stated that university-industry collaboration is visible in a competitive environment where technological innovations, new products, and information technology becomes imperative for which the role of universities through industry collaboration become pertinent (Friedman, 2006; Kim et al., 2006; Stenkiewicz, 1985). These collaborations have strengthened the higher education institutions through generation of additional income and enhanced contribution to the economy (Blackman and Segal; 1993). Wolson (1999) opines that with the decline of public funding for research, university-industry linkages, which expedite and facilitate commercialization may be a fractional path for the sustenance of research in higher education institutions. The collaborations are being made as well as recognized as an important part of institutional policies (Lee, 2000) and over the period of time the periphery of collaborations are becoming more global than regional or national (Sun and Negishi, 2010).

### **Conclusion**

The perspective towards the contribution of higher education changed in the late 1990s with a shift in the literature calling for investment in higher education in view of the benefits surrounding as outcome. Earlier, while considering the rate of returns, the primary education was more focused and prioritized. With the globalization of higher education and movement towards knowledge economy, the role of higher education in development and economic growth has become significant. The role of innovation, new knowledge and technology transfer has been well footed in reference to the university-industry collaboration. The higher education institutions are expected to support not only national innovation system but also the firms to stay competitive. Higher education is also a key contributor to technical change and technological capability at different levels in industry. The experience of both developed and developing countries endorse an increasing role of higher education in the changing future world.

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