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Measuring Education Outcomes: The Case of Pakistan

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Measuring Education Outcomes: The Case of Pakistan

Zara Qaiser

ABSTRACT

This paper examines the problems and challenges in measuring education outcomes using Pakistan as an illustration. Human development framework suggests that there are possibly three major impacts that school education has on an individual's capabilities, namely, economic, social and political. The multiplicity of impact warrants a measurement method that captures the multidimensionality of education. However, there are problems of measuring education outcomes in practice that case studies such as Pakistan demonstrates. The three problems highlighted in this study are that of multiplicity of objectives, lack of context specificity and the problem of selection. The paper argues that such challenges have to be overcome while implementing a policy to measure education outcomes.

Key words: Education, Measurement, Human Development, Pakistan

I. Introduction

Education plays a fundamental role in human development and the measurement of the effect of education is paramount, especially in developing countries. It helps formulate evidence-based and outcome-driven education initiatives and hence, helps education programmes perform better. However, the effect of education can be measured using many indicators - the literacy rate for adults of ages 15 and older is 86.2 percent (World Bank, 2016), the total government expenditure on education is 4.7 percent of GDP (World Bank, 2013) and the gross enrolment ratio is 104.3 percent of primary school-age population (World Bank, 2015). These are only three different ways of measuring the effect of education and there are countless indicators that can do so. The existence of a plethora of such indicators opens a whole line of research: Which effects of education are being measured? What are the most relevant indicators that should be used to measure the effect of education? Aggregating numerous indicators into a single index is not possible; yet using one single indicator to measure the effect of education is a weak methodological approach (Herrero, Martínez & Villar, 2010). Therefore, multidimensional indices are used to measure the effect of education by accounting for several key dimensions. Amongst these various global indices, the Human Development Index (HDI) is considered as the underlying tool adopted by governments and international organisations to measure the human development effects of education in the past 28 years.

The HDI was first established in 1990 by the Pakistani economist Mahbub-ul-Haq, and has, since, become a pervasive mechanism to measure the effect of education. United Nations Development Programme (UNDP) defines HDI as ‘a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living’ (UNDP, n.d.). The HDI consists of three main indices; the life expectancy index, the education index and the Gross National Income (GNI) index, where the education index is calculated using mean years of schooling for adults aged 25 years and more and expected years of schooling for children of school-entering age (UNDP, n.d.). The underlying idea of the HDI is to invoke a human development approach to the measurement of the effect of education by placing human development at the centre and not just restricting it to the human capital approach or the economic growth model of education. The world is past the human capital approach that solely advocates the economic benefits of education. The focus of this essay is thus on the human development approach that underlies the HDI. While the HDI is considered by most as a practical and analytical tool that has undergone many improvements since its inception, controversy surrounds it in terms of whether it provides the best estimate for the measurement of the effect of education. On one hand, it has been argued that HDI is a superior tool as it ‘transformed the landscape of development theory, measurement, and policy’ (Stanton, 2007). On the other hand, however, there has been substantial disagreement within the human development field as to whether the HDI has been successful in measuring the effect of education. Whilst some of these arguments point towards its technical limitations in terms of the indicators used and allocation of weights, others have questioned the potential of the HDI as a tool to help countries measure the effect of education on a national level,

thereby facilitating the process of forming national education policies. This essay draws on Amartya Sen's (1980) work to assess the usefulness of the HDI in measuring national education outcomes. This will help assess whether national level measurements will add more value to the measurement of the effect of education as opposed to global level measurements.

The remainder of this essay is organised as follows. The first section elaborates on the effects of education as a comprehensive concept and positions it more broadly within human development thinking. The second section complements the first section by examining the comprehensive measurement of the effect of education. The third section examines the risks of a blanket application of the HDI in measuring the effect of education within countries and the necessity of a national policy context when measuring education. Finally, the last section provides the conclusion to this essay.

II. Developmental Impacts of Education

To be able to make an informed assessment of the usefulness of the HDI as a measure of the effect of education on a national level, it is first valuable to understand what the impacts of education are and how they are situated more broadly within human development thinking. In this sense, it is possible to point to three different kinds of impacts that education has within the human development framework: economic, social and political impacts.

i. Economic Impact

Proponents of the economic growth model and the human capital approach mainly focus on the supply-side, whereby human beings are 'instruments for furthering commodity production' (UNDP, 1990: p.11). In this approach, education is a means to an end as it brings material prosperity in the form of higher income and hence, a higher standard of living. As highlighted by Ranis *et. al.* (2000) as cited by Deneulin and Shahani (2009), there are in fact various ways in which education and hence, human development can contribute to higher economic growth. Primary education tends to increase the productivity of the rural and urban workforce and improve health and nutrition outcomes (like reduced fertility rates), hence, controlling population growth. Secondary education helps people acquire skills and increase their managerial capacity, while tertiary education facilitates the development of science and technology, along with technological innovation and its domestic application. Secondary and tertiary education also plays a crucial role in developing key institutions including governments, financial structures and legal systems. All this translates into higher Gross Domestic Product (GDP), Gross National Product (GNP), GNI, savings, investment and economic growth¹. This also results in reduced inequality and greater human wellbeing.

Education is also one of the driving forces that allows for the reduction and elimination of poverty. It can be used as a route to exit poverty as it can drive social mobility and hence

¹ However, a higher GDP does not necessarily mean that a country excels in the education sector; Saudi Arabia has a much higher GDP than Uruguay but their women are comparatively less literate (Deneulin & Shahani, 2009).

overcome inter-generational poverty (Breen & Jonsson, 2005). It can bridge the wealth gap between the rich and the poor, which passes on from one generation to another and reinforces the social and financial stratification existing in a society (Haveman & Smeeding, 2006). In addition, education can provide the poor with the opportunity to participate in the labour market with increasing productivity and hence, help them earn their way out of poverty (Andrabi *et. al.*, 2011).

ii. Social and Political Impacts

The benefits of education go beyond the role it plays in commodity production as proposed by the human capital approach (Sen, 1997). Education is actually a multidimensional process involving not only economic, but also social and political changes that have an overarching effect of improving human development. This is the human development approach that focuses not only on the material or economic benefits of education but also on the expansion of substantial freedoms, and the measurement of ends rather than means (Sen, 1999; Nussbaum, 2011). According to the Human Development Report (UNDP, 2010: p.2):

‘Human development is the expansion of people’s freedoms to live long, healthy and creative lives; to advance other goals they have reason to value and to engage actively in shaping development equitably and sustainably on a shared planet. People are both the beneficiaries and the drivers of human development, as individuals and in groups.’

The human development paradigm covers all aspects of development – economic, social and political. Education is in fact, a holistic synthesis of personal, social and spiritual advancement. It does not only have an intrinsic value in that it is a basic capability a person benefits from directly, but it also has instrumental value as it is a stepping stone to access other capabilities like social and political participation (Brighouse & Unterhalter, 2010). It can have a transformational effect on social relations as it diversifies social links and shapes people’s values, attitudes and social identities, thereby promoting social cohesion, solidarity and a balance of interests. Education enhances political tolerance and engagement as a higher number of years of education lead to a greater ‘commitment to democratic norms of tolerance’ via greater cognitive sophistication (Bobo & Licari, 1989: p.286). It also promotes critical thinking and global citizenship that fosters democratic citizenship and governance in terms of freedom of thought, expression and participation (Nussbaum, 2006). Hence, education has much to do with liberty, equality and social justice as it ‘improve[s] the quality of public debates’ (Sen, 1997: p.1960).

Human development is the frame of reference, from which Sen’s core concepts of functionings, capabilities, well-being and agency stem (Deneulin & Shahani, 2009). Education advances human development by enlarging people’s choices and achievements. People often value achievements that are not monetary in nature; such as greater access to knowledge, improved nutrition and health, more job security, greater security against crimes, enjoyable leisure hours, political and cultural freedom as well as a sense of participation in society (Deneulin & Shahani, 2009). The capability approach also requires that we not only

assess functionings in terms of ‘the various things a person may value doing or being’ (Sen, 1999: p.75), but also in terms of available opportunities and freedom of choice so that individuals can choose from and achieve what they value (Unterhalter, 2009). Similarly, when it comes to measuring the effect of education in a country, we should not simply evaluate the functionings or actual achievements (or failures) of a country, but the real opportunities present therein. Human development aims to widen opportunities and not just income available to people, enrich people’s lives and build human capabilities in all areas of life i.e. economic, social and political. Thus, it is important to education, its measurement and hence, its policy-making.

III. Measuring Impact: HDI Approach

The hierarchical nature of education systems results in the measurement of education at various levels (Scheerens, Luyten & Van Ravens, 2011). Teachers measure individual learning through tests in classrooms, while principals and school administrators measure the resources invested in schools and the qualifications of teachers employed (LMTF, 2013). Provincial or district level governments measure education in the form of school quality, while national governments measure the national education system in terms of enrolment ratios, dropout ratios and student-teacher ratios. This enables them to improve the overall education system and formulate effective education policies and practices (LMTF, 2013). Similarly, global indices like the HDI carry out cross-country comparisons to measure education on a global level. However, they may ignore the hierarchical structure of education by using statistics that are measured at the national level, but defined at the global level. Classification of the measurement of education that is not sensitive to the hierarchical structure can give misleading results.

Measuring the effect of education also plays a crucial role in improving inputs, processes and outcomes of education at each hierarchal level. This approach takes into consideration different perspectives based on the input–process–outcome–context framework, a model that describes education as a productive process, which converts inputs into outcomes (Scheerens, Luyten & Van Ravens, 2011). While inputs refer to financial, material and human resources as well as the background pre-conditions that are necessary for the transformation process to take place, outcomes relate to the productivity and effectiveness of any aspect of education, and can further be categorised into outputs, outcomes and impacts, each of which can be measured using different indicators (Scheerens, Luyten & Van Ravens, 2011).

Given this multi-dimensional view of education, the measurement of its effect is not so simple as different approaches are suitable for different purposes and at different levels. In order for measurement to be effective, the indicators chosen must be fit for the purpose. Hence, education is a comprehensive concept that requires comprehensive measurement. No single approach is the best way to measure the effect of education; rather, the choice about what should be measured and how it should be measured must be informed by country specific situations. Since measurement has different objectives at different levels, global indices like the HDI should not focus on global outcomes only.

IV. Measurement in Practice

The motivation behind measuring the effect of education reflects a variety of objectives that the measurement caters to. Is there universal access to, and completion of, primary education? Is there equitable and inclusive education for all in India? Do children complete their primary education in Sierra Leone? Is free education being provided in Guinea? What is the quality of education being provided in Pakistan? Do the youth have the knowledge and skills required for decent work in Europe? Are teachers qualified and professionally trained in Chad? Do countries allocate enough public expenditure on their education sector in Eritrea? Are education facilities disability and gender-sensitive in Niger? Do children have access to and receive quality early childhood education and care in Malaysia? This array of questions indicates a plurality of objectives that cannot be reduced to one single objective when it comes to measuring the effect of education.

i. Plural Objectives

The education index of the HDI is driven by the lack of universal access to and completion of education, which was also Millennium Development Goal 2 from 2000 to 2015 (UN, n.d.)². Based on its objective, the HDI education index measures education through two indicators: expected and mean years of schooling. The expected years of schooling, which ‘is the total number of years of schooling a child of school-entry age can expect to receive if prevailing patterns of age-specific enrolment rates stay the same throughout the child's life’ (UNDP, 2016) and the mean years of schooling, which ‘is the average number of years of education received in a life-time by people aged 25 years and older’ (UNDP, 2016), are relevant when measuring universal access to education. These are very specific indicators catering to a specific goal, which may not be shared by individual countries. Two countries with the same level of GNI per capita can have different human development outcomes of education. Similarly, a country with a higher GNI per capita can have a lower HDI and a country with a lower GNP per capita can have a higher HDI. The HDI is thus more of an ordinal measure for cross-country comparisons through ranking as opposed to a cardinal measure that would help countries in their policy-making with regards to education.

There is a difference between the best way to measure something in the sense that it is a *good way to measure* and that it is a *good measurement* of that thing (Sen, 1980). The HDI is a good and useful reflection of the reality of universal access to and completion of education and hence, justifies the choice of ‘way of measurement’, but it can hardly be accepted as a good way to measure the effect of education (Sen, 1980). The goodness of a way of measurement for education will have to be judged in terms of the objective of measurement and the effect being measured (Sen, 1980).

² It should also be noted that since 2015, there has been a global shift in education priorities. The post-2015 development agenda in the form of Sustainable Development Goal 4 recognises the need to focus on the quality of that education being provided. It aims to ‘ensure inclusive and quality education for all and promote lifelong learning’ (UN, n.d.).

The two particular indicators chosen for the HDI are not exhaustive in capturing all aspects of reality when it comes to measuring the effect of education in a particular national policy context – the general affluence of a country, demographic trends, the formal and informal educational institutions and cultural factors (Scheerens, Luyten & Van Ravens, 2011). In some countries, access to education is not a problem as children go to school, but the quality of education is low. In Kenya, Tanzania and Uganda, three-quarters of grade 3 students, when asked to read the sentence ‘The name of the dog is Puppy’, were unable to do so (World Bank, 2018: p.3). In rural India, around three-quarters of grade 3 students could not carry out two-digit subtraction and were still unable to do so when they reached grade 5 (World Bank, 2018). These countries tend to focus on schooling rather than learning. In an attempt to improve education systems to deliver better learning, such countries ought to have quality of education as their objective as opposed to access to education, for which they would need appropriate indicators. Moreover, countries focusing on the quality of education are most likely to internalise the hierarchical nature of schools and place them at the centre where the transformation of inputs into outputs can be examined (Scheerens, Luyten & Van Ravens, 2011). This is not to say that access to education is not important in a national context, as there are countries like Pakistan where access to education is still a major challenge, but that different countries face different challenges, for which each country has different objectives. Therefore, any monolithic classification of the objective of measurement is bound to leave us with a way of measurement that is ill-suited to the objective and country in question (Sen, 1980).

The HDI can be a misleading figure in assessing the effects of education in a country. It measures global outcomes of education through a national lens but does not measure national outcomes. While international benchmarking through global indices like the HDI can raise awareness of where a country stands in building human development and how short it falls vis-à-vis other countries, it does not provide good measures for isolated national development (World Bank, 2018). Formulating national recommendations based on global objectives may not necessarily result in nationally relevant policies. Countries can make much better use of results from measurement if they set priorities and objectives for their own practice and policies. Improving education requires a clear-eyed diagnosis backed by a nation-specific objective that guides the way of measurement.

ii. Context Specificity

Lack of measurement indeed makes it difficult to understand the education situation of a country and whether any previous policies have made a difference. Measurement that is focused in the wrong direction can also have negative policy implications for countries that have different national objectives. Education policy makers and practitioners often imitate countries, which have better learning outcomes in an attempt to improve their own learning outcomes. However, borrowing policy elements from other countries can result in detrimental results for the practicing country (World Bank, 2018). Finland is known as the home of world-class education with excellent learning outcomes³. In search of the secret behind

³ This example has been taken from World Development Report 2018.

Finland's successful education system, there was a worldwide urge to identify its strengths and imitate them to yield better results. It was discovered that Finland gave considerable autonomy to its well-qualified teachers who were trusted to tailor their teaching to the needs of their students. When South Africa learnt about this, it introduced the same approach by adopting certain goals for its curriculum and leaving implementation entirely to its teachers. This approach immediately failed, as the teachers did not have the level and kind of qualifications, capacity and resources that Finland's teachers had. South Africa's goal should have focused on training their teachers instead as countries with low performing education systems are unlikely to be successful by pursuing 'copy and paste' versions of Finland's policies. This shows that context-specific objectives are vital in order to combat policy and practice problems effectively.

iii. Problem of Selection

The multiplicity of objectives has been discussed so far in the context of global versus national motivations; however, the measurement of the effect of education is much more complex because of the problem of selection (Sen, 1980). As shown in the first section, the concept of human development outcomes of education is much broader than what is captured by the HDI. Assessing the functionings in terms of what a person values is difficult enough, as each person values one particular thing or action very differently from another. When we put together all things or actions that the person values, there will be a multitude of things or actions to be measured. Furthermore, putting together all things or actions that the entire population in a country values, will not only be impossible to carry out in practice but it will be immeasurable. Matters are further complicated when considering not only the things or actions that the person *values*, but the numerous *opportunities* available to and *achievements* of one particular person. Some of these concepts are qualitative in nature, and are hard to measure in quantitative terms. Even if it were possible to somehow quantify these aspects, the number of things to be measured would be asymptotic to infinity; in fact, it is a subjective matter, subject to the choice of each particular person. The HDI, therefore, captures only a few of people's choices and leaves out many that people may value highly. Choosing indicators is not an easy task as it involves making theoretical and practical compromises (Herrero, Martínez & Villar, 2010) concerning the selection of a subset of indicators from a large pool (Sen, 1980). However, the HDI has made practical compromises that undermine the ability of the index to measure the true effect of education in a national policy context. The lack of practical justification of the HDI makes it difficult to analyse its suitability to measure the effect of education vis-à-vis national contexts.

The measurement of education thus involves the difficult exercise of selecting a subset of relevant indicators from a whole set (Sen, 1980). When choosing this subset due to reasons such as budgetary restrictions, lack of resources, etc., one picks only a few indicators that are significant, leaving the rest untouched. One is, in effect, making a choice of measurement that is most relevant in the specific context. This criterion of relevance is crucial to the 'choice basis' of measurement (Sen, 1980). What is, then, the basis on which we can judge whether the selection of indicators is or is not acceptable for measuring the effect of education (Sen, 1980)? Why is it not more realistic to measure the effect of education by measuring the

quality of education using for example, the percentage of population in a given age group achieving at least a fixed level of proficiency in functional literacy and numeracy skills (UN, n.d.) as opposed to the HDI? The answer lies in the fact that the expected and mean years of schooling used in the HDI are more relevant to the global agenda of achieving universal education than the percentage of population achieving a fixed level of proficiency in literacy and numeracy skills, which is more relevant in the context of national agendas. The selection of indicators need not be based on some external global perspective on what the criteria should be; rather it should be based on an internal national perspective focused on the objective relevant to the particular country.

V. Case Study: Pakistan

Low educational quality is one of the major challenges of the education system in Pakistan, contributing to poor learning outcomes (J-PAL, n.d.). This was confirmed by achievement tests conducted in 2001 by the Learning and Educational Achievements in Punjab Schools (LEAPS) programme in three districts of the province of Punjab, where 50 percent of Grade 3 students were unable to demonstrate their concepts of the mathematics curriculum for Grade 1, while more than 80 percent of Grade 3 students were unable to comprehend a simple paragraph. In an attempt to increase the quality of education in schools, researchers designed a report card intervention that would examine the impact of providing parents with report cards containing information on the academic performance of their children. The provision of report cards to parents aimed at determining whether this would create competitive pressures between schools and hence, increase their quality. In order to assess the effectiveness of the intervention, the quality of the schools had to be measured via indicators over time.

Quality of education is itself a multi-dimensional concept with both objective and subjective aspects. Indicators could be used to gain subjective or objective data. In both cases, however, there would be many indicators of interest, which could be used to measure the quality of education. The most straightforward indicator is a test score for English, Urdu and Mathematics. However, other indicators can be used to measure the quality of education as well. These could include quantitative indicators such as the amount of money spent by schools on different inputs and facilities, the amount of government expenditure on schools, the number of teachers in a school, student-teacher ratios, the number of hours students spend at a school and the different number of hours allocated to each subject during school hours. Similarly, qualitative indicators could be used, such as changes in the curriculum of a school, changes in motivation of the students and teachers, whether or not parents make their children spend more time on homework or not and the perceptions of parents about the quality of the school their child goes to. There are numerous other indicators that could measure the quality of education.

In this particular intervention however, four indicators including child average test scores, perceptions of school quality, fees charged by the school and primary enrolment rates were used to gauge the primary outcomes in terms of the direct effects of the intervention on the quality of education in schools (Andrabi, Das & Khwaja, 2017). To gauge secondary outcomes in terms of any indirect effects of the intervention on the quality of education in

schools, indicators such as the number of children going into and out of school, private school closure, parental time spent on teaching child at home, parental non-fee expenditure on education, parent-teacher interaction, break-time, basic and extra infrastructure variables and percentage of teachers with at least a higher secondary degree were used (Andrabi, Das & Khwaja, 2017). These secondary outcomes measured the indirect effects of the intervention on the quality of education in schools via mechanisms through which the quality of education could change (J-PAL, n.d.). The overarching objective in the LEAPS project was to measure the quality of education, but with respect to the provision of information to parents of students via report cards. Indicators used for a project with the same objective but a different intervention such as the use of technology in teaching would require different indicators to measure the quality of education. Thus, keeping the objective of measuring the quality of education in mind with respect to the particular context, a subset of indicators must be chosen from a wider set of indicators that caters to the particular goal. While this is an example of a small-scale intervention in a few districts of a province, the same idea can be extended to the national level.

VI. Conclusion

There are many ways of measuring the effect of education. This essay uses the HDI as a tool to illustrate that there is no ‘best’ way of measuring the effect of education as it is dependent on what we choose to measure. It highlights the practical limitations of using the HDI, which is a good way to measure the effect of education in theory but it may not be a good measurement of the same in practice. The analysis was guided by two key questions: (1) What is the objective behind measuring the effect of education? (2) How is it being measured? Before answering these two questions it is important to understand that education is a comprehensive and multidimensional concept with economic, social and political effects within the human development approach. It requires comprehensive measurement as it involves different components at different levels. These are highlighted in the first two sections of the essay following the introduction.

The first question relates to the multiplicity of objectives, which is what complicates the measurement of education using the HDI. The HDI has been used to measure overall human development outcomes of education for cross-country comparisons to meet the goal of universal access to education in particular. While this objective may be relevant from a global perspective, it is not the objective of every individual country. Countries face different challenges within the education sector for which having appropriate goals is necessary for correct measurement. Examples of countries such as India have been given to shed light on the importance of improving learning outcomes that are more relevant from a national perspective. The correct choice of measurement based on the particular objective is what results in positive policy implications for a country. The second question deals with the problem of selecting a subset of indicators from a larger set based on the objective of the country. The example of an intervention in the province of Punjab of Pakistan shows how countries have to choose a way of measurement that is the most relevant in the specific context and that the criteria of this relevance is crucial to the ‘choice basis’ of measurement.

Typically, there is an inclination to generalise the appropriateness of a particular way of measurement to all contexts. It should not be assumed that what works as a global measure will yield similar results as a national measure. Studying the technical aspects of the HDI is beyond the scope of this essay, however, they should be assessed to determine whether national contexts could be taken into account in global indices like the HDI to better measure the effect of education and hence better inform national education policies.

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