Education for Development: What Policies?

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Introduction

Conventional wisdom today, is that education is a catalyst for economic and social development. Yet, there is no universal agreement on what specific education policies lead to beneficial socioeconomic outcomes. This is evidenced by the continuous education reforms in all countries, rich or poor, that soon have to be replaced by other reforms in the hope of improving the system.

The purpose of this paper is to take stock of what education policies seem to work and what do not. Section 2 reviews the education-related problems that all countries face and policy solutions that have failed. Section 3 provides a theoretical framework and reviews research findings on the many links between education and socioeconomic outcomes. Section 4 presents a series of evidence-based policies for a more efficient and equitable education system.

Common Problems, Failed Solutions

"Education crisis" is found in the title of many books and scholarly articles yielding over 200,000 references in an internet search, e.g. Fleisch, 2008; Gandara, 2010; Blumenstyk, 2015. Although education problems are similar in

all countries of the world, they differ in intensity between high-income and low-income countries.

Basic education coverage

A fundamental objective of education policy in all countries has been to enroll and graduate all children aged 6 to 12 in primary education. This objective has been achieved with a varying speed in several countries, mostly high-income ones. Yet achieving this goal in low-income countries has remained a challenge to date.

There is a long history of international organizations setting numerical targets for education. As of today, none of these targets has been achieved. In 1961 Unesco convened a high level conference of African States in Addis Ababa on the development of education Africa (Unesco, 1961a). A goal was set that by 1980 primary enrolment in Africa should be 100%, relative to 40% in 1960 (Unesco, 1961b). Yet, by 1980 the net primary enrollment ratio in sub-Saharan Africa stood at 56% (Unesco, 1993).

In 1990 the World Bank joined forces with Unesco, Unicef and the UNDP to launch the Education for All initiative calling for universal primary education by the year 2000 (WCEFA, 1990). Of course by 2000 the target was not achieved, and it was shifted to 2015. The target was missed again, with about 60 million children out of school in 2015.

So a new target was set in the United Nations Post 2015 Millennium Development Goals to achieve universal primary education by 2030 (UNDP, 2013). Based on past enrollment trends, this target very likely will be missed again. According to the latest Unesco data, over 200 million children are still out of school.

Secondary education

With progress made in primary education coverage, many countries shifted attention to secondary education. Yet, there are about 70 million children without access to it, most of whom in South Asia and sub-Saharan Africa (World Bank, 2014).

Early school leaving

Setting never-fulfilled education targets is not only a phenomenon in developing countries. In 2000, the European Union set a goal to reduce secondary education dropouts to no more than 10% by 2010 (European Commission, 2006. Yet, by the stipulated 2010 target year, 16% of males were leaving school early in the European Union. So the target was shifted to 2020.

Given the latest data on secondary school dropouts, this target is likely to be missed again. The highest incidence of secondary school dropouts are recorded in Malta (19.6%), Spain (19.0%) and Romania (18.5%).

Learning

Beyond enrollment and graduation, another objective of education policy is to ensure students actually learn the subject matter.

The World Bank (2011) issued its education strategy for 2020 pledging learning for all, meaning that "all students …acquire the knowledge and skills they need to live happy, productive lives". Although the target year of this noble goal is two years away, one wonders how it would be achieved given the huge gaps in educational achievement documented in the most recent PISA data (OECD, 2018).

World-wide, 123 million youth aged 15 to 24 lack basic reading and writing skills, over 60 per cent of which are women (United Nations, 2013b). In OECD countries, about 20% of students perform below Level 2, considered the baseline level of proficiency in science that all students are supposed to attain by the time they leave compulsory education (OECD, 2018).

Financing

A common complain of education Ministers, is that they are short-changed in the country's budgetary allocations. International comparisons of public spending on education are used as an argument for requesting additional funds for education. Lack of finance is the most cited reason for failing to meet education targets, calling for increased foreign aid (Oxfam, 2002; Global Campaign for Education, 2003).

There is a large variation between countries on what is spent on education ranging between 2% and 7% of their GDP. Education expenditure seems to be a very sensitive matter, many countries appearing with "m", i.e., missing, in international data bases (e.g., OECD, 2017). Yet there is no relationship between education expenditure and school performance. Figure plots education expenditure per secondary student in US$ PPP against students' score in PISA.

Employment

Every country faces labor market imbalances resulting to unemployment. Several policies have been devised and applied to fix the problem, none really succeeding. Typical policies amount to introducing a technical/vocational element in the school curriculum and providing out of school training. Education policy aimed at improving the employment prospects of graduates seem to have

failed.

Many countries share dismal statistics on youth and unemployment, exceeding 20% in some Mediterranean countries. But is education policy to blame for Greece's 43% youth unemployment rate or something else, such as the economic crisis the country has been going through for a decade?

The earliest attempt to tune the education system to the labor market was the forecasting of manpower requirements. Based again on intuition, there have been efforts to predict what would be the labor market needs in the future so that the school system provide the "required manpower". In the early 1960's, many countries assisted by the ILO, the World Bank and the OECD attempted to forecast the number of "qualified" or "high-level manpower", as it was called at the time, namely the necessary amount of scientists, engineers and the like needed to produce a unit of output in the various sectors of the economy (Parnes, 1962; OECD, 1965). In the early 1970s many of the forecasts became mature. An evaluation of the accuracy of manpower forecasts has shown forecasting errors of thousands percent, even for occupations such as teachers (Ahamad and Blaug, 1973).

Social inequities

One noble goal of the educational system is to improve social mobility and reduce social inequities. Although the supply of education has increased considerably over the years, inequality indices have increased instead of been reduced (Piketty, 2015).

Why policies fail?

The short answer to this question, is because education policies typically

are formulated based on hunch, intuition or political expediency. They are seldom based on research findings whether a particular policy would work or not. Even when there is consensus in the literature that a given policy works, politicians may ignore it if enacting it means they lose votes in the next election.

Typical example of this, is charging tuition in public universities. Providing free education for all at all levels sounds great to the people and generates votes, even if it is impossible to enact it in practice, let alone inequitable of charging the same price (zero) to rich and poor students. Budgetary allocations for education as a whole, and distribution to the various levels and types of education are governed by inertia from year-to-year, perhaps adjusted for inflation. There is no reallocation of resources away from inefficient or inequitable activities toward better ones.

In the next section, we review the evidence on which policies could be based.

Research Evidence

Traditionally, education was in the hands of pedagogues, psychologists and sociologists. In the last 60 years or so, however, economists play a dominant role in identifying effective education policies. According to human capital theory, formulated in the early 1960s, education is a form of investment creating human capital that is subject to analyses similar to that for physical capital (Schultz, 1961; Becker, 1964). For example, providing education involves a cost in terms of resources that can be compared to the benefits of education. Based on this theory, education policy could give priority to the expansion of those levels or types of education that exhibit the highest profitability.

Initially, research focused on the link between education and labor market

outcomes documenting high returns to investment in education, especially at the basic level. As a result of such finding, the World Bank in the 1990s changed dramatically its lending portfolio towards basic education. In the last ten years or so, the significance of education for development has been reinforced following the documentation of a series non-market effects of education such as better health, less crime and better civics.

The higher the level of educational attainment of a person the more likely for that person to participate in the labor market. The education effect in this respect is particularly strong for women (OECD, 2009). As evidenced in many countries, the higher the level of a person's educational level the lower the probability that the person would be unemployed (OECD, 2014).

Before blaming the educational system, i.e. the supply side, that is not producing the right number and types of graduates to be employable in the market, one should look at the demand side. High unemployment could be due to a structural or institutional factor. Excessive labor market inflexibility by means of a minimum wage, labor hiring-and-firing laws and the non-wage cost of labor, deter employers from hiring, especially the young.

It is a universal fact with no exceptions that, on average, better-educated persons earn more than the less educated. The education earnings premium is especially high in developing countries.

Education returns

The higher earnings of graduates were obtained at a cost, equal to their foregone earnings while studying and the resources needed to operate schools and universities.

Two types of returns are usually estimated, each answering a different

question: First, the private rate of return, that compares the costs and benefits of education as incurred by and realized by the individual student who undertakes the investment. Second, the social rate of return that compares costs and benefits from the country-as-a-whole or society's point of view. The main computational difference between private and social rates of return is that, for a social rate of return calculation, the costs include the state's or society's at large spending on education. Traditional social returns to education are called "narrow-social," and returns that include externalities "wide-social." The distinction between narrow and wide social returns is more than theoretical. By adding externalities to the narrow-social returns, one can reach diametrically opposite policy conclusions, e.g., if primary and tertiary education have differential externalities, by considering the latter the ranking of profitable education investments could be changed.

A meta-analysis of over 1000 rate of return estimates in over 100 countries showed that primary education exhibits the highest returns, followed by secondary and higher education (Psacharopoulos and Patrinos, 2018).

Since the costs are higher in a social rate of return calculation relative to the one from the private point of view, social returns are typically lower than a private rate of return. The difference between the private and the social rate of return reflects the degree of public subsidization of education. Hence, public subsidy to education is shown to be regressive.

Several macro-studies have produced results consistent with the micro evidence. A one-year increase in the average years of schooling of the labor force raises output per worker between 5% and 15% (Topel, 1999) and is associated with a 0.30% per year faster growth rate. Krueger and Lindahl (2001) found a macro-estimated rate of return to schooling between 18% and 30%. Sala-I-Martin, Doppelhofer and Ronald Miller (2004) found that a

10-percentage-point increase of the primary school enrolment ratio is associated with a 0.27-percentage-point increase of the growth rate.

Regarding efficiency in the use of resources, spending on human capital is a good investment. For example, in the United States the long-term 1966–2015 average return on stocks and bonds is 2.4% (Damodaran, 2016) versus a 10.5% overall private return to investment in education.

Vocational education

Within levels of education, and counter to any intuitive thought, general secondary education is more profitable than vocational education. The reason is that whereas general and vocational secondary school graduates have more-or-less equal earnings after graduation, the vocational track of secondary schools costs about twice that of the general track (Psacharopoulos and Loxley, 1985; Psacharopoulos, 1987).

In many countries, the wage returns to academic qualifications are significantly higher than the returns to vocational qualifications, government training programs and adult skills training (Blundell, Dearden and Sianesi, 2005; Dearden et al., 2002; Dickerson 2005; Carneiro and Heckman, 2003).

In a large World Bank follow-up study of students in the technical-vocational curriculum stream of secondary education in Colombia and Tanzania, it was found that the graduates did not seek or find employment in the sector they studied. It was such finding that made the World Bank change its lending portfolio as late as the 1990s away from secondary vocational schools, an activity the institution had been engaged nearly exclusively since its inception (Psacharopoulos, 1985).

Beyond the formal school system, a very robust research finding is that

retraining programs for the unemployed are ineffective (Heckman et al., 1999). The costs of such programs grossly exceed the benefits, the latter being measured by the length of time needed for a graduate of these programs to find a job, and by the earnings differential of those who graduated from the program relative to those who did not (Heckman and Hotz 1989; Ashenfelter and Card 1985; Ashenfelter 1986; Ashenfelter and Lolonde 1997).

Preschool

There have been many cost-benefit studies on the effect of preschooling on eventual educational attainment, adult earnings. Experimentally-induced changes in non-cognitive skills at an early age explain a sizable portion of later education, employment and earnings (Heckman 2000, 2008; Chetty et al, 2011; Wall Street Journal, 2013).

A World Bank study documented a long list of benefits associate with preschool education in Brazil, with an estimate of 12.5 - 15 percent return on the investment. On cost-benefit grounds, preschool is a better investment relative to the Bank's industrial and agricultural projects (World Bank, 2001).

Yet, given its importance, preschool coverage is still low around the world, ranging from an enrollment ratio of 18% in sub-Saharan Africa to 81% in industrialized countries (Unicef, 2014).

Early school leaving

In recent years, there has been a surge in the literature on the loss or cost to society associated with an educational system that falls behind agreed benchmarks such as early school leaving (Psacharopoulos, 2007). For example, reducing early school leaving in Romania would produce a benefit of about 1%

of the GDP according to one study (EFILWC, 2012), or 8% according to another (Varly et al., 2014). It would produce 40% higher lifetime earnings in Estonia (Anspal et al. 2014), 120,000 pounds in the UK (Oreopoulos, 2006), $8.2 billion in Australia (Applied Economics, 2002), or 50,000 euros per Roma graduate in Hungary (EU, undated).

Education quality

Average years of education may not be a sufficient statistic to predict growth (Pritchett, 2001). A year of primary schooling in the UK compared to Brazil will provide different learning outcomes.

On the micro side, cost-benefit analysis of education quality is not as plenty as for education quantity. Many econometric studies have found that increased resources for education (an input measure of school quality) have not led to statistically significant improvements in test scores – a standard measure of education quality. In a survey of 376 education production functions relating school resources to student achievement, most studies report negative or insignificant effects of expenditure per student, teacher salaries or class size (Hanushek, 2003).

A review of 30 randomized control trials designed to improve test scores in the developing world, found that two-thirds of them report near zero or insignificant effects of alleged school quality enhancing interventions such as textbooks, improved buildings or smaller class sizes (Kremer et al., 2013). A meta-analysis of 76 quality-improvement experiments in developing countries concluded that there are insufficient data to assess the relative cost-effectiveness of interventions (McEwan, 2013).

On the macro side, Hanushek and Woessmann (2009) report a one

standard deviation advantage in test scores is associated with a 2.6 percentage points higher per capita income growth rate. Hanushek et al. (2015) report that differences in human capital account for 20-35 percent of variation in per-capita income among states, with roughly even contributions by school attainment and cognitive skills.

Equity

There are four main equity dimensions related to the role of education for inclusive growth and development:

- Access to schools
- Learning in school
- Distributive incidence, i.e., who pays and who benefits from public education financing
- Income distribution

Based on data from 114 countries in the 1985 to 2005 period, one extra year of schooling is associated with a reduction of the Gini income inequality coefficient by 1.4 points (on the Word Bank scale the Gini ranges from 0-100). Gylfason and Zoega (2003) report a significantly negative relationship between secondary school enrollment and income inequality, the latter measured by the Gini coefficient. The reduction of inequality can greatly reduce the number of households in poverty (van der Hoeven, 2000).

Another equity dimension is the distributive incidence of education subsidies, or who really pays and who really benefits from public education expenditure. Hansen and Weisbrod (1969) were the first to find that public financing of education is regressive, i.e. the poor through their taxes pay for the education of the rich. This finding has been replicated in many countries (Yang,

2002; Vawda, 2003).

The soft skills

Research has shown that employers want to hire workers who possess very general, rather than specific, skills. General skills make workers easily trainable for unforeseen occupations in the future (Murnane and Levy, 1996). Soft skills, such as personality, goals, motivations, and preferences are valued and rewarded in the labor market (Heckman and Kautz, 2012). In addition, civic behavior, especially as manifested by trusting others, has an economic value. Civics cultivates interpersonal skills to tolerate others that, among other things, promote social and economic stability, conflict resolution, voting participation, democracy and better governance (Gallego, 2010; Temple, 2001). A higher level of trust in a society facilitates investment and lowers the cost of market transactions (Sequeira et al., 2011; Knack and Keefer, 1997).

Arrow (1972) linked social capital to economic outcomes, noting that virtually every commercial transaction has within itself an element of trust, and argued that much of the economic backwardness in the world might be explained by the lack of mutual confidence. Fukuyama (1995) noted that distrust in a society imposes a kind of tax on all forms of economic activity.

In a cross-country study, using data from the World Value Survey, Knack and Keefer (1997) found that a 10% increase in their measure of trust leads to a 0.8 percentage point increase in the rate of economic growth.

Dincer and Uslaner (2010) using data from U.S. states over a 5-years period and controlling endogeneity, found that a 10 percentage point increase in trust increases the GDP growth rate of by 0.5 percentage points over a five-year period. In the United States, trust explains nearly one-half of the variation of the

growth rate of GDP (Dincer, 2011).

Externalities

That education has many benefits beyond what can be monetized has been recognized since millennia. In 300BC Aristotle wrote: "*If a man neglects education, he walks lame to the end of his life*".

Several terms are being used in the literature all referring to the non-monetary benefits of education such as non-pecuniary, non-market, non-production, private, social, wide-social or external.

Documenting the non-monetary benefits of education has been the subject of extensive research in recent years. In reading this evidence, a distinction should be made between a correlation and the causal effect of education on non-monetary outcomes. The reason is that a simple correlation might hide a myriad of factors other than education that affect outcomes. For example, if more educated people are more satisfied in life than less educated people, this might be due to the fact the more educated have a higher income. In OECD countries, education associates positively with a wide range of indicators.

The evidence presented below on each category of non-monetary benefits is based on studies that have controlled for many factors other than education that might affect outcomes. This is done by means of econometric techniques and natural experiments that resulted in one group of the population receiving a different level of education than the other due to factors not associated with education or income.

Health

Beyond the level of income, more-educated people are more likely to

interpret health information and use the right health inputs. This is an example of the allocative efficiency effect of education, first postulated by Welch (1970). Also, they may be more prone to protect the value of their human capital by being non-smokers.

Crime

In the United States, there is a sharp drop in the probability of imprisonment of blacks who have completed secondary education vs. high school dropouts. A one-year increase in years of schooling in a State reduces arrests by 11%. A 10-percentage-points increase in secondary school graduation rates reduces arrest rates by 7%. A follow-up of the High/Scope Perry preschool program that followed children to adult life found that by age 40 the fraction arrested was reduced by 0.24 percentage points. A Syracuse preschool program reduced participants who have been placed on probation to 6% relative to 22% of the control group (Lochner, 2011).

High school graduation is associated with a long list of social benefits lowering dependence the state for health and welfare benefits, lowering prison costs and generating additional tax revenue. In the United States, a 1% increase of high school completion rates generates an annual social benefit of $1.4 billion due to the reduction of violent and property crimes (Lochner and Moretti, 2004).

In the UK, those without an education qualification have an eight times higher probability to be convicted. A one-year increase in the average years of schooling reduces arrests for property crimes by about 25%. Educational subsidies for coursework completion reduces burglary rates from 22% to 6%. In England and Wales a 1-year increase in the average years of schooling reduces conviction rates for property crime by 20–30% and violent crime by roughly

one-third to one-half (Lochner, 2011).

Relative to a high school graduate, an extra year of college reduces the likelihood of a low birthweight child by about 20% and pre-term birth by about 15%. An extra year of college reduces smoking during pregnancy by roughly one- third and increases the incidence of prenatal care by 3% (Currie and Moretti, 2003).

More educated mothers spend more time with their children than less educated mothers (Kalil, Ryan, and Corey, 2010). As a result, parenting is the most important determinant for children's cognitive and non-cognitive development, even among families with similar incomes (Cunha and Heckman, 2009, Angrist and Lavy, 1996; Murnane 1981, Edwards and Grossman 1980). In addition, more educated parents have healthier children (Currie and Stabile, 2003; Lubotsky and Paxson 2002).

Increased schooling is negatively correlated with fertility resulting in fewer children. The reason can be traced to a trade-off between the number of children and parental investment per child that (Becker and Lewis 1973; Becker and Tomes 1976).

Educating one member of society is associated with a series of benefits that accrue not only to the educated person but also to others. Including such externalities would raise the traditionally estimate social rate of return to education.

One well documented non-market effect is that educating women reduces fertility and child mortality. In Pakistan, it has been found that giving 1000 girls one extra year of schooling reduces fertility and child mortality rates by about 8% (Summers, 1992). In Taiwan mothers with 9 vs. 6 years of education resulted in saving one child life per 1000 births (Chou et al., 2010). A child born to a mother who can read stands a 50% greater chance of surviving past age five

(United Nations, 2014).

Beyond health, it has been found that each additional year of education on average reduces a country's chances of falling into civil war by 3.6 percent (Winthrop and Graff, 2010).

Combining micro and macro estimates, Breton (2010, 2011) reports that an externalities-inclusive rate of return on investment in schooling in the lowest-income countries exceeds 35%.

Including just one non-market effect, reduced mortality, Pradhan et al. (2018) report that the wide-social rate of return to eone exstra year of schooling in low income countries could be 16%, relative to a narrow social rate of 11%.

The distinction between narrow and wide social returns is more than theoretical. By adding externalities to the narrow-social returns, one can reach diametrically opposite policy conclusions, e.g., if primary and tertiary education have differential externalities, by considering the latter the ranking of profitable education investments could be reversed.

Institutions

Following the work of North (1990), there has been a lot of work on the importance of institutions in economic growth (Acemoglu et al., 2005). There are several ways a country's institutions affect the formation of human capital.

Education does not operate in a vacuum. The environment in which schools and universities operate is heavily influenced by the country's political and other institutions. Education policies typically try to fix a problem by narrowly focusing on one component of the education system, abstracting from a host of non-education factors that may prevent or assist in the policy success. Classic omission of such factors relate to institutions.

Centralization

Most education systems in the world today are heavily centralized. The Ministry of education regulates how schools operate, the curriculum, the way teachers are hired or, rarely, fired and how much they are paid. In some countries, the regulations also apply to private schools imposing tuition caps and teacher hiring practices.

Education and labor market policies can be viewed as institutions that affect the quantity and quality of human capital formation in a given country. Take as an example the degree of centralization of an educational system, i.e. the extent to decisions pertaining to schools such as hiring or firing teachers, the curriculum and budget allocation are determined by the central Ministry of Education rather than the school master or the local authorities. Evidence from OECD's PISA shows a negative correlation between the degree of centralization of an education system and student achievement. Finland's shine in student performance has been attributed to the freedom school teachers have to determine the curriculum and timetable.

One of the reasons private schools outperform public schools has to do with decentralization. When education decisions are taken at the school rather than the central level, achievement is higher (OECD, 2004, 2005).

School choice

In most countries, the institutional and political ideological setting is against private schools, imposing all sorts of restrictions in their operations such as a ceiling on tuition fees and regulation of teachers' pay. Yet, evidence form PISA and many studies shows that students in private schools exhibit higher

learning outcomes than students in public schools. In 16 OECD countries and 10 partner countries, private school students outperform their public school counterparts by 30 points in reading scores (OECD, 2011c). Much of this difference remains after adjusting for socioeconomic background

Education yields many of its benefits through the labor market. An inflexible labor market does not augur well for human capital formation. Too much regulation on firing and hiring practices and the difficulty of doing business choke educational development. Such regulations deprive the system of incentives that would contribute to better delivery. They also deprive the system of additional finance that would come from those who are willing to pay for better service.

There are several ways the public and private sector could share the provision and delivery of equation services (Patrinos et al., 2009). Various forms of Public Private Partnerships operate in many countries (LaRoque, 2008; Aslam et al., 2017). In New Zealand, for example, Independent schools receive government subsidies about one third of the average cost per student in public schools. In the Netherlands, public and private schools are equally funded by the government, and schools are free to determine what is taught and how (Patrinos, 2013). In the USA, the Milwaukee Parental Choice Program provides vouchers to poor families to allow them to send their children to private schools.

Studies examining the UK academies have generally found that they have had a positive impact on student performance and degree completion (Eyles et al., 2016).

In Sweden, Free Schools allow students to choose any public or private school, the latter financed by a voucher. Bohlmark and Lindahl (2007) report positive and significant learning outcome benefits for students in the program.

The relative effectiveness of government versus private schools on student

learning has been a hot subject in the literature. In Colombia, vouchers were given randomly to low-income students in order to attend private secondary schools. Angrist et al. (2002) found positive effects of private school enrollment on grade progression and test scores. Similarly, in India, vouchers given randomly to public school students in order to attend private schools raised test scores in a cost-effective way (Muralidharan and Sundararaman, 2015).

Evidence from PISA and other studies shows that students in private schools exhibit higher learning outcomes than students in public schools. In 16 OECD countries and 10 partner countries, private school students outperforms their public school counterparts by 30 points in reading scores. Much of this difference remains after adjusting for socioeconomic background. OECD concludes that private schools benefit the individual students who attend them, although not raising the level of performance of the school system, as a whole OECD (2011c).

School choice and vouchers are an anathema in most country institutional-political settings –. Yet several studies have shown that when there is school choice, as in the Netherlands, students are doing better (Dronkers, 2003).

Several studies have found achievement advantages of private schools (Rouse, 1998; Hoxby, 1998; Green et al., 1999). Neal (1997) finds that urban minorities gain the most, having a 26 percentage points increased probability graduating from high school graduation. Hoxby (2001) reports that competition between public schools raises student achievement at a reduced cost.

Belfield and Levin (2002) reviewed over 41 empirical studies in the US, on the effects of competition on educational outcomes, such as test scores, graduation rates, wages and teacher quality. Most studies found that increased competition improves outcomes and has the strongest effects for low-income students. Increased competition raises school quality, effectiveness and

efficiency.

Charter Schools in the United States are publicly funded but privately managed. Charter schools are given autonomy while held accountable through a contract to produce specific results. Evaluations of charter schools found that the largest benefits accrue to less privileged students (Gleason et al., 2010). A general finding from this literature is that the benefits from charter attendance are larger in math than in reading test scores (e.g. Hoxby et al., 2009; Angrist et al., 2010; Flaker, 2014).

Institutional changes such as the introduction of monitoring and evaluation systems, central examinations, teacher incentives and accountability are more likely to improve school quality, although difficult to cost (Hanushek and Woessmann, 2011).

Toward Better Policies

Given the state of our knowledge, let us summarize what policies we are confident would be conducive to education contributing to socioeconomic development.

Fix institutions

First of all, fix the environment. No education policy will succeed unless the institutional environment is right. Before attempting to enact any education policy, one should look outside the education system. Are the country's institutions conducing to or hampering the success of any education policy? Specific areas to look at are the structure of incentives, regulations and public finance.

Establish priorities

Education systems in all countries, rich or poor, are plagued by a myriad of problems no country or donor can fix entirely. Millennium Development Goals are a utopia (Economist, 2015).

Priorities should be established based on efficiency and equity considerations. Use cost-benefit and cost-effectiveness analysis to establish priorities.

Professor Heckman's famous graph succinctly summarizes priorities that should guide education policies: Target the early ages. If so, why countries keep expanding universities and adult training?

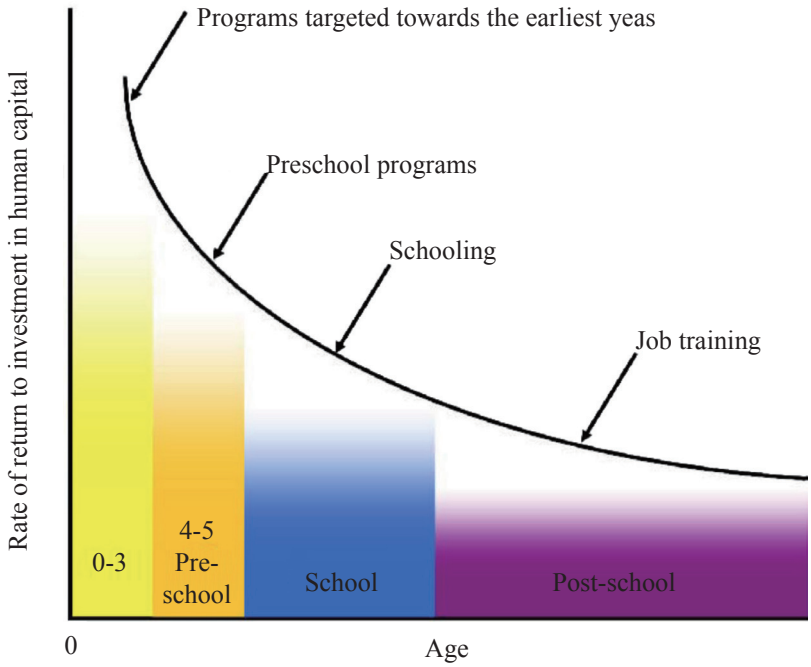

Figure 1: Heckman's grand summary

Source: Heckman (2008)

Is too much spent on tertiary education relative to preschool that has the highest returns? Is too much spent on vocational education and training relative to general education that has the highest returns? Is too much spent on trying to train older workers? Give priority to general rather than vocational curricula and training. The reason is that a good foundation of general education facilitates later specialization and training. In addition, employers today want trainable employees with soft communication skills who could learn on the job, rather than narrow specialists (World Bank, 2013).

Before asking for additional money for education, assess the way the present budget is allocated. Are education funds used in the most efficient and equitable way? Are they been used in the most cost-effective activities, or those with the highest social benefit-cost ratios? To what extent do present education funds allocation promotes social equity?

Reallocation of resources from traditional uses to new ones is a painful process in any organization, public or private. It is most difficult in the public sector because it requires political support. To the extent politicians may fear that because of the new allocation they would lose votes in the new election, reallocation will not happen.

Provide incentives

To the extent that teachers and university professors are civil servants, their salaries essentially are based on years of service. In such scenario, good teachers may have less incentive to shine. How are the teachers selected? Is the teacher occupation a well-regarded one as in Finland and Switzerland, or attracting only those who cannot find another job? Merit-based pay might be the right policy in this case, but usually abhorred by unions and not enacted.

Teacher evaluation may sound a good policy, but again hated by unions and rarely enacted. It is difficult to find an example of firing a public school teacher because of bad performance. Private schools seem to be able to offer incentives to attract and retain better teachers. But labor market regulations may prevent pay differentiation and hamper the easiness of hiring or firing a teacher.

Evaluate

Does the country have a system of external assessment of schools? The external element of assessment is essential, since so-called self-evaluations are a self-fulfilled prophesy.

Assuming there is an effective evaluation system in place, what are the implications of a good or a bad evaluation? Have good teachers been rewarded or bad ones fired? Has there ever been a closure of a school because of sub-standard performance?

Do school teachers and principals have the authority to innovate? Do parents' associations have a say in the running of a school? Can school vouchers be used as an incentive for students in low-performing public schools to move to a better private school?

Should privatization and vouchers be politically unpalatable, try private-public partnerships. Not only in the main school system but also between public universities and industry (as done in South Korea).

Having a centralized system, means that there is no need to evaluate how well it is performing. If schools follow the Ministry's dicta, all is supposed to run well. Even when an evaluation system is in place, more than often it is not enforced, typically because teachers' unions are allergic to it.

Train closer to the firm

Consider adopting a dual training system, such as in Germany (Hamburg Chamber of Commerce, 2012) or the Training Consortium in South Korea (Lee, 2009). Only on the job will a trainee be able to learn to cope with the constantly-changing demands of the labor market.

Even better, move vocational training completely out of the secondary school system, as done in Singapore (Law, 2008).

Decentralize

Decentralize the education system by giving education-related decision authority to schools accompanied by evaluation and accountability. One without the other two in the golden trio will not do

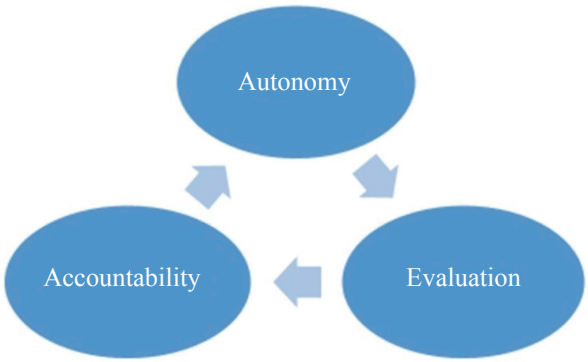

Figure 2: The golden trio

Source: Adapted from Patrinos et al. (2017)

Split financing from provision

Consider indirect financing of public education. Separating the financing from the provision of education is associated with strong incentives. The government can still finance schools but let the money flow in an indirect way through the hands of students in the form of a voucher allowing them to choose a public or a private school.

Although the state could finance training, the delivery of training services could be provided more efficiently by private firms dedicated to vocational training. By giving the training money to the candidate trainee, the trainee can chose the school that would best fit his or her interests. To the extent private training schools will depend on the revenue collected as fees paid by the students, they will be competing between them. The good ones will flourish, and the bad ones will close down. One can hardly think of a Government run training school closing down because of low quality. The indirect flow of funds can have significant redistributive power if a higher amount of training voucher is given to the poorer trainees.

The hardest part in adopting evidence-based education policies, as those outlined above, is persuading the politicians who have the ultimate say. Human capital takes years to build and several decades to realize its full benefits. Such long horizon is at odds with the short life span of an Education Minister. Perhaps it is for the electorate to make politicians realize that education is not an expedient investment.

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為發展而教育：政策為何？

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摘要

教育是經濟和社會發展的催化劑，但對於什麼樣的教育政策有益於社經發展，卻沒有普遍一致的共識。本文旨在判斷何種教育政策得以運作，何者不能。其次，回顧各國教育改革都面臨的教育相關問題及已然宣告失敗的政策方案。許多研究探討教育和社經發展之間的連結。第三，檢視這些研究成果，並提出理論架構。最後，就更高效能、更公平的教育體系提出一系列實證基礎的政策建議。

關鍵詞：教育、發展、政策、教育改革

壹、前言

今日的老生常談認為教育是經濟和社會發展的催化劑，至於什麼樣的教育政策有益於社經發展，卻沒有普遍一致的共識。這一點也證諸不論貧富的各國持續不斷進行的教育改革，這些改革在改善教育體系的期望之下，總是很快又被其他的改革所取代。

本文旨在判斷何種教育政策得以運作，何者不能。其次，回顧各國教育改革都面臨的教育相關問題及已然宣告失敗的政策方案。許多研究探討教育和社經發展之間的連結。第三，檢視這些研究成果，並提出理論架構。最後，就更高效能、更公平的教育體系提出一系列實證基礎的政策建議。

貳、常見的問題，失敗的方案

在網路上進行搜尋可以發現，「education crisis」（教育危機）一詞見於許多書籍和超過二十萬筆的學術文章標題，例如Fleisch, 2008；Gandara, 2010；Blumenstyk, 2015等。世界各地的教育問題大同小異，但高收入國家和低收入國家的問題強度並不相同。

一、初等教育覆蓋率

所有國家教育政策的最根本目標，都在於讓六至十二歲兒童入學受教並從學校畢業。已達成這項目標的多半是高收入國家，速度各有不同，但對低收入國家而言，這個目標至今還是一項挑戰。

國際組織就教育設定數字目標由來已久，但到今日為止，這些目標沒有一個達成。「聯合國教育科學文化組織」（Unesco）於1961年在衣索比

亞首都阿迪斯阿貝巴召開了一場非洲國家高階會議，探討非洲教育的發展（Unesco, 1961a），並且訂下了一個目標，要讓非洲的初等教育入學率從1960年的40%，在1980年時成長到100%（Unesco, 1961b）。然而1980年時，撒哈拉沙漠以南的非洲地區初等教育淨入學率只有56%（Unesco, 1993）。

1990年，世界銀行與聯合國教育科學文化組織、聯合國兒童基金會（Unicef）和聯合國開發計畫署（UNDP）協力展開全民教育計畫（Education for All），預計在2000年讓初等教育遍及全球（WCEFA, 1990）。當然這項目標未能在2000年達成，於是改期至2015年，然而到了2015年，全球依然有六千萬兒童未能就學。

「聯合國2015年後千禧發展目標」（United Nations Post 2015 Millennium Development Goals）於是訂出2030年達成全球初等教育的目標，但根據過往的入學狀況來看，這個目標很有可能再度失敗。根據聯合國教育科學文化組織的最新數據，目前仍有兩億兒童未能就學。

二、中等教育

許多國家在初等教育覆蓋率有所提升之後，將注意力轉向中等教育，然而全球依舊有七千萬兒童無法獲得中等教育，主要是南亞及撒哈拉以南的非洲國家（World Bank, 2014）。

三、中輟

不是只有發展中國家會訂定永難達成的教育目標，歐盟便於2000年訂下目標，要在2010年將中等教育的中輟比例降低到10%以下（European Commission, 2006），然而到了預定的2010目標年，歐盟國卻有16%的男性學生輟學，目標年於是被改訂至2020年。以最新的中學中輟數據來看，歐盟的這個目標應該會再度失敗。中學中輟比率最高的是馬爾他

（19.6%）、西班牙（19.0%）及羅馬尼亞（18.5%）。

四、教育品質

在入學和畢業之外，教育政策的另一項目標在於確保學生確實學習主題科目。世界銀行（2011）提出一項2020全民學習教育策略，要讓「所有學生……習得足夠的知識與技能，以求快樂豐富的人生。」達成這個崇高目標的期限就在兩年後，但從最新的國際學生能力評估計畫（PISA）數據來看，各國的教育表現差距極大，令人懷疑這個目標是否真能達成（OECD, 2018）。

全球有一億兩千三百萬15-24歲的青年不具備基本的讀寫技能，其中60%是女性（United Nations, 2013b）。OECD經濟合作及發展組織國家當中，約有20%的學生表現低於第二級（所有學生離開義務教育時都應該已經具有的基礎科學水準）。

五、籌募資金

教育部長們經常抱怨教育在國家預算分配當中總是備受剋扣，也常拿他國用於教育的公共支出作為要求更多教育專款的論據。未能達成教育目標的理由當中以財務短缺最為常見，對外援的需求也愈來愈高。

教育支出佔GDP的比例在各國之間差距頗大，範圍約是2%到7%。教育支出似乎是個極為敏感的話題，許多國家提供給國際組織的數字都以「不明」（m, missing）一語帶過（例如，OECD, 2017）。但教育支出和在校表現之間並無關聯。

六、就業

各國都有勞動市場不平衡導致的失業問題，但為解決這個問題而制定實施的政策當中，卻沒有哪一項真的獲得成功。常見的辦法如在學校課程

中加入技職元素、提供校外訓練等。以改善畢業生就業前景為目標的教育政策似乎都以失敗告終。

許多國家青年失業的數據令人聞之沮喪，某些地中海國家的失業率甚至超過20%。但希臘高達43%的青年失業率是教育政策失靈所致，還是別有其他原因（例如該國長達十年的經濟危機）？

將教育體系向勞動市場調節的各種嘗試當中，以人力資源預報為最早。人們再度以直覺來預測未來勞動市場的需求，而學校則據以提供此等「需求人力」。在1960年代早期，許多國家都獲得國際勞工組織（ILO）、世界銀行、經濟合作及發展組織的協助，試圖就當時稱為「合格」或「高階人力」的數字做出預測，也就是為了在不同經濟部門創造單位產值所需的科學家、工程師等類人才的數量（Parnes, 1962; OECD, 1965）。許多預測到1970年代早期臻於成熟。一項針對人力預報精確性所做的評估顯示，即便在教師等類的職業，預報誤差都達於數千個百分點（Ahamad and Blaug, 1973）。

七、社會不平等

教育體系懷抱一個崇高的理想，亦即促進社會流動，降低社會不平等。雖然教育供給在過去的許多年間已有長足的成長，不平等指數卻不減反增（Piketty, 2015）。

八、政策為何失敗？

對這個問題的簡答是：因為教育政策的制定往往基於預感、直覺或政治便宜，鮮少以某特定政策是否能行的研究成果為基礎。即便某特定政策能行在研究文獻中已獲得共識，政治人物還是可能因選票考慮而予以忽略。

提高公立大學學費是個典型的例子。提供所有人所有階段的免費教育

聽來十分理想，可以提高選票，但實際上根本無法執行，更不要說對貧富都收取同樣的（零）金額其實並不平等。

將教育當作一個整體而獲得預算，再將之分配到不同的層級和類別，這些活動長久以來受惰性所支配，頂多將通貨膨脹納入考慮，卻沒有為改善無效能或不公平活動而從事資源重分配。

我們將在下一節檢視可以作為政策基礎的實證研究。

參、研究證據

教育向來掌握在教師、心理學家和社會學家手裡。不過最近的六十年間，經濟學家在分辨有效教育政策方面扮演了重要的角色。1960年代初期所建立的人力資本理論認為，教育是一種創造人力資本的投資，跟物質資本一樣可以被分析（Schultz, 1961; Becker, 1964），例如提供教育牽涉到資源成本，而這可以和教育收益相比較。以這個理論為基礎，教育政策可以優先擴展那些高收益的教育層級或類別。

最初的研究焦點在於教育和勞動市場產出之間的關聯，觀察到教育的高投資報酬率，尤以初等教育層次為然。世界銀行基於這項研究發現，在1990年代將貸款組合戲劇性的轉向初等教育。在最近的十年間，有證據顯示教育具有一系列的非市場性效益，例如改善健康、降低犯罪、提升公民素質等，教育在社經發展中扮演的重要角色也就不斷獲得強化。

一個人受教育的程度愈高，就愈有可能進入勞動市場。教育在這方面的效益在女性身上尤其明顯（OECD, 2009）。許多國家都有證據顯示，教育程度愈高，失業概率愈低（OECD, 2014）。

在責備教育體系的供給方之前（例如未能因應勞動市場的需求而產出足夠數量及合適類別的畢業生），我們應當先檢視需求方。高失業率可能有其結構性或制度性的成因。最低工資、勞雇法規、非工資勞動成本等因素都會導致勞動市場過度僵化，從而降低雇主的僱傭意願（尤以是僱傭年

輕人）。

教育程度較高者的收入高於教育程度較低者，這一點舉世皆然，沒有例外。教育在收入方面帶來的優勢在發展中國家尤其高。

一、教育的投資報酬

畢業生獲得較高的收入有其成本，約當其學生時代的收入及運作學校和大學所需的資源。

投資報酬的測算分為兩類，各自解答一個問題：其一是投資報酬的私有比率，也就是將從事投資的個別學生所引發的教育成本和收益相比較。其次是投資報酬的社會比率，是從國家整體或社會的角度來比較成本和收益。

投資報酬的私有比率和社會比率之間主要的計算差異在於，社會比率的計算成本包括了國家或社會整體上對教育投入的成本。傳統的社會投資報酬是所謂的「狹義社會」投資報酬，計入外部性的則是「廣泛社會」投資報酬。社會投資報酬的廣狹並不只是理論上的區別。在狹義社會投資報酬上加計外部性，將會得到完全對立的政策結論，例如，若初等或高等教育存在差異外部性，那麼只要考慮後者，何種教育投資有利（profitable）的排名就會產生變化。

在超過一百個國家就超過一千個社會投資報酬率的估算所進行的後設分析顯示，初等教育的投資報酬率最高，其次為中等教育和高等教育（Psacharopoulos and Patrinos, 2018）。

既然投資報酬計算當中，社會比率的成本較私人為高，社會的投資報酬率通常也就較私人投資報酬率低。社會及私人投資報酬率的差異也反映出公共補助投注於教育的程度。投入教育的公共補助因而顯示為具有遞減性。

有些宏觀研究所得出的結果與微觀證據相一致。平均學校教育年限增

加一年，勞動力的每人產出便增加5-15%（Topel, 1999），且與每年0.30%的成長率相關。Krueger與Lindahl（2001）以宏觀測算方式得出在18%和30%之間的學校教育投資報酬率。Sala-I-Martin、Doppelhofer與Ronald Miller（2004）則發現，初等教育的入學率提高十個百分點，與0.27個百分點的成長率相關。

就使用效能而言，將資源投注於人力資本可謂好的投資。舉例而言，1966年到2015年之間，美國的股票與債券的長期平均投資報酬率為2.4%（Damodaran, 2016），教育的整體私人投資報酬率則為10.5%。

二、技職教育

各層級教育相比的話，普通中等教育比技職教育更具利益（profitable），這一點可能違反眾人的直覺。這是因為不論接受的是普通或是技職中等教育，學生畢業後的收入大體上差不多，但技職教育的學校支出卻約當一般教育的兩倍（Psacharopoulos and Loxley, 1985; Psacharopoulos, 1987）。

比起擁有技職文憑、受過政府教育訓練或成人技能訓練的人，擁有學術文憑者的工資報酬率比較高，這一點在許多國家皆然（Blundell, Dearden and Sianesi, 2005; Dearden et al., 2002; Dickerson 2005; Carneiro and Heckman, 2003）。

世界銀行針對哥倫比亞和坦尚尼亞的中學技職生做了大規模追蹤研究，發現畢業生並未在所學習的領域尋找或找到工作。世界銀行自成立以來幾乎都以技職教育為貸款對象，至1990年代則因為這項研究結果而改變其貸款組合（Psacharopoulos, 1985）。

在正規學校教育之外，一項有力的研究則顯示失業人口的再訓練計畫成效不彰（Heckman et al, 1999）。此類計畫的成本大幅超出效益，而後者的衡量標準是參與此等計畫的畢業生找到工作所需的時間，以

及參與此等計畫的畢業生與未曾參與者的收入差別（Heckman and Hotz 1989, Ashenfelter and Card 1985, Ashenfelter 1986, Ashenfelter and Lolonde 1997）。

三、學前教育

許多成本效益研究關注學前教育對日後的學習表現和成年後收入的影響。此類研究顯示，幼兒時期因實驗而引發的非認知技能變化，對日後的教育、就業和收入都有相當的影響。

世界銀行有一份研究詳列巴西學前教育的益處，其投資報酬率估計約為12.5-15%。從成本效益的觀點來看，投資於學前教育比世界銀行的工業與農業計畫好得多（World Bank, 2001）。

學前教育儘管重要，其全球普及率卻還是很低，就學率從撒哈拉以南非洲國家的18%到工業化國家的81%不等（Unicef, 2014）。

四、中輟

關於教育體系未能達致基本水準（如中輟）造成的社會損失或成本，近年來有相當大量的研究出現（Psacharopoulos, 2007）。例如有一份研究顯示，羅馬尼亞若能降低中輟比率，其GDP將可提高1%（EFILWC, 2012），另一份研究則認為GDP可提高8%（Varly et al., 2014）。研究顯示降低中輟可使愛沙尼亞的終身收入提高40%（Anspal et al. 2014），在英國為提高12萬英鎊（Oreopoulos, 2006），在澳洲為提高82億美元（Applied Economics, 2002），在匈牙利則為每一畢業生提高五萬歐元（EU, undated）。

五、教育品質

平均教育年限不足以作為預測成長的統計基礎（Pritchett, 2001）。同

樣是一年的教育，英國與巴西會得出不一樣的學習成果。

就微觀部分而言，針對教育的質所進行的成本效益分析，數量遠不如對量所做的分析。許多計量經濟學研究都顯示，教育資源的增加（此為學校品質的輸入測度）並不會導致測驗成績產生具有統計相關性的變化（此為教育品質的標準測度）。有一項研究觀察376種教育生產函數，探討學校資源與學生表現之間的關聯，結果顯示學生人均支出、教師薪資、班級大小等因素與學生表現之間多半無關或無顯著關聯（Hanushek, 2003）。

在30個以改善發展中國家學生測驗成績為目的的隨機對照試驗當中，有三分之二的受試者認為，一般認為會提升學校素質的干預措施（如教科書、建築物改良、小班教學等）影響為零或者微乎其微（Kremer et al., 2013）。在發展中國家就76項品質提升實驗所進行的後設分析顯示，沒有足夠的數據可資評斷干預措施的相對成本效益（McEwan, 2013）。

而在宏觀方面，Hanushek與Woessmann的研究（2009）顯示，測驗成績的一個標準偏差優勢與人均收入成長率提高2.6個百分點相關。Hanushek等人的研究（2015）顯示，人力資本的差異使各國人均收入存在20-35個百分點的差距，大體上平均的受到學業成績和認知技能的影響。

六、平等

與教育在包容性成長及發展中所扮演的角色有關的平等面向有四：

- 入學機會
- 在校學習
- 分配方式，亦即在公共教育支出上是誰付費、誰受惠
- 收入分佈

在1985到2005期間共114國所收集到的數據顯示，多一年的學校教育能使基尼係數減少1.4點（世界銀行的基尼尺度為0-100）。Gylfason與Zoega的研究（2003）顯示，中等學校的入學率和收入不平等之間存在著

顯著負相關，後者便是以基尼係數為衡量。縮減收入不平等可大幅降低貧困家庭數（van der Hoeven, 2000）。

教育補貼的分配方式（究竟是誰在支付，又是誰自公共教育支出受惠）是平等的另一個面向。Hansen與Weisbrod（1969）率先發現公共教育經費具有遞減性，也就是窮人透過納稅而負擔了富人的教育。這項研究在許多國家都獲得複製驗證（Yang, 2002; Vawda, 2003）。

七、軟技能

研究顯示，雇主想要僱用的是擁有一般性技能而非特定性技能的員工。擁有一般性技能者比較能夠接受訓練而從事不確定的未來職務（Murnane and Levy, 1996）。諸如個性、目標、動機、偏好等軟技能如今在勞動市場上獲得重視和獎勵（Heckman and Kautz, 2012）。

此外，公民行為（尤其是信賴他人）也被證實具有經濟價值。公民教育培養容忍他人的人際能力，有助於促進社經穩定、衝突解決、投票參與，也能促進民主、提升國家治理（Gallego, 2010; Temple, 2001）。較高的社會信任度可促進投資並降低市場交易成本（Sequeira et al., 2011; Knack and Keefer, 1997）。

Arrow的研究（1972）將社會資本與經濟成果關聯起來而指出，幾乎所有的商業交易都帶有信任因素，並且認為世界各地的經濟落後可能都可以透過欠缺互信而獲得解釋。Fukuyama（1995）指出，缺乏信賴的影響就好比在所有經濟活動上都加徵課稅。

Knack和Keefer使用「世界價值觀調查」（World Value Survey）的數據從事跨國研界，發現信任在其測度中增加10%，可導致經濟成長率提高0.8個百分點。

Dincer與Uslaner（2010）使用美國各州五年期間的數據進行研究，並在研究中控制內生性（endogeneity），結果顯示信任程度增加10個百分

點，可導致五年期間0.5個百分點的GDP成長。在美國，將近一半的GDP成長率差異都可以透過信任而獲得解釋。

八、外部性

教育所帶來的好處遠超過金錢所能衡量，這一點早在千百年前獲得肯認。公元前三世紀亞里斯多德便曾說過：「忽視教育之人勢必終生跛足而行。」

研究文獻當中有些詞彙用以指涉教育的非貨幣利益（non-monetary benefits），如非金錢性（non-pecuniary）、非市場性（non-market）、非生產性（non-production）、私人性、社會性、廣泛社會性或外部性。

近年來有許多研究探討教育的非貨幣利益。在讀取這些證據時應當留意，教育和非貨幣性成果之間的相關性（correlation）和因果關係（causal effect）並非同一回事，因為單純的相關性背後除了影響結果的教育，可能還隱藏著許多其他的因素。舉例而言，教育程度較高的人生活滿意度可能比教育程度較低的人高，這也可能是因為較高的教育程度也讓人獲得較高的收入。經濟合作暨發展組織國家便將教育和許多指標都相關聯起來。

以下就各類非貨幣利益所提出的證據，其證據基礎除了可能影響結果的教育，也包括就許多因素進行的控制研究。研究採取計量經濟學方法及自然實驗，讓一組人基於與教育或收入無關的因素而獲得與其他人不同程度的教育。

（一）健康

在收入層面之外，教育程度較高的人也比較能夠解讀並正確使用關於健康的訊息。這是教育的分配效能效應（allocative efficiency effect）之一例，最早是由Welch（1970）所提出。此外，教育程度較高的人更傾向於透過不吸菸來保護其人力資本。

（二）犯罪

與中輟生相比，美國完成中等教育的黑人受監禁概率有大幅的下降。學校教育年數每增加一年，逮捕人數就減少11%。中學畢業率提高十個百分點便能夠使逮補率下降7%。一項觀察孩童至成年的高瞻斐瑞學前計畫（High/Scope Perry preschool program）追蹤調查顯示，四十歲時的被逮補率下降了0.24%。一項雪城學前計劃（Syracuse preschool program）則使參與者受緩刑宣告的比率降低到6%，相對於對照組的22%（Lochner, 2011）。

一些社會利益諸如降低對國家健康及福利優惠的依賴、降低監獄成本並產生額外的稅收等，都與高中畢業有關。在美國，高中教育完成率提高1%，便能夠產生14億美元的年度社會利益，而這是因為降低了暴力和財產犯罪的關係（Lochner and Moretti, 2004）。

在英國，沒有學歷的人被判刑的機率較有學歷者高出八倍。平均就學年數增加一年，因財產犯罪而被捕的機率便降低25%。完成課業的教育補貼可將入室竊盜比率從22%降低到6%。在英格蘭和威爾斯，平均就學年數提高一年，可使因財產犯罪而被定罪判刑的比率減少20-30%，暴力犯罪方面則約減少三分之一至一半（Lochner, 2011）。

相對於高中畢業者，在大學多就讀一年可使新生兒體重不足的可能性降低20%，早產兒比率降低15%。大學在學多一年使懷孕期吸菸行為減少約三分之一，也使產前檢查的發生率提高3%（Currie and Moretti, 2003）。

與教育程度較低的母親相比，受較高教育的母親花在孩子身上的時間也比較多（Kalil, Ryan, and Corey, 2010）。父母親的育兒照顧因而成為兒童認知與非認知發展最重要的決定因素，即便在收入相當的家庭之間比較亦然（Cunha and Heckman, 2009; Angrist and Lavy, 1996; Murnane, 1981; Edwards and Grossman 1980）。此外，父母教育程度較高的孩子也比較健

康（Currie and Stabile, 2003; Lubotsky and Paxson, 2002）。

學校教育程度的提高與生育率呈負相關，會導致子女數減少，其原因可能在於父母要在子女數量和在每個孩子身上的投資之間權衡取捨。

教育一個社會成員與一系列的利益有關，這些利益的累積不僅惠及受過教育者，也及於其他人。將此等外部性納入考慮，可提高傳統估計中教育的社會投資報酬率。

教育的非市場性效應當中，有一項在文獻中徵之甚詳，那就是教育會降低女性的生育率和兒童死亡率。關於巴基斯坦的研究顯示，讓一千名女孩接受多一年的學校教育，可使生育率和兒童死亡率降低約8%（Summers, 1992）。在台灣，相比於接受六年的教育，受過九年教育的母親其活產數高出千分之一（Chou et al., 2010）。母親識字的兒童在五歲後存活的機率比母親不識字者高出50%（United Nations, 2014）。

除了健康方面的影響，研究還顯示，平均教育年數增加一年，可降低一國內戰的機率達3.6%（Winthrop and Graff, 2010）。

Breton（2010, 2011）結合微觀及宏觀估計而指出，在收入最低的國家裡，計入外部性的學校教育投資報酬率超過35%。

Pradhan等人的研究（2018）只納入一項非市場性效應（即死亡率降低），顯示低收入國家中，學校教育增加一年的廣泛社會投資報酬率可達16%，狹義社會投資報酬率則相對的只有11%。

社會投資報酬的廣狹不僅只是理論上的區隔。在狹義社會投資報酬率加計外部性，便能夠獲致完全相反的政策結論，例如，若初級教育和高等教育的外部性不同，則加計後者便可反轉可有利教育投資的排名。

（三）制度

North的研究（1990）之後出現了許多關於制度對經濟成長重要性的研究（Acemoglu et al., 2005）。一國的制度大約以數種方式對人力資本產生影響。

教育不可能在真空中運作。學校和大學運作的環境深受一國政治與其制度的影響。教育政策解決問題的方法，通常只聚焦於教育體系內的單一部份，而這些部分卻是從一群可能有助或妨礙政策成功的非教育性因素中提取出來。這些常見的失漏可能都與制度有關。

（四）權力集中

現今世上多數的教育體系都是高度權力集中的系統。教育部規範學校的運作、課程、教師的聘僱（有時也規定解僱方法）和薪資。有些國家還將此等規範推及私立學校，規定學費上限及教師聘僱方法。

教育政策及勞動市場政策可謂是影響一國人力資本質與量的制度。教育體系權力集中程度是其中一例，也就是教師的聘僱或解僱、課程、預算分配等與學校有關的決策都由中央的教育部做成，而非學校主管或地方政府。OECD及PISA計劃都有證據顯示，教育體系的集權程度與學生表現之間存在著負相關。一般認為芬蘭學生之所以表現優異，是因為教師擁有決定課程和時間表的自由。

權力下放是私立學校表現優於公立學校的原因之一。教育決策在校內而非中央政府層級做成，可使其獲得較高的成就（OECD, 2004, 2005）。

（五）學校選擇

多數國家的制度和政治意識形態都不利於私立學校，在其運作上加諸許多限制，如規定學費上限和教師報酬等。然而PISA和其他許多研究都顯示，私立學校學生的學習成果較公立學校為佳。在OECD的十六國及另十個夥伴國家當中，私校生的閱讀成績比公立學校學生高出30分（OECD, 2011c）。這項差異在校正過社經背景後依然很大。

教育透過勞動市場而帶來許多好處。僵硬的勞動市場不利於人力資本的形成。僱傭和解僱行為受到過多的規範，以及從事商業活動的困難，都會阻礙教育的發展。這類規範排除了有利較佳表現的激勵機制，也排除掉

願意為較佳服務付費的人可以帶來的額外資金。

公私部門有好幾種方法可以分擔均衡服務的提供和交付（Patrinos et al., 2009）。許多國家都存在著不同形式的公私合作夥伴關係（Public-Private Partnerships；LaRoque, 2008; Aslam et al., 2017）。以紐西蘭為例，獨立學校自政府獲得得的補助，約為公立學校每名學生平均開支的三分之一。而在荷蘭，政府對公私立學校提供同等的資金，教學內容及方法則由學校自行決定（Patrinos, 2013）。美國的密沃基家長擇校計畫（Milwaukee Parental Choice Program）對貧困家庭提供優惠，讓小孩可以到私立學校就讀。

針對英國大學所做的研究基本上顯示，學校對大學生的表現和學位的取得具有正面的影響（Eyles et al., 2016）。

瑞典的自由學校計畫（Free Schools）讓學生可以自行選擇進入公立或私立學校就讀，私立學校的學費則以學券來支付。Bohlmark與Lindahl的研究（2007）顯示，該計畫的學生有著明顯正面的學習成果。

政府和私立學校在學生學習上的相對有效影響一直是個熱門研究課題。在哥倫比亞，學券被隨機提供給低收入家庭的學生，令其得以進入私立中等學校就讀。Angrist等人（2002）的研究發現，進入私立學校就讀對成績進步和測驗成績有著正面影響。印度也有類似的案例，隨機取得學券的公立學校學生在進入私立學校就讀後，測驗成績以具有成本效益的方式獲得提升（Muralidharan and Sundararaman, 2015）。

PISA及其他研究獲得的證據顯示，私立學校學生的學習成果較公立學校學生高。在OECD的十六國及另十個夥伴國家當中，私校生的閱讀成績比公立學校學生高出30分。這項差異在校正過社經背景後依然很大。經合組織獲得結論認為，私立學校使進入就學的學生獲益，不過並未能提升學校系統整體的表現水準（OECD, 2011c）。

在多數國家的制度性政治環境之下，選擇學校的可能和教育券的存在都不討喜，但研究顯示，在荷蘭等可以選擇學校的國家裡，學生的表現確

實較佳（Dronkers, 2003）。

有些研究顯示私立學校學生的成就較佳（Rouse, 1998; Hoxby, 1998; Green et al., 1999）。Neal（1997）的研究顯示都會區少數族群自其間受惠最多，高中畢業機率提高了26個百分點。Hoxby（2001）的研究則顯示，公立學校之間的競爭以較低的成本使學生成績獲得提升。

Belfield與Levin的研究（2002）以競爭對教育成果（如測驗成績、畢業率、工資與師資等）的影響為題，檢視了美國的41項實證研究。多數的研究顯示，競爭提高也會提升學習成果，且在來自低收入家庭的學生身上最為明顯。競爭提高也會提升學校的素質、有效性和效能。

美國的特許學校（Charter Schools）向公共募資，但由私人管理。特許學校擁有自治權，同時透過契約而對某些特定結果負責。針對特許學校進行的評估顯示，最不具優勢的學生自其中獲益最多（Gleason et al., 2010）。這些研究成果當中有一個共通點，那就是這些學校的學生在數學測驗上的獲益高於閱讀測驗（如：Hoxby et al., 2009; Angrist et al., 2010; Flaker, 2014）。

制度性的改變如引進監測和評估系統、集中考試、教師激勵及責任制等，都可能提升學校的素質，但要降低成本卻很困難（Hanushek and Woessmann, 2011）。

肆、邁向較佳政策

以下讓我們在既有的知識基礎上，就我們相信有助於社經發展的教育政策做一總結。

一、整頓制度

環境是首要之務。若制度環境不當，教育政策便不可能成功。在將任

何教育政策付諸實行之前，我們得先就教育體系之外做一檢視。一國的制度對教育政策的成功究竟是有利還是有害？這當中有幾個應予檢視的領域，如激勵機制、法規、公共財政等。

二、確立優先順序

不論是在富裕還是貧困的國家，教育體系都受到許多問題的影響，而沒有哪個國家或捐款人能夠完全解決這些問題。聯合國千禧年發展目標（Millennium Development Goals）不過是個烏托邦想像（Economist, 2015）。

優先順序的確立應以有效性和公平性為考量基礎，以成本利益（cost-benefit）和成本效益（cost-effectiveness）分析來加以確定。

Heckman教授著名的圖1總結，以十分簡潔的方式總結出教育政策的優先事項：應以早期階段為目標。若是如此，那麼為何許多國家還不斷的擴張大學與成人訓練？

相對於投資報酬率最高的學前教育，我們在高等教育上是否投入過多？相對於高投資報酬的普通教育，我們在技職教育訓練上是否投入過多？普通教育應該要優先於技職課程與訓練，理由在於良好的普通教育基礎有利於之後的專業化和訓練。此外，今日的雇主想要的是能在工作上學習、具有軟溝通技能的員工，而非狹隘的專家（World Bank, 2013）。

在要求額外的教育資金之前，應當先評估預算的分配方式。教育資金是否以最具效率和公平性的方式獲得運用？教育資金是用於成本效益最高的活動，還是用於社會成本效益比率最高的活動？目前教育基金的分配方式在多大程度上能夠促進社會公平？

組織不論公私，要將資源從傳統用途重新分配到新用途上都是一個辛苦的過程。在公部門進行這樣的重分配需要政治上的配合，因此最為困難。政治人物可能擔心重分配會導致下次選舉中的選票流失，從而使資源

重分配無從發生。

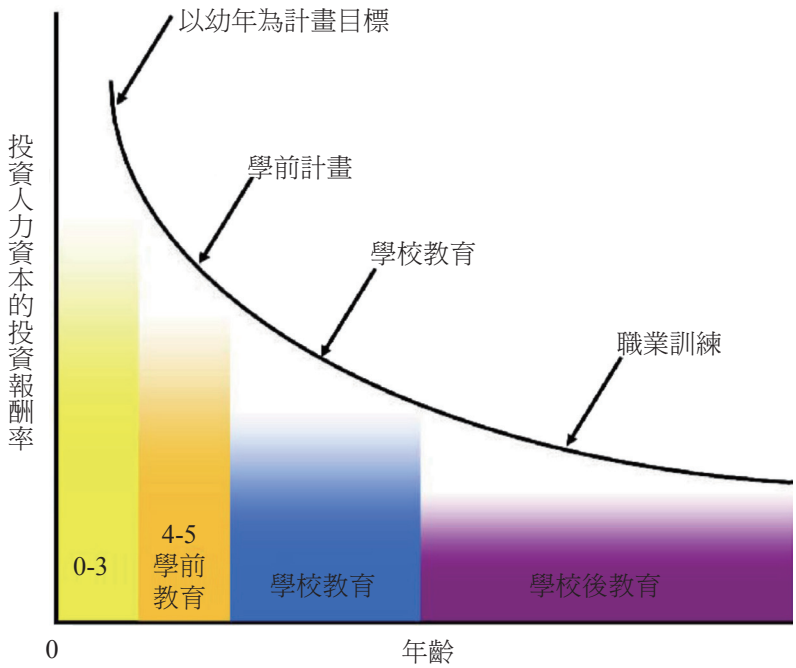

圖 1　Heckman 的總結

資料來源：Heckman（2008）

三、提供誘因

學校教師和大學教授具有公務員身份，故而其薪資以服務年資為基礎。在這樣的情況下，可能便沒有多少誘因激發好老師有所表現。教師如何選任？教師一職是像在芬蘭或瑞士一般受到高度肯定，還是只吸引那些找不到其他工作的人？績優報酬（merit-based pay）在此種情況下可能是比較好的做法，卻總是受到工會的嫌惡而不獲實行。

教師評鑑聽來是個良善政策，但也因為不獲工會青睞而鮮少被付諸實

踐。公立學校因為教師表現不佳而予以解聘的案例非常稀少，私立學校則較能提供誘因而吸引並留住較佳師資。但差異薪酬（pay differentiation）可能因為勞動法規而不獲實現，使得聘僱或解僱教師都不那麼容易。

四、評估

一國是否有學校的外部評鑑制度？評鑑制度中必須要有外部因素，因為所謂的自我評價實則都是自我實現的預言。

假設存在著一個有效的評價系統，那麼評價結果的好壞又意味著什麼？會使好的教師會受到獎勵，而差勁的教師被解聘嗎？有無學校因為表現太差而關閉的例子？

學校教師和校長是否有權創新？家長在學校的運作上是否有發言權？能否以學券來激勵學生從表現不佳的公立學校轉入較佳的私立學校？

若私有化和學券制在政治上不受歡迎，公私合作或許可行。這不只可運用在主要的學校體系內，也可以運用在公立大學和產業界之間（韓國已將之付諸實踐）。

體系內權力集中的話，評價其表現就變得沒有必要。學校只要聽從教育部的指示就能順利運作了。此時即便存在著一個評價系統，也往往因為教師工會對此感冒的關係而不會被付諸實行。

五、貼近企業需求的訓練

德國式的雙重培訓系統（Hamburg Chamber of Commerce, 2012）或韓國式的培訓聯盟（Training Consortium；Lee, 2009）都是可以考慮採行的制度。受訓者只有在工作中才能學到如何因應勞動市場上不斷變化的需求。

更好的做法是將技職訓練完全獨立於中等學校體系之外，如新加坡的做法（Law, 2008）。

六、權力下放

賦予學校教育相關決策權，再佐以評鑑和責任制，便可以在教育體系內達成權力下放，但這是一個黃金三角，三者缺一不可。

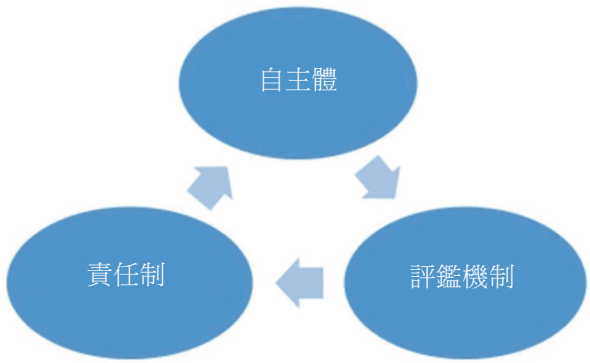

圖 2　黃金三角

資料來源：改編自Patrinos et al.（2017）

七、資金提供與資助相分離

公立學校教育可以考慮採行間接提供經費。將資金提供與資助分離開來便能形成強大的誘因。政府依然可以提供學校資金，但應當讓金錢透過學生之手以間接方式流入學校，方法則為提供教育券，讓學生可以選擇要進入公立或私立學校就讀。

國家可以直接供應教育訓練所需的資金，但由致力於職業訓練的私人企業提供訓練服務會有效率得多。將訓練費用交給受訓者，讓受訓者自行選擇最能適合其興趣的學校。私立學校的收益仰賴收取自學生的學費，故而會彼此競爭，佳者得以興盛，劣者則會倒閉。由政府支持的訓練學校卻不大可能因為素質低落而閉校。若提供更多的訓練券給較為貧困的受訓

者，資金的間接流動便可能成為一股重要的重分配力量。

要採行實證基礎的教育政策，其間最大的困難一如上述，在於要讓政治人物明白誰擁有最終的發言權。人力資本需要許多年才建立得起來，要數十年的時間才能發揮最大效益。這個視界範圍是長遠的，教育部長的任期卻很短暫。或許選民應該讓政治人物明白：教育不該是一種方便權宜的投資。

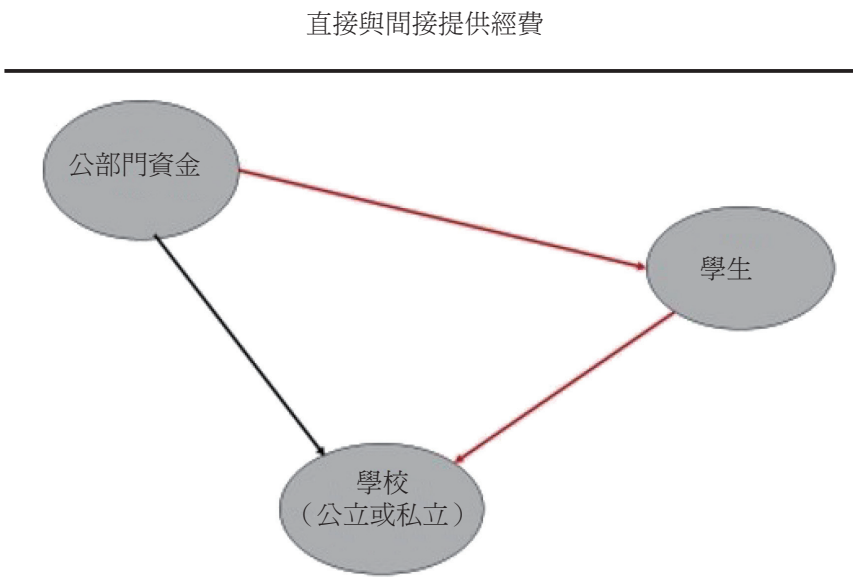

圖 3　直接及間接資助