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PISA – Shocks, After Shocks and Misconceptions

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Abstract: The Program for International Student Assessment (PISA) is as a triennial event of ranking compulsory education performance of students in participating countries. The results are published as a leagues table, which attracts much attention from politicians, media, employer groups, academics and other interest groups. Many of the responses and much of interpretation of PISA results are arguably misguided, for they mistake quality of education within performance of education systems. In this paper we are attempting to demystify PISA results by focusing on issues OECD-PISA education concept, test results and its limitations from a quality of education perspective.

Key Words: PISA reporting, OECD education quality, ranking, compulsory education testing, education system compatibility, misconceptions of OECD-PISA interpretation.

Introduction

The Program for International Student Assessment (PISA) is a triennial survey first conducted under OECD auspice in 2000. PISA is conducted in every OECD member country, and in other partner countries and economies, starting with 41 countries in 2000 and with 71 countries currently sign up of for the 2015 survey. Despite the increase in the number of participating countries and the popularity of PISA two main issues emerge: (i) Since the first publication of PISA results in 2001 OECD has sent 'shock waves' through the political and the education sectors in a number of countries. (ii) OECD with its PISA survey results has failed over the years to put to rest a number of misconceptions it creates with the published results among the general public and the education arena. (iii) More recently OECD has compared cities and/or provinces (excluding the full national participation) in some countries with nation states (including the full national participation). The former include in 2012 survey Shanghai, Macao, and Hong Kong (China) and Tamil Nadu and Himachal Pradesh (India).

The Shock and After Shocks

Germany experienced the first PISA shock in 2001. Based on PISA results in Germany as in many Central European countries caused disbelief, horror, agreement, discontent and rejection. In Germany there was much talk in the media about *Bildungskatastrophe* and in France the media responded to PISA results with head lines such as *C'est toujours la catastrophe*. The situation has not improved much since 2001 and Central European countries experience the after shocks. That is very time PISA results are published, they make headlines in global and national media, attracting considerable attention from the global education community, education bureaucrats, academics, politicians, commentators and other stakeholders such as parents associations.

To clarify, the media hysteria in Germany when it comes to media. During the of 2001 to 2008 period, for example the German daily newspaper *Süddeutsche Zeitung* published over 250 articles and commentaries relating to PISA. If one compares this to the USA, which is performing below the average in PISA results, during the same period there were eight newspaper articles and com-

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mentaries in major newspapers addressing PISA and out of these three articles addressed USA students PISA results (Martens 2008).

There are various reasons for the excitement and shocks about and indifference to PISA results. One of the major points is that in some countries it has been recognized that PISA is not measuring quality of students' performance but the performance of the education system generally based on a certain age group student performance. In other countries politicians and the media may not have quite addressed the subtle difference. Thus PISA results are influencing the educational Zeitgeist by elevating countries' education system ranking to front pages in many of the participating countries. Media commentators and politicians make sweeping announcements on the *quality* of their country's education.

Notwithstanding the above there are some changes discernable. There were aftershock changes, for example the educational challenges have been recognised and are being within reasons addressed. But overall a significant change in the education systems in Central European countries is not discernable. Countries, which suffered from initial shocks are still suffering from after shocks.

Origins of PISA

To clarify: (i) Originally PISA studies were developed during the 1990's and since then five PISA surveys were conducted world wide, the last being completed in 2012 and the results were published in late 2013. (ii) PISA tests 15-year-olds youth globally. The cohort does not necessarily represent any particular grade or level of compulsory education. (iii) PISA studies are designed and conducted by a consortium lead by the Australian Council for Educational Research (ACER) for OECD. (vi) OECD does not claim that PISA studies are gaging quality of education or knowledge attained by the cohorts of students who participated in the tests.

According to OECD, PISA is an instrument for producing 'regular and reliable' data on students' skills in partaking countries. More precisely OECD (2013a), states:

PISA is unique because it develops tests, which are not directly linked to the school curriculum. The tests are designed to assess to what extent students at the end of compulsory education, can apply their knowledge to real-life situations and be equipped for full participation in society (p. 1).

Undoubtedly, OECD claims that PISA results demonstrate students' application of their skills to real-life situations, without such skills being related to the curriculum. It is also evident from OECD (2013a) statements that PISA is a political instrument because:

In addition, given PISA is an ongoing triennial survey, countries and economies participating in successive surveys can compare their students' performance over time and assess the impact of education policy decisions (p1).

Thus, it is not surprising that there is much controversy about the value of PISA results, the underlying assumptions, the processes and the interpretation of results. In the discussions about PISA there is much being said in favour of and against validity of PISA, as much as it has been argued against the purpose and rationality of PISA results, including its concept, methodology and political aspects (cf. Jahnke and Meyerhöfer 2006; Kreiner and Christensen, 2013; Mortimore 2009; Müller, 2006; Sjøberg 2012; Steward 2013; Wuttke, 2007).

In this article we will try to juxtapose various arguments for and against PISA and to try to come to a hopefully balanced understanding of its strengths and weaknesses.

OECD and its concept of education

Noteworthy is the factor that OECD's main aims are to achieve optimal economic development and the advancement of world trade. This is perhaps evident from the OECD perception of its function, which determines its definition of 'education' and thus PISA:

OECD vocation has been to build strong economies in its member countries, improve efficiency, hone market systems, expand free trade and contribute to development in industrialized as well as developing countries (OECD, n. d. p. 3)

Thus, it is not surprising that that OECD's contribution to education is based on education as a catalyst for work productivity and economic growth. In this context, OECD emphasizes that 'good education' should be understood as not only as a high quality but also a balanced learning outcome. However, OECD has not articulated any guidelines on how this is achievable for PISA-participating countries. PISA results do not allow for a causal conclusion on either quality of education nor balanced learning outcomes.

However, OECD identifies, on basis of published top-ranking PISA results countries, and the identification of 'best-practice' examples, indirectly, those factors, which in the OECD own opinion are contributing to 'good education' and 'balanced learning outcomes'. This means that OECD sees PISA as an important instrument for education systems analysis couched in Human Capital Theory for advancement of Human Resource Development within the notion of Rate of Return with its monetary benefits for individuals and the society. Thus 'education' as perceived by OECD is reduced to a 'meal ticket'.

Similarly, PISA is an instrument to 'measure' education within the previously mentioned context of education for economic and workplace productivity advancement. This leads clearly to *economization* and *technologization* of education not only for individuals but the whole society. To elucidate, key term such as 'employability' is perceived in OECD context as labour market 'usability' of individuals.

In this context, 'usability' is closely related with the PISA key term 'literacy', since without the various literacy and numeracy skills an individual is not employable, at least so the argument goes. With the emphases on literacy skills, there is a transition from general education values to basic skills acquisition.

From a sympathetic point of view it could be said that that 'skills' measured in PISA studies are the basis for education. That is, literacy skills, numeracy skills etc., are the foundations for learning, be it in the cognitive-academic knowledge tradition or knowledge related to application and wisdom. That is, a certain degree of literacy, numeracy, problem solving etc., is a pre-requisite for accessing knowledge and forming wisdom. That is, an important aim of education is to prepare students for successful participation in an increasingly networked, heterogeneous and complex world. PISA tested labour market skills are a part of these requirements, but in no way all embracing.

There is a major problem in aligning PISA results with labour market requirements and employability, because there is an underlying assumption that PISA achievements are indicators for real life and labour market situations. This is a fallacy since there is a gap between compulsory education exit and labour market entry of the tested cohort. OECD does not offer a sustained evidence of the relation between test content, test results and real life skill attainment. Thus it appears that since PISA's early days claims for such a relationships are at best non-transparent at worst conceptually deeply flawed (cf. Prais, 2003, 2004, 2007; Rizvi and Lingard, 2006; Jahnke 2012). Hence it is not surprising that due to lack of coherent methodology and methods, PISA results are often seen as an oversimplification of student achievements in relation to real life skills.

Unpacking PISA

As stated above PISA is administered under the umbrella of the OECD. From this point of view, it is not surprising that PISA is skewed towards the OECD political-economy agenda issues. To elucidate:

PISA tests measure 'real life skills', which arguably provide an indication of how well or otherwise the future generation will be able to contribute to the economic advancement of the country. According to OECD (2010)

PISA represents a commitment by governments to monitor the outcomes of education systems in terms of student achievement on a regular basis and within an internationally agreed common framework. It aims to provide a new basis for policy dialogue and for collaboration in defining and implementing educational goals in innovative ways that reflect judgments about skills that are relevant to the adult life (p.3).

Thus, it is not surprising that countries globally, seek to advance their education system in order to augment skills and employability of the youth. However, a cautionary note may be in place: PISA results do not and cannot provide answers about how schools should be changed so that students performance can be improved and *skills relevant to the adult life* are enhanced. Equally so it would be naïve to assume that PISA results may be used as a tool to solve political-economy issues of how changes of an education system may be attained politically.

With this in mind, and according to OECD charter, PISA 'measures' labour market relevant skills. There is nothing wrong with this approach, as long as this is acknowledged and understood by the public, politicians, media, parents, educators and education bureaucracies. PISA results say nothing about social competencies, knowledge and wisdom and other values such as self-development, freedom, democracy, cultural heritage, history, civics and citizenship attitudes of the tested cohorts.

PISA tests are arguably norm referenced (Jobrack, 2012). That is, irrespective, how 'successful' or 'good' every one of the tested students may be only a few are deemed 'excellent' or 'unsatisfactory'. Thus PISA results are skills measures without standards. Even if all participants in all countries were to improve their skill scores, there always would be winners and losers. Thus, from a technical point of view PISA scores refer to a 'norm'. Further questions are: how are we to understand real life skills that are tested through PISA? Can students' *knowledge to real-life situations* be tested under laboratory conditions, i.e. in classrooms or examinations halls under exam conditions?

PISA tests are in part based on multiple-choice questionnaires, in part on open questions. In addition to these achievement tests there is a questionnaire in which participants provide information on family background and learning traits. On this basis it may be possible for PISA researchers to determine the relation between participants' demonstrated skills and their social background.

Notwithstanding the acknowledgement amongst education researchers and scholars, that PISA provides valuable information, there is a common view presented in academic literature that PISA should not be seen as an international achievement ranking in a form of a league table. Instead PISA results should provide information about strengths and weaknesses of education systems so that it may be possible to identify political and policy needs for action.

From a critical point of view it could be argued that PISA education system evaluation results are overvalued and the side effects are undervalued. This is, PISA proponents value what it measures, whereby they forget that it may be better to measure what a civil society values. It appears, PISA tests measure only that what is easily measured, namely labour market skills. Who or how are the labour market skills defined?

PISA – politics and society

As we stipulated above, PISA is a tool used for ranking comparatively education system performance. Thus it seems logically to argue that it is a political instrument, which is at relevant for political reasons. However, as we said before, it is questionable if it can be considered as a diagnostic instrument for improving the quality of education policies in any given country. At best PISA may identify indirectly problems, but does not provide a basis for solutions. That is, the international comparison between countries may highlight the educational system characteristic, which in turn may be used indirectly as pointers for development of new education policies and school or education system accountability.

This accountability focus based on PISA results is underpinned overtly or covertly by a proposition that a school or education system is a self-directing and accountable actor. This is highly questionable because in most, if not all, OECD countries education systems are government instrumentalities. As such they are subjected to government policies. Given the emphases OECD member governments give to PISA results education systems are seen as a political economic device for economic advancement via skills development for the 'real world' and employability. This is in stark contrast to the previously dominant view of education as an instrument of social integration, social reproduction or even social reconstruction (cf. Bourdieu and Passeron, 1977; Durkheim 1977). In short PISA as a concept supports accountability of education systems, which are seen by politicians as a high-stakes contest for political and economic control, domestically and globally.

Thus it is not surprising that general question emerges: What is the meaning of participants' 'achievements'? In the end, there is not more to the PISA rankings than that participants undertaking the tests are simply different. Some students learn slower, other quicker; some achieve certain literacy and numeracy standards sooner other later. Some prefer one type of learning content and teaching-learning methods, whereas others prefer different ones. One could argue that all persons are equally capable to achieve certain skills such as literacy, numeracy, problem solving, etc., but the level of achievement will depend not only on the school, but also on the social environment, motivation and learning methods, as much as on the familiarity with the content to be learned.

With this in mind, PISA results do not contribute much, if anything at all, to knowledge about or understanding of educational values or quality of education, curriculum or teaching or learning. To relate PISA test results to education quality, a country's economic and social development needs as yet to be substantiated. However it is a monitoring tool for education system, which produces data about the strengths and weaknesses on a regular basis.

As we stated already, PISA results receive much public attention and especially attention from political quarters. The responses vary depends on the ranking status of a specific country. This is partially due to the interpretative perspective in the media and the political agenda driven by governments. That is, media and politicians amongst others give credence to PISA beyond that what it is. The political rhetoric is that PISA results are, to a degree, indicators of a country's competitiveness in economic terms. In the minds of many politicians, the press and the business community their country should be in the top league. Thus a modest score leads to the misguided perception that the schools are failing. It may be that the education system in other countries has changed.

What does it mean if a country has increased its place in the ranking table? Should it be interpreted that the competencies tested in PISA have increased in relation to the previous results, or that some other countries' score have decreased? Does it mean that changes in learning assignments have lead to students' increased test experiences? We will never know. Furthermore, what does it mean if a country advances in the PISA leagues tables? Does it indicate an increase of technical competence across the test sample? Does it mean that that the test content was more akin to the learning experiences of the current cohort when compared to the previous cohort? Does it mean that changes in the schools simply enhanced PISA test format and test astuteness of cohorts?

These and other questions raise a number of discussion points and problems, which need to be clarified. Let us take a step back. There is little if any evidence that PISA results and methods have passed rigorous academic scrutiny. One of the reasons may be that PISA does not comparatively analyse education systems of the participating countries. It simply compares results of tests of a specific age group of pupils at a particular time under particular conditions and in specific knowledge areas.

To illustrate our point let us take the 2012 PISA results, which includes participation of 65 countries. The focus was on '...mathematics, with reading, science and problem-solving minor areas of assessment. For the first time, PISA 2012 also included an assessment of the financial literacy of young people' (OECD 2013b).

After the OECD published PISA 2012 results, (although in a sensitized version) a number of governments and media reports jumped to a questionable conclusion in a critical sense of their county's education quality. What they did not recognize is that as we said before that PISA is by its own definition not an assessment of a country's education quality, for it is deliberately extraneous to the vari-

ous curricula of the participating countries (Berliner 2009). PISA results reflect a number of out-of-school factors. Without wishing to go here into details, it may suffice to say that Feniger et al. (cited in Berliner 2011) were able to predict national scores based on only two variables. They realized that PISA ranking variance could be straightforwardly explicated on the basis of two variables. Neither variant was referring to or was aligned intrinsically with quality of education. They focused their attention on GDP and percentage of youth population and PISA results. As it turned out, high per capita GDP and a low birthrate should bring about a high PISA score. It seems that the highest scoring cities, city-states, and nations in the PISA 2012 fit the bill.

Thus at best it can shed light on cultural standards and parental and social mentality of participating countries and how well the cohorts of same-age pupils in these participating countries respond to certain question. It does not say much about schools or the education systems. As OECD (2013b) states:

Students whose parents have high expectations for them – who expect them to earn a university degree and work in a professional or managerial capacity later on – tend to have more perseverance, greater intrinsic motivation to learn mathematics, and more confidence in their own ability to solve mathematics problems than students of similar socio-economic status and academic performance, but whose parents hold less ambitious expectations for them (p.18).

Let us turn to the question equitable comparison. In many Asian countries and cities such as Shanghai, Singapore, Hong Kong-China, Taiwan, Korea, Macau-China and Japan produced the best 2012 PISA results (OECD 2013b). The interesting issue is that Shanghai, Hong Kong-China, Macau-China and Singapore are cities, and as such have a much more cohesive education system than countries. The unanswered question is would China as a country, by including less developed socio-economic provinces, with less developed education provisions say in the Western part of PR China have scored as high as it does. What OECD had done, here is a sleight of the hand. It compares well-developed cities (Shanghai, Hong Kong, and Macao), which have high quality of education (compared to the rest of the country's education system) with whole countries that have a heterogeneous education system in place, like many European and North and South American countries. To put it simply, and to argue for a level playing field would it be more accurate to compare Berlin, Melbourne or Sydney schools' PISA results with the results achieved by pupils from Shanghai, Hong Kong and Macao? The same could be said about Singapore, which is a city-state, without a diversified (urban - rural) education system. The OECD does not address these questions. It is necessary to emphasize, that the intention here is not to question the education system achievements of Shanghai, Singapore, Hong Kong-China, Taiwan, Korea, Macau-China and Japan. The achievements are impressive and laudable.

The second point refers to cultural standards and parental and social mentality. No doubt, cultural standards in Asian countries differ from those of Western countries. The Asian countries such as PR China, Taiwan, Korea and Japan came from behind as far as economic development is concerned and developed their education systems with the aim to produce human resources for economic advancement. They have been very successful in achieving this goal. PR China is the second largest global economy followed by Japan.

PISA: skills versus education

If one follows in the footsteps of OECD some significant problematics emerge regarding education. On the one side there is the OECD aim of education, namely the fulfilment of economic usefulness and technological do-ability of schooling as practiced in the Anglo-Sachsen tradition. This is to be achieved through the application of a concept of competence cum skill based on pragmatism and cognitive psychology culminating in education systems producing *homo economicus* concept of individuals. In contrast there is a Central European dominant cultural content of education leading to a humanistic development of individuals with a focus of developing *homo academicus* or in the liberal

tradition with its notion of *homo sociologicus*. OECD through PISA is firmly rooted in the promotion of *homo economicus*.

Contextual convergence between the economic, the humanistic and liberal picture of individuals may be possible under a condition of articulating an idea of individuals through education on the one side and skills as competencies on the other side. However, in order to achieve this or move closer towards a contextual convergence, there is a need to see skills as competencies as subjective procedural occurrences embedded in education. In such a scenario the idea of education and the individual learner would focus on comprehensive knowledge and interrelated social and cultural values. It also would bring to the fore individual, social, political, economic and other competencies, which are indeed related to the real world. From this point of view PISA falls short of testing labour market skills for 'real life' situation, for it pursues a mono-dimensional view of 'real life' skills and competences.

The notion of competence in the wider sense such as social, cultural, economic, technical and discipline/ occupation oriented competences, ensures that individuals develop skills for a wide range of dispositions. This includes individuals' desires and their pursuit of ideals, for their 'real world' within a realm of social exchange. Thus PISA results bring to the fore only learning results without any reference to the teaching-learning process. Despite this shortcoming PISA is on basis of these learning results used by its proponents as a competence orientation for a new orientation for education. Inadvertently this leads to the elevation of basic skills competencies to a hidden curriculum and teaching and learning for testing. Students and teachers focus on skills how best to excel in perform tests such as PISA.

To be sure, competencies form without any doubt a part of the education process. However education is more than the sum of all its skills and competencies. Educational critique of PISA and other similar projects must counter any at liberty definition of the experience we call education. Against this it could be argued that an understanding of academic, social, cultural and political subject matter and a maturity to use it in 'real world' context are sides of the same coin, whereas skills as defined in PISA are simply the basic tool.

Let us explicate. A teaching-learning process leading to a general compulsory education, should promote an individual's a self-regulatory learning, which allows her or him to articulate a subject matter in a social real world and to apply this with wisdom to his or her *Lebenswelt*. If this is not the case, then the educational competency orientation is in danger of becoming an empty formula; where the learning to learn shifts towards learning for tests and thus content free learning.

This brings us to our final point. The notion of skill as applied in PISA may be understood as competences. Furthermore the PISA tested competences / skills need to be embedded in any education concept. However, there is a need to ensure that education is not assessed only on basis of measuring atomized skills or competencies akin to PISA studies. That is, PISA-tested labour market skills can be integrated into the development of the whole educated person. The concept of skills and competencies must not be allowed to become a content free formula for educational endeavour, as it appears to be the case with PISA tests.

PISA versus education system compatibility

PISA studies have their usefulness and their shortcomings. There are arguments for and against PISA testing, and especially, how the results are interpreted and used in the political arena. Thus for a better understanding we have to reach back and try to revisit the concept of education systems, which was raised consistently in this paper. We have used the notion of education systems in a systemic context, which needs to be subjected to a systemic analysis. If this stands to reason, then we need to focus on an input-output nexus. To substantiate this claim it could be said that education systems are one of the very few systems where the outputs are seldom evaluated, if at all. In circumstances where outputs are evaluated the evaluation is mainly subjective.

The situation is different with inputs. Inputs, in many European countries and OECD member states, are used as tools for the steering of education systems. Here it is important to note that with

PISA we are witnessing a politically steered transition from input to output. From this point of view the focus on comparative evaluation of education systems based on outputs, such as PISA tests, may be welcomed. However there is one major provision, namely that a true and accurate purpose and limitations of the PISA results are articulated and made transparent to stakeholders including politicians, media and the general public.

With reference to a system-theoretical critical perspective it may be noteworthy to state that PISA education system parameters are not properly defined and thus the assumption that students' achievements in PISA tests can be equated with education system or even school system achievements or performance is not justifiable. To elucidate, PISA education system parameters are inappropriate. PISA compares countries, which do not have a unified national education system such as Australia, Germany or USA, with countries, cities and city-states with uniform and unified education systems such as Shanghai, Singapore, Hong-Kong.

Against the attempt to equate students' achievements and education system or school achievements one could put the argument that student achievements in PISA tests as in any other similar test are influenced by a range of other variables, some of which we have identified elsewhere in this paper. Using the education system comparison may at best lead to some impetus regarding possible direction for education system changes. However, PISA results may not be taken on face value for the purpose of a political action at government levels or beyond.

Furthermore there are compelling arguments to be made against reliability of PISA results. That is since PISA is testing general/basic 'compulsory education' which in many countries is based on national cross-curriculum frameworks. OECD maintains, as we noted elsewhere in this paper, that PISA tests are not directly related to national curriculum. This means that PISA tests student achievements against criteria, which does not necessarily exist in the schools. Furthermore as we stated above the question of how valid and reliable are test results claiming to test application of students' knowledge *to real-life situations* be tested under laboratory conditions, i.e. in classrooms or examinations halls under exam conditions remains unanswered? From these vantage points the validity and reliability of PISA results is limited to being indicator of comparative education system performance.

Conclusion

OECD claims that PISA test is focusing on skills in preparation for the 'real world' employability within a context of labour market demands with the purpose of international competitiveness. Here we have a strange twist: in a world of competitiveness, as advocated by OECD, would it be more appropriate to promote diversity of education systems? However PISA studies, through its norm referenced approach is firmly couched in sameness, not diversity.

Much of the above discussion focussed on reorientation of education system from input to output and education versus skills in a context of PISA and OECD. With reference to the former the re-orientation of education systems from input indicators such as human, physical and financial resources to output indicators such as 'product' results (test, achievements, employability, transition from school to work, etc.) brought about by a neo-liberal political-economic ideological conditions, (such as rationalisation, cult of efficiency, cost reduction, cost benefit analyses, etc.) and the associated theoretical instruments (i.e. human capital theory and rate of return concepts) is a catalyst for reorientation of education aims. That is, the re-orientation progresses from a content based quality criteria in education to defining quality as 'efficiency'. With this the cost-benefit relation is brought to the fore in general compulsory education, whereby the benefits are one dimensionally defined in economic terms.

This brings to the fore the question of education. We maintain that education is a highly individualised multi-dimensional act, which is defined to a large extent by the cultural national tradition. From this point of view education must not be economised. It must not be treated normatively as a utilitarian product. This is exactly what PISA results have promoted: economisation and utilitarianisation of education under the banner of economic competitiveness, employability and real world skills development. However one needs to be careful here. Utilitarian notions of education do not necessarily

have to be normatively product oriented. As an education aim, it can be defined as a process for the development of competent and creative individuals, which are useful within the society, i.e. contribute to social, cultural, moral, ethical, and of course economic values and aims of the society. However, PISA focuses on the economic at the expense of other values.

To be sure, education is always based on an educational-philosophical ideal, be it humanism, neo-humanism, or critical pedagogy, liberalism or neo-liberalism, or any other ideology. The values may vary but there is a common factor, namely the individual, autonomous and emancipated learner. If this stands to reason, then education must be bracketed from purely economic interests of the system.

With this assertion, we touched on issues and perception of education, which are not included in PISA tests. We highlighted education here, however simplistically, as an act that goes beyond PISA's mere real-life employability skills. Thus we maintain that PISA test results must not be interpreted in a context of student achievements. It can however be used as a basis for education system comparison. That is, despite the theory-led PISA test development, there are limitations when it comes to drawing causal conclusions within education achievement or quality claims. Because of the cross-sectional test results analysis it is difficult to arrive at sound causal predications.

Thus it is not surprising that over years PISA results have provoked a range of responses from academe, political arena and media; some were positive others negative. On the positive side, PISA has been described as a contributor to advancing global transparency, which lead to development of better education policies, grounded in evidence-based policy decision-making, and thereby supporting educational reform, stimulating productive labour markets and international economic competitiveness. Furthermore, it is argued that since PISA reports and research findings, based on authentic international and analogous database, findings can be used as a tool for advancing knowledge and understanding about what functions in education systems. Academics in favour of PISA concentrate their efforts on scrutinizing and analysing data to ascertain how to improve education system and its schools performance. Often this is based on analyses of education policy and procedures with a focus on finding differences between approaches taken by politicians and education bureaucracy in high-scoring countries vis-à-vis lower-scoring countries (Bray, 2007; Torrance, 2006).

On the opposite site of the spectrum are academics and researchers, which raise legitimate questions about the validity and reliability of PISA tests and thus their results (Drechsel et al. 2011; Milford, 2010; Bracey 2009). Others in the critical camp have questioned the claims that PISA tests are from an educational standpoint culturally neutral. They claim that as PISA tests and test questions are used are the same in all participating countries, the vastly different social, economic, political and linguistic backgrounds cannot be educational neutral. Thus a comparison of PISA test results is problematic.

Let us conclude by saying that in favour of PISA, the tests and findings have produced a rich data and made it to a large extent available to researchers and scholars with the purpose that these individuals will analyse the data in a way that it can be used by policy-makers to advance their country's national education system. PISA test 'skills' and must not be confused with quality of education, knowledge, wisdom, or even innovative thinking.

On balance, it could be stipulated that PISA is arguably the most comprehensive and most demanding international system study in the history of education. PISA results confirm the current education systems anywhere in the world leave room for improvement. However it seems risky to take PISA findings causal statements on face value and to use these as a tool for formulating recommendations for education policy reforms. It is important to keep in mind that PISA results should not be used superficially and ultimately as empty ranking of education systems for questionable and misconstrued political gains.

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