

Measuring privatisation in education: methodological challenges and possibilities

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As the Global Education Reform Movement - or GERM - spreads, key questions which attempt to identify both the nature and the increasing scope and scale of this phenomenon become empirically significant. The concern of this article is to highlight some of the complexities of measuring one key element of the GERM: the privatisation of public education systems. Exploring indicators of privatisation through a set of methods for analysing Likert-style data, Mokken scale analysis and Rasch analysis, we generate a scale to measure an educational phenomenon so complex that it can appear to defy measurement. Our intention is to demonstrate that complex phenomena should not be oversimplified for the purpose of generating numeric data and that measurement is possible. The results, drawn from a European-wide survey, portray a nuanced pattern of privatisation at this regional level in which public funding and ownership remain important but schools are commonly adopting a wide range of 'private-like' practices.

Keywords: privatisation, Mokken scale analysis, Rasch analysis, Global Education Reform Movement.

Introduction

In recent years, education reform has been substantial and rapid across many parts of the world. While it would be mistaken to overly homogenise such reform movements, it is possible to argue that a number of common features have emerged as an orthodoxy and are visible in some form in many different national contexts. Sahlberg (2016) refers to these trends as a *Global Education Reform Movement* – or GERM – characterised by greater standardisation, a focus on core subjects, high-stakes accountability mechanisms and “the use of corporate management models as the main driver of improvement” (Sahlberg, 2012, para 8). The privatisation of education is not identified explicitly by Sahlberg as a component of the GERM, although he does recognise

the downplaying of public institutions and public policy in lieu of “innovations bought and sold from outside the system” (Sahlberg, 2012, para 8). By contrast, in this article, we consider privatisation more than an essential feature of the GERM; rather, it is understood to be a fundamental objective of an approach to education reform dominated by the interests of global capital. In this analysis, public education systems increasingly mimic key features of private markets, whereby policies of decentralisation and deregulation allow for direct private-sector intervention and capital accumulation. This assessment of the GERM represents a fundamental reconfiguration of relations between the state and private capital in education through which the public-sector role is residualised and private-sector actors play an increasing role in providing and managing its key institutions.

Such an analysis presupposes a particular direction of travel or trajectory in terms of the Global Education Reform Movement. While we are not arguing that the spread of the GERM is inevitable, we do assume that the GERM is spreading and, if left unchecked, will continue to do so. However, in making these claims or, indeed, the assertion that there is a trajectory of increasing education privatisation, we immediately face a number of methodological challenges if they are to be anything more than impressionistic or anecdotal. There are obvious problems of quantification; for instance, *how* can we assert whether or not a feature of the social world is increasing in scope and scale without some sense of its original and emergent features? But there are also more fundamental issues of definition and identification; namely, *what* precisely is increasing? These are important questions to address; nevertheless, most significant studies of privatisation in the field of education have tended to focus only on the latter, while avoiding the former (see Molnar, 2006; Robertson, 2007; Verger & Curran, 2014; Verger, Fontdevila & Zacajo, 2016). Indeed, there is an apparent reluctance to find ways to determine, in some

substantive way, the scale of the phenomena that lie at the heart of the GERM. Our starting point for this article is therefore to recognise the considerable challenges in trying to confront problems of quantification in relation to education privatisation and to suggest methodologies that can help us make valid claims which open up the possibility of going beyond the generation and comparison of simplistic numeric data towards a form of measurement. In so doing we offer an alternative methodological approach to understanding patterns of privatisation across diverse national contexts which wrestles with questions of both definition and measurement.

We begin with an exploration of the various conceptions of ‘privatisation’ in public education at the state level and highlight the complexity of conducting intra- and inter-national comparative inquiry on this construct. Then we demonstrate the difficulty of using quantitative methods to explore complex social phenomena and propose the combined use of non-parametric Mokken scale analysis (Mokken, 1971; Sijstma & van der Ark, 2017) and Rasch analysis (Rasch, 1960; Bond & Fox, 2015) of survey data to gain a more nuanced understanding of education privatisation traits across a range of European contexts. Finally, we assess the potential of non-parametric statistical analysis to understanding the additive processes of privatisation, and therefore go beyond the generation and comparison of simplistic numeric data towards measurement. While we neither claim to resolve debates over conceptions of privatisation nor deny the importance of context (see Crossley, 2009) – we recognise that education is generally a sub-national concern (Robertson and Dale, 2015) – we aim to demonstrate the likely indicators of increasing privatisation and thereby contribute to discussions of how education privatisation might emerge and could be analysed both sectorally and regionally.

In order to exemplify the case we are presenting, we draw on data from a recent project undertaken for the European Trade Union Committee for Education (ETUCE) and funded by the

European Commission. The research involved a survey distributed to all ETUCE member organisations and, in this article, we set out some of the findings in addition to discussing the methodology.

Conceptualising privatisation

Any meaningful discussion about quantification of a phenomenon must start with conceptual clarity about what is being quantified or ‘counted’. In this regard, privatisation immediately presents challenges since it emerges in multiple forms, not all of which are easily identifiable, or even obviously ‘private’. Here, we set out some of the key conceptual features of what can be identified as privatisation in education.

From the outset, it is important to recognise that private-sector interests are a significant and often long-established feature of almost all education systems. For example, many public systems have significant number of privately managed schools and oftentimes these institutions receive direct and indirect state support. However, private-sector involvement can include activities as diverse as educational publishing, supplementary schooling, and the production of standardised assessments, which indicates that ‘public systems’ have always been technically ‘mixed economies’. Early use of the term ‘privatisation’ might therefore be better understood as a *process* or a *trajectory* whereby the public-sector is gradually displaced by private-sector activity.

The shift from public to private can be traced back to the emergence of the New Right and the market liberal ideas advanced by Friedrich Hayek (1944) and subsequently Milton Friedman (see Friedman and Friedman, 1980). Much of this ideology extolled the purportedly superior efficiency of private- over public-sector provision (Jimenez, Lockheed and Paqueo,

1991), and was framed in a wider debate about the merits of individual liberty over state power and monopolistic producer interests (Chubb and Moe, 1990). In Milton and Rose Friedmans' classic statement of free market philosophy and monetarist economics, *'Free to Choose'* (1980), they argued that producer interests, insulated from the forces of competition, are under no pressure to meet the expectations of 'consumers', with a concomitant impact on quality. The challenge was therefore to subject education to market forces, either by encouraging private provision or by compelling public providers to behave as private enterprises operating in a competitive market (Adam Smith Institute, 1984).

In reality, the massive market failures that would follow (principally chronic under-consumption), combined with widespread educational inequity, mean that, even in the most privatised systems, the state retains a substantial role. To meet the labour needs of capital and ensure social cohesion, education is simply too important to be left to unfettered market forces (Whitty and Power, 2000).

Efforts to resolve these dilemmas have led to forms of privatisation that are much more complex and diverse than those envisaged by the Friedmans. Early examples include the 1988 Education Reform Act in England (Simon, 2000) and the *Tomorrow's Schools* agenda in New Zealand (Codd, 1993), which presaged the creation of 'quasi-markets' in which schools remained public bodies but were required to behave like commercial organisations (see Gordon and Whitty, 1997). In England, the 1988 Education Reform Act introduced per capita funding and open enrolment which allowed parents to 'choose' – albeit limitedly for some – their child's school (see Edwards and Whitty, 1992). Parental choices were guided by more transparent 'consumer information', most obviously the publication of school performance league tables and inspection reports. At the time, educational historian Brian Simon (1987) saw some merit in

many of the individual proposals (a national curriculum, devolved decision-making) but, when taken as a whole, each contributed to the dissolution of a system of locally accountable community schools and opened them up to the possibility of replacement by privatised forms of provision.

These reforms in England highlight the need to look at processes of privatisation in education in more nuanced terms than the simple displacement of public- by private-sector activity. One major contribution to this analysis is found in the work of Ball and Youdell (2008). These scholars distinguish between ‘exogenous’ privatisation, where external privatising forces are operating directly on schools, and ‘endogenous’ privatisation where teachers experience privatisation indirectly through school and system processes such as the aforementioned ‘quasi-markets’. Embracing both these forms of privatisation allows us to capture a more diverse range of privatisation practices, including those where private actors are directly involved in public education services (for example, public money to private schools, education service contracts to private companies) and instances where public institutions behave as if they were private organisations (for example, the use of practices associated with New Public Management [Hood, 1991; Gewirtz, 2001] and increased resources devoted to marketing and ‘reputation management’ [Keddie, Mills & Pendergast, 2011]).

In many ways, England can be seen as the template for GERM reforms that developed in several sites in the 1980s (see also the USA and Chile) but which have subsequently emerged in many other parts of the world. However, the example of New Zealand reminds us that processes of privatisation are culturally and geographically contingent. For although initial policies in these two Anglophone societies looked strikingly similar, their subsequent development has been quite distinct. More recently, the differences are even more apparent with the rejection of decentralised

budgeting (School News, 2016), standardised testing (NZ Herald, 2017) and charter schools (RNZ, 2018) in New Zealand. This divergence highlights the need to understand how forms and processes of privatisation are experienced in different jurisdictions to distinguish the common and more exceptional features of the GERM and to develop methods that allow for meaningful comparisons between countries and over time.

Privatisation and quantification: identifying the challenges

A barrier to empirical discussions about the forms and processes of privatisation is the methodology that is used to investigate the phenomenon. For instance, significant ethnographic research into the negative effects of educational privatisation has been criticised for its highly contextualised nature (see Tooley, 1997) and, while such critique of qualitative approaches originates in broader paradigmatic and ideological tensions, simply exchanging qualitative methods for quantitative approaches does not, of itself, shed any greater light on this topic. Privatisation cannot be directly observed as a single phenomenon to be quantified and this makes it seemingly ‘unmeasurable’. Hence, when quantitative approaches are used to understand privatisation, there are often several reoccurring problems. Firstly, quantitative research conducted by third-sector organisations has often sought to make broad generalisations about a given phenomenon from survey data which is neither critical of the representativeness of the sample nor of the relationships between the survey items (a problem evident in the Programme for International Student Assessment [PISA] Student Survey [OECD, 2017]). The generalisability of quantitative research that reports raw data, percentages or counts is dependent on large, representative or weighted samples (see Winship & Radbill, 1994). However, the use of non-random, convenience sampling and self-selection severely limit generalisability, meaning

that researchers cannot make any claims about ‘spread’ or even ‘amount’ when using raw data. Without due attention to the sample, survey findings are limited to a description of who has responded to the items, rather than an analysis of patterns of perspectives or the broad theoretical implications of the construct under investigation. In the analysis of survey data, it is therefore essential to avoid the assumption that raw data is the same as measurement for simply reporting how much of a sample has agreed with an item does not create scales capable of measurement (for a development of this argument see Bond and Fox, 2015).

Secondly, items about complex phenomena are unlikely to garner objective reports with consistency across all education systems. Asking research participants about their experience of ‘privatisation’ assumes that these respondents all have the same universal understanding of privatisation and its inherent characteristics. Reducing a complex term down to a single word is an extreme case of double-barrel item design whereby many (possibly contradictory) ideas are embedded in a single item. Respondents are forced to make multiple judgements but simplify their thinking to a single response. The reliability and reproducibility of these types of items is inevitably suspect. Similarly, raw data reported from any form of Likert analysis of a scale of privatisation presupposes that the respondents are equally sensitive to perceived increases or decreases in these characteristics. Despite the simplicity of the scales, survey respondents are unlikely to be able to quantify their own individual perspectives or experiences robustly enough for the raw data to be useful (Oakley, 2000). This is further complicated by the fact that privatisation is a latent construct which cannot be directly measured therefore reducing the phenomenon to a single statement is likely to oversimplify the complexity of issues within that indicator. Thus, an item such as ‘have you experienced increasing privatisation in education in your country?’ (see ETUCE, 2016, p. 21) or ‘at which education levels(s) is privatisation most

widespread?’ (see ETUCE, 2016, p. 24) merely results in the assignment of simple numbers, such as a percentage, to qualitative observations. It does not create data that can be meaningfully compared across contexts (such as different countries) and cannot be used to differentiate systems of high and low levels of privatisation. When survey data is reported through the items which receive the most positive responses but without any critique of how well the items function within a scale, the results are difficult to interpret and potentially misleading.

Significantly, the use of data in this manner threatens claims to validity. Relationships within data cannot be proven by simply stating that the majority of respondents who agree with one item also agree with a second item, that items have a similar percentage of responses, or that one item has a larger percentage response than another. In such cases, Rasch (1961) notes that raw data has “replaced the observations by quantitative parameters, but that does not imply that we have a proper measurement, on a ratio scale or on an interval scale, of the individuals or of the stimuli nor even that a proper ordering is available” (p. 331). Ordering allows a comparison of items or respondents. Without ordering or interval data, very few defensible inferences can be made. A further, critical look at the items must be done to assess whether the items fit a pattern which demonstrates increase as the latent construct increases, otherwise assumptions will be made about relationships. When the pattern holds, the data can be reported as related and the scale can be used for measurement. Analysing privatisation without a clear understanding of the order of indicators and the overall pattern limits research to the level of description of the current status of a single education system. Taking a measurement approach allows us to understand the greater phenomenon across complex and varying systems.

Developing an alternative approach

Considering the challenges of quantification in relation to education privatisation, our argument is that there are methods available that make it possible to go beyond the generation and comparison of numeric data towards measurement and which in turn allow an assessment of comparisons and trajectories.

Measurement is not an automatic outcome of numeric data collection. Numeric data is often collected through surveys, reported as raw data or analysed to fit a model to a data set, but this cannot be considered measurement. While transferring qualitative observations or responses into numeric data is the first step of creating a scale, it is important to remember that “raw data are *not* measures” (Bond & Fox, 2015, p. 3). Quantitative analysis can only be considered measurement when it can be used in a manner similar to a ruler, where the indicators of ‘more’ are consistent over a range of contexts and increase in prevalence as the measure as a whole increases. This means that the items remain in the same relationship no matter which respondent is measured. Equally, the respondents remain in the same order of the ‘amount’ of the variable no matter which item is used to compare them (Fisher & Wright, 1994). Raw data does not fit these expectations and other model building analysis methods are limited in their measurement capabilities.

To obtain measurements, we have adopted a critical approach to quantitative research using non-parametric statistical analysis and, specifically, Mokken scale analysis (Mokken, 1971; Sijstma & van der Ark, 2017) and Rasch analysis (Rasch, 1960; Bond & Fox, 2015). Measurement is a special form of quantification and constructing scales allows a critical analysis of the definition used to obtain the measures. A manifest variable can be observed directly and counted but it is much more difficult to assign numbers to latent constructs, like privatisation, which are not directly observable. Investigating privatisation in this manner involves testing

indicators of the latent construct of privatisation that are conjointly additive (Fisher & Wright, 1994), namely, that they add together to demonstrate increasing ‘amounts’ of privatisation. If the data do not fit the model, then it is not measurement.

Mokken scale analysis and Rasch analysis were chosen for their strength in the initial development of measurement instruments. Mokken scale analysis is useful for analysing Likert-style data when “the researcher has assembled the item set based on theory about the attribute of interest and is not yet sure whether all items have sufficient psychometric quality for selection in the final scales” (Sijstma & van der Ark, 2017, p. 144). Rasch analysis brings the analysis further to examine the relationship between the items under investigation and the respondents. Rasch analysis also allows researchers to theoretically investigate a latent construct (Long, Wendt & Dunne, 2011). The benefit of Rasch analysis methods is that they “often reveal more of interest about the construct than they do about the ostensible reason why one wanted to measure in the first place” (Fisher & Wright, 1994, p. 565). This qualitative aspect of quantitative outcomes allows for the description of patterns in the data that occur across respondents. Other methods could be used to deal with survey data but were not acceptable for this investigation.

Quantification through model building (e.g. factor analysis, structural equation modeling, etc.) is often used to identify relationships between different sets of items. However, these analytical approaches are not suitable for the initial quantitative investigation of a construct (Brown, 2014), are limited by assumptions that numeric responses mean the same thing across participants (Wright & Mok, 2004), obtain misleading results due to the treatment of ordinal data as interval level data (van der Eijk & Rose, 2015) and are difficult to use because the models vary according to the data (Andrich, 2004).

Using Mokken scale analysis, it is possible to detect which items ‘scale together’ as survey respondents identify the presence of more indicators of privatisation as the latent construct of privatisation as a whole increases. The addition of Rasch measurement methods allows for further critique of how the items relate to each other. The combination of methods allows us to retain complexity in the data and descriptive depth within a quantitative framework.

The specific strength of Rasch analysis is that it avoids many of the pitfalls of quantitative analysis that have been described in this article. The outcome of the analysis does not depend on the sample or, specifically, on the individual items that are used, but rather it is able to “transcend the group measured” (Thurstone, 1928, p. 547). Unlike other forms of quantification, the findings are not heavily influenced by the sample of respondents when the data fit the model. A Rasch model “renders it possible, in the analysis of the data, to detach the personal parameters from the stimulus parameters, and vice versa. And furthermore, we may check the adequacy of the model itself independently of both sets of parameters” (Rasch, 1961, p. 321). Thus, instead of fitting a model around a set of data, the data are analysed for how well they fit a Rasch model. This approach allows for a critical examination of the construct being researched (Long, Wendy & Dunne, 2011). While reporting raw data on items is essentially “objectifying test takers by subjecting them to an unquestionable authority the Rasch approach to test creation promotes a conversation in which questions are tested by the respondents just as much as the respondents are tested by the questions” (Fisher, 1991, pp. 7-8), this conversation assumes that the knowledge lies with the respondents rather than the survey designers and gives respondents a way to falsify the hypothesis of the items simply by sharing their perspectives. The strength of this approach is that any assumed definition of privatisation only acts as a starting point and does not dominate the research nor frame the findings as it is interrogated and

developed throughout the analysis. Rasch analysis does not require a ‘representative sample’ in the traditional sense but rather requires a range of responses that fit the model. Instead of a previously validated set of reliable items, what is required is a set of items that demonstrate all of the possible levels of the latent construct. Due to this particular strength, analysis is neither restricted by country borders – thus avoiding the trap of methodological nationalism (Beck, 2006), - nor dependent on an assumed meaning of privatisation. Instead, we are able to hypothesise items and critically analyse privatisation as a latent construct across contexts.

Research Design

The research study and participants

Data for this element of the research were collected through a survey distributed to the 132 member organisations of the European Trade Union Committee for Education (ETUCE). The ETUCE has a membership throughout the European region (EU and non-EU countries). Participating unions were contacted via the ETUCE Secretariat and surveys were completed by union officials of the member organisations. The survey was distributed in two languages (French and English) and was open from December 2016 to March 2017. In total, 68 education unions responded to the survey.

Instrument design and item creation

The first step towards designing a construct to measure privatisation was to hypothesise the possible indicators of privatisation. These indicators were identified through a review of empirical and theoretical research on privatisation, in particular, the work by Ball and Youdell (2008) discussed above and more recent work by Verger, Fontdevila and Zacaño (2016). Survey

items were then created and reviewed by scholars with expertise in each of the sectors under investigation.

A construct map was hypothesised with possible indicators of very low levels of privatisation through high levels of direct private involvement. Respondents were prompted with ‘How common are the following features?’ and Likert-style response categories of ‘Not at all’, ‘Rare’, ‘Fairly Common’, and ‘Very Common’. These categories were chosen to allow some degree of gradation in response without assuming respondents would be able to quantify precisely the nature of privatisation in their national education system. All items were given the same response categories and all items were written in the same direction with no reversed items; namely, ‘very common’ always indicated more private-like behaviour in a country. This was done to maintain the additive quality of the items, that each item shows more of the latent construct, giving meaning to the total scores and to each individual response (Sijtsma & van der Ark, 2017). We acknowledge that this design choice can increase the possibility of “aberrant response behaviour” (Meijer, 1996) such as ‘sleeping’ or ‘plodding’ and acquiescence (Winkler, Kanouse & Ware, 1982) and this in turn can open up the possibility of some measurement error. However, as the response categories asked respondents to identify the prevalence of the item, our view was that reversing negatively-worded items for the analysis would not have been suitable. The absence of a negative indicator cannot unproblematically be reversed into meaning the increased prevalence of a positive indicator as reversed items have different psychometric properties (Hooper, Arora, Martin & Mullis, 2013).

The items were designed with sensitivity to the varying international contexts. None of the items required respondents to report their system in comparison to other systems or to understand systems outside their national context. The items avoided jargon and were created

without any intensifiers such as “very” or “only”. Additionally, given that many of the respondents would be responding to items written in a language other than their first language, special consideration was given to the use of educational terminology. Where terminology was deemed ambiguous or might have posed a difficulty to respondents, elaborations and/or examples were provided to clarify the intent of the item. Even so, the complexity of creating a cross-cultural survey appropriate to the perspectives of a diverse group of organisations representing a range of education sectors and systems should not be understated (Harkness, Vijver & Mohler, 2003). While we made every effort to represent the cultural, organisational and systemic differences in the region, we were aware that our items may not have captured the full breadth of comparative educational experiences

Analysis and Results

As this data set was used to investigate the potential of developing a scale of privatisation, the analysis was conducted in two stages: first using Mokken scale analysis followed by Rasch analysis. We begin by reporting the Mokken scale analysis of which items ‘scale together’ as a latent construct and also which items were excluded at that point. Following this, we report the Rasch analysis method and how the remaining items could be used to measure respondents based on the constructed scale.

First stage of data analysis: Refining the Construct of Privatisation with Mokken Scale Analysis

To explore the idea of privatisation as a measure, the data were analysed through the non-parametric Mokken scale analysis using the software MSP5 (Molenaar & Sijtsma, 2000).

Mokken scale analysis is an iterative process whereby the scale is built from the data. Items that do not fit the requirements of unidimensionality (all measuring a single latent variable), monotonicity (that the items are non-decreasing over the latent construct) and local independence of each item (that the variation in correlation is due to differences in the amount of the latent variable but that the items are not related at any given level of the latent variable) are excluded from the scale (Sijstma & van der Ark, 2017). The calculation is a probabilistic version of a Guttman scale (van Schuur, 2003) to find invariant item-ordering based on responses to items. This analysis tests the dimensionality of sets of items and assesses the quality of each item along with each set of items to make a scale. The H coefficient for each item provides an assessment of scalability and unidimensionality and an H coefficient for the entire scale can be calculated from the items. The reliability of the scale is also reported with the Rho statistic. Items with an H coefficient less than 0.3 were considered “unscalable” meaning they were “low quality in the context of the item set” (Sijstma & van der Ark, 2017). Scales were only considered to have acceptable reliability with a Rho statistic >0.70 and were deemed good with $\text{Rho} > 0.80$. As this was the first step in a larger analysis, items with minor monotone homogeneity violations were retained if they met the threshold for their H coefficient. The discussion at the end of each scale includes an analysis of the items which were excluded at that point. Further analysis of the items included in each scale can be found in the sections describing the Rasch analysis of the data.

The items designed for the primary and secondary schools sector created four scales. Scale one included 13 items with an overall scale $H=0.41$, $\text{Rho}=0.86$ ($\text{Rho}>0.80$ is considered good reliability). This scale was the strongest set of items and was a large enough set of items to be considered a robust scale (more than eight items is considered acceptable for a second stage of Rasch measurement, see Wright & Stone, 1979). The results of this scale correspond strongly to

the features of endogenous privatisation presented by Ball and Youdell (2008) and hence the scale is titled ‘Endogenous Privatisation’. This is reported further in Figures 1 and 2.

The analysis found three other scales, however, these had too few items to be considered as independent latent constructs suitable for Rasch measurement (Wright & Stone, 1979). These items were tested along with the 13 initial scale items but demonstrated low H coefficient values when tested for fit. This meant that they measured a different latent construct than the larger set of items. The shorter scales may warrant further investigation in the future but were not considered usable for measurement as they indicate the presence of a small number of activities related to privatisation but not a broader pattern. The items are listed below in Tables 1, 2 and 3.

Table 1

Scale Two Items: Direct private involvement

PS25 – Non-teaching services in public schools are contracted out to private providers (for example, estates management, payroll etc.).

PS26 – The private sector funds capital projects in public schools (for example, new buildings).

PS27 – The private sector provides continuing training/professional development to public school teachers.

PS28 – The private sector provides consultancy services to public schools.

Table 2

Scale Three Items: Private funding from parents

PS6 – Parents pay additional fees for essential items in public schools (for example, textbooks, paper, pencils).

PS7 – Parents pay additional fees for extra-curricular activities in public schools.

Table 3

Scale Four Items: Quasi-independent schools and private schools

PS5 – The government has established quasi-independent schools which are publicly funded, but privately managed (like US Charter Schools).

PS8 – Private fee-charging schools provide primary and/or secondary education in this country.

P95 – The government provides funding direct to private fee-charging schools (for example, subsidies, tax breaks etc.).

Eight other items hypothesised to fit with the latent construct did not fit with any scale. These are shown in Table 4.

Table 4

<i>Items that did not scale with any other items</i>
PS1 – The financial management of school budgets is decentralised.
PS2 – School funding is based on a voucher system.
PS4 – Pupil enrolment to schools is based on parent choice.
PS10 – The government provides financial incentives for parents to send their children to private fee-charging schools.
PS11 – Public schools are ranked nationally in league tables of student performance.
PS16 – Teachers can be hired on temporary contracts.
PS24 – Public schools lead initial teacher training programmes.

While many of the items excluded from the scale are often discussed as exemplifying the assumed meaning of privatisation, in this analysis, these items did not ‘scale together’ with the items that demonstrated a pattern of endogenous privatisation. Most notably, while the prevalence of ‘independent state schools’ (e.g. Academies and free schools in England), private fee-charging schools and government funding of private fee-charging schools were related to each other, these three items were not related to the overall pattern of endogenous privatisation. These three items may be useful for reporting the presence of private schools in a country, but they are demonstrably different from the privatisation of a state school system in this analysis and vary independently of the other items. It was also notable that private-sector provision of teacher professional development, consultancy to schools and the funding of capital projects were related to each other, but not to the larger pattern of endogenous privatisation (for an example, see Molnar, 2006). Although a common definition of privatisation is an increase in

private funding by parents (Belfield & Levin, 2002, p.9), and recent attention in both the media (McInerney, 2017; Tickle, 2017) and academic literature (Winton, 2016) has focused on parents paying additional fees for essential school items and after-school activities, this direct increase of private funding from parents does not seem to be related to other privatisation mechanisms. The decentralisation of school budgets, voucher systems, parental choice policies, incentives for private schools, and contracting out of other services were not related to each other nor to the pattern of endogenous privatisation. The exclusion of these items warrants further investigation beyond the scope of this analysis but suggests that private-like behaviour of public schools varies independently of direct private involvement.

While Mokken scale analysis is useful for the first look at a set of data, it does not describe the exact relationship between the items or obtain measurements. The analysis was continued to attempt to create a scale out of the indicators of endogenous privatisation.

Second stage of data analysis: developing an ordered scale with Rasch Analysis

In the second stage of quantitative analysis, Rasch analysis was conducted to create a scale of ordered indicators of privatisation that can be portrayed in a hierarchy and used as a measurement of the latent construct.

The basic assumptions of Rasch models are that, when the data fit the model, each respondent can be characterised by an ‘ability’ to endorse an item and each item can be described as having a ‘difficulty’. Items will be ‘easier’ or ‘more difficult’ to endorse fundamentally based on the amount of the latent construct that each individual respondent experiences (Bond and Fox, 2015). As Rasch (1961) explained, the “model specifies a distribution function for the potential responses of a given person to a given stimulus of a certain set of allied stimuli, and this

distribution function depends upon a parameter characterizing the person and a parameter characterizing the stimulus” (p. 321). In terms of the item set for this research, if the data fit a Rasch model, respondents who perceived more privatisation in their individual contexts would be more able to endorse items that describe higher levels of privatisation whereas those who experienced less privatisation would be unlikely to endorse those items. Equally, items that were low-level indicators of privatisation would be comparatively ‘easy’ to endorse for respondents who perceived more privatisation. When items violate this model, they demonstrate high levels of item error and are not useful for constructing a scale. When this pattern holds, we are able to order the items in a hierarchy that indicate increasing amounts of the latent construct. Additionally, the latent construct measured by the items can be expressed as a continuous variable and, based on the difference between those numbers, “the probability of observing any particular scored response can be computed” (Bond and Fox, 2015, p. 32). These computed numbers can then be compared as measures of the latent construct for each respondent. This is the latent variable and makes the latent construct into a measurement.

When the data fit the assumptions of a Rasch model, there is “sample-invariant interpretability” (Wright, 1977), meaning the items measure across different respondents in a comparable way through “specific objectivity” (Rasch, 1977). The comparison of items is not dependent on the ‘abilities’ of the respondents to endorse an item and the comparison of the ‘abilities’ of the respondents to endorse items is not dependent on the items on which they are measured. That the ‘difficulties’ remain equivalent across different ‘abilities’ is how model fit is evaluated (Wright, 1977). Mathematically, this relationship between the ‘ability’ to endorse an item and the ‘difficulty’ of an item can be represented as follows for a dichotomous model:

$$\log e (P_{ni1}/P_{ni0}) = B_n - D_i$$

Where B_n is the ability of subject n , D_i is the difficulty of item i , P_{ni1} is the probability that subject n will succeed on item i , P_{ni0} is the probability of failure ($1-P_{ni1}$).

The survey included four response categories throughout and was therefore a polytomous model. The formula for this model is related to the basic Rasch model but includes an additional term for the probability of whether a respondent endorsed the adjacent category calculated at each threshold (e.g. between 'Fairly Common' and 'Very Common').

When more than two response categories are included, the Andrich rating scale model (Andrich, 1978) is used:

$$\log e (P_{nij}/P_{ni(j-1)}) = B_n - D_i - F_j$$

Where P_{nij} is the probability that person n of ability B_n is observed in category j of a rating scale applied to item i of difficulty D_i compared to the probability $P_{ni(j-1)}$ of the person being observed in category $j-1$, the adjacent category (for example between 'Not at all' and 'Rare').

A key rationale for using Rasch analysis is that it allows for critical analysis of the latent construct of 'privatisation' in a way that other methods do not. While an outcome of Rasch analysis is measurements, it is also useful for clarifying the understanding of a latent construct (like privatisation) by removing indicators that do not fit the model (Long, Wendt and Dunne, 2011, p. 404). The results of a Rasch analysis are an invariant ordering of the items (Fisher &

Wright, 1994) that can be portrayed in a hierarchy demonstrating increasing amounts of the latent variable.

The analysis was conducted using the programme Winsteps (Linacre, 2017). The Rasch analysis for the primary and secondary sector items found that the 13 items retained from the Mokken scale analysis fit a Rasch model while the items excluded in the first stage did not fit with this measurement model. The scale had a global fit statistic of chi-square=1272.13 with 658 degrees of freedom, $p < .01$. The four response categories performed acceptably with 52.9% of variance explained by the model empirically. The items had noticeably positive point-measure correlations with the measures all within the range of 0.45-0.72, except for one item with a correlation of 0.28 (Item PS29). Infit and outfit mean-square values were all below 2.0, meaning that none were degrading to the measurement system. However, two items had infit mean-square values > 1.50 , meaning they were unproductive for measurement (Items PS29 and PS18). A visual inspection of the Item Characteristic Curves (ICCs) showed that the model ICCs were similar to the empirical ICCs. This was all evidence that these indicators create a unidimensional latent construct of privatisation and, therefore, measuring a single pattern across the respondents. The scale had a person separation of 1.99, person reliability of 0.80 and item separation of 4.18, all within acceptable range for a unidimensional scale. Some example items are shown in the text boxes in the Wright Map in Figure 1. A graphic of the complete hierarchy can be found in Figure 2 and a full list of items can be found in Appendix A.

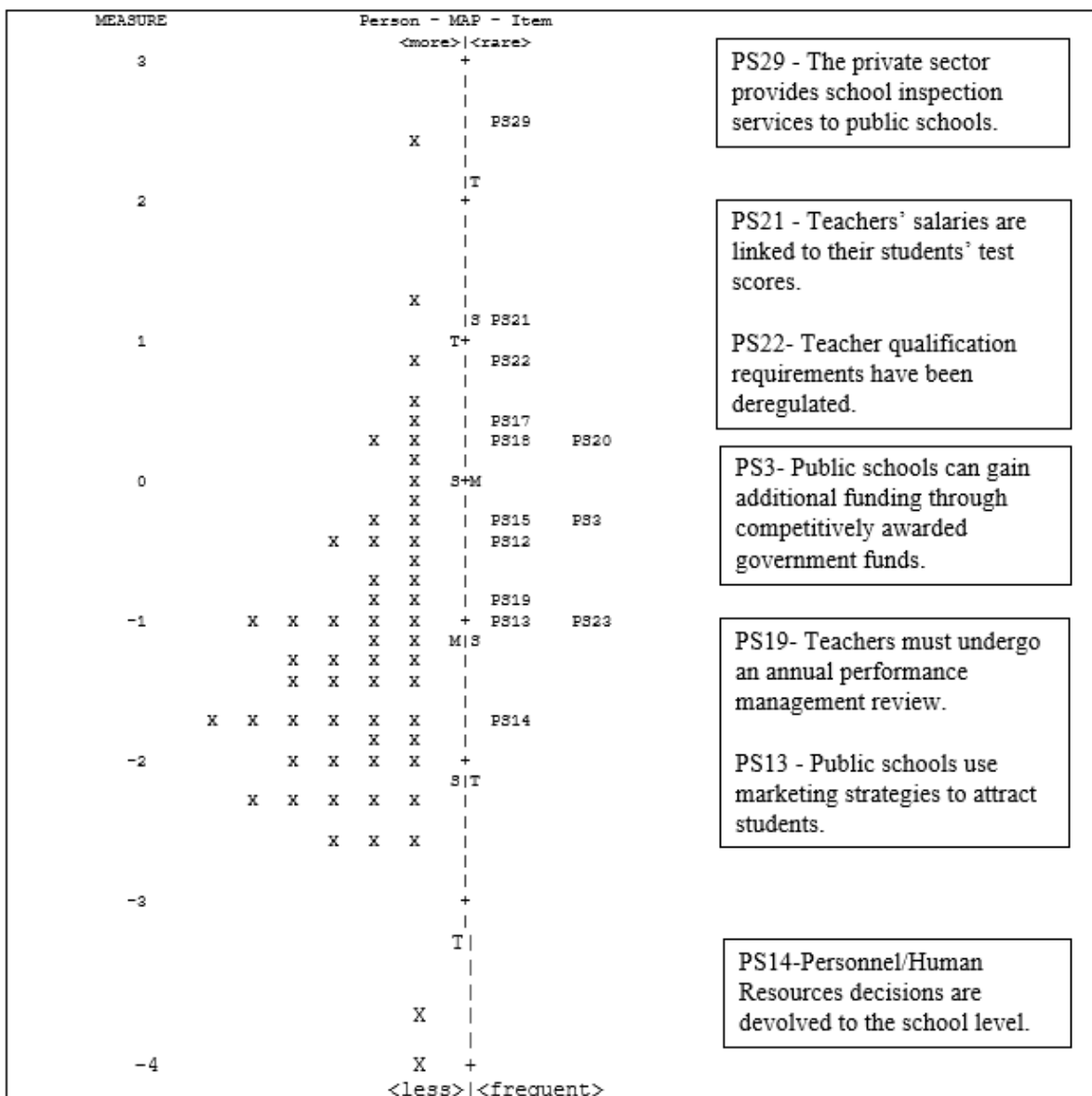


Figure 1. Wright Map of Endogenous Privatisation in Primary and Secondary Schools Scale

In Figure 1, the respondents are marked as Xs on the left side of the figure and the items are identified on the right side of the figure. The far left of the figure is a ruler of the overall latent construct we have called 'Endogenous Privatisation'. The respondents are located in the figure based on their measurement of the latent construct. Respondents near the top of the figure have a higher measure than those on the bottom. The items at the top are rare while the items near the bottom are frequent and all the items are related. In this figure, the respondents are compared

against the items and, at the point where they align, the respondent has an equal chance of endorsing that item. They are likely to have endorsed all the items below their position on the scale and unlikely to have endorsed any of the items above their position on the page. As the items are related, this creates the conditions where this scale can be used to measure the amount of endogenous privatisation that is experienced and compare the measurements of different respondents.

Scale Interpretation

While we do not claim that our research provides a singular definition of the latent construct of ‘privatisation’ — we may have begun the process without some indicators that should have been tested — our argument is that the approach we have adopted offers a starting point for describing patterns of the phenomenon which other studies have been unable to provide. Approaching data from a measurement perspective avoids many of the problems with attempting to quantify complex constructs like privatisation and allow for a nuanced understanding of education privatisation traits across a range of European contexts. The scale produced by this analysis demonstrates a pattern of “endogenous privatisation” (Ball and Youdell, 2008) as the dominant form of privatisation in the statutory age education sector is where schools act more ‘private-like’ by adopting and enacting corporate practices in their operations. While we are able to use the scale to measure the respondents, the investigation of the constructs through Rasch measurement techniques reveals more interesting information than do the measures themselves (Fisher & Wright, 1994, p. 565). The scale included devolved human resources, marketing, and employment conditions and salaries determined at the school level. The items show the intimate link between privatisation in primary and/or secondary schools and high stakes accountability for

teachers, and demonstrate how key features of the GERM are part of a whole. The scale also contained items related to the potential impact of privatisation on teachers' work such as teachers being required to teach outside their specialism, the use of performance management reviews, standardised tests to evaluate teacher performance, the deregulation of teacher qualifications, and salaries linked to students' test scores.

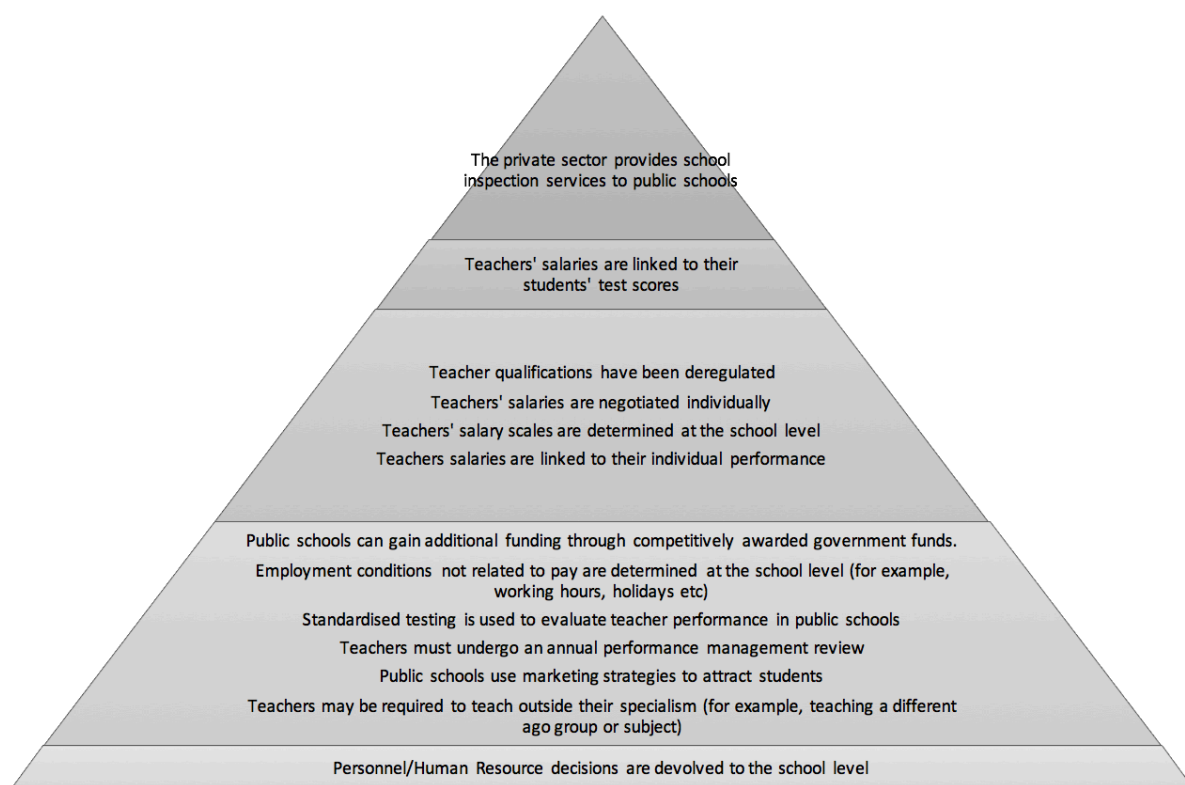


Figure 2. Item hierarchy for Endogenous Privatisation in Primary and Secondary Schools Scale

Figure 2 portrays the full text of the items in a hierarchy. While this visualisation collapses the distance between items shown in Figure 1, it demonstrates the relationship of the items and the different levels of endogenous privatisation. As with Figure 1, the bottom of the hierarchy contains the easiest item to endorse and the peak of the hierarchy contains the most difficult item of the scale. Each level describes a significant step toward a system that would

include all items. At any point on the hierarchy shown in Figure 2, if a system contains that indicator, it is likely to also contain all the indicators below it. Moving up the hierarchy, if a system fails to contain an indicator, it will have few or none of the indicators above it. In this way, the hierarchy can be seen as a type of ruler measuring from bottom to top the amount of privatisation that occurs in a system.

Discussion and conclusion

The argument we present here is that it is possible to consider ‘privatisation’ as a potentially measurable construct. Instead of the quantification reporting raw data, percentages or counts on items, we have demonstrated how observations about the prevalence of practices can be analysed together to create a measurable construct.

The combined use of Mokken scale analysis and Rasch analysis has provided a more fine-grained understanding of the indicators of ‘privatisation’ with particular focus on endogenous privatisation. This analysis challenges assumptions of privatisation being bound to specific behaviours or definitions. By investigating privatisation as a construct, we are able to understand patterns of endogenous privatisation in primary and secondary schools rather than rely on a definition that may or may not fit the context. Further research based on these items could enable continuing discussion about privatisation; in particular, how to identify the indicators of privatisation and how to track trends in privatisation over time. The risk is that research on privatisation is limited when “meanings attributed to hypotheses and research findings are influenced and constrained by underlying assumptions about meanings assigned to constructs and measurements” (Cherryholmes, 1988, p. 428). Relying on assumed definitions of privatisation leads to identifying potentially spurious relationships and may also fail to identify

education systems that have low levels of endogenous privatisation, especially where there is an absence of direct private involvement. Through this approach to critical quantitative analysis, we have been able to clarify indicators of endogenous privatisation across contexts and take into account the complexity of privatisation as a construct. This analysis allows us to look beyond assumed divisions between public and private to “focus on actual mechanisms of commercialization that cross this divide” (Simons, Lundahl & Serpieri, 2013, p. 418).

This research demonstrates variations in how the term ‘privatisation’ may be used (or misused) and, while quantifiable, do not necessarily fit the overall pattern of private-like behaviour of public-sector schools. For example, in the primary and secondary school phases of education the prevalence of private fee-charging schools was not related to private-like behaviour in the state sector. While a growing private sector is one form of ‘privatisation’, it does not seem to be necessary for state sector schools to experience increasing endogenous privatisation. The contrary is also likely, namely, a decreasing number of private schools may not be decisive evidence that privatising behaviour in public-sector schools is in retreat. Rather this research suggests that significant private-like behaviours can increase independently of the increase of private funding, private provision of education or direct private involvement in a potentially measurable manner.

In presenting these findings we seek to intervene into the debate on how we describe and measure ‘privatisation’ in education. Privatisation in its endogenous and exogenous forms is a central feature of the GERM and one that education workers and students often see and feel in their work. In this article, we make the case that there are forms of quantitative analysis that can help us develop our understanding of the cross-cultural experience and prevalence of education privatisation. Furthermore, because the data fit a Rasch model, the findings are not constrained to

only describing the countries represented in the survey but can be used to describe a pattern across contexts. However, we do not claim that the scale would translate unproblematically to other regional jurisdictions such as the Americas, the Middle East, Africa or Asia. While respondents reported a large enough range of experiences to create robust scales, we would argue that the scales would likely need further development to be used in other contexts.

In making this intervention into the privatisation debate, we are cognisant of the limits of this work. The respondents of the survey were all union officials working in education. While highly knowledgeable of the area they work in and the phenomenon under investigation, their outlook will have been shaped by their experiences as union officials. A logical next step is to attain a wider range of participants (policymakers, regional or local level education workers, school leaders and teachers) in the survey sample. Furthermore, the smaller scales identified, but excluded from this study, may have the potential to increase understanding beyond what was possible in this research through more development and data collection. While these smaller scales demonstrated little relation to the rest of the data, it is possible that those items along with other untested indicators could identify robust patterns. The discovery of a unidimensional scale in this study does not mean that no other scales exist or that these indicators are an exhaustive measure of privatisation. However, none of these caveats obviate the claims we make in this article, but simply reinforce the argument for further work and development of the methodology.

In the introduction to this article, we argued that it is difficult to make any claim about the GERM 'spreading' without a clear sense of what it is and having some credible way to measure it. Attempts to quantify privatisation have often suffered from oversimplification, assumptions about the indicators of privatisation and weak data collection or analysis (see discussion above). Through the use of Mokken scale analysis and Rasch analysis, we have been

able to demonstrate how the latent construct of privatisation can develop our understanding of privatisation in a measurable manner. By identifying quantifiably related items that function in a demonstrably additive manner, we can see how respondents are measured on the scale that has been created. In essence, we have presented a methodology that allows for measurement of a key element of the GERM.

Appendix A – List of all Primary and Secondary Survey items

Item ID	Item Text
PS1	The financial management of school budgets is decentralised.
PS2	School funding is based on a voucher system.
PS3	Public schools can gain additional funding through competitively awarded government funds.
PS4	Pupil enrolment to schools is based on parent choice.
PS5	The government has established quasi-independent schools which are publicly funded, but privately managed (like US Charter Schools).
PS6	Parents pay additional fees for essential items in public schools (for example, textbooks, paper, pencils).
PS7	Parents pay additional fees for extra-curricular activities in public schools.
PS8	Private fee-charging schools provide primary and/or secondary education in this country.
PS9	The government provides funding direct to private fee-charging schools (for example, subsidies, tax breaks etc.).
PS10	The government provides financial incentives for parents to send their children to private fee-charging schools.
PS11	Public schools are ranked nationally in league tables of student performance.
PS12	Standardised testing is used to evaluate teacher performance in public schools.
PS13	Public schools use marketing strategies to attract students.
PS14	Personnel/Human Resources decisions are devolved to the school level.
PS15	Employment conditions not related to pay are determined at the school level (for example, working hours, holidays etc).
PS16	Teachers can be hired on temporary contracts.
PS17	Teachers' salaries are negotiated individually.
PS18	Teachers' salary scales are determined at school level.
PS19	Teachers must undergo an annual performance management review.
PS20	Teachers' salaries are linked to their individual performance.
PS21	Teachers' salaries are linked to their students' test scores.
PS22	Teacher qualification requirements have been deregulated.
PS23	Teachers may be required to teach outside their specialism (for example, teaching a different age group or subject).
PS24	Public schools lead initial teacher training programmes.

PS25	Non-teaching services in public schools are contracted out to private providers (for example, estates management, payroll etc.).
PS26	The private sector funds capital projects in public schools (for example, new buildings).
PS27	The private sector provides continuing training/professional development to public school teachers.
PS28	The private sector provides consultancy services to public schools.
PS29	The private sector provides school inspection services to public schools.

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