Transformations of the State
CRC 597

TranState Working Papers

Does Market-Oriented Education Systems Improve Performance or Increase Inequality: A Configurational Comparative Method for Understanding (Un)Intended Educational Outcome

Ramsey Wise

No. 189

Universität Bremen • University of Bremen
Jacobs Universität Bremen • Jacobs University Bremen
Universität Oldenburg • University of Oldenburg

Staatlichkeit im Wandel • Transformations of the State
Sonderforschungsbereich 597 • Collaborative Research Center 597

Ramsey Wise

Does Market-Oriented Education Systems Improve Performance or Increase Inequality: A Configurational Comparative Method for Understanding (Un)Intended Educational Outcomes

TranState Working Papers

No. 189

Sfb597 „Staatlichkeit im Wandel“ – „Transformations of the State“
Bremen, 2015
[ISSN 1861-1176]

Ramsey Wise
Does Market-Oriented Education Systems Improve Performance or Increase Inequality: A Configurational Approach to Understanding School Conditions and (Un)Intended Outcomes
(TranState Working Papers, 189)
Bremen: Sfb 597 „Staatlichkeit im Wandel“, 2015
ISSN 1861-1176

Universität Bremen
Sonderforschungsbereich 597 / Collaborative Research Center 597
Staatlichkeit im Wandel / Transformations of the State
Postfach 33 04 40
D - 28334 Bremen
Tel.:+ 49 421 218-56644
Fax:+ 49 421 218-56633
Homepage: http://www.staatlichkeit.uni-bremen.de

Diese Arbeit ist im Sonderforschungsbereich 597 „Staatlichkeit im Wandel“, Bremen, entstanden und wurde auf dessen Veranlassung unter Verwendung der ihm von der Deutschen Forschungsgemeinschaft zur Verfügung gestellten Mittel veröffentlicht.

Deutsche Forschungsgemeinschaft
DFG

ABSTRACT

Since the introduction of PISA in 2000, school choice has been featured as a mechanism by which students gain equal educational opportunities and schools are pressured to improve their performance. In opposition, critics have argued that geographic and socio-economic disparities may cause choice to unintentionally contribute to further educational inequalities, while performance gains are only marginal. To further explore the market rationale behind these claims, this study develops a conceptual framework that theoretically identifies complementary school-level characteristics of market-oriented education systems. These include choice, autonomy and accountability.

Both educational outcomes – educational performance and inequality – are then analyzed with regard to these characteristics of market-oriented education systems using fuzzy-set qualitative comparative analysis (fsQCA). This configurational comparative approach further allows for the analysis of complex causality in order to understand how features of market orientation (i.e. choice, autonomy and accountability) also interact with a country's socio-structural context. Therefore, market orientation is modeled along with two well known contributing factors of the outcomes explored, namely social stratification and the institutional stratification of educational systems.

Data is derived from the 2009 PISA study and aggregated for 21 OECD countries. The results demonstrate that a strong trade-off between performance and inequality is demonstrated in most countries sampled here. Although many of these countries indeed have market-oriented education systems, few cases contradict this association – the primary difference being the socio-structural context. Theoretically and empirically relevant configurations are identified to explain cross-national variation of educational outcomes; however, these solutions are highly sensitive and possibly subject to model ambiguities.

CONTENTS

1 INTRODUCTION 1

2 MARKET ORIENTATION IN EDUCATION 3

2.1 On the Effectiveness of School Choice 3

2.2 Choice and School Responsiveness 4

2.3 Social Origin and School Stratification 6

3 MODELING CONDITIONS AND OUTCOMES 7

3.1 Calibration of Outcomes 9

3.2 Calibration of Conditions 10

3.3 Calibration of Additional Conditions 11

4 RESULTS OF TESTS FOR NECESSARY AND SUFFICIENT CONDITIONS 12

5 CONCLUSIONS AND IMPLICATIONS FOR FURTHER RESEARCH 16

REFERENCES 18

BIOGRAPHICAL NOTE 22

APPENDIX 23

1 INTRODUCTION

In recent years, there has been more evidence of a growing emphasis on market orientation across policy fields, not least of which is education. Some attribute this trend as a growing concern for the production of marketable skills, and by extension, international competitiveness (McMurtry 1991). The term market orientation in education, however, is distinctive to studies of marketization, which focus specifically on school reforms related to financing or the diversification of school governance. Rather, the concept refers specifically to a growing emphasis on school choice, as a neutral market mechanism intended to improve educational equity and efficiency (Oplatka 2004; West and Ylönen 2010).

To summarize the underlying market rationale of this trend towards market orientation in education systems, user choice and consumer competition are argued to offer the best structure of incentives to improve service provision (Le Grand 2007). More specifically, the exertion of choice by students and their families is assumed to create external pressures that ultimately improve the effectiveness of schools (Chubb and Moe 1990; Friedman 1962). In addition, advocates have argued that choice and competition decreases the impact of social origin on educational outcomes by improving equal access to school options (Hanushek, Link, and Wößmann 2013; Wößmann et al. 2009).

Although market mechanisms have contributed to more effective or equitable outcomes in other areas of the public sector (see Dowding & John 2009), some view education as fundamentally different, lacking the natural checks and balances to warrant off market failure, and thus, weakening incentives for schools to improve (Oplatka 2004; Tummers et al. 2013). Instead, education is more likened to a public good rather than a market commodity or business (Grace 1994, quoted in Oplatka 2004: 145). One important distinction is that the education sector lacks a clear, singular objective compared to the private sector, wherein profit maximization is the guiding force of individual behavior. Rather, educational goals range from skill production and workforce integration on the one hand to fostering citizenship, developing social norms and promoting equal opportunity on the other.

Consequently, opponents of market orientation in education have extensively argued that the intended outcomes of market orientation in education are contingent upon a number of factors that, if not met, will otherwise contribute to unintended consequences that outweigh any benefits potentially gained from improving scholastic performance (cf. Gibbons, Machin, and Silva 2005; Gorard 1997). For example, socio-economic as well as geographic disparities are extremely likely to impact school choice decisions, and thus, lead to further social inequalities. As such, Ball (1993 p. 13) has referred to

the introduction of school choice as a ‘mechanism of class reproduction’, one that not only increases educational inequality, but also weakens social cohesion.

In addition to the wealth of literature on this topic, measuring educational outcomes and other indicators of market orientation in education have greatly improved, allowing researchers to test the efficiency and equity of education systems (Põder, Kerem, and Lauri 2013; Põder and Kerem 2012; Schütz, Ursprung, and Wößmann 2008; Wößmann et al. 2009). For example, the introduction of the OECD’s Programme for International Student Assessment (PISA) has greatly improved the collection and analysis of educational performance data. A worldwide study that continues to grow since its inception in 2000, PISA tests approximately 500,000 fifteen-year olds every three years on mathematics, science and reading competencies that students are expected to have at the end of compulsory education.

Despite some critique of potential bias or unreliability of this performance assessment over time (see Goldstein 2004; Jerrim 2012), the PISA study is widely used for the comparison of education systems and identification of promising policies or best practices for the promotion of scholastic achievement. In addition to performance data, additional information is provided from complementary student, parent and school questionnaires. Hence, PISA data provides measures for the operationalization of market-oriented conditions as well as the educational outcomes analyzed in this study (see Table 5 in the Annex for an overview).

To test the arguments put forward by both proponents and critics of market orientation in education, data from 21 country cases were collected from the 2009 PISA study and aggregated. Fuzzy Set Qualitative Comparative Analysis (fsQCA) was then used to systematically explore the conjunctural relationship between conditions and outcomes by drawing on set theory logic (Ragin 2000). Bridging qualitative and quantitative research methods, fsQCA is particularly well suited for the aims of this study. First, it is an appropriate method for macro-comparative research with a medium-sized number of country cases, as it explains specified conditions and outcomes in terms of their set relationship rather than by exploiting covariance. A second advantage is that QCA allows for the analysis of complex causality (Ragin 2000; Schneider and Wagemann 2012). In particular, QCA permits the inclusion of multiple conditions (i.e. conjunctural causation) that yield multiple and distinctive, yet mutually non-exclusive explanations for specified outcomes (i.e. equifinality) (Schneider and Wagemann 2012:78). Hence, market orientation conditions are modeled in combination with two additional conditions that have long been identified as key determinants of educational outcomes, namely social origin and school stratification.

Taken together, these conditions are particularly relevant for understanding cross-country variation with regard to performance and educational inequality. Subsequently,

the following section introduces a conceptual framework of market orientation of education systems and discusses expected outcomes on performance and educational inequality. Section 3 introduces the data and specifies models for identifying necessary and sufficient conditions for the outcomes measured. Section 4 presents results from the analysis and discusses configurations of school-level and country-level characteristics identified by the country cases included here. In conclusion, Section 5 summarizes the potential implications for these findings and also addresses issues related to their sensitivity to model specification, calibration and parameter changes.

2 MARKET ORIENTATION IN EDUCATION

One of the significant contributions of this study is the development of a conceptual framework for the analysis of market orientation in education. At the core of this framework is essentially *choice*, although it is modeled here as a component of market orientation rather than a single proxy. As a market mechanism, however, this term implies not only the supply of school choice options but also the demand exerted by families in selecting preferred schools – and thereby demonstrating ‘exit’ from less attractive school options. Implicit within this framework is also an additional mechanism that is less frequently demonstrated in empirical studies, namely *school responsiveness* to external pressures derived from the aforementioned school choice mechanisms. The following sections therefore outline the main arguments put forward here on the effectiveness of school choice (Section 2.1.) and the role of school responsiveness (Section 2.2.). In addition to market-oriented conditions, Section 2.3 introduces two additional causal conditions for the analysis of performance and educational inequality, including stratification and social origin.

2.1 On the Effectiveness of School Choice

As Breen et al. (2005, p.227) rightly pointed out, educational choice is guided by ‘expected benefits, costs and probability of success for different educational alternatives’. Thus, the effectiveness of choice is dependent on a number of assumptions that alter this cost-benefit calculation. In particular, this framework highlights three facets, including that there are 1) qualitative differences between school options, 2) perfect and symmetric information provided to families concerning school options and that socio-economic or geographic disparities do not limit the access of families to school options. These facets are further discussed below.

The first assumption requires that there is qualitative difference between school options. Although previous studies have emphasized the effect of different school characteristics, such as school governance and financing, on educational outcomes, these indi-

cators do not necessarily capture the qualitative difference understood by students and their families when making enrollment decisions. Moreover, defining what is considered a ‘better’ school option carries different values for families – whether based on curricula, teaching styles or a religious affiliation, to name a few. For example, Oplatka (2004, p.149) notes that many parents make their decisions based on ‘the beliefs, ideas, and impression they have of each school, image elements that are not necessarily the result of the school’s efficiency’.

A second assumption is that students and their families are fully aware of their school options and the differences between them, i.e. there is *perfect and symmetric information* between families concerning school options. The reason for this is because market failure is more likely to occur without complete information between service providers and consumers (see Akerlof 1970). Although this is a basic economic understanding of markets, too often this facet is neglected in education policy discourse on school choice. This is particularly surprising given the numerous studies that have shown how socio-economic and ethnic disparities amongst families have been widely demonstrated when it comes to information concerning educational choices (Adnett, Bougheas, and Davies 2002; Jackson, Jonsson, and Rudolphi 2011; Oplatka 2004; West, Hind, and Pennell 2004).

Finally, it is imperative that parents have *equal access* to school options. For example, geographic disparities may impact school performance as well as inhibit accessibility, and thus, contribute to unequal access for families. In particular, studies of student achievement in the US have demonstrated strong neighborhood and peer effects (e.g. Hanushek, Kain, Markman, & Rivkin, 2003). In addition, structural aspects of school systems have also been shown to contribute to unequal access, particularly with regard to stratification or selectivity (Becker 2003; Braga, Checchi, and Meschi 2011; West et al. 2004). The same is true of socio-economic disparities, especially if there are additional costs associated with school options (Waslander, Pater, and van der Weide 2010).

2.2 Choice and School Responsiveness

As the previous section highlights, there are many potential ‘market failures’ that may limit the effectiveness of school choice – or contribute to unintended effects if these assumptions are not met. Especially relating to education, it is also extremely unlikely that all enrolment choices are driven by the same values, which intimates an additional type of market failure in addition to the assumptions concerning the supply and demand mechanisms of choice. This aspect relates to the difficulty of translating school choice into clear demands, and by doing so, engendering *school responsiveness*.

School response is a primary mechanism whereby school choice is expected to improve performance; however, it is largely left out of the school choice debate. One rea-

son for this is perhaps the limitations concerning data availability. Although there is currently no measure available in the PISA study, this section elaborates on key school-level characteristics that indicate schools responsiveness. These include school autonomy and school accountability, which are argued here as complements to school choice in market-oriented school systems.

First, school level changes in direct response to pressures extending from choice are much more likely – and more quickly – to occur if schools have the *autonomy* to make school-level decisions. Thus, autonomy is not necessarily equated with school responsiveness, but may serve as a proxy, as it indicates the capacity of schools to independently respond to external pressures extending from the choice demands exerted by students and parents.

Despite much research dedicated to this topic in education research, research has shown that school autonomy alone does not necessarily imply better educational outcomes. Direct benefits are highly disputed amongst education economists. Furthermore, previous studies have shown that autonomy does not have a positive impact on performance in all countries (see Falch and Fischer 2010; Galiani and Schargrodsky 2002; Hanushek, Link, and Wößmann 2013). Hence, some argue that school autonomy may negatively impact educational outcomes if schools are not also held accountable for their output (Waslander et al. 2010; Wößmann et al. 2009). From this perspective, *accountability* is an equally important component of market orientation in education.

In addition to serving as a complement to autonomy, school accountability also supports school choice by improving parental access to information on school options as well as applying additional pressure on schools to perform better and thereby increase competition. For example, UK league tables that publicly rank school performance can pressure schools to improve performance in order to attract students as well as punish and shame low performers (Breen and Jonsson 2005; Simola et al. 2009). In more severe cases, accountability can also serve to punish poor performers, especially when confronted with the ultimatum: to improve or shut down.[1] Although other accountability practices, such as monitoring or standardization, may also positively and directly impact educational outcomes, the practices described here (i.e. with an emphasis on testing, public reporting and the use of standardized testing to track progress) are considered to be the main forms of accountability that complement market orientation in education.

[1] One example case of such strict accountability measures is evidenced by recent New York City school reforms. During the 12 years of Mayor Bloomberg’s administration, 162 schools were reportedly closed, roughly 10% of schools in the district between 2001-2013. The majority of these so-called failing schools were community schools that reopened as smaller charter on independent (non-private) schools.

2.3 Social Origin and School Stratification

Although market orientation is the main focus of this study, one cannot neglect the vast literature that already identifies key contributing factors to the educational outcomes performance and inequality.[2] Specifically, two socio-structural explanations for these outcomes are social origin and school stratification. Unlike previous studies that have estimated the net effect of these conditions on educational outcomes, this study is primarily interested in the configuration of market-oriented conditions that together with socio-structural conditions are sufficient for explaining these outcomes.

To this end, fsQCA permits the analysis of complex causality so as to aptly reflect not only the relationship between market-oriented conditions and educational outcomes, but also how the socio-structural context may also influence the effect of market-oriented education systems on these outcomes. Furthermore, it is assumed that the socio-structural context is also likely to independently explain cross-country differences concerning educational performance and inequality as well as difference amongst countries with market-oriented education systems.

First, enrolment decisions are largely dependent on early educational achievement, which has been tightly linked to *social origin*. Often modeled as a proxy for individual or household resources, the association between social origin and educational achievement has been theorized as the transmission of social, economic and cultural capital (for more recent sociological studies in education, see Becker 2003; Breen et al. 2009; Dirk et al. 2000).[3] Following arguments put forward by Boudon (1973) concerning primary effects of social origin, children from wealthier family backgrounds tend to have more books at home, have parents who spend more time on homework and who promote the value of education. For these reasons, intergenerational social reproduction is often evident, regardless of cognitive ability (Bowles and Gintis 2001; Breen and Jonsson 2005).

Thus, social origin has been well-documented as a key determinant for educational outcomes, both with regard to performance (Brunello and Checchi 2007; Gibbons et al. 2005) and educational inequality (Van de Werfhorst and Mijs 2010; Mare 2014). While social origin contributes to educational outcomes directly, social origin is also more likely to be reproduced in countries with more market-oriented education systems. That is, students of more affluent backgrounds are more likely to be adequately informed of

---

[2] For example, Põder et al. (2013) also uses QCA to test how choice impacts outcomes of efficiency and equity; however, they focus primarily on conditions related to school governance, rather than specifying the impact of market mechanisms. Moreover, they do not account for the structural or social context of education systems, which I argue is important for appropriately modeling the effects of choice on these outcomes.

[3] Classic texts that have greatly impacted the field also include Blossfeld & Shavit (1993), Boudon (1973), Bourdieu & Passeron (1977), Bowles & Gintis (1977), Breen & Goldthorpe (1997) and Coleman et al. (1966).

school options and have complete access to better choice options in order to improve the effectiveness choice by ‘exiting’ from less desirable schools (Gewirtz, Ball, and Bowe 1995; Gorard 1997; Jackson 2013). Moreover, a wider distribution of performance scores will reduce the average performance score for each country.

Although education systems are thought to mediate existing social inequalities, this framework argues that structural aspects of school systems also tend to reproduce them. In addition to market orientation as argued here, previous research has shown that, *stratification* within school systems greatly contributes to educational inequality (Breen and Jonsson 2005; Freitag and Schlicht 2009; Hillmert and Jacob 2010; Schütz et al. 2008; Shavit and Müller 1998; Van de Werfhorst and Mijs 2010; West and Ylönen 2010). In short, highly stratified education systems exhibit multiple and distinct school tracks, wherein students are streamed into one track at an early age of selection (Shavit and Müller 1998). Not only does stratification restrict school options for families, but it also increases the qualitative differences between school options. In turn, these processes limit the competition between schools, so that schools no longer compete for the same group of students. Thus, the combination of market orientation and stratification are not compatible characteristics of education systems and are extremely likely to produce undesirable outcomes in terms of performance or inequality.

3 MODELING CONDITIONS AND OUTCOMES

In the previous sections, I have introduced five causal conditions that are modeled in this paper for the outcome performance and educational inequality. First, school choice, autonomy and accountability are considered as the key complementary school-level characteristics of market-oriented education systems. Second, the distribution of social origin and the degree of school stratification are two additional country-level characteristics that represent socio-structural differences across countries. This section therefore introduces how these conditions and outcomes are operationalized through a process called calibration of these conditions and outcomes.

In short, calibration is a necessary step of fsQCA, which is based on set-theoretic logic. Thus, the subset relation between X and Y is determined by extensive within-case knowledge and across-case comparative analysis. To determine set membership for conditions and outcomes, each case is given a value to indicate whether that case is a member of a set (value = 1) or not a member of a set (value = 0). For example, countries that perform high on the PISA reading scale are given a score of 1, whereas countries not belonging to the high performance set (i.e. low performers) are given a score of 0. However, not all conditions and outcomes are conceptualized as binary. Moreover, this dichotomization has been criticized for losing information with regard to the degree to which a case belongs to a specified set. Thus, a combination of fuzzy set theory and

QCA (developed by Ragin 2000) is employed here, as it allows for the calibration of partial membership within a set from 0 (indicating full exclusion from a set) to 1 (indicating full membership within a set).

Fuzzy set membership values are then derived through a process of calibration via logistical transformation. This process adjusts raw data measures to a value score between 0 to 1 with 0.5 marking the cross-over point between membership and non-membership within a set (Ragin 2008b:90). In short, calibration requires the user to identify three thresholds: an upper threshold (indicating full membership), a lower threshold (indicating non-membership) and a crossover point (which distinguishes between the two sets. Although raw data is derived from quantitative indicators provided by PISA 2009, these thresholds are essentially qualitatively defined.

As a multi-method approach, calibration combines elements from both variable-oriented and case-oriented research. Moreover, this method demonstrates a constant ‘dialogue between ideas and evidence’ in which the contours of these sets are re-shaped and re-defined in order to gain precision (Ragin and Sonnett 2004:55; Schneider and Wagemann 2012:11). However, the systematic and transparent application of these criteria is of utmost importance and should be based on external criteria set by collective scientific or social knowledge as well as the substantive and extensive knowledge of the cases themselves. If no external criteria apply, one might also consider measurable thresholds at the sample mean or by searching for an endogenous gap within the case samples. The threshold points are provided in Table 1, followed by an explanation for the calibration of market-oriented conditions, additional causal conditions and outcomes in the subsequent sections. A complete raw data table (see Table 6) and table with calibrated scores for each case (Table 7) are also located in the Annex.

Table 1: Qualitative Thresholds of Additional Conditions and Outcomes

	Indicator	*Full Non-Membership*	*Crossover Point*	*Full Membership*
		Outcomes		
Pisa	*Performance*	470	492	540
IEO	*Inequality of Educational Opportunity*	25	38	55
		Market-Oriented Causal Conditions		
C	*Choice*	20	60	90
Aut	*School Autonomy*	-1	0	1
Acc	*School Accountability*	30	60	80
		Other Causal Conditions		
S	*Stratification*	0	40	80
E	*ESCS Index*	30	62	80
G	*Gini Index*	20	31	40

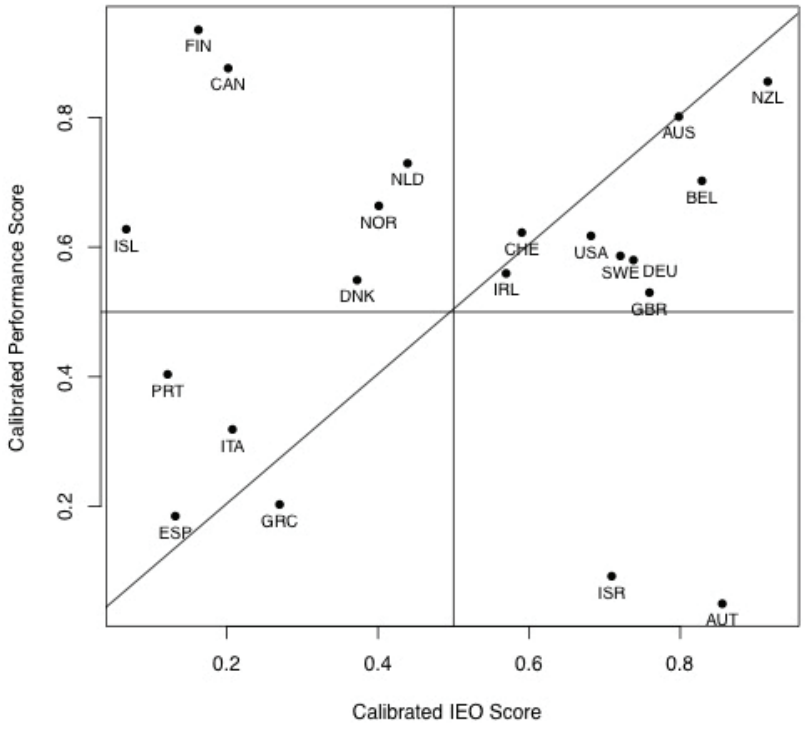
*Note: All indicators are derived from the PISA 2009 Dataset with the exception of the Gini Index Score, which is derived from the OECD Income Distribution Poverty Dataset.

3.1 Calibration of Outcomes

Following previous studies using PISA data (see Table 4 in the Appendix for main secondary sources referenced), performance is measured by weighting the plausible reading score provided by PISA. The crossover point is set just below the OECD average (493), as most cases tend to fall around or just above this value. The inequality of educational opportunity (IEO) is measured by the *slope* of the social gradient, or the score point difference in PISA reading scores associated with one unit change on the PISA constructed index for Economic, Social and Cultural Status (ESCS). As with the outcome performance, the OECD average serves as an external criteria for distinguishing set membership for the outcome high educational inequality (OECD 2010a).

Figure 1 demonstrates the calibration of the outcomes performance and educational inequality for each country case. In the upper right-hand corner of the XY plot are the more liberal, market-oriented countries, which demonstrate a strong trade-off between high performance and high inequality. Most Mediterranean countries cluster in the lower left-hand corner, representing a trade-off between low inequality and low performance. In contrast, the lower right-hand corner of the XY plot indicates countries with the least desirable combination of low performance and high inequality. On the left side, the Nordic countries are situated in the upper left-hand corner of the XY plot, signifying the most desirable combination of outcomes, namely relatively high performance and low inequality. Most countries of this study therefore demonstrate a trade-off between outcomes.

Figure 1: Calibrated Performance and IEO Scores



3.2 Calibration of Conditions

As discussed in the theoretical section, market-oriented conditions consist of measures for choice, autonomy and accountability. Measures for each of these indicators are derived from the PISA school questionnaire and aggregated using student final weights for each country case. Here, school availability serves as a basic indicator of whether choice is provided. While this measure does not directly account for all of the assumptions discussed in the theoretical section, such processes are situated at micro- and meso-levels and do not correspond with the primary research interest of this paper. Thus, a simple measure of choice is determined by the percentage of students in schools that have at least two or more school alternatives in their area.[4]

The crossover point for aggregated scores is set slightly lower than the OECD average at 65. Based on this definition, roughly a two-third of the countries in this sample exhibit choice, including most Anglo-American countries as well as Belgium, Denmark, Germany, Israel, Italy, the Netherlands and Spain. School availability alone does not only indicate market orientation, but may also include highly stratified school systems with multiple school tracks. In contrast, most Nordic and Mediterranean countries exhibit lower percentages, which may also reflect the difficulties of providing multiple school options in predominantly rural areas.

To account for the second component of market orientation in education, the OECD has created an index of school autonomy based on the PISA school questionnaire concerning school decision-making capacity with regard to budget, personnel and academic content. This index specifically refers to decision-making capabilities at the school level and thus provides a holistic indication of whether schools have the capability to respond to pressures extended from school choice.

With the exception of Belgian and the Netherlands, most European education systems do not have a tradition of school autonomy (Eurydice 2007). Rather, most countries experienced widespread decentralization during the 1980s or 1990s (Martens, Mayer, and Hurrelmann 2007; Horn 2012; West, Hind, and Pennell 2004). As Hanushek et al. (2013) have recently pointed out, the study of school autonomy is complicated by the fact that countries have taken different approaches to school autonomy since the 2000s. Interestingly, school autonomy appears more varying over time than

[4] This number is provided by the 2009 PISA school questionnaire. In addition, this question is also asked in the corresponding 2009 PISA parent questionnaire, which provides not only indicators of parental awareness of school availability but also their perception of school quality. Only a fraction of countries, however, participate in the parent questionnaires. Thus, choice is measured here by the provision of school options only. A second follow-up study, however, is in development using the parent questionnaire to model interaction effects – and processes identified by this conceptual framework – at the individual and school level within specific countries.

most of the other school characteristics observed here, with some countries increasing school autonomy since the introduction of PISA while others have increased decision-making capabilities of schools (e.g. in Belgium, Canada and Finland). In 2009, the countries with the school autonomy above the OECD average are Australia, Denmark, Great Britain, Iceland, the Netherlands, New Zealand, Sweden and the US.

Finally, school accountability accounts for the third market-oriented condition. As previously discussed, there are multiple forms of accountability, yet the practices identified here are considered as key complements to market orientation in education by improving both the effectiveness of choice as well as school responsiveness. These include the percentage of students in schools that (a) administer standardized test, (b) publicly post results and (c) use results for tracking school's progress. Values provided from PISA are standardized and averaged to derive a country-level score for accountability. The crossover point is set slightly above the OECD average at 60. Countries in the sample above this threshold include most Anglo-American countries as well as most Nordic countries with the exception of Finland, which relies more on monitoring practices than standardized testing and reporting.

Although many countries in this sample exhibit high accountability, not all are strongly market-oriented, if at all. To summarize, countries that exhibit all components of market orientation in education include Australia, Denmark, Great Britain, New Zealand, the Netherlands and the US. On the one hand, some countries (e.g. Iceland and Sweden) exhibit autonomy and accountability, but not choice. Others exhibit accountability, but no choice (e.g. Norway and Portugal). On the other hand, some countries exhibit choice and accountability, but no autonomy (e.g. Canada and Germany). Others exhibit choice but neither autonomy nor accountability (e.g. Belgium, Ireland, Italy, Spain). Although individual components of market orientation can directly impact the outcomes performance and inequality, the cases do not represent market orientation in education without the presence of all three conditions.

3.3 Calibration of Additional Conditions

Two additional conditions are included for analysis. First, *stratification* is measured by the percentage of students in schools that admit students based on academic record (which is also highly associated with age of selection and number of school tracks). This is most evident in Austria, Germany, Israel and the Netherlands and Switzerland. All of these countries have preserved multiple school tracks that streams students into one of many school programs based on previous academic achievement. The process is highly selective, beginning as early as age ten in Germany and Austria after only five years of primary schooling and at age twelve in Belgium, the Netherlands and Switzerland after eight years of primary schooling. Although selectivity is high in Israel, stu-

dents attend comprehensive schooling until age 15, after nine years of primary and lower secondary schooling. Once sorted into a school track, however, opportunities for higher education as well as in the labor market are heavily tied to the degree of standardization and credentials obtained from these tracks (Shavit and Müller 1998).

A second condition included here is social origin, which is most often operationalized in terms of socio-economic status, based on parental education, occupational prestige or family income (Kerckhoff 2001). Similarly, PISA provides an Economic, Social and Cultural Status (ESCS) index based on parent's education, occupation and household possessions, which they estimate to explain roughly 10-20% of variance in performance scores and have greater explanatory power than other predictors in the dataset, including cognitive ability, study habits, learning preferences as well as school environment (OECD 2010a). For the outcome performance, this indicator is aggregated as the percentage of students within a country that scores above the OECD average on the ESCS index. Countries with more than 60% of students that score above the OECD average on this index are considered to have a high level of social origin and include Australia, Canada, Denmark, Finland, Germany, Great Britain, Iceland, the Netherlands, Norway and Sweden.

For the outcome educational inequality, which is derived using the ESCS index, a better measure is the overall distribution of socio-economic background, or the degree of social inequality. This is measured by the Gini coefficients for each case after taxes and transfers, as provided by the OECD for the late 2000s. In short, more social inequality is expected to also contribute to high educational inequality. Countries that demonstrate higher levels of social inequality at the country level within this sample include Australia, Canada, Spain, Great Britain, Greece, Ireland, Israel, Italy, New Zealand, Portugal and the US.

4 Results of Tests for Necessary and Sufficient Conditions

To analyze the set relationship between these five conditions and the two specified outcomes, two assessments are conducted: First, a test for necessary conditions, and in a second step, a test for sufficient conditions. A condition is considered necessary if, whenever the outcome is present, the condition is also present, or formally: membership in X is not smaller than in Y. In contrast, a condition is sufficient if, whenever the condition is present, the outcome is also present, or membership in X is greater than in Y (Schneider and Wagemann 2012:74). For both necessity and sufficiency, a consistency measure is used to assess the degree to which a given condition is a subset or superset of the outcome, which Schneider & Wagemann (2012) recommends a 0.9 cut-off for the consistency score. Testing all possible combinations of causal conditions including interactions between causal conditions, there was no single condition that returned a con-

sistency score above this 0.9 cut-off for the outcomes performance or inequality. However, for the outcome performance, the combination of choice, autonomy and accountability yielded a 0.906 consistency score. Necessity suggests that high performance occurs when market orientation is present, as the outcome is a subset of the condition (Braumoeller and Goertz 2000)

In a second step, an enhanced Quine McClusky minimization algorithm provided by the QCA package in R (Duşa and Thiem 2013; Thiem and Duşa 2012) is employed to derive the prime implicants, or key explanatory variables deemed sufficient for the specified outcome. The dichotomous truth table is a common feature of fsQCA papers, as it reveals the possible combinations of conditions for the observed country cases as well as hypothetical cases, or logical remainders (see Table 2). As with the test for necessary conditions, the parameters of fit for these models are defined by consistency scores, which demonstrate the extent to which a perfect subset relation is approximated. Based on a relatively high cut-off score of 0.89 for consistency, the results of each model yields a solution that identifies the possible combinations of causal conditions that together are sufficient for the specified outcomes.

Table 2: Dichotomous Truth Table Including Ideal Types

C	*Aut*	*Acc*	*S*	*E*	*G*	*Cases*	*Consistency Score for Performance*	*Consistency Score for Inequality*
1	1	1	0	0	1	GBR, NZL, USA	0.938	0.967
0	1	1	0	1	0	ISL, SWE	0.928	0.844
0	0	0	1	0	1	AUT, CHE	0.693	1.000
1	0	0	0	0	1	ESP, IRL, ITA	0.771	0.724
0	0	0	0	0	1	GRC	0.736	0.707
1	1	1	0	1	1	AUS	0.948	0.967
1	1	1	0	1	0	DNK	0.948	0.896
1	0	0	1	0	1	DEU	0.831	0.940
1	0	0	0	0	0	BEL	0.771	0.836
1	0	1	1	0	1	ISR	0.801	1.000
1	1	1	1	1	0	NLD	0.914	0.898
0	0	0	0	1	0	FIN	0.905	0.678
0	0	1	0	1	0	NOR	0.918	0.722
1	0	1	0	1	1	CAN	0.944	0.798
0	0	1	0	0	1	PRT	0.857	0.780

*Note: Grey represents configurations that yield a consistency score above the cut-off point.

As this study aims to test two separate outcomes, two models are depicted. For each outcome, multiple sufficient configurations are identified for each solution given. Here both the parsimonious and intermediate solutions are provided. Configurations identified by both solutions include logical remainders, the difference being the assumptions

under which they are derived. Both are subject to counterfactual, simplifying assumptions; however, the intermediate solution includes only easy counterfactuals, or those that are based on empirical evidence in combination with theoretical knowledge concerning directional assumption (Schneider and Wagemann 2012:168). Thus, the intermediate solution better illustrates the theoretical framework presented here, but this model is limited in terms of the extent of causal interpretability provided by the parsimonious solution (Baumgartner 2014:16). As the discussion follows, however, the configurations identified by each of these model solutions are not necessarily irreconcilable, although differences between them may point to the difficulty of drawing further inferences regarding causal dependencies. Nonetheless, the configurational association between school-level characteristics and socio-structural aspects across countries is the primary objective of this paper, which further contributes to the literature on school choice and educational inequality.

For each configuration identified by the solutions, upper case letters indicate the presence of a condition, while lower case letters indicate the absence of a condition. Using Boolean algebraic notation, a multiplication sign (*) represents the logical ‘AND’ operation for the conjunction between conditions and the addition sign (+) represents the logical ‘OR’ operation for multiple configurations. In addition, a consistency and coverage score are provided for each configuration. While consistency scores demonstrate the empirical relevancy the identified configuration, coverage scores are only meaningful if consistency scores are above the suggested 0.85 cut-off (Schneider & Wagemann 2012).

Table 3: Sufficient Conditions and Solution for the Outcome Performance

Model 1: *Perf =f*(C, Aut, Acc, S, E)					
Solution Type (cons., cov.)	*Cons.*	*Raw Cov.*	*Unique Cov.*	*Configurations*	*Cases*
Parsimonious (0.849, 0.845)	0.888	0.756	0.133	ESCS	AUS, CAN, DNK, FIN ISL, NLD, NOR, SWE
	0.874	0.520	0.088	C*ACC*s	AUS, CAN, DNK, GBR, NZL, USA
Intermediate (0.855, 0.830)	0.888	0.756	0.350	ESCS	AUS, CAN, DNK, FIN ISL, NLD, NOR, SWE
	0.888	0.481	0.074	C*AUT*ACC*s	AUS, DNK, GBR, NZL, USA

In the first test of sufficiency for the outcome high performance (*perf*), results are provided in Table 3. These conditions included in this model are choice, autonomy and accountability as indicators or market orientation as well as stratification and social origin. The parsimonious solution yields two configurations. The first of which indicates that high performance is conditional on a high share of students that have high

social origin. Ideal cases for this configuration include most of the Nordic countries as well as Australia and Canada. Based on numerous previous studies, this relationship is an expected finding. The second configuration, however, is of more interest for this study, as it indicates that high performance is also conditional on certain aspects of market orientation, in particular the combination of choice and accountability in the absence of stratification. The ideal cases for this configuration include most of Anglo-American countries as well as the Denmark.

Here, autonomy is not identified as a prime implicant; however, the intermediate solution yields quite similar results. The main difference is that autonomy is also included in the second configuration as a prime implicant. Thus, Canada is not included as an ideal case, as it does not exhibit high autonomy, according to the PISA 2009. However, this might reflect an issue in the data, as Canada does exhibit high autonomy in the preceding PISA studies (see also Hanushek, Link, and Wößmann 2013). Nonetheless, results support the hypotheses that both high social origin and market orientation are sufficient conditions for the outcome high performance.

Table 4. Sufficient Conditions and Solution for the Outcome Performance

Model 2: *IEO =f*(C, Aut, Acc, S, G)					
Solution Type (cons., cov.)	*Cons.*	*Raw Cov.*	*Unique Cov.*	*Configurations*	*Cases*
Parsimonious	0.931	0.411	0.140	aut*S	AUT, CHE, DEU, ISR
(0.919, 0.701)	0.928	0.561	0.289	AUT*G	AUS, GBR, NZL, USA
Intermediate	0.931	0.411	0.205	aut*S	AUT, CHE, DEU, ISR
(0.936, 0.657)	0.969	0.452	0.245	C*AUT*ACC*G	AUS, GBR, NZL, USA

In the second test of the sufficiency for the outcome high inequality of educational opportunity (*IEO*), choice, autonomy, accountability, stratification and social inequality are tested. Again, two solutions are reported here (see Table 4). In the first configuration, high stratification in the absence of school autonomy is a sufficient condition for the outcome high educational inequality. This also supports previous findings that school stratification is a strong determinant of high educational inequality, which is evidenced here by Austria, Germany, Israel and Switzerland (identified as highly stratified and having low school autonomy).

The second configuration includes two prime implicants, autonomy and social inequality. Although this solution does not include other core market-oriented conditions, it is interesting that the country cases derived for this configuration are indeed the market-oriented cases identified within the sample. The intermediate solution replicates both configurations with the same ideal cases, although the second configuration identifies all market-oriented conditions in combination with social inequality as the prime implicants.

These results are interesting in two regards. First, this finding supports the hypothesis that although performance is conditional on market orientation, this combination is more likely to come at the cost of educational inequality. Second, this relationship is strengthened by the presence of high social inequality, suggesting that market orientation in education reinforces social inequalities rather than alleviating them. Because of the discrepancy between solutions, however, it is not possible to interpret causal dependency between this outcome and conditions.

5 CONCLUSIONS AND IMPLICATIONS FOR FURTHER RESEARCH

In conclusion, a few initial observations are made concerning market orientation in education. First, a trend toward market orientation in education has been well documented in previous studies and is further demonstrated here, as many of the cases in this sample exhibit market orientation based on the presence of school choice, autonomy and accountability. Second, the cases in this sample also confirm a potentially strong trade-off between high performance and high educational inequality, especially for market-oriented education systems. Finally, results support the hypotheses concerning the relationship between market orientation in education and the outcomes performance and educational inequality. Although market orientation in education may be associated with high performance, it is more likely to reproduce social inequalities than mediate them.

Despite these initial results, any causal relationship between the conditions and specified outcomes should be inferred with some caution. In addition to the discussion of parsimony and causation, Krogslund, Choi, and Poertner (2014) have also shown that fsQCA results can be extremely sensitive to changes in the parameters set by the user as well as to model specification error and measurement error. Although these concerns have been extensively discussed in the literature (see also Hug 2013; Lucas and Szatrowski 2014; Rihoux and Marx 2013; Skaaning 2011), a user-friendly program for R (*stcm*) has only more recently been developed by Chris Krogslund, providing fsQCA users with diagnostic tools for identifying potential inference-related issues. The functions provided by this program essentially conduct 1) sensitivity analyses of threshold parameters for Boolean minimization and 2) Monte Carlo simulations that introduce one or more variables to the data that are comprised of random set membership scores.

Similar to the findings of Krogslund, Choi, and Poertner (2014) in a comparison of QCA applications, the solutions presented in this paper are sensitive to both parameter changes as well as model specification. In particular, a lower, yet still acceptable threshold for the minimum sufficiency inclusion score (0.75) may yield single components of market-oriented conditions as the essential prime implicants for the outcomes performance and educational inequality rather than market orientation as a whole. This

is especially true for the outcome performance, and indeed the only robust set relationship identified in the solutions is between high stratification and high educational inequality.

Despite considerable effort to assign theoretically meaningful and accurate values, it is not possible to conclude with certainty whether the prime implicant for either outcome is indeed market orientation in education or merely a facet of it. This paper attempts to present the concept of market orientation rather holistically in order to identify potential pitfalls of market orientation in education; however, no single country in this sample entirely prescribes to the assumptions expressed in the theoretically section. Even countries identified as having market-oriented education systems demonstrate much within-country variance or regional disparities. Hence, two issues of interest for further causal inference are disentangling processes occurring at micro- and meso-levels and measuring the effect sizes of these cross-level interaction terms.

These potential shortcomings for deriving causal inference from this data and method of analysis, however, are certainly not a critique of the methodology itself. Even short of this research goal, fsQCA proves to be a useful exercise for exploring the configurational relationship between country-level indicators of market orientation in combination with additional causal conditions for the outcomes performance and educational inequality. By allowing for the analysis of complex causality, this study innovatively demonstrates that the outcomes performance and educational inequality are conditional on the combination of the structural context of school systems – particularly market orientation in education – and the wider social context.

REFERENCES

Adnett, Nick, Spiros Bougheas, and Peter Davies. 2002. “Market-Based Reforms of Public Schooling: Some Unpleasant Dynamics.” *Economics of Education Review* 21(4): 323–30.

Akerlof, George A. 1970. “The Market for ‘Lemons’: Quality Uncertainty and the Market Mechanism.” *Quarterly Journal of Economics* 84(3): 488–500.

Ball, Stephen J. 1993. “Education Markets, Choice and Social Class: The Market as a Class Strategy in the UK and the USA.” *British Journal of Sociology of Education* 14(1): 3–19.

Baumgartner, Michael. 2014. “Parsimony and Causality.” *Quality & Quantity*.

Becker, Rolf. 2003. “Educational Expansion and Persistent Inequalities of Education: Utilizing Subjective Expected Utility Theory to Explain Increasing Participation Rates in Upper Secondary School in the Federal Republic of Germany.” *European Sociological Review* 19(1): 1–24.

Bol, Thijs, and Herman G Van de Werfhorst. 2013. *The Measurement of Tracking, Vocational Orientation, and Standardization of Educational Systems: A Comparative Approach*. Amsterdam.

Braga, Michela, Daniele Checchi, and Elena Meschi. 2011. *Institutional Reforms and Educational Attainment in Europe*. Amsterdam.

Braumoeller, Bear F, and Gary Goertz. 2000. “The Methodology of Necessary Conditions.” *American Journal of Sociology* 44(4): 844–58.

Breen, Richard, and Jan O Jonsson. 2005. “Inequality of Opportunity in Comparative Perspective: Recent Research on Educational Attainment and Social Mobility.” *Annual Review of Sociology* 31(1): 223–43.

Breen, Richard, Ruud Luijkx, Walter Muller, and Reinhard Pollak. 2010. “Long-Term Trends in Educational Inequality in Europe: Class Inequalities and Gender Differences.” *European Sociological Review* 26(1): 31–48.

Brunello, Giorgio, and Daniele Checchi. 2007. “Does School Tracking Affect Equality of Opportunity? New International Evidence.” *Economic Policy* 22(52): 781–861.

Chubb, John E, and Terry M Moe. 1990. *Politics, Markets and American Schools*. Washington, D.C: Brookings Institute.

Dowding, Keith, and Peter John. 2009. “The Value of Choice in Public Policy.” *Public Administration* 87(2): 219–33.

Duşa, Adrian, and Alrik Thiem. 2013. “QCA: Qualitative Comparative Analysis.”

Eurydice. 2007. *School Autonomy in Europe*. Brussels.

Falch, Torberg, and Justina A V Fischer. 2010. *Public Sector Decentralization and School Performance: International Evidence*. Hamburg.

Freitag, Markus, and Raphaela Schlicht. 2009. “Educational Federalism in Germany: Foundations of Social Inequality in Education.” *Governance: An International journal of Policy, Administration and Institutions* 22(1): 47–72.

Friedman, Milton. 1962. “The Role of Government in Education.” In *Capitalism and Freedom*, Chicago: University of Chicago Press.

Galiani, Sebastian, and Ernesto Schargrodsky. 2002. “Evaluating the Impact of School Decentralization on Education Quality.” *Economia* 2(2): 275–314.

Gewirtz, Sharon, Stephen J Ball, and Richard Bowe. 1995. *Markets, Choice and Equity in Education*. London: Open University Press.

Gibbons, Stephen, Stephen Machin, and Olmo Silva. 2005. “Competition, Choice and Pupil Achievement.” *Journal of the European Economic Association* 6(4): 912–47.

Goldstein, Harvey. 2004. “International Comparisons of Student Attainment: Some Issues Arising from the PISA Study.” *Assessment in Education* 11(3): 319–30.

Gorard, Stephen. 1997. *School Choice in an Established Market*. Aldershot: Ashgate.

De Graaf, Nan Dirk, Paul M De Graaf, and Gerbert Kraaykamp. 2000. “Parental Cultural Capital and Educational Attainment in the Netherlands : A Refinement of the Cultural Capital Perspective.” *Sociology of Education* 73(2): 92–111.

Grace, G. 1994. “Education Is a Public Good: On the Need to Resist the Domination of Economic Science.” In *Education and the Marketplace* , eds. D. Bridges and T. H. McLaughlin. London: Falmer Press, 3–16.

Le Grand, Julian. 2007. *The Other Invisible Hand: Delivering Public Services Through Choice and Competition*. Princeton: Princeton University Press.

Hanushek, Eric A, John F Kain, Jacob M Markman, and Steven G Rivkin. 2003. “Does Peer Ability Affect Student Achievement?” *Journal of Applied Econometrics* 18(5): 527–44.

Hanushek, Eric A, Susanne Link, and Ludger Wößmann. 2013. “Does School Autonomy Make Sense Everywhere? Panel Estimates from PISA.” *Journal of Development Economics* 104(6185): 212–32.

Hillmert, Steffen, and Marita Jacob. 2010. “Selections and Social Selectivity on the Academic Track: A Life-Course Analysis of Educational Attainment in Germany.” *Research in Social Stratification and Mobility* 28(1): 59–76.

Hug, S. 2013. “Qualitative Comparative Analysis: How Inductive Use and Measurement Error Lead to Problematic Inference.” *Political Analysis* 21(2): 252–65.

Jackson, Michelle, ed. 2013. *Determined to Succeed? Performance, Choice and Education.* Stanford, CA: Stanford University Press.

Jackson, Michelle, Jan O Jonsson, and Frida Rudolphi. 2011. “Ethnic Inequality in Choice-Driven Education Systems: A Longitudinal Study of Performance and Choice in England and Sweden.” *Sociology of Education* 85(2): 158–78.

Jerrim, John. 2012. “The Reliability of Trends over Time in International Education Test Scores: Is the Performance of England’s Secondary School Pupils Really in Relative Decline?” *Journal of Social Policy* 42(02): 259–79.

Kerckhoff, Alan C. 2001. “Education and Social Stratification Processes in Comparative Perspective.” *Sociology of Education* 74(2001): 3–18.

Krogslund, C., D. D. Choi, and M. Poertner. 2014. “Fuzzy Sets on Shaky Ground: Parameter Sensitivity and Confirmation Bias in fsQCA.” *Political Analysis*: 1–21.

Lucas, S. R., and a. Szatrowski. 2014. “Qualitative Comparative Analysis in Critical Perspective.” *Sociological Methodology* 44(1): 1–79.

Mare, Robert D. 1981. “Change and Stability in Educational Stratification.” *American Sociological Review* 46(1): 72–87.

Martens, Kerstin, Peter Mayer, and Achim Hurrelmann. 2007. *Transforming the Golden-Age Nation State*. New York: Palgrave.

McMurtry, John. 1991. “Education and the Market Model.” *Journal of Philosophy of Education* 25(2): 209–17.

OECD. 2010a. II *PISA 2009 Results : Overcoming Social Background*. Paris: OECD Publishing.

———. 2010b. IV *PISA 2009 Results: What Makes a School Successful?* Paris: OECD Publishing.

———. 2010c. I *PISA 2009 Results: What Students Know and Can Do*. Paris: OECD Publishing.

Oplatka, Izhar. 2004. “The Characteristics of the School Organization and the Constraints on Market Ideology in Education: An Institutional View.” *Journal of Education Policy* 19(2): 143–61.

Põder, Kaire, and Kaie Kerem. 2012. “School Choice and Educational Returns in the EU: With a Focus on Finland and Estonia.” *Baltic Journal of European Studies* 2(2): 65–86.

Põder, Kaire, Kaie Kerem, and Triin Lauri. 2013. “Efficiency and Equity Within European Education Systems and School Choice Policy: Bridging Qualitative and Quantitative Approaches.” *Journal of School Choice* 7(1): 1–36.

Ragin, Charles C. 2000. *Fuzzy-Set Social Science*. Chicago: Chicago University Press.

———. 2008a. “Measurement Versus Calibration: A Set-Theoretic Approach.” In *The Oxford Handbook of Political Methodology*, eds. Janet M. Box-Steffensmeier, Henry E. Brady, and David Collier. Oxford: Oxford University Press, 174–98.

———. 2008b. *Redesigning Social Inquiry: Fuzzy Sets and Beyond*. Chicago: University of Chicago Press.

Ragin, Charles C, and John Sonnett. 2004. “Between Complexity and Parsimony: Limited Diversity, Counterfactual Cases, and Comparative Analysis.” In *Vergleichen in Der Politikwissenschaft*, Wiesbaden: VS Verlag für Sozialwissenschaften.

Rihoux, B., and A. Marx. 2013. “QCA, 25 Years after ‘The Comparative Method’: Mapping, Challenges, and Innovations--Mini-Symposium.” *Political Research Quarterly* 66(1): 167–235.

Schneider, Carsten Q, and Claudius Wagemann. 2012. *Set-Theoretic Methods for the Social Science*. Cambridge: Cambridge University Press.

Schütz, Gabriela, Heinrich W Ursprung, and Ludger Wößmann. 2008. “Education Policy and Equality of Opportunity.” *Kyklos* 61(2): 279–309.

Shavit, Yossi, and Walter Müller, eds. 1998. *From School to Work: A Comparative Study of Educational Qualifications and Occupational Destinations*. Oxford: Oxford University Press.

Skaaning, Svend-Erik. 2011. “Assessing the Robustness of Crisp-Set and Fuzzy-Set QCA Results.” *Sociological Methods & Research* 40(2): 391–408.

Solga, Heike. 2014. “Education, Economic Inequality and the Promises of the Social Investment State.” *Socio-Economic Review* 12(2): 269–97.

Thiem, Alrik, and Adrian Duşa. 2012. *Qualitative Comparative Analysis with R: A User’s Guide*. New York: Springer.

Tummers, Lars G, Sebastian R Jilke, and Steven Van de Walle. 2013. *Public Administration Reformation: Market Demand from Public Organizations*. London: Routledge.

Waslander, Sitske, Cissy Pater, and Maartje van der Weide. 2010. Oecd *Markets in Education: An Analytical Review of Empirical Research on Market Mechanisms in Education.* Paris.

Van de Werfhorst, Herman G, and Jonathan J B Mijs. 2010. “Achievement Inequality and the Institutional Structure of Educational Systems: A Comparative Perspective.” *Annual Review of Sociology* 36(1): 407–28.

West, Anne, Audrey Hind, and Hazel Pennell. 2004. “School Admissions and ‘Selection’ in Comprehensive Schools: Policy and Practice.” *Oxford Review of Education* 30(3): 347–69.

West, Anne, and Annamari Ylönen. 2010. “Market-Oriented School Reform in England and Finland: School Choice, Finance and Governance.” *Educational Studies* 36(1): 1–12.

Wößmann, Ludger, Elke Lüdemann, Gabriela Schütz, and Martin R West. 2009. *School Accountability, Autonomy and Choice around the World*. Cheltenham: Edward Elgar.

BIOGRAPHICAL NOTE

Ramsey Wise is research fellow at the Collaborative Research Center “Transformations of the State”, University of Bremen and PhD Student at the Bremen University Graduate School of Social Sciences. This paper was presented in January 2015 at Tilburg University as part of the conference program for Qualitative Comparative Analysis – Social Science Applications and Methodological Challenges. The author also thanks the TranState Working Paper reviewers, Janna Teltemann and Timm Fulge, at the University of Bremen as well as Klaus Hurrelmann, Ingo Rohlfing and Art Woodward for their comments on earlier drafts.

Telephone: +49 421 218-66463
Fax: +49 421 218-56633
E-Mail: *rwise@bigsss.uni-bremen.de*
Address: Bremen International Graduate School of Social Sciences, University of Bremen, Wiener Straße / Celsiusstraße, PO Box 33 04 40, 28334 Bremen, Germany

APPENDIX

Table 5: Indicators and Sources of Causal Conditions and Outcomes

Variable	*Indicator*	*Description of Indicator*	*Secondary Sources*
Outcomes			
Perf	*Performance*	PISA plausible reading score mean (PV1READ)	OECD (2010c)
IEO	*Inequality of Educational Opportunity*	Score point difference in reading associated with one unit change in ESCS index and the percentage of variance in performance explained by ESCS	OECD (2010a)
Market-Oriented Indicators			
C	*Choice*	Percentage of students in schools that have two or more schools available (SCHAVAIL)	OECD (2010b); Põder, Kerem, and Lauri 2013); Wößmann et al. (2009)
Aut	*Autonomy*	Index of school autonomy based on school questionnaires regarding autonomy over budgetary, personnel and curricula decisions (RESPRES, RESPCURR)	OECD (2010b); Hanushek et al. (2013); Wößmann et al. (2009)
Acc	*Accountability*	Averaged mean for students in schools that use standardised tests, publicly publish achievement data and have results tracked by authorities (SC15Q01, SC22Q01, SC22Q05)	OECD (2010b); Wößmann et al. (2009)
Causal Conditions			
S	*Stratification*	Derived from the percentage of students in schools that admit students based on academic record (SC19)	OECD (2010b); Bol & Van de Werfhorst (2013); Põder et al. (2013); Shavit & Müller (1998)
E	*ESCS*	Percentage of students that have above OECD average on the PISA Index of Economic, Social and Cultural Status (ESCS)	OECD (2010a); Põder et al. (2013)
G	*Gini*	Late-2000s Gini score after accounting for taxes and transfers	OECD; Põder & Kerem (2012); Solga (2014)

*Note: Data is derived from OECD's school and student questionnaires for the 2009 PISA test. Country weights are also applied using the final student weight to calculate aggregated measures for further analysis. Previous studies that serve as an additional reference for the calibration of raw scores provided by PISA are noted as secondary sources.

Table 6: Raw Data and Qualitative Thresholds of Conditions and Outcomes

	Outcomes		**Market-Oriented Conditions**			**Other Conditions**		
Country	*P*	*IEO*	*C*	*Aut*	*Acc*	*S*	*E*	*G*
AUS	514.8	45.9	90.2	0.05	65.9	23.5	67.3	34
AUT	470.0	48.3	43.1	-0.46	29.3	61.4	52.2	27
BEL	506.1	47.1	81.9	-0.27	24.6	15.0	57.7	27
CAN	524.0	31.9	66.5	-0.52	77.4	15.8	73.5	32
CHE	500.2	40.1	29.0	-0.40	34.2	60.6	53.0	30
DEU	497.3	44.0	64.1	-0.39	26.5	43.1	60.5	29
DNK	495.2	35.7	66.7	0.12	66.1	2.6	63.3	24
ESP	481.0	29.7	65.0	-0.48	34.0	1.1	38.6	33
FIN	535.6	30.8	43.9	-0.27	48.1	0.9	68.2	26
GBR	494.0	44.6	78.0	0.83	80.4	11.8	60.8	35
GRC	481.8	33.6	40.1	-1.01	50.3	3.5	47.9	33
IRL	495.9	39.6	70.3	-0.21	44.3	10.2	51.7	32
ISL	500.6	26.4	35.8	0.08	61.4	0.0	78.3	27
ISR	475.0	43.2	62.3	-0.13	64.9	47.0	53.9	37
ITA	486.3	32.1	78.2	-0.23	42.3	31.8	44.3	32
NLD	508.2	36.9	76.2	1.17	70.1	77.4	63.4	28
NOR	503.1	36.2	22.3	-0.40	75.5	1.6	74.3	25
NZL	521.1	51.8	74.8	0.46	84.0	21.1	55.3	32
PRT	489.1	29.3	57.4	-0.69	62.2	1.0	36.1	34
SWE	497.7	43.5	52.1	0.51	80.7	1.8	66.5	27
USA	499.8	42.4	69.7	0.10	94.1	22.9	58.9	38
Min	470.0	26.4	22.3	-1.0	24.6	0.0	36.1	24.0
Max	498.9	38.7	60.4	-0.1	57.9	21.6	58.4	30.6
Mean	535.6	51.8	90.2	1.2	94.1	77.4	78.3	38.0

Table 7: Fuzzy Set Membership of Conditions and Outcomes

	Outcomes		**Market-Orientated Conditions**			**Other Conditions**		
Country	*P*	*IEO*	*C*	*Aut*	*Acc*	*S*	*E*	*G*
AUS	0.80	0.80	0.95	0.54	0.70	0.23	0.71	0.73
AUT	0.05	0.86	0.22	0.20	0.05	0.83	0.29	0.26
BEL	0.70	0.83	0.90	0.31	0.03	0.14	0.40	0.26
CAN	0.88	0.20	0.65	0.18	0.93	0.14	0.87	0.58
CHE	0.62	0.59	0.09	0.24	0.07	0.82	0.30	0.43
DEU	0.58	0.74	0.60	0.24	0.04	0.56	0.47	0.37
DNK	0.55	0.37	0.66	0.59	0.71	0.06	0.55	0.13
ESP	0.19	0.13	0.62	0.20	0.07	0.05	0.10	0.66
FIN	0.94	0.16	0.23	0.31	0.24	0.05	0.73	0.21
GBR	0.53	0.76	0.85	0.92	0.95	0.11	0.47	0.79
GRC	0.20	0.27	0.19	0.05	0.28	0.06	0.21	0.66
IRL	0.56	0.57	0.73	0.35	0.18	0.10	0.28	0.58
ISL	0.63	0.07	0.14	0.56	0.55	0.05	0.94	0.26
ISR	0.09	0.71	0.56	0.40	0.67	0.63	0.32	0.88
ITA	0.32	0.21	0.86	0.34	0.15	0.35	0.16	0.58
NLD	0.73	0.44	0.83	0.97	0.82	0.94	0.56	0.31
NOR	0.66	0.40	0.06	0.24	0.91	0.06	0.88	0.17
NZL	0.86	0.92	0.81	0.79	0.97	0.20	0.35	0.58
PRT	0.40	0.12	0.45	0.12	0.58	0.05	0.08	0.73
SWE	0.59	0.72	0.36	0.82	0.95	0.06	0.68	0.26
USA	0.62	0.68	0.72	0.57	0.99	0.22	0.43	0.91