TOWARDS A COMPARATIVE ANALYSIS OF DEMOCRATIC INNOVATIONS
Lessons from a small-N fsQCA of Participatory Budgeting

HACIA UN ANÁLISIS COMPARADO DE LAS INNOVACIONES DEMOCRÁTICAS
Lecciones de un estudio de *N* pequeña sobre Presupuestos Participativos mediante fsQCA

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Abstract
While there has been a proliferation of academic interest in 'democratic innovations', most empirical analysis tends to rely on single case studies. Very little attention has been given to the comparative analysis of innovations, in particular the conditions under which they emerge and are sustained. Recent studies of participatory budgeting (PB) have begun to utilise cross-case analysis in an attempt to explain divergent outcomes. This paper argues that the comparative analysis of democratic innovations could be enhanced significantly through the application of the relatively novel technique of fuzzy-set qualitative comparative analysis (fsQCA). A small-N study of PBs is offered to identify the potential (and pitfalls) of using fsQCA to evaluate the conditions under which such an innovation is institutionalised effectively.

Keywords
Democratic innovations; Fuzzy membership; Institutionalised citizen control; Participatory budgeting; Qualitative comparative analysis (QCA).

Resumen
Aunque el interés académico por las "innovaciones democráticas" ha proliferado, la mayoría de los análisis empíricos se apoyan en un solo caso de estudio. Se ha prestado poca atención al análisis comparativo de las innovaciones, en concreto de las condiciones en que emergen y se mantienen. Algunos estudios recientes sobre presupuestos participativos (PP) han comenzado a emplear análisis de casos cruzados en un intento por explicar los resultados divergentes. En este artículo se sostiene que el análisis comparado de las innovaciones podría mejorar significativamente mediante la aplicación de una técnica relativamente nueva, el análisis cualitativo comparado de conjuntos difusos (fsQCA). Aquí se ofrece un estudio de N pequeña sobre PP para identificar el potencial (y las dificultades) que entraña el empleo de fsQCA para evaluar las condiciones en las que tal innovación se institucionaliza de forma efectiva.

Palabras clave
Análisis comparado cualitativo; Control ciudadano institucionalizado; Innovaciones Democráticas; Membresía difusa; Presupuesto participativo.

INTRODUCTION

This paper makes the case for a more systematic comparative turn in the study of democratic innovations, and specifically investigates the potential of fuzzy-set qualitative comparative analysis (fsQCA) to take such work forward. To draw out the implications of this novel methodological approach for understanding the conditions for effective institutionalisation of democratic innovations, we apply fsQCA to a study of six contrasting cases of participatory budgeting (PB). While this is a relatively small number of cases for an fsQCA, the primary aim of the study is to ascertain whether it can be applied effectively to the analysis of democratic innovations. In particular, it allows us to explore important elements of fsQCA, including population definition, calibration of conditions and presentation and interpretation of outputs. In this way, the study can be understood as laying the groundwork for a larger medium-N analysis[1] of PB and/or other forms of democratic design. We make no apologies that parts of the paper are technical in nature and may introduce unfamiliar QCA nomencalture, although we have sought to make the discussion as accessible as possible. If we are to make methodological advancements in the comparative study of democratic innovations, it is important to consider all aspects of the process for the sake of transparency (c.f. Wagemann and Schneider 2007).

THE CASE FOR THE COMPARATIVE ANALYSIS OF DEMOCRATIC INNOVATIONS

Even for those who retain faith in existing democratic institutions there is much evidence of a 'democratic malaise' (Dalton: 2004, Stoker: 2006) and an attendant growing interest in democratic innovations that recast the relationship between political elites and citizens. Levels of traditional political participation have fallen worldwide, for example, in terms of party membership and turnout at elections (ibid). Moreover, the focus on traditional forms of participation, such as voting, have been challenged because they do not engender significant and long-term engagement (Pateman 1970) and only aggregate what are often relatively uninformed preferences (Bohman 1997).

Democratic innovations have been defined as "institutions that have been specifically designed to increase and deepen citizen participation in the political decision-making process" (Smith, 2009: 2). They are of interest because they can allow those who usually do not participate in political decisions to do so, thereby potentially improving the legitimacy of democratic institutions and systems.

While the evidence base on the practice of democratic innovations continues to grow, there is a need for a more systematic *comparative turn*. This is imperative if, for example,

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[1] Medium-N can refer to anything between 5 and 100 cases depending on the units of investigation and types of data and measures, but it most clearly applies to research involving 20 to 60 cases.

we are to better understand the conditions under which democratic innovations emerge and are sustained. And, since we are at an early stage of phenomenological development, comparative analysis is important in the process of conceptualisation of what counts as a case (Mill, 1950: 298). As a natural consequence of researchers' diverse knowledge and interests, a reasonable consensus of the scope of the study of the emerging field of 'democratic innovations' is yet to form, although a number of theorists have begun to offer definitions (Fung 2003; Smith 2009; Warren 2009).

Even though there are still definitional problems to resolve, we are witnessing the development of a vibrant programme of research on democratic innovations. Much of the work is case-based, from which it is difficult to make generalizable claims about the nature of democratic design (although this does not stop many authors!). It is within the study of participatory budgeting (PB) that the most interesting examples of comparative work have begun to emerge. Early work tended to focus on single case studies of the paradigmatic Porto Alegre, detailing the conditions seen as crucial for its successful outcomes (Abers 2000; Baiocchi 2005). Further studies of individual cases in Brazil and beyond continue to dominate the literature, but significantly cross-case comparative analysis has begun to contribute to our knowledge of PB. Baiocchi's single case study of Porto Alegre actually includes a comparative element: a 'most-variant' strategy of comparing districts with different starting points (2005: 167). This allows him to show that experiences differ within a city, but also that certain trends carry across localities despite potential barriers.

Nylen (2003) made an important contribution to the development of comparative work on PB, showing that the vast majority of publications focused on the paradigmatic 'successful' case of Porto Alegre or other cases with similarly positive outcomes. He argued that it was just as important for researchers to attend to 'failed' cases. Perhaps the finest example of a small to medium-n comparison is that by Wampler (2007). He compares PB in eight Brazilian cities, selecting cases with varying degrees of success in their efforts to deepen democracy. In explaining the variety of outcomes, he focuses on factors such as mayoral support, the role of civil society, mayor-legislative relations and financial health. Thus he identifies key influencing variables within a sample derived from a relatively controlled framework and population (Brazilian municipalities introducing PB) and tries to account for necessary conditions for deepening democracy.

Moving beyond Brazil, Goldfrank (2007) among others has compared PBs across municipalities in Latin America, while Talpin (2007), Rocke (2009) and others have compared PBs across European national borders. Rocke chooses a most-different strategy involving the selection of atypically weak, atypically strong and a typical PB case in each of three countries. This design allows her to answer questions about how country-specific contexts and frames shape the diffusion of PB controlling for positive and negative cases (in terms of typicality and success). Talpin uses a comparable design to investigate whether the educative and transformative effects of participation are similar across varying designs within-PB and across countries. Sintomer et al (2005, 2008, 2010) have made interesting developments in classification and hypothesis-testing/refinement across cases in Europe and beyond.

In the build-up of rich case study literature and the early development of a number of causal explanations for outcomes, an opportunity arises for a larger-N systematic cross-case comparison of PB processes that have been institutionalised in different parts of the world. But at this juncture, a comparison based on conventional statistical analysis is difficult to conceive for a number of reasons. First, it is not clear that we have enough cases on which to draw statistical significance —and for those cases that are available, it is not yet clear that they should all be classified as forms of PB. Second, case work and existing small-N comparisons suggest that causation is likely to be complex. Wampler, for example, suggests, "successful PB cases depend on a series of factors converging to support the delegation of authority" (2007: 159). Moreover, Peruzzotti has claimed that, "Democratic innovation is more likely to take place in a relatively grey area, where neither all of the significant variables promote change nor do all of them conspire against it" (2009: 58).

Studies point towards conjunctural forms of explanation; that is the presence or absence of any influencing factors may work towards success or failure depending on the context of the presence or absence of other causes. Traditional statistical methods focus on isolating the net-effects of a small number of variables over a large number of cases (Ragin, 2007: 177). They will struggle to adequately deal with the increasing number of potential configurations of explanatory variables acting in distinct directions.

We are then faced with a problem familiar to any traditional comparative researcher. That is, when we wish to make context-sensitive comparisons we are faced with a situation where we have too many potentially significant variables and not enough cases. However, Berg-Schlosser and Cronqvist suggest that Qualitative Comparative Analysis (QCA) may offer a solution to this problem:

> Between the extremes of over-generalizing and "universalizing" macro-quantitative approaches, on the one hand, and purely individualizing case-oriented approaches, on the other, a meaningful "medium-range" social science can be built which, at the same time, has a higher explanatory power and a greater social and political relevance, (2005: 172).

PB appears ripe for a medium-N study which aims to advance the goals of both functional population definition (of what PB is) and robust causal analyses (of the combinations of effects that produce more or less successful cases).

WHAT IS QCA AND HOW WOULD IT BE APPLIED TO PB?

Ragin and others have worked to develop diversity-oriented 'configurational comparative methods' (Rihoux and Ragin: 2009). The underlying principle of all qualitative comparative analyses is that many of the social relationships we observe can be described using

set-theoretic statements[2]. In particular set-oriented thinking can help highlight relationships of necessary and sufficient causation in comparative case studies by observing subset-superset relationships. While statistical analysis can measure the effect of having more or less of one variable on another, configurational analysis investigates what combinations of conditions are necessary or sufficient to produce an outcome. Moreover, Boolean algebra can be applied to set-theoretic statements in order to highlight conjunctural and alternative causation[3].

Ragin shows that relationships of necessity and sufficiency between causal conditions[4] and outcomes are set-theoretic. For necessity to be established the set of cases containing the outcome must be a subset of the set of cases displaying the cause. Similarly, for sufficiency to be established the set of cases containing the causal condition must be a subset of the cases displaying the outcome (c.f. Ragin, 2000: 214-217). This allows us to use simple Boolean negation operations to show how the absence of a condition contributes to outcomes. These types of set-theoretic relations are often masked by correlation-focused analyses (Ragin 2000; 2008).

While QCA has been used effectively in other sub-disciplines of political science, for example, in comparative welfare state research (Skanning et al, 2012), it has yet to be applied systematically to the study of democratic innovations. Pratchett et al (2009) offer a first attempt at using crisp-set QCA (csQCA) —this is where membership in a set can be either 0 (out) or 1 (in)— to try and uncover patterns of causation in PB outcomes.[5] The strengths and weaknesses of crisp-set QCA lie in its simplicity and transparency. An illustrative example of a crisp set truth table is shown below. Membership of cases (Porto Alegre, Rome, Belo Horizonte, Sevilla) in the sets of causal conditions (A,B,C,D) and outcome condition (Outcome) can be read easily. Moreover each row of the truth table can be read as a *logical case* (potential combination of causal conditions) for which we have an empirical example. A full truth table would include all possible combinations so that logical remainders (logical cases without empirical examples) can be dealt with transparently.[6]

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[2] This section draws heavily on Ragin and seeks to outline the most important aspects of QCA related to this research project. For book-length treatments of fsQCA methodology see Ragin (2008, 2000) Rihoux and Ragin (2007) and Schneider and Wagemann (2012). Introducing vast new terminology to their audience is a particular dilemma for those writing on fuzzy sets.

[3] This is done by testing alternative conjunctions for relationships of necessity and sufficiency using Boolean logical operations such as 'AND' (the intersection of sets), and 'OR' (the union of sets).

[4] In Fuzzy sets 'variable' is replaced by 'condition'. It is incorrect to think of fuzzy set membership scores as variable because the researcher controls limits to the variation of values of the concept.

[5] This study is somewhat undermined by the overall research question that was structured by the interests of the UK Department for Communities and Local Government (CLG). That said, the study represents a first attempt to use csQCA as part of a systematic review of evidence, in particular, comparison of existing case materials.

[6] Even in large-N studies that take interaction of conditions into account we can expect many of the logical cases not to display any empirical examples. Large-N studies until relatively recently have paid little attention to simplifying assumptions.

Table 1.
Indicative truth table showing crisp membership in sets.

Cases	Causal conditions				Outcome
	A	B	C	D	X
Porto Alegre	1	0	0	1	1
Rome	0	1	0	1	0
Belo Horizonte	1	0	1	0	1
Sevilla	1	0	1	1	1

Truth tables are useful not only as a visual aid but as the first step in collating data which can then be minimised to provide parsimonious explanations of relationships across the data. Minimisation allows us to systematically interrogate the explanatory conditions, reducing them to the simplest combinations possible. Let us take the last two cases (Belo Horizonte and Sevilla) in our truth table above. Here we have a positive outcome with two different combinations of variables. We adopt the notation utilised by the fsQCA software programme used later in this study[7] for the sake of consistency, where ~ preceding the letter denotes absence of a case and * denotes intersection of sets.[8]

A*~B*C*~D (Belo Horizonte)
A*~B*C*D (Sevilla)

If two cases produce the same outcome, but differ only in one explanatory variable, then the variable that distinguishes the two cases can be considered irrelevant and removed (Caramani 2009:72). This produces a simpler explanatory combination, namely:

A*~B*C (solution 1)

We also see that the Porto Alegre case produces the outcome by the causal combination:

A*~B*~C*D

Given that we know the Sevilla case (A*~B*C*D) also produces the outcome we can minimise to the simple combination

A*~B*D (solution 2)

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[8] In csQCA presence of a condition is usually denoted by a capital letter; absence by lower case.

It is unnecessary to introduce too much Boolean notation here (for more see Ragin 1987; Caramani 2009). However, if these were to be the only two combinations of variables that produced the particular outcome (X), then we can state that

X = A*~B*C + A*~B*D

or alternatively:

X = A*~B (C + D)
(where + denotes OR)

We can then state here that Boolean minimisation has uncovered that A*~B (the *presence* of cause A and the *absence* of cause B in combination) is an insufficient but necessary part of an unnecessary but sufficient combination of conditions (an INUS condition[9]) for the outcome given that it is present in both combinations, but on its own, not sufficient: it requires the presence of either C or D.

However, csQCA has been criticised for using a crude dichotomous measurement. Dichotomisation of a variable is reasonable when there is a clear threshold of distinction between a score, which indicates the observation of an occurrence, and one that indicates its absence. But, PB is no different to many phenomena in social sciences, in that although potential causes or outcomes can be observed in many cases of a given phenomena, the degree to which they occur varies. Fuzzy sets[10] suggest a more sophisticated analysis is possible. In a fuzzy set a case can be ascribed a value between 1 and 0 depending on its degree of membership in a set. This allows comparative researchers to describe degrees of variation. Fuzzy sets are in some ways simply an expansion in sophistication of the crisp dichotomisation. Each case will still display a membership score either side of the crossover point (0.5) which is closest to its crisp set membership. Table 2. Represents the conditions from our earlier example in the form of an fsQCA data matrix.

Fuzzy-set scores begin to bridge the divide between qualitative and quantitative data. They allow variation in membership of a set but add qualitatively defined breakpoints that give conceptual meaning to set membership which, in turn, begins to bridge the gap between formal and verbal logic (Ragin, 2000: 160). So, for example, if the outcome condition is understood as 'citizen control in participatory decision making', fuzzy-set scores allow us to represent the degree of control. Using Arnstein's seminal article on the 'ladder of participation' (1969) for illustrative purposes we can see how fsQCA analysis conceptualises a *set of cases* of 'citizen control in participatory decision-making', where cases

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[9] For more on INUS conditions, see Mackie (1988) and Wagemann and Schneider (2007: 6)
[10] Fuzzy sets were adapted to social sciences by Smithson (1988) and Ragin (2000). They were previously developed for use in computer sciences by Zadeh (1965).

Table 2.
Indicative data matrix showing fuzzy membership in sets.

Cases	Causal conditions				Outcome
	A	B	C	D	X
Porto Alegre	0.8	0.4	0.3	0.6	0.7
Rome	0.3	0.9	0.2	1	0.2
Belo Horizonte	0.6	0.1	0.9	0	0.6
Sevilla	0.7	0.1	0.7	0.7	0.8

Figure 1.
Fuzzy set based on Arnstein's 'ladder of participation'
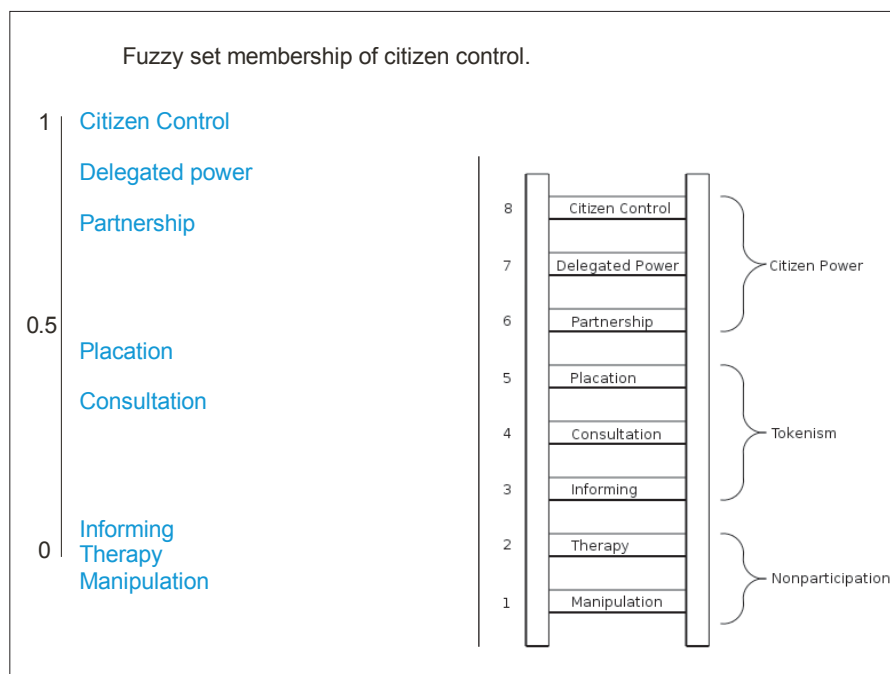
that display full citizen control have full membership of the set, manipulatory designs are located fully out of the set, and a number of cases ranging up from consultation to partnership display partial membership in the set (see fig. 1 below).

This represents a considerable advance for those who would wish to compare variation across cases, potentially offering one way of bridging the 'unhelpful divide' between theory and practice in the study of democratic institutions (Smith 2009).

There is no conceptual difference in the way the Boolean operation (e.g. minimisation) described for crisp sets above are applied to fuzzy sets. But it does mean that, among other advantages, more meaningful consistency and coverage scores can be calculated which give more nuanced explanations of the manner in which each causal formula explains the outcome[11].

If we take fsQCA to be a promising method for a "medium-range" social science programme of research on PB, we are faced with a number of questions. First, what counts as a case of PB? Second, can we adequately define conditions – both causal and outcome? And third (and more practically), is there suitable case material available that provides enough insight into these conditions? While the process of conducting a QCA is both constructive and deductive, it is also iterative, allowing constant revision of theoretical assumptions and measurements. The researcher must be clear about theoretical assumptions involved in measurement, selections of cases, choices made in order to achieve a parsimonious description of empirical regularities, and interpretations of results (c.f. Rihoux and Lobe, 2009: 237).

In fsQCA, case selection is inextricably intertwined with condition selection and calibration of sets[12]. Unfortunately in a medium-N study, it is difficult for a single researcher to gain intimate knowledge of cases at the same time or rate. The addition of new cases one by one is challenging, because it has consequences for both population definition and condition definition. New cases may present a variation in the unit of analysis significant enough to force the researcher to reconsider the population[13]. On the other hand the understanding of how conditions are observed in new contexts may force the researcher to revaluate the calibration of conditions. While this iteration is time-intensive, its transparency in construction of the research is a key methodological advantage of fsQCA.

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[11] These scores are roughly similar to measures of fit as understood in traditional research methods and will be explained further in the analysis that follows.

[12] In mainstream social scientific language conditions and calibration might be referred to as variables and measurement respectively. However, although related, they are quite different concepts. Conditions are sets into which cases have a degree of membership. Calibration is the process by which the membership in the set is formulated by defining full membership, full nonmembership and other degrees of membership. In other words connecting formal and verbal logic (Ragin: 2000).

[13] This relates to the problem of distinguishing between scope conditions and influencing conditions (See Walker and Cohen: 1985)

Scope and population

Ideally the first step of a QCA, once a concept of investigation is decided upon, involves defining a population of cases, drawing on existing theoretical knowledge. For this study, this involves defining what a case of participatory budgeting is – and what it is not. A number of challenges present themselves at this point. It may be that PB has not fully distinguished itself from other democratic innovations or indeed traditional or ongoing methods of participation and/or governance. The diffusion of PB beyond Porto Alegre and Brazil has been a highly differentiated process (Sintomer et al. 2008, 2010, Rocke 2009). It is difficult to know whether the adaptation of PB in new locations is a case of well thought out revision of a concept incorporating local knowledge, or a muddled end product based on a confused understanding of the process. Moreover there is plenty of debate as to whether programmes which call themselves PB in fact are PB, and whether analogous processes that prefer not to use the label are equally comparable.

The position of the Porto Alegre case as not just a poster case, but the archetypal PB, is a challenge in many aspects of this research agenda. There is not much point in defining the population based on the best case. Many activists-come-researchers or theorists may not wish to concede any ground on the attractiveness of what PB was in Porto Alegre before the concept migrated and developed. However, PB has necessarily been implemented in different ways as it has been adapted to different contexts. On the other end of the scale it could be equally foolish to define cases based on minimal criteria. A plethora of programmes now called PB may be so labelled only as a consequence of the perceived desirability of being seen to implement this innovative participatory design.

A related dilemma for a QCA is that the incorporation of conditions in the definition of the population of cases limits the scope of the research and influences the selection of conditions. Should different circumstances be treated as conditions affecting outcomes or do they in fact signify that some cases are examples of different phenomena? For example, is there a minimum level of money available to spend which defines a case as belonging in the population of PBs, or is the amount of money available to spend an influencing condition with which we wish to explain the emergence and sustenance of PB programmes? In QCA the researcher cannot escape tough decisions on what is fully relevant, partially relevant or completely irrelevant over a medium-N of cases. The discussion highlights the difficulty within such a comparative study of distinguishing variations in quality from variations in kinds of phenomena.

A further set of challenges present themselves in selecting cases for comparison. Deciding which potential cases to include and exclude, and collecting the necessary data to perform calibration and analysis, is difficult for a number of reasons. First, it is extremely time-intensive. Retaining the virtues of intimacy with cases in a medium-N comparative study is the qualitative strength of QCA. However, it could take a lifetime of work for any researcher to do in-depth qualitative research with a medium-N (see Bryan 2004 for the effort involved in a 'lighter' large-N study of town meetings). Therefore we rely on secondary sources in an fsQCA of this type. The difficulty here is that the

literature will often, for reasons of space or intentions of a study, document the quirks of a particular case and not all its basic elements. This makes a simple review of case materials for the necessary information on all the conditions for an fsQCA difficult. Therefore we have sought to complement existing secondary material with interviews with field researchers who carried out studies. This has three advantages[14]. First, it enables us to access information on the specific conditions of interest when they are not in the original literature. Second, we can check our interpretation of the nature of conditions with a researcher familiar with the case. Third, we are able to engage the field researcher in the iterative process of refining our causal and outcome conditions – as well as the scope and population.

Conditions

Selecting causal conditions in any form of comparative research relies on good hypotheses. The deductive element of QCA seeks to relate the conditions believed to be most important in explaining an outcome, identifying whether they act in the way we would expect across cases. In QCA this is combined with an inductive element as we learn more about how cases interact and reassess cases and conditions as we iterate across stages in the research.

The growing literature on PB provides ample candidates for conditions. Many of the types of claims that Wampler (2007), Avritzer (2008), Talpin (2009) and others make about causal processes in PB are in fact either explicitly or implicitly claims about set-theoretic relationships of necessity and sufficiency[15]. For example Wampler suggests that the explanatory conditions, *strong mayoral support* combined with *an active civil society* is necessary for the achievement of most successful participatory budgeting programmes (2007: 258). Note that this differs to a correlational claim that the stronger the mayoral support and civil society are, the better the PB will be[16]. One of the challenges to scholars of the variable-oriented tradition who wish to define conditions in an fsQCA is to switch to set-oriented thinking. Fuzzy sets are in fact variables "infused with theory" (Ragin, 2000: 6). This is because a fuzzy set disciplines the researcher to delineate with clear and precise knowledge and description the social phenomenon they seek to represent[17].

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[14] For this article three interviews with field researchers were undertaken. Ideally where available as many interviews as possible should be done, crosschecking evidence to increase robustness. This option increases over time as the numbers of cases of innovation, such as PB, and researchers studying them increase.

[15] For a discussion of the set-theoretic nature of social science see Ragin (2000, 2007).

[16] This is not to say that this claim cannot also be made.

[17] For instance while height is a ratio variable with a fixed minimum and no meaningful maximum, 'tall people' is a set whose range must be defined by the researcher. Thanks to Carsten Schneider for this example.

In almost any cross-case comparison the number of conditions must be kept low – a challenge in itself. QCA has an advantage over other techniques in that it is transparent about the simplifying assumptions it makes about logical remainders (combinations of conditions with no empirical example). It also allows the researcher to control for logical remainders to an extent by limiting the number of explanatory conditions used in the analysis[18]. An analysis of more than four or five conditions that seeks a parsimonious solution is methodologically inadvisable. As the number of possible combinations increase it is more likely that there will be several combinations of conditions to which none of the factual cases we know of correspond. When we do counterfactual analysis in QCA we make assumptions about these cases, but these assumptions become more difficult to defend as the counterfactuals become exponentially more numerous (Wagemann and Schneider, 2007: 22). Yet, looking at the growing literature, there are a wide variety of conditions that may be important for explaining PB, including, for example, the fiscal independence of a polity, the governing ideology of the political leadership, the health of civil society, the quality of deliberation at meetings, the role of the bureaucracy, etc.

A potential answer to dealing with the sheer range of conditions comes in the form of Boolean operations that allow us to logically construct conditions from the combinations of others. For example if we want to explain the outcome 'improved democracy', drawing on existing studies of PB we can make the case that this is present in a necessary combination of 'citizen control' *AND* 'significant sums of money spent'. We would then calibrate set scores for cases on the aforementioned sets and compute the membership of their intersection (logical 'AND') to calibrate the set 'improved democracy'[19]. Similarly if we wish conceive the influencing variable 'favourable political climate' we could suggest that this can be displayed through 'high fiscal independence' *OR* 'high political independence' *OR* 'high bureaucratic capacity'. In this case we would calibrate the set 'favourable political climate' by first calibrating the three conditions independently and then computing the union (logical 'OR') of these set memberships[20]. Here formal logic allows us to retain theoretical and complex information in a relatively open way.

Nevertheless problems arise in this strategy also. Often it is difficult to know to what extent these conditions influence each other. Although these constructions may help limit the number of final conditions in the analysis, introducing more conditions in this way still increases the risk that the order in which these conditions occur is a significant explanatory factor, something QCA is often ill-equipped to deal with. Like the other challenges

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[18] In a QCA if there are k conditions, there will be 2^k logical combinations of these conditions.

[19] In the case of logical 'AND' this is done by taking the minimum membership value of the case across the sets that intersect.

[20] These combinations are used mainly as examples here. It will be up to a researcher's case and theoretical knowledge to decide what relationship ('AND' or 'OR' or another operation) best describes the connection between the more abstract set and the slightly more concrete sets.

outlined thus far, these can be seen in a more or less positive light depending on the researcher's methodological perspective. At minimum, the above discussion shows that QCA disciplines the researcher to think about how the selection of conditions will affect the selection, definition and measurement of cases and other conditions. The act of performing QCA forces the researcher to be transparent about the assumptions they are making, which cases and conditions are most important and how they interact with one another.

DEFINING CONDITIONS FOR PB

The ultimate aim of this study is to draw on a range of cases to explain the conditions under which PB is institutionalised effectively: where democratic participation and ownership of budget decisions by 'ordinary people' becomes a convention. The outcome condition (or in traditional statistical language —the dependent variable) we are aiming to evaluate is *citizen control of budgetary decision making*. This happens when both agenda-setting and decision-making power in budget decisions is directed by and open to all citizens (in Boolean terms, the set of citizen control is created by the conjunction —logical 'AND'— of these two conditions). We recognise that there are other outcomes that may be of interest to PB scholars, including redistribution of wealth, individual and group inclusion, education and budget literacy. We continue to collect relevant data on these potential outcomes and in time may create a more complex outcome condition that incorporates these conditions —or run separate analyses focused on these particular outcome conditions. However for this study we focus attention on how de facto citizen control of budgetary decision making is established, institutionalised and sustained.

Following a survey of the PB literature, interviews with three experienced field researchers (Josh Lerner, Brian Wampler and Anja Rocke), and an iterative process of reflection on populations and existing theories of participatory governance, we identify four key explanatory conditions relevant to understanding the institutionalisation and sustenance of PB understood as citizen control of budgetary decision making:

- Civil society demand
- Participatory leadership strategy
- Fiscal independence
- Bureaucratic support[21]

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[21] Initially this condition was specified as 'capacity to reorganise bureaucracy'. Thanks to a suggestion from Giovanni Allegretti, we altered the condition to better reflect case knowledge and existing causal claims. Again this highlights the extent to which engagement with field researchers and the transparency of the process can lead to improved analysis.

Literature on Latin American cases in particular highlights *civil society demand* at the initiation of PB (Baiocchi 2005, Wampler 2007). Such studies focus on the extent to which a vibrancy and activism within civil society can generate organised pressure for PB from the bottom-up.

Latin American studies, furthermore, emphasise the importance of the *leadership strategy,* a theme also seen in European cases (e.g. Rocke 2009). This combines concerns about the extent to which participation is ideologically central to governing parties, the degree of support for participation across the party and political spectrum, and the instrumental incentives for government to engage citizens in decision-making.

Where diffusion has occurred across vastly different political units with different capacities and functions, the question of the degree of *fiscal independence* available to instigators of participatory processes has arisen. In the early work on Brazilian cases, the fiscal autonomy of municipal mayors was frequently part of the explanation of successful implementation (Abers 2000).

The inclusion of the condition *bureaucratic support* recognises a further source of the exercise of power that can act as a brake or catalyst for participatory reforms. There are important differences across polities in the extent to which political leaders are able to restructure the administration (including the appointment of senior bureaucrats) to enable PB (Abers 2000; Baiocchi 2005).

The inclusion of further cases would no doubt lead to further revision of conditions. Other candidates that will continue to compete for attention include: the existence of other participatory initiatives in a locality (Avritzer 2009), the degree of poverty and the democratic performance of the political system. However, we are confident that the four conditions we have selected represent the most significant causal claims made within the general literature on PB and reflect field knowledge from the cases we include in our analysis. We also need to limit our analysis to four conditions to reduce logical remainders as much as is possible for a small-N study.

CALIBRATION OF CONDITIONS IN CASES

The six cases selected for this study have been chosen to represent some of the sheer variety of cases *and* sources that any comparative study of this type must work with. The cases and sources are:

- Porto Alegre (Abers 2000, Baiocchi 2005, Gret and Sintomer 2005, Wampler 2007)
- Berlin-Lichtenberg (Rocke 2009, interview with Rocke 13/12/2010)
- Morsang-Sur-Orge (Talpin, 2007)
- Toronto Community Housing (Lerner and Van Wagner 2006, interview with Lerner 18/01/2011)
- Buenos Aires (Peruzzotti 2009, Rodgers 2010)
- Belo Horizonte (Wampler 2007, Avritzer 2009, interview with Wampler 16/03/2011)

Calibration involves relating verbal and numerical data. Ideally calibration should be done after cases and conditions are selected. Calibration naturally follows condition selection in particular and is linked to the definition of sets. We define the degrees of membership within the set in particular in relation to three key breakpoints: full membership in the set (score of 1), non-membership of the set (score of 0) and neither more in nor more out of the set (score 0.5). Depending on how confident we are that we have detailed enough knowledge to recognise different degrees of membership we can define other breakpoints for calibration which are linked to verbal statements, e.g. 'more out than in' (0.25) and 'more in than out' of a set (0.75) (Ragin 2000: 156).

Three methods of calibration are typically used in fsQCA. In many recent studies, conditions are defined by converting a continuous variable into a fuzzy set. This has become more common as quantitative researchers have become familiar with fsQCA techniques. None of the four conditions we have selected are of this form, although if the analysis were to incorporate poverty and/or democratic performance, we would have readymade indicators for such a conversion[22].

The most frequent method of calibration, and most straightforward in terms of understanding (but not necessarily implementation), involves drawing on rich qualitative descriptions in already existing casework. Cases are ascribed fuzzy membership values in the sets (each representing a condition). In our study, membership in sets takes one of eight values[23] corresponding to the following logical verbal statements:

1.0   - 'Fully in' the set
0.83 - ' mostly but not fully in'
0.67 - 'more or less in'
0.52 - 'marginally more in'
0.48 - 'marginally more out'
0.33 - 'more or less out'
0.17 - 'mostly but not fully out'
0   - 'fully out'

The first and most critical step is to define what constitutes full membership in the set, full non-membership, and the point of maximum ambiguity in membership. Nevertheless,

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[22] See Ragin (2008: 89) for an introduction to this method of calibration.

[23] Although there are nine values, the crossover point (value 0.5) is the point of maximum ambiguity of membership in a set. A tempting error of logic would be to assume that a case could have a membership score 'halfway' in the set. The verbal logic which ascribes to a membership of 0.5 in a set would be that a case is 'neither more in nor more out' of the set. Ascribing a case such a score places it in a logical limbo and removes it from the analysis. As a solution to this we have included the two 'marginal' conditions (0.48 and 0.52) to create the 7-value set, c.f. Ragin (2000: 156) which requires the ascription of scores either side of the crossover point. This is not simply a technical solution, but rather again corresponds to simple verbal description of the degree to which phenomena can be observed, namely 'marginally more in/out'.

coding cases is an informative, inductive process. There is interplay here between case-knowledge and theoretical understanding.

Let us use the example of the set 'participatory leadership strategy'. We start off with an understanding that full membership in this set is where *the instigator/overseer of PB is ideologically committed to participatory politics and to implementing PB.* Thus full non-membership is where *the instigator/overseer of PB is not ideologically committed to participatory politics and is actively trying to derail or revoke participatory practices.* We might say to the best of our ability that the point of maximum ambiguity (or crossover point) is represented by *the instigator/overseer of PB being committed to participatory politics only to the extent that it fits in with other ideological or material goals. Support for PB is present but limited and fragmented across the governing ranks.* Given our case knowledge we might then feel that there is enough evidence in the secondary literature and from interviews with field researchers to warrant relatively fine-grained fuzzy sets for the purposes of a more nuanced analysis.

We can say that Porto Alegre would achieve a fuzzy membership of 1 in this set as PB was the flagship of an explicit participatory philosophy of the instigating party. The PT proposed a programme specifically designed to involve lower socio-economic groups in public policy-making venues (Wampler, 2007:5), to give civil society organisations an input in making the rules of PB and to increase budget transparency (ibid:126). In comparison, we know that in Berlin we have a mayor committed to participation at the district level but there is a question as to whether this justifies similar membership given that the district mayor is not the only driving force in such a federal system (Rocke:2009). In Buenos Aires there was brief enthusiasm from those in power but this was based on contingent circumstances (Peruzotti 2009 Rodgers:2010).

For our purpose it is useful to visualise the cases on what we term fuzzy-maps (see fig. 2 below) so that we can make confident judgements that the numerical values we ascribe cases make sense both in relation to the verbal definitions of key breakpoints above, and our more tacit knowledge of the cases themselves and how they relate to the condition. Interplay then takes place where the researcher must refine the statements of calibration above in light of the information thrown up by the cases when the difficult process of coding takes place. Where we find cases which we know to have important differences on the degree to which they display the condition with proximate fuzzy membership scores, this may signal a need to consider redefining full membership. In our example, we could do this, for instance, by adding the caveat that *the instigator/overseer of PB is ideologically committed to participatory politics and to implementing PB and is willing to take risky political decisions to uphold this commitment* and recode the cases accordingly. What we seek is that the definitions of membership values will eventually make sense such that membership in the set is clearly calibrated to the theoretical meaning of the condition which we wish to test. We have found that these fuzzy-maps are particularly useful for guiding discussions with field researchers in attempting to clarify the conditions of particular cases with which they are familiar.

Figure 2.

A 'fuzzy-map' for case membership in the condition 'participatory leadership strategy'

This process of calibration highlights the extent to which iteration is central to QCA in seeking both theoretical clarity and robust measurement for comparison. Measurements, scales and populations are not 'given' as they are often seen to be in traditional quantitative research strategies (Ragin 2000). Yet measures can still be constructed which are comparable across cases and conditions, allowing the use of Boolean algebraic operations to uncover relationships of necessity and sufficiency between conditions and outcomes across cases. And as new cases are added, we are often forced into reassessing the nature of membership of particular sets. This is nothing new as quantitative scholars have for years been looking at how concepts travel and can be meaningfully quantified across contexts. Nevertheless, by allowing these considerations at the level of medium-N, QCA seems to provide an alternative location for robust research on the spectrum of trade-offs between complexity and generalisability in social and political research. It is not clear, therefore, that the epistemological authority of QCA should be any less than that of more established methods (see Rihoux and Lobe: 2007).

The third method of calibration we use is merely an expansion of the first two. It uses algebraic combinations to combine sets of conditions to create more nuanced conditions —the logical 'AND' (focusing on case membership of the intersection of two or more sets) and logical 'OR' (focusing on case membership in the union of two or more sets) that we introduced earlier. As such, various combinations of multiple sets can be combined to form a single more complex set using simple algebraic logic.

For example, we calculate the set 'fiscal independence' (fi) from two other sets, namely 'independent spending capacity' (indspend) and 'independent fundraising capacity' (indfund) using fuzzy 'AND'. In verbal language what we are theorising is that for a municipality to be fiscally independent it must have both independence in its spending decisions and its ability to raise funds. Table 3 below shows how this calibration using the intersection of sets (logical 'AND') plays out for our six cases.

Table 3.
Calibration of set membership of fiscal independence (fi)[*]

Caseid	Indspend	Indfund	fi
Porto Alegre	0.83	0.83	0.83
Berlin-Lichtenberg	0.48	0.17	0.17
Morsang-Sur-Orge	0.33	0.17	0.17
Toronto Community Housing Corporation	1	0.33	0.33
Buenos Aires	0.83	0.17	0.17
Belo Horizonte	0.83	0.83	0.83

* Computing of case memberships and analysis presented in this study was produced using fsQCA 2.5.

ANALYSIS AND EXPLANATION

The analysis that follows focuses on four influencing conditions,
- Fiscal independence (fi)
- Participatory leadership (pl)
- Civil society demand (csd)
- Initial bureaucratic support (ibs)

And their relationship with the outcome:
- Citizen control of participatory decision making (outcc)[24]

These conditions across the six cases can be represented in a data matrix – see Table 4.

Table 4.
Fuzzy data matrix for six PB cases.

caseid	pl	ibs	csd	fi	outcc
Porto Alegre	1	1	1	0.83	1
Berlin-Lichtenberg	0.83	0.17	0.48	0.17	0.17
Morsang-Sur-Orge	0.83	0.52	0.33	0.17	0.17
Toronto Community Housing Corporation	0	0.52	0.33	0.33	0.83
Buenos Aires	0.48	0.83	0.48	0.17	0.52
Belo Horizonte	0.67	0.17	0.83	0.83	0.48

[24] This outcome set is the intersection of the sets 'control by participants over agenda-setting' (ca) and 'control by participants over decision-making' (cd).

Testing for necessary conditions

The first step of an fsQCA is a test for necessary conditions to produce the outcome. Table 5 provides the output from the fsQCA 2.5 programme.

Table 5.
Analysis of necessary conditions for the outcome 'citizen control in participatory decision-making'

Analysis of Necessary Conditions
Outcome variable: outcc
Conditions tested:

	Consistency	Coverage
pl	0.725552	0.603675
~pl	0.637224	0.922374
ibs	0.804416	0.794392
~ibs	0.463722	0.526882
csd	0.829653	0.762319
~csd	0.536278	0.666667
fi	0.678233	0.860000
~fi	0.589905	0.534286

The consistency measures show the extent to which the conditions follow the fuzzy subset relation of necessity with the outcome[25]. In a study of only six cases we would require a very high consistency (probably 1) to make any robust claims about necessary conditions —as more cases are added, this demanding threshold can be allowed to drop slightly. Testing for the presence of the outcome first we see that no condition has a consistent relationship of necessity with the outcome set above 0.83. Civil society demand comes closest to a fully consistent necessity subset/superset relation[26]. We can investigate this further by mapping the cases graphically on a fuzzy X/Y plot (see below). We see that two cases, Buenos Aires (marginally) and Toronto break with the necessity relationship. If this were a consistent necessary condition we would see all cases dotted below the diagonal.

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[25] This is a somewhat basic explanation. For a more detailed explanation of the consistency measure see Ragin (2008).

[26] If X is greater than or equal to Y across all cases consistency would be 1.

Figure 3.
A fuzzy X/Y plot for 'citizen control in participatory decision-making' against
'civil society demand'
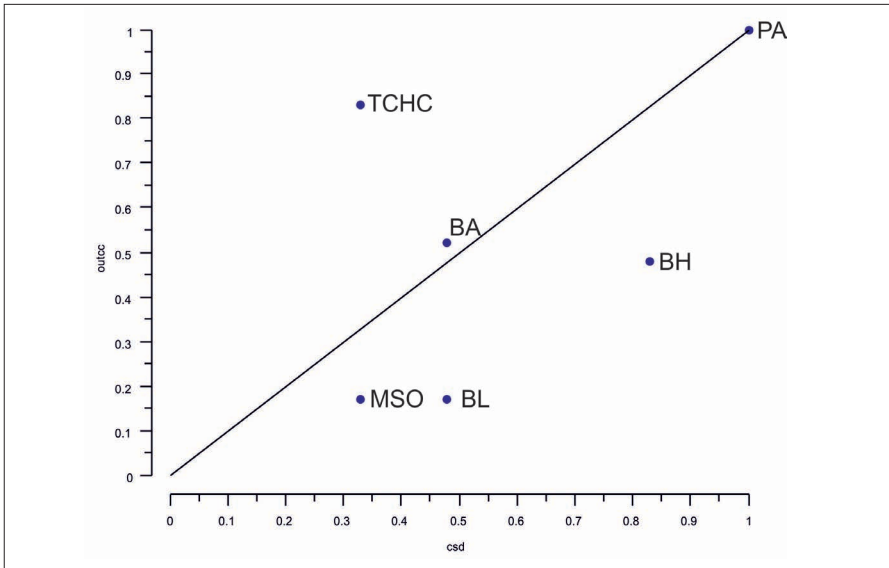
QCA requires us to always test for both relationships with the outcome and the nega-tion of the outcome because causal symmetry is not assumed (unlike in traditional varia-ble oriented research) [27].

In testing for the absence of citizen control in participatory budgeting we find a rather puzzling result that suggests participatory leadership is almost consistently necessary for the outcome. This is counterintuitive and again requires investigation of the x/y plot (Fig. 4). While the set membership in the absence of the outcome (Y-axis) is in almost all cases less than or equal to that in the causal condition (X-axis), this does not apply (marginally) to Toronto. Furthermore, on close inspection of the plot, we find that the Porto Alegre case has full membership in the causal condition and very low membership in the outcome. Logically we can say that such a case tells us little about the outcome in real terms. It is only the Porto Alegre case that is lowering the coverage[28] score of this

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[27] Membership in the negation of the outcome (no citizen control) can be easily calculated by subtracting membership in the set citizen control from 1. This negation operation is one of the cornerstones of fuzzy logic.

[28] Set-theoretic coverage measures the proportion of instances of an outcome explained by a cause or combination of causes (see Ragin 2008: 44).

Figure 4.
A fuzzy X/Y plot for 'absence of citizen control in participatory decision-making' against 'participatory leadership'
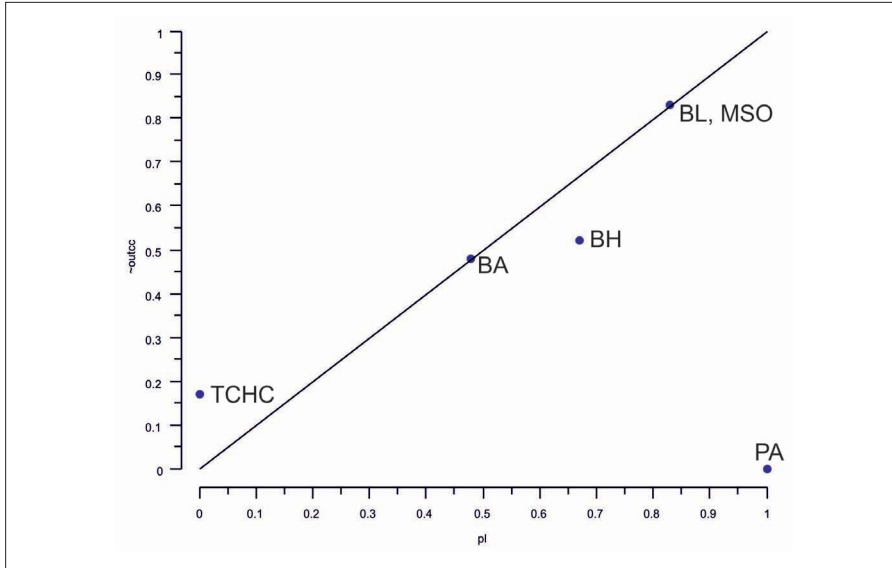

Table 6.
Analysis of necessary conditions for the outcome 'absence of citizen control in participatory decision-making'

Analysis of Necessary Conditions
Outcome variable: ~outcc
Conditions tested:

	Consistency	Coverage
pl	0.939929	0.698163
~pl	0.466431	0.602740
ibs	0.533569	0.470405
~ibs	0.766784	0.777778
csd	0.699647	0.573913
~csd	0.710247	0.788235
fi	0.424028	0.480000
~fi	0.876325	0.708571

necessary relationship and we can imagine that if we observed a similarly consistent subset relation when we move to a medium-N analysis of cases, this coverage score is likely to change[29].

Testing for sufficient conditions

The sufficiency analysis is often the most interesting in QCA because it allows us to use combinatorial mathematics to ascertain how conditions behave when combined in cases. The first step in the analysis involves creating a truth table from the fuzzy data[30]. When using fuzzy sets no case exhibits full membership in any of the different logical combinations, nevertheless, logically they will have greater than 0.5 membership rather in only one. The column 'number' in the table below (reproduced from the fsQCA2.5 programme) shows the number of cases having greater than 0.5 membership in the corner of the vector space represented by that logical combination. This clearly shows the degree to which (unsurprisingly) logical remainders play a part in our study given the small number of cases. The 'raw consist.' column shows the consistency to which this combination observes the fuzzy subset relation for sufficiency.

The second stage of the analysis involves minimizing the data to solutions. At this point we must make a judgement as to the consistency threshold for which we will accept a combination of conditions to indicate sufficiency in realising a positive outcome of citizen control. Depending on quality of data and numbers and types of cases this could range from 0.75 to 0.85 or even higher (Ragin 2000, 2005:11). For this indicative study we take a consistency threshold of 0.9: thus the outcome is coded 1 if 0.9 or above; 0 if below that point (see table 8).

The final step in sufficiency analysis is to minimise the data into solutions. In a standard analysis, the software offers three solutions. The first is the most complex solution where no assumptions about logical remainders are made. The second is a most parsimonious solution where the computer programme allows assumptions about remainders which lead to the least complex solution. The third is termed the intermediate solution. This solution minimises the complex solution, to the extent that the researcher provides information about the direction causal conditions would be expected to act in counterfactuals for which they have reasonable grounds to make assumptions (sometimes called easy counterfactuals). Based on broad theoretical support within the PB literature, we expect the presence of all four conditions to have a positive impact on the outcome (see 'Assumptions' in the Intermediate Solution in table 9).

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[29] For necessity coverage, the addition of cases where the X value is greater than twice the Y value will cause coverage to decrease while the addition of cases where the X value is greater than Y but less than two times Y will lead to an increase in coverage.

[30] This process is described in more detail in Ragin (2005).

Table 7.

Truth table showing fuzzy membership in the corners of the vector space for each logical combination and consistency of the fuzzy subset relation for sufficiency

pl	ibs	csd	fi	number	outcc	raw consist.	PRI consist.	Product
0	1	0	0	2		1.000000	1.000000	1.000000
1	0	0	0	1		0.507463	0.000000	0.000000
1	0	1	1	1		0.838983	0.000000	0.000000
1	1	0	0	1		0.738806	0.000000	0.000000
1	1	1	1	1		1.000000	1.000000	1.000000
0	0	0	0	0		1.000000	1.000000	1.000000
0	0	0	1	0		1.000000	1.000000	1.000000
0	0	1	0	0		1.000000	0.999999	0.999999
0	0	1	1	0		1.000000	1.000000	1.000000
0	1	0	1	0		1.000000	1.000000	1.000000
0	1	1	0	0		1.000000	0.999999	0.999999
0	1	1	1	0		1.000000	1.000000	1.000000
1	0	0	1	0		1.000000	-1.#IND00	-1.#IND00
1	0	1	0	0		0.591304	0.000000	0.000000
1	1	0	1	0		1.000000	-1.#IND00	-1.#IND00
1	1	1	0	0		0.878788	0.515151	0.452709

Table 8.

Cases coded for analysis with a consistency threshold of 0.9

pl	ibs	csd	fii	number	outcc	raw consist.	PRI consist.	Product
0	1	0	0	2	1	1.000000	1.000000	1
1	1	1	1	1	1	1.000000	1.000000	1
1	0	1	1	1	0	0.838983	0.000000	0
1	1	0	0	1	0	0.738806	0.000000	0
1	0	0	0	1	0	0.507463	0.000000	0

Table 9.

Sufficiency analysis solutions for outcome 'Citizen control in participatory decision-making'

COMPLEX SOLUTION

frequency cutoff: 1.000000
consistency cutoff: 1.000000

	raw coverage	unique coverage	consistency
~pl*ibs*~csd*~fi	0.488959	0.274448	1.000000
pl*ibs*csd*fi	0.476341	0.261830	1.000000
solution coverage:	0.750789		
solution consistency:	1.000000		

Cases with greater than 0.5 membership in term ~pl*ibs*~csd*~fi: Toronto Community Housing Corporation (0.52,0.83), Buenos Aires (0.52,0.52)
Cases with greater than 0.5 membership in term pl*ibs*csd*fi: Porto Alegre (0.83,1)

PARSIMONIOUS SOLUTION

frequency cutoff: 1.000000
consistency cutoff: 1.000000

	raw coverage	unique coverage	consistency
~pl	0.637224	0.220820	0.922374
ibs*csd	0.731861	0.053628	0.935484
ibs*fi	0.580442	0.000000	1.000000
solution coverage:	0.952681		
solution consistency:	0.901492		

Cases with greater than 0.5 membership in term ~pl: Toronto Community Housing Corporation (1,0.83), Buenos Aires (0.52,0.52)
Cases with greater than 0.5 membership in term ibs*csd: Porto Alegre (1,1)
Cases with greater than 0.5 membership in term ibs*fi: Porto Alegre (0.83,1)

INTERMEDIATE SOLUTION

frequency cutoff: 1.000000
consistency cutoff: 1.000000
Assumptions:
fi (present)
csd (present)
ibs (present)
pl (present)

	raw coverage	unique coverage	consistency
ibs*~pl	0.488959	0.170347	1.000000
fi*csd*ibs	0.580442	0.261830	1.000000
solution coverage:	0.750789		
solution consistency:	1.000000		

Cases with greater than 0.5 membership in term ibs*~pl: Toronto Community Housing Corporation (0.52,0.83), Buenos Aires (0.52,0.52)
Cases with greater than 0.5 membership in term fi*csd*ibs: Porto Alegre (0.83,1)

In the most 'complex solution' (with no assumptions made about counterfactual cases) we are presented with two solutions (combinations of conditions that are sufficient to produce the outcome across cases). The solution can be written as:

ibs*(pl*csd*fi + ~pl *~csd*~fi) → Outcc
(where '~' represents absence of a cause and '→' implies 'is sufficient for')

The first possible causal path confirms what much of the comparative work on PB thus far has suggested: all of the conditions we have selected are independent necessary parts of an unnecessary but sufficient path to the outcome. Arguably this reflects the significance of the explanations of the archetypal Porto Alegre case (the case with greater than 0.5 membership in this solution term).

The second solution is more intriguing, suggesting that the *negation(~)* or *absence* of fiscal independence, political leadership and civil society demand *combined with* the *presence* of initial bureaucratic support is sufficient to produce citizen control in budgetary decision making. This again may seem counterintuitive, but when we go back to the cases we see that this closely reflects accounts of both Buenos Aires and Toronto. For example, in their explanation of Canadian PBs, Lerner and Van Wagner highlight that in general 'participatory budgeting emerged when staff were passionate and prepared' and 'politicians were looking the other way', amongst other explanatory conditions (2006: 15). If in a medium-N study we again found similar results in the necessity or sufficiency analysis it might force us to think about whether conditions are missing from our model or if theory needs refinement. One potentially attractive explanation is that it is not an absence of participatory leadership per se, but rather de-politicisation of the process that is the positive contributor to outcomes. It may be that a key factor in institutionalised participatory democracy in some localities is that the handing of budget decisions over to citizen participants is not an ideological issue that divides political parties.

In this pilot both solutions cover the outcome to a similar degree, but we might expect that with the addition of further cases the first solution would have higher coverage. However, this cannot be confirmed until the data is collected and analysis carried out.

The 'parsimonious solution' makes all assumptions about the outcome in counterfactual cases which will lead to the most parsimonious solution. It can be represented thus:

~pl + ibs*(csd + fi) → Outcc

We see that even where the consistency of the relationship for these conditions is quite high, their unique coverage (the extent to which this set covers the outcome set independent of others) is low (ranging from 0 to 0.22). The parsimonious solution lacks theoretical insight and rigour but can alert the researcher to possible reasons to make new assumptions about counterfactual cases.

For the 'intermediate solution' we are able to insert directional expectations into the model: in other words, in counterfactual cases we would expect our conditions when pre-

sent to contribute causally towards the outcome[31]. Again this assumption can be debated but the point for now is that it allows us to deal with counterfactual cases transparently. The intermediate solution reads as follows:

ibs*(fi*csd* + *~pl) → Outcc

The intermediate solution is often the most interesting and the one most likely to be debated among the research community. In this small-N study, the intermediate solution is two-fold. The first path is a combination of civil society demand, fiscal autonomy and initial bureaucratic support. Political support is irrelevant. The second path; the absence of participatory leadership combined with the presence of initial bureaucratic support remains. The level of fiscal independence and civil society demand are irrelevant to this second solution term. It is intriguing as to whether the presence of initial bureaucratic support (ibs) will remain an INUS condition in all solutions as new cases are added.

This counterfactual analysis balances our theoretical assumptions that the presence of our selected conditions would be linked to the presence of the outcome in hypothetical cases, with the empirical evidence.[32] We do this by matching empirical cases with counterfactual cases which allow for Boolean reduction (following the same process as in our earlier csQCA example). For example, starting from our second complex solution ~fi*ibs*~pl*~csd, we assume that in the hypothetical case fi*ibs*~pl*~csd, fiscal independence is linked to the presence of the outcome and therefore we can logically drop it from the explanation.

We do the same for civil society demand using the matched hypothetical case ~fi*ibs*~pl*csd. However, any further attempts to simplify the solution either violate theoretical assumptions or empirical findings. When matching the counterfactual for the presence of participatory leadership ~fi*ibs*pl*~csd we find that we already have an empirical example of this case in Mansur-sur-Orge which is not consistent with the outcome in sufficiency analysis (taking into account our frequency threshold of 0.9). This is also the reason that ~pl appears in the most parsimonious solution. The presence of bureaucratic support remains in the solution because the matched hypothetical case for Boolean reduction ~fi*~ibs*~pl*~csd links the absence of initial bureaucratic support to the outcome which violates our theoretical assumptions on the condition.

We present the sufficiency analysis for the negation of the outcome as good practice (Wagemann and Schneider: 2007: 26). The intermediate solution again offers two different causal pathways, but we engage in no further interpretive discussion at this point for reasons of space.

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[31] Given the small number of cases in our analysis both parsimonious and intermediate solutions will be based on a large number of unobserved cases..

[32] Further explanation of the process of counterfactual analysis in QCA is provided by Ragin and Sonnet (2008).

Table 10.

Sufficiency analysis solutions for outcome 'Absence of citizen control'

COMPLEX SOLUTION

frequency cutoff: 1.000000
consistency cutoff: 1.000000

	raw coverage	unique coverage	consistency
pl*~csd*~fi	0.650177	0.650177	1.000000
solution coverage:	0.650177		
solution consistency:	1.000000		

Cases with greater than 0.5 membership in term pl*~csd*~fi: Morsang sur Orge (0.67,0.83), Berlin Lichtenberg (0.52,0.83)

PARSIMONIOUS SOLUTION

frequency cutoff: 1.000000
consistency cutoff: 1.000000

	raw coverage	unique coverage	consistency
pl*~fi	0.816254	0.166078	0.931452
pl*~csd	0.650177	0.000000	1.000000
solution coverage:	0.816254		
solution consistency:	0.931452		

Cases with greater than 0.5 membership in term pl*~fi: Berlin Lichtenberg (0.83,0.83), Morsang sur Orge (0.83,0.83)
Cases with greater than 0.5 membership in term pl*~csd: Morsang sur Orge (0.67,0.83), Berlin Lichtenberg (0.52,0.83)

INTERMEDIATE SOLUTION

frequency cutoff: 1.000000
consistency cutoff: 1.000000
Assumptions:
~fi (absent)
~csd (absent)
~ibs (absent)
~pl (absent)

	raw coverage	unique coverage	consistency
~fi*~csd*pl	0.650177	0.650177	1.000000
solution coverage:	0.650177		
solution consistency:	1.000000		

Cases with greater than 0.5 membership in term ~fi*~csd*pl: Morsang sur Orge (0.67,0.83), Berlin Lichtenberg (0.52,0.83)

CONCLUSION

We make no apology that this is primarily a methodological paper that may feel, on first inspection, out of place given the current trajectory of research on democratic innovations. But there is growing recognition that if we are to better understand the conditions under which democratic innovations emerge and are sustained, existing theoretical and case study work that dominates the field needs to be complemented by systematic comparative analysis. This paper has sought to investigate the potential of using fsQCA to develop such a social scientific programme of research. In particular it applies fsQCA to the study of six very different PB initiatives from around the world.

This illustrative study indicates the potential for such methodological innovation. Proponents of fuzzy-set techniques extol the method for its capacity to incorporate the best of quantitative and qualitative strategies. While its achievements and shortcomings continue to be debated (De Meur et al: 2009), our study suggests that there is sound reason behind this claim. The iterative process of moving between theory, cases, definition and calibration can be time-consuming and frustrating, but it has a number of virtues.

First, the study of democratic innovations, and PB in particular, is blessed with a significant amount of theoretical and case study material (often in one and the same study). Assiduous case-research is vital for QCA. If we hope to move beyond the single case or small-N analysis, but wish such comparative analysis to be theoretically-informed, then fsQCA holds a great deal of promise.

Second, the process is relatively transparent: the analysis is replicable and other researchers are able to review the outcome of the process in terms of the set scores ascribed to different conditions. And our own innovation of engaging field researchers in the process of defining and calibrating conditions means that it is possible to employ an on-going process of collaborative reflection and verification. As more case knowledge emerges, and we revisit the analysis, the process of re-definition and re-calibration remains transparent.

A third virtue of applying fsQCA is the potential to generate unexpected and often counter-intuitive pathways for explaining the outcome. In our sufficiency analysis, we uncovered two very different pathways, one of which has generally been overlooked in the literature. The generation of such pathways —and the way in which this will refocus attention on case material— is important in a field of study which has been dominated by the exploration and analysis of the cause celeb, Porto Alegre.

The study that we offer in this paper can only be illustrative given the small number of cases. However, our contention is that it provides strong evidence that fsQCA will prove to be a valuable methodological tool in improving our social scientific understanding of democratic innovations. We have provided the groundwork; the next step is a medium-N fsQCA that engages with even more of the valuable case material and with the increasing number of field researchers familiar with the cases. The desire to understand the conditions under which democratic innovations are institutionalised makes comparative analysis highly relevant and provides surer grounds to make claims and recommendations about sustenance and decline of participatory institutions.

ACKNOWLEDGEMENTS

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