The Diamond Model of Governance:  
Impacting Social Development from an Open Budget Innovatory Perspective

Abstract: Bad social conditions continue to be a problem throughout the world, what means that studies checking the consequences of social development remain in evidence. A window of opportunity is the suggestion from the governance literature that civil society collaborative engagement should improve social development through open budget actions. This paper aims to conjecture if collaborative stakeholder influences associated with open budget actions can influence social development. Brazil is a reference to the adoption of open budgeting initiatives, which justifies the use of its wide municipality data in a quantitative inquiry. From the theoretical identification of five hypotheses, the use of structural equations certified a new open budget framework, named “the diamond model of governance”. The study main contributions are the level of social development of a given setting is likely to be explained by the level of openness it provides to society for participating in government-based decisions.

Key Words: Open Budget; Collaborative Stakeholders; Budgetary Resources; Social Development; Brazil.

Introduction

This paper focuses on the discussion on the importance of collaborative stakeholders as drivers of open budgeting initiatives toward social development. For this end, its main purpose is to verify if collaborative stakeholders are related to open budgeting actions, affecting social development in a governance perspective. In this context, the presence of a collaborative environment around collaborative stakeholder and open budgeting ought to be a key element to facilitate a better level of social development.
In this context, social development means an improvement on the individual quality of life and on the welfare of society members (Davis 2004). Governments that prioritize people’s opinion in their decision-making processes should give them the opportunity to participate in the development process of policies for social progress (WB 2014, DFID 2006).

Governance considers that multiple stakeholders gather in forums along with public agencies to engage in consensus-oriented decisions, because of the pluralistic state of institutional relationships between government and society (Osborne 2006). Hence, governance relates to the public administration decision-making process, which is based on institutions and procedures regarding citizens’ voices and public concerns (Bovaird 2005).

Transparency, participation, and accountability are open budgeting governance actions that help in the process of achieving social development (Ling and Roberts 2014). The open budgeting process increases collaboration in the public budget arena regardless of the budgetary process phases (drafting, approval, execution, and auditing), based on: budgetary disclose information and government free access by citizens; budgetary stakeholders’ engagement and society’s voice to support policy decisions; and authorities’ public answerability and social budget controls enforceability (Khagram, Fung, and De Renzio 2013).

According to Emerson, Nabatchi, and Balogh (2012), the collaborative governance approach uses decision-making processes based on transparency, participation and accountability strategies of structural arrangements. In these processes, stakeholders with collaborative perspectives are likely to drive decisions regarding governance outcomes by including social commitments in the budgetary process (DFID 2006).

Focusing on responsiveness to issues that are important to the community, collaborative stakeholders influence the strategic management process (Keijzers 2003) contributing with
Innovative products and services that preserve the shared environment (Svendsen 1998). In the governance case, collaborative stakeholder supports government actions to help deliver social policies (Gomes, Liddle, and Gomes 2010).

In this sophisticated framework, this study uses structural equations modeling as a methodological tool to help test the complex links. The availability of budgetary resources moderate the governance process by constraining the capacity to attend social policy needs (Von Hagen and Harden 1996), therefore, the budget is likely to be seen as an important control variable in the statistical validation process.

In this study, Brazil is used as a reference due to a great number of data available on municipalities (for instance, economic and geographic statistic surveys, and government agencies databases), and due to the length of time, the decentralisation principle has been institutionalised (since 1964). Moreover, Brazil’s position in the 2012 Open Budget Survey (IBP, 2014) is the best in the World and the leader in Latin America.

The paper is structured as follows. Next, and in order to provide a better understanding of the case of Brazil, a brief history of its public administration, public budget, and social development is presented. Theories that support the thesis that social development is likely to be explained by these types of relationship between government and society are presented. The methodological aspects describe the research design. Results and discussions are presented afterwards where empirical evidence are gathered. In the conclusion, elements for supporting the idea that participation of collaborative stakeholder as a core element of the open budget approach towards social development.
The Brazil in Context

The recent public administration institutional changes in order to implement the governance model are related to the introduction of open initiatives in budgetary process to achieve better social policies results (Ferreira et al. 2016, PNUD 2014). Following, a short historical context of Brazil is presented.

Brazilian public administration

The Brazilian Public Administration is more than only a constitutional legal system in a social democracy stage. It is a complex institutional system that focuses on governance models for government reforms at all levels: federal; state; and municipal (Abrucio 2005). However, just less than a century ago, Brazil was in a patrimonialism model, based on privileges and private interesting in the public policies decision-making processes (Bresser-Pereira 2009). Only in the 1930s, Brazil started institutionalizing red tape reforms with the purpose of establishing the impersonality, meritocracy, and public interesting control with hierarchical and formal control over procedures (Bresser-Pereira 1996).

In the 1990s, the Brazilian government introduced reforms based on Osborne (1994) named as new public management, which concentrated efforts on: a. resource decentralization – allocations to local levels; b. administrative; c. decentralization – empowerment; d. organizational with few hierarchical levels; e. management by results; and f. administration focused on citizen service. This process was oriented by a Brazilian Master Plan, which was focused on United Kingdom managerial reform during Margaret Thatcher (Bresser-Pereira 2010).

The Fiscal Responsibility Act in 2001 (Constitutional Law n. 101) is one result of this process, which alongside with other complementary institutional changes culminated in what
Core (2007) stated as Brazilian Management Budget Reform. Although the Brazilian Governance Budget Reform represents an advance in terms of public administration (2000). In this line of thinking, the new public management turns old very fast. In the 2000s, the contemporary governance era turns true with the establishment of institutional changes focused on the advance of social democracy (Peci, Pieranti, and Rodrigues 2008). According to Knopp (2011), the Brazilian governance is still in a consolidation process, it follows the international tendency considering issues related to the creation of:

- More inclusive spaces with the stimulus of transparency, participation, and accountability initiatives;
- The use of legitimacy as a reference to set the agenda public policies for the trust building between government and society; and
- Adjusts in government procedures to turn the decision-making process more flexible and efficient.

Next, Figure 1 presents the Brazilian Public Administration timeline with the main characteristic of each Brazilian Public Administration model from the arrival of Portuguese navigators to date.

Figure 1: Timeline of the Brazilian Public Administration

Source: Authors
The recent adoption of transparency, participation, and accountability initiatives from an open budget approach in the public policy decision-making process was adopted to strengthen democracy in order to achieve social progress (Abreu and Gomes 2016, Ferreira et al. 2016). This followed the new public government wave when society received more attention from public managers and politicians in order to increase education and health quality, as well as to reduce the corruption and to improve the budgetary institutions, focused on the state’s strengthen.

**Brazilian Public Budgeting**

The budgetary process is the reference for the public policy decision-making for the formulation of a strategy for public policy results. The budgetary consequences depend on the calculation of which alternatives to consider and to choose. This complex process of calculation takes into account several variables, which have little support from theory for predicting the consequences for social development (Davis, Dempster, and Wildavsky 1966).

According to March (2009, p. 5), “the most common and best-established elaboration of the pure theories of rational choice is that which recognizes uncertainty about future consequences of present actions”. Therefore, the bounded rationality presupposes that budget decisions occur under a limited possibility of alternatives and in the context of a stochastic process (Padgett 1980). In this line of thinking, individuals seek institutions to serve as the basis for making their decisions based upon a logic of adequacy (North, Wallis, and Weingast 2009). This process is complex, frequent, systematic and rationally limited, and aims to establish identities, finding rules for recognized situations (March 2009).

In this context, social institutions play important roles in the organization and application of the budgetary rules to stimulate a collaborative environment. Therefore, social institutions establish individual action by making available the content of identities and rules, thus
attributing expected behaviors to identifiable situations. These institutional structures are not static, as they may change in the face of internal and external pressures, in this case resulting in reforms (March 2009).

In Brazil, as Sanches (2007, p. 190) stated, the 1988 Federal Constitution introduced a number of significant institutional changes in the public budgeting process. It emphasizes the obligation to prepare the following budgetary acts (figure 2): PPA (medium-term planning, four years, starting in the second government mandate), LOA (short-term planning, annual), and LDO (goals fiscal-term, annual). The Brazilian’s Budgetary Acts are available at the Senate’s website (see https://www12.senado.leg.br/orcamento).

Figure 2: Constitutional Framework of the Brazilian’s Budgetary Acts

Source: Authors

The 2000 Brazilian Budgetary Reform was developed based on a strong international influence – due to the financial crisis in the 1990s – with the purpose to give governments more effective and efficient results, improving the public policy delivering and reducing the state cost (Core 2004). The budgetary institutional changes from the Decree 2829/1998 publication impacted all mentioned instruments (PPA, LOA, and LDO), focused on: a. more flexibility in budgetary program elaboration; b. increase the responsibility of the program managers for the delivery of public policy results; and c. the establishment of multi-year fiscal goals focused on the control of debts.
Recently, Abreu and Gomes (2013) identified emancipatory evidences in Brazilian budget process from an open perspective, such as: parliament adjustments, public audiences, public policy councils, the influence of Civil Society Organizations, citizen participation in the elaboration of the PPA, priorities set by public policy specialists, citizen budget (document that summarize the public budget to society), actions towards fiscal education, and data disclose.

**Brazilian social development**

Social development ought to promote infrastructure works for the delivery of social goods and services, as well as the increase of the capacity to generate jobs and generate a redistribution of national income for a better individual quality of life (Gentil and Michel 2009). On the road to social development, it is critical to know that a budget strategy chosen has inevitable social consequences (Abreu and Gomes 2010, Ferreira et al. 2016).

According to Ramos (1983, p. 149-150), “there is notable progress, economic theory field, if the analysis of the development progress occurs from a systematic strategy view.” The budgetary allocation decision-making process needs to be associated with social development strategies, based on ethical conditions for the reduction of poverty as the core preferred set of public policies consequences (Ramos 1981, 1946).

The budgetary strategy needs to consider the context of vulnerability analysis and plan reliability, in order to increase the government capacity of public policy implementation (Siccú 2009). Moreover, it is necessary that the fiscal policy stimulates the increase of tax revenue as a consequence of its performance, using the progressivity criterion, focused on social justice and equity, as well as citizen awareness building (Abreu and Gomes 2010). As Sicsú (2008) states that the budgetary strategies are only effective if the government involves the society. Therefore, the formulation of the budgetary strategy for Brazilian social
development should not be a cabinet plan, but a process of joint construction with society (Abreu and Gomes 2013).

According to Abreu and Gomes (2013), the budgetary strategy in order to achieve social development should consider the promotion of society inclusion, democratic representation, authentic dialogue, and collective knowledge. This strategy is aligned with the open budget perspective of governance.

The Brazil is the leader of Latin America in 2012 Open Budget Survey, and its participation in the Open Government Partnership and in the Global Initiative of Fiscal Transparency recognize the Brazilian position as one of the most important countries in this governance field. As a result, the Brazilian government submit in United Nation General Assembly, which was adopted in 2012, highlighting that recognizing that transparency, participation, and accountability in fiscal policies: a. can play in pursuit of financial stability, poverty reduction, equitable economic growth and the achievement of sustainable development; and b. should be promoted in a manner that is consistent with diverse country circumstances and national legislation (Abreu, Gomes, and Alfinito 2015).

The human development report 2014 of the United Nation Development Programme highlighted the recent social improvements in Brazil. For instance, the reduce racial disparities for its Afro-Brazilian and mixed-race population, by implementing affirmative action policies in education. The Brazilian social progress suggests that how civil society influences pro-people policies and outcomes is a key aspect of state–civil society interaction.

In this report, the Brazilian open initiatives of governance in the budgetary process are on evidence as possible causes of social gains, such as: the increase of participation in budgetary allocation; the disclose of budgetary data; and the strengthening of spaces for the society influence (UNDP 2014).
**What does Brazil matter for?**

The public administrator profile in governance model not only does focus on the purpose to produce more and better quality using fewer resources, but also considering the way that the decision making of public policy happens. In this context, the Brazil is recognized as its endeavor to implement governance tools to move in the governance direction, however, a long way needs to be overcome (Peci, Pieranti, and Rodrigues 2008, Knopp 2011).

The Brazilian budgetary process followed this trend, the reform introduced in 2000 changes brought characteristics in the budgetary process that, among other objectives, seek to increase its strategic dimension to integrate planners, plans, and planning (figure 3). Moreover, recent evolutions advanced in governance model, with the incorporation of transparency, participation, and accountability initiatives (Abreu and Gomes 2010).

![Figure 3: Brazilian Budgetary Governance Model in Fulfillment](image)

Source: Authors

However, the short space of time and the cultural inertia from the implantation of these changes in the Brazilian budget process, it was already perceived social gains associated with the current governance reforms (Abreu and Gomes 2013). In this sense, in order to continue the development into a social democracy, it is important that non-government planners
evolve more with the planning process to obtain equitable plans (Knopp 2011, Abreu and Gomes 2013).

In this context, the non-government planners play a fundamental role in carrying out collaborative actions, given that open budget process is related to the collective behavior of the strategy planners as a core component to achieve social progress (Abreu and Gomes 2010, 2013, Ferreira et al. 2016). Therefore, the Brazil considers the open budget approach as a possible strategy to obtain social gains, what it means a great window of opportunity to study it in order to have a better comprehension of this governance field: the open budget approach.

Following, the literature review basis on the state of art of open budget approach, considering governance, stakeholder, and public budget literature, to support empirical test from Brazilian context.

**Literature Review**

According to Bovaird (2005), governance results happen through the following circumstances: democratic decision-making; open government processes; social inclusion; and equality. Good governance is associated with the better capacity to prevent conflicts, meeting human rights obligations, helping business growth, and delivering essential public services to citizens to achieve social progress (DFID 2006). In the governance mode, multiple stakeholders gather in forums along with public agencies to engage in consensus-oriented decisions (Ansell and Gash 2008).

The governance decision-making process is based on collaborative involvement with transparency, participation, and accountability (Emerson, Nabatchi, and Balogh 2012). In this case, leadership and resources are crucial for setting and maintaining the clarity of the rules in
order to build trust and support negotiations for better social development (Khagram, Fung, and De Renzio 2013, Ansell and Gash 2008).

Hence, social development is a result of an open budget form of governance (Ling and Roberts 2014, De Renzio and Wehner 2015). The United Nations Development Program (UNDP) uses the Human Development Index as a measure of social development (Noorbakhsh 1998), based on “the expansion of people’s freedoms to live long, healthy and creative lives” (Klugman 2010 : 12).

**Open budget actions**

Open budgeting relies on transparency, participation, and accountability actions in a strategic manner, from planning and forecasting revenues and expenditures to executing the resulting budget (Jinguang and Xianyong 2011). From direct democracy to indirect delegate models, the adoption of open budgeting is subject to an ongoing debate regarding the people who should represent civil society (Mansuri and Rao 2004).

Budgetary transparency involves full disclosure of all relevant fiscal information in a timely and systematic manner (OECD 2002). Transparency means making information publicly available through institutions (Dye, Hudspeth, and Merriman 2011, Meijer 2009, 2013).

Participatory budgeting gives otherwise marginalized and excluded people the right to have their voices heard and to influence public decision making (Kasymova and Schachter 2014, Wampler 2012). Participation creates incentives to articulate and aggregate citizens’ interests, providing linkages between the ruler and ruled, policymakers and citizens (Shah 2007, Fung and Wright 2003, Boulding and Wampler 2010).

Budgetary accountability involves procedures for public hearings to investigate spending, public audits and independent judiciaries (Alt and Lowry 2010). Accountability is the
responsiveness and responsibility exercised by state authorities during the period between political elections in democratic environments (Friis-Hansen and Cold-Ravnkilde 2013, Gaventa and McGee 2013).

Due to its complexity, accountability should be classified in public and social approaches, which links with transparency and participation initiatives, respectively (Yilmaz, Beris, and Serrano-Berthet 2010). This relationship gathers open budgeting in a mutually integrated and reinforced model toward social development (Ling and Roberts 2014, Khagram, Fung, and De Renzio 2013).

**Hypothesis 1.** Open budgeting from a governance perspective encompasses transparency, participation, and accountability actions focused on inclusive decision-making processes for better social policies, so one should expect open budget actions to help explain social development.

De Renzio and Masud (2011) state that the Open Budget Index has a rigorous methodology, independence, and comparability, making it a useful addition to existing tools. Moreover, there is statistical evidence of a positive relationship between Open Budget Index and the Human Development Index in resource-dependent countries (De Renzio, Gomez, and Sheppard 2009).

Nevertheless, the Open Budget Index measurement focuses on the transparency perspective. Hence, the development of a complete index for open budgeting remains a challenge. A measurement form that includes transparency, participation and accountability should be the key to test this sophisticated theoretical hypothesis.

According to Ling and Roberts (2014), an index for open budgeting can be composed of selected items of surveys. Therefore, considering the budgetary decision-making processes as
a reference, these items should relate to at least one of the following points: access to information; inclusive mechanisms; and the presence of responsiveness and responsibility.

**Collaborative stakeholders**

A stakeholder can be any organization, group or individual (Freeman 1984). Furthermore, stakeholders are those who have power, urgency, and legitimacy, based on demands and expectations, that can affect or be affected (Mitchell, Agle, and Wood 1997). The potential for stakeholder cooperation is particularly relevant since it can facilitate collaborative efforts between an organization and its stakeholders, which can result in a better management performance (Savage et al. 1991).

According to Koontz (2005, p. 460), “collaboration is characterised by diverse stakeholders working together to resolve a conflict or develop and advance a shared vision.” Stakeholders that are more dependent on a given organization usually demonstrate greater commitment to cooperation (Freeman 1984). Unfortunately, the importance of stakeholder cooperation is commonly ignored because the analysis requires a sophisticated understanding of the types and magnitudes of stakeholder influences (Gomes and Gomes 2008).

Collaborative stakeholders act in a strategic manner focused on collective and cooperative causes, based on open budgeting and contributing to community values (Svendsen 1998). The coordination of collaborative stakeholder’s influences is concentrated on collective interests (strategic and habits), as well as in social agreements: conventions and regulations (Keijzers 2003). Hence, the participation of collaborative stakeholder ought to facilitate communication focused on the potential influences on government decision-making processes.

The open budget approach suggests that stakeholders who act collaboratively drive the actions’ open budgeting in a governance perspective (Khagram, Fung, and De Renzio 2013). A Korean case study suggested that stakeholders (of the Citizens Coalition for Economic
Justice) that act in a strong collaboration environment drove transparency, participation, and accountability initiatives, promoting collaborative public policy commitments (You and Lee 2013).

**Hypothesis 2.** Cooperation among stakeholders contributes to the adoption of transparency, participation and accountability strategies for budgetary commitments, so collaborative stakeholders have the power, urgency, and legitimacy to drive open budget actions.

As Emerson et al. (2012, p. 14) propose that “quality interaction through principled engagement will help foster trust, mutual understanding, internal legitimacy, and shared commitment, thereby generating and sustaining shared motivation.” The relationships of collaborative stakeholder are based on public and organizational values, by which collective social rules support shared gains (Freeman 1984).

The participation of collaborative stakeholder can influence government actions to help deliver social policies (Gomes, Liddle, and Gomes 2010). For instance, collaborative stakeholder’s support to face health problems in South Africa influenced the relaxation of intellectual property protection for HIV/AIDS medications in 2003 (Doh and Guay 2006).

Collaborative stakeholder typically uses strategies to promote government actions in a communicative manner with a collective, collaborative and cooperative environment (Khagram and Ali 2008). Poverty reduction in social development processes is focused on collaboration among various stakeholders (Bowen 2005).

The influence of the community cooperation on social development represents a collaborative governance approach to social change, whereby collaborative stakeholder leads actions that address social needs (Bowen 2005, Khagram and Ali 2008). Hence, the literature suggests that the collaborative stakeholder’s involvement is a key element of social development.
Hypothesis 3. The involvement of stakeholders with greater collaboration conditions supports shared social gains from collective and cooperative actions, so collaborative stakeholders should positively influence social development.

A collaborative stakeholder can act by assessing the political inducement of relevant interest groups from the public perceptions of legitimacy (Mitchell, Agle, and Wood 1997). In this process, the resources and lobbying strategies of collaborative stakeholder shift towards collective issues related to public interests in a budgetary perspective (Doh and Guay 2006).

For instance, the social fund is an institution typically set up as an autonomous agency of a national government that involves collaborative stakeholder, through which government agencies create social mechanisms to channel the budgetary resource to meet social demands (De Haan, Holland, and Kanji 2002). The participation of collaborative stakeholder increases the availability of budget resources to finance social projects designed to improve living standards and help empower vulnerable poor populations.

Although the literature suggests that the collaborative also acts by inducing the level of the budgetary resource (Williams and Aguilera 2008), therefore further empirical investigations are necessary to check the collaborative stakeholder and budgetary resource relationship. The collective action in community settings is by itself a relevant opportunity to develop knowledge to make available the resources required in the government decision-making processes (Bowen 2005).

Hypothesis 4. Public perceptions of the legitimacy influence the promotion of collaborative arrangements of stakeholders to increase resource availability from social interests, so the participation of collaborative stakeholders should increase budget resources devoted to social development.
Gomes and Gomes (2008, p. 265) suggest that a starting point to help in stakeholder measurement can be what stakeholders can be: people (or categories of people); and organizations. However, the literature is not clear on the ways to measure collaborative stakeholder level, in spite of some theoretical considerations that should support collaborative stakeholder gauging.

Nongovernmental organizations are identified as entities that mobilize communities to influence government social actions (Bowen 2005). Moreover, Gomes et al. (2010) stated that the collaborative stakeholder should join together in a nongovernmental organization, to influence public policies, including the possibility of receiving budgetary transfers.

According to (Doh and Guay 2006), the variation of nongovernmental organizations in Europe and the USA shows different levels of collaborative influences in these two regions. Therefore, the number of nongovernmental organizations could be a proxy to determine the level of collaborative stakeholder participation in a region, without forgetting the diminishing importance of the population increasing effect because of the limited capacity of nongovernmental organizations to mobilize people.

**Budgetary resources**

Budgeting means the allocation of scarce resources in the government decision-making process (Rubin 2009). The budget process happens under stochastically in a bounded rationale, since decision-makers have limitations in studying possible alternatives (Padgett 1980).

The public budget is more than a document with words and figures that contain targets for government expenditures and justifies them. It is the translation of public policy priorities into financial resources (Davis, Dempster, and Wildavsky 1966). According to Hyde (2002), the public budget is an instrument of management, development, control and allocation.
Traditionally, as Rubin (2009: 17) states, “one of the major characteristics of public budgeting is that those who pay the bills are not the ones who make the decisions on how the money is to be spent.” Although budget-makers never have enough revenue to meet the requests of all spending agencies, the budget “represents a judgment upon how scarce means should be allocated to bring the maximum return in social utility” (Key 1940: 1138).

As a powerful instrument for the implementation of democracy, the public budget needs to reflect citizens’ preferences to influence the economy and to focus on social outcomes (Foster and Fozzard 2000). On the other hand, the budgetary resource availability determines the limits within which the government will base the execution of its public policies (Hughes 2003).

According to Emerson, Nabatchi, and Balogh (2012), resources are part of the collaborative governance as an element of joint action capability. Hence, the budgetary resource availability moderates the governance process by the constraints on the budget’s capacity to promote social progress (Von Hagen and Harden 1996).

**Hypothesis 5.** The available resources form a crucial element to moderate the social outcomes from public decision-making processes from a governance perspective, so constraint of budget resources should limit social development.

The literature provides some indexes for measuring budgetary resource level. These are almost all related to public expenditures and per capita revenues. Elson and Cagatay (2000: 1351) argue that “when restrictive macroeconomic policies are needed, it is important to adjust the composition of fiscal expenditure and revenue so as to protect the people who are worst off.”
However, the association between the budgetary resource and social development in the governance perspective is still new in specific empirical studies. Therefore, a window of opportunity to validate new theories is to check the link between the traditional budgetary view (focused on resource availability) and the recent open budget approach.

**Empirical Issues**

To check the theoretical hypotheses, this study is based on a constructivist perspective, using a quantitative strategy to check elements that may be involved in the open budget process. In line with Shadish et al. (2002), we use an ex-post-facto method formulated from complex links among the elements of the literature review.

From what Williams, Vandenberg, and Edwards (2009) stated, we identified that the use of structural equations modeling (SEM) can support the literature expansion. The SEM statistic and its goodness of fit help to verify if the effectiveness of theoretical suggestions from the open budget approach to governance. Furthermore, we tested the model’s stability, the variables’ effects, and the power of endogenous variables to predict the exogenous variable, as well as observing the covariance and residual matrices.

According to the literature review, we collected data from official governmental surveys and financial databases, as well as from the UNDP index. Next, we describe each of the variables:

**Exogenous variable**

**Social development.** The UNDP formulates the Human Development Index (HDI) as a proxy for social development. HDI has three aspects (income, longevity, and education), which cover points theoretically considered for social development definition. For Brazil, this index is based on national census data consolidated at the municipal level. The data are available at the UNDP website (available in
http://www.undp.org/content/brazil/pt/home.html/)

**Endogenous variables**

**Open budgeting.** The Brazilian Institute of Geography and Statistics conducts a yearly survey to collect municipal data on public administration and policies named as MUNIC. The selection of 40 MUNIC survey items related to transparency, participation, and accountability should support the composition of an innovative open budget index (see appendix). The data are available at the Brazilian Institute of Geography and Statistics website (available in http://www.ibge.gov.br/home/).

**Collaborative stakeholder.** The Brazilian Institute of Geography and Statistics also carries out a municipal survey to collect data on nongovernmental organizations. We used the per capita number of nongovernmental organizations in a municipality as a proxy of the collaborative stakeholder power to influence social development results, without forgetting the diminishing importance of the population increasing effect. The data are available at the Brazilian Institute of Geography and Statistics website.

**Budgetary resource.** The Brazilian National Treasury consolidates the municipal accounts in a database. We used the per capita amount of municipal public expenditures as a proxy for the budgetary resource. In this case, similar to collaborative stakeholder, we diminished the importance of the population increasing effect. The data are available at the Brazilian National Treasury website (available in http://www.tesouro.fazenda.gov.br/).

Although most of the data pertaining to 2010, we decided to adopt a cross-section analysis because of the broad sample of Brazilian municipalities – 96.4% of municipalities and 96.2% of the population (table 1). We used the 2009 data just from the MUNIC survey, because of the prioritization of the national census in 2010 precluded conducting the MUNIC that year.
Table 1. Sample of Brazilian municipalities in numbers

<table>
<thead>
<tr>
<th>Geographic Region</th>
<th>Amount of Municipalities</th>
<th>Region Population</th>
<th>Municipality Population</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>Northeastern</td>
<td>1,706</td>
<td>53,011,607</td>
<td>31,074</td>
</tr>
<tr>
<td>Southeastern</td>
<td>1,653</td>
<td>78,242,310</td>
<td>47,334</td>
</tr>
<tr>
<td>Southern</td>
<td>1,158</td>
<td>27,538,451</td>
<td>23,781</td>
</tr>
<tr>
<td>Middle-western</td>
<td>434</td>
<td>10,934,484</td>
<td>25,195</td>
</tr>
<tr>
<td>Northern</td>
<td>413</td>
<td>13,721,741</td>
<td>33,225</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td><strong>5,364</strong></td>
<td><strong>183,448,593</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Brazilian Institute of Geography and Statistics

We used the 2010 national census data to obtain the municipal populations, to operationalize the per capita indexes. All data are in a 0-1 standard scale. We used the STATA 13 software for all statistical tests.

Figure 4 depicts the tested SEM model. Note that the variables are in boxes and arrows, which indicate their relationships. Therefore, each of the hypotheses was verified from segregated and integrated perspectives.

Figure 4. SEM model

Source. Authors
Finally, as Mikut and Reischl (2011) suggested, we used comparative analyses with the support of a data miner tool (Rapidminer software) to help validate the results. Considering what Monteiro (1995) stated, we used the regional classification of Brazilian Institute of Geography and Statistics to aggregate the municipalities into two groups: the equatorial (northern and northeastern regions); and the tropical (southern, southeastern and middle-western regions).

Results and Discussion

Based on the literature review, we examined the relationship among collaborative stakeholder, open budgeting, budgetary resource, and social development. These variables are combined in three structural equations. The data of this cross-section study come from 5,364 (96%) of the 5,566 Brazilian municipalities in 2010. Social development is the exogenous variable, and collaborative stakeholder, open budgeting, and budgetary resource are the endogenous variables. Table 2 reports the SEM statistical summary results.

Table 2. SEM Statistical Summary Results

<table>
<thead>
<tr>
<th>Exogenous variable: Social development (SD)</th>
<th>Structural Equations</th>
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<tr>
<td>Endogenous variables:</td>
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<tr>
<td>Intercept</td>
<td>1st CS =&gt; OB</td>
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<tr>
<td></td>
<td>0.3956755 ***</td>
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<tr>
<td></td>
<td>0.0028387</td>
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<tr>
<td>Collaborative stakeholder (CS)</td>
<td>2nd CS =&gt; BR</td>
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<tr>
<td></td>
<td>0.1305619 ***</td>
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<tr>
<td></td>
<td>0.0016253</td>
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<td>0.5204363 ***</td>
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<td>0.0030983</td>
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<td>0.166952 ***</td>
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<td>0.0111584</td>
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<td>0.2164679 ***</td>
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<td>0.0062236</td>
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<td>0.2087836 ***</td>
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<td>0.0108699</td>
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<td>R-Squared</td>
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<td></td>
<td>0.0176337</td>
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<td></td>
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<tr>
<td></td>
<td>0.0003079</td>
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<td></td>
<td>0.0171503</td>
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<tr>
<td>N</td>
<td>5364</td>
</tr>
<tr>
<td>Overall R-Squared</td>
<td>0.149655</td>
</tr>
<tr>
<td>Chi² (test of model vs. saturated)</td>
<td>2.55</td>
</tr>
<tr>
<td>Prob &gt; Chi²</td>
<td>0.1103</td>
</tr>
</tbody>
</table>

Sig Levels: ‘*’ 0.05; ‘**’ 0.01; ‘***’ 0.001

Source. Authors

We used the maximum likelihood estimation method. The three SEM equations present coefficients and constants with statistically significant levels less than 0.001. The equations explain 2%, 10%, and 30% of open budgeting, budgetary resource, and social development, respectively. The overall explanation is 15%. Therefore, all the structural equations have a relevant contribution to explaining social development.

The result of the Chi-squared test (model vs. saturated) is 2.55 ($p$-value = 0.1103), meaning that the difference between the covariance matrices is not statically significant at the 0.05 level. Moreover, all residuals of covariance and observed variables are less than 0.001, and the SEM satisfies the stability condition (stability index = 0). Hence, according to the recommendations of Hair et al. (2006), these tests suggest sufficient goodness of fit.

Figure 5 presents the estimated model with the coefficients and its errors, called the “diamond model of governance” because of its shape. Note that the relationships of the variables are represented by the theoretical hypotheses in Figure 4.
Source. Authors

From the analyses of the coefficients’ significance levels, we can infer that the five theoretical hypotheses are confirmed by the empirical results. In other words, open budgeting, collaborative stakeholder, and budgetary resource relate to social development, and collaborative stakeholder relates to open budgeting and budgetary resource.

Table 3 shows the direct, indirect and total effects of collaborative stakeholder, open budgeting, and budgetary resource on social development. The verification of the effects of the model helps identify which endogenous variable has the strongest effect on the exogenous variable.
Table 3. SEM Direct, Indirect and Total Effects

<table>
<thead>
<tr>
<th>Endogenous Variable</th>
<th>Effects to Exogenous Variable: Social development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct</td>
</tr>
<tr>
<td>Collaborative stakeholder</td>
<td>0.166952 ***</td>
</tr>
<tr>
<td></td>
<td>0.0111584</td>
</tr>
<tr>
<td>Open budgeting</td>
<td>0.2164679 ***</td>
</tr>
<tr>
<td></td>
<td>0.0062236</td>
</tr>
<tr>
<td>Budgetary resource</td>
<td>0.2087836 ***</td>
</tr>
<tr>
<td></td>
<td>0.0108699</td>
</tr>
</tbody>
</table>

Sig Levels: ‘*’ 0.05; ‘**’ 0.01; ‘***’ 0.001

Source. Authors

The empirical evidence indicates that open budgeting has the strongest direct effect on social development, followed by budgetary resource and collaborative stakeholder. However, considering the indirect effect of collaborative stakeholder, this rank changed considerably, since collaborative stakeholder moves to the first position, followed by open budgeting and budgetary resource.

Next, we present comparative analyses from Brazilian municipal aggregation in equatorial (northern and northeastern regions) and tropical (middle-western, southeastern, and southern regions) groups. Figure 6 shows the means of open budgeting, collaborative stakeholder, budgetary resource, and social development for both groups. According to Abreu, Gomes, and Alfinito (2015), we should expect higher social development mean in the tropical than the equatorial group.
However, the fact is that this phenomenon (higher mean in the tropical group than the equatorial one) occurs also for all other variables (open budgeting, collaborative stakeholder, and budgetary resource), without line crossing in Figure 6. Therefore, the variation of these means is directly related, which agrees with the SEM results.

**Final Considerations**

Poor social conditions continue to be a problem throughout the world, this justifies further studies on the determinant factors to social development. This study makes a contribution to this field checking the consequences of social development by applying statistical tests from an open budget framework, which we call as “the Diamond Model of Governance”.
Based on the literature review, the logical approach to the diamond model of governance is:

- Collaborative stakeholder are non- and government actors working for budgetary collaborative social commitments;
- Open budgeting is budgetary disclose information, government free access by citizens, budgetary stakeholders’ engagement, society’s voice to support policy decisions, authorities’ public answerability, and Social budget controls enforceability;
- Budgetary resources are the available resources that guide the levels of expenditure; and
- Social development means governance outcomes in a cooperative approach for the improvement of quality life and the welfare state.

Therefore, the main contributions of this study to expand the governance literature focused on collaborative citizen engagement are:

- Social development is explained by open budgeting, collaborative stakeholder, and budgetary limitations; and
- Collaborative stakeholder has a higher overall effect over social development than open budgeting and budgetary resource.

Hence, not only are open budgeting and budgetary resource crucial to explaining social development, but also the engagement of collaborative stakeholder can be regarded as an innovative element of the open budget approach. Therefore, collaborative participation assumes relevant importance in the literature due to its ability to produce direct and indirect effects on social development. Finally, budgetary resources contribute to validate the model, ensuring that all variables are significant and the equations are relevant.
The comparative validation analysis of the variables’ means concludes that the variation of open budgeting, collaborative stakeholder, budgetary resource, and social development are directly related. According to the hypotheses, the variation of collaborative engagement is likely to affect the other variables. Hence, the concentrated effort in the increase of collaborative stakeholder participation might be a strategic alternative to improve not only social development consequences but also open budgeting and budgetary resource results.

The diamond model of governance is based on collaborative processes. In this line of thinking, as Shepsle and Bonchek (1996) stated, social results become more similar over time, due to eliminating inconsistencies in a collective environment. The collaborative stakeholder is associated with the collaboration behavior, which should achieve leadership performance gains in order to promote social progress.

However, stakeholder conflicts are typically persistent, which could result in a condition described as “the tragedy of the commons”, in particular, because of different existing identities, insatiable desires, and competitions of primacy among stakeholders (Hardin 1968: 1243). In this process, it is very important to consider democracy-strengthening to build social commitments instead of the stakeholder conflicts. In this context, inclusive initiatives in the civic community should active society with equity and trusty opportunities to cooperate with social policy set.

In this sense, the Brazilian Government adopted a new act to stimulate the civil society organisation actions in order to promote public policies. Published in 2014, the law n. 13.019 (MROSC) established forms of partnerships between government agencies and civil society organizations, from a mutual cooperative regime to execute public policies with reciprocal interests. This new Brazilian institutional reference is based on the premise of increasing society engagement, based on transparency, participation, and accountability. Therefore, in
next years, a wide panel-data study could be a new opportunity to check if the MROSC governance institutional change results in better Brazilian social development.

Altogether, the open budget approach remains an incomplete subject, needing further investigation. The understanding of how collaborative processes continues to be a conundrum. Moreover, further studies of the possibility of stakeholder conflicts could be a window of opportunity to expand public administration theories, for instance, using panel data sets. New contributions to social progress are always welcome, considering the critical challenge to support reducing global poverty.

References


Von Hagen, Jürgen, and Ian Harden. 1996. "Budget processes and commitment to fiscal discipline."

Wampler, Brian. 2012. Participation, Transparency and Accountability: Innovations in South Korea, Brazil, and the Philippines. GIFT.


APPENDIX

Items that compose the new Brazilian Municipality OB index.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A130</td>
<td>Communication to general public: mail</td>
</tr>
<tr>
<td>A132</td>
<td>Communication to general public newspapers</td>
</tr>
<tr>
<td>A133</td>
<td>Communication to general public: internet</td>
</tr>
<tr>
<td>A134</td>
<td>Communication to general public: telephone</td>
</tr>
<tr>
<td>A135</td>
<td>Communication to general public: ombuds offices</td>
</tr>
<tr>
<td>A145</td>
<td>Communication by internet (egov initiative): newsletter</td>
</tr>
<tr>
<td>A146</td>
<td>Communication by the internet (egov initiative): document public access</td>
</tr>
<tr>
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<td>Communication by the internet (egov initiative): procurement</td>
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</tr>
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<td>A152</td>
<td>Communication by the internet (egov initiative): government journals, legislation, and finance</td>
</tr>
<tr>
<td>A153</td>
<td>Communication by the internet (egov initiative): civil servant selection</td>
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<td>A154</td>
<td>Communication by the internet (egov initiative): school enrollment</td>
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<td>Communication by the internet (egov initiative): certificate issuance</td>
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</tr>
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<td>A159</td>
<td>Communication by the internet (egov initiative): suburbs with free public access points</td>
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<td>A160</td>
<td>Communication by the internet (egov initiative): government agencies with free access points</td>
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<td>Education policy: participative management in schools</td>
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<td>A211</td>
<td>Education policy: existence of a council</td>
</tr>
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<td>A212</td>
<td>Education policy: the council has community participation</td>
</tr>
<tr>
<td>A214</td>
<td>Education policy: the council is advisory</td>
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<td>Education policy: the council is deliberative</td>
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<td>Education policy: the council had a meeting last year</td>
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<td>Education policy: private partnership</td>
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