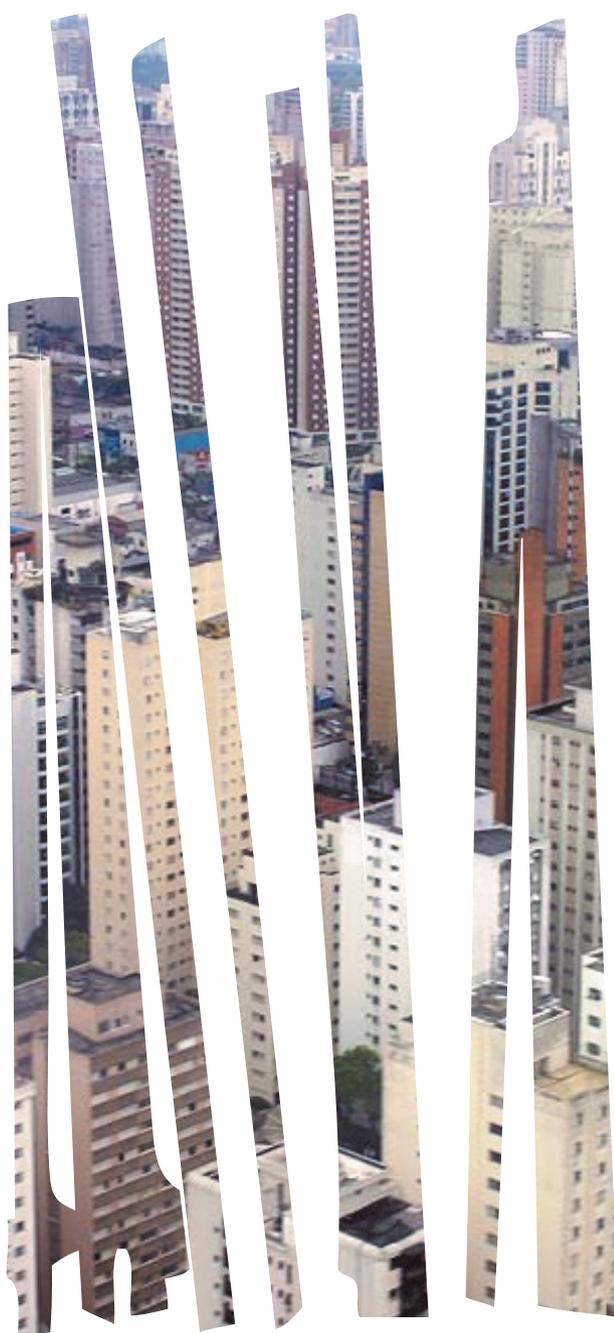


Working Paper No. 92, 2016

**The External Dimension of Subnational Fiscal
Autonomy**

Insights from the Mexican Case

Constantin Groll



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Groll, Constantin 2016: "The External Dimension of Subnational Fiscal Autonomy: Insights from the Mexican Case", **desiguALdades.net Working Paper Series 92**, Berlin: **desiguALdades.net** International Research Network on Interdependent Inequalities in Latin America.

The paper was produced by Constantin Groll during his post-doctoral research at **desiguALdades.net** from 03/2015 to 09/2015.

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Insights from the Mexican Case

Constantin Groll

Abstract

Subnational politics and federal relations are an increasingly studied aspect of Latin American federation. However, much of the literature neglects the importance of external economic conditions for the study of these phenomena and tends to reinforce the bias towards methodological nationalism implicit in most of the studies. This paper provides a first approximation to the analysis of the interdependence of global processes with subnational politics, while avoiding “non-institutional” as well as “non-spatial” thinking at the same time. It proposes the concept of subnational fiscal autonomy, defined as the discretionary amount of subnational revenue, in order to observe and analyze the multi-dimensional effect of external economic conditions on subnational politics in particular and federal relations in general. Using panel data for the period from 1990 to 2012, the paper offers a quantitative analysis of the causes of the variation in subnational fiscal autonomy in Mexico. The results show that one can expect significant effects of changing external economic conditions on subnational fiscal autonomy during this period. The paper proposes a framework to interpret these effects. The results of this study provide insights for further studies of subnational politics, federal relations and the potential of subnational governments to pursue policies to reduce inequality.

Keywords: Mexico | federalism | subnational autonomy | external economic factors

Biographical Notes

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1. Introduction

Since the turn of the twenty-first century, Latin American federal states have experienced an extraordinary growth period, in many cases of duration and size not seen since the 1930s. This period of economic bonanza, which eventually ended with decreasing world commodity prices, led to a significant rise in public revenue (CEPAL 2013), a reconfiguration of the state-society relations via a massive increase in conditional cash transfers (Lavinás 2013), and consequently a small but significant decrease in socio-economic inequalities (López-Calva and Lustig 2010). Federal relations, i.e. relations between government levels in the federal state, were not unaffected by these changes. Although there is no uniform and clear overall trend observed in Latin American federal states, obtaining more information about the interaction between global economic developments and the variation in federal (power) relations may help to shed more light on the potentials and limitations that subnational governments face with respect to pursuing policies to reduce inequality.¹

Intergovernmental relations have been seldom remained stable during this period, and consequently dynamics in these relations have been vividly discussed in the comparative federalism and decentralization literatures, including studies with various methodological approaches and cases (Beramendi 2012; Dickovick and Eaton 2013; Dickovick 2007, 2011; Falletti 2010; Gibson 2012; Olmeda 2014). Some claim that inter-governmental power relations became either centralized – for example in the case of Argentina (Cherny et al. 2010; González 2010) or decentralized as in the case of Mexico (Hernández Rodríguez 2008). However, the importance of the external economic dimension of such changes has been either neglected or treated as a merely contextual category. In other words, such contributions do not only risk having findings that vary unpredictably due to omission of the significant effects arising out of the global embeddedness of socio-political processes – i.e. the changes in inter-governmental power relations – in the nation state but ultimately reinforce a bias towards methodological nationalism (Chernilo 2006). This is not only surprising because of the exceptionality of the recent growth period, but also because in other research fields (security, welfare) the global embeddedness of domestic political and social processes is described as increasingly relevant.

¹ Thanks to the decentralization reforms in the 1980s and 1990s, spending authority has become increasingly fragmented between different government levels. Today, subnational governments are co-responsible for the provision of social services such as in-kind transfers in the area of health and education. Yet as studies show, these are exactly the areas of social spending which are decisive for a sustainable reduction of (income) inequality in the long run (Lustig et al. 2013).

In contrast, this paper seeks to explore directly the inter-relationship between changing external economic circumstances and federal relations inside the nation state. Taking the external dimension of federal relations into account, this paper combines a theoretical perspective which avoids, on the one hand, “non-spatial thinking”, in the sense that it does not treat states as territories of governance which behave like abstract, homogenous containers. Quite to the contrary, the interdependence between domestic institutions and external factors is taken seriously, not only in that domestic responses to global changes are understood as depending on a specific domestic institutional setting, but also in the sense that global and domestic politics are inseparably inter-related in a world of economic interdependence. On the other hand, the theoretical perspective guiding this contribution aims to avoid “non-institutional” thinking. This is admitting that spatial relations historically have been mainly “territorially-defined relations” (Robinson 2007: 15).²

In applying such a theoretical perspective for the study of the inter-relationship between global economic dynamics and inter-governmental relations, three specifications have to be made: Firstly, the empirical analysis is limited to the fiscal relations between government levels only. This may be perceived as a limitation because relations between government levels in federal states are multi-dimensional, complex and often contradicting (Montero and Samuels 2004). However, the standard literature on federations emphasizes that (independent) fiscal policy is a keystone of autonomous subnational governance (Davis 1956; Nathan and Balmaceda 1990; Oates 1999) and is, in fact, an elementary pre-condition for the functioning of subnational (public) institutions. Thus “fiscal independence” was perceived as “substantially similar to those tenets of subnational autonomy involved in regard to constitutional independence” (Davis 1956: 17).³ In addition, this paper argues that the ongoing dynamics of the interdependence between external and subnational circumstances can be observed precisely via the focus on fiscal relations.

Secondly, the analysis has to be multi-level in nature. With few exceptions (Beramendi 2012), most of the comparative federalism literature is biased towards a binary logic in its analysis: i.e. this literature either captures changes in the relationship between the federal and the subnational level (e.g. Gibson 2012) or changes in the relationship

2 It is widely agreed that social forces are largely mediated by territory, and territory in the Westphalian state system is overwhelmingly defined by nation-states (at least if it comes to politics) with particular domestic institutions and historical legacies (see also Leicht and Jenkins 2007). This paper also considers nation-states and domestic institutions to be relevant but argues that this perspective should also be more sensitive to the spatial interdependencies and mechanisms through which processes of diffusion, (political) interactions or power are organized and related.

3 Moreover, it has been argued that the core question of whether “subnational autonomy is fiscally protected [...] becomes a core test of the autonomy (self-rule) principle” (Agranoff 2004: 43).

between territorial defined political units at the same (subnational) level. However, in federal relations, there is hardly any major policy issue which does not have an impact on both relationships. The paper therefore presents in Section 2 an analytical perspective to understand the multi-level effect of external economic developments on subnational finances, i.e. a possibility to observe changes along a national-subnational as well as along a subnational-subnational axis at the same time.

Finally, this paper introduces a novel method of measuring the concept of subnational fiscal autonomy (Section 2) and empirically asks whether external economic developments have an effect on the variation of subnational fiscal autonomy, and if so, what kind. Subnational fiscal autonomy is understood here as a heuristic concept and principally serves as a proxy to observe the changing dynamics of power relations in federal systems in a multi-level perspective, i.e. to observe the variation in fiscal resources over which subnational governments have complete and autonomous decision-making authority. Subnational fiscal autonomy is defined as the capacity of subnational governments to collect and spend revenues with discretion, i.e. without the interference of or legal control by other levels of government.⁴ In contrast to much of the decentralization literature, which is primarily concerned with the institutional or legal modifications in relations between government levels, the concept as used here provides the advantage of observing the annual outcome of variation among all subnational units (collective subnational autonomy) and between subnational units (individual subnational autonomy). In addition, as recent contributions in the fiscal federalism literature have argued (Blöchliger and Petzold 2009; Stegarescu 2005), it is superior to classical measures of fiscal decentralization as it takes only the fiscal resources into account over which subnational decision-making authority is unbounded (in other words autonomous). Finally, it provides a net indicator to understand the fiscal ability of subnational governments to pursue inequality-reducing policies by themselves, which can be especially useful for understanding the potential of subnational government in the recent period of inequality reduction.

The paper presents evidence for the importance of external economic developments for the variation in subnational fiscal autonomy in Mexico in the period between 1990 and 2012.⁵ The decision to select Mexico as a case study may be surprising at first glance. Frequently Mexican federalism is labeled as a deviant case. Although

4 This paper only analyzes the revenue dimension of subnational fiscal autonomy. An analysis of the expenditure dimension can be found in (Groll 2015a).

5 It is important to note that this paper analyzes the fiscal autonomy of the second tier state level, i.e. state governments. Although municipal governments are constitutionally independent and an important feature of Mexican federalism, due to reasons of complexity and space they will not be analyzed in this paper.

constitutionally defined as a federal polity, including politically autonomous levels of government (Serna 2008), or “self-rule” (Elazar 1987:12), the Mexican federation is described in a comparative perspective as a highly demos-enabling federation (Stepan 2004: 46).⁶ However, analyzed on its own, and taking the particularities of the Mexican state-building process into account, the Mexican federalism experienced a certain subnational “revival” since the mid-1980s (Díaz Cayeros 2006). In particular, state governments were able to explore new, often informal, sources of power and gained increasing importance in national as well as subnational political arenas as well (Benton 2012; Flamand 2006; Hernández Rodríguez 2003, 2008; Langston 2010).

Moreover, the Mexican case provides several advantages to study the influence of external economic conditions on subnational fiscal autonomy, given the specific integration of the Mexican economy into the world market. On the one hand, the country’s finances are exceptionally connected to international commodity prices, in particular the price for oil. Revenues from oil production reached up to 39% of general government revenues during 1990-2012 (SHCP 2014). On the other hand, Mexico’s economic development model is fundamentally oriented towards the global market. The 1982 economic crisis, which was followed by the oil price shock four years later, marked the turning point for the Mexican economy and the Mexican development strategy changed from import substitution to an export-orientated industrialization within the framework of trade liberalization (including NAFTA), de-regulation, privatization, and the withdrawal of the state from much of the economy (Moreno-Brid and Ros 2009). This makes the Mexican economy extremely sensitive to dynamics in the global economy and thus an almost exemplary case to study the inter-relationship between global economic dynamics and the variation in inter-governmental fiscal relations.

Methodologically, the empirical analysis combines a short qualitative historical contextualization of subnational fiscal autonomy in Mexico as well as statistical tests of the external effects on subnational fiscal autonomy. The latter analysis rests on a regression analysis of an unbalanced, short panel data set with data for a period from 1990 to 2012. The data set combines fiscal, social, political, and economic indicators for each subnational unit (cross-sectional) as well as the changes of these indicators over time (time series).⁷ The statistical analysis is performed using different estimation techniques adequate for panel data: pooled OLS, fixed effects (FEM) and random

6 This is because malapportionment is comparatively low in both chambers of Congress, the policy scope of the Senate is limited, and the federal executive can intervene in subnational units. Thanks to the legacy of the period of PRI hegemony, the party system is centralized, the ability of subnational governments to effectively control subnational political competition is comparatively limited and the Mexican constitution empowers municipalities (Groll 2015b).

7 In total, the data set encompasses 86 variables representing 739 observations.

effect (REM) model specification. Estimation results are controlled for cross-sectional and serial correlation using robust covariance matrix estimators (Driscoll and Kraay 1998).

Before presenting this analysis in Section 4, Section 2 describes and justifies the introduction of the concept of subnational fiscal autonomy and presents an analytical framework to estimate the possible effects. Based on a discussion of the literature, the section argues that subnational fiscal autonomy is a suitable approximation to understand better the interaction between global economic circumstances and domestic realities in federal states. In addition, this section presents an analytical perspective to understand the multi-level effect of external economic developments on subnational finances. Section 3 of the paper provides a short introduction to the context of subnational fiscal autonomy in Mexico.

2. Subnational Fiscal Autonomy and Global Economic Dynamics

Subnational fiscal autonomy is a useful approximation to analyze the translation of global economic process into subnational politics within a federal polity. In a more abstract sense, this concept offers a possibility to open the discussion in the comparative federalism literature to take the global-national-subnational interdependence of federal relations into account, providing new insights for the study of federal relations. Before clarifying and justifying the selection of this concept, this section first gives credit to the literature that theorizes federal relations as a (ongoing) bargaining process instead of a stable and (formally) institutionalized relationship. However, although such a perspective has gained wide prominence in the recent literature on Latin American federations, the external dimension of this bargaining process is generally omitted. This omission makes it difficult to make sense of federal dynamics in an increasingly interconnected, globalized world and also ends up reinforcing methodological nationalism. Therefore the concept of subnational fiscal autonomy is introduced and a simple framework to understand the possible – multidimensional – effects of changing global economic developments on the revenue autonomy of subnational governments is presented.

2.1 Federal Relations as an Ongoing Bargaining Process

Classic federal theory informs us that federalism “is a process as well as a structure” (Elazar 1987; Friedrich 1965; Ostrom 1994), in the sense that the institutionalized division of political authority (*Herrschaft*) – for example within the constitution – is only robust, if credible guarantees and supportive institutions (political parties, judiciary system, etc.) exist (Bednar 2005; Bednar et al 2001; Riker 1964). Nevertheless, at the

same time the “very things which make federalism desirable and occasionally possible also make it unstable and occasionally perishable” (Riley 1973: 120). In other words, federal bargaining outcomes will be dependent on the changes in (other) political and juridical institutions, because a federal contract “can only be [a] formalized transaction of a moment in the history of a particular community” (Davis 1978). In this sense, a federal state structure produces a “complex reality in constant flux” (Beramendi 2007: 759), where bargaining outcomes are temporal and do not lead to a final “institutional” outcome but are unstable and contested and reflect the “ebb and flow of authority among levels of government” (Filippov et al. 2004: 10).

Moreover, in Latin America the bargaining between national and subnational actors “is bargaining over things in limited supply – authority, revenue, jurisdiction, power [...]” (Filippov et al. 2004: 12) and frequently one can observe not only a single collective action problem but also an “interconnected web of collective action problems” (Bednar 2005: 12). It is this momentum, which nurtures the bargaining between government levels in a continuous way and which makes fiscal and administrative relations between government levels in an externally (economic) dependent state a competitive bargaining system rather than a joint decision making system (Braun 2003).

Recent scholarship on federal relations in Latin America confirmed this perspective and offered new insights on the – typically informal and temporary – changes in federal power relations in Argentina (Gibson 2012; Giraudy 2009; González 2010; Lodola 2011; Wibbels 2005), Brazil (Montero and Samuels 2004), Mexico (Edmonds-Poli 2006; Hernández Rodríguez 2008; Modoux 2006) or even Bolivia (Dickovick and Eaton 2013; Faguet 2013). These contributions, although convincingly specifying the domestic (formal and informal) institutional factors which influence the bargaining process, too often omit the embeddedness of such federal power dynamics into global economic processes which occur outside the nation state. This may be one reason why such primarily neo-institutionalist research ultimately fails to provide a satisfactory explanation for the ambiguous performance of federal systems, the perils of decentralization (Wibbels 2006) or the subnational heterogeneity in political and social processes within the same country.

Consequently such literature is not only running into a “territorial trap” (Agnew 1994:53);, but ultimately reinforces the methodological nationalism within their analysis. However, as the discussion in the (critical) political geography literature argued, the vision of the centrality of state territories and (the states’) scalar hierarchies is an “impossible dream of imposing closure” (Cox 2013: 13). Movements or economic flows are never spatially structured in a hierarchical fashion, because “the positioning of separate levels in a

scalar hierarchy which then interact is to endow them with a capacity, a power that they cannot have in and of themselves” (Cox 2013: 13). Movements of economic flows, especially the mechanisms of capital accumulation in global capitalism, likely form their own territorialities, which then may provide an unstable ground on which state territories exist and change (Brenner 2004; Harvey 2006; Knox et al. 2014). State institutions may try to regulate – for example via modes of representation, via the internal organization of the state or via other modes of intervention (Jessop 1990) – these other forms of territoriality (for example the private or the economic) but territoriality in itself is not reducible to the state (Cox 2013: 13).

For the analysis of federal relations, these insights imply that states and their territorial sub-units should not be treated like territories of governance, which behave like abstract, homogenous containers. Quite to the contrary, the interdependence between domestic institutions and external factors has to be taken seriously, not only in the sense that domestic responses to global economic processes depend on the specific domestic institutional setting,⁸ but also in the sense that global and domestic processes are inseparable in a world of economic interdependence.

Moreover, it becomes important to follow an analytical perspective which is sensitive to networks and flows that crisscross jurisdictional boundaries the interdependence between global and local factors for the explanation of social phenomena and especially for the question of power. Although, as Cox (1998) points out, institutionalized political actors may be in a prime position to control an area, their ability to perform this task is inherently incomplete, as social struggles are continuously propelled by material and social dynamics that transcend jurisdictional limits. Consequently, such a perspective is important to understand the dynamics of federal relations, as it is sensitive to changes which do not directly translate in an (formal) institutional shift along jurisdictional boundaries. It helps to shed greater light to the dynamics within the changing relations between subnational units as well as between the federal and subnational level, because such dynamics are essentially fluid and dynamic; “that is, in terms of the ebb and flow of particular tendencies and countertendencies that may shift considerably – weather gradually or rapidly – over time and space” (Bates and Smith 2008: 200).

⁸ For such an argument, see the literature on domestic institutional change within the process of globalization (Braun and Trein 2013; Genschel 2002; Swank 2002).

2.2 Subnational Fiscal Autonomy

In order to apply such a spatially sensitive perspective to the study of the dynamics in federal relations this paper proposes to analyze the changes in subnational fiscal autonomy in Mexico during the last two decades. Subnational fiscal autonomy is defined quite straightforwardly as the ability of subnational governments to collect and spend fiscal resources in a discretionary way, i.e. without the interference of other government levels or agencies. Subnational fiscal autonomy is (at least) two-dimensional and can be divided into expenditure and revenue autonomy of subnational units.⁹ Due to reasons of space, this paper analyzes the revenue dimension only. It can be measured both collectively (and in relation to the federal level) as the overall average fiscal autonomy of all subnational units or individually, as well as the fiscal autonomy of one subnational unit. This allows for a multi-level analysis (vertical and horizontal).

Subnational fiscal autonomy is meant to be a heuristic concept here. Its principal purpose is analytical and not normative. For example, the analysis of subnational fiscal autonomy does not per se aim to establish a connection between an increase in fiscal autonomy and an increase in expenditure or revenue collection efficiency, nor does it provide information about a possible decrease or increase in democratic responsiveness of subnational governments due to an increase fiscal autonomy. It rather aims to inform an understanding of the interdependence between global economic processes and discretionary fiscal resources of subnational governments and the resulting consequences for the intergovernmental relations in a federation.

As mentioned, federal relations are complex, multi-dimensional and dynamic. The focus on subnational fiscal autonomy does not aim to neglect possible other or connected sources of autonomy of subnational governments within such relations, whether political or institutional. This paper rather proposes to understand fiscal autonomy as one approximation to observe, in a systematic and comparable manner, the horizontal and vertical dynamics of power relations in a federal state under the influence of a changing external economic environment – controlled for other, non-fiscal sources of autonomy.¹⁰

9 Subnational fiscal autonomy has been analyzed in previous studies (Dickovick 2011; Pola 2015). However, in contrast to earlier attempts, this paper conceptualizes the fiscal autonomy of subnational governments in fiscal terms only, measuring the amount of fiscal resources subnational governments can spend discretionally.

10 In other words, it is a trade-off between a concept open to spatially sensitive thinking and, at the same time, avoiding non-institutional thinking.

Nevertheless, the selection of the fiscal aspect of autonomy is not arbitrary. Firstly, public finances are especially suitable to observe the interaction between global and subnational processes. This is especially true in the case of Latin America as most federations' public finances have been highly sensitive to the developments in the global economy. Finally, within a historical perspective public finances and the quest of allocation of revenues along the different government levels has been the cornerstone of the state-building process in Latin American federations, including Mexico (Aboites Aguilar 2003; Carmagnani and Bidart Campos 1993; Centeno and Ferraro 2013). Such historical contributions illustrate that a fiscal perspective on subnational autonomy enables an exploration of the material and, indirectly, social (pre-) conditions, in which such autonomy is nested.

However, in order to prevent confusion, the use of the term autonomy needs to be specified more closely. The way the term is used in this paper aims to prioritize neither a structural nor an agency-based perspective.¹¹ This means that, while subnational governments' autonomy is – formally and informally – institutionally constrained, if fiscal autonomy increases, governments have more opportunities to pursue their own goals.¹² However, autonomy as used here should not be confused with influence or capacity. The principal interest here is to observe the ability or power of subnational governments to do things. "Influence", in contrast, as suggested by Morriss (2002) "sometimes (and typically) does not" (Morriss 2002: 11) include such ability. Subnational fiscal autonomy is also different from the concept of simple subnational fiscal capacity, as the latter term too often conflates discretionary subnational government fiscal resources with resources which are bound to some kind of control by others.

2.3 A Framework to Understand the (Multi-level) Effects of Global Economic Changes on Subnational Fiscal Autonomy

One of the aims of this paper is to understand whether and how subnational fiscal autonomy is affected by changes in the external economic environment. In general, one can assume three possible transmission channels via such an interaction is possible: the presence of (externally induced) crisis, the specific form of integration into the global market via strong export ties or reliance on commodity exports, or access to

11 In other words, there is no intent to decide the question of the priority of agency vs. structure, echoing the debate of the problem of structure versus agency in sociology (Barnes 2001; Sewell 1992) – i.e. that either the agency (the actions of individuals, groups, or in this case subnational governments) or relatively stable patterns of social relations should be taken into account in the explanation of social processes and behavior.

12 This said, there may be other ways how subnational governments may increase this possibility, as specified, for example by Gibson (2005, 2012), however often these strategies are doomed to be temporal and unit-specific.

global capital markets, either via foreign direct investments or the possibility to contract (external) debt. The importance of these channels can be either argued to be specific for each region and case, with respect to their historical importance for Latin American economies in general and Mexico in particular (Bértola and Ocampo 2013; Moreno-Brid and Ros 2009). In addition, these transmission channels occupy a disproportionate relevance in the Latin American economic development literature, in general, and for public finances in particular. In Section 4, the paper presents some indicators in order to operationalize these three possible causes of variation – i.e. increase or decrease – in subnational fiscal autonomy.

Nevertheless, as subnational units are part of the federal polity, such an effect is likely to be mediated by the domestic conditions in which subnational fiscal autonomy is embedded. Two characteristics of a federal polity illustrate the country-specific domestic institutional setting which constrains or empowers the autonomy of subnational governments and their fiscal autonomy in particular: the institutional asymmetries of the federal polity and the characteristics of the regime of fiscal distribution. Both are intrinsically connected but analytical separable.

Institutional asymmetries describe the vertical – i.e. asymmetries between government levels of a different order (central vs. regional; central vs. local, regional vs. local) – and horizontal asymmetries – i.e. asymmetries between government levels of the same order (regional vs. regional, local vs. local). Such asymmetries can be caused by formal (constitution, laws) as well as informal institutional (party dynamics) arrangements and both are the result of the (historical) state-building process of a given country. Vertical institutional asymmetries are the defining feature of a federal polity, as federalism aims to constitutionally increase the center-constraining aspect of the polity (for and overview see Burgess 2006). Horizontal asymmetries – that is between subnational units – may be the result of constitutional or anti-constitutional (positive) discrimination of singular subnational units due to historical, ethnic, or linguistic factors, or – more important in the case of Latin American federations – via different weights of a subnational unit's influence in the federal political arena, for example in the form of malapportionment.

The regime of fiscal distribution in a federation is the second domestic institutional feature in which subnational fiscal autonomy is embedded. In principle, in addition to inter-personal or intra-group distribution, such a regime may also encompass features of inter-regional distribution and the allocation of revenue collection separately from expenditures.¹³ More specifically, one can argue that three aspects of the regime of fiscal distribution are important for subnational fiscal autonomy: its re-distributive

¹³ Allocation between the federation and sub-units as well as among regions or sub-units.

nature, the structure of the tax system, and the existence of direct compensational mechanisms for resource-rich subnational units. These three aspects function like institutional filters that mold the effect of external factors on subnational autonomy. Depending on the design and coexistence of these three aspects, external effects can be expected to interact differently with subnational autonomy (Groll 2015a).

Consequently, explaining the effects of changing external economic conditions on subnational fiscal autonomy requires taking into account the institutional setting which molds such a relationship. One possibility to theorize this relationship is to think of the interaction between domestic institutional conditions and changing external economic developments in a multi-level perspective.

On the one hand, external factors may increase the (fiscal) autonomy of subnational governments in relation to other domestic influences. That is, the effect of such factors will increase autonomous fiscal resources of a subnational unit in comparison to other units and consequently make them less dependent on conditional fiscal resources from the central government level thanks to a higher amount of discretionary fiscal resources. Thus, external factors may increase the unit's autonomy from domestic influence. On the other hand, it is conceivable that there may be a domestic institutional setting which limits the dangers but also the possibilities of a positive or negative global economic development on subnational fiscal autonomy. This would mean that the combined result of this interaction may either strengthen the autonomy of subnational units against external threats or weaken the fiscal resistance of such subnational units.

Table 1 combines these two effects on subnational autonomy in a two by two table. One could conceive of external factors that, in combination with the existing institutional filters in Mexico, led to a higher autonomy of subnational units from domestic and external influence (high/high). Next, one can expect an interaction which will produce a lower subnational autonomy from domestic as well as from external influence (low/low). Further the effect produced may, on the one hand, strengthen the autonomy of the subnational unit from domestic influence but make it at the same time more exposed to external influences (low/high). Finally, the interaction of domestic institutional filters and external effects can also lead to an opposite scenario. Subnational autonomy from external influence may be high but the unit's autonomy from domestic influence will be low (high/low). Table 1 provides a schematic overview of the possible combinations.

Table 1: Schematic Effects of the Interaction between Domestic and External Factors on Subnational Autonomy

		Autonomy from domestic influence	
		High	Low
Autonomy from external influence	High	(High / High)	(High / Low)
	Low	(Low / High)	(Low / Low)

Source: Own elaboration.

In sum, the resulting effect of a change in external economic developments on subnational fiscal autonomy will likely depend on the domestic institutional setting present in a given federation. As this condition is country-specific and bound to the historical evolution of each federation, the next section presents these configurations for the Mexican case. However, the following description aims to highlight that both domestic institutional features – the characteristics of regime of fiscal distribution as well as the evolution of institutional asymmetries – are not only conditioned by domestic struggles, but the result of a federal bargaining which is interdependent with global economic developments over time.

3. Contextualizing Subnational Fiscal Autonomy in Mexico

Domestic factors are often highlighted when describing the evolution of federal relations in Mexico and to explain the struggle of authority and resources. This is a plausible account, as the predominant feature of the Mexican state-building process is the centralized party system and specifically, since the Mexican Revolution, the period of the hegemonic one-party rule of the PRI party. Studies continue to claim that the rise of the importance of subnational governments after the mid-1990s was either due to the fading control of the central executive over subnational politicians via the party channel (Hernández Rodríguez 2003, 2008) or with a decisive strategy of the PRI party to “decentralize” resources and power to inferior government levels in order to counteract the assumed negative effects of a loss of the federal presidency after the 1990s (Díaz Cayeros 2006). However, this process was limited and in a comparative perspective the Mexican federal design continues to be demos-enabling including a relatively high level of fiscal administration.

This section does not aim to overturn all of the conclusions of previous studies. However, it attempts to correct the oversight of the significant importance of external

economic developments in the making of the domestic institutional conditions that mark Mexican federalism today. This said, the history of Mexican federalism is too rich to present in full here, so the focus is on the importance of the external dimension in specific events relevant for subnational fiscal autonomy, particularly the events that led to the establishment of the institutional filters in which subnational fiscal autonomy is embedded.

Today fiscal authority is highly concentrated in the hands of the central government in Mexico. Except for some minor taxes, the federal government level collects all major taxes within what is known as the National System of Fiscal Coordination (SNCF).¹⁴ This system emerged in 1979/80 and specifies – today – in addition the legal allocation of tax authority, also the mechanisms by which tax revenue is shared between the three levels of government. This system divides the overall tax revenue subject to sharing (*recaudación federal participable*) between the levels of government via different transfer mechanisms. Two of them are the most important: automatic, unconditional transfers (*participaciones*) and conditional transfers for specific spending purposes (*aportaciones*). *Aportaciones* represent, on average, over 46% of total revenue (in 2011) and are currently distributed via eight transfer funds for specific spending purposes. Subnational governments have no or only very limited discretion over these funds.¹⁵ *Participaciones* – representing around 32% of total state revenue (in 2011) – are distributed according to a formula stipulated in the Fiscal Coordination Law and applied to the amount of federal revenue subject to sharing. These funds are genuinely subnational. The distributive effect of the *participaciones* system gradually changed since the 1980s,¹⁶ but it is still – thanks to the origin of the system as a proportional compensation of the state’s share of the previously existing federal sales tax (*Impuesto*

14 Today subnational units collect only a tiny part – approx. 5% – of total general government revenue (OECD 2014). Although comparatively low, Mexican states do have a significant amount of revenues they can collect and spend without the interference of other government level. Currently states collect around 7 own taxes on average, which in total sum up to a revenue effort of 0.45% of GDP (OECD 2014).

15 It was not until the first year of the divided congress in 1997 that a regularization of the financial aspect of the administrative decentralization occurred. Various previously separate federal spending items were merged into one budget item with one formula, combining various “radically different” (Flores and Trillo 2004: 134) funds which had used distinctive distributional formulas.

16 With the years the actual distribution formula was object to frequent changes, most notably in the end of the 1990s. Moreover, the federal government, at least during the 1990s, possessed some discretion over the effective distribution. Overall compensatory criteria were introduced in the revenue sharing formula and the population criteria gained more weight. As a result, the derivation principle in the allocation of fiscal resources was weakened (Cadena and Gobierno del Estado de Puebla 1996; Aguilar Villanueva 1996).

Sobre Ingresos Mercantiles – ISIM) – following a derivation principle,¹⁷ rewards states with the best economic performance.

Generally, the high concentration of fiscal authority as well as the rise of SNCF is explained with the extreme centralization of the party system during the PRI hegemony. Indeed this is an important point to make as the hegemonic PRI party system enabled a decoupling of subnational politicians interest from their respective unit (Díaz Cayeros 2006). However, the creation of the SNCF was by no means the first centralization effort in the history of Mexican federalism (Aboites Aguilar 2003) and thus such arguments do not explain why the resistance of subnational governments to an increased centralization vanished over time (and especially in 1979). In fact, an important missing part of the explanation may have to do with the fiscal and economic circumstances. Economic developments certainly influenced the reasons why subnational governments joined the voluntary tax sharing system. After a phase of economic stagnation – including rising debt¹⁸ – in the late 1960s and early 1970s from 1977 onwards exploitation of the newly discovered oil resources in southern Mexico and their sale on the international market would bring a swift and strong recovery.¹⁹ In fiscal terms, this oil boom translated predominantly into an increase in federal revenue because the taxation of subsoil resources was assigned in the constitution to the federal level. Thus the rationale of subnational governments was to take at least indirectly part in the oil boom and the positive economic development via unconditional automatic tax sharing. Indeed, after the installation of the SNCF, no state received fewer revenues than before, although states had relinquished almost all of their revenue raising authority (Díaz Cayeros 2006).

A second important “institutional filter” of the regime of fiscal distribution in Mexico today is the non-existence of any direct transfer mechanism of compensation for oil producing states. Unlike in many other countries, oil producing states are not directly compensated for the extraction of oil resources in their territory. In contrast, oil revenues – representing up to one-third of general government revenue – are shared between the federal and subnational governments and distributed via the *participaciones*

17 In sum, this meant that the poorer states received smaller per capita transfers than economically “richer” states (Díaz Cayeros 1995: 94). This principle was reinforced with the tax reform in 2007.

18 By 1970, the external public debt to GDP ratio reached 12% (compared to 1% in 1946) (INEGI 1999), and in 1968 amortization and interest payments on medium and long-term external public debt represented close to 30% of exports (Hansen 1971).

19 Indeed, from 1978 to 1981 economic growth recovered strongly, leading to a period of economic expansion at rates well above the historical norm, led by oil production (19.4% annual growth) and oil exports (52.7% annual growth) (Moreno-Brid and Ros 2009).

system.²⁰ Generally this absence is explained in historical terms and the centralizing tendencies in the state building process in Mexico as the authority over subsoil resources and the resulting possible revenues were already assigned to the federal government in the constitution of 1917. However, the history of revenue centralization of subsoil revenues in Mexico is more complicated, and included also either the direct participation of subnational elites in the exploration process, as in the case of mining revenues (Carmagnani 1993: 163-164; Haber et al. 2003; Martinez Fritscher 2011), or the direct compensation of oil-producing states before the nationalization of the oil industries in the year 1938.²¹

Taking external economic developments into account, it is important to note that the mechanism of direct compensation for oil-producing states did only come to an end as the federal government succeeded to install a new regulatory code in 1940 with the aim to foster the operation of PEMEX, which was heavily hit by the nationalization and the loss of international markets due to the World War II. As a result, the tax burden was lowered and the contribution to oil producing states significantly reduced (Aboites Aguilar 2003: 104). Especially for oil-producing states like Veracruz, this meant a significant loss in revenue and consequently fiscal resources.²² Although the contribution of PEMEX to the federal state did settle down to an average of 13.1% of total federal tax revenue from 1941 to 1951 (Aboites Aguilar 2003: 189), the nationalization of the company and the subsequent federal regulations canceled any

20 Currently oil production and exportation contributes via different concepts to states' revenue. The main revenues are generated via a kind of hydrocarbon tax (*derechos ordinarios*), levied on the income of PEMEX at a current rate of 71.5%, a special tax on production and services (*Impuesto Especial sobre Producción y Servicios – IEPS*) applied to gasoline and diesel sales, a tax on oil yield, and *aprovechamiento sobre rendimientos excedentes*. Revenues from oil production compose approx. one-third of total revenues as in December of 2010, a figure almost identical to the year 1990. This is 7.6% of GDP for the year 2011. Figure A in the Appendix displays oil revenue as a percentage of GDP and as a percentage of total general government revenue. It is observable that Mexican fiscal dependence on oil revenues has not been effectively addressed during the last 22 years, as the share of oil revenues to total revenues was not reduced in any year (except 1992) below 25%, and in the entire period it even increased on average. Oil revenues peaked in 2006 with a share of over 38% of total revenues or 8.2% of GDP.

21 Another example occurred in 1922 when the government of Veracruz – by then the state with the most important oil extraction industry – aimed to establish a subnational tax on oil production (Aboites Aguilar 2003: 104). In constitutional terms this was an open attack on the validity of Article 24 of the Constitution. The federal government, rejecting this initiative, decided instead to share with oil extracting and refining states the amount of five percent of the revenues of the federal tax on hydrocarbon production in the form of automatic transfers. This initiative did not only show that the federal government's authority over revenue from subsoil resources was by no means initially accepted by all states, it also set the blueprint for the upcoming "federalization" of federal taxes.

22 Despite constant claims of governors of oil-producing states, PEMEX was even freed to pay the land property tax, which was at that time still under the control of the states.

major benefits for oil-producing states and established the priority of federal matters against any particularistic subnational interest.²³

Both accounts continue to be of importance for the embeddedness of subnational fiscal autonomy in Mexico today, because they describe the critical events that gave rise to the decisive features – or institutional filters – of the regime of fiscal distribution in which subnational fiscal autonomy is embedded. Moreover, these short descriptions indicate that one should not neglect the importance of global economic developments when describing the evolution of these institutional filters. This means that external factors like global economic developments are – in interaction with domestic constellations – historically important for understanding the rise of the domestic institutional setting within which subnational fiscal autonomy is embedded. This section presented support for the historical importance of the interaction between external circumstances and federal-level factors to understand the embeddedness of subnational fiscal autonomy. The next section goes on to test whether external factors have had a persistent and on-going impact on the fiscal autonomy of subnational governments in recent decades.

4. Quantitative Analysis of the External Dimension of Subnational Fiscal Autonomy in Mexico

This section analyzes the nature and extent of influence of external economic developments on subnational fiscal autonomy in Mexico for the period from 1990 to 2012, for which reliable data is available. Before discussing the results of the quantitative analysis, the following paragraphs describe the choice and operationalization of the dependent and independent variables and justify the model selection. It is important to note that the analysis is limited to the revenue dimension of subnational fiscal autonomy in order to leave enough space for interpretation and discussion of estimation results.²⁴

The operationalization of subnational discretionary revenues in Mexico is straightforward. The basic rationale behind this indicator – calculated in per capita values in thousand

23 One should not forget that the nationalization of the oil industry was also heavily promoted via a popular public discourse in which regional concerns played no role. The symbolic and material importance of PEMEX is very well described in the words of Antonio Bermúdez, the director of PEMEX in 1947: “La institución [...] es de carácter eminentemente nacional. De ella depende en gran parte el bienestar y prosperidad del país. Nadie tiene derecho a poner en peligro por intransigencias, descuidos, o actividades egoistas. Implica un interés superior e inviolable, que es el de la Patria misma. Y a ella deben subordinarse las pasiones, los apetitos y, cuando sea necesario hasta los intereses legítimos” (Bermúdez 1958: 148).

24 An analysis of the expenditure dimension of subnational autonomy has also been pursued elsewhere (see Groll 2015a).

Mexican pesos at 2010 prices for each year and unit ²⁵ – is to measure as close as possible the amount of revenue that the subnational government can dispose without the intervention or conditionality of other government levels. In other words, this measure tries to reflect the fiscal resources that subnational governments can dispose in an autonomous way. In the Mexican case, this means that discretionary revenues are calculated as tax revenues of a state plus non-tax revenues of a state plus automatic unconditional federal transfers of the federal tax sharing mechanism (*sistema de coordinación fiscal*), also known as *participaciones* (for data sources see Table 4 in the Appendix).

As mentioned above, the influence of external economic developments on (sub-) national finances is possible via three transmission channels: (externally induced) crisis, integration into the global market via strong export ties or the reliance on commodity exports and the access to global capital markets, either via foreign direct investments or the possibility to contract (external) debt. However, there are various challenges in the construction of reliable and valid measures for external effects at the subnational level in Mexico. First of all, state level data for exports is not reliable for the period before 2007. In addition, the identification of subnational external debt is challenging. Subnational debt is generally reported as total stock and cannot be differentiated between domestic and external debt.²⁶ This is the reason why subnational debt is not considered as an external factor in the analysis, although it is included to investigate likely general influences.

Table 5 in the Appendix summarizes the variables representing likely external economic factors which may affect subnational fiscal autonomy. Three indicators measure the effects of a (externally induced) crisis. The rationale behind the operationalization is that a national crisis can trickle down to the subnational economy and translate into pressure on subnational finances and/or a decline in federal transfers. Crisis may affect subnational fiscal autonomy indirectly via the presence of a national crisis and directly via the interaction of the national crisis with the performance of the subnational economy or subnational unemployment. The existence of a national crisis is calculated as a dummy variable (variable name: CRISIS_RR), where the value one

25 The choice to calculate the measure on a per capita basis was made (a) due to the fact that measures for gross state product (GSP) are not reliable for the entire period, and (b) in order to express the amount of discretionary revenue in relation to the possible recipients of such revenues not in relation to other government levels, as would be the case if it were to be calculated as a share of total revenue of subnational units).

26 Unlike in other Latin American federations, external subnational debt in Mexico is a relatively new phenomenon. Only with the reform of the *Ley del Mercado de Valores* in 2001 could states or municipalities issue bonds in the Mexican securities markets and thus obtain revenue from the (global) capital market. This relatively unregulated subnational debt avenue came to an end with the recent implementation of a hard budget constraint by the federal congress (Marcial Pérez 2015).

is used to indicate the presence of a national crisis in a given year. The definition of a national crisis follows that used by Reinhardt and Rogoff (2009, 2011).²⁷ The “trickle down” effect of a crisis to the subnational economy is measured both directly and indirectly. It is measured directly in the form of a reduction in subnational economic activity in the presence of a (externally induced) crisis of the national economy, or it is measured indirectly, in the form of a rise of the subnational unemployment rate (PARO) in the presence of a (externally induced) crisis at the federal level. The direct form is operationalized as the interaction of a national crisis with the annual variation of the states’ gross domestic product in a given year. The variation of the annual subnational gross domestic product (CGSP) is calculated in percentage change.

The integration into the global economy of a subnational unit is measured via three variables in both countries. Unfortunately, measures for subnational export activity are not available before the year 2007. Alternatively, measures like the share of (formal) employed industrial workers (*población ocupada por industria manufacturera*) on the total subnational economic active population are misleading and are only very modestly correlated with contemporary subnational export figures. Although 94.65% of total Mexican non-oil exports between 1990 and 2012 are classified as manufactured goods, the bulk of non-commodity exports comes from the Mexican *maquila* industry. As a result, alternative measures likely underestimate the important role of the maquiladora industry in total subnational exports, especially in the northern Mexican states. The analysis therefore uses an alternative measure for the export activity of Mexican states. However, exploratory analysis for the period from 2007-2012 confirm the results.

In order to capture the relevance of commodity exports for Mexican states, the analysis test for two variables. First is a dummy variable for oil producing states (PETRO), coded as 1 for states with oil exploration and 0 for those without it.²⁸ Although revenues from oil exploration are federalized, as explained in Section 3, there a positive influence due to an indirect compensation of such economic activity via the *participaciones* system is possible in theory. As a second indicator the international oil prices, expressed as the price for crude oil at US Dollar per barrel (bbl.) in constant 2000 US-Dollars, is introduced

27 However, to account only for externally induced crisis, only four forms of crisis are taken into account from the crisis definition in Reinhardt and Rogoff: currency, inflation, external sovereign debt and banking crisis. Following the crisis definition, presented in chapter two, nine crisis years in the period from 1990 to 2012 can be identified: 1990, 1991, 1994-1999, 2000, and 2008 as a result of the global economic crisis.

28 Today oil is extracted in the territory of the states of Campeche, Chiapas, Puebla, San Luis Potosí, Tabasco and Veracruz, although in different quantities.

into the analysis (OIL).²⁹ Finally, the analysis tests the effects of external factors which express the subnational access to global capital markets, although reliable data for this measure is limited to foreign direct investment (FDI).³⁰ Table 6 in the Appendix presents the correlation between external factors and subnational revenue autonomy for Mexico in the period 1990-2012.

Three groups of variables test for alternative hypotheses and explanations for the variation of subnational revenue autonomy in Mexico: a first group tests for the influence of additional characteristics of fiscal federal relations (fiscal federalism); a second group of variables describes the socio-economic development of subnational units; and a group of variables which account for political-institutional dynamics. These indicators are selected because of their persistent importance in the comparative federalism and fiscal federalism literature.

In order to control for possible effects of the system of fiscal federalism, the models are fitted with two variables, conditional federal transfers and subnational debt. Conditional federal transfers are calculated on a per capita basis (CCTRANS).³¹ Subnational debt is measured in the per capita debt stock in nominal prices at the end of the year (CDEBT). The ability to contract subnational debt is intimately related to the fiscal relationships between government levels: either because the federal government directly functions as creditor, or it is used explicitly – for example using automatic transfers as a collateral

29 This price expresses the crude oil average spot price of Brent, Dubai and West Texas Intermediate Oil, equally weighted. In fact there exist various other international oil prices, depending on the kind of oil traded. However, this price is reasonably similar to the price for Mexican oil, which is determined as a function of four international oil varieties – two American crude oils: West Texas Sour (WTS) and Light Louisiana Sweet (LLS); one British (Brent) and a fuel oil, US Gulf Coast No.6 3.0 % Sulfur, which is only used in daily formulas for the international price of the Maya crude. Mexico sells mixes of crude oils of different densities both in the domestic and in the foreign market. Mexican oil is classified as Maya (heavy), Istmo (light) and Olmeca (super-light).

30 These are measured in on a per capita basis for each subnational unit in US-Dollars as reported by the Secretaría de Economía (Dirección General de Inversión Extranjera). The inflow of FDI increased remarkably since the 1990s, triggered by the liberalization of trade, the incorporation into NAFTA and the privatization of formerly state owned enterprises. Overall FDI grew from 0.97% of GDP in the year 1990 to over 4% in 2001. However, since 2001 the share of FDI on GDP has only surpassed the 3% level in three years: 2002, 2004 and 2007 and averaged at 2.56% of GDP (World Bank 2014) second remarkable feature of foreign direct investment in Mexico is its high concentration in few states. Only five states accumulated 68% of the average per capita foreign direct investment in Mexico in the period between 1990 and 2012: Mexico City (30%), Nuevo León (11%), Baja California (9%), Baja California Sur (7%), and Chihuahua (7%). All other states did not accumulate more than 3% on average of total FDI during this period. This evidence reflects, on the one hand, the high integration of the northern Mexican states at the US border within NAFTA (Baja California, Chihuahua and Nuevo León, Baja California Sur), and the importance of the maquiladora industry in some of these states. On the other hand, it provides evidence for the enduring importance of Mexico City as the main location of most headquarters of foreign companies and the resulting attraction of FDI.

31 Conditional federal transfers are all federal transfers which are pegged to a specific spending purpose by the federal government. Such transfers are *aportaciones* in the case of Mexico.

– or implicitly – in the case of state bailouts – as lender of last resort. The second group of control variables includes indicators of economic and social development. In order to control for the effects the size of the subnational economy on subnational autonomy, the per capita GDP per state (CGSP) is measured. In addition, a measure for subnational inequality (Gini) – indicating the socio-economic inequality via the Gini coefficient – is applied in the analysis.

Finally, the subnational political system has been highlighted in the decentralization and comparative federalism literature as a crucial explanatory factor for variations in (political) subnational autonomy. This analysis accounts for such hypothesis controlling for different political factors. One hypothesis suggests that subnational fiscal autonomy has to do with the competitiveness of the subnational political system. More competitive subnational electoral system can led federal governments to pass more fiscal resources to the subnational level, if they expect their partisans to win in subnational elections (O'Neill 2005). Thus, the robustness of the results is controlled with a measure of subnational party competition in subnational elections. Electoral competition is measured on the basis of the effective number of competing candidates (or electoral coalitions) in each gubernatorial contest (ENC). The effective number of candidates is expressed by the Laakso and Taagepera index.³² This index has become somewhat of the standard measure for the comparative analysis of party systems (Caulier and Dumont 2005).³³

Another measure to estimate the effect of the competition in the subnational political system is the majority distance in the gubernatorial elections (MD_GOV). This measure takes the democratization process in Mexico into account and serves as an approximation to the political weight of governors in control of the political arena.³⁴ In addition, several studies argue that the political representation of subnational governments at the federal level is decisive for extracting additional resources, for example via clientelist relationships from the center (Behrend 2011; Gibson 2005). The analysis here measures

32 This index can be calculated as $\frac{1}{\sum_{i=1}^n v_i^2}$ where v is the share of votes for every candidate i .

33 However, it has been argued that this measure does not apply well to some empirical situations, as it over-counts the larger party (Molinar 1991) and increases consistently with greater atomization. In order to address these critics the robustness of the findings were tested employing the alternative

Molinar index of $1 + ENP \frac{(\sum_{i=1}^n v_i^2) - v_1^2}{\sum_{i=1}^n v_i^2}$, where ENP is the Laakso and Taagepera index, and v_1^2 is the proportion of the votes of the winning candidate squared (ENC_M). The results of the analysis did not change.

34 It is calculated as $v_1 - v_2$, where v_1 is the vote share of the candidate in first place and v_2 is the share of the runner-up candidate. The robustness of the results is also checked with an alternative indicator: the margin of victory in the governor's race (MARGIN_GOV). It is calculated as $v_1 - 0.5$, where v_1 is the vote share of the candidate in the first place.

malapportionment to control for these insights. Malapportionment is measured as the difference between the subnational population share and the subnational vote shares in the senate in both countries (MAL_S). In the case of Mexico, the mixed electoral system (combining proportional representation and majority representation) effectively addresses malapportionment in the case of the Chamber of Deputies. Still, a minor degree of malapportionment can be found in the Senate. Finally, the analysis controls for the effects of party politics: i.e. if the subnational government is part of or allied to the country's dominant political party. A dummy variable measures if the subnational government is part of the PRI party in Mexico (PRI_GOV). The rationale behind this variable is to control for alternative explanations that link subnational autonomy to the partisan ties of the federal government party.

4.1 Model Specification and Estimation Results

The following analysis applies a multivariate regression analysis in order to study the effects of external factors on subnational revenue autonomy in Mexican states in the period 1990 to 2012. Generally speaking this regression analysis is concerned with the study of dependence of the subnational revenue autonomy on various explanatory variables, "with a view to estimate the average value of the former in terms of the known values of the latter" (Gujarati and Porter 2009: 18).³⁵ In the case of the following analysis, OLS estimation is biased as the intercepts are correlated with the explanatory variables, highlighting the influence of omitted variables. However, because both data sets combine observations of characteristics that vary over time and between the units, this problem can effectively be addressed. Panel data allows controlling for omitted variables and omitted heterogeneity.³⁶ Therefore, the following regression analysis applies estimation methods which enable a correction of this problem. In addition, preliminary tests (Durbin-Watson Test, Box-Pierce Test and Breusch Godfrey Test) of models that estimate the effect of external effects on subnational revenue autonomy via a standard OLS estimation disclose the existence of (serial) autocorrelation and heteroscedasticity. In addition, statistical tests reveal a relatively high heterogeneity of the degree of revenue autonomy between subnational units and over time. In sum, there is good reason to believe that panel data estimation techniques provide more

35 Applied to this study the basic idea behind multivariate regression analysis is to test the average effect the external factors on subnational autonomy, controlling for the influence of other variables. Most commonly regression analysis applies an ordinary least square estimator (OLS) as method of estimation. However, OLS regression is tied to several strong assumptions, which if not met result in a biased and inefficient estimation.

36 In this analysis heterogeneity means that subnational units are assumed to be fundamentally different from one other. Ordinary OLS estimation does not take this into account, consequently omitting such variables causes a bias in estimation. Likewise OLS estimation cannot evaluate time series variables, which influence the behavior of subnational units in a uniform way, but differently in each time period (Kennedy 2003: 282).

efficient estimation results. Three of such techniques are used: a pooled OLS model, a fixed effects model with a within-group estimator (FEM) and random effects model (REM). The random effects specification for the model is the following:

$$\begin{aligned} \ln(CDISC_REV)_{it} = & \beta_0 + \beta_1 \ln(CFDI)_{it} + \beta_2 \ln(CRISIS_RR * PARO)_{it} + \\ & \beta_3 \ln(CRISIS_RR * \ln(CGSP))_{it} + \beta_4 OIL_{it} + \beta_4 PETRO_{it} + \beta_5 PARO_{it} + \\ & \beta_6 \ln(CTRANS)_{it} + \beta_7 \ln(CDEBT)_{it} + \beta_8 \ln(CGSP)_{it} + \\ & \beta_9 GINI_{it} + \beta_{10} PRI_GOV_{it} + \beta_{11} ENC_{it} + \beta_{12} MD_GOV_{it} + \beta_{14} MAL_S_{it} + \omega_{it} \end{aligned}$$

where: β = is the intercept of each independent variable; i = the entity, $i = 1 \dots 32$; t = time, $t = 1990 \dots 2012$; $\omega_{it} = \varepsilon_{it} + v_{it}$; ε_{it} = the cross-section error component for each i ; v_{it} = idiosyncratic term.

Table 2 presents the estimations results of the three models for subnational revenue autonomy as the dependent variable. The pooled OLS estimation does not account for the heterogeneity between subnational units, and reduces the degrees of freedom. In addition, statistical test indicate the presence of panel effects. Moreover, the Hausman test (Hausman 1978) indicates that the REM specifications is inconsistent and thus the fixed effects model specification is chosen as the most efficient estimation. In addition, the Breusch Godfrey test for panel models (Godfrey 1978) indicates the existence of serial correlation and the Breusch Pagan test (Breusch and Pagan 1980) suggests the presence of heteroscedasticity. In order to control for cross-sectional and serial correlation robust covariance matrix estimators, as proposed by Driscoll and Kraay (1998), are calculated and presented in Table 2.³⁷

Before interpreting the effects of each variable in detail, it should be noted that the coefficients presented include both the within-entity and between-entity effects. In the case of TSCS data, the coefficients represent the average effect of the external variable over the discretionary revenue when the external variable changes across time and between states by one unit. The FEM model specification addresses the omitted variable bias by focusing on the within-entity variation excluding time-invariant effects. Thus time-invariant characteristics of Mexican states, like the presence of oil exploration, are absent in the model.

³⁷ Such robust standard errors are frequently used in the literature. However, some scholars blamed these technique as a easy way to overcome problems of model misspecification (King and Roberts 2015). A further improvement of the model therefore should take these concerns into account and, if needed, respecify the model.

Table 2: Results of Multivariate Regression Analysis with Three Models

	Discretionary Revenue		
	Pooled OLS	Fixed Effects	Random Effects
	Model 1	Model 2	Model 3
FDI per capita (log)	-0.005 (0.013)	0.018*** (0.003)	0.020*** (0.004)
Unemployment * Crisis year	-0.021 (0.014)	-0.037*** (0.007)	-0.034*** (0.007)
GSP/capita (log) * Crisis year	0.068** (0.030)	0.116*** (0.024)	0.112*** (0.031)
Crisis year	-0.180** (0.076)	-0.256*** (0.082)	-0.250*** (0.096)
International Oil price	0.002*** (0.001)	0.003*** (0.0005)	0.003*** (0.001)
Oil-producing state	0.171*** (0.034)		0.153 (0.123)
Aportaciones per capita (log)	-0.041*** (0.004)	-0.008* (0.004)	-0.009* (0.005)
Debt per capita (log)	0.031* (0.016)	0.006 (0.013)	0.006 (0.009)
GSP per capita (log)	0.616*** (0.045)	0.111 (0.081)	0.187* (0.097)
Unemployment	0.007 (0.017)	-0.016** (0.007)	-0.015** (0.007)
Gini	0.219 (0.814)	-2.174*** (0.325)	-2.247*** (0.274)
PRI Governor	-0.023 (0.033)	-0.020* (0.012)	-0.021* (0.012)
ENC	-0.197** (0.088)	-0.024 (0.020)	-0.028 (0.026)
Majority distance governor's race	-1.476*** (0.387)	-0.310*** (0.089)	-0.338*** (0.109)
Malapportionment Senate	0.457 (1.009)	0.943 (0.702)	0.585 (0.977)
Constant	7.412*** (0.689)		9.005*** (0.299)
N	493	493	493
R-squared	0.641	0.798	0.815
Adj. R-squared	0.621	0.723	0.789
F Statistic	56.873*** (df = 15; 477)	125.783*** (df = 14; 447)	140.085*** (df = 15; 477)

***p < .01; **p < .05; *p < .1

Source: Own elaboration.

In general, the estimation results confirm that external effects, even if controlling for alternative explanations, exert a significant effect on subnational revenue autonomy in Mexican states during the observation period. This overall result underlines the importance to take external economic developments into account in order to explain the dynamics of fiscal autonomy of state governments in Mexico. Moreover, it is a strong indication to include the external dimension in the analysis of dynamics in Mexican federal relations.

However, the estimation results show that the effects of external factors on subnational revenue autonomy are not uniform. In general, as mentioned in Section 3, this is due to the particularities of three “institutional filters” in the regime of fiscal distribution in Mexico. The interaction between these domestic conditions and changing external factors explains processes of increasing inequality in fiscal autonomy between subnational units as well as of subnational units in relation to the center. In other words, inequalities of income are interdependent, in the sense that they are produced and reproduced by domestic and external dynamics.

For example, the positive and significant influence of states’ per capita FDI on subnational revenue autonomy is consistent with the bias of the nature of the regime of fiscal distribution priming economically dynamic states. One explanation for this relationship is that FDI primes an already existing high economic development in some states, as they are concentrated in the states with the largest economies. FDI may therefore reflect and even accentuate the existing economic disequilibria that structure the differences in subnational revenue autonomy. In addition, given the regime of fiscal distribution, an increase in economic activity is likely to be rewarded by higher automatic federal transfers.³⁸ Moreover, states with a strong economy also tend to have higher shares of non-tax revenue, particularly in the case of Mexico City.³⁹

Estimations results show that in a crisis year, if coupled with an increase in subnational unemployment, the state accumulates less discretionary revenue. This relationship is significant in both the FEM and REM specification and shows the way that the *participaciones* system magnifies crises for the subnational level. However, if a state can grow despite being in a crisis year, it is likely to acquire more discretionary revenue. One explanation for this observation, confirmed in this analysis by the positive and significant relationship between the interaction of a crisis year and the

38 With the financial reform in 2007, which placed economic success for the distribution of the revenues above the revenue level of 2007, this effect was even enlarged.

39 This hypothesis is supported if the difference between the average revenue autonomy of Mexican states that export disproportionately much (per capita) (high-exporting) and the ones with a low share of export for the period from 2007 to 2012 (in which data is available) are plotted against each other.

states' economic growth, is the zero sum nature of the *participaciones* system and the partial distribution of automatic transfers on the basis of economic performance. In contrast, the existence of a crisis year has a significant negative effect on subnational revenue autonomy, which is consistent in all three specifications. This reinforces the argument in this analysis that states can “save” themselves from national crisis effects if their economy can grow. In addition, subnational revenue autonomy in Mexico is only affected in a crisis year if a crisis can “trickle down” to the subnational level. In other words, if a crisis causes a reduction of subnational economic performance or a rise in subnational unemployment which impairs the allocation of performance-related automatic transfers and decreases the (although generally low) revenue collection ability of Mexican states. Thus, in general, the influence of a crisis on subnational revenue autonomy is explainable by the existence of the high concentration of tax authority in Mexico.

The nature of fiscal distribution, i.e. the absence of a direct compensational mechanism for oil extraction, and the high centralization of tax authority also explain the positive and significant effect of the rise of the international oil price in subnational revenue autonomy. This effect, robust for all model specifications, is explicable by the great importance of oil revenue for public finances in Mexico. The centralization of such revenues at the federal level and the distribution of part of these revenues collectively to all states is the main mechanism behind this effect. The direct compensation of oil producing provinces, omitted in the FEM specification, is not significant in the REM. As a result one can conclude that, although oil-producing provinces have on average higher revenue autonomy across time and in comparison to non-oil producing states,⁴⁰ this feature does not explain changes between states and during time in a statistically significant way.

Finally, the robustness of these findings is enhanced by the performance of the control variables. The influence of the eight control variables is almost completely consistent with a priori expectations and the existing empirical literature on decentralization and comparative federalism. In Mexico, the socio-economic control variables confirm the significant structural disadvantage of economically weak and socially underdeveloped states to obtain a higher degree of subnational revenue autonomy. The significance of an increasing gubernatorial competition is in line with the assumption about the reasons for decentralization in Mexico (Díaz Cayeros 2006). Federal governments tend to channel additional resources to the subnational level, if electoral competition is increasingly competitive. Finally, malapportionment in the Senate does not, as

⁴⁰ One can argue that this is due to the strong contribution of the oil industry to the subnational economic performance. Such provinces are then to a minor degree indirectly compensated due to their higher economic activity.

expected, show a significant effect on subnational revenue autonomy. In sum, these results indicate that the regression models are relatively well specified and lend an additional degree of confidence in the results.

These findings can also enhance the understanding of the multi-level effect of external economic developments on subnational revenue autonomy. One possibility is to arrange the results within the analytical framework presented in Section 2. This framework takes two dimensions into account: (a) if the resulting effect increases/decreases the (fiscal) autonomy of subnational units in relation to domestic influence and (b) if the interaction between the domestic institutional setting with the specific external effect produces a higher/lower autonomy of subnational units via the external economic environment. Table 3 combines these two dimensions into a two by two table with high and low values of the two dimensions.

Table 3: Multi-level Effect of External Factors on Subnational Revenue Autonomy

		Autonomy from domestic influence	
		High	Low
Autonomy from external influence	High	GSP growth in crisis year	/
	Low	FDI (Export Share)	International Oil price Trickle down of a crisis (crisis year/unemployment) Crisis year

Source: Own elaboration.

Given the knowledge of the effect of each external factor, one can now relate the effect of each external factor within the two dimensions. In the case of foreign direct investment (FDI) per capita in Mexican states, one can argue that an increase in FDI will led to a rise of in revenue autonomy but also make states with high FDI more reluctant to a potential decline which will be reflected in a decrease in discretionary revenue. Increasing FDI and potentially high exporting states on the other hand will enable them to increase their independence from domestic influence. Thus states which can attract disproportionately high amounts of FDI can gain higher (fiscal) autonomy from domestic influences and at the same time are more exposed to external dynamics (low/high).

A second possibility would be the effects of external factors which, in combination with the existing institutional filters in Mexico, led to a higher autonomy of subnational units from domestic and external influence at the same time (high/high). According to the results of this estimation, this is for example the case of a subnational unit which is able to grow in a year of a federal crisis.

Finally, the opposite scenario is present in the case of the change in the international oil price, the trickle-down effect of a crisis year, i.e. the rise of subnational unemployment during a crisis year, or the presence of a crisis year. Given the high fiscal centralization and the importance of unconditional transfers for discretionary revenue of Mexican states these factors result in a lower autonomy from both domestic and external influence.

5. Conclusion

This paper aimed to offer a better understanding of the interdependence between global process and federal relations. This inter-relation is largely absent in the current literature of comparative federalism in Latin America. A first approximation to better account for this interaction is demonstrated in this paper. In particular, the study of subnational revenue autonomy in Mexico found strong support for the hypothesis of a close relationship between the two processes. The concept of subnational autonomy, describing the amount of discretionary revenue subnational governments have at their disposal, served as good instrument allowing the analysis of the multi-dimensional translation of external economic developments to subnational finances.

The analysis presented here demonstrates how external economic developments exerted a structural influence on subnational fiscal autonomy in Mexico in the period from 1990-2012. This influence is significant even when controlling for other possible explanations and domestic factors. This evidence underlines the inference that global economic factors should be of constant relevance for the dynamics in subnational fiscal autonomy. Still, as described in Section 4, the specific effects of the transmission of external economic developments via the three channels – crisis, the integration into the global market and the access to international capital markets – are by no means uniform but are themselves also mediated by the existing institutional filters which mold the effect of each external factor. Specifically, these institutional filters are: the structure of the tax system, i.e. the concentration of tax authority at the federal level, the absence of a direct compensational mechanism for oil exploiting states, and finally the overall non-redistributive nature of the unconditional transfer system.

Statistically, this is demonstrated by the use of interaction terms. The constellation of these institutional filters explain the individual effects on subnational revenue autonomy of each of the factors elaborated for the three transmission channels: the international oil price, subnational oil exploration, per capita FDI, the interaction of a crisis year with subnational unemployment, the interaction of a crisis year with the Gross State Product (GSP) or the presence of a crisis year. The fixed effects estimation indicated that the effect of each of these factors has a significant effect on the revenue autonomy of Mexican states. This effect is positive in the case of FDI per capita, a rise in GSP during a crisis year and a rise in the international oil price. The effect is negative in the case of a rise in the subnational unemployment rate during a crisis year and the general presence of a crisis.

Apart from the empirical results, the overall insight from this analysis is that global economic developments have an important impact on subnational autonomy. This autonomy can be theorized in relation to external influence as well as from domestic influence. Given the institutional filters present in Mexican federalism, one can for example argue that states which can attract disproportionate high amount of FDI can gain a higher (fiscal) autonomy from domestic influences are likewise more exposed to external dynamics. The paper presented a preliminary framework to assess the multi-dimensional effect of each external factor with respect of an increase of revenue autonomy in relation to external as well as domestic influence.

The result of this exercise can also inform further studies of federal politics and inequality. One possibility would be to ask whether subnational governments used additional discretionary resources to introduce inequality-reducing policies or whether such governments positively affected by global economic conditions used such resources to establish or increase networks of citizen support, either via increasing clientelist relationships or via the realization of popular policies. In addition, this analysis may inform future studies of federal relations. Such studies should explore which additional conditions enable subnational governments to take advantage of an increase in subnational fiscal autonomy to gain greater leverage from lower or higher tier administrations. Further research is needed to explore these questions, that accounts properly for the external dimension of federal politics.

6. Appendix

Table 4: Data Sources

Variable	Data Source
Discretionary Revenue	Instituto Nacional Estadística y Geografía (INEGI). <i>Estadística de finanzas públicas estatales y municipales.</i>
Foreign Direct Investment (FDI)	Secretaría de Economía. Dirección General de Inversión Extranjera.
Crisis year	Reinhardt und Rogoff (2009, 2011)
International Oil price	World Bank, <i>World Development Indicators</i>
Oil-producing state	INEGI
<i>Aportaciones</i>	INEGI, <i>Estadística de finanzas públicas estatales y municipales.</i>
Debt	Secretaría de Hacienda y Crédito Público (Información proporcionada por las Entidades Federativas)
Gross Social Product (GSP)	INEGI, <i>Producto interno bruto por entidad federativa</i>
Subnational Unemployment	Encuesta Nacional de Ocupación y Empleo (ENOE). <i>Anuarios Estadísticos de las Entidades Federativas (varios años)</i>
Subnational Gini	Consejo Nacional de Evaluación de la Política de Desarrollo Social (CONEVAL) con base en el MCS-ENIGH 2008, 2010 y 2012.
PRI Governor	Instituto Federal Electoral (IFE), Institutos Electorales Estatales
Effective number of candidates (ENC)	
Majority distance (MD) governor's race	
Malapportionment Senate	Senado de la República, México
Population	INEGI
Exports	INEGI, <i>Sistema de Cuentas Nacionales de México</i>

Source: Own elaboration.

Table 5: Operationalization of External Factors, Mexico

Concept / Variable		Mexico
Crisis	Economic crisis effects	Interaction between annual GSP growth and crisis year (CRISIS_RR*VARGDP)
	Social crisis effects	Interaction between state's official unemployment rate and crisis year (CRISIS_RR*PARO)
	Crisis year	Crisis year (CRISIS_RR)
Integration into the global market	Export activity	
	Commodity reliance	International price for oil (OIL)
		Oil producing state (PETRO)
Global capital markets	Foreign direct investments (FDI)	Per capita foreign direct investments per state (CFDI)

Source: Own elaboration.

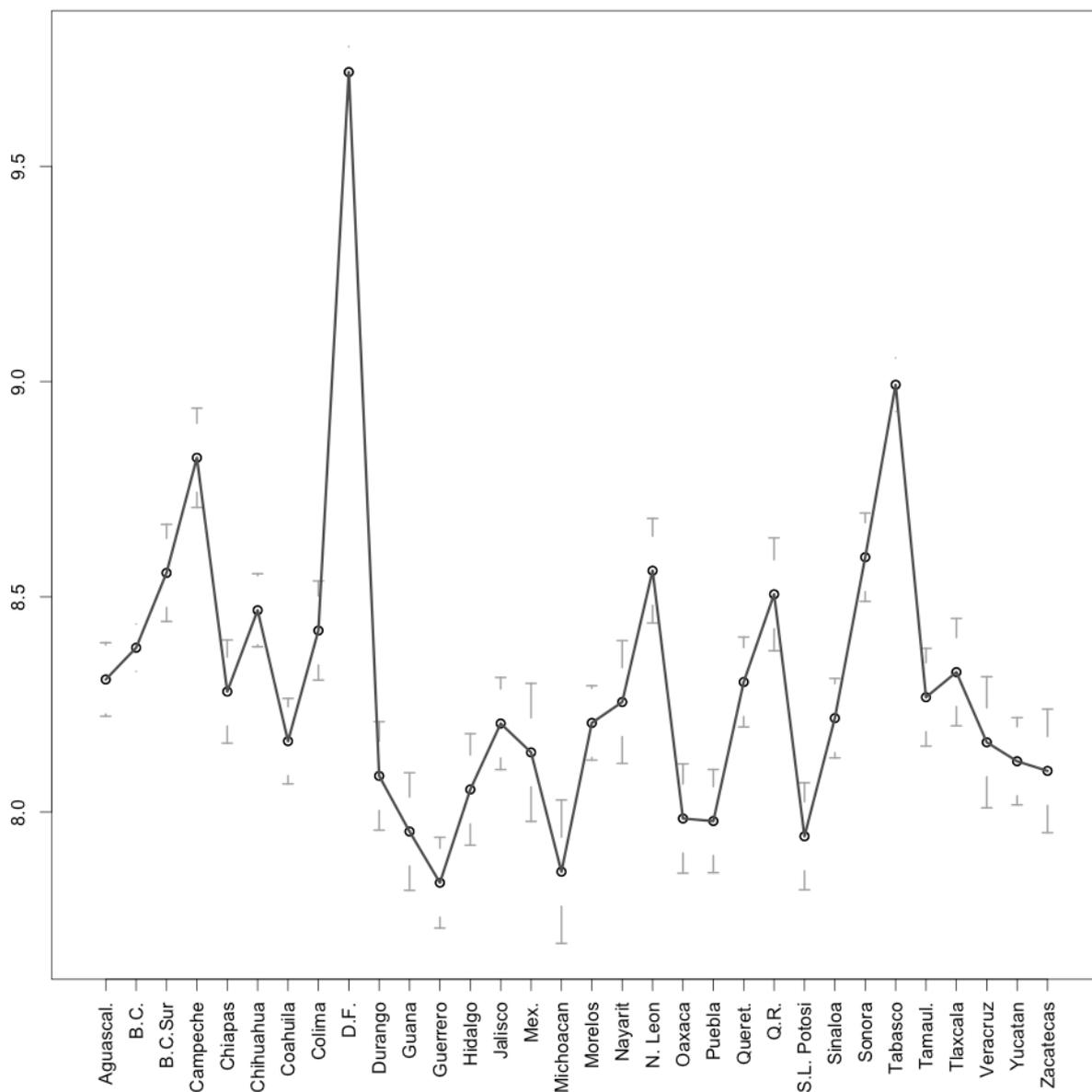
Table 6: Correlation: Subnational Revenue Autonomy and External Factors in Mexico, 1990-2012

	Discretionary Revenue
Crisis year	-0.347
International Oil price	0.553
Oil producing province	0.043
Export activity (per capita)	0.239
Foreign direct investment (FDI)	0.463
Subnational debt*	0.535

Source: Own elaboration, Spearman correlation coefficient;

* Subnational debt includes external and domestic debt

Figure 1: Heterogeneity of Revenue Autonomy of Mexican States, 1990-2012



Source: Own elaboration; mean log per capita values; 0.95 confidence intervals.

Effect plots

Figure 2: Interaction of Crisis and per capita GSP (log) in discretionary per capita Revenue (log)

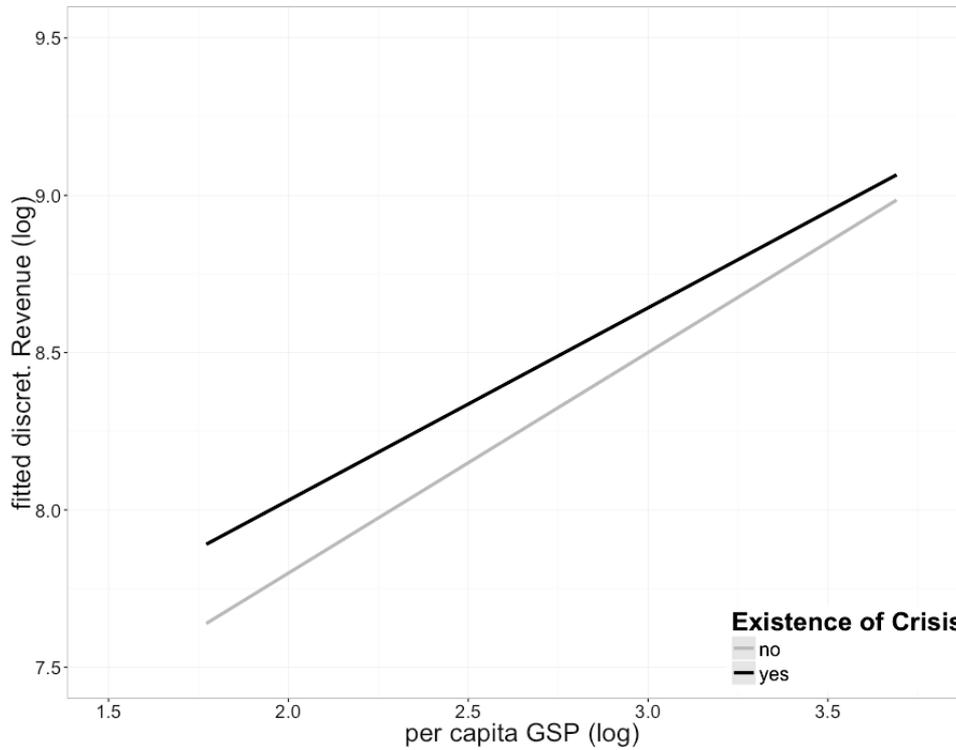


Figure 3: Interaction of Crisis and Unemployment in discretionary per capita Revenue (log)

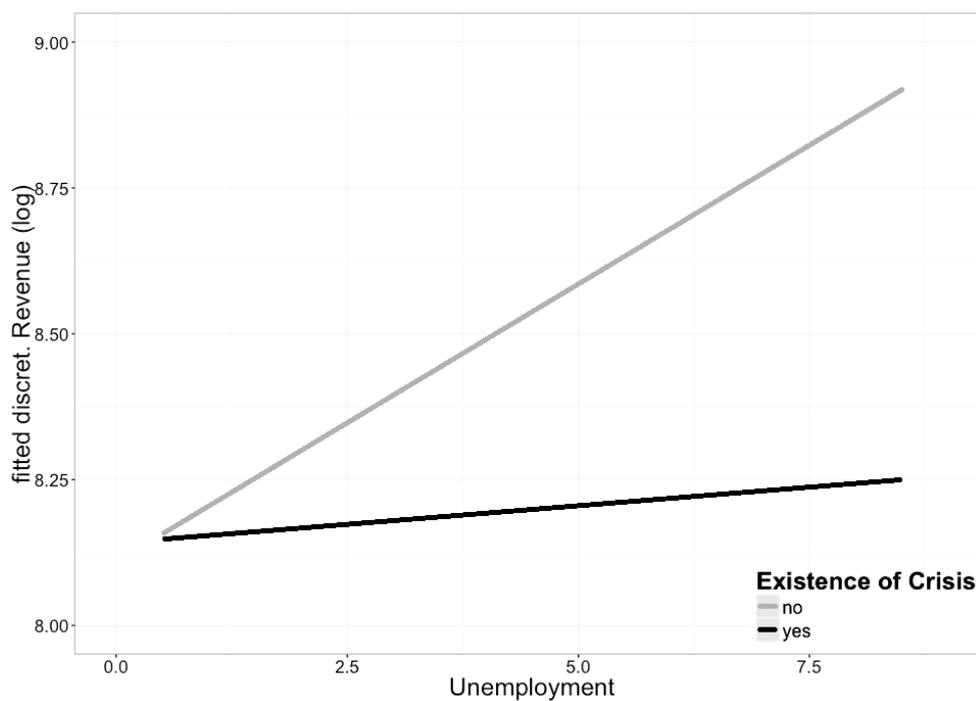


Figure 4: Oil and discretionary per capita Revenue (log)

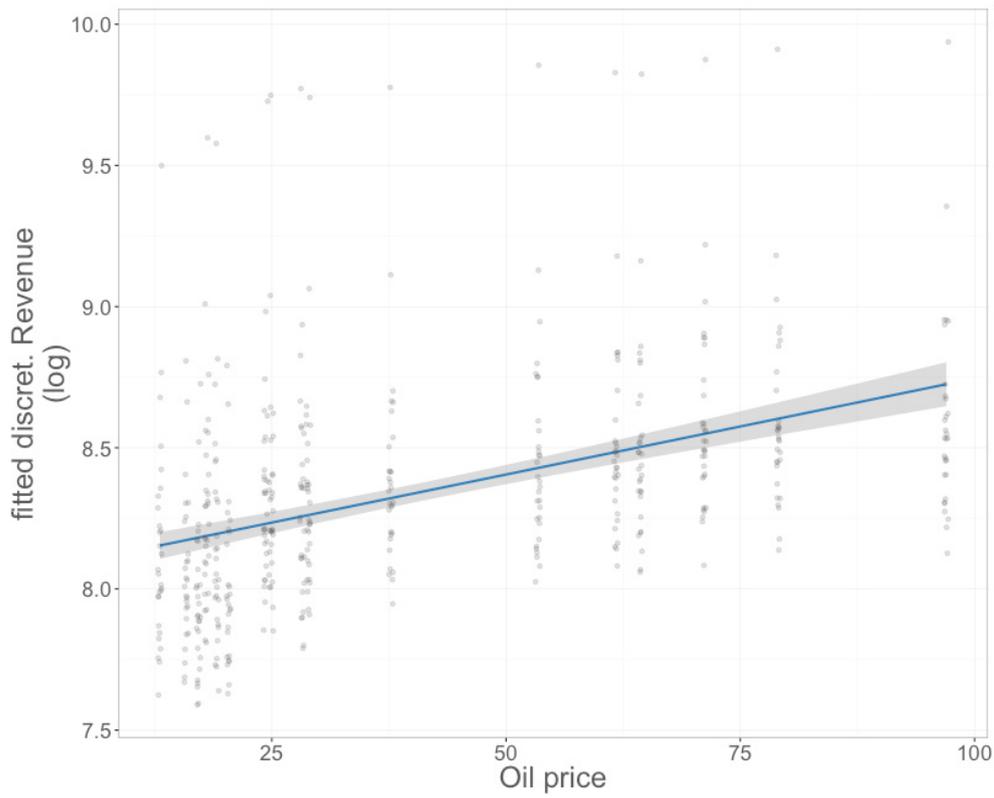


Figure 5: FDI per capita (log) and discretionary per capita Revenue (log)

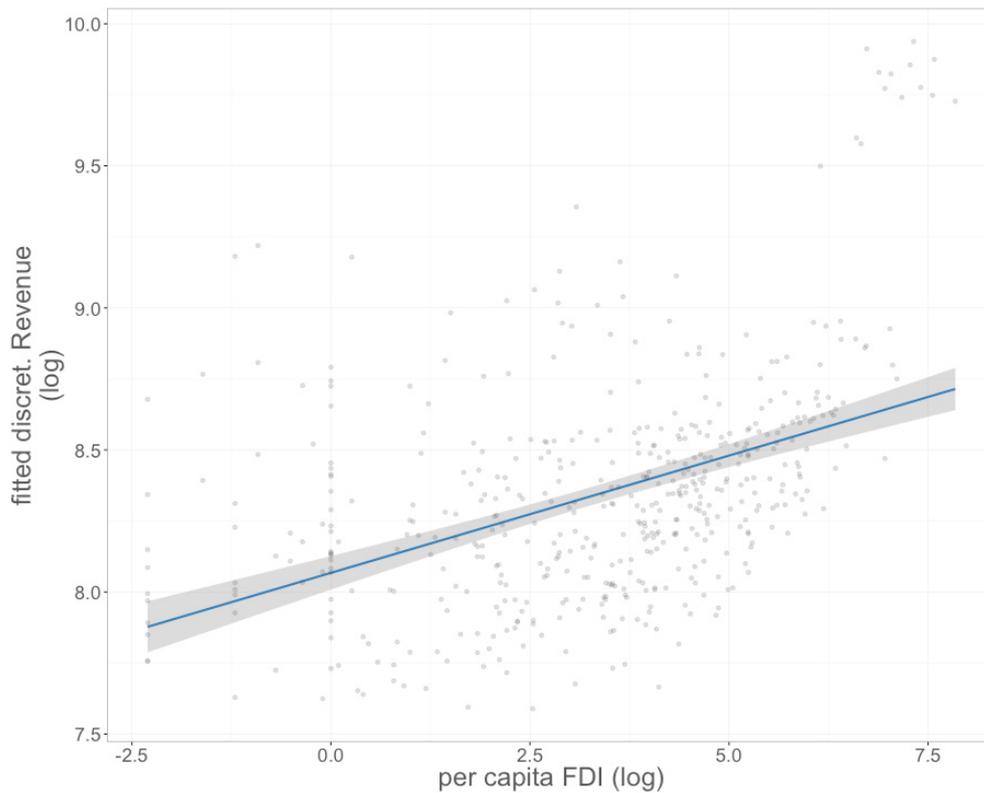
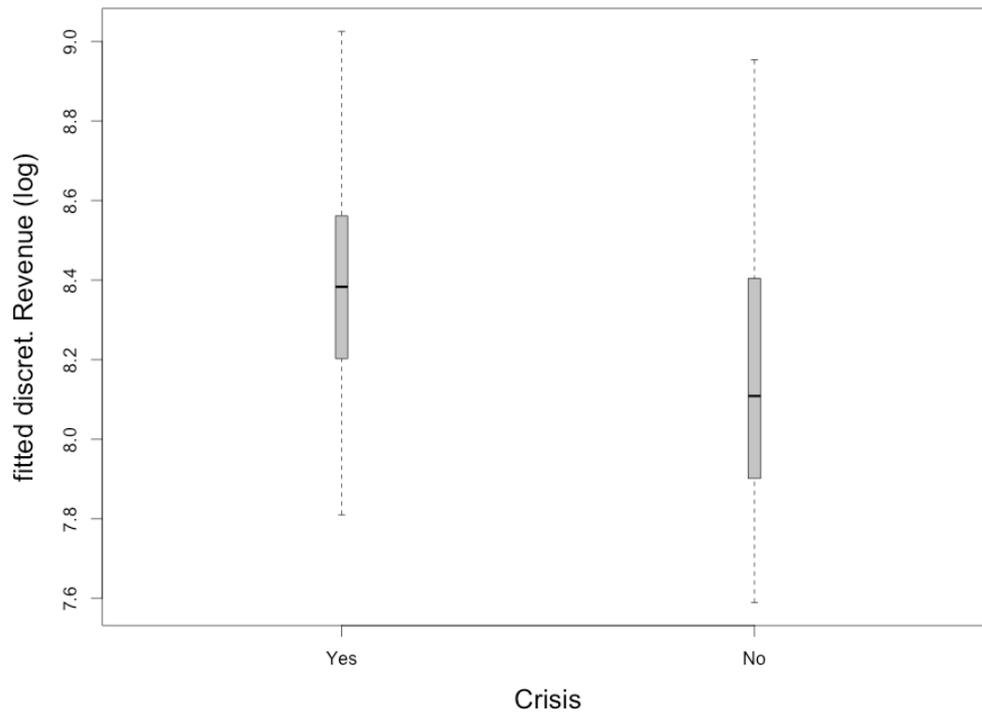


Figure 6: Crisis and discretionary per capita Revenue (log)



Source: Own elaboration for all effect plot figures..

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