



Département d'économie politique
Faculté des Sciences Economiques et Sociales

Chaire d'économie internationale et régionale
Thierry Madiès, Professeur ordinaire



Department of Economics and Accounting
Hannu Laurila, Professor

THE SOFT BUDGET CONSTRAINT PROBLEM IN TRANSITION AND DEVELOPING COUNTRIES

Under the supervision of :

Prof. Thierry Madiès
Chaire d'économie internationale et régionale

Prof. Hannu Laurila
Department of Economics and Accounting

XAVIER FROMAGET

Fribourg, December 2008.

Xavier Fromaget
Impasse du Château 23
1696 Vuisternens-en-Ogoz

xavier.fromaget@gmail.com
+41 26 411 16 10
+41 78 804 05 24

ABSTRACT	4
TABLES	5
INTRODUCTION.....	6
I. FACTS AND DESCRIPTION	8
1. ORIGINS OF THE SOFT BUDGET CONSTRAINT PROBLEM	8
1.1 <i>Vertical fiscal imbalance</i>	8
1.2 <i>Intergovernmental finance and hierarchical relations</i>	9
1.2.1 Clarity of the distribution of expenditure and revenue authority	10
1.2.2 Transfers.....	11
1.2.3 National regulations.....	13
1.3 <i>Political mechanism</i>	14
1.3.1 Information.....	15
1.3.2 Coalition and term of office	15
1.4 <i>Borrowing</i>	16
1.5 <i>“Too Big to Fail” hypothesis</i>	19
1.6 <i>Synthesis</i>	20
2. MECHANISMS TO HARDEN BUDGET CONSTRAINT	23
2.1 <i>Institutional reform</i>	23
2.1.1 Hierarchical mechanisms	24
2.1.2 Capital Markets	27
2.2 <i>Political factors</i>	28
2.3 <i>Synthesis</i>	30
II. MODELS OF THE SOFT BUDGET CONSTRAINT PROBLEM.....	33
3. EQUALIZATION TRANSFERS, COMMON POOL AND BAILOUT	34
3.1 <i>Hypotheses</i>	34
3.2 <i>Central and regional governments’ problems</i>	36
3.2.1 Central government’s problem.....	36
3.2.2 Regional government’s problem	39
3.3 <i>Conclusion</i>	41
4. EXTERNALITIES, JURISDICTION SIZE AND BAILOUT	43
4.1 <i>Hypotheses</i>	44
4.2 <i>Bailouts and externalities</i>	47
4.2.1 Central government bailout policy	48
4.2.2 Local government bailout policy.....	50
4.3 <i>Bailouts and jurisdictional size</i>	51
4.4 <i>Conclusion</i>	55
5. RELATED MODELS	57
5.1 <i>Jurisdiction size, regional inequality and bailouts</i>	57
5.1.1 Context and hypotheses	57
5.1.2 Findings and conclusion.....	58
5.2 <i>Fiscal competition and monetary centralization</i>	60
5.2.1 Context and hypotheses	60
5.2.2 Findings and conclusion.....	60

5.3 <i>Tax competition and bailouts</i>	61
5.3.1 Context and hypotheses	61
5.3.2 Findings and conclusion.....	62
5.4 <i>Additional developments</i>	63
5.4.1 Decentralized leadership meets soft budget.....	63
5.4.2 Dynamic model with incomplete information	65
III. EMPIRICAL EVIDENCE OF SOFT BUDGET CONSTRAINT IN TRANSITION AND DEVELOPING COUNTRIES	68
6. POLITICAL INFLUENCE ON FISCAL PERFORMANCE AND INTERGOVERNMENTAL TRANSFERS	69
6.1 <i>Politics, institutions and fiscal performance in Argentina</i>	69
6.1.1 Hypotheses	70
6.1.2 Method and variables.....	72
6.1.3 Results.....	75
6.1.4 Conclusion.....	76
6.2 <i>Influence of political representation and ideologies on spending in Malaysia</i>	77
6.2.1 Hypotheses	78
6.2.2 Method and variables.....	78
6.2.3 Results.....	81
6.2.4 Conclusion.....	81
6.3 <i>Nature of intergovernmental transfers in Latin America</i>	83
6.3.1 Hypotheses	83
6.3.2 Method and variables.....	84
6.3.3 Results.....	87
6.3.4 Conclusion.....	89
7. IS THE “TOO BIG TO FAIL HYPOTHESIS” VALID IN MEXICO?.....	91
7.1 <i>Hypotheses</i>	91
7.2 <i>Method and variables</i>	92
7.3 <i>Results</i>	93
7.4 <i>Conclusion</i>	94
8. BORROWING AUTONOMY AND FISCAL DISCIPLINE IN OECD, TRANSITION AND DEVELOPING COUNTRIES	95
8.1 <i>Hypotheses</i>	95
8.2 <i>Method and variables</i>	96
8.3 <i>Results</i>	97
8.4 <i>Conclusion</i>	97
CONCLUSION	99
BIBLIOGRAPHY	103

ABSTRACT

The soft budget constraint problem arises in most transition and developing countries during their decentralization process. Indeed, central governments generally transfer responsibilities to lower levels of governments but maintain strong interests in local affairs. The result of such a setting is sub-national governments' expectation to receive additional funds in case of financial crisis. This thesis provides an overview of the literature on this topic, in dealing respectively with facts, models and empirical works. The first part describes the origins of the soft budget constraint in transition and developing countries, as reported in the case study literature. It also illustrates mechanisms to harden sub-national budget constraints. The second part aims to display fundamental models developed to explain the bailout phenomenon. Goodspeed (2002) and Wildasin (1997) effectively model interactions between levels of government in a given situation to demonstrate bailout's expectation and its implication. Moreover, related models and recent additional developments complete this technical view of the topic. Finally, the last part introduces empirical studies on the problem in transition and developing countries. Investigations demonstrate worrying results, since authors find evidence of soft budget constraint in their analyses.

TABLES

TABLE 1 : THE SOFT BUDGET CONSTRAINT MECHANISMS IN THE COUNTRIES OF CASE STUDIES.....	20
TABLE 2 : THE HARD BUDGET CONSTRAINT MECHANISMS IN THE COUNTRIES OF CASE STUDIES	30
TABLE 4: THE EFFECTS OF OVER-REPRESENTATION IN THE LEGISLATIVE AND IN THE EXECUTIVE ON STATE GOVERNMENTS' EXPENDITURES	80
TABLE 5: THE DETERMINANTS OF THE REGIONAL DISTRIBUTION OF FEDERAL TRANSFERS PER VOTER TO STATE GOVERNMENTS IN BRAZIL.....	86
TABLE 6: INFLUENCE OF SUB-NATIONAL GOVERNMENTS' SIZE IN THE DETERMINATION OF THE BAILOUT AMOUNT AFTER THE TEQUILA CRISIS.....	93
TABLE 7: INFLUENCE OF SUB-NATIONAL GOVERNMENTS' SIZE IN THE CASE OF A HIDDEN BAILOUT.....	93

INTRODUCTION

Decentralization underlies new setup with many positive aspects for lower levels of government, especially in the field of responsibility and autonomy. For a country, as for a firm or other organization, autonomy for a sub-national government raises the potential for opportunistic behaviour, possibly with desirable as well as undesirable effects. Recent studies assesses that decentralization process results in high costs, especially at early stages of development and in countries in transition to a market economy (Rodden, Eskeland, Litvack, eds, p. 2-3).

This paper addresses a problematic feature that transition and developing countries face during the decentralization process, namely the soft budget constraint problem. Generally, central authorities rapidly transfer responsibilities to lower levels of government. Thus, the central government has limited control over sub-national government spending and borrowing, but it maintains strong interest in the affairs of lower-level governments. The result of such a setting is that sub-national governments perceive that they will receive additional resources in the event of financial crisis. The term soft budget constraint defines the *expectation* of receiving additional resources from the central government (Vigneault, 2003, p. 1). The concept was originally formulated by Kornai to describe the bailout of losses in socialist state-owned enterprises. The notion was further used to illustrate the rescue of indebted or insolvent authorities by central government (Kornai, 2003, p. 1096-1097). There is currently no consensus about the definition of soft budget constraint problem, however most authors agree that “the syndrome is truly at work only if organizations can expect to be rescued from trouble, and those expectations in turn affect their behaviour” (Kornai, 2003, p. 1104). Wildasin argues that the sub-national outcome that occurs under soft budget constraint would not have been attainable under the “normal”, “initial” or “announced” constraint. This author describes the bailout as “receivership” in order to give “the flavour of this phenomenon” (Wildasin, 1997, p. 5-6).

The implicit guarantee that the central government will rescue a sub-national government that faces financial problems leads to a potential source of distortion, namely the common pool problem. “A sub-national government does not perceive the full social cost of national tax resources used for bailing it out”, that is, sub-national government does not “take into account the true social marginal cost of taxation and choose an excessive level of expenditure” (Pisauro, 2001, p. 9). Indeed, sub-national government may generate an excess of deficits as well as an excess of public spending without thinking about the additional cost to national taxpayers. A second source of distortion is listed in the literature under the term of moral hazard problem. The implicit insurance of bailout by the central government leads sub-national governments “to decide not to raise the revenue required to finance their expenditure – even though they have enough fiscal autonomy to do that – since they may believe they have the option of being bailed out by the central government and then financing local expenditures with national revenues” (Pisauro, 2001, p. 5).

The purpose of this paper aims to provide a synthesis of the soft budget constraint problem in transition and developing countries. The first part sets out facts of the case studies literature. Indeed, the first chapter describes five common origins of soft budget constraint. The second attempts to list mechanisms implemented by central government in order to harden sub-national budget constraints. Examples illustrate each section of this factual presentation. The second part shows how authors model soft budget constraint origins. In fact, chapters three and four study methods to precisely examine bailouts and their implications in the economic world. The fifth chapter gives an overview of models related to bailouts and commitment problems. For instance, a new wave of bailout models bears a relation to tax competition. The last part introduces empirical surveys on the soft budget constraint problem in transition and developing countries. Authors have studied about the influence of soft budget constraint’s determinants in specific countries. Most of the studies use data from Latin American federations, as these examples illustrate interesting fundamentals or economic characteristics.

I. FACTS AND DESCRIPTION

The first part of this paper aims to expose a complete description of the soft budget constraint problem in transition and developing countries as reported in the case study literature. The first chapter examines five key determinants of soft budget constraint. The content of the second chapter corresponds to the mechanisms to harden sub-national budget constraint. Examples illustrate each section and a synthesis will summarize the kind of problems case study countries face.

1. Origins of the soft budget constraint problem

The first chapter of this thesis tries to explore the soft budget constraint problem in compiling different issues of case studies. The major goal is to set out an analytical framework in order to explore the origin of the mechanism in transition and developing countries. Through analyses of former Soviet Union nations, Latin American and Asian countries, one may identify similar difficulties in maintaining hard budget constraints. The sections below present five types of problems that often occur in those countries, namely vertical fiscal imbalance, intergovernmental finance and hierarchical relations, political mechanisms, borrowing and finally the size of sub-national government.

1.1 Vertical fiscal imbalance

The decentralization process in transition and developing countries is fraught with difficulties, as mentioned in the introduction. A common feature is the devolution of expenditure responsibilities to sub-national governments without the adequate taxing authority, which accrues to the central government. This leads to a vertical fiscal imbalance that necessitates intergovernmental transfers. This grant programme alters the perception of local voters, governments and creditors about the real levels of expenditure that can be sustained. Furthermore, highly transfer dependant sub-national governments have limited flexibility to raise additional

revenue in case of unexpected adverse fiscal shocks. The choices which often occur include cutting services, running deficits or relying on arrears to employees and contractors and therefore the risk to incur a fiscal crisis. The transfer dependence allows local politicians, along with their voters and creditors, to believe that the central government is ultimately responsible for the deficits and that it cannot ignore the fiscal woes (Rodden, 2002, p. 672). The existence of large vertical fiscal imbalance¹ creates expectations of bailout and central government comes under pressure from sub-national governments, voters and creditors. The simplest solution for the central government is consequently a bailout. One may add that larger vertical fiscal imbalance exacerbates the common pool problem. Indeed, sub-national governments have every incentive to overspend when a large share of financing is raised by the central government (Pisauro, 2001, p. 4).

The little autonomy in tax revenue and the highly pro-cyclical feature of transfers justify the little sub-government's flexibility to absorb macroeconomic shocks. One may determine that the vertical fiscal imbalance explains the large sub-national amount of debt relating to the Tequila crisis in Argentina, Brazil or Mexico. For instance, Mexican states and municipalities main sources of revenue are composed of net block transfers, whereas the federal government collects most of the rich tax bases (Trillo, Cayeros, Gonzales, 2002, p. 370).

1.2 Intergovernmental finance and hierarchical relations

The following features of intergovernmental finance and hierarchical relations between levels of governments tend to promote soft budget constraint problem. Intergovernmental transfer systems become more complex and develop an interdependent network of different shared taxes, expenditure function and decision-making bodies which makes it impossible for voters and taxpayers to identify which level of government spends or taxes and for what purposes (Saiegh, Tommasi, 1999, p. 15). Indeed, unclear distribution of expenditure authority, constitutionally mandated services or uncertain transfers put sub-

¹ Vertical fiscal imbalance may be assessed as « transfers as a percent of total sub-national revenues » (Rodden, 2002, p. 672). Larger are the transfers, greater is the vertical fiscal imbalance.

national governments and their citizen in a position where they have incentives to believe that the centre will back their overspending.

1.2.1 Clarity of the distribution of expenditure and revenue authority

This part respectively examines the lack of clarity in the distribution of expenditure and revenue authority. One notices that unclear or overlapped assignments between the centre and the sub-national governments blur the real responsible. The centre has therefore difficulties in maintaining a credible “no bailout” policy because local voters and politicians still expect discretionary transfers to back their debts.

Distribution of expenditure authority

Most of the case studies show that there is often a lack of clarity in the distribution of expenditures. The roles and responsibilities that different levels of government are expected to provide do not appear clearly in national Constitutions. In fact, responsibilities in providing certain services between central and sub-national governments are not divided into well-defined and mutually exclusive categories. Therefore local governments often have to provide the services and bear the costs. Finally, sub-national communities cope with additional expenditures without the equivalent funding. Unclear or shared responsibilities have a cost in term of accountability and incentives, and may therefore soften the budget constraint.

The Ukrainian legal foundation of intergovernmental system demonstrates ambiguity about what each level of government is supposed to provide, as well as the functions that executive and legislative branches should face. Indeed, the Constitution emphasizes that sub-national governments “may be considered as local government bodies only when they represent and follow common interest of territorial communities in villages, town and cities. Otherwise they act as deconcentrated agents of the centre” (O’Connell, Wetzel, 2003, p. 7). Moreover, provisions for decentralized governments are specified in a bundle of specific laws (for instance the Law on Local Self-Government), which exacerbate the existing ambiguity. In fact, the various relationships established in those laws are

peculiarly interwoven and create more confusion about “who is responsible for what”. We notice with this example that ambiguity in the Constitution or in different laws engender a vague idea on the real provider of services and, indirectly, which level of government bears the costs.

Another type of uncertainty comes from the sharing of responsibilities for the provision of services. For example, the Brazilian or the new South African Constitutions list a variety of “joint” responsibilities of the federal and the states governments. This includes a wide range of spending such as health, education or welfare. Sometimes three levels of government are concerned by the provision which leads to confusion and chaos in the service delivery (Ahmad, 2003, p. 13). One can notice that the same problem arises in Hungary with the so-called “potential” responsibilities. Again, the lack of clarity about the provider of services generates potential source of commitment problem, and therefore softens the budget constraint.

Distribution of revenue authority

As in the case with the spending authority, overlap in the distribution of taxing authority leads to confusion and inefficiency (Rodden, 2003b, p. 7). Local governments rely on various sources of revenues, but often have little control over most of these. A first type of local revenue in transition and developing countries comes from shared taxes, which both rate and base of tax, as well as the rate of sharing is determined by the centre (O’Connell, Wetzels, 2003, p. 11). The regulation of tax base or rate might engender uncertainty about the ultimate responsible for local fiscal outcomes. This limited autonomy lets local politicians, voters and creditors believe that the centre remains accountable in case of fiscal crisis and therefore backs the debts. A second main source of revenue is the intergovernmental transfers and represents the scope of the next section.

1.2.2 Transfers

In most transition and developing countries, central government raises important revenue and redistributes them to sub-national government as revenue sharing arrangements or transfers. The soft budget constraint may arise if transfers to sub-

national governments are discretionary, that is, if transfers are based on poorly defined or easily manipulated criteria. Sub-national communities may petition the central government to use its discretionary transfer power in a period of financial crisis (Vigneault, 2003, p. 4). Indeed, transfer-dependence might give to sub-national politicians and citizens an indication of the central responsibility in case of fiscal profligacy. There is a wide range of fiscal intergovernmental transfers throughout the world, with specificities depending on each country. Hereafter are presented three types of transfers which give to sub-national governments disincentives to harden their budget constraint.

Negotiated transfers

Countries give to their sub-national governments opportunities to negotiate the size of their annual grants. Despite a possible reliance on formula based transfers, bilateral negotiations introduce an element of non-transparency and lead to moral hazard problems (Mc Carten, 2003, p. 12). It happens that transfers based on ad hoc decisions and devoid of any formal criteria granted politically powerful or wealthy states. For instance in 1988, the home state of President Sarney in Brazil² received more money through negotiated transfer than all the other state governments in the northern region as a whole (Rodden, 2003b, p. 10) This eloquent example illustrates the distortion that may appear with negotiated intergovernmental transfers. Note that transfers done on arbitrary basis or political bargaining remain a common practice in transition and developing countries.

Gap filling transfers

This sort of transfer assists local governments that have deficits or go bankrupt and provides therefore incentives to raise less revenues and to increase expenditures since grants may potentially fill the gap (Wetzel, Papp, 2003, p. 20). Generally, transfer systems based on gap filling risk to engender behavioural changes from sub-national entities, which have less motivation to raise their own taxes. Indeed, an increase in local resources will then reduce the likelihood of receiving other transfers. For instance, the demand for the “deficit grants” system

² José Sarnay served as President of Brazil from March 1985 to March 1990.

applying in Hungary, which possesses the characteristics described above, has increased during its two first years of existence. This phenomenon proves that sub-national governments expect a bailout rather than raising their own revenues.

Equalization transfers

Another type of transfer prompts sub-national government to adopt strategic behaviour. Fiscal equalization system, which aims toward the equivalence of living conditions or absorbs regional shocks, redistributes revenues from the wealthy to the poor sub-national communities. Based on concepts as financial resources and needs, this kind of transfer lessens the incentives to improve revenue collection for poor sub-national governments. Indeed, they receive grants to balance their budget, thus they have no reason to raise their own economic performance and tax base (Rodden, 2003a, p.12-13). For instance, The “Normative Grants” is such a disincentive transfer system in Hungary. Based on a series of norms, it aims to equalize culture, education and social welfare across the country (Wetzel, Papp, 2003, p. 12-13). Despite the use of this type of transfer in transition and developing countries, one of the most famous situations is happening in a developed country, namely Germany and the equalization system between its Länder.

Transfers might introduce bad incentives and expectations that affect the behaviour of sub-national governments. The next section deals with a different issue related to the provision of a specific kind of goods or services.

1.2.3 National regulations

Sub-national governments are sometimes required to provide constitutionally mandated services or face significant externalities. National regulations, such as the provision of minimum services standards, undermine the autonomy of sub-national jurisdictions. Identically, merit good, that consumers are unwilling to purchase at the right level because of their preferences, also justify the intervention of governments. National or sub-national governments act as players of the market and therefore fund goods or services in order to encourage or compel the consumption by citizens. Note that purely local public goods, with

non-excludable and non-rivalry characteristics, have the same implications, but are not necessarily mentioned in regulations. In certain countries, it also exists a number of laws regulating wages or social payment to the population under social assistance that define responsibilities and prices for local governments. Those regulations, as mandated services, clearly limit the decision making of sub-national government and mitigate their expenditures commitment. The implication of the centre in local fiscal affairs, through national regulations, can send a signal to local politicians or voters that the central government is ultimately responsible for the fiscal outcomes. Hence a belief of bailout in critical situations such as the failure in the provision of key services that have national constituencies can occur. The centre might be unable to refuse bailout if sub-national governments are failing in their responsibility to provide the services (Rodden, Eskeland, Litvack, eds, p. 15). In Ukraine, local governments provide mandatory services they are unable to finance even though they are required the Constitution. This leads to a large amount of arrears, particularly for wages and pensions (O'Connell, Wetzel, 2003, p.11). In such situations, the central government will find difficulties to make credible promises not to provide bailout.

1.3 Political mechanism

Decentralization creates opportunity for voters to punish or reward their representatives for the fiscal annual results. Through the mechanisms of “voice” or “exit”, citizens may express their opinion on the effectiveness of the local government in carrying out its functions. Despite these positive elements of democracy, transition or developing countries still have problems in the well functioning of political mechanisms. Transparent information on governments’ budget or national political features may influence, or even worse, distort citizens’ choices. This section is divided into two parts, the first explaining the consequences of a lack of information and the second treating the importance of coalition and term of office.

1.3.1 Information

Voters need information on government performance in order to assess annual results. Access to sub-national budget or council decisions are not sufficient to monitor local officials' performance, data must be accurate and transparent. Citizens in presence of a lack of information cannot perceive who is responsible for their fiscal health and may have a perception that their local representatives are not held accountable for deficits (O'Connell, Wetzel, 2003, p. 17-18). On the other hand, even with adequate information, sub-national budgets are complex and entail difficulties in the identification of true costs and benefits of government policies. Authors such as Alesina and Perotti assume that sub-national governments deliberately overestimate budgets, in order to create confusion and hold them less accountable for financial problems (Vigneault, 2003, p. 4). The result of such a distortion of information is the citizens' exclusion from the decision process. This impossibility to monitor annual budgets therefore fosters distrust and scepticism towards local governments. Moreover, the usual overlap of expenditure responsibilities between levels of government tends to complicate this electoral accountability. In Brazil, as in Ukraine, voters have neither the information nor the incentives they need to effectively hold state governments accountable for their fiscal activities. In such a context, creditors are led to believe that debt is backed by the central government (Rodden, 2003b, p. 34).

1.3.2 Coalition and term of office

Fiscal discipline may be influenced by political mechanisms, even in respecting the rules of democracy. The features of a national political system, such as electoral or career incentives faced by public officials, might affect fiscal outcomes. Elected politicians and their respective parties influence the budget process and therefore the spending programme. Stability of coalitions or length of mandates might influence the expenditure and revenue decisions. The Indian case exposes this point of view because of relatively short mandates and short time horizon in office. Rather than competing for the support of the median voter, state politicians militate to solidify the support of their party and maintain a stable score at the polls. A former Indian Finance Secretary, S. Guhan, made strong

remarks about this serious instability of governance. He particularly found that “state governments with a time-horizon of two to three years cannot be expected to have deep commitment to long-term development or even an involvement in medium-term issues during their uneasy and limited tenure” (Mc Carten, 2003, p. 31). Typical consequences were the building of physical infrastructures or the investment in social policies without planning mechanisms for long-term cost recovery. This leads logically to a great fiscal indiscipline and increases the likelihood of bailouts. Still in relation with political mechanisms, election system may also influence fiscal outcomes. In countries with promotion, politicians move to a different level of government to aspire to higher status. Without re-election incentives, as in Brazil, the constant shifting of individuals makes electoral accountability difficult and therefore endangers the fiscal discipline. Moreover, a political system that runs without parties’ competition exacerbates this risk because career advancement depends on the provision of particularistic goods to specific groups of constituents (Rodden, 2003b, p. 18-19). For instance, the massive granting of politically powerful regions to gain votes before an election arises in certain transition and developing countries.

The political mechanisms and their implications for accountability play a crucial role in the softness of budget constraint. An insufficiently mature system or ill-intentioned executives might create large deficits that next generations will have to deal with. Weaker is the political stability, bigger the fiscal imprudence and the risk of excessive spending. This softness in the sub-national government’s behaviour, often coupled with a too little tax effort, open as a consequence a window called borrowing. This latter will be treated in the next section.

1.4 Borrowing

Most sub-national governments provide services that generally require sizeable investment and because those services provide a bulk of future benefits over a long period, it is appropriate to finance them through borrowing in order to spread the cost of the assets over time (O’Connell, Wetzel, 2003, p. 25-26). In other

words, it is both fair and efficient for future generations to share the cost of financing projects (Trillo, Cayeros, Gonzales, 2002, p. 369). Borrowing systems differ in each country but the main means are banks (national, regional, state and sometimes even local banks), capital market, insurance or occasionally loans from higher levels of governments.

Countries normally have a national legal and regulatory framework for sub-national borrowing, which allows and specifies the access of borrowing to sub-national governments. The soft budget constraint problem arises when sub-national governments circumvent these restrictions in order to engage off-budget activities or issue debt to finance special functions. Moreover, poorly defined regulation or unrestricted borrowing engender the expectation that the central government is ultimately responsible for sub-national default risk. Therefore the credit market transfers the credit risk to the national level and creates over-borrowing, because sub-national governments and their citizens perceive debt-financed projects less costly than tax-financed ones. This process can compel the central government to offer a bailout, in order to avoid a national financial crisis (Vignault, 2003, p. 5). In an environment without clear rules of the game and strong enforcement, opportunity to soften the budget constraint remains strong.

Borrowing by sub-national governments is a relatively new phenomenon in Central and Eastern Europe and regulations and practices vary significantly across countries. Despite the introduction of limits on borrowing and debt service in several countries, some of them still have no prohibition (Dafflon, Tòth, 2005, p. 54). Ukraine is perhaps the worst case study in sub-national borrowing. Primarily, this country has no good debt legislation for all forms of debt, mentioning the type of debt, the method of securing such debt and the remedies upon default. Those important details are completely absent from the Law, as well as a requirement for independent audits or a legislation dealing with the insolvency of local governments (O'Connell, Wetzel, 2003, p. 28-31). Moreover, there is no explicit legislation that states that the central government will not bail out sub-national governments' debt. Secondly, the combination of all these factors has led to the creation of financial instruments that exacerbate the problem of arrears and non-

cash payment. As a matter of fact, Ukrainian “veksel”, a bill of exchange legally accepted as short-term borrowing, is used by both public and private sectors. In practice, veksel transactions are a combination of mutual cancellation of debts among enterprises and offsetting arrangements that help localities to finance expenditures and enterprises to reduce tax arrears (O’Connell, Wetzel, 2003, p. 34). Veksels became a significant revenue source in sub-national tax collection and considerably raised sub-national arrears. Still in Ukraine and in relation to an immature financial system, sub-national governments have the ability to finance their deficits with loans at zero interest from higher level of government. These loans, allocated with high level of discretion, are unfortunately a direct contribution in the persistence of soft budget constraint. Indeed, sub-national governments do not really bear the costs of their bad fiscal performance and this tends to depress the maturity of the financial sector and its ability to discipline irresponsible fiscal behaviour (Vigneault, 2003, p. 24).

The reorganization of the Chinese banking system also underlies soft budget constraint problem. Indeed, the banking reform tends to foster long-term financing and policy oriented project. A budget law therefore forbids local governments to borrow on the capital market, in order to avoid large amounts of sub-national deficits. Nevertheless local enterprises, which still depend on local government and represent de facto government agencies, can legally borrow from banks and on the capital markets. Such borrowing from local commercial banks by enterprises actually finances local government spending, as redundant small or medium-sized investment, and thus creates contingent liabilities. It ensues a proliferation of trust and investment companies under the jurisdiction of provincial and local government, which causes a lack of transparency on sub-national government borrowing and thus difficulties to control excesses of debt (Jing, Heng-fu, 2003, p. 24-28). This form of borrowing engenders uncertainty about the real amount of sub-national debt and therefore softens the budget constraint.

1.5 “Too Big to Fail” hypothesis

This section gives an itemized explanation of a commonly accepted origin of soft budget constraint problem. There is wide literature on the matter that the size of a sub-national entity could be important in explaining bailout. Despite the possibility to treat this point as part of the different sections above, the relevance of this hypothesis warrants the presentation in one unique section. Actually, several reasons may justify the bailout of a large jurisdiction because of the negative spillovers that its failing may cause to other sub-national communities. A first argument for bailing out a particular sub-national government may be its considerable importance on national elections because of the sizeable population. This example is closely related to the political mechanisms explained in a section above because of the major role of very populated states at the polls. Second, from an economic point of view, a strong sub-national entity might affect the national rate of growth in case of reduction of its growth rate. Moreover, a financial crisis in a region that possesses a high GDP may lead to a loss of confidence among foreign investors in the country (Trillo, Cayeros, Gonzales, 2002, p. 371). Therefore the centre chooses a bailout ex post in order to avoid the negative externalities mentioned above. The central government may also decide to bail out in case of the provision of basic goods or services because of the positive externalities for other jurisdictions. Sub-national governments decide their level of provision, knowing ex ante that the centre will bail them out ex post. Thus the likelihood of bailout increases with the size of the externalities. According to this argument, bailouts are more likely in large size localities (Wildasin, 1997, p. 20-21). Transition and developing countries are obviously affected by the “Too Big to Fail” hypothesis, because of the existence of large states. For instance, Buenos Aires province has 38 percent of the nation’s population, 48 percent when combined with Buenos Aires city, and together they generate well over half of the national GDP (Webb, 2003, p. 4). In Brazil, states such as Sao Paulo, Rio de Janeiro, Minas Gerais and Rio Grande do Sul also represents a major problem that undermines the credibility of the central government’s commitment not to bail out a state. Indeed, the default of such big

states represents a serious threat for the national macroeconomic stability. As a consequence, those states called for and obtained a bail out of their debt (Facchini, Testa, 2007, p. 343).

1.6 Synthesis

The table hereafter makes the connection between soft budget constraint mechanisms presented above and countries of the case studies. A cross signifies that a country is concerned by the indicated mechanism. The comments below indicate which factor(s) is/are more important for each country.

Table 1 : The soft budget constraint mechanisms in the countries of case studies

	<i>Argen- tina</i>	<i>Brazil</i>	<i>China</i>	<i>Hungary</i>	<i>India</i>	<i>Mexico</i>	<i>South Africa</i>	<i>Ukraine</i>
Vertical fiscal imbalance	X	X	X	X	X	X	X	X
Intergovernmental finance and hierarchical relations	X	X	X	X	X	X	X	X
Clarity in the distribution of exp. and rev. authority		X	X	X			X	X
<i>Distribution of expenditure authority</i>		X					X	X
<i>Distribution of revenue authority</i>		X						X
Transfers	X	X	X	X	X	X		X
<i>Negotiated transfers</i>	X	X	X		X			X
<i>Gap filling transfers</i>				X	X			

	<i>Argen- tina</i>	<i>Brazil</i>	<i>China</i>	<i>Hungary</i>	<i>India</i>	<i>Mexico</i>	<i>South Africa</i>	<i>Ukraine</i>
<i>Equalization transfers</i>				X				
National regulations	X			X	X			X
Political mechanisms	X	X		X	X	X		X
Information				X				X
Coalition and term of office	X	X		X	X	X		X
Borrowing	X	X	X		X	X		X
Too Big to Fail hypothesis	X	X				X		

Source: author's elaboration

Argentina: Sub-national governments pushed the limits of spending and borrowing because of the high dependence on transfers (high vertical fiscal imbalance). Soft budget constraint was stronger at the beginning of the 1990's than at the end, since central government took measures to tighten fiscal discipline.

Brazil: The main factors of fiscal indiscipline remain the lack of constitutional authority and the governor's interests. One may note that the overall level of vertical fiscal imbalance is low, but the dependence on transfers varies dramatically from one state to another (Rodden, 2003b, p. 7).

China: The core problem is clearly "the proliferation of trust and investment companies and securities houses under the jurisdictions of provincial and local governments" (Jing, Heng-fu, 2003, p. 28). This system of sub-national governments borrowing engenders a lack of transparency and may lead to over-borrowing.

Hungary: As most of the countries of Eastern Europe and the former Soviet Union, the Hungarian system of intergovernmental finance needed radical changes and adaptations to face different origins of soft budget constraint. Despite a certain number of fiscal indiscipline features, Hungary has developed several tools to strengthen sub-national budget constraints (refer to the next chapter for more details).

India: Gap filling transfer and political realm, characterized by unstable coalitions and short term mandates, represent the main origins of soft budget constraint in India. Furthermore, sub-national government deficits still increase because of the dependence of small savings that represent a high charge of interest, especially for poorer state.

Mexico: The Tequila crisis affected the credit markets and created large amounts of sub-national debt. In order to rescue its local entities, the federal government provided extraordinary transfers. This behaviour causes therefore soft budget constraint problems.

South Africa: Joint responsibilities represent the major origin of soft budget constraint. However, provinces do not have any sources of own-taxes and are therefore transfer-dependant for the delivery of services.

Ukraine: “The system as it currently functions creates incentives in almost every realm for soft budget constraints. In such a context, the lack of hard budget constraint cannot be attributed to a specific policy failure or the lack of a single mechanism. Rather it is a systemic failure” (O’Connell, Wetzel, 2003, p. 1). As Hungary and other countries of the Former Soviet Union, Ukraine needs radical changes in intergovernmental finance and hierarchical relations to improve fiscal discipline. Furthermore, the chaotic Ukrainian political landscape is another sphere where changes may facilitate the hardening of budget constraint.

2. Mechanisms to harden budget constraint

The first chapter focused on different possible origins of soft budget constraint problem for transition and developing countries. Despite the presence of one or several features that jeopardize fiscal discipline, most of the countries of the case studies also establish mechanisms intended to harden budget constraint of sub-national governments. Rather than describing an exhaustive list of measures that discourage fiscal indiscipline, this second chapter explores solutions and processes used to improve fiscal discipline in transition and developing countries of the case studies. This consequently gives a more practical approach than presenting theoretical solutions, which do not take into account the transitional aspect of those different countries.

Explanations are classified into two main sections, namely institutional reform and political competition. One might emphasize that one solution will not work for all the cases and that some “solutions” may do more harm than good under the wrong conditions (Rodden, Eskeland, 2003, p. 37).

2.1 Institutional reform

The institutional reform appears differently in case studies, although central government commonly modifies or even creates new regulations in order to monitor their sub-national entities. In reforming legislations, conceiving new laws or hardening existing ones, the centre tries to lessen the behavioural incentives that soften sub-national budget constraint. An interesting point of view asserts that fiscal crises and even large bailouts provide some of the best opportunities to reform the institutional framework. Indeed, a financial rescue allows the opportunity for negotiations and improvements in institutions that otherwise would be difficult, if not impossible (Rodden, Eskeland, 2003, p. 43-44). In this way, the central government can signal that the rules of the game to be played in the future will be different. The first part examines hierarchical mechanisms used by central government to oversee the fiscal behaviour of sub-national entities. The

second explains the essential changes for a competitive capital market, a necessary condition to constraint sub-national borrowing.

2.1.1 Hierarchical mechanisms

Implementation of hierarchical mechanisms is an important change in institutional reforms. In fact, the lack of oversight lets sub-national governments free to run deficits or rely on arrears and leads to the softness of budget constraint. In reforming regulations, the centre invites “oversight from voters and creditors by forcing local government to provide information, including accounting and auditing procedures” (Rodden, Eskeland, 2003, p. 43). In the next two next sub-parts are respectively presented rules and laws that promote incentives for fiscal discipline.

Rules

The creation or the tightening of rules on debt, transfers or sub-national governments’ budget constraint is a key issue. Hereafter are presented institutional restructurings in transition and developing countries of the case studies. A common strategy remains, placing limitations on debt, for example limiting the aggregate stock of long-term debt to a fixed share of the sub-national tax base. Another type of strategy that regulates the use of debt by sub-national government is permitting long-term borrowing to capital projects only (Rodden, Eskeland, Litvack, eds, p. 28). Rules on borrowing have been implemented with success in Hungary, due to the consequences on local governments’ behaviour. Those rules fix a real constraint on the borrowing behaviour and generate incentives to cut costs and particularly to raise revenue efforts (Rodden, Eskeland, 2003, p. 42). Significant restructuring in the financial and fiscal intergovernmental system may also be a fundamental institutional reform. The rationalizing of fiscal transfers between different tiers of governments or the decrease of discretionary transfers reduces the possibility to negotiate annual grants or to prevent expectation of additional transfers in the presence of a fiscal crisis. In addition, one must legislate the ability of all levels of government to control certain types of expenditure and to collect their own taxes. The “Pacto Fiscal I and II”

negotiated by the Argentinean central government in respectively 1992 and 1993 illustrate an interesting reorganization of expenditure and transfer areas. Among other reforms, the central government transferred federal health and secondary school programme to provinces and federalized the pension plan in order to eliminate the need to subsidize pensions from the general treasury. Although the relevance of these changes is significant, provinces continue to circumvent the rules “due to the long history in Argentina of circumventing budget constraint” (Webb, 2003, p. 14-16).

Dafflon and Tòth (2005, p. 52-54) suggest a relevant solution of budget orthodoxy for transition countries, based on the Swiss budget policy. The application of the “golden rule”, which induces that “local current revenues net of current expenditures are sufficient to serve the debt interest and bear the running costs of past and new investments”, is a first type of regulation. If a sub-national government does not follow this rule, the central government might decide to raise its annual coefficient of taxation. A second rule allows public debt only for “financing capital expenditure and if the sub-national government has the financial capacity to pay the interest and amortization of the debt out of its current budget”. However, this debt limitation requires a distinction between current and capital budgets. Most of the transition and developing countries do not separate them and this renders the implementation of this second rule difficult to control.

Hierarchical control is also the management of sub-national governments budget. Different kind of policy measures may be implemented, such as a multi-year budgeting process in South Africa or control mechanisms over local spending and borrowing in Hungary. The first case aimed the establishment of a set of rules that ensures ex-post balanced budget through top-down process. This includes the determination of the levels of resources available for intergovernmental transfers over a three to five year period and a direct monitoring of provincial budgets (Ahmad, 2003, p. 15). The second case is even more restrictive with sub-national government because Hungarian central government regulates local government borrowing, requires balanced budgets and enforces numerical debt service limits.

The ministry of finance oversees budget processes at all levels of government and controls therefore ex-ante payments against budget appropriations (Rodden, Eskeland, 2003, p. 30). Actually countries with high levels of vertical fiscal imbalance, in other words lower levels of government extremely dependent on transfers, really need to implement top-down fiscal restrictions. Indeed, central government knows that it could ultimately be held responsible in case of fiscal profligacy. A successful hierarchical oversight prevents the central government from bailout demands.

Laws

Despite positive consequences in the use of rules, one of the best mechanisms remains the provision of good incentives through laws that regulate fiscal activities. For instance, the “Fiscal Responsibility Law” and the “Penal Law for Fiscal Crimes” established in the year 2000 in Brazil deal with a wide range of fiscal problems. One describes hereafter the general content of those laws, because it reflects common problems of transition and developing countries. This new legislation attempts to limit personnel expenditures and includes prohibitions on wage increases and new hires. This aims to solve the problem of excessive state borrowing because of high personnel expenditures. Threats exist to punish sub-national governments that fail in those expenditure targets or that violate the yearly debt limits. Actually, the new legislation increases the role of the judiciary and the penal system, in order to enhance the enforcement of the law. For instance illegal efforts to issue public bonds includes prison sentences or mayors may be stripped if debt limits or personnel expenditure ratios are exceeded. Even severer, omission of an expenditure item in a budget or a misrepresentation in a revenue calculation are subject to penal suit (Rodden, 2003b, p. 31-32). A last important point remains: the new securities regulations that introduce uniform accounting, planning and transparency requirement that entail a better assessment of local performance by voters and creditors. Hungary also modifies its legal framework in this way and added another very interesting legislation that regulates local government insolvency and bankruptcy. The “Municipal Bankruptcy Law” creates a prospect for default resolution in the event of insolvency and provides

reorganization and workout procedures for the municipality. The Law also sets out a method that ensures the provisions of mandated services even during a period of insolvency. Moreover, the legislation states that the central government will not guarantee local borrowing and provide incentives for sub-national government to collect its own taxes (Wetzel, Papp, 2003, p. 33-35). The set of procedures about sub-national bankruptcy avoids pressure on the centre in case of fiscal crisis. Furthermore, the implementation of courts and arbitrators (through penal and judiciary systems) give a strong signal to local governments and creditors that the centre will not intervene with bailout anymore (Rodden, Eskeland, 2003, p. 43).

The examples of rules or laws exposed above show how the central government tries to make explicit its commitment to say “no” when pressed for bailouts. However, “hierarchical mechanisms are only as good as the strength and credibility of the central government’s commitment to stand by them and enforce them” (Rodden, Eskeland, 2003, p. 36). In the case studies of India or Brazil, factors such as fragmented political institutions have undermined hierarchical discipline implied by institutional reforms. Therefore, hierarchical control may be defined as necessary but not sufficient to harden budget constraint. The central government must supervise the enforcement of rules or laws by sub-national government because entities may try to circumvent them in order to spend or borrow as much as they want. The next part presents mechanisms for an efficient capital market, which also plays an important role in the institutional framework.

2.1.2 Capital Markets

The performance of capital markets is an obvious condition in guiding and constraining sub-national fiscal activities. Moreover, a competitive capital market requires efficient supportive institutions. Indeed, financial intermediaries have to foster a free and competitive access to capital funds by avoiding dysfunctional characteristics such as political influence. Owners and institutions have therefore to select good credit objects, because disciplined credit markets may punish poor fiscal performance with higher borrowing cost or limited access. However, a

competitive capital market is not a sufficient way to harden budget constraints. The central government must have a credible “no bailout” policy, because lenders may continue to grant sub-national loans if they perceive the likelihood of bailout in case of bad fiscal performance (Rodden, Eskeland, Litvack, eds, p. 21-22). However, central as well as state banks must also to tighten the access to credit in order to avoid over-borrowing. For instance, the Argentinean Central Bank revised its charter in order to make explicit its role as “no lender of last resort” for provinces. It took means to harden the budget constraint on provinces by limiting the ability to borrow from state banks and eliminating the access to central bank financing (Webb, 2003, p. 12). Identically, the Brazilian government implemented new banking regulations and some moves towards the autonomy of the National Monetary Council and Central Bank. Still in the banking system, the privatization of states banks also contributes to tighten the sub-national borrowing. The goals of the previous resolutions are the restriction on borrowing from state banks, the imposition on new borrowing ceilings and the limitation of new bond issues (Rodden, 2003b, p. 30). Another national government took decisive means to reform the capital market and reduce its access to sub-national governments. In South Africa, central government decided to regulate the borrowing powers of local government in legislating a specific act and specifies new rules about municipal bankruptcy (Ahmad, 2003, p. 10).

2.2 Political factors

The political sphere represents a potential form of fiscal discipline for sub-national government through the competition for political power. Indeed, democracy lets voters the choice to punish or reward their representatives, local as well as national. Fiscally irresponsible governments may go out of office if voters face transparent information about local performance and if they have enough authority and incentives to do so. Free and fair elections with vigorous opposition compel fiscal decisions of sub-national governments. Political parties following different ideologies effectively harden budget constraint because competition between each other functions as a control mechanism. Moreover, autonomous

medias, which are not connected with government or under political influence, may also improve the transparency of information and therefore exacerbates the respect of fiscal discipline. Still linked with political competition, the mechanism through which power is allocated may foster hard budget constraint. Career incentive, that is politicians' incentive of re-election, clearly mitigates opportunistic behaviour and the risk of large deficits. Bad fiscal performance undermines credibility and may signify the end of a political career, hence the importance of fiscal discipline in a competitive political system (Rodden, Eskeland, Litvack, eds, p. 23-24). South Africa is one of the only countries of the case studies that have really improved its political realm. In order to strengthen fiscal discipline, communities have been able to directly elect their representatives. This new electoral process represents a first step to limit the ability of local authorities to engage in unsustainable fiscal decisions (Ahmad, 2003, p. 18-19).

The mobility of economical factors also put local officials under pressure, as it has a direct influence on the price of immobile assets. As explained above, voters have the possibility to reward or punish their representatives in "voicing". On the other hand, workers and residents can also express their interests through the threat of "exit", in leaving the jurisdiction to reach a better compromise between taxes and services. The credibility of this threat affects the local politician choices in order to protect their tax base. Despite the weight of this mechanism, its effectiveness requires a certain number of strong assumptions that are difficult to find in transition and developing countries. This model is difficult to apply with "large jurisdictions, heavy dependence on agriculture and large state-owned enterprises, or in fragmented settings with important ethnic and linguistic cleavages across jurisdictions" (Rodden, Eskeland, Litvack, eds, p. 25-26). In addition, other features such as collusion or intergovernmental equalization transfers lessen efficiency of this mechanism. It therefore receives negligible attention in case studies and does not represent a very relevant argument for this paper.

The proportion of owners and renters in a community may bias the borrowing and consumption choices in favour of investments. Assuming that residents are

owners, they have therefore incentives to handle local affairs and to take into account long-term consequences of sub-national government borrowing. Since they approve local fiscal decision, owners directly face the consequences through tax payment and land prices. On the other hand, renters may have an insufficient financial interest in the future of the sub-national community because of their easier possibility to move away. The residents of a community have therefore a direct impact on local government management, and owners may exacerbate the enforcement of fiscal discipline.

2.3 Synthesis

The table hereafter makes connection between hard budget constraint mechanisms presented above and countries of the case studies. A cross signifies that the country implemented a mechanism, successfully or not. The comments below gives more details on their success or respectively, their failure.

Table 2 : The hard budget constraint mechanisms in the countries of case studies

	<i>Argentina</i>	<i>Brazil</i>	<i>China</i>	<i>Hungary</i>	<i>India</i>	<i>Mexico</i>	<i>South Africa</i>	<i>Ukraine</i>
Institutional reform	X	X	X	X	X	X	X	
Hierarchical mechanism	X	X	X	X	X	X	X	
<i>Rules</i>	X	X		X	X	X	X	
<i>Laws</i>		X		X			X	
Capital Market	X	X		X			X	
Political competition							X	

Source: author's elaboration

Argentina: “The various measures to harden provincial budget constraints succeeded in part because they were set in the context of a broader adjustment programme that was perceived, correctly, to be essential for the rescue of the overall economy” (Webb, 2003, p. 27). Indeed, the Tequila crisis permitted the implementation of new fiscal rules. However, the system needs some changes for a long-term efficiency because Argentina is still vulnerable, especially during bad economic times.

Brazil: The central government has tools to limit fiscal indiscipline. However, the effectiveness of the instruments implemented has been undermined by administrative and political fragmentation, particularly by governors’ interests (Rodden, Eskeland, 2003, p. 34).

India: The hierarchical mechanisms in this case study encounter great problems, notably with political fragmentation and short term of office. Despite the lack of mechanisms to implement hard budget constraints, “liberalization of economic markets and decentralization have made India ripe for more institutional reform” (McCarten, 2003, p. 40).

In India and Brazil, fragmented political institutions undermine the central government’s commitment for a “no bailout” policy. This leads to claim that political realm has a strong influence in the enforcement of institutional change. Actually, “the most important but vexing hard budget constraint mechanism is an active and informed public with incentives and tools to oversee government decision-making” (Rodden, Eskeland, 2003, p. 45).

China: Two reforms in the revenues and spending responsibilities were implemented in the 1980’s and the 1990’s. Nevertheless, the main problem in China remains the indirect borrowing through investment companies and nothing has been done to correct this distortion yet.

Hungary: The measures adopted in Hungary represent a systemic reform which allows the improvement of local government's performance. In limiting borrowing and imposing strong hierarchical controls, the central government oversees the fiscal behaviour of sub-national entities.

Mexico: The government implemented a rules-based approach with adequate results in a short-term period. However, additional actions should be taken in order to enforce sub-national fiscal discipline.

South Africa: "South Africa's experience so far suggests that a framework of a hard budget constraint in a multi-tiered government cannot be imposed through one specific channel; such a magic bullet is elusive. Instead a systemic policy approach in which hierarchical regulatory control, fiscal tools, markets, and community accountability all are needed to provide the right incentive for each tier of government to be held accountable for their management of economic affairs" (Amhad, 2003, p. 24-25).

Ukraine: As already mentioned, the Ukrainian case represents a systemic failure and no mechanisms for implementing a hard budget constraint was successfully put into place yet (O'Connell, Wetzel, 2003, p. 1).

II. MODELS OF THE SOFT BUDGET CONSTRAINT PROBLEM

The first part of this paper exposes the origins of the soft budget constraint problem in transition and developing countries. As exhibited in the table 1, different causes usually compose a country's fiscal profligacy. The cases of Eastern Europe countries and the former Soviet Union demonstrate it particularly well. Despite this reality, authors have tried to develop models of soft budget constraint in examining precise mechanisms of bailout and their implication in the economic world. The second part of this paper therefore focuses on fundamental models of the soft budget constraint problem. Chapter three explains a model applying to equalization transfers and their impact on regional government. In fact, Goodspeed (2002) hypothesizes that the central government creates a soft budget constraint in allocating equalization grants. Chapter four presents a model of bailout based on externalities and jurisdiction size. Wildasin (1997) effectively assumes that central authorities have incentives to prop up the finances of local governments when the public services provided locally benefit the rest of the society. Furthermore, this author postulates an important principle about the incentives for bailouts when local governments are considered "Too big to fail". Chapter five introduces an overview of models related to commitment problems and bailouts. Facchini and Testa (2007) develop a model close to Wildasin's hypotheses, as they also include borrowing and externalities in their framework. The soft budget constraint problem modelled by Qian and Roland (1998) is also briefly summarized. In addition to dealing with state-owned enterprises, their model proposed the first macroeconomic model viewed as a dynamic commitment problem in the framework of a federal government. Their findings on fiscal competition and monetary centralization have had a strong impact on other researches. For instance, Köthenbürger (2003) examines capital tax competition in the presence of grants policies without federal commitment. His model shows further implications of the commitment problem and symbolizes another view of bailouts. To conclude this second part, the last section sets out two additional developments on the soft budget constraint issue in explaining the researches of Akai and Sato (2005) and Bordignon and Turati (2005).

3. Equalization transfers, common pool and bailout

Goodspeed (2002, p. 409-421) develops a model of central government transfer decisions and inter-temporal regional spending when there is an interaction between the levels of government via transfers. This political economy model assumes that the central government uses transfers to maintain a certain quantity of regional spending that is politically optimal. These central grants allocations pursue equalization principles, as the centre allocates transfers to equate the weighted marginal utility of regions' voters and thereby maximize its expected votes. This central government's behaviour creates a soft budget constraint and engenders two incentives effects, a common pool effect on tax payments and an opportunity cost effect. The organization of this chapter is designed as follows. The next section sets out the hypotheses and the context of the model. The second section explains the central and regional governments problem, as Goodspeed solves his model with backward induction. The third part presents a summary and conclusions of this chapter.

3.1. Hypotheses

Hypotheses are divided into three distinct parts: the basic framework, the sequential game and the interaction between the levels of governments.

Goodspeed uses a model within a Federation that includes two types of players, namely the central government and N regional governments.

H1) Region i is inhabited by n_i people, where $i = 1, \dots, N$.

H2) The utility of the representative consumer of the region i is assumed to be a function of the private and public consumptions represented hereafter:

C_{i1} and C_{i2} the private consumption in periods 1 and 2,

G_{i1} and G_{i2} the per-capita public consumption in periods 1 and 2,

Y_{i1} and Y_{i2} the private income of the representative consumer in each period.

The basic set-up embodies a two-period inter-temporal model.

H3) An initial level of grants for each region is defined before the beginning of the game by the central government, denoted g_{i1} . This decision is exogenous to the game to be played.

H4) Still in this first period, the region is able to borrow an amount per capita for public consumption in period 1, denoted B_{i1}^g and chooses a period 1 tax rate.

H5) Consumers have the opportunity to borrow an amount for private consumption in period 1, denoted by B_{i1}^c .

H6) In period 2, regions choose a tax rate and the central government decides a second period per-capita grants, denoted g_{i2} .

Strategic interactions exist among the regions, as well as between the regions and the central government:

H7) Interaction between regional governments: they are assumed to move simultaneously and make a choice concerning borrowing and taxation in period 1. A Nash Equilibrium is obtained, in which each region takes the other regions' borrowing and tax rates as given. In the second period, regional governments again move simultaneously and select a period 2 tax rate.

H8) Interaction between the central government and the regional government: the central government moves in period 2 and decides regions' second period grant level. Respecting regional borrowing and first period taxation, the interaction between the central government and regional government is consequently sequential with the regional government moving first. A Stackelberg game is played, namely a model with perfect information. The regional government knows therefore how the central government will react in the second period and takes into account the reaction function of the central government in its choice of borrowing in the first period. The regional government also chooses a tax rate in the second period and that represents a second interaction with the centre. However, this latter interaction is simultaneous and the region takes the central government grant decision as given when it chooses a second period taxes.

3.2 Central and regional governments' problems

The model implicates both the behaviour of the regional governments in period 1 and the regional and central governments in period 2. Goodspeed uses the method of backward induction to solve the sequential game between the central and regional governments. This means the presentation of the central government's problem in period 2 and the resolution of the regional government's behaviour in period 1 in using that solution.

3.2.1 Central government's problem

The most important assumption is that the central government is politically motivated and chooses an amount of regional grant in period 2 that maximises its expected votes. Letting p_i denote the probability that a voter in region i votes to re-elect the government, the centre chooses a vector $g_2 = \{g_{i2}, \dots, g_{m2}\}$ to

$$\text{Max}_{g_2} \sum_i n_i p_i (u_i(G_{i1}) + u_i(G_{i2}) + w_i(C_{i1}) + z_i(C_{i2})) \quad (1)$$

Since the central government moves second, it must take as given the regional governments' borrowing and taxation choices from period 1. The regional government choice of tax rate in period 2 is also taken as given, since the central government plays Nash with respect to this choice. The first order conditions are

$$n_i \frac{\partial p_i}{\partial v_i} \frac{\partial v_i}{\partial G_{i2}} - \sum_{k=1}^m n_k \frac{\partial p_k}{\partial z_k} \frac{\partial z_k}{\partial C_{2k}} \frac{n_i Y_{k2}}{\sum_k n_k Y_{k2}} = 0 \quad \text{for all } i \quad (2)$$

The central government equates then the weighted marginal utility of increased grants to a region and the marginal cost of increased taxes that must be paid by all regions. Assuming an interior solution, the first order conditions simplify to

$$\frac{\partial p_i}{\partial v_i} \frac{\partial v_i}{\partial G_{i2}} = \frac{\partial p_j}{\partial v_j} \frac{\partial v_j}{\partial G_{j2}} \quad \text{for all } i, j \quad (3)$$

That is, the central government will equate the weighted marginal utility of regions' voters. The weights depend on the increase in probability that a resident of a region will vote for the central government in place.

The central government's reaction in period 2 to a region's borrowing decision in period 1 represents a crucial commitment problem. A soft budget constraint arises when the centre feels political pressure and increases a region's grant allocation in period 2. In adopting this behaviour, the centre lowers the opportunity costs of borrowing for the region, as the grant pays off a part of the debt. In resisting to political pressure, the centre creates a hard budget constraint.

The central government's behavioural response to regional government borrowing can be derived, by examining the central government's reaction function. The first order conditions (3) implicitly define the central government's reaction function (that is its optimal choice of grants $\{g_{i2}^*, \dots, g_{m2}^*\}$ as a function of borrowing).

Solving implicitly for this set of functions yields

$$g_{i2}^* = f_{i2} \left(\frac{\partial v_i}{\partial G_{i2}}(B_{i1}), \frac{\partial p_i}{\partial v_i}(B_{i1}) \right) \quad \text{for all } i \quad (4)$$

The central government's grant decision for region i in period 2 will depend on region i 's borrowing in period 1. The derivative of this function with respect to borrowing explains how the central government will adjust its allocation of grants to a region in period 2 if that region borrows in the first period. Before deriving the slope of the reaction function, one must consider two special cases:

A hard budget constraint policy: the central government resists any temptation to increase region's grants in the second period when that region borrows in the first. That is, the centre chooses beforehand the amount of grants, regardless the region's borrowing decision. This supposes that $\partial f_{i2} / \partial B_{i1}^G = 0$ for all i . Although the efficiency of such strategy, one will see that it is not credible.

A soft budget constraint policy: the central government finds optimal to increase a region's period 2 allocation of grants when that region borrows. This lowers the opportunity cost for the regional government because the grants pay back a part of its borrowing. This supposes that $\partial f_{i2} / \partial B_{i1}^G > 0$ for all i . This inefficient strategy will happen in the present model.

The derivative of the central government's reaction function with respect to borrowing gives

$$\frac{\partial f_{i2}}{\partial B_{i1}} = v_{GG} \frac{\partial G_{i2}}{\partial B_{i1}} + p_{vv} \frac{\partial v_i}{\partial G_{i2}} \frac{\partial G_{i2}}{\partial B_{i1}} \quad (5)$$

The sign of this derivative reveals whether the central government will pursue a soft budget constraint policy in the second period. Hereafter the sections discuss the two additive parts of the derivative.

The two components of the first term are negative, this latter therefore indicates that part of the central government's reaction will be to increase grants to the borrowing region. Indeed, this term is working to make $\partial f_{i2} / \partial B_{i1}^G > 0$. Goodspeed gives the following explanation: if the central government does not increase grants, the region must reduce its period 2 public consumption which increases the marginal utility of period 2 public consumption in the region. Since the central government is using the grants to get the region to what it perceives to be an optimal consumption of public good in period 2, it must increase period 2 grants to offset the region's behaviour and achieve this aim.

The second additive term of the derivative consists of three multiplicative terms. The last is negative, as higher borrowing in the first period reduces public good consumption in the second. The next to the last is positive, since lower public good consumption in period 2 lowers utility. Thus the sign of the second additive part of the derivative depends on the sign of p_{vv} . The intuitive reasoning makes p_{vv} negative for the same reason that marginal utility intuitively decreases. In other words, at high levels of utility, a small increase in utility is likely to make a slight difference in voting behaviour while at low levels of utility, it might make a great deal of difference. According to the probability of voting for the incumbent that increases at a decreasing rate with utility, the second additive component is positive, and the second additive term is also working to make $\partial f_{i2} / \partial B_{i1}^G > 0$. Goodspeed considers the second additive term as political in nature and gives the following justification as proof. If the centre does not increase grants, the region must reduce its period 2 public consumption which decreases utility. If $p_{vv} < 0$,

the marginal probability that a resident votes for the incumbent (i.e. the weight in the first order condition) is higher than it was before the region borrowed. By increasing grants to the region, the central government can therefore garner more votes. If $p_{vv} = 0$, the marginal probability that a resident votes for the incumbent does not change with the level of utility and the second additive term is zero. Assuming $p_{vv} = 0$ or $p_{vv} < 0$ and the unambiguous positive value of the first term, the slope of the reaction function is thus unambiguously positive. This means that the central government's incentives are to increase a region's grant with its borrowing.

A crucial fact of this model remains the basic commitment problem of the central government. Indeed, the centre uses transfers to maintain a certain quantity of regional spending that it considers politically optimal because it maximises its re-election chances. This point of view prevents the centre to commit a credible "no bailout" policy beforehand. The regional government knows that when it comes to period 2 and uses its first-mover position to take advantage of central government preferences.

3.2.2 Regional government's problem

The regional government i is assumed to maximize utility of a representative consumer of region i subject to constraints on private and public consumption in each of the two periods, the regional and central government budget constraints and the reaction function of the central government. Playing a Stackelberg game with perfect information, one may assume that the regional government knows the reaction function of the centre.

Regional government i 's problem is therefore

$$\underset{B_{i1}^G, B_{i1}^G, t_{i1}, t_{i2}}{\text{Max}} \quad u_i(G_{i1}) + v(G_{i2}) + w_i(C_{i1}) + z_i(C_{i2}) \quad (6)$$

The first order condition, which possibly deviates from efficiency, results in

$$\frac{\partial u_i}{\partial G_{i1}} - \left(1 - \frac{\partial f_{i2}}{\partial B_{i1}^G}\right) \frac{\partial v_i}{\partial G_{i2}} (1+r) - \frac{\partial z_i}{\partial C_{i2}} \sum_{j=1}^m \left(\frac{n_j Y_{j2}}{\sum_{j=1}^m n_j Y_{j2}} \frac{\partial f_{j2}}{\partial B_{i1}^G} (1+r) \right) = 0 \quad (7)$$

which reduces to

$$\frac{\frac{\partial u_i}{\partial G_{i1}}}{\frac{\partial v_i}{\partial G_{i2}}} = \sum_{j=1}^m \left(\frac{n_j Y_{j2}}{\sum_j n_j Y_{j2}} \frac{\partial f_{j2}}{\partial B_{i1}^G} \right) (1+r) + \left(1 - \frac{\partial f_{i2}}{\partial B_{i1}^G} \right) (1+r) \quad (8)$$

The price faced by the regional government when it borrows consists of two distinct parts. The first term results from the common pool problem. If region i borrows \$1 and the central government increases grants to region j by $\partial f_{j2} / \partial B_{i1}^G$, region i must pay a part of the cost engendered by the increase in grants. This term represents therefore the tax price to region i resulting from an increase in grants to any and all regions. The second term indicates the opportunity cost of G_1 in terms of the foregone G_2 . Increasing grants to the region reduces the region's opportunity cost. The most important feature of the region's incentives is the derivative of the reaction function of the central government. Goodspeed proposes to consider once again the two special cases exposed previously.

Hard budget constraint, that supposes $\partial f_{i2} / \partial B_{i1}^G = 0$ for all i . Under this policy, the central government does not change its initial allocation of grants when a region borrows. The opportunity cost is thus $1+r$, since borrowing must be paid for by reducing next period's revenues by the amount of borrowing plus interest. Moreover, there is no tax cost. As already remarked with the central government's behaviour, it cannot credibly commit to a no bailout policy beforehand. As a result, the regional government will not rationally expect following this central government's policy.

Soft budget constraint, that supposes $\partial f_{i2} / \partial B_{i1}^G > 0$ for all i . Under this policy, the central government increases a region's future grants when it borrows. The failure of the hard budget constraint policy includes two consequences for the region. Firstly the opportunity cost of borrowing is lowered since less period 2 public consumption must be given up to pay off the debt. This is represented by the second term of (8) and implies a greater amount of borrowing than under a hard budget constraint. Secondly, there is a rise in tax payment represented by the first

term of (8). This rise, which represents only a portion of each dollar borrowed, implies a higher price and less borrowing than under the hard budget constraint. Goodspeed identifies two sub-cases of soft budget constraint. First, the centre may increase only the grants of the borrowing region so that $\partial f_{i2}/\partial B_{i1}^G = 0$ for all $i \neq j$. Such behaviour results because the central government's re-election chances depend on it equating the weighted marginal utility of region's voters. When a region's borrowing disturbs this equality, the central government will attempt to adjust its grants to maximize its chances of re-election. The taxes rise by only a portion of the additional grants received and the region's increase in cost due to additional taxes is less than its decrease in the opportunity cost of borrowing. This leads to excessive borrowing. Second, one may assume that the central government increases grants not only to the borrowing region but also to other regions so that $\partial f_{i2}/\partial B_{i1}^G > 0$ for $i \neq j$. The difference with the first sub-case lies in the fact that the central government essentially punishes the borrowing region when it increases grants to other regions, as the additional grants are given to other regions. The interesting view is that the rise in taxes may be so great that it offsets the lower opportunity cost resulting from its own increased grants. In other words, it exists a type of soft budget constraint that results in efficient borrowing. However, this model does not deal with this sub-case, as the reaction function (4) is not a function of the borrowing of regions other than region i .

3.3 Conclusion

Regions' incentives depend on the reaction function of the central government. The political model of Goodspeed leads to interesting conclusions on budget constraint policies, based on the assumption that grants equate the marginal utility of regions' voters and thereby maximise central government's expected votes. A hard budget constraint policy, which leads to efficient borrowing incentives for regional governments, remains inefficient since the centre cannot credibly commit such a policy. On the other side, a soft budget constraint policy engenders two effects on incentives of regional government, namely a common pool problem and an opportunity cost effect. Indeed, the soft budget constraint lowers the

opportunity cost of borrowing for the regional government, but also increases the tax cost since a portion of the borrowing must be paid for through increased taxes. As long as other region's grants do not change as a result of a given region's borrowing, the common pooling effect on tax payment implies that the increased tax cost must be less than the decrease in the opportunity cost. This leads to over-borrowing. An interesting element of this model remains the possibility for the central government to punish the borrowing region in increasing grants to other regions enough to deter excessive borrowing by any region. In fact, the borrowing region must pay a portion of the tax increase for those grants increase and this finally leads to efficient borrowing decisions.

Goodspeed proposes a relevant model that deals with several features of fiscal recklessness mentioned in the first part of this paper. He effectively builds his analysis on an equalization transfer system in relation with sub-national borrowing incentives, in paying attention to politics. Moreover, he finds valuable conclusions about the common pool problem and the opportunity cost effect. The considerable number of citations about Goodspeed's model by other famous authors proves that he wrote an influential paper. Furthermore, he inspires researchers for new kind of models, such as Breuillé, Madiès and Taugourdeau (2005). Based on the model explained above, they "set up a simple model of central government transfer decisions with inter-temporal regional budgetary decisions when both horizontal and vertical tax externalities are at work" (Breuillé, Madiès, Taugourdeau, 2005, p. 231). Their paper belongs to the literature that proposes a new view on commitment problem, in examining the impact of tax competition on budget constraint. They find that tax interactions harden the regional budget constraint when the region is not deeply in debt, whereas they have no effect on central government transfer behaviour.

Goodspeed's model suggests that the derivative of the reaction function may depend on political factors. One of the only other models that endogenously derive soft budget constraint bailout behaviour on the part of the central government is Wildasin's model. This author assumes that the reaction function may also depend on regional government's size. The next chapter will deal with this author's view.

4. Externalities, jurisdiction size and bailout

The general content of this chapter attempts to ask why some lower-level governments fall into fiscal crises that seem to require interventions by higher-level governments while others do not. Wildasin (1997, p.1-36) proposes a model that deals with external effects created by the provision of a local public good, corrected with a Pigouvian tax. Indeed, this author explores the hypothesis that the central government acts to maximize the welfare of households residing outside of the locality that is being considered for a bailout. Moreover, this model considers under which conditions the centre would intervene in the local fiscal affairs, in which case localities face soft budget constraint. In addition, this author also develops an interesting point concerning the behaviour of localities, which have partly their budget constraint in their hands and may decide the attractiveness of a bailout.

However, the reputation of Wildasin's bailout model remains in his jurisdiction size analysis, which interprets the relationship between jurisdiction size and hardness of budget constraint. In fact, this model underlies the "Too big to fail" hypothesis, which is especially important in regards to the consequences it may engender. This hypothesis primarily refers to the banking literature with the "lender of last resort" theory. This means that a lender, usually the central bank of a country, has to prevent the collapse of banks or national institutions that are facing financial problem. In other words, the lender of last resort protects the national economy against the dramatic externalities that the collapse of a financial institution may engender. Nevertheless the potential bailout in case of problems gives institutions the temptation to take more risks on the capital markets. Wildasin linked this theory with jurisdiction size, since the failing of a large sub-national government may create negative spillovers on other national entities and may even affect the national economy.

The organization of this chapter is designed as follows. The next section sets out the hypotheses and the context of the model. The second section explains the

external effects' model which is divided into subdivisions exposing central and regional governments problem, as Wildasin solves his model with backward induction. The third section deals with Wildasin's famous jurisdiction size analysis, while the fourth presents a summary and conclusions of the chapter.

4.1 Hypotheses

This model is based on two strong hypotheses.

H1) Local governments provide public goods, which not only benefit their own residents but that produce external benefits for residents of other localities as well. The central government acts therefore in the interest of the whole society and establishes a programme of intergovernmental transfers that function as Pigouvian corrective subsidies.

H2) There is a sequential structure with decision-making. Firstly, the centre moves in establishing a programme of corrective intergovernmental transfers. Localities accept this policy and choose their level of local taxes and expenditures. However, there is a third stage and the centre can move last, after observing local fiscal decisions, by taking direct control over local expenditures and by financing incremental local spending from central funds. In other words, this third stage corresponds to a bailout from the centre and, if it occurs, reveals that the local government budget constraint has been soft.

The following numerous assumptions are needed to understand Wildasin's bailout model. The five distinct parts are the basic framework, households' consumption, governments' fiscal situation, the equilibria and the sequential game.

The model includes three types of actors: the central government, localities and their households.

H3) Localities are of identical size, i.e. they contain equal numbers of residents. According to that parameter, the degree of fiscal decentralization is thus related to the size of local governments. The degree of fiscal decentralization becomes low with only a few large jurisdictions, whereas it is high when it encompasses small

and numerous jurisdictions. This model will explain how jurisdiction size affects the hardness of local budget constraint.

H4) N represents the total population of the economy. Population is partitioned into local jurisdictions, which are assumed all to contain the same number of households, n . Households are immobile among jurisdictions.

Let's consider the following households' consumption and the externalities they generate.

H5) Households are assumed to have identical preferences and endowments and they consume three commodities:

x for all-purpose private good which will serve as numeraire. Each household is endowed with w units of this commodity.

z represents the consumption of good, which may be health, water or education and that yields external benefits to other households.

G is a Samuelson public good whose level of provision is determined by the central government.

Note that external effects of good z create interdependency among households. Thus suppose that each household h has a strictly quasi-concave utility function $u(x_h, z_h, Z, G)$ where $Z \equiv \sum_h \beta(z_h)$, with $\beta' > 0 > \beta''$. Here, (x_h, z_h) is household h 's own-consumption of goods x and z ; the parameter Z reflects the external benefits to h of consumption of good z by other households. The concavity of the function β reflects the basic need aspect of the external effects. The high degree of substitutability in the external benefits generated by households' consumption of good z is reflected by the summation of external effects across households. The strict quasi-concavity of $u(\cdot)$ reflects the diminishing marginal returns to aggregate externalities. It is also assumed that no goods are inferior.

Governments face the following fiscal situation.

H6) Each locality determines a level of good z to be provided to each of its residents, i.e. z is treated as a local public good. In order to simplify the analysis of jurisdiction size, it is useful to leave aside diseconomies of scale in the provision of local public good.

H7) Localities and central government are assumed to have uniform lump-sum taxes at their disposal to finance their expenditures. Local public goods may therefore be paid with local taxes or with grants from the centre. The role of transfers in the analysis will be to affect the local provision of z , that generates spillover benefits for the rest of the society.

H8) m denotes the share of local expenditures reimbursed by the centre through matching grants. The matching rate is assumed to be the same for all localities in order to simplify the analysis.

H9) g_i denotes any lump-sum grant from the centre to locality i , expressed in per-capita terms. Note that the notation distinguishes lump-sum grant level by localities because the centre may use these transfers to intervene in the financing of local public good in a particular locality.

H10) c_i is the per-capita level of local “own-contributions” to the provision of the local public good in locality i . The level of local public good consumed by each resident of locality i is thus $z_i = c_i + g_i$ with lump-sum grants or $z_i = c_i/(1 - m)$ under matching grants.

H11) The central government budget constraint, in summing total fiscal transfers across all localities i , takes the following form $\sum_i n g_i + G = NT$ with lump sum grants and $m \sum_i n z_i + G = NT$ with matching grants, T denoting the amount of central government lump-sum tax imposed on each household.

Consider those localities and households’ equilibria.

H12) The equilibrium for locality i is assumed to solve the problem $\max_{x_i, z_i} u(x_i, z_i, (N - n)\beta(\bar{z}) + n\beta(z_i), G)$ subject to H11 and assuming that \bar{z} denotes the per capita level of z provided to the residents of all localities other than i .

H13) Given the strong assumption above, it is obvious that there is an unique (x^*, z^*, G^*) that maximises the common utility of all households subject to the fundamental resource constraint $\sum_h x_h + \sum_h z_h + G \leq Nw$.

Interactions exist between the levels of government.

H14) Localities take the parameters of the central government grant policies as given. The centre acts as a Stackelberg leader or first mover, with localities adapting as well as they can to the policies announced to them. However, the central government may not be able to enforce its commitment, as a departure from announced constraints seems to be a feature of soft budget constraint.

According to those numerous and strong assumptions, the next section defines Wildasin's bailouts model.

4.2 Bailouts and externalities

Externalities found the basic issue of this bailout model. Assume that the central government offers each locality a matching rate of m^* for its expenditures on good z , which would support an efficient per capita level of z . Imagine that a locality fails to provide the basic good and sets $z_i = 0$. According to the externalities the provision of z_i may engender for residents in other jurisdictions, the centre might intervene and control the provision of z for the locality i . The central government uses therefore its own resources in the interest of residents of other localities. In other words, the centre bails the locality i out. The strategic value is thus the level of basic good z provided by locality i , z_i .

In order to simplify the relationship between the levels of government, it is sufficient to consider the interaction between a single locality i and the centre. Let's suppose that the centre announces an optimal matching rate m^* and that all other localities choose first-best levels of own-contributions to the provision of good z , $c^* \equiv (1 - m^*)z^*$, thus achieving the optimal provision level z^* . Does locality i choose to set $c_i = c^*$ and accept the central matching grant or choose some other level of its own contributions in anticipation of a central government bailout? The answer depends on the central government's bailout policy, which describes what level of bailout a locality receives if it deviates from the first best contribution level c^* . The decision of bailing out a locality i after observing its

choice of c_i indicates that there is a sequential structure between levels of government. Wildasin therefore analyses the relationship recursively, considering first the central government's bailout policy.

4.2.1 Central government bailout policy

The objective of the central government in Wildasin's model is the maximisation of the welfare of households residing outside of the locality i that is being considered for a bailout. In order to model the central government's bailout optimization problem, consider the following three assumptions. Firstly, the level of own-contributions chosen by locality i is denoted by c'_i , which may or may not be equal to c^* . Second, the central government has the possibility to intervene in locality i 's provision of good z after observing c'_i by adding a conditional lump-sum grant of g'_i to locality i 's own contribution, resulting in a level of provision denoted by $z'_i = c'_i + g'_i$. Thirdly, the centre adjusts its level of expenditures on good G after observing the choice of c'_i to have available funds.

Considering that $N - n$ is the total number of households that reside in localities other than i , the central government's bailout optimization problem can be explained as

$$\max_{\langle g'_i, G' \rangle} u\left(x^*, z^*, (N - n)\beta(z^*) + n\beta\left(\frac{c'_i}{1 - m^*} + g'_i\right), G'\right) \quad (1)$$

subject to

$$ng'_i + G' = NT - m^*\left((N - n)z^* + n\frac{c'_i}{1 - m^*}\right) \quad (2)$$

The objective function in (1) is the utility of a representative household residing in any locality other than i . Using (2) to solve for G' in terms of g'_i and substituting into the utility function in (1) reduces the problem to an unconstrained maximisation with respect g'_i . The first order condition

$$\frac{u_z(\cdot)}{u_G(\cdot)}\beta\left(\frac{c'_i}{1 - m^*} + g'_i\right) \leq 1 \quad (3)$$

must hold as a strict equality if $g'_i > 0$, i.e., if there is effectively a bailout.

The values of g'_i and G' that solve the bailout problem (1) depend on the level of locality i 's own contribution, c'_i . Assume that this locality chooses its contribution at the first-best optimal level $c'_i = z^*$. The first order condition (3) must hold as a strict inequality at a solution to (1), and by continuity, this inequality must hold for any c'_i sufficiently close to z^* . In other words, a locality that chooses a level of own-contribution to provide z that is optimal or sufficiently close to optimal receives no bailout from the centre.

Wildasin proposes then the possibility for localities to obtain a positive bailout from the centre. In fact, if a locality i sets $c'_i = 0$ and therefore makes no contribution at all to provide the good z , the central government bails out the locality, according to

$$\frac{u_Z(x^*, z^*, (N-n)\beta(z^*) + n\beta(0), G^*)}{u_G(x^*, z^*, (N-n)\beta(z^*) + n\beta(0), G^*)} \beta'(0) > 1 \quad (4)$$

This implies that the centre chooses a positive bailout $g'_i > 0$ for all own-contributions c'_i sufficiently close to zero. Note that high values of $\beta'(0)$ and of $u_Z(\cdot)/u_G(\cdot)$ increase the left-hand side of (4), indicating that a bailout is relatively attractive to the centre if the first units of z provided to a locality produce large external benefits.

The first order condition (3) must hold as an equality for all values of c'_i such that the bailout g'_i is positive. The bailout function derived as a matter of central government policy can be denoted as $g'_i = \gamma(c'_i)$ such that

$$-\frac{1}{1-m^*} < \gamma'(c'_i) < 0 \quad (5)$$

One can deduct from this general case that increases in own-contributions are partially but not completely offset by reductions in net transfers from the centre.

To summarize this section, there is no central government bailout when own contributions of locality i fall in the interval $[\bar{c}'_i, z^*]$, where $\bar{c}'_i < z^*$. This means that a locality that chooses a level of own-contribution that is optimal or sufficiently close to optimal does not receive a bailout. The critical value \bar{c}'_i will be strictly positive if the externalities associated with locality i 's provision of good z are

sufficiently strong that (4) holds. The bailout is thus a strictly positive and monotonically declining function of the own-contribution level for all values of \bar{c}'_i in the interval $[0, \bar{c}'_i]$. In other words, a locality that chooses a level of own-contribution sufficiently close to zero receives a bailout from the centre.

4.2.2 Local government bailout policy

A specific feature of Wildasin's model of bailout remains the assumption that local governments also exhibit bailout policies. He argues that they control the level of own-contributions to the local public good and thus determine whether to trigger a bailout. The condition (4) determines whether locality i can induce a bailout from the centre and represents a necessary condition for this locality to face a soft budget constraint. However, this condition is not sufficient for a soft budget constraint, since the bailout may be sufficiently unattractive that locality i would always choose an own-consumption level greater than \bar{c}'_i . Let's therefore analyse the local choice of own-consumption to local public goods.

If locality i chooses $c'_i \geq \bar{c}'_i$, the central government does not bail it out. On the other side, if locality i chooses $c'_i < \bar{c}'_i$, it then receives a bailout, and the consumption bundle that its residents receive is defined by the relations

$$x'_i = w - T - c'_i \quad (6.1)$$

$$z'_i = \frac{c'_i}{1 - m^*} + \gamma(c'_i) \quad (6.2)$$

$$Z' = (N - n)\beta(z^*) + n\beta(z'_i) \quad (6.3)$$

$$G' = NT - m^* \left((N - n)z^* + n \frac{c'_i}{1 - m^*} \right) - n\gamma(c'_i) \quad (6.4)$$

The utility of locality i in the event of a bailout is therefore $u(x'_i, z'_i, Z', G')$, each argument depending on c'_i . Let \hat{c}'_i denote the values derived from (6) when $c'_i = \hat{c}'_i$. The first order condition for a maximum of $u(x'_i, z'_i, Z', G')$ with respect to c'_i is

$$\left(\frac{u_z(\cdot)}{u_x(\cdot)} + n \frac{u_z(\cdot)}{u_x(\cdot)} \beta'(\cdot) \right) \left(\frac{1}{1 - m^*} + \gamma' \right) - n \frac{u_G(\cdot)}{u_x(\cdot)} \left(\frac{m^*}{1 - m^*} + \gamma' \right) \leq 1 \quad (7)$$

with strict equality if $\hat{c}'_i > 0$.

The first order condition (7) requires localities to choose a level of own-contributions that takes into account central matching grants, bailouts and their impact on the centre's own public good provision level. The own-contribution level \hat{c}'_i lies in the interval $[0, \bar{c}'_i]$ and is thus lower than the first-best optimum.

The locality i 's choice to induce a bailout depends on its own preferences and on the external effects that its provision of good z generates for other localities. Both these effects determine the location of the critical point \bar{c}'_i , which define the level of own contributions sufficiently high to reduce the bailout to zero and determine as well the rest of the bailout function $\gamma(c'_i)$. Assuming that residents have a very inelastic demand for good z , the lower level of provision attained under a bailout plan is likely to be unattractive and the locality will not induce a bailout. On the contrary if locality have an own-consumption of good z highly substitutable with other goods, the bailout is more likely. The external effects also affect the likelihood of bailout, as strong external effects are more likely to induce a bailout rather than small external ones. To summarize, the likelihood to induce a bailout depends on the local and external benefits generated by the provision of the local public good.

4.3 Bailouts and jurisdictional size

A key feature of Wildasin's model clearly remains the size of localities and their impact on the central government's bailout policy. The section above has assumed that all localities are of the same size, n . However, the author suggests that a bailout is more likely when locality are large in size, that is, related to the "Too big to fail" hypothesis presented in the first part of this paper. Let's impose any additional structures to the model developed in the section above to verify this postulation.

The comparison of two discretely different consumption bundles involving every argument of the utility function, (x^*, z^*, Z^*, G^*) and $(\hat{x}', \hat{z}', \hat{Z}', \hat{G}')$ is the first step when a locality decides whether or not to induce a bailout. The second one is assessing the effect of jurisdictional size on bailouts amount to model the vector

$(\hat{x}', \hat{z}', \hat{Z}', \hat{G}')$ as a function of n . The last stage is determining whether $u(\hat{x}', \hat{z}', \hat{Z}', \hat{G}')$ is increasing or decreasing in n and finally comparing its value with $u(x^*, z^*, Z^*, G^*)$.

This analysis includes implications of more specialized assumptions about preferences. The author firstly supposes that the utility function is additively separable in each argument and quasi-linear in G , that is

$$u(x, z, Z, G) \equiv A(x) + B(z) + C(Z) + G \quad (8)$$

There are implications for the quasi-linearity of G^3 , which induce that $c'_i/(1-m^*) + g'_i = c'_i/(1-m^*) + \gamma(c'_i) = c'_i$ for all values of own-contributions c'_i such that the centre is willing to bail out the locality. If household preferences satisfy (8), the quasi-linearity in G implies that they will choose either $c'_i = 0$ or $c'_i = z^*$ if

$$n < A'(w - T^*) \quad (9)$$

When (9) holds, the author assumes considerable simplification for the remainder of this section. Particularly, if a bailout occurs, (9) insures that $c'_i = 0$, that the level of bailout is therefore the unique value $\gamma(0) = c'_i$, and that the bailout is precisely the level of consumption of the local public good z that will be consumed by residents in the locality receiving the bailout, i.e. $\hat{z}'_i = \bar{c}'_i = \gamma(0)$.

Assuming that preferences satisfy (8), the unique bailout level \bar{c}'_i that the centre provides is determined by the first order condition (3), which now takes the form

$$C'(Z)\beta'(\bar{c}'_i) \leq 1 \quad (10)$$

where

$$Z \equiv (N - n)\beta(z^*) + n\beta(\bar{c}'_i) = Z^* - n(\beta(z^*) - \beta(\bar{c}'_i)) \quad (11)$$

This condition is satisfied as an equality if the bailout \bar{c}'_i is strictly positive, which will be true if and only if (4) holds, that is,

$$C'(Z^* - n(\beta(z^*) - \beta(0)))\beta'(0) > 1 \quad (12)$$

³ The quasi-linearity implies that $\gamma'(c'_i) = -1/(1-m^*)$ whenever $\gamma'(c'_i) > 0$. Let's assume this implication as given, as its development goes beyond the scope of this paper.

For a given utility function satisfying (8) and for a given external benefit function $\beta(\cdot)$, whether or not condition (4) holds depends only on the value of n .

Particularly, since

$$\frac{dZ}{dn} = -(\beta(z^*) - \beta(0)) < 0 \quad (13)$$

and since $C(\cdot)$ is strictly concave in Z , it follows that there is a critical value of jurisdiction size, corresponding to $\bar{n} \in [0, N]$ such that (12) does not hold for all $n \leq \bar{n}$ while it does for all $n > \bar{n}$. In other words, it exists a critical jurisdiction size \bar{n} such that localities not larger than \bar{n} receive no bailout from the central government, whereas localities larger than \bar{n} do receive positive bailout, if they choose a zero level of own-contributions to good z . Moreover, using (10) to solve implicitly for \bar{c}'_i as a function of n , we have

$$\frac{d\bar{c}'_i}{dn} = \frac{nC''(Z)\beta'(\bar{c}'_i)}{nC''(Z)\beta'(\bar{c}'_i)^2 + C'(Z)\beta''(\bar{c}'_i)}(\beta(z^*) - \beta(\bar{c}'_i)) > 0 \quad \text{for } n > \bar{n} \quad (14)$$

This last equation means that the size of the bailout offered by the central government to a locality that makes zero own-contributions to local provision of good z is higher, the larger the locality. According to the suppositions of (8), larger localities can obtain larger bailouts from the centre than smaller ones, and small localities may not be able to extract any bailout from the central government at all. The reason is that the local good provided by larger localities generates a larger positive externality. However, the analysis does not take into account the utility payoff of the consumption bundle a locality attains under a bailout as compared to that attainable with first-best optimal own-contribution. Wildasin states that it is hardly obvious to declare whether bailouts raise or lower utility for a locality's residents, or whether bailouts are more or less attractive to large localities than small ones. Despite this fact, one can affirm that localities of size $n \leq \bar{n}$ always choose a first-best optimal level of local contribution to good z , $c'_i = z^*$, since they cannot obtain a bailout anyway.

To prove the foundation of his assumptions, Wildasin illustrates his model with numerical calculations. The author chooses the functional forms and parameters in order to shed light on the working of the model rather than to simulate a real

economy⁴. Those numerical results primarily confirm (14), in other words that the bailout offered by the centre to a locality is larger, the larger the locality. Moreover, significantly small localities do not receive any bailout at all. In addition, the calculations reveal that the utility payoff in the event of a bailout is larger for larger localities, and that in some cases large localities find that utility is higher under a bailout than the first best optimum. The local government in that situation clearly faces a soft budget constraint in the sense explained above, that is, the central government does offer resources to the locality to finance the provision of the public good z if the locality fails to do so, and the locality prefers this outcome than the first-best optimal level.

According to the parameters determined by Wildasin, the following conclusive results give a more precise idea about the jurisdiction size and its impact on bailout. For instance, localities that constitute at least 21 percent of the national population receive positive bailouts. If smaller localities choose not to provide z , they receive no bailout at all. Localities of size $n < 21$ thus face hard budget constraints. However, note that this critical value of \bar{n} depends on the importance of external effects: with a small value of c_0 , \bar{n} can even attain 34 whereas it can only be 7 with a large value of c_0 . A locality that constitutes 41 percent or more of national population is better off under bailouts and thus faces a soft budget constraint. Under the same parameters, localities of sizes ranging between 21 and 41 percent of the national population would receive bailouts if they do not choose to provide the local public good, but the bailout is sufficiently unattractive that they prefer not to induce it. Those localities face hard budget constraints. Note that external effects play an important role in the decision of bailout. Indeed, Wildasin shows that weak external effects not only imply that the number of localities that can obtain non-zero bailouts from the centre remains small, but also that the size of the bailouts they can obtain is relatively small, making thus bailouts unattractive.

⁴ The values are $N = 100$, $w = 10$, $x^* = 7$, $z^* = 1$, $G^* = 2N = 200$. At first-best optimum, 70 percent of income is allocated to private good consumption, 20 percent to the national public good G and 10 % to the local public good z .

4.4 Conclusion

The model exposed above includes strong assumptions that greatly simplify the notation and the formal analysis. Moreover, the calculations do not give results that can be generalized. However, they provide a concrete illustration of many features of Wildasin's model and give an interesting view on budget constraints. For instance, the model explains that the occurrence of bailout partly depends on the willingness of the centre to offer it. Externalities generated by local public goods may make a central intervention attractive from the view point of the rest of the society, but there are also conditions under which the centre will not intervene and induces therefore a hard budget constraint. Moreover, this willingness also depends on the magnitude of the externalities associated with the provision of the local public good. The occurrence of bailouts not only depends on the central government's willingness to offer them, but also on the decision of localities to accept them. This interesting feature explains that the payoff of residents in the event of a bailout may be sufficiently unattractive that the locality does not choose to trigger the central government intervention. Finally, it is demonstrated that budget constraints tend to be softer for larger localities. In other words, incentives for a bailout can be especially strong when localities are considered "Too big to fail". Wildasin interprets this result as an indication that problems of fiscal discipline arise not because there is too much decentralization, but because there is too little. According to this point of view, it makes sense to devolve fiscal authorities to smaller jurisdictions. PISAURO gives another formulation to this problem in writing "for a given population size, the bailout problem becomes less serious, the higher the number of localities" (PISAURO, 2001, p. 13). The "Too big to fail" hypothesis remains a central theory in the literature, since most of the paper concerning bailouts and soft budget constraint problem refers to Wildasin's work.

A recent example of this assumption is the mortgage crisis in the United States, which perfectly illustrates the "Too big to fail" hypothesis. Despite that "saving companies from their own mistakes was not supposed to be part of the

government's job description" for American politicians and economists, Fannie Mae and Freddie Mac's possible failure changed their minds. Indeed, the government offers a bailout to these mortgages companies, which own nearly half of the nation's \$12 trillion worth of home mortgages. The common pool problem was also debated, as the "taxpayers - who now are confronted with plunging house prices, a drop on Wall Street and soaring costs for food and fuel - will ultimately pay the costs". However, "the United States cannot be allowed to collapse, just as Fannie and Freddie cannot be allowed to fail". In fact, the failure of such companies would engender one of the biggest downturn in the United States since the Depression. The survival of Fannie Mae and Freddie Mac, and therefore their bailout, remained the unique solution (Goodmann, 2008).

5. Related models

This chapter proposes an overview of models related to bailouts and commitment problems. Goodspeed and Wildasin have developed models that corroborate explanations given in the first chapter. Their fundamental findings remain elementary in the literature, since a number of researchers still refer to their results. For instance, Facchini and Testa (2007) examine a model which have similarities with the jurisdictional size model of Wildasin. In addition, this chapter gives further information about researches on bailouts. Indeed, a macroeconomic model by Qian and Roland (1998) is presented, as it contains important conclusions on fiscal competition and monetary centralization. Subsequently, a modern model developed by Köthenbürger (2003) analyses tax competition in the presence of a lack of fiscal commitment. To conclude, the last section presents researches that imply additional developments on the soft budget constraint problem, with a theory of Akai and Sato (2005) and a dynamic model of Bordignon and Turati (2005).

5.1 Jurisdiction size, regional inequality and bailouts

A recent survey by Facchini and Testa (2007, p. 333-344) captures similarities with both models presented above. Indeed, their paper deals with a simple two-period model of public good provision within a federation that includes borrowing and jurisdiction size issues. Moreover, the common pool problem is also treated, as well as the question of redistribution among states. These authors based their paper on the lessons from Brazil's debt crisis in the mid 1990's.

5.1.1 Context and hypotheses

Facchini and Testa propose a theoretical framework, in which heterogeneous states face incentives to borrow. In a two-period setting, they consider a federation of two states that differ in their population size. All residents are endowed with a constant per capita income and the income of the larger state exceeds the one of the small. The federal government provides a federal public good, as the states

provide a local public good. A proportional tax revenue is levied on the residents to provide both goods. The total revenues are allocated between levels of government via a formula assigning to each of them a share that is equal to their share of the first best provision of public goods. It is noteworthy to mention that the grant can only be spent for the local public good's provision. States have the opportunity to finance the first period provision of the local good by borrowing at the current interest rate. However, the entire debt must be repaid in the second period. Borrowing in the first period means thus a reduction of citizens' private consumption in the second period, in order to repay the debt. A state that is not able to repay the outstanding debt will default, unless the federal government decides to bail it out. In case of bailout, additional taxes are needed to provide the required funds, since states do not reduce the provision of public goods to repay the debt (as the provision is given by the first best level determined by the formula). The budget constraint faced by a state that receives additional funds is soft. On the other hand, if the centre denies a bailout and that the state must reduce its residents' private consumption to repay the debt, the budget constraint is hard. The default has a negative impact on the income of the insolvent state, and on that of the entire federation in case of a large state's default. Indeed, these authors point out that the default of large Brazilian states in the mid-1990's posed a serious threat to the financial stability of the whole country.

The authors model the interaction between the centre and the states as a two-period game. They firstly characterize the first best allocation of resources and then study under which conditions each state finds optimal to borrow to increase the local public good's provision guaranteed by the revenue sharing formula.

5.1.2 Findings and conclusion

Facchini and Testa firstly determine the optimal amount of federal and local public good, which is provided according to the revenue sharing formula. They find that borrowing is never optimal, as the first best allocation is achieved when states do not borrow. However, the central government must be able to enforce a hard budget constraint, in order to avoid expectations of bailout by state

governments. When states anticipate that they will receive further funds from the central government, they will borrow in the first period and over-provide the local public good. The presence of a soft budget constraint may engender a common pool problem, as excessive borrowing is financed with tax levied on all the residents of the federation. However, Facchini and Testa assume that a bailout might be optimal ex-post as it would be too costly for the country to maintain a hard budget constraint. Indeed, a default involves a cost for the economy of the state and/or of the federation, and when this cost is significant, the total welfare of the federation in the second period may be higher if a bailout is offered. Nevertheless, states may anticipate that the “no bailout” policy is not credible and over-borrow in the first period.

These authors propose an interesting viewpoint on bailouts and defaults, as they introduce the cost of default in their framework. They assume that the large state also has a negative impact on the income of the small state, while this is not the case for the small one. They find that it is optimal from a point of view of the large state and the federation to bailout the large state only. However, this bailout is not Pareto efficient and the default’s magnitude may change the results. In fact, the loss imposed on the small solvent state by the bailout of the large insolvent state might engender the default of the small state. As a consequence, a bailout occurs only when both states are insolvent. The authors explain that if the total debt cannot be bailed out, the small state will be forced to default, while the larger might face a soft budget constraint.

Although the hard budget constraint is optimal from an ex-ante point of view, the ex-post incentives to bail a state out are different since the default is costly and its consequences vary depending on the size of states. States, whose default is detrimental for the federation, are more likely to receive a bailout. Anticipating the central government ex-post incentives, large states are more willing to borrow than small ones. This conclusion may be illustrated with the Brazilian experience, since the richest and most fiscally independent states run fiscal deficit and benefit from the federal largesse.

5.2 Fiscal competition and monetary centralization

The first macroeconomic model of the soft budget constraint viewed as a dynamic commitment problem in the framework of a federal government was presented in a paper of Qian and Roland (1998, p. 1143-1162). These authors build a model based on China's experience of transition to a market economy, in order to investigate fiscal competition and monetary centralization. They analyse how the government's incentive to soften budget constraints depends on the extent of decentralization of fiscal and/or monetary authority. The description of their model's basic framework is interesting, as it certainly influenced numerous papers.

5.2.1 Context and hypotheses

Qian and Roland build a model in a three-tier hierarchy with respectively the central government, multiple local governments and state and non-state enterprises. They firstly assume that government bodies face sequential bailout decisions in the presence of sunk costs and enterprises behave strategically in securing subsidies. Secondly, they hypothesize that local governments compete with each other in allocating their own budgets to attract mobile factors and grants from the central government in a simultaneous-move game. They finally assume that the central government plays a sequential game against local governments in deciding on the allocation of grants and, if monetary financing is possible, on the total money supply. Note that state-owned enterprises face soft budget constraints, as they are bailed out by the central government in case of financial trouble. In their model, the authors try to find what combination of fiscal and monetary conception would be more efficient.

5.2.2 Findings and conclusion

Qian and Roland establish interesting conclusions on the effect of federalism in hardening budget constraint. Their results indicate that local government supervision over state enterprises, as opposed to central one, has an impact on the enterprises' budget constraints. In fact, decentralization of fiscal authority

together with mobility of non-state capital across regions is effective in hardening enterprises' budget constraints. The authors show that fiscal competition may act as a "commitment device". Indeed, the competition among local governments in attracting capital in their region creates an externality that increases the opportunity cost of subsidizing inefficient enterprises which in turn reduces the incentives for bailouts. They also demonstrate that fiscal competition together with monetary recentralization hardens enterprises' budget constraint. Effectively, Qian and Roland explain that monetary decentralization remains inefficient with fiscal decentralization, as it creates high inflation and therefore softens budget constraints.

5.3 Tax competition and bailouts

Qian and Roland's model proposed the first viewpoint on tax competition and its relation with bailouts. The wave towards globalization renders tax competition more prevalent and becomes a common subject for policy-makers and academics. Among dozen of researches, Köthenbürger (2003, p. 498-513) examines capital tax competition in the presence of an interstate transfer policy without federal commitment.

5.3.1 Context and hypotheses

Köthenbürger studies tax competition in a two-layer fiscal union with decentralized states. Those decentralized members engage in capital tax competition and receive lump-sum grants from the federal government. In this model, decentralization implies that states choose their tax policy in moving first and the federal government decides the amount of transfer after the level of public debt has been chosen. In moving so, state governments rationally anticipate federal transfers in case of fiscal profligacy and strategically select too high public debt levels.

In his analysis, Köthenbürger compares the outcome prevailing under Nash equilibrium and the outcome established under decentralized leadership. In other words, the first outcome is obtained in assuming that both levels of government

choose their policy simultaneously, i.e. each government takes other governments' policy choices as given. The result coincides with the standard tax competition outcome. The second outcome is achieved with states acting as Stackelberg leaders in a two-stage game between the two levels of government. In the first stage, states select their capital tax rate simultaneously, taking the reaction of the federal government and the capital demand into account. They behave as Nash-competitors towards each other. In the second stage, the federal level determines its policy variables for given states' policy choices and anticipates the reaction of capital demand. The game is solved by backward induction, in order to characterize the subgame-perfect equilibrium. The author finds that decentralized leadership neutralizes tax competition, i.e. capital mobility does not negatively affect public good provision. Nevertheless, interstate lump-sum redistribution effectively becomes an interstate revenue-sharing system, which renders public good provision inefficiently low.

5.3.2 Findings and conclusion

Given symmetric states and the local public good under-provision in both situations, Köthenbürger compares the welfare obtained using each scenario. He finds that the effect of revenue-sharing under decentralized leadership with an infinite number of states unambiguously implies lower welfare relative to tax competition. However, decentralized leadership may prove to be welfare superior with a finite number of states. Also in this paper, the author provides another result on vertical fiscal externalities. He explains that under decentralized leadership, state tax policy affects other states budgets via federal policy changes. Köthenbürger shows that states anticipate that lump-sum transfers equate public funds ex-post, namely after capital taxes have been chosen. Identifying the federal decision-making problem, states perceive transfers as depending on tax rates, which convert lump-sum transfers into conditional transfers from each state's perspective. This expectation of grants has two consequences on taxing incentives. First, it neutralizes fiscal externalities arising with capital mobility. Ex-post equalization implies that the outflow of capital, following an increase in the tax rate and the induced tax base expansion in neighbouring states, feeds back

in the form of higher transfers to the tax-raising state. In other words, fixing capital tax rates prior to federal transfers undermines horizontal fiscal externalities due to capital mobility among states. The lack of commitment implies that each state therefore perceives its tax base as immobile, a phenomenon which strengthens taxing incentives. Second, the author shows that tax competition may appear to be the preferred federal governance structure, as the federal intervention in the presence of fiscal externalities is more welfare-deteriorating.

5.4 Additional developments

Soft budget constraint problem remains a current topic, since authors still develop new theories. This section offers two types of models that imply additional developments to the subject. The first model presented below results from Akai and Sato (2005)'s researches and synthesizes two different views on the soft budget constraints. The second shows implications of a dynamic model with incomplete information, as formulated by Bordingnon and Turati (2005).

5.4.1 Decentralized leadership meets soft budget

Akai and Sato (2005, p. 1-58) put forward a new theory on the soft budget constraint problem. They first state that there are two different kinds of literature on the commitment problem. Indeed, they insist on a difference between the soft budget and the decentralized leadership literature. The former postulates that the *ex ante* moral hazard or adverse incentive consequences on the local governments result from the anticipation of the *ex post* bailing out by the central government in the pursuit of *ex post* objectives. Goodspeed and Wildasin's models belong to this category, as they conceptualize a sequential game with local governments moving first and the central government deciding the transfer policy in the second turn. The latter addresses *ex ante* horizontal and reciprocal externalities with the central government acting as Stackelberg follower and local governments as leaders, but establishes different implications from the soft budget constraint problem. Indeed, this type of model achieves an efficient allocation of local public services when there are inter-regional spillovers. Then, *ex post* transfers serve to internalize the

spillover effect, the transfers being lump-sum *ex post* but perceived as matching by the regions *ex ante*. Köthenburger's model which is presented in the section above belongs to this literature. Akai and Sato aim to synthesize the decentralized leadership and the soft budget views in order to develop a new model of commitment problem.

In fact, these authors develop a simple decentralized leadership model in which local governments move first and the transfer scheme is decided *ex post*. In both literatures, the central government pursues *ex post* social welfare politics that distort the *ex ante* incentives of local governments. Akai and Sato want to establish the direction of the *ex ante* distortion that addresses commitment problem. In other words, they analyse what local governments' decision on public expenditures or tax collection is made *ex ante*. The timeline is therefore very important in their model, as the *ex ante* local government's choice between expenditures and tax collection affects the policy instruments determined *ex post*. Indeed, the central government acts as a Stackelberg follower and designs its intergovernmental transfers according to the local government's decisions. The authors intend to study how the timing structure affects the equilibrium consequences. In order to examine the efficiency of their model, Akai and Sato consider extensions, such as changing scenarios or introducing tax competition.

They establish that the direction of the *ex ante* distortion relies on what policy instrument is decided *ex ante* at the local level, namely tax revenue raising effort or local spending. This means that whatever extensions the authors tried, the essence of the incentive problem remains the same. Indeed, the *ex post* discretion of intergovernmental transfers still gives the following output: the *ex ante* competition results with under-taxation, while the horizontal interaction with expenditures competition result with local governments over-spending. Moreover, they explain that the lack of central government commitment to own transfer policy leads to inefficiency, either under taxation or over-spending relative to the first best or the commitment solution.

5.4.2 Dynamic model with incomplete information

Bordignon and Turati (2005, p. 1-54) suggest the development of a dynamic model and give new interesting ideas to analyse the soft budget constraint problem. They primarily investigate the case of health care funding in Italy, since this country has plenty of examples of *ex post* interventions by the central government to finance regions' health deficits. Their model is closely related to bailout's expectations of public health expenditures in Italy.

The confrontation between the centre and regional governments on the matter of health was a strategic game in Italy. Regions claimed that the central government under-finances them for the provision of health services, whereas the centre affirmed that regions overspend and waste money. However, in the middle of the 90's, the central government decided to implement measures, reducing *ex ante* health funding and convincing regions it was going to be "tough". Facts such as a dramatic financial crisis and the need to meet Maastricht constraints for joining the European Monetary Union (EMU) made the hard budget constraint credible. Regions then successfully introduced measures to control expenditures. However, health expenditures started to accelerate again when Italy obtained its final stage for the EMU.

The model is implicitly inspired by the facts above. Bordignon and Turati consider a simple model with two governments, the central and the regional. The centre moves first in setting the health funding level, for simplicity a low or a high level. Then the regional government moves and selects an expenditure level, low or high too. They assume that if the region responds with the appropriate level of expenditures to the central funding, region's budget is in equilibrium. Moreover, if the central government sets a high funding, the region can only respond with a high level of services. However, if the centre sets a low level of funding, the region may choose a high level of expenditures. The central government must then decide to let the region fend for itself with the deficit or bail it out partly or fully.

The authors explain that under perfect information, the only perfect equilibria of the game are (1) central government plays the low funding in the first period and the region selects the low expenditures level; (2) the central government selects a high level of funding and the region immediately chooses the high spending; (3) the centre plays the low funding, the region reacts by selecting a high level of services. The central government bails the deficit out in the third period. The first best equilibrium can only be achieved if the centre can credibly commit to a no bailout policy, namely the case (1).

Bordignon and Turati include the dynamic view of the model at this step, according to the Italian experience. They suppose that the region only has some *a priori* on the central government's policy. In other words, the region does not know exactly the centre's decision and expects therefore that it will be "tough" with a probability p , and weak with probability $1-p$. The "tough" central government prefers not to bail out the region, while the "weak" central government bails out the region in case of deficit. Then the authors solve the dynamic game using the situation of incomplete information.

Their conclusion leads to an interesting implication: under incomplete information, the "weak" government can try to take advantage of region's uncertainty by mimicking the "tough" behaviour. Region may then believe this illusion and responds with a low level of expenditures and therefore reach the first best equilibrium (1). The "weak" government can thus achieve this equilibrium, whereas this would be impossible under perfect information. Then the result of this game depends on the *ex ante* credibility of the centre to induce a no bailout policy, that is the value of p . Indeed, when p is sufficiently high, a low level of financing is a more reliable signal that the central government is "tough" and the region therefore reacts by choosing a low level of funding. On the other hand, this situation would not be possible with perfect information since the region would not believe the implicit threat and thus select a high level of expenditures.

The dynamic model of Bordignon and Turati implies interesting suggestions in the soft budget literature. Indeed, the assumption of incomplete information gives the opportunity to the central government to take advantage of regions' uncertainty. With a sufficiently high value of p , the centre can behave as a "tough" government that implements hard budget constraints.

III. EMPIRICAL EVIDENCE OF SOFT BUDGET CONSTRAINT IN TRANSITION AND DEVELOPING COUNTRIES

The second part presented the way to model soft budget constraint mechanisms. The last part of this thesis aims to introduce empirical studies on the soft budget constraint problem in transition and developing countries. It exists a limited number of papers concerning transition and developing countries, as most of empirical evidences were tested in developed countries. In the literature, famous researchers such as Von Hagen (1991) or Poterba (1995) tested hypotheses for United States. Studies by Rodden (2000) about Germany, Borge and Rattso (2002) concerning Norway and Dahlberg and Von Hagen (2004) on Sweden also examined the phenomenon in Northern European countries. Another paper by Garcia-Mila, Goodspeed and Mc Guire (2001) presented results about Spain. However there are some empirical papers on transition and developing countries, with a particular interest for Latin America. The sixth chapter presents empirical studies, which specifically analyse the impact of politics on fiscal performance and intergovernmental transfers. Jones, Sanguinetti and Tommasi (2000) present first an empirical study based on the analysis of Argentinean provinces, which provides results on political interest and the common pool problem. The second section provides the findings of Abdul Jalil (2007) about political influence on spending in Malaysia. Finally, Kraemer (1997) investigates the equity principle, incentives principle and political non-discrimination principle in Argentina, Brazil and Mexico. The seventh chapter lays out an empirical survey concerning the “Too big to fail” hypothesis. Trillo, Cayeros and Gonzales (2002) test the impact of Mexican sub-national governments’ size when a bailout occurs. The last chapter principally deals with borrowing autonomy, as Rodden (2002) tries to test its simultaneous application with intergovernmental transfers and federalism.

The presentation of empirical surveys will always follow the same layout. The first section presents the hypotheses tested and the second one the results. The last section concludes the chapter with a summary and sometimes comparison with other studies or comments.

6. Political influence on fiscal performance and intergovernmental transfers

As mentioned in the first part of this thesis, many transition and developing countries face problems in their decentralization process. Despite the devolution of expenditures responsibilities, a number of sub-national governments remain transfer dependant. A vertical fiscal imbalance is the result of such a distortion between sub-national expenditures and revenues. This soft budget constraint's origin affects most of Latin American countries. In addition, the lack of clarity in the grants' distribution or the discretion of certain types of transfers may foster the influence of politics and institutions on spending. Annual grants negotiation or spending behaviour modification softens therefore sub-national budget constraints. The following three studies try to give empirical evidence of political influence in Latin America and Malaysia.

6.1 Politics, institutions and fiscal performance in Argentina

Jones, Sanguinetti and Tommasi (2000, p. 305-333) carry out a survey that provides results on institutional characteristics and fiscal politics. In founding their investigation on Argentina, these authors focus on the interaction between fiscal authorities, as most provincial spending is financed from taxes collected by the national government. Primarily, it is important to explain their approach in detail in order to understand their reasoning and results. The key players of the game are politicians interested in providing net benefits to their region. According to the large fiscal imbalance in Argentina, these benefits are financed out of a common pool, that is, an over-utilization of the national wealth. The authors postulate that there is a common pool at two levels because of the federal fiscal organisation in Argentina. On the one hand, the federal transfers induce an over-spending bias across jurisdictions, as each province tries to overuse the national common source of funds. On the other, local legislators see the provincial and national taxing capacity as a common resource too. In their survey, the authors

test hypotheses about institutional and political variables in order to show their impact on the common pool problem.

In their approach Jones, Sanguinetti and Tommasi choose the spending as independent variable. As other authors, they explain the soft budget constraint problem in using the spending variable. This implies the following link: sub-national entities that still have increasing spending without the corresponding revenues rise their vertical fiscal imbalance. As in the case of Argentina, indebted provinces receive more intergovernmental transfers to cover their expenditures or, in last resort, demand a bailout. Extraordinary transfers or bailout are financed by all the taxpayers, hence the relationship with the common pool problem.

6.1.1 Hypotheses

The following three hypotheses are derived from the common pool problem across provinces, that is, when each province tries to overuse the national wealth.

The Federal Tax-Sharing Agreement (FTSA) is a transfer mechanism that implements the distribution and destination of revenues collected by the federal government. Most of the transfers that provinces receive are determined by this regulation, which is based on a coefficient fixed by law and independent of actual actions. However, this can lead to inefficient spending since governments receive the full benefit of increased provincial spending, while paying only a part of the political tax cost. The authors hypothesize that, holding other factors constant, spending will be greater in the provinces that are more favoured by the FTSA.

H1) Provinces that receive a larger percentage (normalized by population) of transfers under the FTSA will have a higher per capita spending.

The President, who is elected by a national constituency, is held responsible for macroeconomic outcomes and has thus better incentives for fiscal conservatism than governors. According to the Argentina's high party discipline, provincial governors from the President's political party will behave close to the national objectives. In fact, the President is able to induce governors from his party to internalize a portion of externality to a greater extent than opposition governors.

The authors expect, *ceteris paribus*, lower spending in provinces where the governor is from the same party as the President.

H2) *Provinces where the governor is from the same political party as the President will have lower per capita spending than provinces where the governor is a member of the opposition.*

The third hypothesis postulates that party affiliation may influence the outcome. In Argentina, the Peronist Party (PJ) and the Radical Civic Union (UCR) are large parties that share the same fiscal and economic ideologies.

H3) *Provinces headed by Peronist and Radical governors do not differ noticeably in their levels of per capita spending.*

The next hypotheses are derived from the application of the common pool problem at the provincial level, that is, when local legislators see the provincial and national taxing capacity as a common resource.

According to political economy theory, fiscal discipline is greater under divided than unified government as there are less difficulties for the executive to get the budget through the legislature. This hypothesis also follows the party discipline logic emphasized in H2. In fact, the authors assess that a unified government tends to help their governor in his fiscal prudence politics.

H4) *Provinces where there is divided government will have higher per capita spending than provinces where there is unified government.*

Another fiscal determination commonly accepted by political economists is the influence of the electoral cycle. The authors suggest that during election years, governors employ public work projects and other expenditures to affect the upcoming election.

H5) *Provincial spending per capita will be higher in gubernatorial election years than in other years.*

The authors construct an index composed of six individual indicators related to budgetary institutions and linked procedures, in order to assess their impact on the fiscal outcomes. The components used to form those indicators concern the ability of the legislature to amend the budget proposal submitted by the governor, the provincial borrowing ability, the municipal borrowing ability, autonomy and strength of audit agency, provincial-municipal tax sharing agreements and finally promotional subsidies in the Constitution. They attribute a value from zero to ten to each province and sum the six indicators in order to create the Fiscal Institutionalization Index. Higher the value, more disciplined the province.

H6) *Per capita spending will be lower in provinces with higher values on the Fiscal Institutionalization Index.*

6.1.2 Method and variables

Jones, Sanguinetti and Tommasi apply a system of simultaneous equations, linear three stage least squares (3SLS) as methodology to analyze the determinants of provincial revenue and expenditures in the Argentinean provinces.

Three stage least squares (3SLS) is a method developed by Zellner and Theil in 1962. It combines multivariate regression and two stage least squares. Three stage least squares estimates are obtained by first estimating a set of linear or non-linear equations with cross-equation constraints imposed, but with a diagonal covariance matrix of the disturbances across equations. The parameter estimates obtained are used to form a consistent estimate of the covariance matrix of the disturbances, which is then used as a weighting matrix when the model is re-estimated to obtain new values of the parameters. Three stage least squares estimates are consistent and asymptotically normal, and under some conditions, asymptotically more efficient than single equation estimates (Zellner, Theil, 1962, p. 54-55).

The data used are a pooled cross-section of the 23 Argentine provinces from 1985 to 1996, excluding years that contain bias. The analysis begins with an examination of hypotheses H2-H5, using the 3SLS method and the data set. Authors then utilize the results to test hypotheses H1 and H6 by regressing the

time in-variant Fiscal Institutionalization Index on the 23 provincial fixed effects variables drawn from the 3SLS analysis.

The dependant variables in the 3SLS analysis are the annual per capita revenue in the province (*revenue per capita*) and the annual per capita public sector spending in the province, excluding interest payment (*expenditure per capita*). The expenditures contain the following control variables: *provincial revenue per capita*, *national transfers* (amount of transfers per capita received by the province from the national government during the year) and *unemployment* (percentage of the work force that was unemployed in the province's capital during the year). The revenue have *revenue per capita at (T-1)* and *energy consumption* as independent variables. Actually, energy consumption is a proxy for provincial GDP, for which reliable annual data are unavailable. For purposes of control, cross sectional (i.e. provincial, 23 total) and temporal (i.e. year, 10 total) fixed effects variables are also included.

To test the hypotheses H2-H5, the authors observe the effect of five political variables on the level of per capita provincial public sector spending. The variables *president party* measures the partisanship of the governor in relation to that of the president. The years during which the governor of a province holds to the same party as the president are coded one, while other years are coded zero. The following variables assess the partisan affiliation of the governor. For the variable *UCR governor*, a one is given if the province was governed by a member of the UCR during the year being coded. For the variable *provincial party governor*, a one is assigned if the province was governed by a provincial party. The fourth variable is *divided government*, which is defined as a situation in which the governor's party lacks a majority of the seats in the single house in the unicameral system and in both houses in the bicameral system. Years where divided government existed are coded one while other years with unified government receive zero. The last variable is *governor election year* and years in which gubernatorial election occurred are coded with one, zero otherwise.

Table 3: A 3SLS analysis of the institutional determinants of provincial per capita revenue and expenditure

Depdt variable	Indpdt variable	R1	R2	R3	R4	R5	R6	R7
Revenue per capita	Rev.pc at (T-1)	0.933** * (0.028)	0.486** * (0.056)	0.479*** (0.056)	0.478*** (0.056)	0.478*** (0.056)	0.475*** (0.056)	0.460*** (0.059)
	Energy Cons.	1.268 (1.549)	8.786 (11.284)	12.636 (11.384)	13.088 (11.393)	13.132 (11.594)	14.983 (11.664)	9.497 (11.862)
	Cross-sectional fixed effects	No	Yes	Yes	Yes	Yes	Yes	Yes
	Temp fixed effects	No	No	No	No	No	No	Yes
	Adjusted R ²	0.821	0.862	0.862	0.862	0.862	0.862	0.862
Exp per capita	Prov revenue per capita	1.027** * (0.085)	1.741** * (0.315)	1.750*** (0.309)	1.726*** (0.313)	1.677*** (0.299)	1.628*** (0.293)	0.918** (0.304)
	National Transfer	1.093** * (0.019)	0.834** * (0.044)	0.818*** (0.044)	0.819*** (0.044)	0.810*** (0.043)	0.802*** (0.043)	0.813*** (0.046)
	Unempl	2.485 (1.848)	-0.285 (2.115)	0.081 (2.075)	-0.405 (2.113)	-0.161 (2.111)	0.301 (2.077)	-2.899 (2.753)
	President party			42.280*** (14.275)	48.270*** (15.160)	49.701*** (14.975)	60.023*** (15.099)	58.253*** (16.446)
	Divided Govnmt				-19.742 (18.472)	-17.079 (18.278)	-15.043 (18.215)	-20.605 (17.437)
	Governor election year					32.976** (13.236)	33.225** (12.986)	
	UCR						30.294 (23.118)	33.685 (22.991)
	Governor Prov party						-82.135** (30.957)	-88.541** (29.040)
	Cross sectional fixed effects	No	Yes	Yes	Yes	Yes	Yes	Yes
	Temp fixed effects	No	No	No	No	No	No	Yes
Adjusted R ²	0.955	0.959	0.960	0.960	0.962	0.963	0.973	

Source : Jones, Sanguinetti, Tommasi (2000), p. 320

Note: the standard errors are in parentheses; * significant at the 0.05 level for a one-tailed test; ** significant at the 0.01 level for a one-tailed test; *** significant at the 0.001 level for a one-tailed test.

6.1.3 Results

The analysis of the determinants of per capita public sector revenues and expenditures in the Argentine provinces between 1985 and 1996 provides the following results.

- a) There is a strong support for H2, as the President's party has a strong and significant inverse effect on the level of per capita provincial spending. On average, provinces with a governor member of the President's political party spend significantly less than provinces with a governor of the opposition. In other words, the authors' view is supported since governors who are co-partisans of the President spend less than other governors. It is noteworthy that this result is closely related to the strong party discipline in Argentina. For instance, the study of Abdul Jalil about Malaysia will show different conclusions.
- b) The findings also support H3 and permit concluding that "party matters"⁵ in Argentina. Two factors underling this "party matters" in that country are the existence of a common pool and the President's status as the leader of a relatively disciplined political party and his ensuing additional influence over governors who are co-partisans. Conversely, ideological differences do not influence taxing and spending preferences in Argentina, as it normally happens in developed countries.
- c) The results do not provide support for H4. Actually, the presence of a divided government fails to lead to a significant increase in per capita spending. On the contrary, the negative estimated coefficients show that a divided government may reduce spending, albeit not at a significant level.
- d) The findings provide support for H5, since levels of provincial per capita spending are significantly greater when gubernatorial elections years occur. Authors find that provinces spend on average 33 pesos per capita

⁵ In the literature, « party matters » is used to explain the influence of parties in taxing and spending preferences.

more during gubernatorial than during non-gubernatorial years. Indeed, governors try enhancing their chances of re-election via public works and salary bonuses for provincial public sector employees.

In order to confirm the robustness of their results, Jones, Sanguinetti and Tommasi conduct two diagnostic tests. They first take into account the effect of national transfers on the level of provincial spending. The second diagnosis concerns the economic changes faced by Argentina between 1985 and 1996, namely macroeconomic policies' modification and the reduction of inflation through the implementation of the Convertibility Plan. Neither the influence of national transfers nor the historical facts related to the Convertibility Plan affects the conclusions on H2 to H5. The robustness of their findings is therefore confirmed.

Finally, the authors examine H1 and H6 in regressing the invariant normalized FTSA shares and Fiscal Institutionalization Index values on an estimated coefficient for the provincial fixed effects variables. The findings of this analysis confirm H1, since the larger the normalized FTSA share received by average province, the higher its level of per capita spending. Furthermore, these results support the confidence in H6, as the Fiscal Institutionalization Index has a significant inverse effect. That is, the greater the level of fiscal institutionalization in a province, the lower its level of per capita spending is likely to be.

6.1.4 Conclusion

This chapter focuses on the political and institutional factors that influence the fiscal outcomes. Jones, Sanguinetti and Tommasi base their empirical survey on Argentina, since this federal country possesses interesting characteristics. The empirical results give interesting views on the political features that bias the tax and spending decisions. Provinces where the governor is from the same political party as the President, *ceteris paribus*, spend less than the other provinces. Party discipline plays therefore a positive role in strengthening provincial expenditures. The authors achieve yet another interesting result about the electoral expenditures

cycle, as provincial spending is higher in gubernatorial election years than in other years. Provinces with unified governments do not appear as a good predictor for fiscal outcomes. Indeed, the authors find that a divided government may reduce spending, although not at a significant level. This survey also shows that more fiscally conservative provinces spend less than other provinces. However, a main effect remains: the fact that the Federal Tax-Sharing Agreement induces a bias to overspend, especially in provinces that are more favoured by the system. There is thus the temptation to affirm that the FTSA is not a good system since it increases the common pool problem. Argentina faces a high vertical imbalance problem, since transfers on average account for 77 percent of provincial spending. This origin of soft budget constraint, combined to the FTSA and the political influence represent a great distortion of fiscal discipline. This chapter will show other results that confirm the important fiscal problems faced by this Latin American country. The next empirical study proposes another view on intergovernmental relations by investigating the politics and spending behaviour in Malaysia.

6.2 Influence of political representation and ideologies on spending in Malaysia

Abdul Jalil (2007, p. 117-175) founds his survey on the relationship between political systems and economic performance. He effectively tries to test whether highly represented states in the government or states that share the same political ideology as the central government influence the outcome. His reasoning is as follows: a state that is influential faces weaker incentives to be fiscally responsible, has a higher probability in obtaining extra allocations from the central government and may expect a bailout in case of fiscal crisis. As in the previous survey, this author also uses spending to explain the soft budget constraint problem.

6.2.1 Hypotheses

The author bases his hypotheses on two different models that may explain the possible relationship between politics and spending.

The first hypothesis is based on the legislative bargaining model, which induces the two following assumptions. It first supposes that the state representatives care about the outcome of their constituencies and face therefore incentives to reward them in attracting public sponsored projects. Secondly, it assumes that the state representatives have the capacity to influence central government's decisions, especially in the allocation of public projects.

H1) States with the strongest representation in the Parliament or in the Government have a relatively higher spending.

The second hypothesis follows the conclusion of the partisanship model, which postulates that ideological preferences of sub-national governments may partly explain the amount of transfers that they will receive from the central government. This amount will in turn determine the sub-national government's level of expenditures. This assumption has the opposite reasoning than the second hypothesis of Jones, Sanguinetti and Tommasi. Indeed this latter postulated a high party discipline, whereas the following hypothesis states that the partisanship allows higher spending.

H2) States that share the same political ideologies as the central government have relatively a higher spending.

6.2.2 Method and variables

Abdul Jalil applies the generalized method of moments (GMM) to test the link between politics and spending.

Generalized method of moments (GMM) is a method developed by Hansen in 1982. This development revolutionized empirical work in macroeconomics and became an important unifying framework for inference in economics, as it encompasses most of common estimation methods. Hansen “centres on the presence of known functions, labelled moments functions of observable random variables and unknown parameters that have expectations zero when evaluated at the true parameter values”. The method generalizes “the standard method of moments where expectations of known functions of observable random variables are equal to known functions of the unknown parameters” (Imbens, 2002, p. 493).

There are two types of GMM estimators, namely the difference estimator and the system estimator. The data used cover the period of 1982 to 2002, divided into four periods which are concordant with the term of the Parliament’s members. The data on state governments’ expenditures and revenues are obtained from the State Finance and the political, socio-demographic, as well as economic data from other sources such as election reports or the major newspaper.

To test H1, the author uses *the number of seats per capita allocated to each states in the parliament* and *the number of members per capita a particular state has in the cabinet* as variables. The first variable represents the influence that a particular state has in the Parliament, as the more seats a state has the more influence it will have in the legislative process. Identically, the state that is overrepresented in the cabinet will have more influence on the decisions made at the executive level.

To test H2, the author uses *the number of seats per capita in the Parliament won by the ruling party*, *the percentage of state assembly seats won by the ruling party* and *the number of votes obtained by the ruling party* as variables. Indeed, the author assesses that the extent of the partisanship of a state with the ruling party can be measured by the number of seats and votes obtained by the ruling party both at the national and state level elections. The control variables include lagged value of the dependant variable, log of real per capita revenue, dummy variable representing year before election was held, GDP per capita, a dummy variable for states with petrol revenues, proportion of forest area, proportion of Malays and

natives in the total population, urbanization rate and the proportion of population with tertiary education. The table below shows the tests for the first hypothesis H1. The GMM difference is used in columns A to C and the GMM system estimator in column D to F.

Table 4: The effects of over-representation in the legislative and in the executive on state governments' expenditures

	A	B	C	D	E	F
Political variables						
Seats in Parl. pc	0.0025 (0.0432)		-0.0041 (0.0325)	0.0123 (0.0081)		-0.0022 (0.0065)
Member of cabinet pc		16.4225*** (4.7758)	16.5420*** (4.77597)		9.7423*** (2.1120)	10.5827*** (3.5703)
Economic variables						
Revenue	0.5516*** (0.1044)	0.5232*** (0.1259)	0.5799*** (0.1245)	0.7857*** (0.1319)	0.7072*** (0.1326)	0.7028*** (0.1151)
Lagged exp	-0.0308 (0.1284)	-0.0416 (0.1219)	-0.0479 (0.1427)	0.2362*** (0.0725)	0.2393*** (0.0686)	0.2451*** (0.0684)
GDP pc	0.0001 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)
Socio-demo variables						
Malays prop	-0.0667 (0.0462)	-0.0487 (0.0472)	-0.0465 (0.04215)	0.0026 (0.0019)	0.0017** (0.0009)	0.0016 (0.0009)
Urban rate	0.0045 (0.0073)	0.0124** (0.0055)	0.0063 (0.0051)	0.0033 (0.0023)	0.0011 (0.0022)	0.0008 (0.0020)
Tertiary education	0.0213 (0.0256)	0.0041 (0.0157)	0.0208 (0.0173)	-0.0062 (0.0109)	0.0005 (0.0087)	-0.0007 (0.0105)
Size	0.8786 (0.6939)	0.6279 (0.5477)	0.6204 (0.5512)	0.0161 (0.0234)	-0.0018 (0.0215)	-0.0057 (0.0235)
Population	-0.1098 (0.5978)	-0.6822 (0.5822)	-0.6742 (0.5824)	-0.1409 (0.0858)	0.0915 (0.0446)	0.1257 (0.0982)
Constant				0.2341 (0.3376)	0.1997 (0.1535)	0.2509 (0.2663)
Hansen p-value	0.306	0.267	0.275	0.862	0.573	0.719
1 st order AC (prob)	-2.67 (0.008)	-2.99 (0.003)	-2.74 (0.006)	-2.78 (0.0050)	-2.51 (0.012)	-2.43 (0.015)
2 nd order AC (prob)	1.12 (0.261)	-1.40 (0.163)	-1.41 (0.159)	1.12 (0.261)	-0.81 (0.415)	-0.89 (0.371)

Source: Abdul Jalil (2007), p. 157

Note: the standard errors are in parentheses; * significant at 0.1 level; ** significant at 0.05 level; *** significant at 0.01 level.

6.2.3 Results

The analysis of the impact of political factors on the spending tested by Abdul Jalil between 1982 and 2002 provides the results listed in the table 4.

- a) With the number of seats in the Parliament as primary independent variable, the impact of overrepresentation at the Parliament level on the expenditure level is not statistically significant (column A). The value indicates that a higher number of representatives per capita at the legislature do not translate into a higher spending by the state governments. This finding is consolidated since the author obtains the same result with the GMM system estimator (column D).
- b) In the column B and E, the author tests the number of members in the cabinet per capita as primary independent variable. The table shows that the coefficient is highly significant in both the GMM system and the GMM difference estimator. This suggests that a higher representation in the executive leads to a higher spending by state government. In the column C and F, the author introduces simultaneously both variables in the estimation and finds the same results as the previous analysis.
- c) In order to test the effect of political ideologies on state government spending, the author introduces in his estimations the three variables first separately and then simultaneously. Still in using the GMM difference and the GMM system estimator, none of the three variables are statistically significant. This finding implies that political ideologies do not seem to have an impact on the state government's fiscal behaviour.

6.2.4 Conclusion

Abdul Jalil finds interesting results about the impact of legislative and executive representatives on state government's fiscal behaviour. In regards to these findings, he can conclude that what matters the most for the states in order to be influential is to be well represented at the executive level of government. An

overrepresentation at the legislative level does not have a significant impact on the state government's fiscal outcomes. A possible explanation should be the minimal role played by the members of the Malaysian Parliament in the decision process. Moreover, he finds that the political ideologies do not influence the state governments' spending either.

Jones, Sanguinetti and Tommasi's second hypothesis has similarities with the second hypothesis of Abdul Jalil. Indeed, they both postulate that partisanship may influence the fiscal outcome of sub-national governments. The first survey assumes that sub-national governments with a governor of the same political party as the President spend less, whereas the second survey supposes higher spending if the states share the same ideological preferences as the centre. The empirical analyses give different results, since the first survey assesses that governors who are co-partisans of the President spend less than other governors while the second study does not notice any impact. The following remarks may explain the difference between both surveys. The President's status in Argentina hardens the party discipline and this partisanship permits to avoid spending differences. This argument is supported by the third hypothesis, since the authors find that "party matters" in Argentina. On the other hand, the same political party is in place since the Independence in Malaysia. As a (possible) result, being from the same party as the central government does not seem to play a significant role on the fiscal behaviour.

One may therefore consider each political system and characteristics of each country in analysing the political impact on spending. Features such as party discipline, term of office or even historical events might influence the results of such empirical surveys. The next study proposes an interesting comparison of Latin American countries, in dealing with equity principle, incentive principle and political non-discrimination.

6.3 Nature of intergovernmental transfers in Latin America

Kraemer (1997, p. 1-47) did an empirical paper concerning transfers and politics in Argentina, Brazil and Mexico for the Inter-American Development Bank. Vertical fiscal imbalance remains a major problem for Latin America countries, as mentioned in the first part of this thesis. Intergovernmental transfers thus represent a main source of revenue for sub-national entities. Are those transfers influenced by political factors? This author tries to investigate whether the transfers system works according to rational principles, i.e. how funds that are transferred from the central to the intermediate governments are distributed among the latter.

6.3.1 Hypotheses

Hypotheses are based on three principles in order to measure the rationality of the transfers system: equity principle, incentive principle and political non-discrimination principle.

Equity principle: redistributive policies, closely related to the living conditions, should distribute more per capita transfers into regions with poor socio-economic indicators. The author gives a weak and a strong interpretation of this principle: the weaker demands only that poorer region should not receive less funds than richer ones. The stronger demands that, *ceteris paribus*, governments of poor regions should not only receive at least the same per capita transfers but should actually obtain relatively higher funding, in order to foster equalization of living conditions across the nation.

Incentive principle: perverse incentives, due to systematic transfers to states with fragile fiscal positions, can discourage tax effort. Indeed, states that expect bailout transfers from the centre do not have incentives to raise their tax effort. Once again, the author postulates two interpretations. The weak assumption is that the per capita transfers from the central government should, other things being equal, not increase the lower tax ratios of the intermediate government. The strong

assumption demands that the central government should create incentives for higher tax efforts, and per capita transfers should decrease with lower tax ratios of intermediate governments. The main goal aims to lessen the importance of transfers in sub-national governments' budget.

Political non-discrimination principle: this proposition assumes that electoral, partisan or other political constellations should play absolutely no role in the determination of transfers' distribution. Indeed, the author thinks that political influence is not compatible with a rational and fair system of intergovernmental fiscal relations.

6.3.2 Method and variables

The author uses the same empirical approach for the three countries, namely a multiple regressions using OLS estimation. The study of Brazil is developed to explain how the author proceeds and to give the interpretation of the results. For the two following countries, only the basic information is given since the development stays identical from one empirical survey to another.

Brazil: the author chooses the year of 1991, as it is considered a normal year since there was no political transition. Data forms a sample of 27 Brazilian states. Variables are standardized and have a cross-provincial arithmetic mean of zero and a standard deviation of unity. As both dependant and independent variables are defined in this way, the regression coefficient can be interpreted as elasticity. Indeed, the coefficients display the change in the dependant variable if the independent variable is exogenously increased by one standard deviation.

Table 5 presents the determinants of the regional distribution of federal transfers per voter to state governments in Brazil. The first dependent variable is *total transfer*, which is the standardized amount of transfers per capita (equation B1). *Tax transfer* describes the constitutionally mandated tax sharing mechanisms (equation B2) and *non-tax transfer* the more flexible transfers from other agreements (equation B3). The first independent variables is *tax effort* which is

the standardized ratio of the states' own revenue and their respective GNP. *PCY* (per capita income) is also considered, since it is used as the indicator to determine the amount of transfer resources to the states for redistributive purposes. *Senadores* is a variable that defines the number of senators per million voters and is used to isolate the difference of representation of states. *Bahia* is a dummy variable equal to one if the chairman of the budget committee assures favourable transfers for his home state of Bahia, and zero otherwise. *Alagoas* is an additional variable that control the President home state, as the latter case of Bahia. The third dummy, *Sao Paulo*, controls the "metropolis-bias" in favour of the most populous, politically and economically most influential state.

Equation B1 shows that there is a perverse effect indicating that better-off states received, other things being equal, higher transfers. A coefficient > 0 effectively indicates that the equity principle was violated in 1991. Equation B3 demonstrates that a more distributional pattern exists for the discretionary non-tax part with a highly significant elasticity of 0.27. On the contrary, formula based-transfers seem to be negatively dependent from *PCY* (equation B2). *Tax effort* shows no significant coefficient in any of the three equations. Thus, the prevailing transfers system does not create any incentives in favour of enhanced own revenue collection on the state level (i.e. a positive sign) but also avoids moral hazard problem (i.e. a negative sign). Moreover, there is evidence that neither the chairman of the budget committee nor the President favour their home states of *Bahia* or *Alagoas*. Insignificant results are also reported for the dummy *Sao Paulo* and there is therefore no detection of "metropolis-bias". The most significant and striking result in those equations remains the *Senadores* variable. Indeed, the findings clearly indicate that the Senate influences the distribution of federal transfers to the states.

Table 5: The determinants of the regional distribution of federal transfers per voter to state governments in Brazil

	B1	B2	B3
Dependent variable →	Total transfer (per voter, 1991)	Tax transfer (per voter, 1991)	Non-tax transfer (per voter, 1991)
PCY	0.16 (3.05)	-0.15 (-1.46)	0.27 (3.69)
Tax effort	-0.03 (-0.61)	-0.01 (-0.08)	-0.03 (-0.53)
Senadores	1.00 (22.16)	0.87 (9.84)	0.99 (15.59)
Alagoas	0.04 (0.16)	-0.03 (-0.07)	0.06 (0.18)
Bahia	0.09 (0.38)	-0.15 (-0.34)	0.17 (0.55)
Sao Paulo	-0.31 (-1.25)	0.05 (0.11)	-0.43 (-1.24)
R ² adj.	0.90	0.76	0.86
F-value	84.4	19.4	41.3
Sample size	27	27	27

Source : Kraemer (1997), p. 42.

Note: the values in parentheses are t-statistics. The coefficients in bold are significant at a level of 90 percent or more. All F-value are above the critical value.

Argentina: the author chooses two distinct years (1986 and 1995), representing different stages of the Argentinean process of democratisation. Data forms a sample of 23 provinces, excluding a province that could create a bias. Variables are also standardized and have a cross-provincial arithmetic mean of zero and a standard deviation of unity. The first dependent variable is *total transfer*, which represents the per capita transfer of all funds from the federal to the provincial government. The second is *automatic transfer*, which comprises only the formula-based segments of transferred funds per capita, while *ATN transfer* represents the completely discretionary Treasury Grants. As independent variables, the author selects an *index of human development*, the *density*, *tax effort* and two political variables to control parties' influence and finally the *Senadores*. Moreover dummies are also used to control the President home state's grants.

Mexico: Kraemer chooses the year of 1992, which is the middle of a presidential term of office. The dependent variable still is *transfer* and all variables are

standardized with a mean of zero and a standard variation of unity. As independent variables, the author takes an *index of human development*, *tax effort*, *Senadores*, political variables to control parties' influence and representation, and dummies to control favourable treatment for President home state.

6.3.3 Results

Results are classified per country with the findings corresponding to each of the three principles.

- a) Brazil: the *equity principle* was violated in the year examined, as states with higher per capita income received, other things being equal, higher per capita transfers. The *incentive principle* was strongly violated, but held in the weak formulation. In fact, tax effort played no role in the determination of the grants distribution. And while higher tax efforts on sub-national level were not encouraged, they were at least not influenced negatively. Finally, the *political non-discrimination principle* was violated. Over-representation of population-poor states in Brazil attained impressive differences. For instance, Sao Paulo can send only 0.16 Senators per million voters whereas Roraima can send 41, that is 256 times more.

- b) Argentina: both *equity* and *incentive principles* hold in their respective weak interpretation in both years considered. Indeed, the payments are unrelated to the level of both provincial development and revenue raising efforts. However, both principles were violated in using the strong interpretation: no positive relationship exists between development and tax effort on one hand and transfer receipts on the other. One might deduct that the present intergovernmental fiscal system cannot contribute to the expansion of less developed regions of Argentina. The *political non-discriminatory principle* was violated in both years. Firstly, discretionary transfers are prone to be politically manipulated. For instance, President Menem's home province received much more ATN grants, which are

discretionary and non-reimbursable. The high coefficient and its significance of *La Rioja* variable (home province of Menem) prove this conclusion. Moreover, even the rules-based revenue sharing systems are not immune to the political interest. The author assesses that the differences in representation in Senat had strong repercussions on the per-capita allocation of non-discretionary transfers. On the other hand, it can be stated that partisan interest did not significantly determine the distribution of transfers.

- c) Mexico: the *equity principle* has been violated in its weak and its strong interpretations in 1992. Indeed, less developed states systematically received less per capita transfers than richer ones. The coefficient of a rich state tested in the survey shows that it constantly received by far the most per capita transfers. The *incentive principle* in its weak interpretation has been satisfied in both years, that is, increased tax effort by states was not punished by a withdrawal of transfers. The *political non-discrimination principle* has been violated in Mexico in several ways. There are indications that fiscal transfers system was used by the Government to promote the ruling parties electoral perspectives. In fact, states that support the ruling parties during presidential election received, other things being equal, more per capita funds. Secondly, the author finds that certain states receive substantial grants in period of gubernatorial election. Indeed, the government is more generous with states, in order to synchronize the budget cycle with the electoral calendar. In this way, the ruling party improves the short-term economic conditions and insures success at the polls. Finally, population-poor states which are over-represented in the Senat receive more funds per capita. This last political distortion is exactly the same problem that Kraemer detects in the Argentina's situation. The author deduces that the distribution of funds is therefore "supply-leading" rather than "demand-following". To conclude the findings concerning Mexico, and also to contrast with the Argentinean

case, the results do not show any influence of the Mexican President in the attribution of additional grants for his home state.

6.3.4 Conclusion

Kramer attempts to show the effects of political institutions on the distribution of intergovernmental transfers. His investigation gives interesting but worrying results, as the rational principles were violated in most of the cases. The violation of the equity principle in Brazil, Mexico and in Argentina (in the stronger formulation only) reinforces disparities between poor and rich regions. This renders the equalization of living conditions across the nation practically impossible. Furthermore richer states receive relatively more transfers, although they already have enough resources. This fact may exacerbate the risk of soft budget constraint, since richer states know they will still receive intergovernmental transfers despite their “rich-state” status.

The second principle holds in its weak interpretation in the three cases, but not in its stronger formulation. The next step for those countries is therefore to intensify decentralization and subsidiarity in order to gradually shrink the importance of transfers in the sub-national governments’ budgets. This step will not only give sub-national governments more flexibility but will especially harden budget constraint, since less transfers diminish the risk of bailout’s expectation.

The systematic violation of the last principle, namely the political non-discrimination principle, tends to prove the great importance of this factor of distortion in Latin America. Indeed, Kraemer declares that political institutions have proved to be of equal or even higher importance as economic and socio-demographic factors in Argentina, Mexico and Brazil. Although each country has its own typical political problems, over-representation of poor-population states in the Senat remains an important common problem in this survey. Indeed, states or provinces can usually send two Senators irrespective of the number of residents, and this creates a bias in favour of less populous states. In fact, they have the possibility to influence the distribution of discretionary transfers, and even rule

based grants in certain situations. In the parameters tested for Mexico, Kraemer finds that states receive more grants in period of gubernatorial elections. This result can be linked with the higher spending in electoral cycle tested by Jones, Sanguinetti and Tommasi. In both situations, one may deduct that political parties try to misrepresent the reality to voters, in order to gain more votes. In case of fiscal profligacy, voters can believe that sub-national governments are not held accountable and this may lead to demand of bailout.

To conclude this section, one can affirm that political institutions play a major role in the softness of sub-national budget constraints as they use different means to influence the distribution of intergovernmental transfers. To lessen this effect, countries of Latin American have to reduce the discretionary power in their budgetary procedure and/or have to decree binding rules for fiscal policies.

7. Is the “Too big to fail hypothesis” valid in Mexico?

The banking literature stated the proof that size matters when it comes to bailing out an entity. As explained in the first part of this paper and demonstrated in the second, the “Too big to fail” hypothesis is an important factor to explain the bailout of large sub-national states or provinces. This chapter aims to show empirical results about this origin of soft budget constraint, in order to prove that large sub-national governments may expect a bailout because of their size.

Trillo, Cayeros and Gonzales (2002, p. 365-380) found their empirical survey on the case of Mexico, as this Latin American country has interesting characteristics. Indeed, this Federation faced the 1995 financial crisis, the so-called Tequila crisis, and thus coped with highly indebted local governments. The federal government offered a generalized bailout in order to rescue its sub-national entities. The author’s aim is to evaluate questions behind bailouts to prevent futures ones. This chapter only focuses on their analysis of sub-national government’s size as determinant of bailout.

7.1 Hypotheses

First of all, these authors consider two types of bailouts. The first is the open bailout (or generalized bailout), which took place as a result of the Tequila crisis when the Federation had to rescue virtually all the states. In a second example, they identify hidden bailouts, which could be situations where a state with a primary fiscal deficit also reports a reduction in its debt level. In other words, hidden bailouts may be described by the definition given in the introduction of this thesis. The authors analyse separately both types of bailout in their empirical study.

The first hypothesis tests the size of sub-national governments in the determination of the bailout’s amount after the Tequila crisis.

H1: Does the size of a state matter in the generalized bailout?

The second hypothesis tests the size of sub-national governments in the case of hidden bailouts.

H2: Does the size of a state matter in hidden bailouts?

7.2 Method and variables

Trillo, Cayeros and Gonzales use a regression to test the “Too big to fail” hypothesis in both types of bailouts. Their data source is the Secretaria de Hacienda which is the Finance Ministry of Mexico. The period of this study covers the years between 1994 and 1998.

To test H1, the dependant variable is the generalized bailout measured as *Extraordinary transfers* from the federal government to the state as proportion of its total revenue. In their econometric test, the authors include proxies for the size of the states, as the importance of the states is not an observable variable. They first use *Number of formal workers in the state*, since they may exert political pressure in the form of strikes. Secondly they include *Population*, as a highly populated state has a greater impact at the polls. The higher are these variables, the greater are the chances for the large states to be bailed out.

To test H2, the authors define two dependent variables, each one representing a possible definition of a hidden bailout. *Debt reduction* that is unmatched by fiscal state government surpluses represents the first dependent variable. In fact, a hidden bailout may be indicated when a sub-national government presents a fiscal deficit but still reduces its level of outstanding debt. *Variation in the interest rate*, which reflects the difference in interest rates before and after debt renegotiation is the second dependent variable. As independent variable, the authors still use *Number of formal workers in the state*.

Table 6: Influence of sub-national governments' size in the determination of the bailout amount after the Tequila crisis

Variable	Coefficient	Standard Error	t-ratio
Dpdt variable: Extraordinary transfers (1994)			
Population	0.016560	0.003946	4.20
R2	0.41		
Durbin-Watson statistic	2.243713		
Dpdt variable : extraordinary transfers (1998)			
Number of formal workers in state	0.252027	0.045973	5.48
R2	0.40		
Durbin-Watson statistic	2.035954		

Source: Trillo, Cayeros, Gonzales (2002), p. 373. Adapted by the author.

Table 7: Influence of sub-national governments' size in the case of a hidden bailout

Variable	Coefficient	Standard Error	t-ratio
Dpdt variable: Debt reduction			
Number of formal workers in the state	769432.2	347572.7	2.21
R2	0.6		
Durbin-Watson statistic	2.142152		
Dpdt variable: Variation in interest rate			
Number of formal workers in the state	2.48E-13	7.82E-14	3.17
R2	0.06		
Durbin-Watson statistic	2.171915		

Source: Trillo, Cayeros, Gonzales (2002), p. 378. Adapted by the author.

7.3 Results

- a) The results of the regression in the table 6 suggest that H1 holds. Effectively, the sign of the coefficient *Number of formal workers in the state* is positive and statistically significant at the standard significance level. Furthermore, the coefficient *Population* remains positive and

statistically significant too. This means that the size measured in these terms matters when the Federation decided by how much to bail a state out.

- b) The results of the regression in the table 7 indicate that the “Too big to fail” hypothesis holds, regardless of the definition the authors give to a hidden bailout. Indeed both coefficients are positive and statistically significant.

7.4 Conclusion

The survey of Trillo, Cayeros and Gonzales suggest that the bailouts in Mexico took two forms, namely a generalized bailout and a hidden one. Among others hypotheses, they test the “Too big to fail” assumption. Their findings show that the size of states turned out to be important in explaining bailouts, regardless of the definition they used. These results confirm the facts described in the first part of this paper and also Wildasin’s model. In fact, it can be validated that Latin American countries may bail large states out as they are politically significant. In this study, the size is represented with the number of formal workers or the population in a state. However, from an economic point of view, states that possess high GDP should not face a financial crisis, since this may lead to a loss of confidence among foreign investors in the whole country. The size of a state could therefore be assessed with an economic measure too. In their study, these authors also test the importance of the GDP per capita and find that bailouts have a regressive distributional effect. In other words, the richer states receive more extraordinary funds. Those results correspond to Wildasin’s suppositions. His model effectively confirms that larger localities can obtain larger bailouts.

The “Too big to fail” hypothesis has therefore strong support. It is described in the literature as the origin of soft budget constraint, is then modelled by a famous author and is confirmed with empirical evidence.

8. Borrowing autonomy and fiscal discipline in OECD, transition and developing countries

As revealed in the first part of this thesis, borrowing may soften sub-national budget constraint in certain situations. Unrestricted legislation or poorly defined restrictions effectively engenders large deficits and therefore expectations of bailout by sub-national governments, creditors and voters. Rodden (2002, p. 670-687) assesses that large deficits occur when sub-national governments are simultaneously dependant on intergovernmental transfers and are free to borrow. Moreover, he argues that this combination is frequently found in federations or constituent units. This author tests borrowing autonomy with vertical fiscal imbalance and commitment.

8.1 Hypotheses

Countries that face high levels of vertical fiscal imbalance need to find a credible no bailout commitment. To harden their sub-national entities' budget constraint, central government can formally restrict their spending and access to credit. Indeed, this easy way of restriction seems to be a direct response to commitment problems.

H1: Central governments will place restrictions on sub-national borrowing autonomy when fiscal imbalance is high.

In the second hypothesis, the author postulates an interactive relationship between intergovernmental transfers, borrowing autonomy and fiscal performance. Assuming that vertical fiscal imbalance is associated with sub-national fiscal indiscipline, the relationship should only hold when sub-national governments have relatively unrestricted access to borrowing.

H2: Vertical fiscal imbalance will only affect sub-national fiscal performance at high levels of borrowing autonomy.

Federalism implies a limited autonomy of the central government. Indeed, the federated units (i.e. the sub-national governments of a federation) have some influence in the formulation of the constitutional contract and can therefore enact rules or constraints that limit the central autonomy.

H3: Political federalism undermines the central government's ability to restrict sub-national borrowing.

8.2 Method and variables

The author first uses a cross-section average and then a time-series cross analysis to test the hypotheses. The data are composed of yearly observations for forty-three countries drawn from a cross-section of OECD, developing and transition countries for the period between 1986 and 1996.

Rodden chooses the sub-national fiscal discipline as the dependent variable. He defines it as the *sub-national surplus as a share of expenditures*, since he finds that this variable should be the most appropriate to facilitate cross-national and time-series comparison. In order to minimize the impact of economic cycles, he utilizes averages over a sufficiently long time period and he also includes control variables for exogenous macroeconomic fluctuations. For the independent variable, the author measures *vertical fiscal imbalance* with the relation grants/revenue, as this distinguishes intergovernmental grants from own-source revenue. Rodden uses a slightly modified version of a legal institution index created by the Inter-American Development Bank as the independent variable for *borrowing autonomy*. A dummy codes federal countries because of their constitutional status of states or provinces. Moreover, the author includes several control variables that can influence central governments' credibility to maintain a hard budget constraint.

8.3 Results

- a) There is support for H1, as the central government attempts to cut off sub-national access to credit markets when vertical fiscal imbalance attains high levels. In this way, the centre prevents over-borrowing and therefore moral hazard problems.

- b) H2 holds, as relatively free sub-national entities that are simultaneously transfer dependent run larger long-term deficits. The results effectively show that strict formal borrowing limitations or relative fiscal independence leads to relatively less deficits among sub-national governments. The author also stipulates that growing transfer dependence over time is associated with larger deficits only when sub-national entities are free to borrow. The borrowing autonomy represents therefore an objective origin of soft budget constraint, as it clearly exacerbates the deficit level of transfer-dependent entities.

- c) The cross-section model states that federated sub-national governments have significantly higher levels of borrowing autonomy. H3 thus holds, since federated units have a greater access to credit.

8.4 Conclusion

Many developing and transition countries have rapidly decentralized responsibilities without giving the corresponding funding. Indeed, this responsibility often accrues to the central government which then distributes revenues via a transfers system. The simultaneous increase of transfer-dependence and sub-national borrowing autonomy do not give incentives to enlarge the local tax base. Sub-national governments run therefore large amounts of deficits (H2) and may finally demand a bailout. To prevent this, certain central governments cut off access to credits (H1). Brazil and India introduced this type of restrictions in order to enhance the control of sub-national spending and borrowing. However,

Rodden finds that this method takes place in small and homogeneous unitary system rather than in large federations. Closely related to this author's remark, H3 assesses that federated sub-national governments have a greater borrowing autonomy. According to this empirical study, federated units have a larger access to credit markets and less restrictions in case of fiscal indiscipline. Furthermore, Rodden specifies that asymmetry of jurisdictions size or small overrepresented jurisdictions generally characterize federations. This empirical part treats both problems with particularly significant results. In fact, the survey on Mexico shows that the size matters in the bailout decision and Kraemer demonstrates that the problem of overrepresentation occurs in Latin America.

Consequently does federalism lead to moral hazard problems? The different empirical evidences may throw doubts on the positive aspects of this political system for transition and developing countries. On the other hand, there is considerable indication that fiscal discipline works well among governments like the US states or Swiss Cantons. Therefore, there is temptation to conclude that the goal is to increase the local self-sufficiency. Indeed, the central government must send a clear signal to voters and creditors that it pursues a no-bailout policy. Rodden proposes for instance to increase the tax base and revenue raising capacity and to place borrowing restrictions. However, he is aware that this can be extremely difficult in poor countries with weak or corrupt local government institutions and high levels of inequality.

CONCLUSION

This thesis proposes an overview of the soft budget constraint problem in transition and developing countries. The first chapter describes five origins that underlie the *expectation* of receiving additional funds from the central government. The synthesis sets out the importance of vertical fiscal imbalance and political influence in the softness of budget constraint. This tendency is confirmed in the empirical part. Table 1 reveals that interaction between mechanisms favours fiscal indiscipline, rather than one unique origin's influence. Furthermore, authors even state that countries such as Ukraine face a systemic failure, that is, the existence of bad incentives for fiscal discipline in almost every realm. The second chapter presents mechanisms used in countries of the case study literature to harden their sub-national government's budget constraints. Despite the implementation of various restrictions, central governments do not or only partially succeed in their reforms. However, South Africa's case shows that only a systemic policy approach provides correct incentives. Conversely "what works best in one country may not in another because of the different fiscal, political and financial institutions in place"(Vigneault, 2003, p. 24). Nevertheless, the best way to reform tends toward the sovereignty of sub-national entities with increase of the tax base and revenue-raising capacity, implementation of borrowing restrictions and a clear signal to voters and creditors that the centre pursues a no bailout policy. Despite the attractiveness of such local self-sufficiency, its application in poor countries facing weak or corrupt local government institutions and high level of inequality can be extremely difficult (Rodden, 2002, p. 684). Moreover, timeline is an important factor in the improvement of budget constraint's hardness, since the establishment of fiscal discipline takes time, especially in transition and developing countries.

The factual part gives the flavour of the phenomenon, while the second provides details on technical aspects. Indeed, models of soft budget constraint focus on specific cases and try to demonstrate implications of the commitment problem. Chapters three and four contain famous models that constitute the basic literature

on soft budget constraint problems. Goodspeed (2002) develops a model on equalization transfers, whereas Wildasin (1997) deals with externalities and jurisdiction size. Their models represent a basic framework for other researchers, such as Breuillé, Madiès and Tagourdeau (2006) or Facchini and Testa (2007) among others. A new wave of models based on the decentralized leadership literature give interesting additional developments. Indeed, Köthenbürger (2003) or Akai and Sato (2005) develop models that differ from the basic setup and suggest extensions such as tax competition in the presence of bailouts.

The last part of this thesis aims to introduce empirical studies on the soft budget constraint problem in transition and developing countries. Several hypotheses test political influence and results give relevance to this soft budget constraint's origin. For instance, Jones, Sanguinetti and Tommasi (2000) show that electoral cycles affect expenditures in Argentina, while Abdul Jalil (2007) supports that Malaysian states which are well represented at the executive level of government have relatively higher spending. In both studies, authors assume that political influence on spending may then generate *expectations* of bailout in case of fiscal recklessness and thus soften sub-national budget constraint. Moreover, Kraemer (1997) presents worrying results on the distribution of intergovernmental transfers in Latin America. Among other results, he proves that the overrepresentation of less populous states distorts the distribution of discretionary transfers. The famous "Too big to fail" assumption finds relevance in a study on Mexico by Trillo, Cayeros and Gonzales (2002), since size turned out to be an important factor in explaining the bailouts. Finally, Rodden (2002) proposes an interesting test on borrowing, since he demonstrates that sub-national governments run large deficits when transfer dependence is coupled with free access to borrow.

Most of empirical works study countries of Latin America. It is regrettable that there is a lack of studies on other countries, such as countries of the former Soviet Union, as the factual part describes mechanisms of softness in such countries. Moreover studies on European Transition countries may be useful to follow their evolution, in order to assess their level of convergence with countries of the European Union.

As described in the first chapter and demonstrated in the empirical part, the soft budget constraint problem is real and not only a theoretical artefact. Indeed, rapid decentralization gives local governments more autonomy and discretion within their jurisdictions and this weakens central government authority. (Akai, Sato, 2005, p. 51). The commitment problem that results from such a situation may induce dramatic consequences, either in macroeconomic or in social fields. The softness of budget constraints incurs high costs for a nation, especially in transition and developing countries. Indeed, the bailout of sub-national governments through the common pool resource do not seem to be a fair redistributive politic. Resources of all taxpayers may be used for equalization principles or funding of national goods, instead of granting sub-national government's fiscal indiscipline. Institutional tools, such as rules or laws presented in the second chapter, may prevent central governments from bailout demands.

However, implementation of hard budget constraint with institutional mechanisms, and even the respect of central pre-commitment not to bail out sub-national governments, may be an inefficient choice. A recent paper explains that, in the context of a model of fiscal federalism, hard budget constraints do not necessarily solve soft budget constraints' problems. In fact, Besfamille and Lockwood (2007) affirm that a hard budget constraint policy may lead to under-investment. They assume the provision of good investment projects which generate non-monetary benefits greater than the initial cost, and bad investment projects that generate no benefit unless additional funding is invested. They also suppose that sub-national governments have incentives to lower the likelihood to provide bad projects in exerting, at a cost, efforts. Under hard budget constraint, sub-national governments may therefore be "over-incited" to provide efforts, as the payoff for bad projects is low. In such case, the hard budget constraint leads to under-investment, that is, under-provision of public goods. Indeed, sub-national governments do not want to provide a bad project and exert inefficiently high efforts. The authors find robust results and assess that, under some circumstances, hard budget constraint is not the most efficient policy.

Despite this last argument's relevance, the first step for transition and developing countries remains the establishment of hard budget constraint policies adapted to their situation. As already mentioned, the benchmarking of successful situations is not a miracle cure. However, fights against corruption and "friendly"⁶ governments seem to be primordial in order to avoid distortions. The organisation of intergovernmental relations, especially assigning to lower levels of government the revenue bases they can collect, limiting the degree of vertical fiscal imbalance and reducing the degree of discretion in intergovernmental transfers, is also a key solution to reduce sub-national expectations of bailouts (Stein, 1998, p. 21). According to the facts and the studies described in this thesis, drastic measures are needed to get out of political habits and solve vertical fiscal imbalance problems.

Future research should analyse the evolution of the soft budget constraint problem in countries of the case studies. For instance, it could be interesting to assess the efficiency of hard budget constraint mechanisms. The second chapter gave means to lessen bailout expectations. Therefore, it would be relevant to investigate their application over a long time period.

⁶ This expression is used by Bordignon and Turati (2005) to explain the political influence of regions well represented in the central government in Italy.

BIBLIOGRAPHY

Abdul Jalil Ahmad Zafarullah (2007), *Decentralization, Subnational Government's Behavior and Macroeconomic Instability: The Case of Malaysia*, Université d'Auvergne, Clermont-Ferrand I.

Ahmad Junaid (2003), "Creating incentives for fiscal discipline in the New South Africa", in Rodden Jonathan, Eskeland Gunnar, Litvack Jennie (2003), *Fiscal Decentralization and the Challenge of Hard Budget Constraints*, MIT Press, Cambridge.

Akai Nobuo, Sato Motohiro (2005), *Decentralized Leadership Meets Soft Budget*, Working Paper, CIRJE-F-391.

Besfamille Martin, Lockwood Ben (2007), "Bailouts in federations, is a hard budget constraint always best?", *International Economic Review*, 49, n° 2.

Bordignon Massimo, Turati Gilberto (2005), *Bailing Out Expectations and Health Expenditure in Italy: an Empirical Approach*, Working Paper.

Borge Lars-Erick, Rattso Jorn (2002), "Spending growth with vertical fiscal imbalance: Decentralized government spending in Norway, 1880-1990", *Blackwell Publishing*, Vol. 14(3), p. 351-373.

Breuilé Marie-Laure, Madiès Thierry, Taugourdeau Emmanuelle (2006), "Does tax competition soften regional budget constraint?", *Economics Letters* 90 (2006), p. 230-236.

Dafflon Bernard, Tòth Kristina (2005), *Fiscal Federalism in Switzerland, Relevant Issues for Transition Economies in Central and Eastern Europe*, Working Paper 3655, World Bank Policy Research.

Dahlberg Matz, Von Hagen Jürgen (2004) “Swedish local government: Is there a bailout problem”, in Molander Per (2003), *Fiscal Federalism in Unitary States*, Kluwer Academic Publishers, Netherlands.

Facchini Giovanni, Testa Cecilia (2007), “Fiscal decentralization, regional equality and bail-outs: Lessons from Brazil’s debt crisis”, *The Quarterly Review of Economic and Finance* 48 (2008), p. 333-344.

Garcia-Mila Teresa, Goodspeed Timothy J., McGuire Therese (2001), “Fiscal decentralization Policies and sub-national debt in evolving federations”, *Economics Working Paper*, n° 549, Department of Economics and Business, Universitat Pompeu Fabra.

Goodmann Peter S. (2008), “Is America too big to fail”, *International Herald Tribune*, July 20, 2008.

Goodspeed Timothy J. (2002), “Bailouts in a federation”, *International Tax and Public Finance* 9, p. 409-421, Kluwer Academic Publishers, Netherlands.

Imbens Grido W. (2002), “Generalized method of moments and empirical likelihood”, *Journal of Business and Economic Statistics*, Vol. 20, N° 4 (Oct. 2002), p. 493-504.

Jin Jing, Heng-fu Zou (2003), “Soft budget constraint and local government in China, in Rodden Jonathan, Eskeland Gunnar, Litvack Jennie (2003), *Fiscal Decentralization and the Challenge of Hard Budget Constraints*, MIT Press, Cambridge.

Jones Mark P., Sanguinetti Pablo, Tommasi Mariano (2000), “Politics, institutions, and fiscal performance in a federal system: an analysis of the Argentine provinces”, *Journal of Development Economics*, Vol. 61 (2000), p. 305-333.

Kornai Janos, Maskin Eric, Roland Gérard (2003), "Understanding the soft budget constraint", *Journal of Economic Literature*, Vol. 41, N° 4 (Dec. 2003), p. 1095-1136.

Köthenbürger Marko (2003), "Tax competition in a fiscal union with decentralized leadership", *Journal of Urban Economics* 55 (2004), p 498-513.

Kraemer Moritz (1997), *Intergovernmental Transfers and Political Representation: Empirical Evidence from Argentina, Brazil and Mexico*, Working Paper 345, Inter-American Development Bank.

Mc Carten W. J. (2003), "The challenge of fiscal discipline in the Indian states", in Rodden Jonathan, Eskeland Gunnar, Litvack Jennie (2003), *Fiscal Decentralization and the Challenge of Hard Budget Constraints*, MIT Press, Cambridge.

O'Connell Sean, Wetzel Deborah (2003), "Systemic soft budget constraints in Ukraine", in Rodden Jonathan, Eskeland Gunnar, Litvack Jennie (2003), *Fiscal Decentralization and the Challenge of Hard Budget Constraints*, MIT Press, Cambridge.

Pisauro Guisepe (2001), *Intergovernmental Relations and Fiscal Discipline: Between Commons and Soft Budget Constraints*, IMF Working Paper, International Monetary Fund.

Poterba James M. (1995), "Capital budgets, borrowing rules, and state capital spending", *Journal of Public Economics* 56, p 165-187.

Qian Yingyi, Roland Gérard (1998), "Federalism and the soft budget constraint", *The American Economic Review*, Vol. 88, N° 5 (Dec. 1998), p. 1143-1162, American Economic Association.

Rodden Jonathan (2000), "Breaking the golden rule: Fiscal behaviour with rational bailout expectations in the German states", Unpublished paper presented at European Workshop on Fiscal Federalism and Financing, Brescia, Italy,

Rodden Jonathan (2002), "The dilemma of fiscal federalism: grants and fiscal performance around the world", *American Journal of Political Science*, Vol. 46, N° 3 (July 2002), p. 670-687.

Rodden Jonathan (2003a), "Soft budget constraints and German federalism", in Rodden Jonathan, Eskeland Gunnar, Litvack Jennie (2003), *Fiscal Decentralization and the Challenge of Hard Budget Constraints*, MIT Press, Cambridge.

Rodden Jonathan (2003b), "Bailouts and perverse incentives in the Brazilian states", in Rodden Jonathan, Eskeland Gunnar, Litvack Jennie (2003), *Fiscal Decentralization and the Challenge of Hard Budget Constraints*, MIT Press, Cambridge.

Rodden Jonathan, Eskeland Gunnar (2003), "Lessons and conclusion", in Rodden Jonathan, Eskeland Gunnar, Litvack Jennie (2003), *Fiscal Decentralization and the Challenge of Hard Budget Constraints*, MIT Press, Cambridge.

Rodden Jonathan, Eskeland Gunnar, Litvack Jennie (eds), *Fiscal Decentralization and the Challenge of Hard Budget Constraints*, MIT Press, Cambridge.

Saiegh Sebastian, Tommasi Mariano (1999), "An "incomplete contracts" approach to intergovernmental transfer systems in Latin America", *Documento 17*, World Bank Conference, Valdivia, Chile.

Stein Ernesto (1998), *Fiscal decentralization and government size in Latin America*, Working Paper, n° 368, Inter-American Development Bank, Washington D.C..

Trillo Fausto, Cayeros Alberto, Gonzalez Rafael (2002), "Determinants and consequences of bailing out states in Mexico", *Eastern Economic Journal*, Vol. 28, Issue 3, p. 365-380

Vigneault Marianne (2003), "Intergovernmental fiscal relations and the soft budget constraint problem", *Consortium for Economic Policy Research and Advice (CEPRA)*, Bishop's University.

Von Hagen Jürgen (1991), "A note on the empirical effectiveness of formal fiscal restraints", *Journal of Public Economics* 44, p. 199-210.

Webb Steven B. (2003), "Argentina: hardening the provincial budget constraint", in Rodden Jonathan, Eskeland Gunnar, Litvack Jennie (2003), *Fiscal Decentralization and the Challenge of Hard Budget Constraints*, MIT Press, Cambridge.

Wetzel Deborah, Papp Anita (2003), "Strengthening hard budget constraints in Hungary", in Rodden Jonathan, Eskeland Gunnar, Litvack Jennie (2003), *Fiscal Decentralization and the Challenge of Hard Budget Constraints*, MIT Press, Cambridge.

Wildasin David E. (1997), *Externalities and Bailouts, Hard and Soft Budget Constraints in Intergovernmental Fiscal Relations*, Policy Research Working Paper, The World Bank, Washington.

Zellner Arnold, Theil H (1962), "Three-stage least square: simultaneous estimation of simultaneous equations", *Economica*, Vol. 30, N° 1 (January 1962), p. 54-78.