Booms, Busts, and Bailouts:
Fiscal Federalism, Sovereign Risk, and Subnational Credit

By

Kyle D. Hanniman

A dissertation submitted in partial fulfillment of

the requirements for the degree of

Doctor of Philosophy

(Political Science)

at the

UNIVERSITY OF WISCONSIN-MADISON

2012

Date of final oral examination: 10/4/12

This dissertation is approved by the following members of the Final Oral Committee:
        Nils Ringe, Associate Professor, Political Science
        Mark Copelovitch, Assistant Professor, Political Science, La Follette School of Public Affairs
        Lisa Martin, Professor, Political Science
        Scott Gehlbach, Associate Professor, Political Science
        David Weimer, Professor, Political Science, La Follette School of Public Affairs

For Karla

Booms, Busts, and Bailouts:
Fiscal Federalism, Sovereign Risk, and Subnational Credit

Kyle Hanniman, Ph.D.

University of Wisconsin-Madison, 2012

This dissertation examines the constraints credit markets impose on subnational fiscal policies, focusing on the role and limits of fiscal federal structures in mediating this relationship. The conventional wisdom claims credit markets do not constrain the policies of governments that rely heavily on central transfers. Co-financing is believed to limit market discipline by signaling a national incentive in bailing out fiscally distressed units. I argue that the effects of transfer dependence are overstated and that if anything, dependence hardens market constraints. Dependence not only fails to send compelling bailout signals, but it also harms subnational creditworthiness by restricting governments' autonomy to raise additional revenues during periods of fiscal distress.

I find clear links between market participants' bailout expectations and other aspects of the fiscal federal environment, including subnational responsibility for politically sensitive social services, formal national commitments to redistributing risk and wealth across territorial units, and heavy concentrations of national population, output, and debt in a limited number of territorial jurisdictions. However, I caution against overstating the importance of transfer dependence and other fiscal federal factors. Most variation in market constraints is driven by national-level factors in general and investors' relative expectations of sovereign default in particular. Extreme movements in sovereign risk can induce booms and busts in subnational lending, outcomes that intergovernmental institutions only weakly mediate.

I substantiate these claims using a range of quantitative and qualitative data and methods, including cross-national statistical analyses of credit ratings and bailout probabilities assigned by major credit rating agencies; case studies of subnational credit conditions in Canada and Germany; and interviews with regional treasurers, underwriters, and investors in regional bonds in these same countries. The findings have implications for the relationship between financial markets and government policy autonomy and the macroeconomic stability of multi-tiered systems of government.

ACKNOWLEDGEMENTS

A dissertation is a collective effort. There may only be one author, but the final product embodies the insights and support of friends, family, academic advisors, and many others. I want to thank my dissertation committee - Nils Ringe, Mark Copelovitch, Lisa Martin, Scott Gehlbach, and David Weimer - for being at the forefront of that effort. I am especially grateful to Nils Ringe and Mark Copelovitch, the two advisors who have contributed the most to this project and my development as a scholar.

Several others have also helped along the way, either by reading drafts, providing informal advice, keeping my statistical analysis honest, or helping me get my mind off work and research for a while. I want to thank Marc Ratkovic, Doug Brown, Adrienne Pagac, Brian Gould, Keith Banting, Yujin Kim, Bob Ascah, Enid Slack, Alex Tahk, Paul Hutchcroft, and Barry Burden as well members of my cohort. I want to extend a special thanks to two Madison colleagues. Ilia Murtazashvili was the senior graduate student colleague who readily availed himself as my informal academic advisor. I will admit his advice was not always welcomed, at first, but in the end, I would have gladly invited him to sit on my dissertation committee. Adam Auerbach was my housemate and best friend in the program from day one. I already miss our long hours poring over readings and stats problems in computer labs, libraries, and coffee shops. Madison would have been a much lonelier, unproductive and boring place without Adam's friendship, inspiring work ethic, and sense of humour.

I also received tremendous support from the department's administrative staff. It is difficult to imagine how I would have found my way around campus, let alone an expense report,

I will close by thanking my new family: my wife Karla, her brother Jeff, and her parents Lynn and Mike. I will always regret not finishing these acknowledgements before Mike had a chance to read them. He and Lynn always encouraged my scholarly pursuits, even when they must have wondered when I planned on getting a 'real' job. No doubt their confidence in me came from their daughter, who has been my greatest supporter since our first date 11 years ago. I will never forget the sacrifices she has made and unlike the debt to my parents, this is one I can and fully intend to repay. Let me begin with the smallest of gestures, dedicating this dissertation to her.

TABLE OF CONTENTS

1   INTRODUCTION

1.1   RESEARCH QUESTION

In recent decades, a growing number of local and regional governments have turned to credit markets to fund infrastructure projects and shortfalls in their operating budgets. Subnational governments' growing dependence on credit markets has raised a number of substantive concerns, though the nature of these concerns varies across the political spectrum. For those on the left, rising public debt represents a threat to democratic policy autonomy and the viability of the welfare state. According to this view, governments need to adopt market-pleasing policies, such as lower deficits and possibly lower levels of social spending, or risk higher interest rates and reduced access to credit. The implication, therefore, is smaller government and a shifting of accountability away from voters and towards financial markets.[1] This threat is particularly acute at the subnational level, where access to credit is more constrained.

For those on the right, subnational borrowing presents a distinctly different set of concerns. Excessive borrowing invites a host of local inefficiencies, including corruption and coddling of local state industries. It also threatens the stability of the broader currency union, leading to higher levels of inflation, central government debts, and even sovereign debt crises (see, for example, Rodden 2006b, 2002, Rodden and Wibbels 2002). From this perspective, market constraints are not undemocratic threats to policy choice, but vital sources of efficiency

---

[1] See Mosley (2000, 2003) for a useful summary and critique of this perspective.

and stability. By punishing rising debt and deficits, markets discourage subnationals from accumulating unsustainable and macro-economically destabilizing debt burdens.

But regardless of one's normative outlook, few would dispute that the dangers of subnational debt are rising. Not only are subnational governments borrowing more, but they are borrowing in the context of a global financial crisis and increasingly fragile national economies. The threats to government policy autonomy and macroeconomic stability are, therefore, considerable. This raises important questions about the determinants of subnational credit conditions. It also raises questions about their broader implications. What factors shape the capacity of subnational governments to borrow? And what are the implications of these capacities for public policy autonomy and the stability of national economies?

The conclusion will afford the opportunity to consider the broader implications of market behavior. However, the bulk of the dissertation focuses on the question of its determinants. It asks: What explains variation in the credit conditions of subnational governments or, conceived slightly differently, variation in the constraints (e.g. credit ratings and interest rates) that markets impose on government fiscal choices? Although these constraints are shaped by several factors, recent research grants fiscal federal structures, or the distribution of fiscal authority across different levels of government, pride of place. The goal of this dissertation, therefore, is to shed light on the role and limits of these distributions in shaping subnational credit outcomes.

The argument, at the most general level, is that fiscal federalism mediates market behavior by shaping market perceptions of subnational default risk. My approach is to decompose the concept of subnational default risk into its core components, identify causal links between these beliefs and various dimensions of intergovernmental fiscal authority, and test

these linkages on micro-level data. Section 1.3 spells out these micro-level linkages in some detail. The following section motivates the original contribution by reviewing and critiquing prevailing theories of fiscal federalism and market constraints.

1.2   EXISTING RESEARCH

Why is the availability of credit more constrained for some subnational governments than others? The most prominent efforts to answer this question link market outcomes to the design of fiscal federal institutions. The prevailing wisdom has long claimed or implied that market constraints are strongest in dualist or competitive fiscal federal systems in which central and subnational governments are uniquely responsible for their own tasks and fund these responsibilities through own-source taxation. Divided authority sends creditors, along with voters and other relevant agents, an important signal: Central officials will not be bailing out insolvent subnational units. This message induces creditors to lend at levels and rates commiserate with local fiscal performance, thereby encouraging local officials to borrow only what they can independently repay. Market constraints are believed to be weaker in overlapping or solidaristic federal systems in which central regulation of finances, joint responsibility for local service delivery, and other examples of overlapping sovereignty signal a national incentive or even obligation in bailing out fiscally distressed units (Enderlain 2010, Rodden, et al. 2003). These implicit guarantees induce creditors to lend more and at lower rates than local fundamentals can sustain, as default risk becomes less about the solvency of the subnational borrower and more about the (typically superior) solvency of the implicit guarantor (Hallerberg 2011, Lane 1993, Rodden 2006b).

Central meddling comes in various forms, but none more corrosive, from the perspective of fiscal conservatives, than transfers that enable subnationals to spend in excess of independently generated revenues (McKinnon 1997, Rodden 2006b, Weingast 2009, von Hagen and Eichengreen 1996). When lower-level services are funded by central transfers, subnational voters and politicians are less likely to internalize the consequences of their spending and more likely to blame central officials for service disruptions. With expectations and blame focused squarely on central officials, the pressure for bailouts mounts and markets, cognizant of these pressures, conclude that local debts are centrally guaranteed (Rodden 2006b).

The link between transfer dependence and soft budget constraints finds broad support in orthodox federal theory, including its market-preserving variant (McKinnon 1997). It is also the official view of the IMF, World Bank, OECD, and other international organizations actively involved in advising countries on their decentralization programs.[2] But there are good reasons to treat this relationship as hypothesis rather than fact. For one, existing research fails to predict the evolving credit conditions of several prominent subnational borrowers. Take, as a first example, the case of Spanish regions. The regions share constitutional responsibility with the national government for the delivery of social services, jointly determine limits on regional debts with central authorities, and depend heavily on central transfers to fund their extensive and politically sensitive responsibilities in education and healthcare. This close intertwining of intergovernmental authority should, theoretically, signal the implicit bailout commitments of national officials, causing regional credit conditions and ratings to cluster around national levels. And yet regions currently find themselves locked out of conventional bond markets, despite the

---

[2] See Treisman (2007) for a review of the role of these organizations in promoting decentralization in the developing world.

national government's continued (if precarious) access to credit. Indeed, regional credit had, at the time of writing, grown so constrained that Madrid was establishing a regional liquidity fund to help regions roll over their debt.

Now take the case of Canadian provinces, archetypal examples of dualist units in the comparative literature's view (Rodden 2006a, Bird & Tassonyi 2003). Provinces rely heavily on own-source revenues, enjoy sole constitutional responsibility over core social services, and borrow on credit markets free of national constraint. Canada's sharp division of intergovernmental authority is supposed to signal that provinces approach creditors as sovereigns. This should translate into sharp differentials in provincial risk premia and credit ratings, particularly given the wide and growing divergence in provincial debts. But these predictions have not borne out. Provincial ratings remain high and stable, interprovincial bond spreads are tightly compressed, provincial yields are extremely low, and foreign investors are flocking to provincial securities in droves.

The predictive shortcomings of the existing literature have several potential roots. The first is the presumed relationship between transfer dependence and bailout expectations. The assumption has been that political pressure for bailouts increases with the vertical fiscal imbalance (or the extent to which total revenues come from transfers). But transfer systems are governed by a host of political and constitutional factors likely to affect the timeliness and generosity of external assistance. And these factors do not necessarily correlate with the level of transfer dependence.[3]

---

[3] Scholars are often quick to acknowledge this possibility, but also quick to downplay it, arguing that dependence exerts powerful independent effects. These debates are examined in greater detail in chapter 2.

A second shortcoming of existing research is its overly narrow conceptualization of credit risk. Credit risk is the primary channel through which federalism shapes market constraints. At the core of credit risk is the notion of default risk or the risk that a borrower fails to honor her debts in full and on time. Most studies focus on one element of subnational default risk, namely bailout expectations. This is a crucial consideration, but it is not the only one. Unless the probability of a bailout is certain, investors and rating agencies also have to assess the likelihood of 'standalone default' or the risk that subnationals cannot repay their debts independently. Some subnationals have considerable capacity to limit this risk. Others have virtually none. These capacities, critically shaped by the fiscal federal environment, may account for important variation in credit ratings, risk premia, and other examples of market constraints.

Existing research also rests on shaky empirical grounds. Several studies infer the determinants of bailout expectations by regressing subnational debts, deficits, or some other measure of fiscal discipline on the vertical fiscal imbalance (VFI) or the proportion of transfers over total subnational revenues (Bordignon and Turati 2009, Crivelli, Leive and Stratmann 2010, Rodden 2006b, Rodden 2012). A negative relationship between VFI and fiscal performance is taken as evidence that governments are under limited pressure to consolidate their finances, presumably because creditors and other fiscal enforcers (e.g. voters) interpret dependence as an implicit guarantee. But a fiscal outcome does not tell us whether dependence impacts fiscal behavior through bailout expectations or some other intervening process. It also does not tell us whether pressure for fiscal discipline comes from creditors, voters, or some other group of actors. A second strategy takes a more direct approach. It examines the effects of dependence on subnational credit ratings or risk premia (Booth, et al. 2007, Cheung 1996, Schuhknecht, et al.

2009). These studies have the virtue of isolating market constraints from those exerted by voters and politicians, but they still do not tell us whether pressure operates through bailout beliefs or some other cognitive process. In short, the literature has yet to demonstrate a direct relationship between transfer dependence and investors' bailout beliefs. And yet the validity of standard theories of market constraint hinges on these micro-foundational claims.

1.3   THEORY, RESEARCH DESIGN, AND CONTRIBUTION

This dissertation takes these deficiencies as motivation for a reassessment of the relationship between fiscal federalism and market constraints. I assume fiscal federalism shapes these constraints by impacting market perceptions of subnational default risk. I then develop a fuller conceptualization of credit risk, link its components to fiscal federal variables, and test these relationships on micro-level data. The results provide an important challenge to conventional wisdom. At the most general level, I contend that fiscal federalism matters, but not in the ways commonly assumed. I find that the relationship between bailout expectations and specific dimensions of overlapping sovereignty is poorly understood, that fiscal federalism affects perceptions of default risk through non-bailout channels that the literature typically neglects, and that despite these effects, the relative importance of fiscal federalism is probably exaggerated.

More concretely, I argue that the impact of transfer dependence, long considered the variable most likely to insulate governments from market constraints, is overstated and that if anything, hardens market constraints. I base these claims on four arguments about the effects of fiscal federal variables. First, transfer dependence does not send market participants compelling bailout cues. Transfer systems are governed by a host of political and institutional factors and these factors interact with countless other aspects of the intergovernmental environment. Given

this complexity, it is difficult to imagine what, if any, information investors can glean from the level of transfer dependence alone.

Second, I argue that investors infer clearer bailout signals from other aspects of the fiscal federal environment. I link bailout expectations to the political sensitivity of subnational policy assignments, formal commitments to equalizing living conditions and redistributing risk across territorial units, and heavy concentrations of national debt, population, and output in limited numbers of jurisdictions. I also argue, however, that the strength of these signals is conditional on levels of national economic development. Central commitments to protecting local services and solvency are more credible in developed than developing countries.

Third, not only does transfer dependence fail to signal implicit guarantees, but it also restricts subnationals' capacity to raise additional taxes. This limits subnationals' ability to steer their budgets through fiscal hardships and shocks. The upshot is weaker standalone credit profiles and tougher credit conditions for transfer-dependent units.

But I do not want to exaggerate the importance of transfer dependence or other fiscal federal factors. The majority of variation in market constraints is driven by country risk in general and investors' relative perceptions of sovereign risk (or the expected probability of central government default) in particular. Fiscal federal factors mediate the impact of sovereign risk, but their affect is slight when sovereign variables (e.g. national credit ratings and risk premia) assume extreme values. Indeed, extreme shifts in sovereign risk can easily induce booms and busts in subnational lending. The importance of sovereign risk has grown considerably in the wake of the global financial and sovereign debt crises and will likely continue to account for the

bulk of cross-national variation in credit conditions for some time to come. These developments are important to keep in mind when assessing the relative importance of federal variables.

To be fair, the importance of sovereign risk is not lost on supporters of the conventional wisdom. It is widely appreciated that creditors use yields on sovereign bonds as floors for determining interest rates on subnational debt, much like rating agencies use sovereign ratings as caps on the ratings of other borrowers in a given economy. It is also true that many scholars are unconcerned with this relationship. Unlike this dissertation, their goal is not explaining variation in absolute interest rates or credit ratings (my indicators of credit conditions or constraints), but in determining whether local interest rates reflect the probability of subnational default. (It is this correspondence that ensures governments borrow sustainably, the principal concern of most researchers.) If one adopts this perspective and assumes, as the conventional wisdom does, that sovereign yields are useful floors for pricing local default risk, then the impact of sovereign risk is irrelevant. The real question becomes whether the spread or difference between national and subnational interest rates adequately captures the added risk of lending to a subnational unit.

But yields on sovereign debt are not unproblematic guides to pricing subnational default risk. As I will show, they regularly distort the relationship between local risk premia and debt sustainability. What is more, sovereign risk also impacts market bailout expectations, the outcome of interest in most mainstream research. Thus, even in light of these considerations, sovereign risk exerts unexpected and important effects.

My arguments not only challenge conventional wisdom, but they also rest on firmer empirical footing. Unlike most studies, the dependent variables are not fiscal outcomes or aggregated measures of default risk, but the beliefs underlying broader perceptions of default risk. Specifically, I analyze the first cross-national datasets of bailout expectations and

standalone credit ratings. These data, which come from Moody's Investors Services, represent both a cause and proxy for broader market beliefs. I compliment this analysis with qualitative analysis of Moody's rating materials as well as the materials of the two other major international rating agencies, Standard and Poor's and Fitch Ratings. Finally, I draw on measures and justifications of credit beliefs taken from semi-structured interviews with investors in Canadian provincial and German state bonds. These data speak to the external validity of the Moody's measures and provide direct insight into the beliefs of market participants in two of the world's largest subnational bond markets.

This dissertation contributes to three strands of literature. First, it advances debates about the relationship between financial markets and government policy autonomy and the viability of the welfare state (Garrett 1998, Mosley 2000, 2003, Swank 2002). To date, this work has focused primarily on the national level. The objective has been determining whether markets induce a race to the bottom in social provision or whether national policymakers retain room to maneuver vis-à-vis mobile capital markets. I extend this analysis to the subnational level, but focus less on the implications of capital mobility and more on the systematic pressure applied by international credit rating agencies. Contrary to conventional expectations, my findings suggest that responsibility for sensitive social services enhances credit ratings, largely because national officials are unlikely, in market participants' view, to allow providers of these services to default. But this relationship is conditional, among other things, on levels of economic development. Rating analysts consider service-based bailout guarantees more credible in developed than developing countries.

Second, this dissertation furthers our understanding of the relationship between fiscal federalism and subnational credit conditions, broadly conceived. By adopting a micro-

foundational approach, it clarifies the linkages between various dimensions of fiscal federalism and expectations of subnational default, a key driver of credit outcomes. The results challenge the view, ubiquitous in academic and policy circles, that transfer dependence relaxes market constraints. It also reveals the limits of fiscal federalism and, by implication, institutional design in shaping market participants' credit beliefs.

Third, my findings contribute to discussions about the relationship between fiscal federalism and macroeconomic stability (Rodden 2006b, Treisman 2000, Wibbels 2005). Recent research links subnational profligacy to several macroeconomic ills, including higher levels of inflation and sovereign debt crises. Credit markets potentially constrain local indiscipline by lending at levels commiserate with local debt sustainability. But markets can also reinforce indiscipline (e.g. by lending too much) if they believe local debts are centrally guaranteed. This dissertation does not examine local fiscal policies or their macroeconomic outcomes directly. However, it helps illuminate these outcomes by examining some of their root causes: bailout expectations and other pricing distortions in subnational debt markets. In the final chapter, I conclude that bailout expectations are neither unconditionally bad for macroeconomic stability nor is fiscal federalism the principal source of distortions in subnational credit markets. This dubious honor, I argue, belongs to inefficiencies in sovereign debt markets.

1.4 OVERVIEW AND PREVIEW OF RESULTS

Chapter 2 establishes the analytic framework and theory underlying subnational credit risk. It takes the perspective of a credit analyst or investor assigning a probability of default to a local or regional government. This probability translates into a credit rating or risk premium on a government bond or loan. The probability of default is a function of three factors: a bailout belief

and the expected probabilities of standalone and sovereign default. These micro-level beliefs are the bases of market constraints and serve as dependent or independent variables in subsequent chapters. The chapter goes on to consider the determinants and effects of each variable, with an emphasis on their fiscal federal dimensions.

Chapter 3 provides the dissertation's first empirical test: a case study of recent developments in Canadian provincial credit conditions. The study provides a useful segue into the broader analysis for two reasons. First, provinces provide a critical test case for conventional theories of market discipline. The provinces are archetypal examples of dualist or independent units in the comparative literature's view. The prevailing wisdom expects markets to punish severely heavily indebted provinces as a result. And yet these predictions have not borne out. These results force us to rethink the determinants of market constraints. Second, the drivers of provincial credit conditions are not unique to provinces, but represent broader determinants of market constraints. Thus, the Canadian case helps lay the foundations for the comparative analysis to follow. The provinces' favorable credit conditions are underwritten by strong expectations of central bailouts (rooted in provinces' provision of sensitive services, the transfer system, and heavy concentrations of debt and population in Ontario and Quebec); their unusually high capacity to raise taxes; and low levels of sovereign risk. I back these claims with several data sources, including measures of bailout expectations taken from interviews with investors in provincial bonds.

The next three chapters examine credit beliefs in cross-national perspective. Chapter 4 analyses the bailout expectations of major international rating agencies. The chapter draws on two types of evidence: a qualitative review of rating methodologies and reports issued by Fitch, Moody's, and Standard and Poor's and a quantitative analysis of bailout scores issued by

Moody's. Contrary to standard predictions, there is no evidence of a positive relationship between expectations and transfer dependence. Indeed, the quantitative analysis suggests, if anything, a negative relationship. Qualitative materials reference the institutions and politics governing transfer arrangements, including the degree of redistribution between rich and poor units, but not transfer dependence *per se.* This suggests that it is the nature, rather than the level, of transfer dependence that informs market beliefs. The qualitative analysis also reveals positive relationships between bailout scores and other fiscal federal variables, including local provision of sensitive services (conditional on economic development) and the size of subnationals' outstanding debts.

Chapter 5 shifts the analysis to standalone creditworthiness. This analysis also relies on a mix of qualitative materials and statistical analysis. The dependent variable is standalone credit ratings, also issued by Moody's. These ratings estimate the probability of default in the absence of a bailout guarantee. The qualitative analysis reveals that all major rating agencies consider access to own-source revenues a credit positive, largely because it gives subnationals the capacity to adjust revenues in the face of long-term fiscal challenges and shocks. The quantitative analysis is consistent with this finding. It reveals a robust and positive relationship between standalone ratings and access to discretionary own-source revenue. The chapter also finds positive relationships between standalone ratings and other fiscal federal variables, including the transparency of governments' financial information and the flexibility of local expenditure assignments.

Chapter 6 examines the relationship between subnational credit conditions and sovereign risk. It differs from the other chapters in that it focuses on the effects, rather than the determinants, of this credit belief. It relies on a range of quantitative and qualitative data,

including interviews with subnational treasury officials, underwriters, and institutional investors in Germany. It finds evidence for three central claims: that marked shifts in sovereign risk can induce booms and busts in subnational lending; that these movements are only weakly mediated by intergovernmental institutions; and that the costs and benefits incurred from these shifts differ across national and subnational governments. Much of the empirical analysis focuses on the latter point, where I show that these variable costs and benefits are rooted in asymmetries in international investors' knowledge of national and subnational borrowers. These gaps reflect the costs of gathering information on the fiscal federal systems that underlie subnational creditworthiness.

Chapter 7 summarizes the results and their implications for government policy autonomy and the welfare state and the macroeconomic stability of multi-tiered systems.

2 FISCAL FEDERALISM AND SUBNATIONAL CREDIT RISK

2.1 INTRODUCTION

What explains variation in the constraints creditors impose on subnational fiscal policies? What role do intergovernmental fiscal relations play in mediating these constraints? This chapter develops a series of expectations concerning the latter question. It proceeds in four steps. Section 2.1 establishes the scope of the study. Section 2.2 develops a simple decision-analytic model of subnational credit risk consisting of three components: bailout expectations and the probabilities of standalone and sovereign default. I define these concepts and discuss their interrelations. I also explain their relationship to market constraints.

The majority of the chapter theorizes the determinants and effects of these three essential credit beliefs. The key independent variables are fiscal federal in nature: They concern the division of public functions and finances across multiple levels of government. I consider several of these variables, but frame the discussion in terms of the effects of transfer dependence. The framing reflects this variable's pride of place in the literature. The conventional wisdom has long claimed or implied that credit markets do not discipline the finances of governments that rely heavily on central transfers or shared revenue schemes. Presumably, creditors, voters, and other actors interpret generous transfers as implicit guarantees on subnational debt. The central claim of this dissertation is that the effects of transfer dependence are overstated and that if anything, dependence hardens market constraints. This claim rests on four arguments about the effects of

fiscal federalism. First, transfer dependence does not send clear bailout signals. Second, other aspects of the fiscal federal environment do. These include subnational responsibility for politically sensitive services like healthcare and education and formal obligations to equalize resources, social outcomes, and risk across territorial units. Third, transfer dependence restricts subnationals' ability to raise taxes and manage fiscal challenges and shocks. This limits their independent repayment capacity, resulting in lower credit ratings and higher risk premia. Finally, the importance of transfer dependence and other fiscal federal variables pale in comparison to the importance of sovereign risk, which is, by far, the most important driver of subnational credit risk.

I develop this argument in several steps. First, after a brief literature review, I argue that transfer dependence does not send investors compelling bailout signals. The hold of institutional factors over market behavior depends on their capacity to coordinate actors' credit beliefs. Transfer systems are incredibly complex. They are governed by countless political and institutional factors and interact with several other aspects of the intergovernmental environment. Thus, it is difficult to imagine what, if any, bailout information is consistently communicated by the level of dependence alone.

I then argue that other fiscal federal factors send crisper bailout signals. One of these factors is the political sensitivity of services delivered locally. National officials have powerful incentives to protect healthcare, education, and other services that benefit nationwide constituencies. These policies figure prominently in national election campaigns and central officials regularly meddle in them, even when they fall squarely within provincial jurisdiction. This behavior signals a clear interest in preserving subnational solvency. Another set of factors is constitutional provisions requiring national officials to assist (though not necessarily guarantee

the debts of) fiscally challenged units. These provisions include formal co-responsibility for subnational service outcomes and equalization clauses mandating redistribution and risk-sharing across territorial units. The permanency and visibility of these obligations make them effective devices for coordinating market beliefs.

I then qualify these arguments. I argue that the effects of intergovernmental variables are conditional on levels of national economic development. Officials in developing countries have less ability to borrow and raise tax revenues. They also have weaker incentives to deliver popular welfare services. These factors weaken the bailout signals implicit in sensitive expenditure assignments and formal constitutional provisions.

I conclude the discussion of bailout expectations by considering the role of government size. I develop a variant of the too-big-to-fail thesis in which government sectors, and not necessarily individual jurisdictions within them, are too big to fail. A big sector is one in which at least one unit comprises significant shares of national output or debt. In these sectors, default by small units triggers contagion by signaling the vulnerability of big borrowers. Because investors assume central officials want to stem these contagion effects, they assign higher bailout probabilities to all units in a entire sector.

Section 2.4 shifts the discussion from bailout expectations to another critical feature of credit risk. It looks at the determinants of standalone credit risk or the risk that subnational officials require a bailout in the first place. I argue that transfer dependence undermines standalone creditworthiness by restricting governments' capacity to raise revenues during periods of fiscal distress. By contrast, heavy reliance on own-source taxation enhances standalone creditworthiness by signaling that governments are independently capable of managing fiscal

challenges and shocks. This section also addresses other aspects of fiscal flexibility and standalone credit risk.

Finally, section 2.5 examines the final critical credit belief: expectations of sovereign default. This section differs from the previous two in that it focuses on the effects, rather than the determinants, of the featured credit belief. This shift in emphasis reflects two factors. First, subnational credit conditions are far more sensitive to sovereign risk than any other factor. Second, fiscal federalism only determines a small share of sovereign risk. This section makes three essential claims. First, extreme movements in sovereign risk can induce booms and busts in subnational lending. Second, intergovernmental institutions only weakly mediate these movements. Third, the costs and benefits of these movements are unevenly distributed across national and subnational governments in a given country. I devote most of my efforts to developing the last point. National governments benefit more or suffer less from safe-haven flows, because international investors perceive subnational debt as riskier. This perception stems, in part, from objective credit considerations, but it also stems from creditors' unfamiliarity with subnational borrowers and the federal and other political institutions underpinning their creditworthiness.

To summarize, the chapter is structured as follows. Section 2.1 establishes the study's scope. Section 2.2 develops a simple decision-analytic model of subnational credit risk. Sections 2.3 through 2.5 examine the determinants or effects of each of the model's components: bailout expectations and the expected probabilities of standalone and sovereign default. Section 2.6 concludes.

2.2   SCOPE OF THE STUDY

This dissertation examines the constraints credit markets impose on subnational fiscal policies. Specifically, it examines the role and limits of fiscal federalism in shaping the beliefs underlying risk premia, credit ratings, and other observable constraints on government policy choice. Social scientists generally are not interested in these outcomes for their own sake. Rather, they are interested in their impact on fiscal policy and performance. For students of government policy autonomy, the outcome of interest may be social spending, the distribution of spending across different budget categories, or relative tax burdens on business or labor. For students of fiscal federalism, it may be local budget balances or debt loads or their macroeconomic consequences (e.g. central government debts and inflation). This study examines the relationship between political institutions and market perceptions and constraints. Fiscal responses are black boxed.

There are clear merits to this narrower approach. Above all, it focuses the analysis on a large and important gap in our knowledge. As chapter 4 explains, existing literature, including existing work on market constraints, is fixated on fiscal outcomes. This fixation has prevented scholars from opening up the black boxes of market beliefs and constraints. It has also prevented scholars from examining the behavior of other actors, including local voters and politicians. The dearth of research in this area motivates this micro-foundational approach.

It is also important not to downplay the study's substantive importance. Although I do not explicitly model political or fiscal responses, there can be little doubt that markets induce them. Governments cannot borrow indefinitely. At some point, they have to come to terms with creditors (Hallerberg 2011). One need only look to Europe currently to appreciate this fact. Arguably, every euro area country has been forced to undertake radical austerity measures.

These measures began when creditors lost faith in governments' repayment capacities. They will not likely end until that faith is restored.

Note also that market constraints are even stiffer at the subnational level. Broadly, this additional pressure is not difficult to explain. Limited powers of taxation, the inability to monetize debts, vulnerability to fiscal decisions taken nationally, and enigmatic ties to national governments make lending to subnationals inherently risky. But the credit conditions of subnational governments vary widely. Much of this variation is attributable to the relationship between fiscal federalism and subnational credit risk. Unpacking the latter concept is the objective of the next section.

2.3   CONEPTUALIZING SUBNATIONAL CREDIT RISK

This section develops a simple decision-analytic model of subnational credit risk to guide the theoretical discussion to follow. The model takes the perspective of an investor or a rating analyst interested in the probability of subnational default. The probability could be used as a latent probability underlying an ordinal scale of credit ratings. It might also be interpreted as a risk weighting used to adjust the expected returns on a government security. In either case, it eventually translates into an observable constraint on government fiscal policy. The model consists of three components: a bailout belief and the probabilities of standalone and sovereign default.

A bailout belief refers to the likelihood of central officials bailing out a local or regional government on the verge of default. This definition is narrower than the one typically employed in the literature. It excludes, for example, routine gap-filling transfers that delay fiscal adjustment. It also excludes bailouts that occur after a subnational has defaulted. The latter

exclusion is crucial. Investors are not only interested in whether they are repaid in full. They are also interested in whether they are repaid on time. Thus, expectations of the timeliness of repayments also influence bond prices and ratings. The former exclusion is less crucial and at some points in the analysis, problematic. Thus, I broaden the definition to include gap-filling transfers at various points in the analysis. The second component is standalone credit risk. It refers to the likelihood of a default in the absence of external assistance. Conceived slightly differently, it is the probability that a subnational will require a bailout. The third and final component is sovereign risk or the probability of sovereign default. The model, illustrated in figure 2.1, can be written as:[1]

$$P(SD) = P(S) * [1 - P(B)] + P(B) * P(C)$$

where $P(SD)$ refers to the probability of subnational default, $P(B)$ the probability of a central bailout, $P(C)$ the probability of a central or sovereign default, and $P(S)$ the standalone probability of subnational default. I assume $P(C) \leq P(S)$. This assumption, which is typically true, ensures the sovereign probability of default never exceeds its subnational equivalent.

As the probability of a bailout approaches 0, the probabilities of subnational and standalone default converge. Under these conditions, subnationals approach credit markets as "miniature sovereigns" or the ultimate guarantors of their own debt (Rodden 2006b). Their credit conditions come to depend, in important measure, on their fiscal performance and other determinants of standalone default risk $P(S)$ as a result. However, as $P(B)$ rises, the importance of the first term and, by consequence, subnational fiscal performance, decline. As the probability

---

[1] This model, implicit in a lot of research on subnational credit risk, is a slight simplification of the algorithm used by Moody's Investors Services in its *Joint Default Analysis* (JDA) (see chapter 4 for a description of the JDA methodology.)

of a bailout approaches one, the probabilities of subnational and central default converge. If $P(B)$ equals 1, subnationals are nothing more than extensions of the sovereign borrower, adopting the latter's credit rating. More often than not, however, $P(B)$ falls somewhere between 0 and 1, meaning most units are best described as semi-sovereign (Rodden 2006b).

The model simplifies the notion of credit risk, which usually consists of two parts: (1) default risk or the likelihood that a government fails to honor its debts in full and on time and (2) spread risk or the risk that the value of a debt instrument (e.g. a bond) will decline relative to other securities against which an investor's performance is compared (Fabozzi 2007). $P(SD)$ refers strictly to a probability of default. Determining this probability is a rating agency's sole concern. But investors also have to worry about spread risk. The differences between default and spread risk are subtle. Spread risk may reflect perceptions of default risk, but it also encompasses investors' expectations of other market participants' beliefs. For example, investor A's credit assessments may remain stable, but she may incur a mark-to-market loss or gain[2] if the beliefs of other actors (i.e. investors and rating agencies) trigger trading activity.

I simplify the analytic framework by restricting it to default risk. This is unproblematic in the analysis of credit ratings data in chapters 4 and 5. However, it is less useful in chapters 3 and 6 where spread risk becomes relevant to the analysis. Thus, I expand the definition to incorporate spread risk where appropriate.

I do not assume investors have a fully objective view of credit risk. In fact, I assume credit beliefs reflect the limited time, information, and cognitive abilities at investors' disposal. In section 2.5, I also suggest creditors' decision-making is vulnerable to certain biases. Fortunately, the analysis does not hinge on the correctness of market participants' beliefs. My

---

[2] Market-to-market value refers to the value of an asset or liability based on its current market price.

purpose is to understand the role of fiscal federalism in shaping these beliefs. It is these beliefs (and not the actual probability of default) that affect bond ratings and risk premia.

The model is illustrated in figure 2.1. It shows fiscal federal structures impacting the three beliefs underlying credit risk. These beliefs then interact to produce an aggregate probability of subnational default. This probability is reflected, in turn, in credit ratings, credit access, risk premia, and other constraints on the black box of fiscal policymaking. The dashed arrow connecting fiscal federalism to sovereign risk signifies the primarily exogenous character of sovereign risk, a point to which I return in section 2.6.

Figure 2.1 Model of Subnational Credit Risk
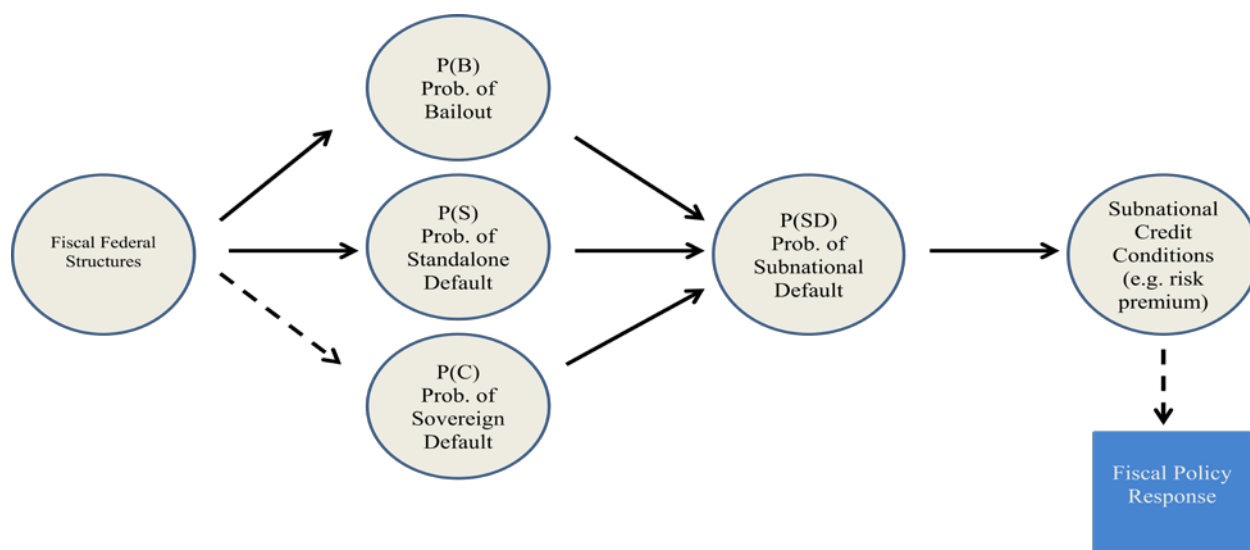
Most independent variables of interest are fiscal federal in nature. They concern the division of public finances and revenues across different levels of government. These variables affect credit risk in two ways. First, they impact governments' capacity to manage long-term fiscal challenges and shocks. These capacities, less emphasized by the literature, refer to units'

autonomous ability to adjust revenues and expenditures, a critical component of standalone creditworthiness. Second, they shape investors' perceptions of central incentives and obligations to guarantee subnational debt. The focus on electoral incentives places this dissertation firmly within the political economy approach to fiscal federalism (Rodden 2006b, Rodden and Wibbels 2002, Treisman 2007, Wibbels 2006, Weingast 1995). The traditional literature, which originated in public economics, sought to identify the optimal division of authority between national and subnational governments (Musgrave 1959, Oates 1972). By contrast, I am interested in the political incentives and obligations that these distributions engender.[3]

While extremely basic, the model captures the core concepts of credit risk. The remainder of the chapter theorizes the determinants or impacts of $P(B)$, $P(S)$, and $P(C)$.

2.4   CREDIT BELIEFS: BAILOUT EXPECTATIONS

Why do creditors assign high probabilities of bailouts to some jurisdictions and not others? What factors explain variation in bailout expectations across and within multi-tiered systems? These questions have spurred a considerable body of research, mostly by scholars interested in identifying the preconditions for fiscal discipline at the subnational level. One approach to predicting bailout beliefs is simply identifying official bailout policies. But this strategy is, at best, incomplete, and at worst, misleading, as bailout commitments are not always explicit and explicit policies are not necessarily sincere (Lane 1993). A more common and productive strategy seeks to identify implicit sources of bailout intentions (Bordignon and Turati 2009, Rodden 2006b). Political scientists and economists have proposed several determinants,

---

[3] For much more detailed accounts of the differences among traditional, public choice, and political economy approaches to fiscal federalism, see Hallerberg (2010), Rodden (2006b), Weingast (2009), and Wibbels (2006).

including the size of subnational borrowers (Wildasin 1997), the nature and degree of their representation in the national legislature (Gibson and Calvo 2000, Rodden 2006b, Wibbels 2005), and their partisan ties to central officials (Hallerberg and Stolfi 2008, Khemani 2007, Rodden 2006b). But the most prominent strand of literature traces expectations to fiscal institutions or the division of intergovernmental fiscal authority between higher and lower levels of government.

Conventional Wisdom

The prevailing wisdom has long claimed that market discipline prospers in systems of dual sovereignty in which different levels of government are sovereign over their own spheres of authority and have sufficient own-source revenues to finance these responsibilities. This neat division of authority signals that subnational governments approach credit markets as sovereigns or the ultimate guarantors of their own debt. Market discipline grows increasingly tenuous, however, as intergovernmental functions and finances overlap (Rodden, Eskeland and Litvack 2003, Vigneault 2007). Regulation of subnational fiscal decisions, joint responsibility for sensitive services, and subnational dependence on transfers and shared revenue schemes blur the sovereign boundaries between local and national governments and signal to creditors, voters, and other potential fiscal enforcers that national officials have an incentive or even obligation to protect local solvency (Vigneault 2007).

Of the various forms of central intervention, arguably none is accorded more importance than dependence on transfers and shared revenue schemes (McKinnon 1997, Rodden 2006b, Weingast 2009, von Hagen and Eichengreen 1996). The so-called "second-generation" of fiscal federal scholars characterize national grant programs as common pools of national resources

vulnerable to overfishing by opportunistic local officials (Weingast 2009). Because their accountability to the median national voter creates strong incentives to preserve macroeconomic stability, national officials have a natural incentive to prevent overfishing (Rodden and Wibbels 2002). But their resilience is put to the test when local services are financed by central or collective resources. Rodden (2006b) and von Hagen and Eichengreen (1996) develop the political logic. They contrast the reactions of two stylized local governments, one capable of raising own-source revenues and another dependent on transfers, to a severe economic shock. The latter's dependence on transfers dramatically increases the political pressure for bailouts. First, transfer dependence breeds the "fiscal illusion" that local services are financed by nonresidents. Residents fail to internalize the costs of local services and over-demand them as a result (Olson 1969). Second, dependent governments have limited capacity to address fiscal crises. Unable to raise taxes, they quickly look to the center to prevent school closures, cancelled infrastructure projects, and other economic and social disruptions. Indeed, they may even come blame the center for these actions, as most critical fiscal decisions are taken centrally. These pressures strain the credibility of central officials' no-bailout pledge.

Political incentives differ where subnationals have broad access to own-source revenues. The center is not heavily involved in funding local services, so local voters have no realistic expectation of central aid. They do, however, observe local officials manipulating tax rates and other policy levers. This suggests local officials are both responsible for and capable of resolving the fiscal crisis. With popular expectations and blame focused squarely on local officials, the pressure for central bailouts is reduced, enabling national officials to withhold assistance without fear of electoral reprisals (Rodden 2006b). Presumably creditors perceive these dynamics (or perhaps merely their observable implications) and adapt their bailout beliefs accordingly,

assigning high (low) probabilities of external support to dependent (independent) units. The upshot is feeble market discipline for heavily dependent units and formidable discipline for governments that collect most of their revenues through their own powers of taxation.

Conventional Wisdom Challenged

This dissertation poses an important challenge to the prevailing wisdom. It argues that transfer dependence does not send compelling bailout cues. Transfer systems are both complex and diverse. Some are administered according to transparent and formulaic criteria while others are discretionary and *ad hoc*. Some criteria apply evenly to all subnational units, while others are asymmetric. Some grants are intended to equalize resources across territorial units while others are disbursed on a per capita basis. Transfer systems also interact with countless other aspects of the intergovernmental environment, including the autonomy to adjust expenditures, regional representation in the national legislature, vertical party linkages, and variation in subnational expenditure assignments. Each of these factors potentially influences bailout expectations. Given this complexity, it is difficult to imagine what, if any, signals investors are likely to infer from the level of transfer dependence alone. It is even more difficult to imagine dependence consistently communicating similar information to most market participants.

These difficulties are compounded by the nature of investors. Investors are imperfectly rational. Their inferences are compromised by the limited time, information, and mental capacities at their disposal. Their potential for erroneous and unique interpretations is, therefore, considerable. The only means of limiting eccentric views are painfully obvious or clearly articulated indications of central officials' incentives and obligations. For reasons I have indicated, transfer dependence is unlikely to play this coordinative role. The remainder of the

section highlights factors that potentially can. These are local responsibility for sensitive national services; constitutional provisions requiring national officials to assist fiscally challenged units; high levels of economic development; and the presence of one or more exceptionally large jurisdictions in a subnational sector.

Sensitivity of Subnational Services

Subnational governments vary considerably in terms of their expenditure assignments. Some governments are almost exclusively responsible for infrastructure projects and locally-oriented services, such as sewage services, street cleaning, parks and recreation, and garbage collection, while others are responsible for healthcare, education, pensions, and other core features of the welfare state. The nature of these assignments and the center's involvement in them have important implications for creditors' bailout expectations. Von Hagen, et al. (2000) and others (Bordignon and Turati 2009) have suggested that central officials may regard certain services as "too sensitive to fail."

But what services are central officials most likely to regard as vital? The comparative welfare state literature provides some important clues. A critical issue for this research is the relative resiliency of different spending categories. Which categories of spending are policymakers most likely to retrench? Which categories are they most likely to sustain or expand? There is broad consensus that healthcare, education, and other universalistic programs have been most resistant to retrenchment (Esping-Andersen 1996). These programs provide

broad-based benefits to nationwide constituencies. Aggressively retrenching them could have serious negative consequences for elected politicians of all ideologies.[4]

It follows that national officials are most interested in protecting these services. By contrast, incentives to protect local capital investments and labor market-related transfers are likely lower. The former provide largely localized benefits (Breunig and Busemeyer 2012) while the latter primarily target marginalized labor market participants (Jensen 2011, Pierson 2001). Jensen develops a compelling argument as to why healthcare is particularly resistant to retrenchment. Unlike labor market policies correlated with income, healthcare is a life-course risk. Politicians on both the left and right are anxious to protect and even expand it because "all individuals regardless of income must at some point in life expect to fall ill. Given the potentially ruinous costs of purely out-of-pocket medical treatment, this has a profound impact on the preferences of most citizens for public health care" (2011).

The salience of healthcare and other universal services is apparent in national policy debates and election campaigns. It is also apparent in national governments' near-universal attempt to regulate them, even when they fall squarely within provincial jurisdiction. National meddling only reinforces incentives for intervention. It fosters obligations to citizens as well as territorial units. In effect, it transforms local service failures into national policy crises. These incentives are not likely to go unnoticed by credit markets. Even in Canada, where federal transfers are relatively limited, healthcare is still the most salient issue in most federal elections.

---

[4] I acknowledge recent work that suggests that the welfare state may not be as resilient as the first wave of research on retrenchment assumes. This work finds that although radical, overt, and abrupt retrenchment is difficult, the trend towards gradual and stealthy erosion of welfare commitments is unmistakeable (Hacker 2004, Hacker and Pierson 2010, Streeck and Thelen 2005). This finding is, however, beside the point. Center-right parties may be able to roll back commitments over the long term, but they are unlikely to allow essential services to fail in the short term (their reluctance to do so is the motivation for gradual and stealthy retrenchment in the first place.)

One expects, therefore, that credit markets assign a higher likelihood of assistance to subnationals responsible for delivering universal social services.

Formal National Obligations

But the nature and extent of central involvement in these policy areas varies considerably. Some central governments (e.g. the American, Australian, and Canadian governments) buy influence through the federal spending power, exchanging grants for national conditions. Other central governments (e.g. the Indian, Italian, and Spanish governments) share joint constitutional responsibility for service outcomes. In Brazil, the central government is constitutionally responsible for setting national standards in healthcare, education, environmental protection, housing, and welfare, while states are responsible for service delivery. The formal blurring of responsibilities increases the visibility of national interventions in these policy areas, increasing the blame officials are likely to incur for service failures. It also formalizes national obligations to assist governments that fall below minimum standards of national service provision (Bordignon and Turati 2009).

Central obligations can also take a more general form: constitutional mandates guaranteeing minimum standards of national service provision (von Hagen, et al. 2000). These mandates require "subnational governments to provide nationally uniform levels of public services as part of an attempt to guarantee equal standards of living to all citizens of the country, regardless of where they live" (von Hagen, et al. 2000, 35). These equal living conditions clauses are often part and parcel of "equalization programs" aimed at equalizing some concept of fiscal capacity across territorial units. Equalization schemes may or may not be linked to specific policy areas. They may redistribute resources without making any specific demands on

governments' spending priorities (Blöchliger and Charbit 2008). Regardless, these mechanisms provide minimum baseline revenues for all governments. They also provide regional insurance against negative fiscal shocks. These mechanisms do not necessarily formally guarantee subnational debt. However, they signal something closely related: a central commitment to redistributing wealth and risk.

Equalization systems differ considerably in terms of their generosity, enforceability, and visibility. Each of these factors potentially shapes investors' bailout expectations. With respect to generosity, the Australian, German, and Swedish systems virtually eliminate fiscal disparities among subunits while the Canadian, Portuguese, and Swiss systems leave significant gaps (Blöchliger and Charbit 2008). Variation in enforceability is tougher to measure. Some equalization programs are explicitly enforced by constitutional courts while others (even where they are constitutionally enshrined) are not necessarily justiciable (e.g. Canada's, see chapter 3). Other equalization systems lack formal constitutional status, but may enjoy constitutional-style stability if, for example, national officials are credibly committed to securing social equity.

This dissertation does not attempt to unpack the multitude of observable determinants of system stability and enforceability. This would be extraordinarily difficult given the immense number of variables at play. I test a more modest set of relationships. I argue that even relatively modest and weakly enforceable equalization systems, such as Canada's, send compelling bailout cues if they enjoy (at least nominal) constitutional status and redistribute resources across large regions. There are at least two reasons why these systems might have this effect. First, they are highly visible. While limited in comparative terms, they redistribute non-negligible resources across politically and fiscally salient units, making them regular and visible objects of intergovernmental bargaining and contestation. Second, they are difficult to retrench. Their

constitutional status, however (technically) tenuous it may be, raises the political costs and risks associated with retrenchment.

In short, even limited systems provide stable, visible, and significant forms of inter-territorial redistribution. It is not inconceivable, therefore, that creditors interpret these commitments as implicit bailout guarantees. Yet, it still follows that generous and judicially sanctioned equalization systems exert greater effects. Courts can perpetuate and reinforce bailout expectations by calling on other governments to meet them, while greater levels of redistribution signal greater commitment to preserving regional solvency.

To summarize, I have argued that investors are imperfectly rational. They are likely to hold heterogeneous bailout expectations and the complexity of intergovernmental systems only reinforces this heterogeneity unless it provides clear indications of central support. In and of itself, transfer dependence is unlikely to play this role. Creditors may, however, find other aspects of the intergovernmental environment consistently informative. These include subnational responsibility for universal services, formal co-responsibility for service outcomes, and constitutional clauses requiring national officials to assist (but not necessarily bail out) distressed local units. I have also argued that equalization arrangements do not have to be extraordinarily generous or judicially enforced to signal an implicit guarantee. Nonetheless, generous and rigorously enforced arrangements should make superior coordinating devices. The discussion may be distilled into the following hypotheses:

H1: The level of transfer dependence will have no impact on creditors' bailout expectations.

H2: Subnational responsibility for sensitive services (i.e. healthcare and education) will have a positive effect on creditors' bailout expectations.

H3a: Co-responsibility for sensitive services, equal living conditions clauses, equalization requirements and other formal constitutional obligations to assist subnational units will have a positive effect on bailout expectations.

H3b: The impact of formal equalization commitments are conditional on their enforceability (e.g. justiciability) and redistributive scope.

Economic Development

An interesting question is whether bailout expectations depend on levels of economic development. On the surface, the answer seems obvious. Developing countries are less capable of assisting ailing local units. They have weaker fiscal capacities and economies and their ability to borrow on international markets is limited (Eichengreen, et al. 2005, Mosley 2003, Wibbels 2006). Their capacity to provide timely bailouts is additionally hindered by underdeveloped accounting practices, which prevent timely detection of fiscal shortfalls. And yet some researchers claim development has little bearing on bailouts (von Hagen, et al. 2000, von Hagen and Dahlberg 2004). As evidence, they point to high-profile bailouts in both developed and developing countries (e.g. Argentina, Brazil, Italy, Germany, and Sweden). Others suggest that developing countries are more bailout prone. They attribute this tendency to limited levels of decentralization and local democratization, both of which preserve greater scope for central intervention (Rodden, et al. 2003).

I challenge this argument on both empirical and theoretical grounds. Empirically, I argue that the incidence of bailouts in the developing world is exaggerated. This only becomes apparent when one applies the definition of bailouts developed at the chapter's outset: assistance intended to *prevent* an imminent default. This definition reflects creditors' concern with the timeliness, as well as the extent, of repayment. By this definition, several prominent examples of

developing-world bailouts are disqualified. These include bailouts of Brazilian states and Argentinean provinces in the 1980s and 1990s, which, in many cases, came after these units defaulted.

There are also good theoretical reasons to doubt developing countries' bailout commitments. Above, I argue that protection of sensitive services is a critical motivation for central intervention. But nascent literatures in comparative and international political economy suggest welfare spending in developing countries is far more constrained. Several reasons have been proposed, including lower levels of democratization (Kaufman and Segura-Urbiergo 2001), anti-welfare business interests (Garrett and Mitchell 2001), weak labor unions (Rudra 2002), and greater vulnerability to global financial shocks (Wibbels 2006). Several studies identify a negative relationship between social spending and liberal globalization in developing countries, a finding that stands in sharp contrast to research on developed countries, where internationalization and welfare effort are positively associated (Cameron 1978, Katzenstein 1985, Garrett 1998, Rodrik 1997, Adserà and Boix 2002).[5] In light of these findings, I hypothesize that:

> H4: Low levels of development will have a negative impact on bailout expectations. It will largely undermine the positive signals inherent in the provision of sensitive services and formal central obligations to protect local service outcomes or finances.

Too Concentrated to Fail

Perhaps the most intuitive explanation of bailout expectations is the notion that some entities, whether they are banks, subnational borrowers, or large industries, are too big to fail. Default by

---

[5] But see Iversen and Cusack (2000) for an alternative explanation of welfare effort.

large governments can impose negative externalities, including lower growth, weakened exchange rates, and higher borrowing costs, on the broader currency union. It can also result in significant electoral losses for national politicians.[6] According to some, Brazil's bailouts of Minas Gerais, São Paulo, and other large states in the 1980s was motivated by national efforts to limit these costs (Rodden 2003).

But evidence for the too-big-to-fail thesis is mixed (Crivelli and Staal 2006). One can point to several examples of bailouts of small entities. Germany bailed out two small states, Saarland and Bremen, in the 1990s, for example (Seitz 2000). One can also find examples of national officials favoring small over big jurisdictions. The Argentinean government bailed out several small provinces in the 1990s, including Jujuy, La Rioja, Tucumán, Catamarca, Corrientes, Santiago del Estero, and Río Negro, but let large provinces, including Buenos Aires, Córdoba, La Pampa, and Santa Fe, fail (Nicolini, et al. 2002).

Von Hagen, et al. (2000) suggest the (seemingly) lower incidence of bailouts for big governments reflects their limited incentives to demand them. Large jurisdictions internalize the costs of bailouts because their taxpayers are disproportionately responsible for financing them.

Rodden (2006b) conditions the too-big-to-fail logic on vertical party linkages between national and subnational governments. He argues that German officials have been reasonably successful in disciplining large states when state and national leaders share the same party label. He claims large states internalize the negative macroeconomic consequences of their spending because the "electoral success of state-level politicians in Germany is intimately tied up in voters' assessments of the macroeconomic performance associated with their party label." This, he

---

[6] Wildasin proposes yet another scenario in which central officials intervene in order to protect the positive externalities generated by services provided by large jurisdictions (1997).

argues, "places limits on incentives of state governments to attract bailouts" (Rodden 2006b, 223). By contrast, he claims large states in Brazil were more likely to demand bailouts, because these coattail effects were absent.

Yet another set of arguments states that some governments are too *small* to fail while others are *too big to save*. National politicians may bail out small units simply because it is cheap. By contrast, politicians have to weigh the costs of bailing out large governments against the costs of default. Roubini highlights this dilemma with respect to the current euro area crisis. He argues that default by Italy or Spain would send shockwaves throughout European financial markets (implying that they are too big to fail) but that saving these countries would also prove extraordinarily costly (implying that these governments are too big to save) (see also Inman (2003)).[7]

Recent developments in Europe's sovereign debt crisis suggest yet another motivation for bailing out small units. They reveal that default (or the threat of default) by small economies (e.g. Greece, Ireland, and Portugal) can wreak havoc on financial markets. These defaults can trigger chain reactions of financial losses. But they can also transmit contagion through psychological means: Default by one issuer raises questions about the solvency and liquidity of similar borrowers. I propose a variant of the too-big-to-fail thesis in which defaults by small jurisdictions trigger contagion by signaling that similar, but decidedly larger jurisdictions are also vulnerable to default. By this logic, a default by Prince Edward Island (PEI), a Canadian province of less than 200,000, rattles bond markets not because it is large (it clearly is not) but

---

[7] Gibson and Calvo advance an interesting explanation of why some governments may actually be too *small* to fail. They argue that small jurisdictions can easily wrest bailouts from representatives of large jurisdictions by exchanging legislative votes for transfers that the latter find cheap to provide. These exchanges occur regularly in legislatures that over-represent small jurisdictions relative to their population (Gibson and Calvo 2000).

because it signals the vulnerability of Ontario or Quebec, jurisdictions that account for massive shares of national population, debt, and output. We could imagine a less contagious scenario in which PEI was yet another one of the thousands of towns, cities, counties, school boards, sewage companies, hospitals, publicly owned airports or railways, or redevelopment agencies that comprise the US municipal bond market. Its default would be but a blip and while it might contribute to general unease with the sector, it would not raise the specter of default by jurisdictions comprising two-thirds of the country's population. In short, some sectors may be too *concentrated* to fail: heavy concentrations of national output, population, and debt in a limited number of jurisdictions increases the financial turmoil of any one government defaulting, resulting in uniformly high bailout expectations for all units.

The effects of sectoral concentration are likely conditional on several factors. One is aggregate levels of subnational spending. A sector's deterioration is more threatening if its spending accounts for large shares of national consumption and, therefore, economic activity. Even more worrisome, from investors' perspective, however, are heavy levels of indebtedness. Turmoil in concentrated and heavily indebted sectors signals weaknesses in borrowers whose bonds are widely held. In light of these considerations, I hypothesize that:

> H5: Bailout expectations will increase for all governments that belong to sectors in which national population, output, and especially debt are concentrated in a limited number of units.

Broader Implications: Variation Within and Across Countries

Existing research has sought to explain variation in bailout expectations both within and across countries. The hypotheses discussed thus far suggest that the most important sources of variation operate across rather than within intergovernmental sectors. This rings clearest with respect to

H5: the notion that government sectors, rather than individual governments, are too big to fail. However, it is also implicit in the arguments about expenditure assignments, constitutional obligations, and economic development. Local responsibility for healthcare, education, and other universal services transforms local service failures into threats to basic social rights; rights that central governments have articulated and sworn, implicitly or explicitly, to uphold. Fiscal equalization and joint responsibility for services signify generalized commitments to protecting the fiscal interests of all jurisdictions. And economic development affects the incentives and capacities of central officials to follow through on these commitments. This is not to dismiss the importance of within-system variation. It is, however, to suggest that the most important determinants of expectations are cross-national or cross-sectoral in nature.

2.5   CREDIT BELIEFS: STANDALONE DEFAULT RISK

If subnational units were simple extensions of national governments, then investors could forgo credit analysis of local governments and infer their repayment capacities strictly from the level of sovereign creditworthiness. But investors almost always harbor some uncertainty about central officials' bailout commitments. This implies a corresponding interest in local debts, deficits, and other basic drivers of standalone default risk; the risk a subnational government requires a bailout in the first place. This section addresses an important gap in existing research: the relationship between fiscal federalism and standalone creditworthiness.

Fiscal federalism shapes standalone default risk by, among other things, determining governments' independent capacity to manage long-term fiscal challenges and shocks. Specifically, it affects their autonomous capacity to adjust revenues and expenditures. Analysis of the credit conditions of US states reveals the importance of this capacity. Several studies find

that states with self-imposed revenue limits, such as referenda and super-majority requirements for raising taxes, incur higher borrowing costs and lower bond ratings (Johnson and Kriz 2005, Deller, et al. 2010, Wagner 2004). Others find that these limits increase the positive effects of unexpectedly high state deficits on state bond yields (Poterba and Rueben 1999). It appears rating analysts and creditors take a dim view of governments that cannot independently manage their budgets. These findings imply lower credit ratings and higher borrowing costs for governments with limited access to own-source revenues.

The legal capacity to adjust tax bases and rates does not necessarily imply unlimited powers of taxation, however. Tax policies are still subject to various political and economic constraints. As Brennan and Buchanan famously argued, decentralization of taxes and expenditures restrains the size of government by fostering competition for mobile consumers and firms (1980). Theoretically, these constraints are most severe for Canadian provinces, American states, Swedish municipalities, Swiss cantons, and other units that rely heavily on mobile and politically sensitive tax streams (i.e. corporate and personal income tax, respectively). Note, however, that not all economic models of federalism predict a race to the bottom. In the Tiebout model, firms and consumers have different preferences over tax and service levels and move to jurisdictions that best match their preferences. These sorting effects mitigate downward pressure on tax rates in pro-tax regions (Tiebout 1956).[8]

In short, transfer dependence increases standalone credit risk by restricting governments' capacity to raise additional taxes. Conversely, heavy reliance on own-source revenues improves

---

[8] The logics of exit and matching have close parallels in the IPE literature. Scholars use the exit logic to predict the downward harmonization of public spending and tax rates implied by the globalization of capital (labor is considered largely immobile in these models). Others argue that convergence of fiscal policies is overstated, arguing that producers continue to select into production regimes that best support their "core competencies and dynamic capabilities" (Hall and Soskice 2001, 6). These matching effects are believed to limit tax competition at the international level (Swank 2006).

issuers' standalone creditworthiness by enabling them to raise additional revenues as fiscal circumstance dictates. These claims are subject to the caveat that revenue flexibility is conditional on the mobility and preferences of taxpayers. My principal hypothesis is that:

> H6: Standalone credit ratings will increase with subnational reliance on discretionary own-source over total revenue. Conversely, standalone credit ratings will decrease with subnational dependence on transfers and shared revenues.

Fiscal flexibility does not depend solely on revenue autonomy. It also depends on governments' ability to cut spending. Subnational governments vary in this capacity as well. The spending priorities of Italian regions, Bulgarian municipalities, and Russian regions are largely determined by national legislation while Canadian provinces and Swiss cantons are more or less free (at least in strict legal and policy terms) to spend as they see fit.

But like tax increases, spending cuts are also subject to political constraints. Some expenditures are politically challenging to cut. Others are less so. Perhaps the broadest distinction is between operating and capital expenditures. The latter cover nationally salient areas like education and healthcare (see above), but they also include recurring local commitments like transportation and garbage collection. The latter may be of marginal interest to otherwise meddling national officials, but local voters likely consider them essential. Operating budgets are, therefore, difficult to retrench. Capital expenditures provide more room to maneuver. They are less politically salient (Breunig and Busemeyer 2012). Finally, they are one-off and easier to defer, though political demand for them will vary according to local infrastructure demands.[9]

---

[9] This account of investor preferences differs from standard accounts in the literature. Most political scientists derive preferences over spending decisions from efficiency assumptions. Markets punish social spending and government consumption because, unlike public investment, it undermines productivity and growth in subsequent periods. This decreases future revenues, thereby threatening governments' debt repayment capacities. There are important problems with this logic, however. First, most market participants would admit the productive potential of certain expenditures that count, at least officially, as public consumption. These include recurring commitments to education, healthcare, or even unemployment insurance (Garrett 1998, Estévez-Abe, Iversen and Soskice 2001).

2.6   CREDIT BELIEFS: SOVEREIGN RISK

I now turn to sovereign risk, the third and most critical credit belief. This section differs from the discussions of bailout expectations and standalone credit risk in that it focuses on the effects, rather than the determinants, of this factor. The shift in emphasis reflects two factors. First, perceptions of sovereign risk are the most important determinants of subnational credit outcomes. Second, these beliefs do not depend, to the same extent, on fiscal federal factors. Sovereign risk is, in other words, primarily exogenous, a point to which I return below.

This section makes three central claims. First, marked shifts in sovereign risk can trigger booms and busts in subnational lending. Second, these shifts are only weakly mediated by intergovernmental institutions. Third, the costs and benefits of these shifts are unevenly distributed across national and subnational units. The first two points are most critical, but easily understood. Thus, I devote most theoretical attention to the final point. In recent years, subnationals have not benefited to the same extent as sovereign borrowers in safe-haven countries while sovereigns have not suffered to the same extent as subnationals in high-risk settings. Indeed, national-subnational borrowing costs have widened in both contexts. This widening is due, in part, to increased uncertainty in financial markets and its implications for investors' demand for safe assets. However, it also reflects variation in investors' knowledge of

---

Second, despite this broad agreement, there is little consensus over what the optimal levels and distribution of social spending are. Thus, investors and rating agencies may respond to spending decisions in uncoordinated ways, dulling the penalties and rewards governments incur for particular spending decisions (Mosley 2003). Third, returns on government investment are often uncertain. Markets may not be in a position to assess the quality of investments and their implications for government finances. Finally, these returns are often only realized over the long term, but rating agencies' time horizons are generally three years (Vir Bhatia 2002) and investors' time horizons are even shorter (Mosley 2003). For these reasons, creditors' preferences over government spending are unlikely to reflect efficiency considerations. Rather, they are likely to reflect the rigidity of expenditure assignments. This characteristic is relatively easy to assess and its effects on government finances fall well within investors' time horizons.

public borrowers and their credit characteristics. International investors have inferior (superior) information on subnational (national) borrowers. Research in financial economics suggests this asymmetry will cause investors to perceive subnational securities as riskier. The upshot is under-investment in subnational debt and a consequent widening of intergovernmental spreads. I attribute these knowledge gaps to several factors, but highlight the complexity and variability of intergovernmental institutions as their chief source.

Intergovernmental Credit Risk: Broad Correlations

National and subnational credit conditions are closely interlinked. The linkage reflects, among other things, the close correlation between national and subnational credit risk. This correlation reflects, in turn, three broad factors. First, within a monetary union, governments' standalone credit profiles are driven by several common factors, including macroeconomic stability and access to capital. These linkages are reinforced by financial ties between higher and lower levels of government. These ties are tight, even within relatively decentralized countries like Canada and the United States.[10] Second, sovereign risk conditions investors' bailout expectations. Central officials prioritize servicing their own debts over those of other governments. It follows, therefore, that marked improvements (deteriorations) in sovereign creditworthiness bolster (undermine) the credibility of national bailout commitments. Finally, markets use sovereign borrowing rates as benchmarks for pricing subnational credit risk. In effect, the sovereign yield provides a floor for determining subnational rates. This pricing convention partly reflects

---

[10] To see why, consider the difference between the fiscal linkages between the US government and American states and the linkages between the US government and a typical private firm.

objective correlations between national and subnational credit risk. However, it is, above all, an informational shortcut and as such, also exerts independent effects.

Sovereign yields embody several factors, including exchange rate, liquidity, and inflation risks. In recent years, however, sovereign risk, or the expectation of sovereign default, has become the biggest source of cross-national variation in yields. This is particularly true of the euro area where the common currency removed internal inflation and exchange rate risk (and significantly reduced liquidity premia) but left considerable default risk in their stead. Credit risk is rising across most countries, which should, theoretically, result in a general rise in risk premia. But in reality, yields have plummeted in safe-haven countries as a general rise in default risk coincides with an even sharper divergence in relative risk. Barring dramatic and successful policy responses, spreads are likely to remain elevated for some time as their principal source, the falling supply and increasing demand for safe assets, shows no immediate signs of abating. These supply-demand dynamics are sustained by deteriorating debt sustainability in peripheral euro area countries, generalized volatility and uncertainty in financial markets, and the growing use of safe assets in prudential regulations, collateral practices, and central bank operations (IMF 2012, 82).

The Limited Role of Intergovernmental Institutions

Again, dramatic shifts in sovereign credit risk triggering booms and busts in subnational credit. This section argues that the role of intergovernmental institutions in mediating these movements is limited. Booms and busts are almost equally likely in systems characterized by strong and weak implicit guarantees. To see why, consider the effects of a sharp rise in central default risk. First, the sovereign yield rises. This increases base interest rates across the entire economy,

including rates for implicitly guaranteed borrowers. Second, standalone creditworthiness and the credibility of implicit guarantees decline. Third, subnationals edge closer to default. Assuming that investors are risk-averse (or that their expected utility functions are concave) yields should increase exponentially as the prospect of default approaches (so should spreads if the subnational is approaching default faster than the sovereign). Fourth, spread risk increases, inducing investors to sell bonds in order to limit mark-to-market losses. This selling occurs even if investors consider the probability of default low, because they worry rating agencies and other investors do not share their beliefs.

Default could, under these circumstances, become self-fulfilling unless central officials inject liquidity. But the incentives for immediate action are rarely present. National officials often delay bailouts, even where they are ultimately eager to provide them, in order to limit moral hazard while subnational officials often refuse bailouts, even where they are ultimately eager to accept them, as a tactic for relaxing centrally imposed austerity. This brinkmanship occurs in a wide range of settings, including countries with strong implicit guarantees.[11] Its effects on subnational credit are highly damaging. It increases the imminence of default, introduces uncertainty over central bailout commitments, and fuels spread risk.[12]

Asymmetric Costs and Benefits

The current flight to quality in global financial markets is placing downward (upward) pressure on interest rates in safe (unsafe) countries. All borrowers in a given country tend to benefit (or

---

[11] Some claim a similar game of chicken is playing out between the leaders of the core and peripheral countries of the euro area currently (Bergsten and Kirkegaard 2012).

[12] Spread risk is present even if all investors believe the probabilities of default and bailouts are 0 and 1, respectively. The only precondition is uncertainty over or false understandings of other investors' beliefs.

suffer) from these movements together, but the costs and benefits are not evenly distributed. As I show in chapter 6, subnationals do not benefit to the same extent as sovereign borrowers in safe haven countries and sovereigns do not suffer to the same extent as subnationals in high-risk settings. These asymmetries are apparent in several countries and even affect Australian states, German Länder and other governments with implicit guarantees. What explains these developments?

At the most general level, spread widening stems from rising uncertainty and volatility in global credit markets. These developments increase demand for liquid and safe assets, which benefit sovereigns over other asset classes, including subnational governments. While general, the rush to safety is most pronounced among reserve managers and central banks. This market segmentation (or clientele effect) widens spreads even further.[13] The buying power of central banks puts massive downward pressure on sovereign yields and makes institutional investors reluctant to invest in other assets (e.g. subnational and corporate bonds) at historic spread levels --- perhaps because traditional levels do not fully compensate investors for risk, perhaps because yields are not sufficient to meet investors' liabilities (a growing problem with pension and insurance funds) or perhaps because of a combination of these and other factors. Finally, spread widening reflects liquidity premia. The crisis has increased the probability of liquidity shocks, thereby bolstering demand for liquid assets. Subnational bonds are not issued in the same volumes as sovereign assets and do not, therefore, provide comparable (or even nearly comparable) levels of marketability.[14]

---

[13] A clientele effect refers to the notion that certain categories of investors have preferences over certain assets or policies and that these preferences change as policies and conditions shift.

[14] The determinants of liquidity are several, but a chief driver is the volume of outstanding debt: It is difficult to find buyers for thinly held securities, but easier to find buyers for broadly distributed debt. Not all subnationals' issue in

But shifting preferences over liquidity, risk, and return only tell part of the story. I link spread widening to yet another mechanism: investors' variable knowledge of different government asset classes. The flight to safety has resulted in massive flows of foreign capital into and out various countries. Although these flows affect all borrowers, foreign investors' have superior information on the creditworthiness of sovereign over subnational borrowers. This asymmetry causes investors to perceive subnational bonds as riskier. This insight comes from a variant of the home-bias literature in financial economics. It states that investors under (over)estimate the risk-adjusted returns of assets with which they are familiar (unfamiliar). The upshot is underinvestment in subnational assets and a consequent widening of national-subnational spreads. I attribute these asymmetries to, among other things, the costs of gathering and processing information on subnationals' fiscal federal frameworks. I illustrate this point by comparing three broad sets of government asset classes: securities issued by (1) sovereign governments, and securities issued by (2) explicitly and (3) implicitly guaranteed government agencies and subnational units.

Relative to other asset classes, knowledge of sovereign creditworthiness is high. This is so for several reasons. First, sovereign borrowers maintain higher profiles in capital markets. They also have recognizable brand names. Investors have, therefore, basic knowledge and familiarity with these borrowers. Second, comparable sources of economic and fiscal data for sovereign governments are widely available. This reduces the costs of gathering information and facilitates cross-national comparisons of credit quality. Third, many investors have established

---

sufficiently high quantities to satisfy investors' liquidity demands and even large subnationals often pay significant liquidity premiums over their respective sovereigns. Liquidity is often reinforced by special features of sovereign bond markets. In Germany, for example, the liquidity of national bonds (or Bunds as they are often called) is enhanced by a liquid futures market.

methodologies for rating and comparing sovereign creditworthiness. This gives market participants a framework for analyzing the data described above. It also provides a basis for comparing credit characteristics across countries.

Evaluating explicitly guaranteed agencies is also relatively straightforward. Many of these borrowers have established records in international credit markets and explicit guarantees simplify credit analysis considerably. Provided the guarantee is credible, credit analysis shifts exclusively to the sovereign guarantor.

But evaluating implicitly guaranteed entities is more challenging. Subnationals often have low profiles in capital markets, comparable cross-national data on economic and fiscal performance are scarce, and methodologies for rating these entities are not well developed. Most daunting of all, analysts have to determine the credibility of central bailout commitments and, because these commitments are uncertain, the likelihood of standalone default. These are not easy tasks. Above all, they require a basic understanding of the system of intergovernmental fiscal relations. Are subnationals allowed to raise taxes and cut expenses? Are they politically constrained from making these adjustments? Are their budgeting forecasts accurate? Can national officials credibly limit subnational borrowing? Will central officials provide liquidity for governments on the verge of default? Will they provide it before credit spreads severely deteriorate? Do subnationals have formal mechanisms for advancing and protecting their fiscal interests? These are daunting questions for the uninitiated. Answering them requires, at a minimum, crash courses in federal and constitutional politics and a capacity to monitor current events. For some investors, the cost of collecting this information is prohibitive. For others, the decision to invest is protracted, occurring only after considerable research has been conducted. In

either case, we can expect this process to increase, at least temporarily, relative demand for sovereign over subnational assets.

The micro-foundations for these arguments are found in the "home-bias" literature in financial economics (see Lewis (1999) and Sercu and Vanpée (fothcoming) for reviews). This literature seeks to explain the persistence of home bias in investor portfolios despite the advantages of international portfolio diversification. My argument draws on two strands of this literature. The first is an informational strand emphasizing investors' tendency to invest in assets of which they are informed. This work finds positive relationships between actual portfolio holdings and several proxies for information, including investors' proximity to foreign markets, cultural variables, and economic distance. The second strand is a behavioral approach emphasizing the irrational aspects of investor behavior. Building on insights from psychology and experimental economics, this work claims that in addition to objective considerations, perceptions of risk are colored by fear and discomfort with the unfamiliar. These feelings distort risk perceptions and cause investors to over (under)estimate the risk-adjusted returns on familiar (unfamiliar) assets. The empirical chapters do not attempt to systematically parse informational and behavioral effects. This is probably best left to carefully crafted surveys and experiments. Rather, it provides highly suggestive evidence of investors' ignorance and discomfort with subnational assets and links these perceptions to investment behavior.

In sum, this section has advanced three major claims: extreme movements in sovereign risk can induce booms and busts in subnational credit; intergovernmental institutions only weakly mediate these shifts; and the costs and benefits of these shifts are unevenly distributed across national and subnational borrowers, largely because of current uncertainty in global

financial markets, but also because of asymmetries in foreign investors' knowledge of national and subnational borrowers.

Intergovernmental Institutions through the Backdoor?

A key assumption of this dissertation is that sovereign risk does not depend, in a significant way, on fiscal federal institutions. This claim is not uncontroversial. Subnational debts affect sovereign risk by affecting the total stock of government debt while fiscal federalism conditions the sustainability and size of these debts and whether they end up on central governments' balance sheets. It is conceivable, therefore, that fiscal federalism affects sovereign credit ratings and risk premia. Anecdotal evidence suggests this is the case. Yields on Spanish bonds jumped, for example, in 2012 when it was announced regional governments were seeking national bailouts. Cross-national research also suggests a relationship between fiscal federalism and sovereign risk. A sizeable literature links fiscal and political federalism to variation in national debts, budget balances, and other determinants of sovereign default (Rodden 2002, 2003, Rodden and Wibbels 2002, Wibbels 2000).

The relationship between fiscal federalism and sovereign risk is understudied and deserving of research. However, there are at least two reasons to doubt its relative significance. First, fiscal federalism's major effect is conditioning the size and ultimate responsibility for subnational debts (i.e. whether they end up on central government balance sheets). But subnational debt comprises a small share of total national debt in most countries, even decentralized ones. Subnational over total government debt in the EU-27 in 2010 amounted to just 15 percent (or 11 percent of GDP). These figures are, admittedly, higher in some countries. In Canada and Germany, for example, subnational debt to GDP exceeds 20 percent. But these are

also countries with AAA credit ratings, which suggests, at least, that there are far more important factors than subnational debt at play.

Second, it is arguable whether government debt, even total government debt, has much bearing on sovereign ratings and risk premia, particularly within the euro area currently (De Grauwe 2011). Risk premia are probably better predicted by headline risk, general risk aversion, and factors driving countries' underlying debt dynamics. These latter factors include the health of national banking sectors, export competitiveness, and the (in)ability to monetize debt and adjust exchange rates.

I do not want to downplay the potential significance of subnational debt. Weakening sovereign conditions can engender positive feedback loops whereby rising sovereign and subnational risk become mutually reinforcing. But this possibility does not threaten the dissertation's two central claims, namely that transfer dependence stiffens market constraints and that the effects of fiscal federalism pale in comparison to those of sovereign risk. With respect to the first point, note that most cross-national research suggests that national debts rise (rather than fall) with transfer dependence. If this is true, it provides yet another mechanism through which transfer dependence hardens market constraints. With respect to the second point, sovereign risk is, in all likelihood, mostly exogenous or marginally endogenous to subnational debt, fiscal federalism, and their interrelations.

Is Sovereign Risk Relevant to Studies of Market Discipline and Market Constraints?

Despite its clear importance, the literature is not generally interested in the relationship between sovereign risk and subnational credit. This indifference partly reflects the literature's focus on market discipline as opposed to market constraints. Market constraints refer to interest rates,

credit ratings, access to credit, and other credit outcomes that affect the costs of sustaining a given fiscal policy course. Market discipline refers to credit outcomes that encourage governments to adopt a sustainable fiscal path. Theoretically, markets play this role by correctly pricing default risk. If the price of credit is too high, governments adopt self-defeating austerity measures. If the price is too low, governments have incentives to borrow recklessly. Sovereign yields determine the base price of credit and bailout expectations and standalone credit risk determine the spread subnationals pay over sovereign yields. Scholars are generally uninterested in the former because they assume it is an appropriate floor for pricing subnational risk premia. Armed with this assumption, the only question becomes whether the spread correctly captures the added risk of lending to the subnational unit. If capital markets are free, financial information is transparent, and no-bailout pledges are credible, then the answer is yes. If one or more of these conditions is violated, then the spread is distorted and market discipline is compromised.

This dissertation focuses on the question of market constraints rather than discipline. Sovereign risk is, therefore, a central focus. But I argue that sovereign risk is relevant to studies of market discipline as well. It is relevant in at least three respects. First, sovereign risk affects credit spreads by conditioning the credibility of central bailout commitments. Second, sovereign yields are imperfect benchmarks for pricing subnational credit. They are not pure embodiments of systemic risk at the subnational level. Rather they are informational shortcuts. Third, sovereign yields are also imperfect measures of sovereign risk. The global flight to quality has introduced several distortions in government bond markets, including systematic under and overpricing of sovereign risk.[15] By tracking sovereign yields, subnational risk premia transfer

---

[15] One of the most striking developments of the global financial crisis has been the plunging yields on US Treasuries, German Bunds, and other safe-haven assets. The drop is striking because it has coincided with sharp

these distortions to the subnational level. Thus, students of market discipline cannot take the appropriateness of benchmark sovereign yields for granted. They need to ask whether it provides an efficient baseline for pricing default risk. I return to this issue in the concluding chapter.

2.7   CONCLUSION

In this chapter, I seek to explain variation in the constraints creditors impose on subnational fiscal policies. Specifically, I consider the role and limits of fiscal federal factors in shaping these constraints. I reject the widely held view that transfer dependence insulates subnational governments from market discipline. Indeed, I argue that transfer dependence invites stiffer credit constraints. I develop this argument in three broad steps. First, I argue that transfer dependence does not provide compelling bailout signals, but that other aspects of the fiscal federal environment do. These include politically sensitive local expenditure assignments, constitutional provisions obliging national officials to assist fiscally challenged units, high levels of economic development and concentrated government sectors. Second, I argue that dependence (or limited access to own-source taxes) restricts governments' revenue-raising capacities. This incapacity limits their ability to manage fiscal hardships and shocks. We should expect dependent governments to incur lower credit ratings and higher borrowing costs as a result. Finally, the importance of transfer dependence (and other fiscal federal factors) pales in

---

rises in credit risk in these same countries. One can observe this fact by comparing recent developments in sovereign risk premia and credit default swap (CDS) spreads (a credit default swap is insurance in the event of a default on a debt obligation. The CDS spread is the yield on the regular payment the buyer of the swap pays to the seller.) The relationship has turned negative in some countries, including Germany, implying that German risk premia are falling precisely as expectations of German default are rising. This puzzle is easily (if only partly) explained by even sharper declines in creditworthiness in the European periphery: Safe havens have become riskier, but their relative riskiness has decreased (Brookes and Daoud 2012).

comparison to that of sovereign risk. Differences and movements in sovereign risk profiles explain the majority of variation in subnational credit conditions across countries and over time.

The remaining chapters empirically investigate these arguments using a range of quantitative and qualitative data. Chapters 4, 5, and 6 examine bailout expectations, standalone credit risk, and sovereign risk, respectively. The next chapter, a case study of recent developments in provincial credit conditions in Canada, investigates each of these credit beliefs.

3   CANADIAN PROVINCES IN THE CREDIT MARKETS

> The U.S. states and Canadian provinces are the clearest examples of market discipline. The states and provinces have wide-ranging fiscal autonomy; most of their revenues come from broad-based taxes for which the bases and rates are determined locally. Moreover, they borrow in competitive capital markets, and their respective central governments place no constraints on their spending and borrowing. State and provincial politicians and their constituents have few reasons to expect bailouts; there is no history of bailouts, no clear mechanism through which local obligations might be assumed by other jurisdictions, and attempted bailouts by the federal government would risk being challenged on constitutional grounds. Persistent deficits are assumed to lower credit ratings and raise borrowing costs, resulting in political pressure to adjust when faced with adverse fiscal shocks.
>
> <div align="right">-- (Rodden and Eskeland 2003, 435-436)</div>

> Any…serious [investor] knows that the federal government is not going to let a province default.
>
> <div align="right">--Bond Underwriter, Major Canadian bank[1]</div>

In recent years, Canadian provinces have experienced a notable deterioration in their fiscal performance. Like many other regional governments, they have been forced to turn to credit markets to address their funding shortfalls. But unlike most other subnational governments, the provinces borrow without national constraint. And like only a handful of their closest peers, they borrow to finance aggressive counter-cyclical fiscal policies and nearly every aspect of the modern welfare state. Not surprisingly, the scale of provincial borrowing has been immense. In recent years, we have seen numerous headlines warning of defaults by American states and

---

[1] Interview CB-1

Spanish regions and yet compared to provinces, the debts of these governments look trifling. Indeed, in 2009, the provinces' average tax-supported debt to GDP was roughly 10 times the level for American states.[2] And no state, not even the much-maligned California or Illinois, comes close to rivaling the per capita or absolute liabilities of Ontario or Quebec.

The provinces' growing reliance on credit markets begs an important question. Have creditors been punishing provincial borrowing by raising borrowing costs and limiting provincial credit? Or have the provinces been able to sustain favorable credit conditions despite rising debt burdens. The prediction from the comparative literature is strong and clear. Provinces, along with American states and Swiss Cantons, belong to a select group of subnational borrowers that tax, spend, and borrow with minimal national interference or oversight (Rodden 2006b). This sharp division of intergovernmental authority is supposed to send credit markets a clear and resounding signal: Ottawa will not be bailing out provinces on the brink. This message has arguably only grown louder in recent years, with the federal government's "open federalism" agenda, which seeks to disentangle intergovernmental policies and finances even further.

An implicit no-bailout commitment should result in a sharp rise (drop) in risk premia (credit ratings) for heavily indebted provinces. And yet provincial credit markets remain a sea of calm compared to the stormy conditions of other regional borrowers. Provinces have not been locked out of bond markets, as Spanish regions have been. They have not provoked panicked losses of investor confidence, as American states have. In fact, despite rising national-provincial spreads, yields on provincial bonds are extremely low, interprovincial spreads are tight, credit

---

[2]Average tax supported debt-to-GDP levels for provinces and states in 2009 were roughly 26% and 2.6%, respectively. Provincial and state figures are calculated by different units within Moody's and may only be roughly comparable as a result. State debt figures come from Moody's *2010 State Debt Medians Report*. Provincial figures were calculated from data found in the December 2010 edition of *Moody's Statistical Handbook: Non-U.S. Regional and Local Governments*.

ratings are stable and elevated, and foreign investors are flocking to provincial securities in droves.

This chapter examines the puzzling credit conditions of Canadian provinces. It provides a useful segue into the broader analysis for three reasons. First, provinces are big borrowers. Few subnational governments borrow more and fewer still have a larger presence in international capital markets. Thus, their credit conditions are of inherent interest to anyone interested in subnational credit generally.

Second, provinces provide a "crucial case" for testing prevailing theories of market discipline. Eckstein defined a crucial case as one "that *must closely fit* a theory if one is to have confidence in the theory's validity, or, conversely, *must not fit* equally any rule contrary to that proposed" (Eckstein 1975, 118). Like subnationals in the normative dualist model, provinces resemble "miniature sovereigns" (Rodden 2006). They are authoritative over distinct spheres of authority and rely heavily on own-source revenues to fund them. This dualism is reinforced by Canada's weak bicameralism and split and fragmented national party system. The basic preconditions for market discipline are, therefore, in place and yet markets allow heavily indebted provinces to borrow with seeming impunity. These results represent an important challenge to received wisdom.

Third, as subsequent chapters show, the drivers of provincial credit conditions are not unique to provinces, but speak to the determinants of market constraints generally. Thus, description and analysis of the provincial case lays the foundations for the alternative account of market constraints tested in subsequent chapters.

This chapter advances three explanations for the provinces' favorable credit conditions, each of which corresponds to one of the fundamental drivers of credit risk identified in chapter 2

(bailout expectations and the probabilities of standalone and sovereign default). First, contrary to the comparative literature's predictions, market participants believe Ottawa is committed to bailing out provinces on the verge of default. I back this claim with data from interviews with investors in provincial bonds. Interview participants gave several reasons to expect Ottawa's support, but three common responses are of direct theoretical interest. The first is Ottawa's presumed interest in protecting sensitive provincial services (e.g. healthcare and education). The second is the various positive bailout signals emanating from the transfer system in general and its equalization component in particular. The final, and most important factor, is the anticipated economic, and financial consequences of a provincial default. Nearly all investors believe a provincial default would wreak intolerable havoc on the national economy, financial markets, and Canada's credit standing, thereby necessitating Ottawa's intervention. Interestingly, this contagion logic applies almost equally to big and small provinces. Failure by one province, no matter how small, is generally perceived as a default (or at least a formidable loss of credibility) for all. I interpret this as suggestive evidence that investors consider the provincial sector too concentrated to fail.

While the bulk of the chapter focuses on the question of bailout expectations, the effects of Canada's fiscal federal framework go further, extending to provinces' standalone creditworthiness as well. Provinces benefit from the flexibility to adjust revenues and to a lesser extent, expenditures. These features, recognized by rating agencies, reassure markets by signaling that provinces are capable of managing fiscal challenges and shocks.

Finally, and most importantly, provinces are beneficiaries of Canada's safe-haven status. This is a tremendous advantage, particularly in a world characterized by escalating and diverging sovereign risk. Broad faith in the Canadian economy lowers borrowing costs across the country

and increases investors' faith in the credibility of Ottawa's bailout commitments. But the flipside of this advantage is the provinces' greatest vulnerability. There is no guarantee Canada's safe-haven status will last and should it falter, the provinces will find their capacity to borrow severely constrained.

The remainder of the chapter is organized as follows. Section 3.1 draws on comparative literature to characterize and make predictions about the Canadian case. Section 3.2 evaluates these predictions and finds them wanting. Sections 3.3 through 3.5 develop and test an alternative set of expectations taken from chapter 2. Section 3.6 concludes.

3.1   PROVINCES AND MARKET DISCIPLINE: PREVAILING PREDICTIONS

This section draws on comparative theory to predict the severity of provincial market constraints. The section consists of two parts. The first concerns fiscal federal variables, the dissertation's primary focus. The analysis clearly suggests provinces constitute a crucial test case for conventional theory. It is possible, however, that uncontrolled covariates threaten the validity of the case selection. The remainder of the section seeks to dispel this concern. It considers the key political determinants of market surveillance (i.e. vertical party linkages and the nature of subnational representation in national decision-making bodies). It also considers other preconditions for effective market surveillance (i.e. free and open credit markets and the transparency of government finances). In both respects, the case selection appears valid. Canada's weak bicameralism and frayed vertical party linkages should dampen bailout expectations while its free and open capital markets and transparent public accounting should ensure a close correspondence between fiscal performance and lending conditions.

Fiscal Institutions

According to prevailing wisdom, market discipline is strongest in dualist intergovernmental systems, in which different levels of government are uniquely responsible for their own tasks and fund these tasks through own-source revenue. All else equal, sharp divisions of authority signal that central officials have little or no incentive in preventing default at the subnational level. All multi-tiered systems, including Canada's, are characterized by significant degrees of overlapping authority. However, the Canadian framework contains several notably dualist features. For one, provincial finances and borrowing are only weakly regulated by central authorities. Provinces comply with various reporting and accounting standards laid out by the Public Sector Accounting Board (PSAB), but compliance is voluntary and provinces are not subject to national debt or deficit limits and borrow on capital markets (international markets included) free of national constraint.

Second, provinces enjoy sole constitutional responsibility for most core social services, including education and healthcare. Ottawa does intervene through the federal spending power, imposing conditions in exchange for funds through, for example, the Canadian health and social transfers (CHT and CST, respectively). Provinces are also required to comply with the five conditions of the Canadian Health Act (CHA). But unlike in Spain, Italy, and several other countries, national officials do not share formal constitutional responsibility for service delivery.[3] What is more, Ottawa has recently sought to reduce its influence in the healthcare field. All these factors suggest comparatively modest incentives for service-based bailouts.

---

[3] Section 92(7) of the *British North American Act* - one of Canada's two core constitutional documents - states that provinces have exclusive jurisdiction over the "establishment, maintenance, and management of hospitals, asylums, charities, and eleemosynary institutions in and for the province, other than marine hospitals."

Finally, and most importantly from the literature's perspective, provinces rely heavily on own-source revenues. The federal government provides grants in two major forms: loosely conditional support for healthcare, education, and social services and general-purpose equalization grants that effectively redistribute revenues from revenue-rich to revenue-poor regions.[4] But the provinces' overall transfer dependence is modest. Even Prince Edward Island, Canada's most dependent province, is less dependent on transfers than typical first-tier regions in Australia, Germany, Italy, Spain, and several other heavily decentralized countries. Figure 3.1 provides a comparison of the proportion of discretionary over total revenues for provinces and regions in Australia and Spain (the revenue autonomy of German Länder and Italian regions is even more restricted.) Canadian figures are distinguished by the grey bars.

The provinces' independence is acknowledged by the major international credit rating agencies. Figure 3.2 compares the revenue flexibility of 22 groups of governments rated by Standard and Poor's (S&P). The index, developed by S&P, measures units' legal autonomy to set tax rates and bases subject to the limits of tax competition.[5] The provinces rank third, trailing only Swedish municipalities and New Zealand local governments, but ahead of Swiss cantons and Spanish foral regions, groups with noted reputations for fiscal independence (S&P 2007). Moody's, another one of the big three rating agencies, is also impressed with provinces' revenue-

---

[4] Specifically, the program redistributes with the intent of equalizing provincial "fiscal capacity." It determines fiscal capacity by calculating provinces' individual capacities to raise revenues from five tax bases: personal income tax, business income tax, consumption tax, property tax, and 50 percent of potential natural resource revenues. Per-capita revenue raising capacities are then compared against a national standard (the average capacity of all provinces). Provinces under the average receive vertical transfers to bring them to the national average.

[5] The index likely underestimates provinces' relative fiscal independence. It is intended to measure revenue flexibility (rather than autonomy) and considers limits to flexibility imposed by tax competition as a result. This factor only comes into play in countries where subnationals have broad access to mobile or politically sensitive revenue streams like personal and corporate income tax. Canadian provinces and Swiss cantons would likely rank higher if one dropped this factor and looked strictly at the legal capacity to determine tax bases and rates.

raising capacities, likening provinces to "'quasi-sovereigns' [with] access to virtually every fiscal

policy lever" (Moody's 2010b, 11).[6]

Figure 3.1 Discretionary over Total Revenue, 2009
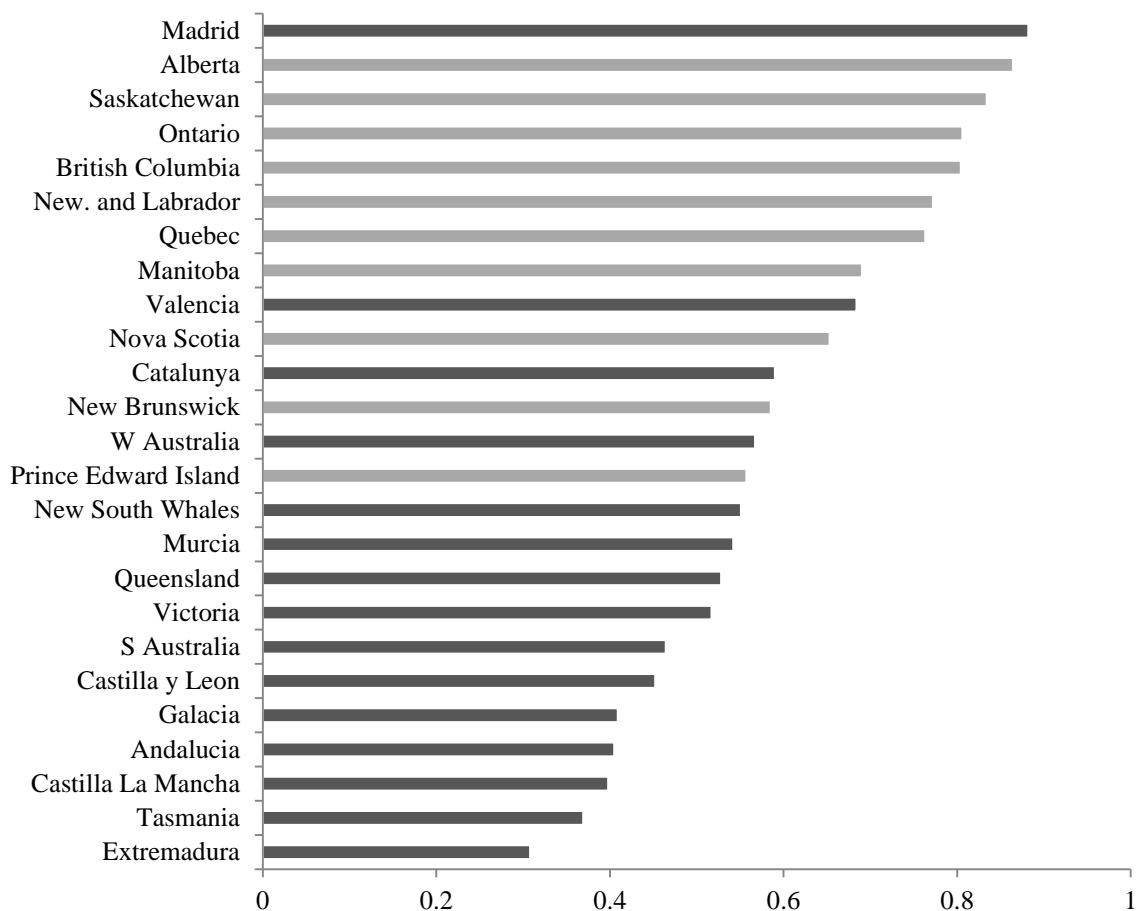
Source: Moody's[7]

---

[6] Indeed, provinces generate own-source revenues from nearly every revenue stream available to sovereign governments. These streams include personal and corporate income, gasoline, tobacco, dividend revenues from provincial enterprises, and natural resources.

[7] Only the Spanish regions rated by Moody's are included in the sample.

Figure 3.2 Revenue Flexibility (Modifiable over Total Revenue), Group Averages, 2004-06
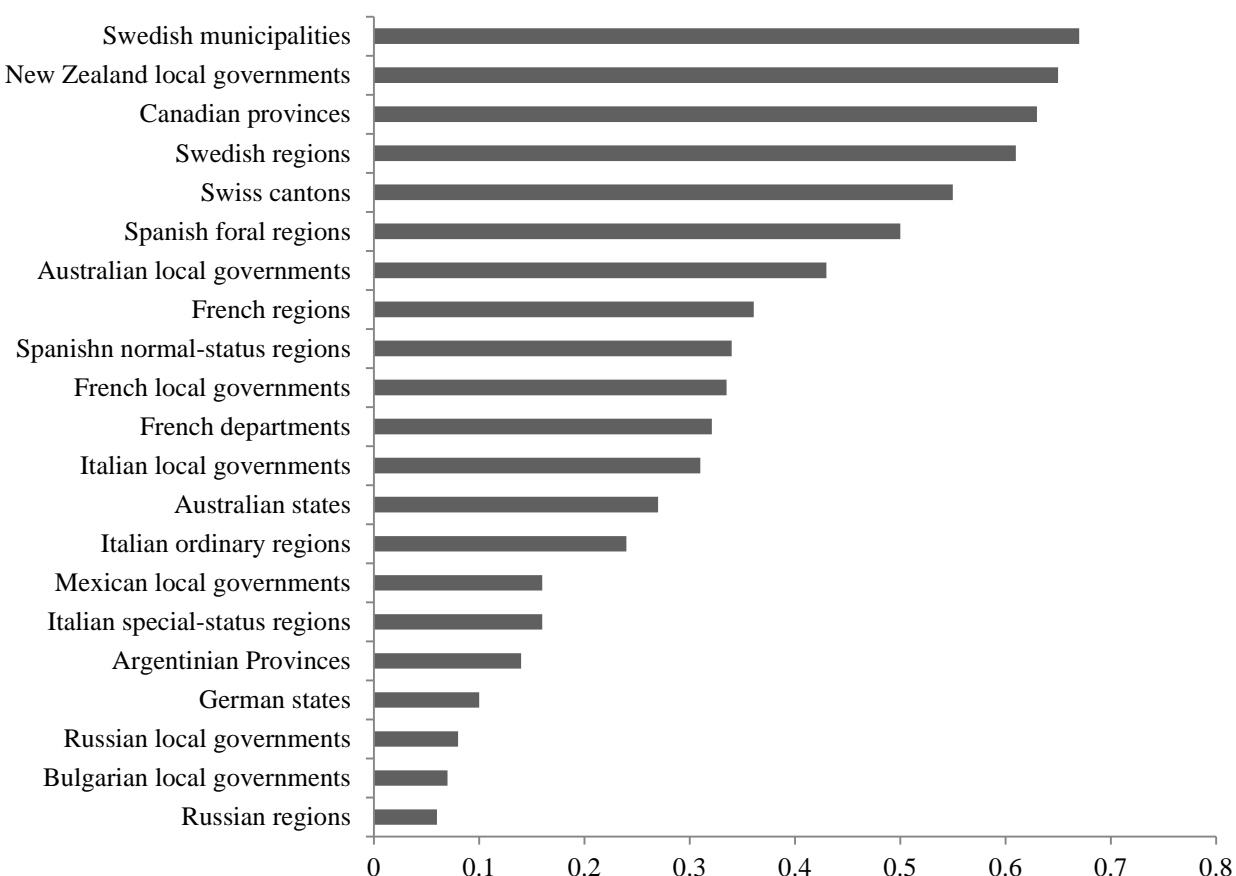
Source: Standard and Poor's

The extent of federal transfers has, nonetheless, led some to suggest that provincial debts (and the debts of equalization recipients in particular) are implicitly guaranteed (McKinnon 1997, 80). The Canadian constitution does, after all, commit "Parliament and the government of Canada" to the "principle of making equalization payments to ensure that provincial governments have sufficient revenues to provide reasonably comparable levels of public services at reasonably comparable levels of taxation."[8] Chapter 2 notes that equalization mechanisms ensure regions minimum baseline revenues and protection against negative fiscal shocks. While

---

[8] C*onstitution Act,* 1982, section 36(2).

this does not oblige Ottawa to roll over provincial debts, it does represent a generalized commitment to assisting challenged governments. Might this signal an implicit bailout commitment? There are at least two reasons, from the literature's perspective, why it theoretically should not. First, the system's redistributive impact is modest. Second, its constitutional status and enforceability is ambiguous.

Table A3.1 in the appendix presents OECD figures comparing the redistributive effort and impact of equalization systems across a handful of federal countries. It reveals two relevant facts. First, equalization payments comprise a relatively small share of GDP in Canada: about 1 percent compared to an average of 2.5 for the federal countries surveyed. Only Australia's share is lower. Equalization also accounts for a small share of total government spending and intergovernmental transfers: 2.5 percent compared to a sample average of 5.4 percent.[9] Second, the redistributive impact of Canadian equalization is comparatively small. Table A3.2, also in the appendix, shows the gap in regional fiscal capacities between the most and least capable provinces both before and after equalization takes effect. The pre-equalization difference in Canada is 102.1 percent of provinces' average fiscal capacity. After equalization, the gap narrows to 64, second highest only to Switzerland and significantly higher than for Australia and Germany, where inter-regional disparities are virtually eliminated.

The OECD also compares pre- and post-equalization variation in regional GDP. Canada's post-equalization variation coefficient is 20.1, the highest in the sample and well above the sample average of 9.5. Canada's equalization system reduces the coefficient by 9.7 percentage

---

[9] The OECD warns that these statistics need to be interpreted with care, noting that "equalisation statistics can be biased because fiscal equalisation transfers are not gathered uniformly" (Blöchliger and Charbit 2008, 34).

points, the second lowest reduction after Switzerland's (8.7). In short, Canada's equalization system is not particularly robust.

The program's constitutional status is also questionable. It is unlikely the Canadian courts would be willing or able to enforce Ottawa's commitment to the "principle" of equalization payments. It is even more unlikely that struggling provinces could invoke the equalization clause to force Ottawa to bail out provinces incapable of meeting the program's goals. This was precisely the tactic taken by two German states in 1988. Bremen and Saarland sought assistance from the national and other state governments on the grounds that balancing their operating budgets (a constitutional requirement) would compromise their constitutional duty to secure 'equal living conditions' for state residents. In 1992, the Federal Constitutional Court agreed, ruling that the constitution's *'Bundestreuekonzept'* or solidarity principle made all governments responsible for supporting a state facing "extreme budgetary hardship" (Seitz 2000). A similar outcome seems unlikely in the Canadian context. As Canada's foremost constitutional scholar has argued, "the constitutional obligation to make adequate equalization payments to the poorer provinces is probably too vague, and too political, to be justiciable" (Hogg 2000, 156).

And if provincial finances were not independent enough, the current Conservative government is trying to disentangle them even further. Stephen Harper's Conservatives have pursued a policy of "open federalism" aimed at limiting the federal spending power, clarifying the roles and responsibilities of each government, and respecting provinces' constitutionally defined jurisdictions. Thomas Courchene (2006, 51) and others (Harmes 2007) suggest these measures represent a clear shift towards a "market-preserving" model of federalism. The Conservatives recently applied these principles in the provincial healthcare field, when, in late 2011, they announced they would increase the Canadian Health Transfer at an annual rate of 6

percent until 2016-17, but link increases to three-year rolling averages of growth in nominal GDP thereafter. Although generous in the short term, the move is expected to reduce significantly the share of healthcare funded by transfers over the long term. It was also announced that new funding will come with no federal strings attached.

Political Institutions

Fiscal institutions are not the only drivers of bailouts or creditors' bailout beliefs. The literature identifies at least two other sets of determinants (Wibbels 2006): subnational representation in national decision-making bodies and vertical party linkages between national and subnational officials. A close look at these factors only affirms the "crucial" character of the Canadian case.

Perhaps most telling is provinces' weak representation in the national legislature. The House of Commons modestly over represents small provinces, but remains fundamentally majoritarian in design. The Senate is apportioned along regional rather than provincial lines and, because its members are appointed rather than elected, lacks the legitimacy to play a meaningful role in the legislative process. Not only is the upper house virtually powerless, but executive and legislative power is fused in the lower chamber, where the Prime Minister is largely unaccountable to his caucus and even his cabinet (largely because party leaders are not elected by Parliamentarians but by delegates at party leadership conventions). The upshot is an enormously powerful Prime Minister, even by Westminster standards (Savoie 1999). The executive-dominated house limits the inter-territorial bargaining characteristic of most federal legislatures.[10] Specifically, it limits the formation of the logrolling bailout coalitions that benefit small and indebted regions in mal-apportioned legislatures (Gibson and Calvo 2000, Samuels

---

[10] Indeed, according to certain thick definitions of federalism, Canada is not even federal. King (1982) insists that in order to qualify as federal, subnational representation must be constitutionally entrenched in the national legislature.

and Snyder 2001). It also restricts provincial vetoes over sudden and drastic transfer cuts. Canadian policymaking does not, therefore, exhibit the status-quo bias characteristic of joint decision-making arrangements in Germany, the EU, and several other intergovernmental systems (Scharpf 1988).

Yet another obstacle to bailouts is Canada's highly fragmented and split party system. The incidence of same-party rule at national and provincial levels is low (Riker 1964, Rodden 2006b) and organizational linkages across provincial and federal party branches are virtually non-existent (Bakvis 1994, W. Chandler 1987, Thorlakson 2009). This limits provinces' capacity to veto transfer cuts or wrest bailouts from their national co-partisans.

This is not to say that provinces are without influence. Provinces advance their interests through various intergovernmental forums and channels (Cameron and Simeon 2002, Simeon 1972). Some characterize Canadian federalism as a process of "without-system" bargaining in which provinces defend their interests by bargaining with the federal government "as if it were some external force" (Fillipov, et al. 2004). Simeon, one of the first to recognize this pattern, dubbed it "federal-provincial diplomacy" (1972). Fillipov, et al. (2004) contrast this pattern to the "within-system" bargaining characteristic of Germany and the US, where territorial interests are directly represented in the legislature. They claim the latter process is less disruptive: It disciplines intergovernmental bargaining and redistributive conflict by, among other things, integrating territorial representatives into cross-cutting partisan alliances. It also limits the tendency of units to hold federations hostage by threatening secession or generalized constitutional conflict. Both of these tactics provide promising means of winning and protecting transfers and bailouts (Alesina and Spolaore 2003). Quebec, a sporadic separatist threat, is a

major recipient of transfers and Nova Scotia helped lay the seeds of Canada's equalization system by threatening secession over a century ago (Rodden 2010).

Still, in the literature's view, the lack of formal territorial vetoes seems more likely to undermine than support central bailout commitments. It frees up Ottawa to slash transfers aggressively when its fiscal position comes under strain. And indeed, Ottawa has a history of this aggressive behavior. The 1990s provides an often cited example. Ottawa cut provincial transfers by 1.1 percent of GDP (3.7 percent to 2.6 percent) from 1993-94 to 1996-97 (Sancak, et al. 2011) and in 1995, ended cost-sharing programs with the provinces, collapsing the Established Programs Financing into a single block grant called the Canadian Health and Social Transfer (CHST). In this move, Ottawa renounced its commitment to covering half the cost of a wide range of social services and social assistance. As Rodden remarks, "compared with the German and Australian central governments, the Canadian and U.S. federal governments have a great deal of discretion over intergovernmental transfers, and have a history of balancing their own budgets by slashing transfers to provincial and state governments" (Rodden 2006b, 93). He goes on to suggest that these moves have undermined rating agencies' confidence in Ottawa's bailout commitments.

Interestingly, Ottawa might not be the only Canadian government resistant to a bailout deal. Bailouts seldom come unconditionally. Central officials want assurances that recipients are cutting spending, raising taxes, and taking other steps to restore fiscal balance. In some cases, subnationals will have little choice but to comply with these rules. In others, they may be willing and able to resist. This behavior seems particularly likely in a country like Canada, where bargaining falls to the executives of autonomous and in some cases, culturally distinct, territorial units. Undisciplined by partisan hierarchy, strong national identity, or legislative bargaining,

provincial elites may resist significant incursions into their fiscal sovereignty. Alternatively, they may look for a bailout in the long term, but play a game of chicken in the interim, threatening the federation with a default in the hopes of softening the center's fiscal dictates.

Each of these responses may seem unlikely for a region on the verge of default. Yet examples of this sort of behavior are not difficult to find. Beyond the obvious example of the euro area (which one might characterize as extreme) there is the case of Spain, where the country's two largest regions, Andalucía and Catalonia, are preparing to tap an emergency national liquidity fund, but refusing to accept the national government's austerity conditions in return. Canada also has a history of stubborn provinces on the brink. In 1936, Alberta refused assistance necessary to roll over its debts when Ottawa conditioned any further support on the establishment of a Loan Council responsible for supervising provincial borrowing. The result was Canada's first and only example of a provincial default (Ascah 1999, Hanson 2003, 171-176).

Additional Preconditions for Market Surveillance

A credible no-bailout pledge is only one precondition for effective market surveillance. It should be noted that the provincial case meets at least two additional conditions. First, provinces borrow in open and competitive capital markets with extremely limited access to privileged or repressed financing. Provinces' reliance on open capital was solidified in the 1990s when a sharp spike in borrowing forced them to broaden their investor base beyond a limited number of federal and provincial accounts (e.g. the Canadian Pension Plan and various provincial pension plans). The marked de-politicization of these accounts in recent decades has further eroded access to privileged financing (Wooldridge 1996).

Second, provincial finances are highly transparent. This aids investors in properly valuating subnational debt, another ostensible precondition for market surveillance. Provinces have adopted accrual-based accounting practices and rating agencies consider their financial reporting timely, accurate, and comprehensive.

Summary of Case Justification

Like subnationals in the normative dualist model, provinces resemble "miniature sovereigns" (Rodden 2006b). They are authoritative over distinct spheres of policy and rely heavily on own-source revenues to finance them. This division of fiscal authority is reinforced by weak bicameralism, a split and fragmented national party system, and provinces' theoretical willingness to resist and derail a bailout deal. If this were not enough, provinces have limited access to privileged capital and their finances are open books. Conditions are ripe, therefore, for a robust system of market discipline. How does this prediction stack up against the empirical record?

3.2   PROVINCES AND MARKET DISCIPLINE: MIXED EVIDENCE

Canada is regularly cited as one of the few federal systems that brings meaningful market discipline to bear on its constituent units (Bird and Tassonyi 2003, Boothe 1993, Bordo, Markiewicz and Jonung 2011, Courchene 1999, Kneebone 1994, Rodden 2006b, Vigneault 2007).[11] This perception is based, in large measure, on provinces' struggles in the credit markets during the 1990s. Provincial finances deteriorated sharply during this period, with debts in some provinces reaching over 60 percent of provincial GDP. Credit ratings dropped sharply, with

---

[11] Others have argued that credit markets closely monitor and punish provincial deficits, but that provinces have not necessarily responded with rapid or aggressive fiscal responses (Ter-Minassian and Craig 1997).

some falling out of the critical 'A' range. Newfoundland and Saskatchewan were nearly shut out of credit markets and it was rumored that even Ontario was approaching the "debt wall" (MacKinnon 2003). As Rodden notes, "according to S&P, the default risk for Newfoundland and Saskatchewan in 1996 was similar to that of Colombia, Croatia, or El Salvador" (Rodden 2006b). Several authors have attributed the drop and divergence in provincial ratings to the absence of an implicit guarantee.

Recent developments in provincial finances provide another opportunity to test this hypothesis. While the current downturn has not been nearly as severe, provincial debt is, once again, on the rise. Provinces' average debt to GDP (including unfunded pension liabilities) increased from roughly 27 percent before the crisis to roughly 34 percent this fiscal year.[12] Only two provinces saw a decrease during this period (Saskatchewan and Newfoundland and Labrador) while three provinces (Ontario, Quebec, and Prince Edward Island) have reached levels of roughly 40 percent or more (39 percent, 63 percent, and 42 percent, respectively).[13]

Figure 3.3 compares net borrowing over total revenues for first-tier regions in selected countries in 2010. The figures come from the IMF's *Government Finance Statistics.* The provinces' net borrowing is second only to Spanish regions and significantly higher than the regions of all other advanced federations and South Africa.

How have markets reacted to these trends? The response is in no way reminiscent of the 1990s. After deteriorating during the crisis, provincial credit conditions have rebounded sharply. Provincial ratings remain well within the A range (A to AAA for S&P and AA2 to AAA for

---

[12] These projections come from a recent report from the Dominion Bond Rating Service entitled "If Growth Falters, Will Resolve Hold: 2011 Canadian Federal and Provincial Governments Overview," December, 2011.

[13] These figures refer to late 2011 DBRS projections for the 2011-12 fiscal year.

Moody's) and foreign investors are flocking to provincial securities in droves. Even Asian central banks have been buying large quantities of bonds from Ontario and Quebec, Canada's two most indebted provinces.

Figure 3.3 Net Borrowing over Total Revenues for Regions in Selected Countries, 2010
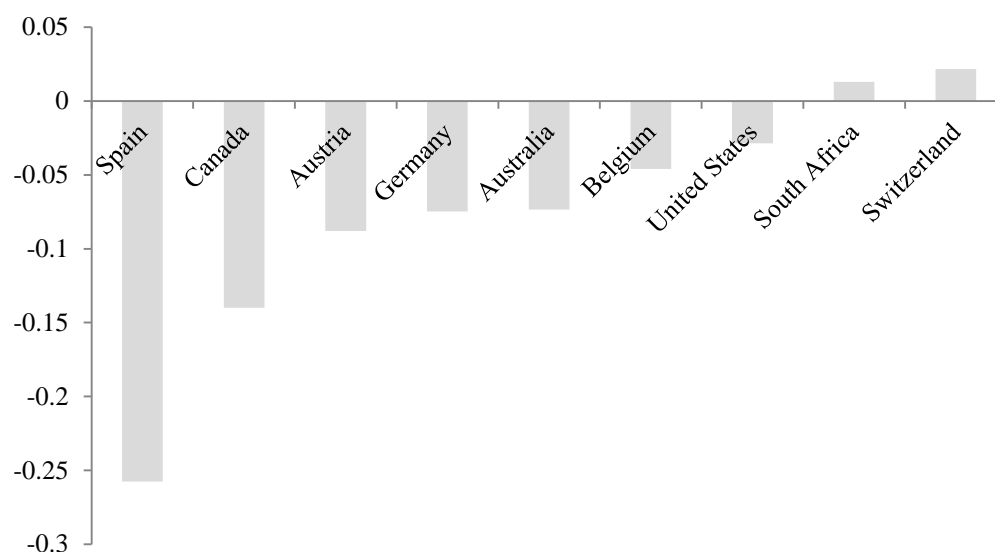
Source: IMF Government Finance Statistics

One way of gauging market constraints is examining yield spreads or the difference in borrowing costs among government borrowers. Figure 3.4 tracks yields on 10-year bonds for the government of Canada and selected provinces: Ontario and Quebec (Canada's two largest provinces), Prince Edward Island (generally considered Canada's least creditworthy province) and Alberta (generally considered Canada's most creditworthy province). Yields are measured as the percentage of annual interest paid on a government bond. The data come from the Canadian Imperial Bank of Commerce (CIBC), a major market maker and underwriter of provincial debt. The data are estimates of what a bond would yield if a particular issuer were to go to market on a

given day. National-provincial spreads widened significantly at the height of the global financial crisis, but quickly contracted beyond the crisis peak (the vertical red line signifies the Lehman Brothers default.) Spreads were widening again in the summer of 2012 and some, if not a lot, of the widening may reflect provinces' deteriorating fiscal conditions. However, most is likely driven by a global flight to quality of which AAA sovereign governments (e.g. the Government of Canada) are the overwhelming beneficiaries. As I discuss in chapter 6, similar widening is occurring in Germany, despite strong implicit guarantees on state debt.

Figure 3.4 Yields on 10-Year Bonds for Canada and Selected Provinces
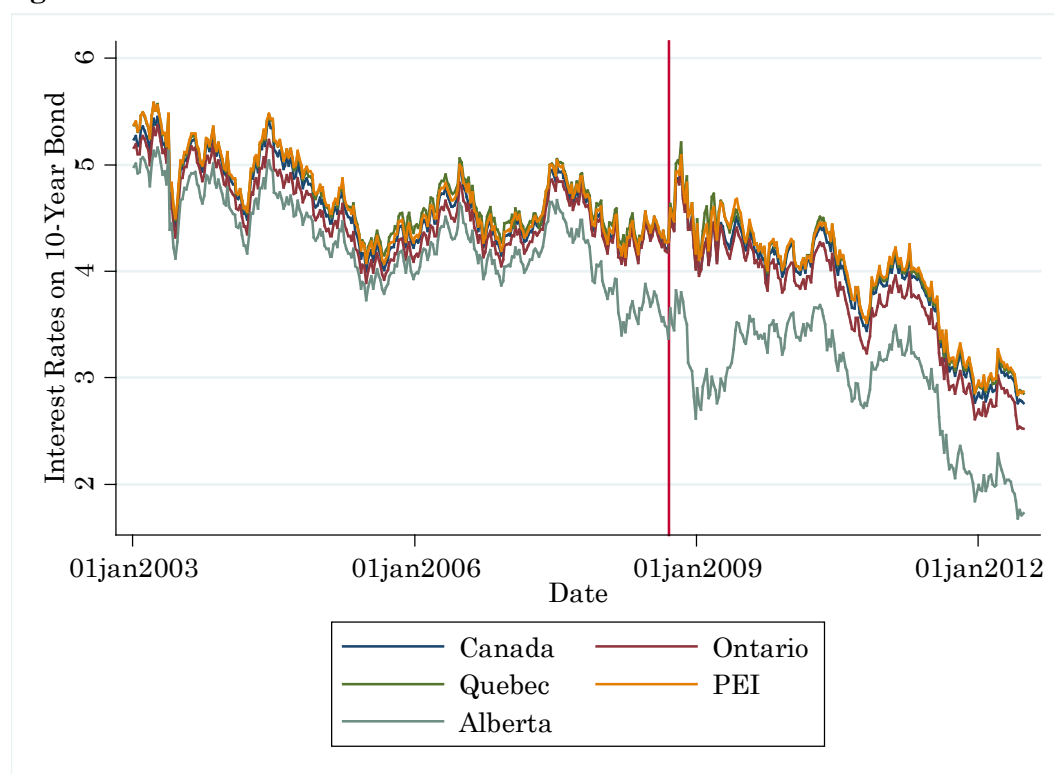
Source: CIBC World Markets

Perhaps a better way of gauging market constraints, therefore, is examining interprovincial spreads. Interestingly, these spreads remain narrow and stable, usually within .30

percent throughout the time series, despite sharp and growing differences in provincial debts. Figure 3.5 shows just how tight these spreads are. It plots the correlation between the average difference in rates paid on 10-year provincial bonds in 2011 and provinces' 2010 debt levels. Rate differences are measured in basis points where 1 basis point refers to .01 percent annual interest. Debt is denominated by provinces' annual operating revenues. The slope of the line is .10, meaning that a 100 percentage point increase in debt to operating revenues increases the average yield on a provincial bond by an estimated 10 basis points or .10 percent annual interest. This is hardly a punishing differential. It would seem creditors lend to provinces with little regard for their debt sustainability.

Figure 3.5 Spreads on 10-year Provincial Bonds and Provincial Debt Loads, 2011
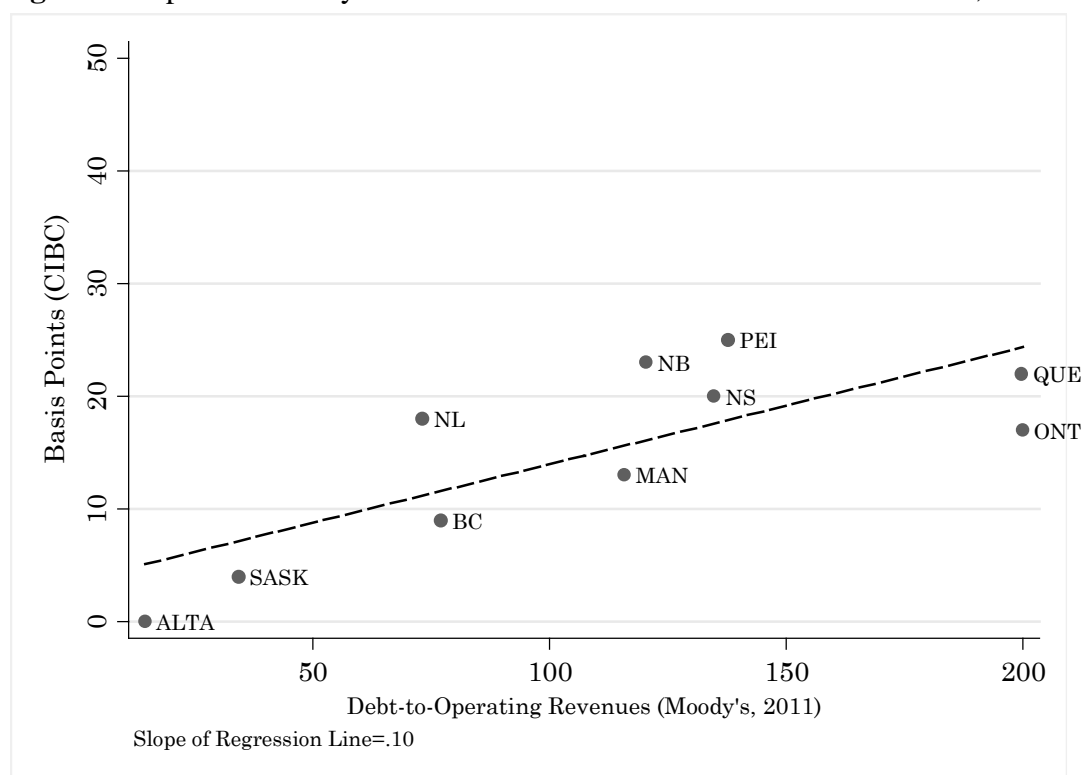
Sources: Spread data from CIBC; Debt data from Moody's Investors Services

What explains the surprisingly weak market surveillance of provincial finances? And why was market surveillance stronger in the 1990s? The remainder of the chapter addresses these questions. I develop three sets of hypotheses. Each corresponds to one of the core credit beliefs identified in chapter 2: bailout expectations, standalone default risk, and sovereign default risk.

3.3   BAILOUT EXPECTATIONS

Alternative Expectations

There are at least three reasons why we might expect investors to assign higher probabilities of bailouts to provinces than the literature predicts. First, provinces are the country's primary providers of education and healthcare. In 2006, provinces accounted for well over 90 and 60 percent of total national spending on healthcare and education, respectively.[14] As I note above, the federal government provides limited oversight of these areas and is not constitutionally responsible for service outcomes. Thus, the literature predicts minimal national incentive to intervene. Nonetheless, these are sensitive responsibilities and ones that figure prominently in national election campaigns. Thus, in accordance with H2 in chapter 2, I predict a positive relationship between provinces' provision of sensitive services and investors' bailout expectations. Second, the Canadian constitution commits the federal government to indirectly redistributing revenues from revenue-rich to revenue-poor regions. Canada's equalization system is less generous and redistributive than programs in other developed federations and most researchers do not, for this reason, believe it sends credible bailout signals. However, it is constitutionally enshrined, politically stable, and redistributes non-negligible resources across large and politically salient units. It also adapts, if slowly, to provinces' evolving fiscal

---

[14] OECD 2011

conditions (struggling Ontario recently became an equalization recipient) and it is a regular and visible object of intergovernmental bargaining and contestation. For all these reasons, chapter 2 suggests the equalization system signals Ottawa's implicit support.

The third point is less developed with respect to the Canadian case, so I take more time to develop it here. Chapter 2 argues that creditors assign uniformly high bailout probabilities to governments that belong to heavily concentrated sectors or sectors containing exceptionally large jurisdictions (see H5.) In these contexts, default by any unit, even a small one, can trigger contagion by signaling the vulnerability of big borrowers. A big borrower is one that comprises significant shares of national population, output and most importantly, debt. By these measures, the provincial sector is undoubtedly too concentrated to fail. Provinces account for significant shares of national debt and debt, population, and output are heavily concentrated in two provinces, Ontario and Quebec.

One useful indicator of concentration is the national population shares of countries' largest regions. Figure 3.6 compares these shares for the two largest borrowers in eight developed federations plus Italy: Australia (New South Whales and Victoria), Austria (Vienna and Lower Austria), Belgium (Flanders and Walloon), Canada (Ontario and Quebec), Germany (North-Rhine Westphalia and Bavaria), Spain (Andalucía and Catalonia), Switzerland (Zurich and Bern), the United States (California and Texas) and Italy (Lombardy and Campania). The comparison illustrates the heavy concentration of the Canadian sector. As a share of national population, Ontario and Quebec are larger than most regional governments.

Figure 3.6 Population Shares of Largest Regions in Selected Countries
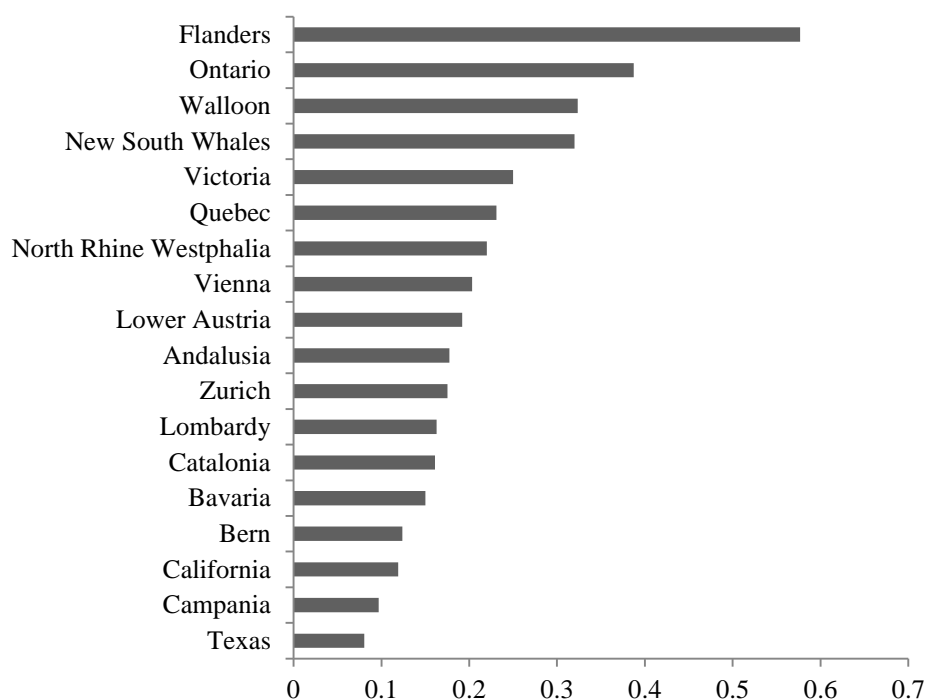
Figure 3.7 Concentration of Regional Population in Selected Countries, Herfindahl Index
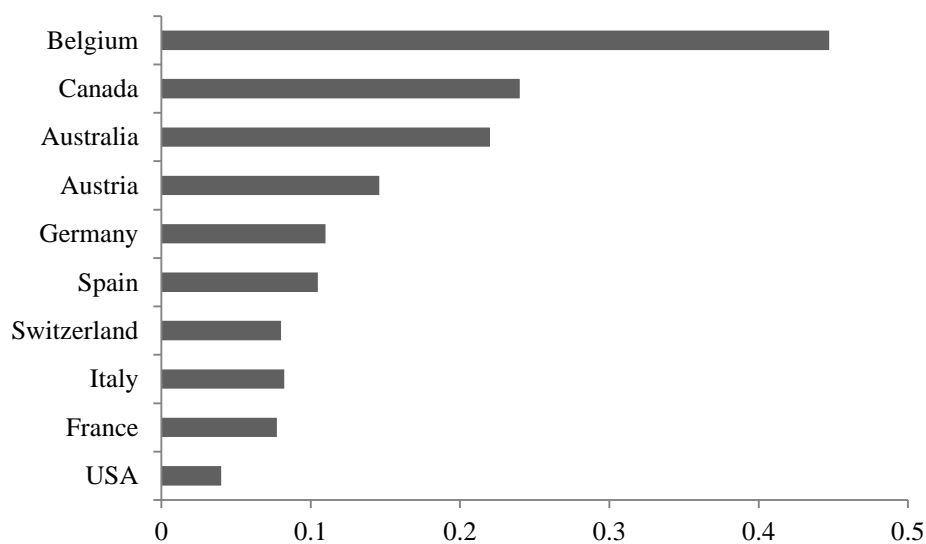
Figure 3.7 applies a broader measure of concentration. It uses a Herfindahl Index, a common tool for measuring firm concentration in industry sectors. The figures are calculated by summing the squared population shares of countries' first-tiered regions. Only Belgium, which consists of just three regions, has a higher score than Canada. Australia's close behind, but the remaining countries trail significantly.

Provinces also have an unusually large presence in debt capital markets, a fact that makes provincial default doubly disturbing for investors. A recent study by TD Economics forecasts that provincial debt will account for roughly 44 percent of total net government debt in 2012-13, up from 41 percent in 2010-11. Provincial debt to GDP is expected to reach 29 percent in 2012-13, compared to 37 percent for the federal government. By contrast, in 2011, regional debt to GDP in Germany and Spain - the EU-27 countries with the most indebted regional sectors - was 25 and 13 percent, respectively.[15] Provincial debt accounted for roughly 25 percent of Canada's investment-grade domestic bond market in 2010, making provinces some of the most prominent names in Canada's major bond indices. Of these amounts, Ontario and Quebec's obligations dominate. According to TD figures, their debts will account for roughly 84 percent of total net provincial debt in 2012-13. The figure goes to 92 percent if British Columbia, the third of 10 provinces, is included in these calculations.[16]

The absolute debts of Canada's largest provinces easily outstrip those of the most indebted US states. In 2010, Ontario and Quebec's net direct and indirect debt stood at roughly $178billionUS and $134billionUS, respectively while California and New York's tax-supported debt stood at $87billionUS and $61billionUS (see figure 3.8), according to Moody's Investors

---

[15] Eurostat, 2012

[16] TD Economics, 2012 and author's own calculations

Services.[17] In 2010, Prince Edward Island, a province of less than 200,000 people, had absolute liabilities exceeding 12 states.[18] Alberta, the next least indebted province and the least indebted in per-capita terms, had more outstanding debt than another 11.[19]

Figure 3.8 Debt outstanding, Canadian Provinces and American States ($USbillions), 2010
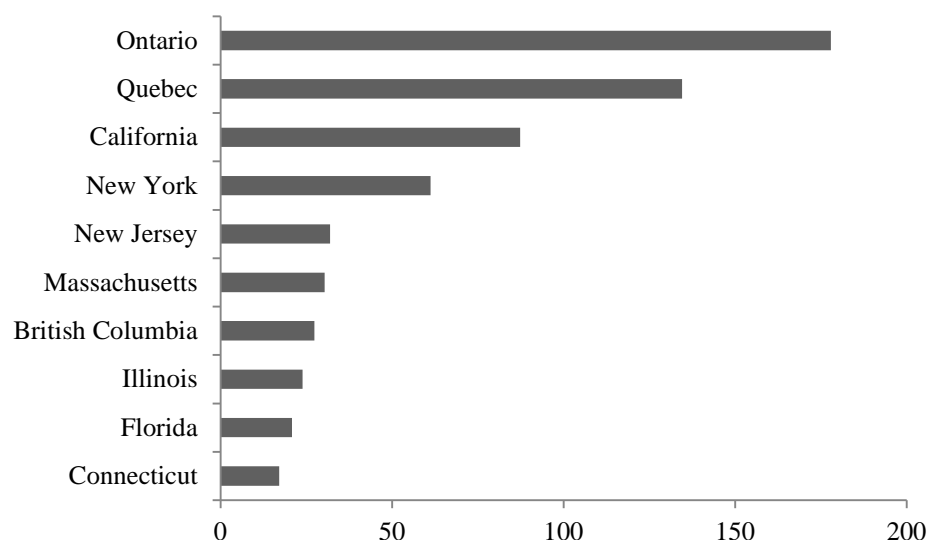
Source: Moody's Investors Services

Provinces are also highly visible in foreign currency markets, yet another factor that distinguishes them from US states and yet another reason why Ottawa may be anxious to backstop their liabilities.[20] Ontario borrows in a raft of foreign currencies, including Euros, US Dollars, Hong Kong Dollars, Australian Dollars, Swiss Francs, Pound Sterling, Norwegian

---

[17] Canadian and US data are calculated by separate units within Moody's and may, therefore, only be roughly comparable.

[18] These states were Maine, Alaska, Arkansas, New Hampshire, Idaho, Vermont, Montana, Iowa, North Dakota, South Dakota, Wyoming, and Nebraska.

[19] Although Alberta has debts outstanding, it is, in fact, a net creditor.

[20] US states rely almost exclusively on domestic retail investors. This is due to the fact that US households are not taxed on municipal bond earnings. This drives down yields and makes these bonds unattractive to institutional and foreign investors, who do not receive similar tax treatment.

Kronor, and Japanese Yen. Smaller provinces have less need for foreign issuance, but several borrow in US dollars, Euros, and niche currency markets. In 2009, the pre-swap foreign currency debt exposures of Manitoba, Quebec, Ontario, and Saskatchewan stood at 24.7, 23.1, 22.4, and 21.7 percent, respectively.[21] These were the highest exposures among developed local and regional governments rated by Moody's. Foreign investment is not limited to provinces' foreign currency debt, however. Non-residents' holdings of provinces' domestic currency bonds have increased significantly in recent years.

In sum, there are at least three reasons why we might expect investors to assign a higher probability of federal support than conventional wisdom assumes. First, provinces are responsible for sensitive social services. Second, Ottawa is formally committed to redistributing resources across salient political units. And third, and most importantly, the provincial sector is too concentrated to fail. The remainder of the section investigates these hypotheses using data from interviews with investors in provincial bonds.

Description of Interviews

I conducted semi-structured interviews with 18 investors in Canadian provincial bonds in the summer of 2012. Roughly 45 percent of interviews were conducted in person. The remainder were conducted by phone. Roughly 80 percent of interviews were organized by debt capital markets teams at three of Canada's major investment banks: Bank of Montreal, Canadian Imperial Bank of Commerce, and National Bank of Canada. These organizations are major

---

[21] These data come from *Moody's Statistical Handbook: Non-U.S. Regional and Local Governments*. For 8 of 10 provinces, these exposures are almost entirely hedged. One of the exceptions is Manitoba, which uses US-dollar revenues from hydro-electricity sales as a natural hedge against its US dollar obligations.

market makers and underwriters of provincial bonds. In 2010, they combined to underwrite nearly 50 percent of Canada's primary subnational bond sales.[22]

Underwriters and their sales teams were asked to identify *major* investors in provinces' domestic bond markets. Two major investors in provinces' US-dollar bond issues were also interviewed. I defined major investors as those most likely to affect the price of a given bond issue. Assuming markets are not entirely efficient (or that all investors are not price takers) these investors have more influence over bond prices than typical market participants. The sample included several of the country's largest asset managers and pension funds. It also included two major American insurance companies. Some small and medium-sized accounts also participated. The investment banks drew the sample from three geographic sub-samples: (1) Ontario (Toronto), (2) Quebec (Montreal), and (3) the rest of Canada (Calgary, Edmonton, Vancouver, and Halifax) and the United States. Knowing confidentiality would be critical to securing participation, I informed participants that I would not attribute views or comments to individuals or organizations. Many participants could not, for legal reasons, be directly cited.

We already have suggestive evidence of bailout expectations from provincial yield data: Interprovincial spreads are tight, despite significant variation in provincial debt loads. But spreads could reflect other factors, including investors' indexing strategies and supply-demand dynamics. Spread data also do not tell us where bailout beliefs come from. The simplest and most effective (i.e. direct) way of measuring and explaining investors' bailout beliefs is asking actual investors.

---

[22] Author's own calculations from data supplied in Alexander, Doug. "RBC Tops National Bank to Lead Provincial Sales: Canada Credit." *Bloomberg* 5 January 2011.

Of course, I could have gathered this information in one of two ways: semi-structured interviews or large-N surveys. I opted for the former. The semi-structured format gives me the opportunity to generate comparable data without comprising opportunities to derive new hypotheses, explore causal mechanisms, refine concepts, and pre-test survey questions (Mosley forthcoming). This process, particularly useful in light of the limited descriptive data in this area, facilitates my longer term goal of developing a large-N survey. With respect to sampling strategy, I employed snowballing techniques. Undoubtedly, this increased participation, particularly among large accounts (see Blinder, et al. (1998) on these issues). I also targeted "major investors" rather than a random sample. This strategy was more efficient given time constraints.

There are, however, drawbacks to my approach. Readers may, for example, have concerns about the confidentiality of survey responses. Comments have not been directly attributed to persons or organizations and participants have not been identified. While necessary to secure participation, these measures make the study difficult to replicate. What is more, while most questions were asked fairly consistently, I took the opportunity to experiment with the phrasing and framing of certain questions. This compromises the comparability of responses to certain questions. However, it provides a rich source of meta-data for developing future surveys. This tradeoff seemed appropriate given our rudimentary understanding of market participants' perceptions.

Measuring Bailout Beliefs

After having interviewees introduce themselves, their firm, and the role of provincial bonds in their portfolio(s), I opened the interviews with the following question: "In general, how likely, in

your view, is the federal government to bail out a province on the *verge* of default?" I emphasized on the "verge of default" to ensure my definition of bailouts was similar to Moody's (see chapter 4). I asked interviewees to rate the likelihood on a scale of 1 to 5, where 1 refers to "very unlikely" and 5 to "very likely." Participants were also asked to justify their beliefs and whether their expectations varied across provinces. I followed these open-ended questions with questions about the relevance of specific fiscal federal factors. In most cases, investors were asked about each of the variables of theoretical interest.

Figure 3.9 displays the frequencies of responses to the opening question for big and small provinces. All but two respondents considered the likelihood of a bailout high: 16 of 18 respondents considered support for large and small provinces likely or very likely. Only three participants assigned big and small provinces different scores. In two of these cases, small provinces received lower scores, in both cases because investors expected their failure to have a smaller economic or financial impact. (One of the participants who gave small provinces a lower score said it only applied to the tiniest province, Prince Edward Island. He scored all other provinces 5.) [23] The only respondent to give small provinces a higher bailout score claimed it was because smaller provinces are less expensive to support. Other investors thought probabilities differed across provinces, but not enough to justify differentiation on a five-point scale. A few investors considered Quebec less likely to receive support if it were on the verge of seceding. (One investor considered Quebec less likely to receive support in general.) I did not create a separate category for Quebec, however, given the lack of imminent secessionist threat.

---

[23] Interview CI-7

Figure 3.9 Investors' Bailout Expectations, Distribution of Responses, 2012
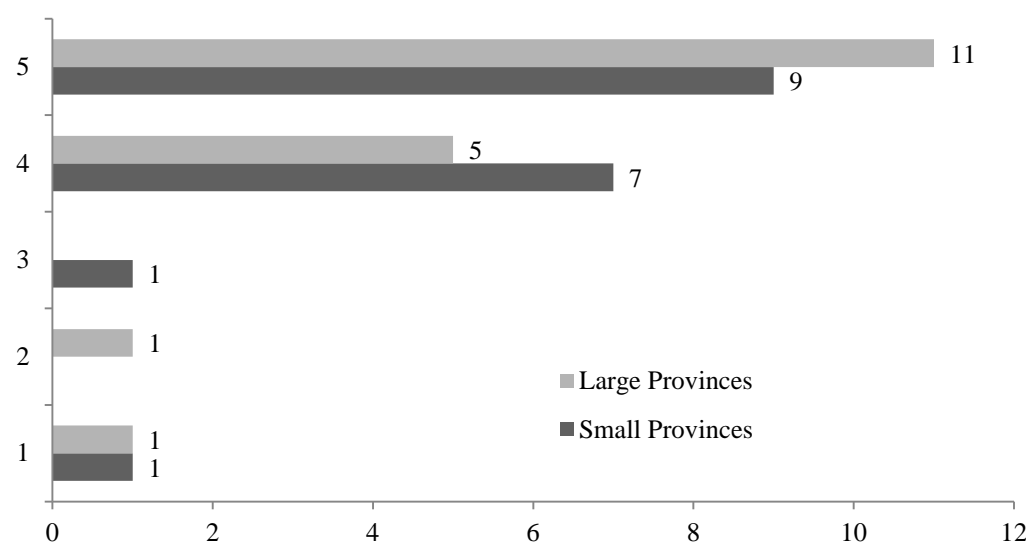
n=18; The figure displays the distribution of investor responses to the following question: "How likely, in your view, is Ottawa to bail out a province on the verge of default, where 5 refers to very likely and 1 to very unlikely."

Investors were often emphatic about the likelihood of a bailout. "I can't foresee the government letting a province default or even [getting] to the verge of default," said one. Ottawa would prevent a default "at all costs," she added.[24] "The likelihood of a bailout is extremely likely, close to 100 percent, 99.9 percent probable with any of the provinces," said another.[25] "One hundred percent likely in my opinion," said a third.[26] "It is a virtual certainty," argued a fourth, who seemed baffled that I would even ask.[27] What is the basis of these overwhelmingly consistent and in many cases, emphatic beliefs?

Financial and Economic Implications of Default

---

[24] Interview CI-3

[25] Interview CI-8

[26] Interview CI-12

[27] Interview CI-14

The most common and emphatic justifications concerned the economic and financial ramifications of a default. Investors spoke to the implications of default for unemployment and growth, the stability of the Canadian currency and domestic bond markets, and Canada's reputation in international credit markets. Sixteen of 18 respondents considered this factor critical. Another interviewee considered it somewhat important.

As one investor put it, a bailout is "something you do or the economy collapses and nobody chooses the latter."[28] Another investor spoke to the implications for bond markets. A provincial default "would really rattle the whole credit market."[29] Asked why Ottawa would bail out a province, one investor retorted, "You don't want a systematic collapse, do you?"[30]

As these and other comments suggest, contagion was clearly on the minds of many, if not most, investors. "Contagion effects are huge," argued one participant. "If you have one province defaulting or having severe financial difficulties, there's always a fear that just like the situation [in] Europe, the weaker provinces could follow." She reasoned the federal government would almost certainly intervene as a result. It would view its role "almost as a CDIC [Canadian Deposit Insurance Corporation] for provinces...Their role is to step in and prevent panic."[31]

There were also frequent references to the implications for Canada's international credit standing.[32] A provincial default would signal "weakness" in the broader economy, said one

---

[28] Interview CI-9

[29] Interview CI-10

[30] Interview CI-14

[31] Interview CI-8

[32] e.g. Interviews CI-1, CI-3, CI-4, CI-5, CI-8, CI-12

investor.[33] "It looks bad on Canada...if a province defaults...Credit markets lock up...There's reduced liquidity. Nobody wants that," said another.[34] "I don't think Canada can let one of the provinces fail, just reputationally."[35]

Some investors believed provinces' reliance on foreign investors created distinct reputational risks. One participant spoke to this issue at length: "Canada has a fairly recent and pretty terrifying experience with being...*persona non grata* in the capital markets. Since then...the federal government...has gotten its house in order and the provinces have allowed their positions to deteriorate and as a result rely on a lot more wholesale foreign funding than they had before...[What's more], we're a pretty small and open economy and we no longer...have a current account surplus." For these and other reasons, he argued, the federal government will "provide the air of stability as long as it can."[36] Note, however, that this and other investors did not necessarily think that Ottawa was any more likely to protect a province's domestic than foreign obligations. Indeed, some investors thought Ottawa was more likely to bail out domestic bondholders.

Some investors suggested that the European debt crisis increases the financial motivations for bailouts. According to one pension fund manager, "It's exaggerated, but I really think Ottawa believes Canada's the best managed economy in the world. They're not going to want to risk losing that [reputation]" by allowing a province to default.[37] A credit analyst

---

[33] Interview CI-1

[34] Interview CI-3

[35] Interview CI-4

[36] Interview CI-6

[37] Interview CI-5

compared the current context to the recession in the 1990s, arguing that Ottawa's more likely to assist a province now than then. "Things have changed... I think we've seen how unstable the markets can be." She said the effect of the European debt crisis on the Canadian and American markets is "huge: The markets...follow those headlines everyday....I think everyone is just a little more cautious now, including governments. They can see...how...liquidity dries up. And I think the focus is trying to avoid that at all costs."[38]

Judging from these comments, it is possible that elevated bailout expectations reflect recent turmoil in financial markets rather than the factors identified in the theoretical chapter. However, there is evidence that bailout expectations were high prior the crisis as well. First, national-provincial and interprovincial spreads were extremely tight (even tighter than current spreads) prior to the financial crisis. Second, Moody's, the only rating agency to publicize the bailout probabilities it assigns to subnational governments, puts the probability of a provincial bailout at .80, the same score it assigned provinces when it began issuing bailout probabilities in late 2006.

Small Provinces, Contagion, and Too Big to Fail

As I note above, investors' bailout expectations do not differ significantly across big and small provinces. Investors' proposed several reasons for this. Many said that while big provinces (i.e. Ontario and Quebec) are too big to fail, small provinces are too small to fail. "I mean for a small province, why wouldn't you?" asked one investor rhetorically. "And then for a large province it's too important to let go."[39] Some even suggested that the negligible costs of saving small

---

[38] Interview CI-3

provinces made them more likely to receive support, though only one of these respondents assigned small provinces a higher likelihood of a bailout on the five-point scale.[40]

Clearly, most investors consider Ontario too big to fail. "The reputational risk [of a default], with 35 billion dollars of Ontario debt being issued annually, it's huge," argued one investor. "And Ontario is 40 percent of Canada's GDP, so I don't know how Canada as whole [wouldn't] be marred by a default in a province like that."[41]

Interestingly, however, investors did not think provinces had to be big in order to trigger some or even a lot of contagion.[42] All those asked or who raised the issue themselves (15 in total) thought failure by a small province would induce at least some contagion. Consider the following remarks:

> Default by a small province "would still be a pretty big deal for Canadian markets...We're a highly rated country. People find safety in our assets. Even for a small province to default, it's...pretty significant, [so]...I think all provinces would be treated equally."[43]

> "You may be tempted to bail out a larger province like Quebec or Ontario because...if [they flub], the potential economic disruption to the whole federation would be greater. But what's the implication? If you don't bail out a small province that potentially sets a precedent for...not bailing out a big province."[44]

> The reputational risk of a big province defaulting is bigger, but "even [for] the smaller provinces, I think there's huge reputational risk."[45]

---

[39] CI-12

[40] CI-17

[41] Interview CI-8

[42] Interviews CI-1, CI-2, CI-3, CI-4, CI-5, CI-6, CI-7, CI-8, CI-9, CI-10, CI-13, CI-14, CI-15, CI-16, CI-18

[43] Interview CI-3

[44] Interview CI-10

[45] Interview CI-8

"There [is, irrespective of provinces' size], a fair amount of homogeneity with respect to how provincial credit trades in the market. Unless there is some significant headline risk going through, they basically trade in a synchronous fashion."[46]

While the terms of bailouts would probably differ, "I think Canada and the federal government [have] an interest...in making sure the reputation of the country as a whole remains intact. I don't think it would matter whether it's PEI or the province of Ontario."[47]

"Just the fact that a Canadian government entity was to essentially to fail...The fact that that would happen to anybody would be a negative. And even though the impact would of course be lower [for] some...provinces, there would [still] be concern and [Ottawa] would want to prevent that from happening."[48]

Some responses to this question were nuanced in various ways. One investor, for example, believed that default by any province, save Prince Edward Island, would trigger contagion.[49] Another thought that contagion caused by a small Maritime Province would be limited to that region.[50] Yet another respondent pointed to an interesting interactive effect explored in more detail in chapter 6. He claimed the likely contagion from a small province defaulting increases with the number of foreign investors in provincial bond markets: "A Canadian investor might be able to distinguish that [a default by PEI] is not a big deal, but internationals will say...'Is this a province that went bankrupt? Okay, we won't buy Ontario anymore just in case.'" He sympathized with this thinking, citing his own nervous experience with Spanish regions: "I don't know one [region] from the other...We got rid of our Spanish

---

[46] Interview CI-6

[47] Interview CI-1

[48] Interview CI-2

[49] Interview CI-4

[50] Interview CI-14

bonds a couple years ago...just [because of] the headlines...not knowing particularly if one [region] was better or worse."[51]

The Transfer System

Contrary to theoretical predictions, Canada's minimalist transfer system does not appear to undermine markets' bailout beliefs. Indeed, if anything, it appears to have the opposite effect. Fifteen of 18 respondents indicated it sent at least a somewhat significant and positive signal,[52] though their justifications for this belief varied. Twelve of 18 (or 12 of 16 if the two American investors are excluded) highlighted the importance of the equalization system, either as a bailout signal or as a mechanism for precluding an imminent default scenario.[53] As one participant claimed, it speaks to the country's "nature:" "It just goes to show the type of mentality that exists in Canada; that we're trying to get everyone on an equal footing."[54] Alluding to the crisis in Europe, another claimed Canada's "transfer union" was already in place. He observed the system's ability to adapt to provinces' shifting fiscal fortunes, noting that struggling Ontario recently became an equalization recipient. He believed Canada's "collectivist approach" to intergovernmental arrangements was firmly established and that bailouts would be easier to implement than in Europe or the US.[55] Another participant described bailouts as logical

---

[51] Interview CI-15

[52] Interviews CI-1, CI-2, CI-3, CI-5, CI-6, CI-7, CI-8, CI-9, CI-12, CI-13, CI-14, CI-15, CI-16, CI-17, CI-18

[53] Interviews CI-1, CI2, CI3, CI-5, CI-6, CI-12, CI-13, CI-14, CI-15, CI-16, CI-17, CI-18

[54] Interview CI-15

[55] Interview CI-6

extensions of the equalization principle. If a province is already receiving equalization payments, then "why wouldn't [it] take additional steps to give them more money?" he asked.[56]

Some described the equalization system as a form of "permanent" or "perpetual"[57] bailout. In a similar vein, others argued that it more or less precluded an imminent default scenario. As one investor put it, "I can't foresee the government letting a province default, or even [getting] to the verge of default. I think the transfer payments...prevent that."[58] According to another,

> I would view [a bailout as highly likely] based on how the transfer system is already working. For years and years we've had the federal government collect taxes from all the provinces and from all the people in the provinces and then [it] doles it back out...and the provinces with have-not status generally receive more of those funds back via transfer payments than the provinces that are in a better position...That in and of itself mitigates a lot of [default] risk.[59]

Of course, these comments stretch the definition of a bailout as I have defined it: They refer to forms of ongoing support whereas I asked about the likelihood of support for provinces on the "verge" of default. Participants' usage is, however, consistent with definitions regularly employed in the literature and speaks to the image of a broadly supportive federal government. Interestingly, this sentiment was shared by the *only* investor who considered the probability of emergency assistance "very low." The interviewee, who assigned bailout scores of 1 for both big and small provinces, claimed transfer arrangements and the equalization system in particular rendered an imminent default scenario virtually impossible. Given the redistributive and liquidity provisions already in place, a full-blown solvency crisis would, in his mind, require a fiscal

---

[56] Interview CI-2

[57] Interviews CI-6, CI-8, CI-9

[58] Interview CI-3

[59] Interview CI-13

shock or political ineptitude of almost unimaginable proportions (I did not, for obvious reasons, count this participant among those who attributed the equalization system a positive effect.)[60]

At least two investors did not necessarily think the transfer system signaled a moral or political commitment to providing support. However, they did consider a bailout highly likely and viewed the transfer system as a useful means of channeling it.[61] It provides a convenient "workaround," as one put it.[62] "The system is in place to help equalize the level of social services and help pay for healthcare and education and things like that. So I think there's already a level of support within the system," said another. "The fact that it's already in place may make it easier to increase transfers to certain provinces...I think that's a very important factor."[63]

Social Services

Several investors also considered provinces' provision of sensitive services a motivation for federal bailouts.[64] A smaller number (at least 3) considered this factor most important. Consider the following comments:

> If ...[and] you're seeing this in Athens now, hospitals are not even getting basic drugs; nurses, doctors are working that haven't been paid for weeks...it's a really, really dire situation...[If provinces are unable to provide those services]...that's where the federal government would be going, 'we've got to keep the province

---

[60] Interview CI-11. Indeed, this was precisely why he believed a province would not receive emergency relief: Ottawa would refuse because the province would have to have been behaving recklessly. He added, however, that Ottawa would reserve this harsh treatment for insolvent provinces. Solvent provinces facing a liquidity crunch could, he said, expect emergency funding from the Bank of Canada.

[61] Interviews CI-7, CI-9

[62] Interview CI-9

[63] Interview CI-7

[64] Interviews CI-1, CI-3, CI-6, CI-10, CI-12, CI-13, CI-14, CI-17

functioning, it has to keep delivering those two core services [education and especially healthcare].'[65]

This same investor also claimed Ottawa's first priority would be paying service providers, not bondholders. He still put the likelihood of a bond bailout at 4, however. According to another participant:

> When you look at what the provinces are responsible for...on a day-to-day basis...you've got services that you have to provide that are essential services...It's very likely that the rest of Canada would...say, 'Wait a second, we can't say we're not going to have any doctors left in Prince Edward Island, because the province can't afford to pay them.'[66]

In many cases, it was difficult to disentangle investors' views on the transfer/equalization system from their thoughts on service provision. Consider the following comment. It emphasizes the importance of healthcare and education, but also invokes the equalization principle:

> There are basic minimums in terms of what is delivered medically and in terms of education...I don't think there's any interest in seeing any province fall short of those basic minimums, cause that would cost [the federal government] too much...I would say there's an unspoken compact that nobody would fall below those [basic minimums]. If you're a Canadian, you expect to have certain minimal levels of services delivered.[67]

Another investor, when asked about whether the probability of a bailout differed across big and small provinces, responded:

> The [federal] government talks about equalization and making sure that social services and healthcare and everything else [are] equally applied across the country, so you [would] think the government would treat every province equally and if any province got into difficulty that the federal government would treat it the same way.[68]

---

[65] Interview CI-10

[66] Interview CI-13

[67] Interview CI-12

[68] Interview CI-1

Recent developments in fiscal federal relations

Investors were also asked whether recent developments in fiscal federal relations between Ottawa and the provinces had affected their bailout expectations. As I note above, the federal Conservatives have pursued a so-called "open federalism" agenda aimed at further clarifying and disentangling intergovernmental responsibilities and finances. These developments, recently applied in the healthcare field, reinforce Canada's dualist fiscal arrangements and might, if one accepts the prevailing wisdom, dampen investors' bailout expectations.

Investors appeared to have varying degrees of knowledge about these developments, but only 1 of 18 participants considered them significant. One participant acknowledged that Harper is trying to "fix expectations of what provinces are receiving, but it doesn't really affect whether a province will get a bailout."[69] According to another, "Harper...changed the formula for the Canadian Health Transfer...I'm not sure there was a lot of consultation in advance of Harper's announcement...and hence some of the irritation from the provinces. But I don't think that has a bearing on how shrewdly the federal government will assess the need to bail out a province at some point in the future."[70]

Several investors suggested that the Conservative government might insist on stiffer conditions for bailout recipients, but the consensus (if only implicit in the minds of some) was that the question of bailouts is a non-partisan issue: The Conservatives "might impose more restrictions or more austerity [on provinces in the case of a bailout] but ultimately I think they would still have to bail them out. They are more fiscally responsible in general, not to say that

---

[69] Interview CI-9

[70] Interview CI-10

Paul Martin and the Liberals weren't, but it does not affect my ultimate view," argued one asset manager.[71] "In my opinion, a bailout is just [not an] option and it's irrelevant [who] the current political party [is]...All parties would agree that it [is]...their role to step in and stabilize...[the] economic turmoil," said another.[72] One investor, who remarked upon Canada's fundamentally "centrist" and "narrow political spectrum," suggested the Conservatives might be more willing to "play hardball," allowing provinces to go to the brink in order to exact certain political demands, but that ultimately that sort of strategy is mere "preamble," because if "it ever came to a cataclysmic scenario...there would be...some kind of horse trading" and a deal would get struck.[73] According to another participant, "The federal government has...been a lot more hard line in dealing with the provinces as far as giving them extra funds...[But] that's [a] significant ways away from...a province defaulting and shutting down schools and hospitals."[74] One investor acknowledged the current government's recently imposed caps on equalization and other transfer arrangements, but said he did not, broadly speaking, "see any real changes on the federal government's side....[Equalization is] enshrined in the constitution."[75] An American investor said the only conceivable obstacle to a bailout, in his mind, was the rise of an extremist political element like the Tea Party.[76]

Distilling the results

---

[71] Interview CI-15

[72] Interview CI-8

[73] Interview CI-6

[74] Interview CI-13

[75] Interview CI-14

[76] Interview CI-4

The interviews provide evidence for each of my major hypotheses. First, several investors believe provinces' responsibility for healthcare and education might motivate a federal bailout. A small number even considered this factor most important. Second, Canada's minimalist transfer system does not appear to send negative bailout signals. Indeed, if anything, it increases the likelihood of a bailout in the eyes of most investors (15 of 18). The reasons for this varied. Several respondents (12) focused on the equalization system. Some suggested equalization guarantees residents certain minimum standards of service provision, regardless of where they live. Some characterized equalization as a permanent or perpetual form of bailout for have-not provinces. Others viewed bailouts as logical extensions of the equalization principle. Others did not think the transfer system implied a political or moral commitment to bailing out provinces, but expected a bailout all the same and considered existing transfer arrangements a useful means of channeling it.

By far, however, investors considered the economic and financial consequences of a default most important. Nearly all investors considered these factors most critical and nearly all identified them in open-ended questions about Ottawa's motivations.

Investors also assigned near-uniform scores to all provinces, regardless of size. Only three differentiated among big and small provinces and by one notch in each case. Probably no one reason explains investors' reluctance to differentiate among provincial borrowers. But one is the widely held belief that a default by any province, big or small, would be contagious. These are precisely the beliefs we would expect investors in provincial bonds to hold. The provincial sector may be too concentrated to fail: It consists of two massive and heavily indebted provinces.

A default by Prince Edward Island or New Brunswick could raise the specter of Ontario or Quebec's failure. A few investors drew this link explicitly.[77]

But the uniformity of scores appears to reflect other factors as well. Some participants linked it to Ottawa's commitment to equalizing resources and social provision across provinces. Others spoke of small-province contagion, but did not explicitly link it to big provinces. Subsequent chapters will revisit these issues in comparative context.

Chapter 6 briefly examines the question of bailout expectations in Germany. I examine rating agencies' assessments of bailout probabilities in this country as well and it is worth touching on broad differences here. The most general difference is the emphasis on economic versus political and legal motivations for bailouts. Several Canadian investors attribute Ottawa political and social motivations, but economic externalities were foremost on their minds. In Germany, the emphasis is on the system of revenue equalization and the constitution's solidarity principle, which the Constitutional Court has used to order bailouts of states unable to uphold their constitutional obligations. Without a doubt, Germany's equalization system and solidarity principle send more powerful bailout cues than their Canadian equivalents (a limited equalization system and vague constitutional commitment). This is hardly surprising.

Nonetheless, one is struck by Canadian investors' frequent references to equalization's positive effects (identified by 12 of 18 investors and 12 of 16 Canadian investors). One is also struck by the fact that Canada's limited transfer system rarely suggests that Ottawa would *not* assist a province (only once was this notion clearly conveyed). One possible lesson to draw is that even relatively limited equalization systems have the capacity to communicate bailout commitments if they are (at least nominally) constitutionally entrenched and redistribute

---

[77] Interviews CI-9, CI-10, CI-16

resources across politically salient units. The visibility and stability of these arrangements suggest a permanent form of political and fiscal support even if, in reality, that support is modest.

But bailout beliefs are only one aspect of credit risk. What are the implications of Canada's fiscal federal structures for other essential credit beliefs?

3.4   STANDALONE DEFAULT RISK

In chapter 2, I argue that fiscal federalism has important implications for standalone creditworthiness or governments' independent capacity to honor their debts. One of the main ways intergovernmental institutions shape this capacity is by determining subnationals' autonomy to independently adjust expenditures and revenues. The ability to cut spending and raise taxes is a major advantage for governments facing long-term fiscal challenges and shocks.

Canadian provinces have considerable legal capacity to manipulate taxes and spending. The Canadian Health and Social transfers notwithstanding, national restrictions on provincial spending are extremely limited. Provinces' principal constraints come from provincial voters. A large portion of provincial spending is concentrated in healthcare and education, two areas that are extremely difficult to retrench. Indeed, provincial healthcare spending continues to grow at considerably faster rates than provincial revenues. Provinces also spend considerable sums on unionized salaries. Finally, capital spending, a more flexible spending category, comprises a small share of provincial budgets.

The rigidity of provincial spending is highlighted by the rating agencies. Both S&P and Moody's consider containing healthcare and education costs major credit challenges. According to S&P, provincial services and wage commitments give provinces "virtually no scope to reduce these expenditures" (S&P 2007, 13). S&P highlights these rigidities in comparative perspective.

It has developed an expenditure flexibility index comparing the flexibility of 21 groups of subnationals. Provinces rank 18 of 21. But despite the low ranking, cross-national variation in expenditure flexibility is limited, a point addressed in more detail in chapter 5. Thus, provinces are not necessarily disadvantaged, in any fundamental sense, relative to other regions.

Provinces have greater flexibility on the revenue side. They have access to a wide range of revenue streams, including personal and corporate income, gasoline, tobacco, dividend revenues from provincial enterprises and natural resources. They also have wide autonomy to determine tax rates.

Provincial budgets are also free of the self-imposed revenue-limits that contribute to higher risk premia and lower credit ratings for US states. Some provinces have adopted these rules,[78] but provincial limits are not nearly as effective, frequent or comprehensive as their US counterparts (Clemens, et al. 2005). And because they are imposed by statute, they are easier to repeal than states' constitutional limits.[79]

Provinces do, however, face political and economic resistance to tax increases. They rely heavily on corporate income tax (a highly mobile stream) and personal income tax (a moderately mobile, but politically constrained stream). In 2009-10, provinces' personal income over total tax revenue was, on average, 24 percent. Corporate income tax accounted, on average, for another 7 percent.[80] Rating agencies recognize these constraints, but seem more impressed with provinces' legal capacity to affect tax rates and bases. Provinces rank third of 21 groups on S&P's revenue

---

[78] Manitoba, for example, is required to hold a referendum in order to raise major tax rates.

[79] And provinces have overturned these limits. Ontario, for example, repealed referendum requirements for major tax increases when the Harris Conservatives left office.

[80] Dominion Bond Rating Service (2011)

flexibility index and fourth overall on its fiscal flexibility index (which combines measures of revenue and expenditure flexibility). As for Moody's, it claims that:

> Provinces…retain wide discretion over expense decisions providing substantial flexibility to address fiscal challenges and meet policy objectives…While…it might be politically difficult for provinces to alter their expense programs or revenue bases significantly, provinces are not bound by requirements for referenda or supermajorities – as is the case for some US states – to raise revenues or cut expenditures…There are no major legislative hurdles to fiscal policy adjustments…This high degree of fiscal policy flexibility supports higher debt burdens at equivalent levels of credit risk (Moody's 2010b).

In short, provincial creditworthiness is bolstered by high levels of fiscal flexibility, particularly on the revenue side. Rating agencies acknowledge this autonomy and link it to higher provincial ratings.

3.5   SOVEREIGN RISK

The global financial and sovereign debt crises have triggered a sharp divergence in sovereign risk premia. These movements have important implications for subnational borrowers. For one, they affect the benchmarks (sovereign lending rates) used to price subnational debt. Subnational borrowing costs closely track sovereign levels. Second, sovereign creditworthiness affects the credibility of the sovereign's implicit bailout guarantee.

Provinces have benefited immensely from Canada's current safe-haven status. Canada has been one of the major beneficiaries of the global flight to quality. There are several reasons why. First, unlike members of the euro area, the country retains an independent monetary policy, effectively guaranteeing liquidity for the country's bondholders. Second, the country's debts are almost wholly denominated in domestic currency. Third, its North American location gives it a degree of insulation from the euro area debt crisis. Fourth, the country's fiscal position is

relatively stable. Despite a relatively high debt load, its operating deficit is the smallest among G-8 countries. Fifth, in an era of intense financial volatility, the country's banking system remains a pillar of stability. The World Economic Forum has ranked it the most stable in the world four years running. Sixth, the country benefits from a unified political leadership. There is broad political consensus to see current austerity measures through and Canada's Westminster-style government does not suffer from American or European-style gridlock. Finally, the country has a recent track record of aggressive fiscal consolidation. Canada is widely cited as a case study in fiscal discipline, having restored its fiscal health in the 1990s after suffering a dramatic increase in government debt, a massive currency depreciation, and losses of its AAA credit rating and prestige in international credit markets.

The country's safe-haven status is evident in a number of common measures of sovereign risk. Canada retains its AAA rating with all major international rating agencies. Yields on 10-year Canadian bonds had, at the time of writing, fallen well below 2 percent. And the country has seen a noticeable improvement in its rankings in the Institutional Investor's semi-annual survey of Country Credit. It was ranked third (behind Norway and Switzerland) at the time of writing.

This has resulted in a sharp drop in yields on provincial bonds, even while national-provincial spreads continue to widen. Low interest rates have helped offset growth in debt servicing costs caused by rising borrowing. Indeed, as a percentage of total revenue, provinces' average net interest costs decreased from 13.7 to 13.1 percent from 2007-08 to 2010-11 and all provinces' interest costs remain below their 2002-03 levels.[81]

But the provinces' dependence on Ottawa's safe haven status is also their greatest vulnerability. Provincial credit conditions are, by and large, as strong as investors' confidence in

---

[81] Dominion Bond Rating Service, 2011

Canada and currently, Ottawa instills much confidence. But Ottawa's 'halo effect' is tenuous. Canada's productivity levels are abysmally low, the economy has grown increasingly dependent on volatile commodities, its exchange rate is uncompetitive, household debt exceeds American levels, the housing market is overheated, and rating agencies are beginning to raise concerns about the health of the country's banks. All of these factors make Canada extremely vulnerable to negative global shocks. If Canada does falter, it will undermine provincial credit conditions through multiple channels. It will increase the provincial debt-to-GDP level; tarnish provincial brands in domestic and international credit markets; undermine investors' confidence in Ottawa's bailout commitments; and trigger transfer cuts should Ottawa decide to prioritize its own finances over provinces'. Under these conditions, the easy credit conditions of today may give way to a repeat of the harsh realities of the 1990s.

3.6   SUMMARY AND ANALYSIS TO COME

This chapter has reviewed recent developments in provincial credit conditions. The case study serves three critical purposes. First, it provides a crucial case for testing prevailing theories of market discipline. Second, it shows that prevailing theories do not hold. Third, it provides preliminary evidence for an alternative set of expectations developed in chapter 2.

Of course, the notion of a single case dethroning established theory is controversial, no matter how "crucial" the case may seem (Gerring 2007). This is why the following chapters bring additional and comparative evidence to bear.

One shortcoming of the chapter, in the author's view, is its failure to reconcile provinces' current credit conditions with their struggles in the 1990s. The clear suggestion towards the end of the chapter is that much of the difference reflects evolutions in sovereign risk: Canada's

current credit standing supports lower interest rates and stronger bailout expectations. It is also true that provincial debt levels remain well below their mid-90s peaks. Still, the question remains: If Ottawa's implicit bailout commitments were as (or nearly as) strong as they were in the 1990s, then why were some provinces nearly locked out of capital markets? I return to this question in chapter 6.

4 BAILOUT EXPECTATIONS

4.1 INTRODUCTION AND HYPOTHESES

Bailout expectations are important determinants of market constraints. Subnational governments, banks, state-owned enterprises, and other entities are often able to borrow at rates lower than their fiscal fundamentals or balance sheets would dictate, because creditors assume their debts are guaranteed by a higher fiscal power.

For those writing in the market-preserving federalism tradition, implicit guarantees are a major cause for concern. They threaten economic stability by encouraging governments to accumulate unsustainable debts. Implicit guarantees may also encourage local politicians to subsidize struggling businesses, provide rents to interest groups, engage in corruption and pursue inefficient forms of market intervention (Weingast 2009, 280). For scholars on the left, there is a silver lining. Soft budget constraints can shield subnational fiscal policy from the race to the bottom dynamics that undermine the viability of big government and the welfare state (Obinger, Leibfried and Castles 2005).

Pushing aside these normative debates, this chapter looks at the empirical drivers of market participants' bailout beliefs. It builds on the previous chapter by examining these determinants in cross-national perspective. The principal source of data is bailout probabilities assigned to local and regional governments by Moody's Investors Services. I analyze these

scores statistically and compliment the analysis with a qualitative look at rating reports issued by Moody's and the other major international rating agencies, namely Standard and Poor's and Fitch.

The chapter tests several hypotheses developed in chapter 2. First, I expect a non-relationship between transfer dependence and bailout scores. Transfer systems are complex. They are governed by myriad political and institutional factors and interact with several other variables besides. Thus, I expect rating analysts, like the Canadian investors interviewed, to look for clearer indications of implicit support.

Second, I expect a positive relationship between bailout scores and the sensitivity of subnational expenditure assignments. Specifically, I expect higher scores for subnationals responsible for universal services or services that command broad national constituencies. Chapter 2 singles out education and healthcare as the two areas most likely to fuel bailout expectations.

Third, I expect a conditional relationship between the sensitivity of services and officials' formal obligations in the subnational field. Some central officials involve themselves in subnational policy through the federal spending power while others are constitutionally committed. The latter commitments likely increase the blame national officials incur for local service failure. They also give constitutional courts greater leeway to enforce the center's formal commitments. Equal living conditions mandates committing governments to securing equal or comparable levels of services to all residents, regardless of where they live, should exert similar effects. Equalization commitments vary, however, in terms of their enforceability and redistributive scope. More enforceable and redistributive systems are likely to generate firmer bailout expectations.

But the effects of constitutional obligations and expenditure assignments are not unconditional. I have also argued that officials in developing countries are less likely to abide by their implicit and in some cases explicit social and constitutional commitments. Developing countries have weaker capacities to tax and borrow. They also have less capacity to detect subnational liquidity crises. Finally, they have weaker incentives and capacities to provide and sustain social spending. Thus, I expect the effects of expenditure assignments and formal obligations to increase with levels of economic development.

Fifth, I argue that some subnational sectors are too concentrated to fail. Heavy concentrations of national output, population, and debt in limited numbers of territorial units increase the systematic risk of any one government defaulting, even a small one. Thus, I expect high and relatively uniform bailout scores within concentrated sectors. The key hypotheses may be summarized as follows:

H1: The level of transfer dependence will have no impact on bailout expectations.

H2: Subnational responsibility for sensitive services (i.e. healthcare and education) will positively affect bailout expectations.

H3a: Co-responsibility for sensitive services, equal living conditions clauses, equalization requirements, and other formal constitutional obligations to assist subunits will positively affect bailout expectations.

H3b: The impact of formal equalization commitments on bailout expectations will be conditional on their enforceability and redistributive scope. Expectations will increase with enforceability and redistributive impact.

H4: Low levels of national economic development will negatively impact bailout expectations and weaken the positive signals that come from the provision of sensitive services and formal obligations.

H5: Bailout expectations will increase for all governments that belong to sectors with exceptionally large and especially exceptionally indebted jurisdictions in it.

More generally, I argue that bailout expectations are more likely to vary across than within countries. This is most evident with respect to H5: the notion that government sectors, rather than individual governments, are too concentrated to fail. However, it is also implicit in the arguments about expenditure assignments, constitutional obligations, and economic development. Local responsibility for healthcare, education, and other universal services transforms local service failures into threats to basic social rights; rights that central governments have sworn, implicitly or explicitly, to uphold. Fiscal equalization and joint responsibility for services signify general commitments to assisting fiscally weak and distressed units. And national economic development affects the incentives and capacities of central officials to help all jurisdictions.

The remainder of the chapter is organized as follow. Section 4.2 reviews and critiques existing empirical work on subnational bailout expectations. Section 4.3 justifies the value of dependent variables generated by credit ratings agencies. Section 4.4 analyzes the data statistically. Section 4.5 analyzes them qualitatively. Section 4.6 concludes.

4.2   STANDARD EMPIRICAL APPOACHES

Bailout expectations are notoriously difficult to measure, particularly across countries. In the absence of survey data, researchers have employed a variety of indirect approaches. This section discusses three: statistical analyses of fiscal outcomes, statistical analyses of credit ratings and risk premia, and qualitative analyses of materials issued by major credit rating agencies.

Perhaps the most common empirical strategy is to regress subnational budget balances, debt loads, or some other fiscal outcome on the vertical fiscal imbalance (VFI) or the proportion of transferred over total revenues (a common measure of transfer dependence) (Bordignon and

Turati 2009, Crivelli, Leive and Stratmann 2010, Rodden 2006b, Rodden 2006a, Rodden 2002).

A negative relationship between VFI and fiscal performance is taken as evidence that governments are under limited pressure to balance their budgets, presumably because creditors, voters, local politicians, or some other combination of actors interpret dependence as an implicit guarantee on subnational debt.[1] But there are at least three problems with this approach. First, it does not tell us whether dependence affects fiscal performance through bailout expectations or some other intervening process. Might, for example, higher deficits reflect governments' inability to raise taxes? Second, a fiscal outcome does not tell us whether pressure for fiscal consolidation comes from creditors, local politicians, voters, or some other group of actors. Instead, it forces the analyst to assume that these actors share similar expectations and influence fiscal policy in similar directions. Third, by using a fiscal outcome, researchers confound two potentially distinct outcomes: fiscal discipline and fiscal performance. Consider the causal logic implied by the usual empirical setup. A hard budget constraint (or lack of bailout guarantee) induces local officials to raise taxes, cut spending, and make other politically costly fiscal adjustments and these measures lead, in turn, to lower debts and budget surpluses. There is no allowance for the possibility of austerity-induced fiscal contractions.[2]

A second strategy takes a more direct approach. It examines the effects of dependence on subnational credit ratings or risk premia. Although they do not all examine the drivers of bailout expectations, analyses of national-subnational spreads and credit ratings have been conducted with respect to the Canadian provinces (Booth, Georgopoulos and Hejazi 2007, Cheung 1996,

---

[1] Not all of these studies are interested in the expectations of creditors *per se*. They may be interested in the bailout expectations of other actors.

[2] This may seem unlikely at the subnational level, where governments are responsible for smaller and therefore less macro-economically consequential shares of government spending. But it is not inconceivable, particularly with respect to big spending jurisdictions like Australian states or Canadian provinces.

Landon and Smith 2000), American states (Alesina & Nadler, 2012; Poterba & Rueben, 1999)

German Länder (Heppke-Falk & Wolff, 2007; Nadler & Hong, 2011; Schulz & Wolff, 2009) and

small numbers of different subnational groups (Schuhknecht, et al. 2009, Lemmen 1999). These

studies have the virtue of isolating market constraints from those exerted by voters and

politicians. However, when it comes to analyzing bailout expectations, they have two distinct

drawbacks. First, they still do not tell us whether market participants' responses to dependence

reflect their bailout expectations or some other aspect of credit risk. Second, with the exception

of Gaillard's (2009) analysis of Moody's ratings, analyses of subnational credit conditions are

limited to one or a very small number of subnational groups.

A third approach is Rodden's qualitative analysis of S&P credit ratings (Rodden 2006b,

Rodden 2006a). Rodden looks for indications of the agency's bailout perceptions in rating

agencies' commentary and reports. He also plots the correlations between ratings and the debt to

own-source revenues of five groups of subnationals: the Australian states, Canadian provinces,

German states, Spanish regions, and US states. His analysis provides one of the most direct tests

of bailout expectations, so it is worth briefly reviewing his results. He finds that ratings are most

sensitive to the debt levels of the two most independent groups (Canadian provinces and US

states) and less sensitive to the debt levels of more dependent group (Australian states, German

states, and Spanish regions). Rodden concludes that while "much hinges on the specifics of the

transfer system and there is considerable variation across subnational units within countries, the

credit rating data do suggest a clear cross-national relationship between overall transfer

dependence and bailout expectations" (Rodden 2006a, 94).

Of the three, my analysis most closely resembles Rodden's. Like him, I examine

materials from rating agencies. However, my study enhances his approach in three respects.

First, I have direct measures of bailout probabilities. Thus, I can analyze their determinants statistically and need not infer them by comparing bivariate relationships between ratings and debt levels within countries. Second, my analysis draws on a much broader sample. The number of governments rated by Moody's and other major rating agencies has grown considerably since Rodden's analysis. Third, I draw on explicit justifications of bailout scores provided by Moody's in the agency's rating reports. These justifications were not available at the time of Rodden's study.

4.3   ON THE USE OF CREDIT RATINGS DATA

The empirical analysis relies heavily on opinions and data supplied by major international rating agencies. Before engaging in the analysis, I address potential objections to the use of these data. One possible criticism is that it is creditors and not rating agencies that ultimately determine market constraints, i.e. borrowing costs and access to credit. Interviewing or surveying investors as Mosley does in her study of sovereign bond markets (Mosley 2000, 2003) would seem, therefore, to offer a superior approach. I agree and this is why I interviewed investors in Canadian provincial debt. However, a broadly cross-national survey is impracticable for several reasons. First, the globalization of subnational debt markets is limited, much more limited than the globalization of sovereign debt. It is impossible, therefore, to survey a group of marginal or influential global investors as Mosley does, because these investors do not exist.

A key advantage of the ratings data is that the big three (Moody's, Standard and Poor's, and Fitch) use one methodology each for rating all local and regional governments outside of the

United States.[3] Not only are these data readily available. They are also generated by some of the only analysts with a broadly global or comparative view of the sector.

Note also that ratings and risk premia tend to be highly correlated. This is certainly true of the Canadian provincial sector (CIBC 2011). It is also true of sovereign bond markets (Afonso, et al. 2011, Jaramillo and Tejada 2011), even if there is evidence, in the euro area at least, that this correlation is weakening (Véron and Wolff 2011). This correlation suggests ratings are good proxies for market beliefs.[4] My surveys of Canadian investors lend further credence to this view. Like investors, Moody's considers the probability of provincial bailouts high (.8).[5]

Credit ratings may be particularly influential at the subnational level, where they are especially valuable to international investors. As I highlight in chapter 6, foreign investors often have little or no knowledge of subnational borrowers beyond their borders. Acquiring this knowledge is costly and complicated by the complexity and variety of intergovernmental systems. These factors make credit ratings vital sources of information for the uninitiated.

Finally, anecdotal evidence suggests agencies' policy influence is not limited to their impact on borrowing costs. They also influence policymaking directly. Rating decisions attract

---

[3] Separate methodologies are employed for municipal and state borrowers in the United States.

[4] There are several possible reasons for this correlation, none of which are mutually exclusive. First, ratings impact borrowing costs by affecting perceptions of spread and default risk and the risk weights applied to capital held by banks, insurance companies, and other financial institutions regulated by prudential accounting standards. Second, risk premia impact ratings: Rating decisions may be influenced, for example, by borrowers' access to credit. Finally, ratings may, to some extent, mirror market perceptions of credit risk.

[5] Many argue that the influence of credit rating agencies is declining and will continue to do so. Their failures to predict defaults of mortgage-backed securities and questionable downgrades of European sovereigns have prompted large financial institutions to enhance their internal credit research. These developments have also led to political efforts to limit agencies' regulatory influence. Finally, euro area spreads are increasingly responsive to political pronouncements and headline risk (Véron and Wolff 2011). Ratings are not designed to keep pace with these fast-pace events. But ratings still reflect longer term determinants of spreads and are likely to continue to wield influence for some time.

considerable media attention. The media appears to use ratings to evaluate officials' policy performance. This may explain why some politicians are so critical of rating downgrades and why others use downgrades (or the threat thereof) as justifications for aggressive austerity measures (the government of Ontario appears to be employing this strategy currently.)

Note that the validity of ratings as a dependent variable do not, for the purpose of this analysis, hinge on their correctness. Their usefulness depends on their validity as (1) constraints on policymakers or (2) proxies or drivers of market beliefs.

4.4   OVERVIEW OF DEPENENT VARIABLE AND ANALYSIS

The brunt of this chapter examines bailout probabilities assigned to local and regional governments by Moody's Investors Services. This analysis consists of two parts. The first is a quantitative analysis of bailouts scores. The second is a qualitative review of (1) Moody's bailout methodology and (2) justifications of scores found in the individual rating reports of rated governments. The bailout methodology and some scores are available on Moody's website. Other scores as well as rating reports and exogenous data were downloaded by the author at Moody's Canadian headquarters in Toronto. Most scores have not changed since their initial issuance in late 2006. The vast majority of scores were extracted from rating reports issued in 2010.[6]

The quantitative analysis is useful but partial. Data constraints limit the analysis to two independent variables of interest: transfer dependence and economic development. Fortunately, the qualitative analysis allows me to determine whether Moody's considers factors the statistical

---

[6] I used the latest reports issued by Moody's at the time of my visit to Moody's Toronto office. Ratings for some issuers had been discontinued, in which case I used the data from the last report issued.

analysis omits. Taken together, the analyses provide strong evidence for most hypotheses and suggestive evidence for others.

Dependent Variable

In late 2006, Moody's adopted its *Joint Default Analysis* (JDA) for rating local and regional ratings. The *JDA* has also been applied to other implicitly guaranteed entities, including banks, public agencies, and state-owned enterprises. Its goal is to make explicit Moody's "assessment of the likelihood of *extraordinary support* by a higher-tier government to prevent [a subnational default]" (Moody's 2008, 1). "Extraordinary support" refers to assistance for governments on the "verge of default" (2008, 2). This assistance could come in any form, "ranging from formal guarantees, to direct cash infusions and to any action facilitating negotiations with lenders that enhances access to interim financing for the [subnational]" (2008, 2).

Two features of Moody's definition distinguish it from common definitions in the literature. First, it refers to support intended to *prevent* default. It does not include expectations of bailouts or assumptions of debt after a default has occurred. This exclusion is crucial. The investors and regulators who use Moody's ratings are not merely concerned with the probability of repayment, but the probability of timely repayment as well. Second, Moody's emphasizes support for borrowers on the "verge" of default. This excludes "gap-filling" transfers intended to preempt an imminent default scenario. It also excludes non-discretionary equalization payments that discourage subnationals from making structural fiscal adjustments. Moody's considers these measures important, but incorporates them through other rating channels. The literature considers gap-filling measures important sources of moral hazard (Ter-Minassian and Craig 1997, Rodden 2006b) while others also blame rules-based equalization payments for softening

budget constraints (McKinnon and Nechyba 1997). Thus, the qualitative analysis expands, at various points, the definition of bailouts to include these considerations.[7]

In a separate process, Moody's performs a baseline credit assessment to determine the likelihood that a subnational will require extraordinary support. This likelihood is expressed as a standalone credit rating. This rating corresponds to an expected loss-ratio on governments bonds, which, along with the bailout probability and two other inputs, are entered into an algorithm to generate a final rating. In some cases, the bailout probability results in a significant uplift. The ratings of the lowest rated Canadian provinces, for example, generally jump two notches. The ratings of the lowest rated German states jump three. In some cases, the uplift is more modest. The ratings of Italian regions (whose expected probability of support is .50) typically increase by one notch. The ratings of other governments (i.e. ones with scores below .50) often do not adjust at all. While the generation of the final rating is deterministic, determination of its inputs, including the bailout probability, is anything but. Moody's analysts use a scorecard to guide the analysis, but their determinations reflect a range of qualitative judgments and considerations.

In most cases, the expected guarantor is the central or national government. In some cases, however, it is a lower tier of government (e.g. a region) responsible for even lower levels of government (e.g. a municipality). This is common in federal countries, where regional governments often regulate municipal entities. In one instance, the expected guarantor is a *lower* level of government. Moody's expects the Basque foral provinces, and not the national government, to provide assistance to the Basque region should the latter require it.[8]

---

[7] Note that some authors do not necessarily consider non-discretionary grants sources of moral hazard. These measures would not, therefore, qualify as bailouts, according to these researchers.

[8] Moody's also expects the Basque region to provide support for its constituent provinces.

Variation Within Groups and Over Time

Bailout scores are expressed in terms of probabilities ranging from .05 to 1, generally in increments of .15 (.05, .20., .30., .50, .65., 80., 95). Only entities with explicit guarantees receive scores of 1 (e.g. the city of Budapest). These instances are extremely rare.

Bailout scores do not generally differ across subnational groups. For example, all Canadian provinces receive scores of .80, all German Länder .95 and nearly all Mexican States .05. Note that countries can contain more than one subnational group. Moody's, for example, assigns different group scores to Italian regions (.50) and cities (.20). It also assigns different scores to Mexican states (.05) and municipalities (.20).

The uniformity of group scores reflects Moody's scoring process. Its scorecard consists of three broad categories: institutional framework, historical behavior of the higher-tier of government, and individual characteristics of governments. The first two categories refer to group-level considerations that apply equally to all sectoral units. Only the final category (individual characteristics) is meant to differentiate within groups.

Three specific factors cause government scores to deviate from group probabilities. The first is a special political relationship between national and subnational governments. Moody's claims this factor is rarely applied. The second is governments' strategic importance to the broader economy or country. This factor is more commonly invoked. A government's strategic importance could, according to Moody's, reflect standard too-big-to-fail variables, such as the size of the economy or population. However, it could also reflect "capital city status" or a factor as intangible as "international brand recognition." These considerations explain why, for example, Prague and Moscow receive higher scores than typical Czech and Russian cities.

Finally, Moody's looks at differences in subnational debt structure. Milan, Venice, and Naples receive higher scores than other Italian cities because of their larger presence in capital markets.

Because scores do not generally vary within groups and because Moody's clearly accounts for deviations, I ignore within-group outliers and shift the analysis to the group level. Also, because bailout scores vary so rarely over time, I treat the dataset as a cross-section. A time-invariant and group-level outcome poses both advantages and disadvantages. The chief disadvantage is that it prevents analysis of sources of diachronic and within-group variation. These factors might include the incidence of same-party rule at the national and subnational level, the nature and degree of subnationals' representation in the upper chamber, and within-group variation in transfers.

But the chief advantage of these data is that they effectively control for these factors, many of which are not of immediate theoretical interest. What is more, the structure of the data is telling in and of itself. It suggests that Moody's considers sources of cross-national variation most critical. Standard and Poor's, another one of the big three international rating agencies, appears to take a similar view. Though it does not quantify its bailout scores for clients, it claims that it rarely assigns different scores to borrowers within the same sector (S&P 2010).

The uniformity of group scores may, at first glance, seem implausible, but a few points might suggest otherwise. First, although they are expressed in terms of probabilities, the scores are not particularly fine grained. As they are separated by increments of .15, the vast majority of governments can only receive one of seven possible scores. This suggests there is room for un-captured differences within groups. Second, Moody's comparisons are broadly cross-national. Within-group and inter-temporal differences are likely to appear decreasingly consequential as the number and diversity of groups grows. Moody's and other rating agencies may, for example,

have made sharper distinctions between Canadian provinces and German Länder before they began rating Brazilian and Mexican states. Third, as chapter 2 indicates, there are good theoretical reasons to expect scores to cluster within countries.

The constancy of scores over time is arguably more problematic. Moody's only started explicitly assigning bailout probabilities in late 2006, so we cannot know if or how significantly expectations vary over a longer period. But it is worth noting that, as of December 2010, the vast majority of scores had not changed since their initial issuance.[9] They remained stable well into the financial crisis, a period of intense financial uncertainty and volatility. Also note, however, that the *impact* of bailout scores did change. Moody's algorithm is designed to discount the impact of bailout probabilities as the probability of sovereign default rises. Thus, sovereign risk conditions expectations over time (or at least in the short to medium term). Conveniently, the bailout probabilities exclude this conditional effect, controlling for yet another extraneous factor and helping to focus the analysis on fiscal federal variables.

Descriptive Statistics and Preliminary Analysis

This section provides the first tests of two key independent variables: transfer dependence and economic development. These are the only independent variables for which comparable data are available for most of the sample.

Moody's does not provide a measure of transfer dependence *per se*, but does provide a group-level indicator of discretion over the "rates and objects of own-source" revenue. This is the

---

[9] It is difficult to know with certainty how many scores changed. In late 2006, Moody's publicized precise probabilities of extraordinary support. Afterwards, however, they only released ranges of bailout scores (i.e. low .05 and .20; moderate .35 and .50; high .65; and very high .80 and .95). I can, however, only find two instances in which a group or a borrower's range changed.

rough inverse of dependence on transfers, shared revenues, and other revenues over which subnationals have no control, so one can simply reverse the scale and rename the variable. Moody's also takes the political as well as the legal capacity to adjust revenues into account. Ideally we would like strip the variable of political considerations, since it is legal capacity that the literature deems relevant. Doing so, however, would likely have little impact for two reasons. First, legal capacity is the primary driver of cross-national differences in revenue-raising capacity (see next chapter). Second, Moody's scale is not particularly fine grained. Striping the variable of political considerations would not necessarily result in a significant number of re-classifications, particularly if I am correct in suggesting political considerations are relatively trivial. The variable takes three values: 1 for highly autonomous or weakly dependent (e.g. Canadian provinces), 7.5 for moderately dependent (e.g. Spanish regions), and 15 for highly dependent units (e.g. German Länder). Rather than assuming a linear effect, I break the variable into two indicators: one that takes a value of 1 for moderate levels of dependence and 0 otherwise and another that takes a value of 1 for high levels of dependence and 0 otherwise. This leaves low levels of dependence to serve as a baseline.

I begin the analysis with cross-tabulations of bailout scores and transfer dependence. Table 4.1 splits groups between those with bailout scores of .50 or more and those with scores less than .50. Recall that the literature predicts a positive relationship. But the cross-tab suggests, if anything, the opposite effect. Indeed, of the 19 groups with high levels of dependence, only 2 (German Länder and Slovakian regions) receive a high bailout score. Of the 13 weakly dependent groups, 3 fall under this category (French cities, Portuguese autonomous regions, and Spanish cities).

Table 4.1 Moody's Bailout Probabilities and Transfer Dependence

	Low Dependence	Moderate Dependence	High Dependence	Total
High (≥ .5)	10	12	2	24
Low (< .5)	3	11	17	31
Total	13	23	19	55

Figure 4.1 Bailout Probabilities and Transfer Dependence
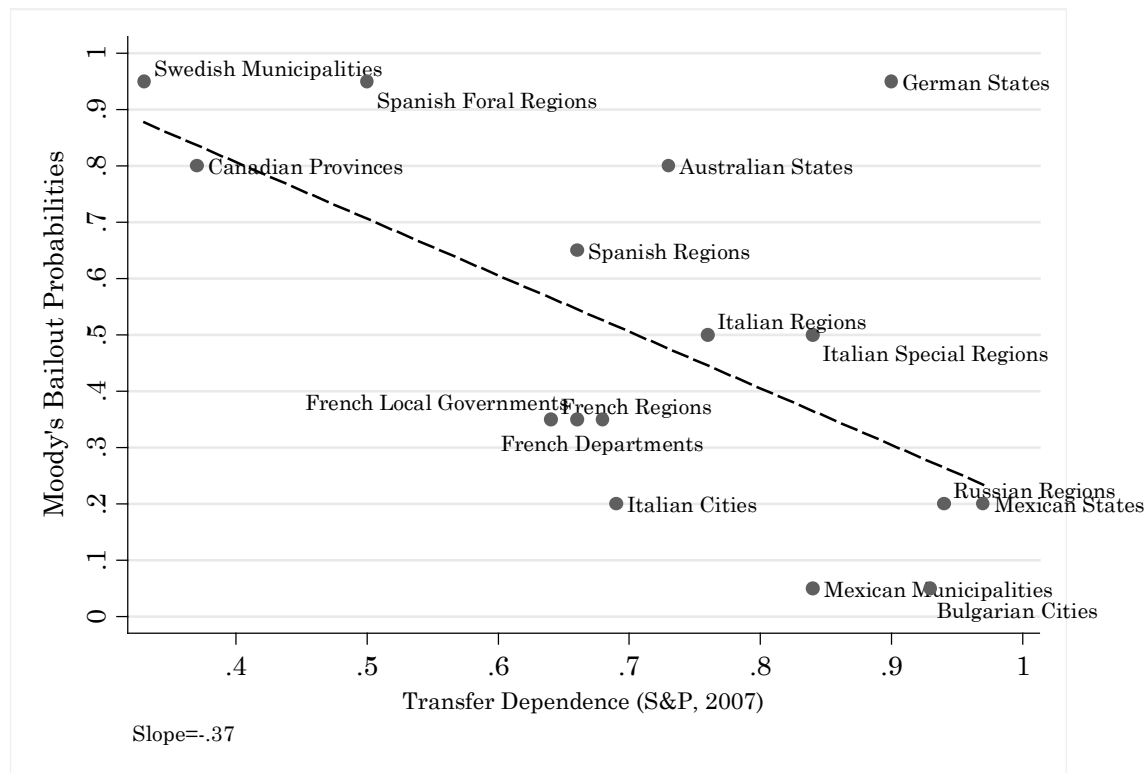
Sources: Transfer dependence from Standard and Poor's and author's own calculations;
bailout probabilities from Moody's Investors Services

I also plot bailout scores against an alternative measure of dependence developed by Standard and Poor's (see figure 4.1). S&P provides group-level averages of the proportion of modifiable (or discretionary own-source) revenue over total revenues. I subtract these values from one to generate a measure of dependence. The S&P measure is more fine-grained. It also seems more consistent with the literature's perceptions of certain groups' revenue-raising

capacities (Moody's tends, for example, to attribute greater discretion to Austrian Länder and Australian states than the literature does.[10]) The drawback of the S&P data is that they cover fewer cases. Again, there is no suggestion of a positive relationship; if anything, the opposite relationship appears to hold. The slope of the regression line is -.37 and the German Länder appear, yet again, as an outlier.

I now turn to economic development. Once again, I split the sample, this time between developed and developing countries (see table 4.2). I use Moody's categorizations of economic development (Moody's indicates which countries it considers developed and developing in its *Statistical Handbook of Local and Regional Governments*.) Portugal is the poorest developed country in the sample. The cross-tab strongly suggest a sorting effect, with developing countries far more likely to receive bailout probabilities of .50 or more. One might conclude that development is a quasi-necessary condition for probabilities above this threshold. Indeed, no developing group receives a score above .65 (the score assigned to Colombian cities).

Econometric Analysis

Next, I examine these relationships in a regression framework. The dependent variable is a bounded proportion, ranging from .05 to 1. It only takes a limited number of values (eight), suggesting that a non-linear specification (i.e. ordered logit or probit) might be appropriate. I omit these estimates, however, as several observations are completely determined by a key control (default history).

---

[10] This may reflect the relatively limited number of categories (3) that Moody's uses to classify groups. It might also reflect the inclusion of groups from developing countries, many of which have extremely limited revenue-raising capacities.

Table 4.2 Moody's Bailout Probabilities and Economic Development

	Developed	Developing
High (≥ .5)	Australian States	Colombian Cities
	Australian Territories	Slovakian Regions
	Austrian Länder	
	Belgian Regions	
	Belgian Communities	
	Belgian Regions	
	Canadian Municipalities	
	Canadian Provinces	
	Canadian Territories	
	German Cities	
	German Länder	
	Italian Regions	
	Italian Special Status Regions	
	Japanese Cities	
	Japanese Prefectures	
	New Zeal. Councils	
	Spanish Cabildos (Canary Isles.)	
	Spanish Regions	
	Spanish Foral Provinces	
	Spanish Foral Regions	
	Swedish Cities	
	Swiss Cities	
	UK Councils	
Low (< .5)	French Cities	Argentinean Provinces
	French Departments	Argentinean Municipalities
	French Inter-Munis	Brazilian Cities
	French Regions	Brazilian States
	Greek Cities	Bulgarian Municipalities
	Italian Cities	Czech Cities
	Italian Autonomous Provinces	Czech Regions
	Italian Provinces	Estonian Municipalities
	Portuguese Cities	Latvian Cities
	Portuguese Regions	Macedonian Cities
	Spanish Cities	Mexican Cities
		Mexican States
		Polish Cities
		Polish Regions
		Russian Cities
		Russian Regions
		Serbian Cities
		Slovakian Cities
		South African D. Municipalities
		South African Municipalities
		Ukrainian Cities

Papke and Woolridge's (1996) fractional logit model, designed explicitly to handle bounded proportions, provides another natural framework. A nice feature of the fractional logit is that it ensures the predicted values stay within 0 and 1. But the fractional logit is a partial maximum likelihood (ML) framework and I have observations for less than 50 groups. As Long notes, the asymptotic properties of ML estimators are not realized in small samples (Long 1997). Thus, I estimate a series of OLS models and report fractional logit estimates as a robustness check. Unlike ML estimators, OLS estimates are unbiased in small samples. The following OLS specification provides a baseline:

$$BP = \beta_0 + \beta_1 MTD + \beta_2 HTD + \beta_3 GDP + \beta_4 Bicameralism + \beta_5 Default + \varepsilon$$

BP refers to the probability of a bailout and MTD and HTD are the main variables of interest. They refer to moderate and high levels of transfer dependence, respectively (see above).[11] Again, the analysis is at the group level.[12]

GDP refers to national GDP per capita measured in thousands of current US dollars. It ranges from 6.7 (Ukraine) to 44 (Switzerland). The amounts are annual averages from 2006 (the year bailout scores were issued) to 2010 (the year the data were collected). I expect a positive and statistically significant result.

---

[11] Coverage for this variable is not as comprehensive as coverage in table 4.3. This is because Moody's provides two types of bailout scores, bailout probabilities and ranges of probabilities. Coverage for the latter is incomplete.

[12] In some cases, group-level scores were not immediately apparent, because the sector contained only one rated entity. I used the score for singletons provided there was no suggestion that they would receive higher scores than other sectoral issuers if those issuers were rated. If, however, I determined a singleton's score would differ, I dropped it unless I was able, using the bailout scorecard, to confidently rationalize the effects of the region's special status. I was only able to do this in one case (i.e. Düsseldorf, Germany).

Bicameralism is the first of two controls. It is intended to capture subnationals' influence over the fiscal policymaking process. The variable, a numerical transformation of ordered categories assigned by Swenden (Swenden 2010), measures the strength of subnational governments within the upper chamber. It ranges from 0 to 3 in increments of .5. Scores for federal regions range from 1 to 3, while regions within unitary systems and local governments receive scores of 0 (these 0s were assigned by the author and not Swenden.) I have observations for all federal regions except Mexican states. This group is dropped from the sample. Legislative influence increases subnationals' veto power and capacities to form bailout coalitions and should, therefore, result in higher bailout scores.[13]

Default controls for a history of multiple defaults at the subnational level. It takes a value of 1 if the sector has a history of such defaults and a value of 0 otherwise. This variable was constructed from references to defaults found in Moody's rating reports. A history of defaults signifies a clear no-bailout policy or tendency. This is also an explicit consideration in Moody's bailout methodology. Thus, I predict a negative and statistically significant effect.

β_0 is the intercept and ε is a stochastic error term. β_1, β_2, β_3, β_4, and β_5 are the respective coefficients for MTD, HTD, GDP, $Bicameralism$, and $Default$. A description of all variables and their sources is found in table A4.1 in the appendix.

---

[13] There are alternative measures of regional legislative influence like, for example, the extent to which small (large) jurisdictions are over (under)represented relative to their share of national population (Samuels and Snyder 2001). There is considerable evidence that small and overrepresented regions are better equipped to win bailouts by exchanging legislative votes for inexpensive transfers. But this variable is arguably probably better suited for explaining within rather than cross-group variation in bailout beliefs.

Table 4.3 Determinants of Moody's Bailout Probabilities, OLS Estimates

	Full Sample			Influential Outliers Dropped		
	M4.1	M4.2	M4.3	M4.4	M4.5	M4.6
M. Transfer	-0.142	-0.127	-0.0902	-0.142	-0.105	-0.127**
Dependence	(0.0902)	(0.0894)	(0.0646)	(0.0902)	(0.0907)	(0.0614)
H. Transfer	-0.223**	-0.225**	-0.139*	-0.224*	-0.178	-0.174**
Dependence	(0.109)	(0.107)	(0.0786)	(0.115)	(0.116)	(0.0781)
GDP Per	0.0151***	0.0151***	0.00789**	0.0141***	0.0156***	0.00710**
Capita	(0.00420)	(0.00414)	(0.00320)	(0.00423)	(0.00421)	(0.00313)
Bicameral		0.0665	0.0675**		0.0701	0.0624**
		(0.0438)	(0.0315)		(0.0417)	(0.0282)
Default			-0.375***			-0.331***
History			(0.0600)			(0.0507)
Constant	0.182	0.146	0.443***	0.166	0.0607	0.451***
	(0.153)	(0.152)	(0.120)	(0.168)	(0.175)	(0.133)
N	46	46	46	40	40	40
Adjusted R^2	0.356	0.376	0.676	0.440	0.467	0.756

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Standard errors in parentheses

Table 4.3 reports the results for two sets of OLS models: models that draw on the entire sample and models in which influential outliers are dropped.[14] Standard errors appear in parentheses.[15] Contrary to the literature's predictions, the dependence coefficients are negative

[14] Outliers were identified on the basis of their overall influence on the transfer dependence coefficients. They were calculated using the standard cut off for DFBETAS (i.e. DFBETAS $> 2/\sqrt{n}$) . The six outlying groups were Colombian cities, German Länder, Japanese cities and prefectures, Portuguese regions, and Spanish foral provinces.

[15] Heteroskedasticity does not appear to be a major problem. Thus, I estimate classic rather robust standard errors. Standard errors may still be biased downwards on account of clustering of observations within countries. Clustered-robust standard errors are not, however, valid in small sample sizes. Fortunately, the choice of standard errors

across all models. Contrary to my predictions, however, the result attains statistical in several models, suggesting a non-neutral effect. The moderate dependence indicator only reaches statistical significance (at the .05 level) in model 4.6, the full model in which influential outliers are dropped. The high dependence dummy performs better. It reaches statistical significance at the .1 level or better in 5 of 6 models, including both full models. Both variables perform better when outliers are dropped. However, I have not reason, *a priori*, to drop these observations. Thus, I encourage readers to treat this result with caution. Fractional logit estimates are found in table A4.3 in the appendix. The negative and statistically significant effects hold in several of these estimates as well.[16]

The increase in the bailout probability is greater as one moves from low to medium than from medium to high levels of dependence. Table 4.4 displays the predicted probabilities at various levels of transfer dependence when the default history dummy is set at 1 and the remaining controls are held at their sample means. The estimates come from M4.3. The predicted probabilities are .32, .23, and .18 for low, moderate, and high levels of transfer dependence, respectively. In terms of magnitude, the effects appear modest. Moving from low to high decreases the probability of support by .14 or about a half a standard deviation of the dependent variable. The effect is trivial given the real-world gaps in revenue dependence between units across these categories. More realistic (yet nonetheless significant) movements from low to moderate and moderate to high decrease the expected probabilities of support by roughly .09 and .05, respectively.

(classic, robust, or robust-clustered) does not significantly affect the statistical significance of the transfer dependence coefficients in the full models (i.e. models M4.3 and M4.6).

[16] I drop the same outliers in the fractional logit and OLS models. Outliers were identified from diagnostics on the full OLS model, M4.3.

Table 4.4 Predicted Bailout Probabilities

Transfer Dependence	Predicted Bailout Probability
Low (baseline)	.32
Moderate	.23
High	.18[*]

Estimates come from M4.3 in table 4.3
default history=1; other controls held at sample means
[*]transfer dependence coefficient statistically significant at .10 level

Note that it is possible the transfer dependence estimates suffer from selection bias. The sample excludes Swiss cantons and American states. Both have low levels of transfer dependence[17] and both are believed to borrow in the absence of implicit guarantees. Indeed, cantons and states, along with Canadian provinces, are widely cited as the *only* federal regions to face meaningful market constraints (Peterson and Nadler 2012, Rodden 2006b, Rodden 2012), largely on account of their revenue independence. Their inclusion could, therefore, impact the significance and signs of the dependence coefficients. I test this possibility by running another set of unreported regressions imputing values of independent and dependent variables for both missing cases. Assigning values of the regressors is straightforward: Neither sector has a recent history of defaults (thus, I assign values of 0), Swenden provides measures for the strength of subnational representation, and the World Bank provides values for GDP per capita. I can also safely assign low values of transfer dependence to both cases. The only variable over which I have meaningful discretion is the dependent variable or probability of a bailout. I assign the lowest possible values, .05, for each as these values provide the most stringent tests against statistically significant and negative effects. Interestingly, in the re-estimates, both transfer dependence coefficients retain their negative signs, but become highly statistically insignificant.

---

[17] American states are rated by a separate methodology for which bailout probabilities are not assigned. Swiss cantons do not solicit ratings from Moody's. They do, however, solicit ratings from Standard and Poor's.

I now turn to GDP per capita, the second variable of interest. The variable is, as expected, significant across all reported models. It reaches statistical significance at the .05 level in all OLS and fractional logit models (tables 4.3 and A4.3, respectively). The magnitude is modest, however. In M4.3, a one standard deviation increase in GDP per capita increases the likelihood of a bailout by .075. But the results likely understate the certainty and magnitude of the variable's effect. Note the GDP coefficient is sensitive to the inclusion of default history. Indeed, the coefficient falls by roughly half when the latter is included. This is not surprising. The correlation between GDP and default history is high (see the correlation matrix in table A4.4 in the appendix) and this relationship is probably at least partially causal.

The bicameralism variable performs reasonably well, reaching statistical significance at the .05 level in the full models (M4.3 and M4.6). This variable could be improved in future studies, however. There is potential slippage between the measure and the concept it is intended to capture, namely subnational influence over national policy decisions. Subnationals can influence these outcomes through intergovernmental forums (as in Canada) as well as powerful associations of municipal governments (as in Scandinavia). Future measures could be more sensitive to alternative dimensions of subnational influence.

The most powerful and consistent effects are reserved for default history. It reaches statistical significance at the .01 level in M4.3 and M4.6 and decreases the probability of a bailout from anywhere from .33 to .38 in the OLS models.

In short, the analysis suggests a negative, albeit it slightly uncertain, relationship between transfer dependence and bailout expectations. The analysis also suggests a positive relationship between bailout scores and national economic development. The latter relationship may be

understated, however, given the strong and potentially causal relationship between development and default history, a key control variable. I now turn to the qualitative analysis.

4.5   QUALITATIVE ANALYSIS

The qualitative analysis consists of two parts: reviews of Moody's (1) bailout methodology and (2) justifications of bailout scores. It addresses four sets of variables: the transfer system, the division of intergovernmental responsibility for sensitive services (and its interaction with economic development), the concentration of subnational sectors, and central regulation of subnational finances or hierarchical controls.

Transfer System

Moody's makes relatively few references to transfer systems in its bailout methodology. And there is never any suggestion of a straightforward or positive relationship between dependence and bailout beliefs. Moody's does assign a higher probability of external support to subnationals with "responsive intergovernmental arrangements (i.e. [arrangements] that allow for emergency transfers and/or liquidity to manage periods of financial stress" (Moody's 2008, 10). But there is no suggestion that this is a necessary condition for high scores (recall that bailouts can come in myriad forms, including *ad hoc* transfers and soft loans from public banks.) Nor is there any suggestion that the probability of a bailout increases as the level of transfers increases.

One is also hard pressed to find references to transfer systems in justifications of group scores. I was only able to find three (these were references to Australian states, Canadian provinces, and Turkish cities). This does not mean Moody's considers transfer systems irrelevant.

The agency's justifications are not necessarily comprehensive (they tend to be brief) and may be influenced by factors of which rating analysts are not fully aware.

The number of references to transfers increases, however, if one expands the definition of bailouts to include "ongoing forms of support." Recall that these might include gap-filling transfers as well as permanent and non-discretionary equalization arrangements that discourage structural fiscal adjustment. All three rating agencies look favorably upon stable and predictable transfers systems, particularly if they gradually adapt to subnationals' evolving fiscal needs. They also value equalization payments that redistribute risk and wealth across territorial units (Moody's 2008, 6). According to Fitch, "any equalization mechanisms in place that could mitigate a weaker socio-economic profile would be viewed as positive" (Fitch 2012, 2). Agencies also claim that equalization systems may more or less preclude imminent default scenarios.

Rodden's review of credit ratings and transfer systems generates similar findings. He concludes that agencies favor stable and predictable grants like "general-purpose equalization transfers," but take "a dim view of highly discretionary and unpredictable transfers, which may expose governments to sudden and arbitrary loss of revenue" (Rodden 2006b, 81). The key difference between my study and Rodden's is that I find no clear correlation between these factors and levels of transfer dependence. Several heavily dependent regions are not, according to Moody's, well supported by transfer arrangements while some relatively independent subnationals, e.g. Canadian provinces, are.

Intergovernmental Responsibility for Sensitive Services

I now consider the effects of sensitive expenditure assignments (e.g. education and healthcare). This factor is difficult to assess in a regression framework, because cross-national data on social spending are not sufficiently disaggregated.[18] Moody's does not explicitly mention service delivery in its bailout methodology. However, rating reports link higher scores to service provision for six groups: Austrian Länder, Danish cities, Italian regions, Portuguese autonomous regions, Spanish regions, and Swedish municipalities. All six groups deliver significant healthcare and education services.

In some cases, Moody's also cites shared intergovernmental responsibility for sensitive services as an added bailout incentive, suggesting a conditional effect. Take, for example, the cases of Austrian Länder and Italian regions:

> Moody's assigns a very high likelihood of extraordinary support from the Federal Government, reflecting Moody's opinion of the vital role played by each Land in the Austrian institutional framework, to the extent that the [Austrian] Länder act on behalf of the federal government for key functions (education, social welfare, healthcare / hospitals and housing) (Moody's 2010i).

> While recognizing the central government's promotion of greater accountability for Italian regions, Moody's also believes that the provision of sensitive and co-shared responsibilities, such as healthcare, together with the regions' presence in the capital market, represent moderate incentives for the central government to consider bailing out [Italian regions] in the event of need (Moody's 2010h).

Interestingly, Moody's does not mention social services as motivations for bailouts for Canadian provinces or Australian states, two groups with high bailout probabilities and extensive welfare responsibilities. It is possible that Moody's neglects to mention these causes (again, its explanations for scores are not necessarily comprehensive.) However, it may also reflect the fact

---

[18] The IMF provides data on different categories of subnational spending, but these data are not typically broken down by appropriate sectors. For example, my dataset includes four groups of French and five groups of Italian subnationals, but the IMF lumps all subnational spending in these countries into a single "local" category.

that social services are, in strict constitutional terms, regional responsibilities in these countries. Perhaps this reduces incentives for service-based bailouts in Moody's view.

Not once does Moody's identify service provision as a motivation for bailouts in developing countries. This omission is notable since several developing regions in the sample (including Argentinean provinces, Brazilian states, Mexican states, and Polish municipalities) have significant and often shared responsibilities in healthcare or education.

It also is worth noting that of the 12 developed groups with low bailout scores (see table 4.2), only one - Portuguese autonomous regions - has significant social welfare obligations. But Moody's comments about this group provide some of the most compelling evidence of the impact of social services. Although the autonomous regions receive modest bailout probabilities (.35), their responsibility for healthcare and education causes Moody's to doubt the credibility of the central government's no-bailout pledge. Consider the following comment:

> Although the recently approved Regional Finance Law reflects a clear signal of no timely bailout from the state…the provision of highly sensitive responsibilities, such as healthcare and education, may present moderate incentives for the central government to consider bailing out [an autonomous Portuguese region] in the event of financial stress" (Moody's 2010d).

It is also worth noting that all other developed regions with low scores are primarily responsible for infrastructure investments (e.g. French subnationals) or locally-oriented services, such as transportation, waste collection and sewage (e.g. Italian cities) and not universal services commanding broad national constituencies.

In sum, Moody's pays careful attention to spending responsibilities when assigning bailout scores. It pays particular attention to subnationals' role in delivering healthcare and education. The reports also suggest that the effects of service delivery are conditional on the precise division of intergovernmental authority and economic development.

Too Concentrated to Fail

In chapter 2, I argue that some subnational sectors are too concentrated to fail (TCTF). Investors assign uniformly high bailout probabilities to subnationals that belong to sectors in which significant shares of national debt, output, and population are concentrated in a limited number of territorial units. Chapter 2 also suggests that distributions of government debt are the most salient indicators of concentration.

Unfortunately, comparable data on subnational debt do not exist for most countries.[19] Data are available for subsets of countries (e.g. the EU-27), but these data are not sufficiently disaggregated for my purposes.[20] One could, theoretically, collect these data from national statistical agencies, but the marginal benefit is arguably low.[21]

Concentration scores for population and local GDP appear, at first glance, easier to generate. But not all governments in a given sector necessarily borrow (borrowing may, for example, be limited to large and medium-sized regions or cities.) Identifying relevant samples of governments could, therefore, prove challenging, particularly for less transparent countries.

Bailout data and justifications provide some leverage for examining the TCTF hypothesis, however. First, we should expect first-tier regions, or the administrative units directly below the national level, to have the highest bailout scores. These are the most encompassing

---

[19] Rating agencies generate comparable debt statistics for the governments they rate, but my analysis is at the sectoral, not the individual level. The IMF's *Government Finance Statistics* compare subnational fiscal balances, but coverage for debts is extremely spotty.

[20] Eurostat, for example, provides debt-to-GDP figures for state (i.e. regional) and local government sectors for the EU-27, but does not disaggregate within sectors. All subnational debt in Italy and France is, for example, classified as local, but rating agencies identify sub-sectors within these categories.

[21] Rating agencies often adjust debt statistics to improve international comparability. Use of raw national data would, therefore, likely introduce significant and (in light of the small dataset) non-random measurement error.

units in a given country and have, therefore, the highest concentrations of national population and output. And in fact, in developed countries, scores for first-tier regions are generally high and uniform within groups. Moody's assigns probabilities of 1 to Japanese prefectures; .95 to German Länder; .80 to Australian states, Austrian Länder, Belgian regions and communities, and Canadian provinces; .65 to Spanish regions, and .50 to Italian regions.[22] There are exceptions to this rule. Scores for French regions (.35) and Portuguese autonomous regions (.35) are low, but arguably for reasons captured by the TCTF logic. Portuguese regions do not constitute a nationally encompassing sector[23] while French regions constitute the most de-concentrated group of developed regional governments in the sample. Within most countries, bailout scores for the highest tiers are generally greater than or equal to scores for lower levels. An exception is Mexico where states and municipalities receive scores of .05 and .20, respectively. Taken together, these results provide evidence of the TCTF logic, but the evidence is, at best, suggestive. The previous sections suggest other reasons why first-tier regions have higher scores. These groups often deliver sensitive services and partake in high-profile equalization systems.

Perhaps the most compelling evidence of TCTF comes from Moody's justifications of bailout probabilities. Moody's links higher scores to subnationals' presence in capital markets or potential capital market disruptions in five cases. Two refer to the German Länder and Spanish regions, the EU-27's most indebted subnational sectors as a percentage of national GDP. Debts in these sectors are also heavily concentrated. 70 percent of Länder debts are concentrated in 4 of

---

[22] Bailout probabilities within the groups just listed are uniform with the exception of Italian regions, where Lombardy receives a higher score than other regions.

[23] They refer to two regions with special autonomous status.

16 Länder while 65 percent of regional debts are concentrated in 4 of 17 normal-status Spanish regions.

Moody's also cites potential capital market disruptions as motivations for bailing out Canadian provinces. Provincial debts are arguably the heaviest and most concentrated in the sample. Provincial debt represents roughly 26 percent of national GDP and over 80 percent of provincial debts are concentrated in 2 of 10 provinces (see chapter 3). Units are assigned equal probabilities of support in all three sectors (Spanish regions, German states, and Canadian provinces), despite wide within-system variance in debt burdens. Interestingly, Moody's used to differentiate among Spanish regions according to their capital market exposure. The largest debtors (Andalucía, Catalonia, Galicia, Madrid and Valencia) received scores of .65 while the smallest (Castilla y León, Castilla La Mancha, Extremadura, and Murcia) received scores of .50.[24] Recently, however, all scores have been equalized at .65. Moody's now argues that "We believe that [external] assistance would be likely, albeit with conditions likely to be attached, given that a default by any region, regardless of its size, would severely damage the sovereign's reputation and its ability to access the wholesale financial markets" (Moody's 2010k). This thinking is consistent with the TCTF logic developed in chapter 2.

Other references to capital market disruptions refer to less concentrated groups: Italian regions and Canadian municipalities. Italian regions have a significant, but by no means immense presence in capital markets while municipal borrowing in Canada represents only a fraction of total government debts.[25] Expectations of contagion in these contexts may be driven

---

[24] Some regions, e.g. the Canary Islands, are not rated by Moody's. The foral regions are treated as a separate group.

[25] Bailout scores within these sectors are uniform with one exception. The Italian region of Lombardy receives a higher score owing to the region's "size and economic power" (Moody's 2010h). But this score has nothing to do with Lombardy's presence in capital markets. Moody's claims the latter factor boosts the scores of all regions.

less by the size and distribution of debts and more by political and regulatory linkages between central and sub-central units. Italian officials are heavily involved in regulating and financing sensitive regional services while provincial officials maintain tight oversight of municipal finances, including municipal borrowing decisions. These linkages increase the negative reputational consequences of a default for the center.

Hierarchical Controls

Some researchers cite central regulation of subnational finances as an important driver of bailout beliefs (Rodden, et al. 2003). This factor was not highlighted in the theoretical section, however, because its effects are, from the literature's perspective, obvious. Hierarchical controls signal a clear central interest in supporting subnational solvency. They also increase the reputational risks of letting a subnational government fail.

Moody's bailout methodology explicitly references central oversight. According to Moody's, oversight is "a measure of the higher level of government's interest in maintaining a lower-tier government's financial stability and an indication of the capacity and willingness of the higher level of government, as a regulator, to intervene in the financial affairs of the lower-tier government" (Moody's 2008, 10).

Moody's distinguishes between high and medium levels of oversight and assigns higher scores to governments under the former. High levels of oversight refer to strong and frequent reporting requirements, approval of operating capital budgets, pre-authorization of borrowing, debt and debt service limits, and the capacity of the central government to assume or intervene in financial administration. Medium levels of oversight refer to "moderate reporting requirements, non-binding review of capital and operating budgets, [and] limited capacity of the higher tier of

government to intervene and take-over financial administration of a [regional or local government]" (Moody's 2008, 10).

Several rating reports reference oversight as a positive contributor to group scores. Oversight leads to higher scores for Canadian municipalities, Colombian cities, Czech subnationals, Japanese subnationals, Polish subnationals, Slovakian regions, Swiss cities, and British councils. Consider Moody's commentary on British councils: "Moody's assigns a very high likelihood of extraordinary support from the national government…reflecting Moody's assessment of the reputation risk to the state, were a local government's financing to fail within such a tightly designed and monitored system" (Moody's 2010f, 3).

But tighter monitoring does not necessarily result in high or even higher bailout scores. In some cases (e.g. Brazil), it coincides with credible efforts to minimize moral hazard at the subnational level. In these cases, Moody's assigns a lower probability of support.

4.6   SUMMARY

This chapter provides strong or suggestive evidence for several hypotheses about markets' bailout expectations. I find no evidence for the conventional claim that transfer dependence fuels bailout expectations. Indeed, if anything, the statistical analysis reveals the opposite effect. I caution against this interpretation, however, for four reasons. First, transfer dependence may be correlated with unobserved factors, such as levels of expenditure decentralization or borrowing autonomy. Second, the quantitative analysis may suffer from selection bias. Statistical significance disappears in regressions using imputed values for two critical and omitted cases (Swiss cantons and US states). Third, there is no obvious theoretical reason as to why dependence would lower bailout expectations (the literature explains why we should expect the

opposite effect, while I have argued for a non-effect.) Fourth, the qualitative analysis fails to uncover a negative relationship. It suggests instead that it is the politics and institutions governing transfers, and not the level, that matter most. What seems clear, however, is that dependence fails to exert a positive effect.

Although rating agencies do not explicitly cite dependence, they do reference other fiscal federal variables in their rating materials. These include formal or credible commitments to equalizing resources across territorial units. They also include subnational responsibility for sensitive social services, particularly if national officials are formally responsible for upholding national standards of service provision. These references are explicit in Moody's bailout justifications. There is also evidence that the effects of service provision and formal obligations are conditional on levels of economic development. Provision of healthcare and education are never mentioned as motivations for bailing out subnationals in developing countries, despite the heavy social burdens of some of these units. More generally, developing units receive extremely low bailout scores. All but two (Colombian cities and Slovakian regions) receive scores below .50.

Finally, I find suggestive evidence for the TCTF hypothesis. Moody's identifies capital market disruptions as motivations for bailing out three heavily indebted and concentrated groups. However, it also highlights these disruptions for two less indebted and concentrated groups, though perhaps for different reasons (i.e. regulatory linkages between central and sub-central officials).

This concludes the cross-national analysis of market bailout beliefs. The next chapter examines standalone default risk, another essential credit belief.

5   STANDALONE DEFAULT RISK

5.1   INTRODUCTION AND HYPOTHESES

The previous chapter considers the determinants of market participants' bailout expectations. This chapter shifts the focus to the question of standalone default risk or conversely, standalone creditworthiness. Standalone default risk refers to the probability that a government will require a bailout from a higher level of government. As I note in chapter 2, this probability matters very little if the expected probability of a bailout is 1. However, investors almost always harbor some uncertainty over central officials' bailout intentions. Accordingly, standalone credit risk almost always informs broader perceptions of credit risk.

Several factors affect the likelihood of standalone default. However, this chapter focuses on the issue of fiscal flexibility or subnationals' ability to independently adjust their revenues and expenditures. These capacities receive special emphasis, because they represent the most fundamental aspects of public fiscal authority. Fiscal flexibility sends lenders and rating agencies several important signals. First, it indicates that governments have the ability to manage long-term budgetary challenges. Second, it signals that governments are capable of responding to negative fiscal shocks. Third, and more generally, it signals that subnationals are capable of making independent fiscal adjustments; that they need not rely on central officials, whose fiscal interests may or may not align with their own, to make these adjustments. These points suggest that transfer dependence, long considered the factor most likely to insulate subnational governments from default, may actually undermine subnational creditworthiness.

Chapter 2 advances several hypotheses with respect to fiscal flexibility. However, the main hypothesis states that:

> H6: Standalone credit ratings will increase with subnational reliance on discretionary own-source over total revenue. Conversely, standalone credit ratings will decrease with subnational dependence on transfers and shared revenues.

Chapter 2 also makes predictions with respect to expenditure flexibility. I expect standalone credit risk to increase with the political sensitivity of subnational spending assignments. Operating expenses are generally more sensitive than capital expenditures while spending on education, healthcare, and other universal services are most difficult to retrench.

This chapter is organized as follows. Section 5.2 analyzes Moody's standalone ratings statistically. Section 5.3 is a qualitative analysis, drawing on rating materials from the big three international rating agencies. Section 5.4 concludes.

5.2   QUANTITATIVE ANALYSIS

Dependent Variable: Definition and Measurement

This section provides a quantitative analysis of standalone default risk or conversely, standalone creditworthiness. It relies on standalone credit ratings generated by Moody's Investors Services. These ratings measure the likelihood of subnational default in the absence of a bailout. They, along with the probability of a bailout, comprise one of two key inputs in Moody's *Joint Default Analysis*. Standalone ratings are baseline credit assessments, which Moody's adjusts up or down depending on values of other inputs (e.g. sovereign risk and bailout scores). The adjusted baseline provides the final credit rating.

In the last chapter, I suggest that bailouts come in at least three forms: assistance for subnationals on the verge of default, gap-filling transfers intended to prevent an imminent default scenario, and rules-based equalization payments that discourage subnationals from making structural fiscal adjustments (some analysts do not consider the latter measures bailouts.) Unfortunately, Moody's standalone ratings only exclude one of these considerations: assistance for governments on the verge of default. Indeed, Moody's considers gap-filling transfers and equalization payments examples of "ongoing support" and incorporates them into its standalone credit assessment. Thus, the dependent variable is not, according to some definitions, a pure measure of standalone credit risk. My solution to this problem, described below, is to control for ongoing support in the statistical analysis.

Standalone ratings were extracted from the rating reports of individual governments. Ratings were issued during the 2010 period and downloaded at Moody's Canadian headquarters in Toronto. The ratings range from 0 to 17 with the most creditworthy governments taking the highest values and the least creditworthy taking the lowest values (this is a reversal of Moody's scale.) The dataset is a cross section. Moody's only began issuing standalone ratings in late 2006 and annual reports containing ratings are issued sporadically throughout the year, making the construction of a panel dataset problematic.

This chapter does not provide a lengthy justification of the use of credit ratings data, as the justifications in the previous chapter largely hold for this chapter as well.

Explanatory Variable

The variable of interest is discretionary own-source over total revenues. Discretionary revenues are revenues generated from tax streams under direct subnational control. Subnational officials

can decide whether or not to tax these streams and at what rate. This measure, the rough inverse of transfer dependence, excludes transfers as well as revenues distributed through shared revenue schemes. These exclusions are critical given my interest in isolating subnationals' autonomous capacity to manage fiscal hardships and shocks.

This measure comes from the December 2010 version of *Moody's Statistical Handbook: Non-U.S. Regional and Local Governments*. These data are superior to standard measures of own-source revenue in at least three respects. First, they are comparable across countries. Moody's analysts have developed protocols for improving the cross-national comparability of fiscal data. Second, they are disaggregated to the unit level. The IMF's *Government Finance Statistics* (GFS), the standard data for comparing subnational revenue sources, are aggregated to the sectoral level (i.e. the national, state, and local levels). Finally, Moody's distinguishes between discretionary and non-discretionary components of own-source revenue. The GFS data only isolate grants from other levels of government (Rodden 2004). They do not track revenues from shared revenue streams that subnationals do not no control.[1]

The theoretical section and literature review suggest the effects of discretionary revenue may be either conditional or unconditional. While it is conceivable that rating analysts view the effects of tax autonomy as additive, it is also conceivable that they use tax autonomy to discount the risk associated with poor fiscal performance. Thus, in addition to an additive model, I also interact the variable of interest with governments' debt to operating revenues, a standard measure

---

[1] See Ter-Minassian and Fedelino (2010, 599) for a recent discussion on the limited availability of cross-national data on subnational finances.

of fiscal solvency.[2] I expect a negative relationship between ratings and public debt, but I expect the magnitude of this effect to decline as the proportion of discretionary over total revenues increases. The debt measure, described in more detail below, also comes from *Moody's Statistical Handbook*.

Figure 5.1 Moody's Standalone Ratings and Discretionary Revenue
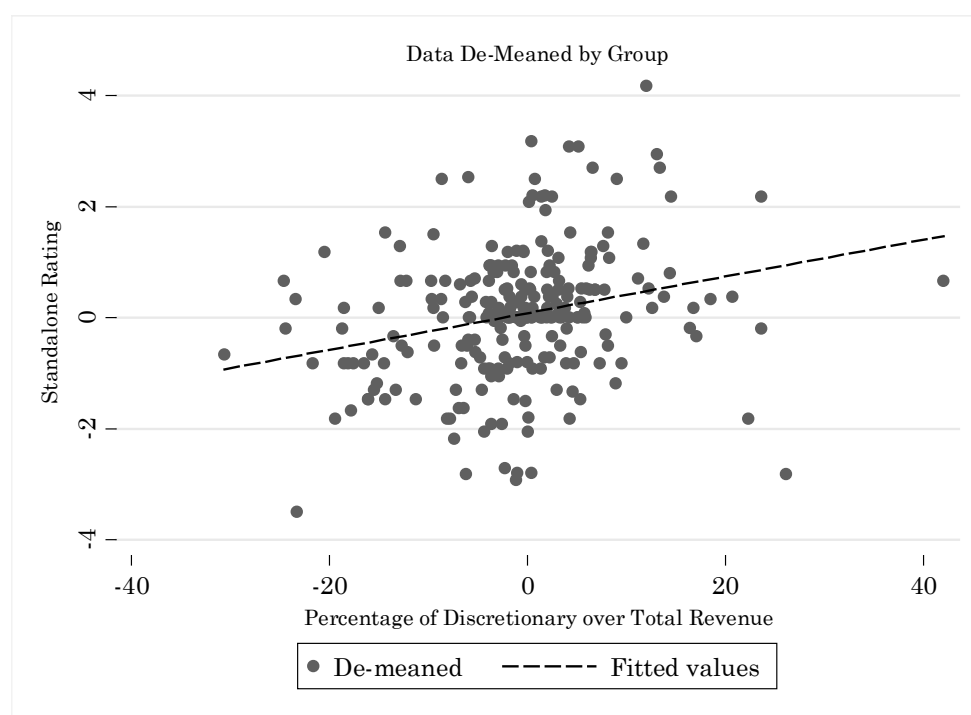
The mean level of discretionary revenues for the sample is 40.43 with a standard deviation of 29.98. The average standalone rating in the sample is 9.83 with a standard deviation of 4.22 (descriptive statistics are available in table A5.2 in the appendix). Figure 5.1 plots standalone credit ratings against discretionary revenue. Both variables are demeaned by

---

[2] Analysis of sovereign ratings or spreads often use debt to GDP as a measure of debt sustainability. Debt to revenues is a superior measure at the subnational level, however, given subnationals' wildly varying access to revenues.

subnational group in order to control for unobserved group effects. The plot suggests the hypothesized positive effect.

Estimation and Controls

Statistical modeling is complicated by clustering of ratings into two nested groups: countries and subnational regimes within those countries. Recall from the previous chapter that countries may contain several groups (e.g. Italy consists of provinces, cities, and regions). This clustering means the errors are not independently and identically distributed, which will tend to bias the standard errors of regression coefficients downwards. I address this threat by estimating a series of three-level hierarchical linear models.

Again, the dependent variable is a numeric translation of categorical ratings assigned by Moody's. Some researchers treat ratings as ordinal (Ederington 1986, Gaillard 2009) while others treat them as continuous (Archer, Biglaiser and DeRouen Jr. 2007, Cantor and Packer 1996, Block and Vaaler 2004). But the substantive results of linear and non-linear models should not differ significantly if the rating scale is sufficiently fine grained. Accordingly, I simplify the analysis and interpretation by fitting a linear model. However, I also estimate unreported non-linear models (e.g. ordered probit and hierarchical ordered logit) as robustness checks.

In some respects, the sample properties are less than ideal for estimating multilevel models. Complexities lie in the low number of national and subnational groupings, 29 and 54, respectively, and small and unbalanced group sizes. Small group numbers make variance components and their standard errors less reliable (Maas and Hox 2004) while combinations of small group numbers and high numbers of groups with single observations generate type-1 error in the standard errors of group-level predictors. But these issues are of little concern here, as I am

mostly interested in the fixed effects estimates of individual-level variables, not group-level predictors or variance components. Recent simulations suggest the interval estimates of individual-level regressors are not biased by these otherwise unfortunate sample properties (Bell, et al. 2008).

The following random-intercept specification provides a baseline:

$$CR_{ijk} = \delta_{0j} + \delta_1 I_1 + \ldots + \delta_{11} I_{11} + e_{ijk} \qquad (1)$$

$$\delta_{0j} = \gamma_{00} + \gamma_{00} Sub_{01} + u_{0jk} \qquad (2)$$

$$\gamma_{00} = \pi_{000} + \pi_{001} N_{001} + r_{00k} \qquad (3)$$

I_1 through I_{11} in equation 1 refer to individual-level variables, which include three variables of interest (discretionary revenue, debt to operating revenues, and their interaction term) as well as a number of fiscal and economic controls, namely short-term over total debt, surplus to operating revenues, interest payments to operating revenues, and the log of regional GDP per capita adjusted for purchasing power parity. These data also come from *Moody's Statistical Handbook*. These variables and their units are described in table A5.1 in the appendix.

I expect positive and statistically significant effects for surplus and regional GDP and negative and statistically significant effects for short-term debt and interest payments. I use 2008 values for all fiscal and debt metrics. The two-year lag is partly due to expedience (coverage for 2009 and 2010 data is spotty), but it is also justifiable on theoretical grounds. In general, Moody's uses two-year old data to generate baseline estimates of ratings. It then uses forecasts and more recent measures of fiscal performance to adjust baseline ratings up or down. Moody's reliance on historical data reflects its express goal of rating governments through the fiscal cycle.

The models also control for the quality and transparency of government finances. Recent research suggests that markets reward transparent governments with lower risk premia (Bernoth and Wolff 2008). Similarly, I expect rating agencies to award transparent governments with higher credit ratings. Note that rating agencies do not audit the financial statements of the governments they rate. They must assess issuers' fiscal health with the information that national and local governments provide. Dependence on these sources should compel agencies to place a premium on its quality and transparency. The models include two measures of financial information: one for the accuracy of budget forecasts (fiscal management) and another for the comprehensiveness and frequency of financial reporting (financial transparency). Both measures are provided by Moody's. They take one of three values: 1, 8.5, and 15 for low, moderate, and high levels of accuracy or transparency, respectively.

I also include two additional "governance" controls provided by Moody's. The first measures the quality of issuers' debt and investment management (debt management). The second refers to jurisdictions' capacity to pass budgets without significant gridlock (conflict resolution). These variables take the same scale as the informational variables. Effective debt management, including minimization or hedging of variable-interest and foreign currency debt, is an important determinant of creditworthiness while legislative gridlock is often blamed for lowering the ratings of California and other American states. Thus, I expect positive and statistically significant signs for both variables.

The initial specification models individual-level coefficients as fixed and group-level intercepts as functions of subnational and national-level variables (see equations 2 and 3). I employ one subnational-level variable, a measure of the stability, predictability, and responsiveness of the fiscal federal framework (institutional robustness). This control, which

comes from individual rating reports, is potentially crucial. Although standalone ratings *do not* reflect the possibility of a bailout in the face of imminent default, they *do* incorporate the possibility of increased transfers and other measures intended to prevent an imminent default scenario. The literature often includes pre-emptive transfers in its broad definition of bailouts (Rodden 2006b). Thus, the dependent variable is not, according to some definitions, a pure measure of standalone default risk. Fortunately, institutional robustness – a measure of the predictability, stability, and responsiveness of revenue and expenditure assignments – helps control for pre-emptive transfers. I expect a positive and statistically significant result.

The national-level equation contains the final variable, namely sovereign risk. This variable, a broad measure of systemic risk, provides yet another control for pre-emptive transfers (rating agencies believe the probability of such transfers increases with sovereign creditworthiness.) I expect a positive and statistically significant sign.

Four outliers are dropped from the models, because they threaten the normality of the errors in the individual-level equation.[3] Inclusion of these observations does not significantly alter the substantive results, however. Other observations were dropped because of missing data. According to Moody's, coverage of exogenous data is incomplete for one of two reasons: either data were not available or Moody's did not consider certain measures relevant for a particular case. The latter explanation suggests that some data are not missing at random. This condition threatens the validity of random imputation techniques. I employ list-wise deletion as a result.

---

[3] These observations are the Moscow Oblast, Russia; L'Aquila, Italy; Catalonia, Spain; and Athens, Greece. These outliers appear to be non-systematic. Reasons for their extreme scores are provided in Moody's rating reports. I report Moody's reasoning in parentheses beside each region: Moscow (unusually high direct and indirect debt exposures compared to other Russian subnationals) (Moody's 2010j); L'Aquila (economic and fiscal implications of the recent earthquake) (Moody's 2010g); Catalonia (extreme short-term budgetary pressures) (Moody's 2010e); and Athens (deterioration of the Greek economy and Athens' close operational and financial ties to the national government) (Moody's 2010c).

Table 5.1 Determinants of Standalone Credit Ratings
3-Level HLM Estimates

	Raw Data	
	M5.1	M5.2
Individual-Level Predictors		
Disc. Revenue	0.0159***	0.0157***
	(0.00485)	(0.00414)
Debt	-0.00224	-0.00250
	(0.00406)	(0.00242)
Disc. Revenue x Debt	-0.000004	
	(0.00006)	
Surplus	0.0129**	0.0130**
	(0.00630)	(0.00627)
S. Debt (%)	-0.00756**	-0.00757**
	(0.00311)	(0.00310)
GDP per Capita (logged)	0.814***	0.814***
	(0.163)	(0.163)
Interest Payments	-0.158***	-0.158***
	(0.0484)	(0.0482)
Fiscal Management	0.151***	0.151***
	(0.0187)	(0.0186)
Debt Management	0.0278	0.0276
	(0.0211)	(0.0210)
Financial Transparency	0.0883***	0.0883***
	(0.0191)	(0.0191)
Conflict Resolution	0.0625**	0.0625***
	(0.0243)	(0.0241)
Constant	-9.070***	-9.061***
	(1.563)	(1.555)
Group-Level Predictor		
Inst. Robustness	0.00664	0.00672
	(0.0533)	(0.0530)
National-Level Predictor		
Sovereign Rating	0.673***	0.673***
	(0.0678)	(0.0677)
$\sqrt{\psi_{(3)}}$	0.9488***	0.9516***
	(0.2035)	(0.1958)
$\sqrt{\psi_{(2)}}$	0.4219***	0.4280***
	(0.1475)	(0.1464)
σ_e	0.8086***	0.8068***
	(0.0415)	(0.0413)
Observations	251	251
Country Groups	29	29
Subnational Groups	54	54
Log Likelihood	-381.7	-372.9
χ^2	73.5***	85.8***

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, Standard errors in parentheses

Table 5.2 Determinants of Moody's Standalone Ratings, OLS and Tobit Estimates

	OLS		Tobit	
	Raw Data	Demeaned Data†	Raw Data	Demeaned Data†
	M5.3	M5.4	M5.5	M5.6
Disc. Revenue	0.0190***	0.0139**	0.0208***	0.0139**
	(0.00420)	(0.00646)	(0.00448)	(0.00633)
Debt	0.00792*	-0.00323	0.00753	-0.00323
	(0.00450)	(0.00271)	(0.00467)	(0.00265)
Surplus	0.00815	0.00907	0.00862	0.00907
	(0.00927)	(0.00832)	(0.00943)	(0.00815)
S. Debt (%)	-0.0159*	-0.00484	-0.0167**	-0.00484
	(0.00804)	(0.00478)	(0.00800)	(0.00468)
GDP per Capita (log)	1.086***	0.778***	1.130***	0.778***
	(0.107)	(0.152)	(0.108)	(0.149)
Interest Payments	-0.241**	-0.132*	-0.264***	-0.132**
	(0.0949)	(0.0651)	(0.101)	(0.0638)
Fiscal Management	0.144***	0.153***	0.146***	0.153***
	(0.0274)	(0.0201)	(0.0267)	(0.0197)
Debt Management	0.0677**	0.0282*	0.0645**	0.0282*
	(0.0277)	(0.0147)	(0.0277)	(0.0144)
Financial Transparency	0.0990***	0.0954***	0.0991***	0.0954***
	(0.0285)	(0.0205)	(0.0285)	(0.0201)
Conflict Resolution	0.0584**	0.0653**	0.0589**	0.0653**
	(0.0255)	(0.0302)	(0.0263)	(0.0296)
Inst. Robustness	-0.0304		-0.0234	
	(0.0610)		(0.0617)	
Sovereign Rating	0.655***		0.662***	
	(0.0713)		(0.0723)	
Constant	-12.28***	0.0142	-12.80***	0.0142
	(1.006)	(0.0282)	(0.999)	(0.0277)
σ			1.144***	0.718***
			(0.0833)	(0.0446)
Observations	251	251	251	251
Country Groups	29	29	29	29
Subnational Groups	54	54	54	54
R^2	0.935	0.629		

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Robust standard errors clustered by country in parentheses; †Denotes values of the dependent and independent variables are demeaned in order to control for unobserved group-level heterogeneity.

Results

I now turn to the statistical results. Baseline estimates are found in table 5.1. I refer the reader to the two variables of interest: discretionary over total revenues and its interaction with debt to operating revenues. The interaction term takes its expected sign in M5.1 (the negative impact of debt to operating revenues decreases as reliance on discretionary revenues grows) but fails to reach statistical significance. The result suggests the data do not support a multiplicative effect. Interacting discretionary revenue with other measures of fiscal and economic performance, including operating surplus and regional GDP, yields similarly insignificant or unstable results. The latter results are unreported.

Far more robust is the unconditional and positive effect of discretionary revenue. The estimates are statistically significant at the .01 in both M5.1 and M5.2. This effect is also robust to several additional specifications. These include models in which influential outliers are dropped[4] and intercepts and slope coefficients are allowed to vary by group and country. The results also stand up in three-level ordered logit, ordinary least squares (OLS), tobit, and ordered probit frameworks.[5] Table 5.2 displays the results of the OLS and tobit regressions. I estimate two sets of OLS and tobit models: one that includes raw data for all variables and another that demeans values of the dependent and independent variables by group. The latter, fixed-effect

---

[4] Dropping influential outliers (or those with disproportionate influence on the revenue coefficient) consistently strengthens the magnitude and significance of the revenue coefficient.

[5] The justification for the tobit specification is the potential censoring of the highest category of the dependent variable. Ratings cannot exceed this category, though credit quality may vary within it. The ordered probit simply treats the dependent variable as ordinal and the hierarchical ordered logit does the same, but explicitly addresses the clustering of observations within groups.

specifications control for unobserved group effects.[6] The discretionary revenue coefficient is significant in these specifications as well.[7]

Admittedly, the magnitude of the revenue coefficient is modest, ranging from .0139 to .0208 in the reported models. This implies that a 100 percentage point increase in discretionary over total revenues (or movement across the entire range of the variable) increases ratings by a mere 1.36 to 2.08 notches. The magnitude shrinks when endogenous and exogenous data are demeaned by group. This may be due to unobserved group effects, but it could also be an artifact of decreased variation in the independent and dependent variables.

But while these effects appear slight, they are surprising in light of prevailing wisdom, which predicts both a highly negative and statistically significant relationship between revenue autonomy and subnational creditworthiness. The effects also look impressive relative to the effects of standard measures of fiscal performance. Table 5.3 compares the effects of one standard deviation increases in selected independent variables using the results from M5.2 or the baseline multi-level model. The impact of discretionary revenue (.47) exceeds that of the debt (-.11), surplus (.15), short-term debt (-.16), and interest payment (-.33) variables and is roughly comparable to the impact of regional GDP (.51). In short, rating analysts appear to place more stock in governments' revenue autonomy than their fiscal fundamentals.

---

[6] The group and national-level variables do not vary by group and are excluded from the demeaned models as a result.

[7] I estimate robust standard errors clustered by country for the OLS and tobit models. (A Breusch Pagan test suggests the classical standard errors are not heteroskedastic, but the HLM estimates suggest non-random clustering by group.) Clustered standard errors are only valid in large samples. Clustering on 29 groups may, therefore, bias standard errors downwards. Fortunately, estimates of classic and robust standard errors do not differ significantly. I also remind the reader that results are statistically significant in the HLM specifications, a framework that explicitly models group-level clustering.

Table 5.3 Impact of 1 SD Increase in X on Moody's Standalone Rating

Variable	Predicted Change in Moody's Rating	Standard Deviation
Disc./Total Revenue	**0.47**	**29.98**
Debt/Operating Revenue	-0.11	44.42
Surplus/Operating Revenue	0.15	11.31
Short-term/Total Debt	-0.16	20.80
GDP per Capita (logged)	0.51	0.63
Interest/Operating Revenue	-0.33	2.11
Sovereign Rating	2.43	3.61

Estimates are from model M5.1 in table 5.1.

The effects of discretionary revenue are also more stable than the effects of most controls. Government surplus is positive and statistically significant at the .05 level in the HLM models, but fails to reach this threshold in the OLS and tobit specifications. Its significance is also sensitive to outliers (it generally loses significance when a single South African municipality is dropped.) Governments can expect lower ratings as their interest payments increase. This effect is generally significant at the .05 level or better, but it too is sensitive to outliers (its significance generally disappears when Canadian provinces are dropped.) Ratings fall as the proportion of short-term over total debt rises, but statistical significance does not hold across all specifications. Perhaps the most surprising results concern the debt variable. It takes its anticipated negative sign in the baseline models, but only reaches significance at the .10 level in one model (M5.3). What is more, its sign actually switches to positive in this model and its magnitude is consistently low. According to M5.2, a 100 percentage point increase in debt to operating revenues decreases a unit's credit rating by less than half a notch.

It would appear rating analysts place significant stock in the log of regional GDP (significant at the .01 level across all models) and the various governance indicators. Of particular importance is the quality of governments' fiscal management. Financial transparency

is also consistently significant at the .01 level, though its magnitude is notably lower. Finally, debt management and conflict resolution exert positive effects, though only the latter is consistently statistically significant across reported models.

Shifting to the group-level equation, institutional robustness takes its expected sign in the baseline, but not in the OLS and tobit models (it is not included in the demeaned models.) The sign's instability likely reflects the variable's large standard errors. The effect's uncertainty may reflect collinearity with other variables. In M5.2, the coefficient's tolerance and variance inflation factor are .21 and 4.69, respectively. Some (Allison 1999), though not all, scholars consider these levels cause for concern.

The most powerful predictor, by far, is the sovereign rating. It is statistically significant at the .01 level across all models and its magnitude is marked. A one notch increase in the sovereign rating boosts standalone ratings anywhere from .655 to .673, while a one standard deviation increase boosts standalone ratings by roughly 2.43 notches.

Endogeneity

It is possible that estimates suffer from endogeneity bias. National and local officials could react to rating decisions or expectations of decisions by altering the structure of local revenues, e.g. increasing or decreasing access to own-source taxes. Alternatively, revenue structures may be endogenous to deeper, historical factors. The first form of endogeneity is unlikely given the slow-moving nature of intergovernmental reforms. The second possibility is, perhaps, a bigger threat. However, I do not address it for three reasons. First, identifying instrumental variables for revenue autonomy or any other driver of credit ratings is extraordinarily difficult. An appropriate instrument only impacts the error term through the regressor of interest, but credit analysts, or

the people who determine the error term, are unlikely to ignore any driver of credit risk. Second, although an imperfect solution, the model controls for several factors likely to affect revenue autonomy. These include measures of fiscal performance and the log of regional GDP (poor and indebted regions are more likely to be transfer dependent than rich ones.) Finally, the inferential threats posed by deep historical factors are probably low. Several factors, including ones entirely unrelated to credit conditions, influence the design of intergovernmental systems and institutional designers cannot predict, with complete certainty, the effects of institutions over the long term. This uncertainty opens the door to exogenous institutional effects (Shvetsova 2003).

In short, the quantitative analysis strongly suggests a positive, if modest, relationship between standalone credit ratings and access to discretionary own-source revenues. This suggests that transfer dependence increases, rather than decreases, subnational credit risk.

5.3   QUALITATIVE ANALYSIS

I now shift to the qualitative analysis. It consists of a review of rating methodologies and reports from the big three international rating agencies: Moody's, Fitch and Standard and Poor's. Unlike the quantitative analysis, I consider two sides of fiscal flexibility: revenue and expenditure flexibility. I also consider three other sets of factors closely or loosely related to fiscal federalism. These are hierarchical controls of subnational finances, the quality of government financial information and the stability, predictability, and responsiveness of the intergovernmental environment.

Revenue Flexibility

The qualitative analysis suggests a broadly positive relationship between revenue autonomy and subnational creditworthiness. All three agencies cite the capacity to raise additional tax revenues as a major advantage. According to Fitch, "an issuer's ability to control its own revenue sources, including the power to adjust tax rates, is an important credit positive" (Fitch 2012, 5). Standard and Poor's and Moody's take similar views, with the former arguing that "full authority over a tax base or a rate [translates] into strong revenue flexibility and potentially higher creditworthiness" (S&P 2007, 11).

Of the three, S&P appears to place the greatest weight on this factor. It develops a fiscal flexibility index measuring governments' capacity to adjust revenues and expenditures in the face of negative fiscal shocks. The agency measures revenue flexibility as the proportion of modifiable over total revenues, where modifiable refers to "local taxes, fees, and operating nontax revenues which may be raised by a [local or regional government]" (S&P 2007, 11). Among the highest rated governments on S&P's fiscal flexibility index are Canadian provinces, New Zealand municipalities, Swiss cantons, and Swedish regions and municipalities. According to S&P, "in certain cases the level of [revenue and more generally] fiscal flexibility can have a marked influence on [subnational] ratings (S&P 2007)." Consider S&P's comments with respect to Spain:

> [In] a single institutional framework and economic context, the varying levels of fiscal flexibility among different types of regional government actually contribute to ratings differentiation. Spain's foral regions, Navarre and Basque Country, are both rated 'AAA', which is above the 'AA' average for Spain's normal-status regions.[8] This is in part because the foral regions benefit from a specific and highly beneficial financing system, which provides them with significant revenue flexibility in terms of tax regulation, collection, and tax management. Spain's foral regions also have relatively greater protection against unilateral decisions

---

[8] These ratings have declined significantly in the wake of Spain's current debt crisis.

from the central government involving unfunded expenditure responsibilities (S&P 2007, 6).

Other agencies also regularly cite tax autonomy as a credit positive or negative for particular groups. Here is Moody's perspective on Chinese subnationals:

> In the case of China, [subnationals] have more limited control over their own-source revenues; a situation which detracts from their creditworthiness. A large portion of taxes is shared with the central government, and for those taxes that are local in nature, the rates are often set by the central government. This level of revenue flexibility is less than that enjoyed by the Canadian provinces and Australian states, which are able to independently adjust their own sources of revenue (Moody's 2012, 4).

Access to own-source revenues does not merely enable subnationals to raise additional revenues. It also insulates them from (1) deep and sudden transfer cuts from central officials and (2) downturns in national economic conditions. More generally, it delinks subnational finances from the national business cycle. This recognition is reflected in agencies' criteria for rating subnationals above their sovereign governments. According to Standard and Poor's, in order to receive a higher rating than their sovereign, subnationals require, among other things, "lack of dependence on the sovereign or any less creditworthy government for any appreciable share of its revenues" (S&P 2009). Moody's also cites revenue independence as a precondition for piercing the sovereign rating cap. Subnationals generally require economic independence, low dependence on transfers, and a distinct tax base in order to receive such a rating (Moody's 2008). Finally, according to Fitch, "a subnational may be rated above the sovereign if it is shielded from the kind of sovereign interference which could lead to unilateral changes of funding and responsibilities, and if it does not rely on national grants or transfers to give it strong standalone fundamentals" (Fitch 2009).

But as I note in chapter 2, revenue flexibility does not depend solely on governments' access to own-source revenue. It also depends upon political and economic limits to raising taxes. Often, it is the most decentralized units, or those with the heaviest reliance on own-source revenues, that face the stiffest political and economic constraints. These governments often rely heavily on mobile or politically sensitive tax streams (i.e. corporate and personal income tax, respectively). Other autonomous units, such as Swiss cantons and US states, are additionally constrained by self-imposed revenue limits, including super-majority and referendum requirements for raising taxes. Still, when evaluating revenue autonomy, rating agencies appear to place a premium on local reliance on own-source revenue. Some of the best evidence of this comes from S&P's revenue flexibility index. As figure 3.2 shows (see chapter 3), several of the leading groups, e.g. Canadian provinces, Swiss cantons, and Swedish municipalities and regions, score highly, despite heavy reliance on mobile and politically sensitive tax streams.

Expenditure Assignments

The other side of fiscal flexibility is, of course, the capacity to manage spending. Expenditure flexibility consists of at least two parts: the legal or policy capacity to adjust and political limits on this capacity. Some units like Canadian provinces, US states, and Swiss cantons have almost unlimited legal capacity to manipulate expenditures. Their revenues mostly come from own-source revenues, unconditional (or non-earmarked) grants, or both. Other governments, including Russian and Italian regions, have virtually no capacity to determine spending levels and priorities, often because expenditures are determined by national legislation or directives. Rating agencies recognize these restrictions as threats to creditworthiness.

But formally autonomous groups often face the stiffest informal constraints, not least because their spending commitments are politically or technically challenging to cut. Here rating agencies differentiate between operating expenses and public investments. Agencies consider operations tougher to cut for several reasons. First, these expenditures are, by definition, recurring. Second, some are non-discretionary. Mandatory expenditures may include interest payments on government debt, personnel expenditures (i.e. public sector wages and salaries), mandated expenditures from higher levels of governments, and pension obligations.[9] Third, operating expenditures are often concentrated in politically sensitive sectors. Most notably, these include education and healthcare. As chapters 2 and 4 highlight, these services provide broad-based benefits to middle-class voters, making them politically costly to retrench. This issue is regularly highlighted in rating materials. Consider S&P's comments on the fiscal travails of Spanish regions: "We still have doubts about the regions' implementation of cost-cutting plans. The growth drivers of operating expenditures are powerful, in our opinion, largely linked to the maintenance of the Spanish welfare state." The agency goes on to note that: "Spanish regions have taken on the three main responsibilities of a modern welfare state: Health care, education, and social care" (2010: 20).

Consider also S&P's comments on Australian states:

The Australian states have limited expenditure flexibility. Although the Commonwealth has most of the revenue-raising powers, the states have a majority of the 'big-ticket' spending responsibilities - essential and politically sensitive services such as health and education that are reined in only with difficulty. Given this, the states' expenditure flexibility is limited (S&P 2007, 19).

---

[9] Rating agencies appear particularly attentive to personnel costs. These expenditures absorb significant shares of certain governments' budgets. The perceived rigidity of these costs is conditional, however. Rating analysts consider the role of wage bargaining institutions in facilitating cost containment. In Canada, for example, provincial wages are considered relatively inflexible due to "multi-year agreements" and "powerful collective bargaining agents" (2007: 15).

Finally, note the following commentary on ordinary Italian regions:

> Italian ordinary regions have the lowest flexibility of all [subnationals] covered in this study, as their budget is highly concentrated on health care expenditures (almost 80% of their operating expenditures), which we believe are very hard to cut. All of these expenditures are inflexible as they derive from a dedicated transfer from the central government that is fully redistributed to the healthcare sector (S&P 2007, 22).

As with bailout expectations, it appears the effects of expenditure assignments are conditional on economic development. S&P clearly considers welfare spending more rigid in developed countries. It is worth quoting the agency's comments at length.

> Expectations of the population in terms of public services standards could be higher in wealthier [subnationals], compared with [subnationals] in relatively poor countries. Notably, a large concentration of costs in the healthcare and education sectors, combined with high standards of services provision, puts pressure on [a subnational's] performance and limits its ability to cut spending in case of need...In contrast, lower standards of service provision and employment allow more for expenditure adjustments; therefore Russian and Mexican [subnationals] have relatively high expenditure flexibility (S&P 2007, 8-9).

The agency goes on to cite evidence of this flexibility in the Russian case:

> When under pressure following the 1998 crisis, many Russian [subnationals] stopped making payments for social taxes and supplies, with some even delaying salaries to public servants for months without significant interruption to the provision of basic services. Although this is certainly not the type of flexibility that Standard and Poor's would evaluate positively, it does show that [subnationals] in such an environment have some room to maneuver, in spite of the fact that the lion's share of important education and healthcare spending in Russia is also financed via earmarked transfers (S&P 2007, 9).

Other operating expenditures are considered less rigid. For S&P, these include spending on culture, sport, and subsidies to private companies (S&P 2007, 11). But expenditure rigidities are not limited to core welfare responsibilities. Rating agencies also highlight the "essential" nature of other services, including transportation, waste collection, and sewage. This is evident in the following statement about Italian cities: "Italian local governments have limited flexibility on

their operating expenditure as the bulk of it relates to the essential public services that make up their core responsibilities, such as public transportation, waste collection, and the social sector" (S&P 2007, 19).

Rating agencies clearly consider public investment more flexible than operating expenses. In the words of S&P, "capital expenditures are usually considered more flexible than operating costs, which are very personnel intensive. As a result, [subnationals] with a higher share of capital expenditures tend to benefit from a more flexible budget" (S&P 2007, 9). These views are apparent in the following comments about French regions:

> Regions have [more expenditure flexibility] than other layers of government in France due to their historical capital expenditure focus, mainly in roads, transport, economic development, and education. This has declined in recent years, however, as a result of the recent devolution process that mainly consisted in transferring recurrent expenditures, including large numbers of education-related staff, to the regional level (S&P 2007, 17).

But the flexibility of investment spending depends on the strength of local infrastructure demands. Here, rating agencies take several factors into account, including the region's demographic profile, economic growth, economic development, and the quality of existing infrastructure. S&P, for example, believes underinvestment in Bulgarian infrastructure creates significant spending pressures for Bulgarian municipalities. However, Swiss cantons and New Zealand local governments could easily defer investments given their solid infrastructural bases and limited developmental needs (S&P 2007, 10). S&P believes pressure for infrastructure spending is greater in developing countries. Indeed, growing infrastructural requirements are often the reason these jurisdictions borrow and solicit credit ratings in the first place (Liu and Tan 2009).

Expenditure Assignments, Bailout Expectations, and Standalone Credit Risk: The previous chapter suggests subnational responsibility for sensitive services relaxes market constraints by fueling markets' bailout expectations. This chapter suggests that responsibility for sensitive social services (i.e. education and healthcare) stiffens market constraints by restricting governments' capacity to cut spending. These conflicting results beg an important question: What is the overall impact of expenditure assignments? Do the negative effects on standalone ratings outweigh the positive effects on bailout expectations?

Figure 5.2 Expenditure Flexibility, Group Averages, 2004-06
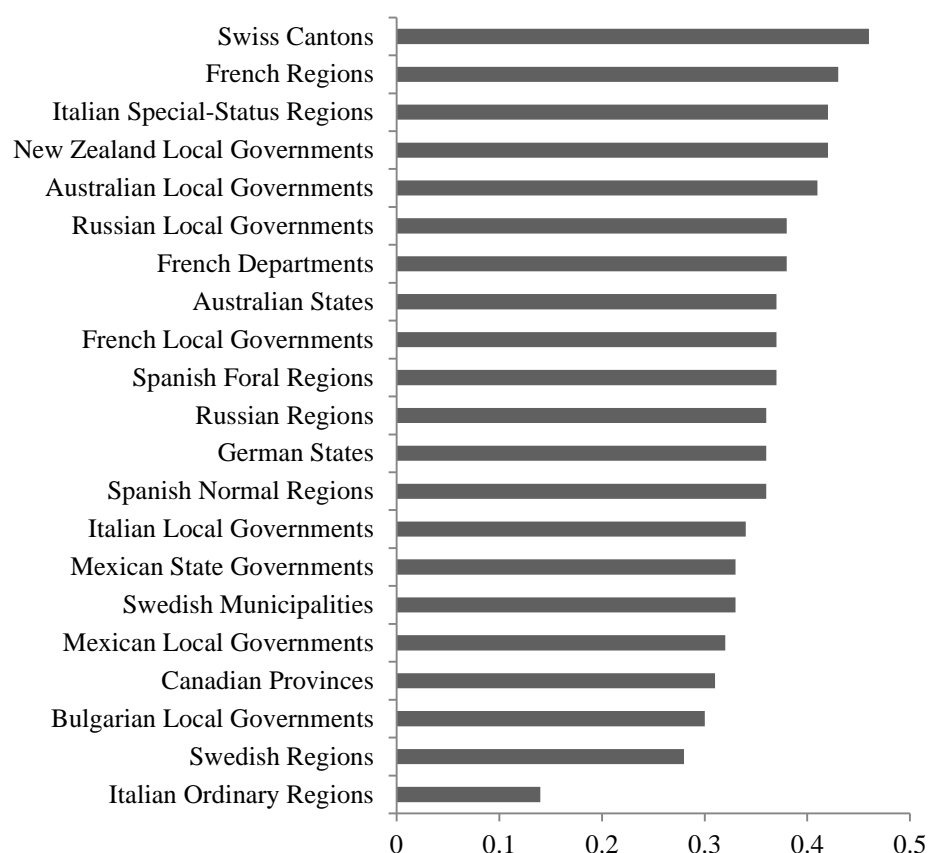
Source: Standard and Poor's

It is difficult to answer this question definitively, because we lack appropriate data to test it quantitatively (see the previous chapter for an explanation of why.) However, there is at least some evidence that sensitive assignments are more apt to relax than stiffen market constraints. I base this argument on two separate claims. First, the previous chapter strongly suggests that sensitive assignments fuel bailout expectations. Second, expenditure flexibility does not vary considerably across countries, despite variation in the sensitivity of spending commitments. Healthcare, education, and other universal services may be among the most rigid expenditures, but residents also regard garbage collection, policing, and other local services as essential and investment spending is, under certain conditions, difficult to contain. The general inflexibility of expenditures is reflected in S&P's expenditure flexibility index. The index, displayed in figure 5.2, compares the flexibility of 21 groups of subnationals. The coefficient of variation is 18.9 compared to a coefficient of 64.5 for S&P's *revenue* flexibility index (author's own calculations). The expenditure coefficient drops to 12.8 if Italian ordinary regions, an extreme outlier, is excluded. S&P acknowledges this limited variability and attributes it to the "internationally recognized difficulties in cutting budget spending" (S&P 2007, 10). This suggests sensitive service provision's positive effect on bailout expectations outweighs its negative effect on standalone ratings. In other words, responsibility for universal services boosts credit ratings.

Additional Variables

The qualitative analysis reveals a number of additional determinants of standalone credit risk. This section briefly touches on some of these factors, particularly those that concern the division of intergovernmental fiscal authority. I refer readers to Liu and Tan (2009) for a more comprehensive survey of the drivers of subnational credit ratings and risk.

The first major factor is central oversight of subnational finances. In recent years, we have seen a notable centralization in government borrowing as a growing number of countries impose hierarchical limits. These limits come in several forms, including debt and deficit limits and restrictions on borrowing. Not surprisingly, rating agencies view hierarchical controls positively. Not only can they signal bailout commitments (see previous chapter) but they also improve standalone creditworthiness by limiting debts and refinancing needs. The centralization of government borrowing appears poised to grow, particularly in the European Union where Eurostat incorporates all government debts into general government accounts and where subnational governments are often active participants in national austerity programs. We see this participation in Belgium, Germany, Italy, Spain, and elsewhere.

The effectiveness of hierarchical controls is arguably the biggest determinant of subnational credit risk and yet it does not receive a great deal of attention in this chapter or the dissertation. The foremost reason is that its effects are not particularly interesting. It is hardly surprising that governments that cannot borrow and cannot, therefore, run up debts receive higher ratings. Still, there are a number of important puzzles with respect to hierarchal controls. One is whether rating agencies and investors consider certain controls more or less credible. Research in this direction could build upon recent work on the effects of various types of fiscal rules on subnational fiscal performance (Plekhanov and Singh 2006).[10] Another, arguably more, interesting question is what determines these controls and their credibility. Hierarchy is often

---

[10] This work regularly distinguishes between three types of rules: administrative constraints (whereby the central government has direct control over government borrowing); fiscal rules (which target fiscal outcomes); and cooperative arrangements (whereby debt limits are negotiated between different levels of government) (Ter-Minassian and Craig 1997).

negotiated in the wake of sovereign or subnational debt crises, but the stringency and nature of these rules vary considerably across countries.

The qualitative analysis also reveals the importance of the quality and transparency of governments' financial information. Rating agencies look favorably upon comprehensive and sophisticated financial reporting. Analysts assess, among other things, the frequency and timeliness of financial reporting, the accuracy of fiscal forecasts (i.e. forecasts of revenues and expenditures), whether financial statements are independently audited and whether the government employs accrual (as opposed to cash-based) accounting practices. In some cases, these practices vary considerably across countries. In most cases, however, they are determined by national regulation or legislation (S&P 2010).

Finally, rating agencies also pay close attention to the predictability, stability, and responsiveness of fiscal federal arrangements. There are a series of questions all agencies ask. Do expenditure and revenue assignments evolve in predictable ways? Are changes to intergovernmental expenditure and revenue assignments limited and gradual? Are subnationals given appropriate resources (i.e. grants and own-source revenue streams) to cope with new responsibilities? Are subnationals in a position to negotiate or veto reforms that implicate their fiscal health? These questions pertain to the meta-institutions underpinning the intergovernmental framework. This variable barely registered in the quantitative analysis above, though this may have been due to its collinearity with other variables.

Perhaps the interesting question for political scientists is not whether these assessments affect ratings, but what factors shape these assessments. Here, rating analysts clearly consider units' structural influence over fiscal and institutional outcomes. The intergovernmental arrangements considered most supportive are often underpinned by territorially representative

upper chambers. But agencies also highlight sources of influence the comparative federalism literature regularly ignores. These include powerful associations of local and regional governments found in Scandinavia and other unitary countries. Ultimately, however, it seems these assessments are largely endogenous to economic development. Groups in rich countries generally score higher on this dimension than groups in poor ones.

5.4   SUMMARY

This chapter examines the relationship between fiscal federalism and subnationals' standalone creditworthiness. The analysis revolves around subnationals' fiscal flexibility or their capacity to independently adjust revenues and expenditures. I place particular emphasis on the revenue side, which appears to account for the majority of variation in units' overall flexibility. The quantitative analysis reveals a clear and positive relationship between standalone ratings and access to own-source revenue. The qualitative analysis suggests that revenue autonomy sends rating agencies several positive signals. It suggests that subnationals have the capacity to manage fiscal challenges and shocks. It also suggests that subnational finances are less sensitive to national business cycles.

I also consider the relationship between standalone ratings and various aspects of expenditure flexibility. Variation in expenditure flexibility is relatively limited, but governments' formal authority to adjust expenditures varies. Flexibility also depends on the political sensitivity of spending assignments. Operating expenses are generally tougher to retrench than public investments, particularly where operations are concentrated in personnel or core welfare services.

Finally, the chapter briefly considers the effects of other fiscal federal variables, including hierarchical controls, the quality of financial information, and the stability, predictability and responsiveness of the intergovernmental environment. The qualitative analysis suggests all of these variables are potentially important. The statistical analysis suggests the quality of government information may be particularly important.

This concludes the analysis of standalone credit risk. The final empirical chapter turns to the most critical credit belief: perceptions of sovereign risk.

6 SOVEREIGN RISK

6.1 INTRODUCTION

This chapter considers the relationship between sovereign risk and subnational market constraints. It makes three broad claims. First, extreme shifts in sovereign risk can trigger booms and busts in subnational credit. Second, fiscal federal institutions only weakly mediate these shifts. Third, in any given country, the costs and benefits of these shifts are unevenly distributed across national and subnational borrowers. These asymmetries are attributable, in part, to variation in investors' knowledge of national and subnational borrowers. Foreigners favor national over subnational debt, because it is costlier to gather and process information on subnational than national credit characteristics. These costs reflect, among other things, the complexity and variability of the systems of intergovernmental fiscal relations in which these units are embedded.

This chapter focuses on the effects, rather than the determinants, of sovereign risk. It differs from the previous two chapters, which treat credit beliefs as endogenous. The shift in emphasis reflects two factors. First, as I argue in chapter 2, the dissertation's independent variable of interest (fiscal federalism) only likely explains a small share of sovereign risk. Second, of the three credit beliefs, sovereign risk has the most profound impact on subnational borrowing conditions.

This chapter relies on a range of data, including spread data, media reports, and insights from interviews with German market participants. Many of the independent variables of interest, including foreign investors' knowledge of subnational borrowers, are difficult to measure. Media

reports and interviews with underwriters and treasury officials, two groups of actors in direct contact with foreign investors, help alleviate this problem. These actors can speak to investors' knowledge and concerns, providing a useful means of establishing cause and effect.[1] Some of the treasury officials[2] interviewed provide particularly valuable insights: They belong to a select group of subnational officials in close and regular contact with international investors.

The chapter is organized as follows. Section 6.2 examines the broad correlation between sovereign risk and subnational credit, particularly in the current context of global financial uncertainty. Section 6.3 describes and explains the uneven costs and benefits that safe haven flows bestow upon national and subnational governments. Section 6.4 concludes.

6.2   SOVEREIGN RISK AND SUBNATIONAL CREDIT

Subnational and national credit conditions closely correlate. This correlation reflects several common factors, including exchange rate, inflation, and economic risk. Above all, however, it reflects sovereign risk or expectations of the central government defaulting.

Sovereign risk impacts subnational credit outcomes through three channels. The first is standalone default risk. Shared membership in a monetary union implies tight linkages between national and regional economies and finances. This integration underlies rating agencies' policy of capping, with rare expectations, subnational ratings at sovereign levels. It is also evident in the statistical analysis in chapter 5, in which the sovereign rating provides the best predictor of

---

[1] Mosley (forthcoming) argues that interview data may be particularly useful when variables of interest are difficult to measure.

[2] Treasury officials refer broadly to both debt managers and investor relations personnel responsible for marketing an issuer's debt.

Moody's standalone ratings. Figure 6.1 shows just how tight this relationship is. It displays the correlation between sovereign and standalone ratings issued by Moody's Investors Services.

Figure 6.1 Moody's Standalone and Sovereign Ratings (2010)
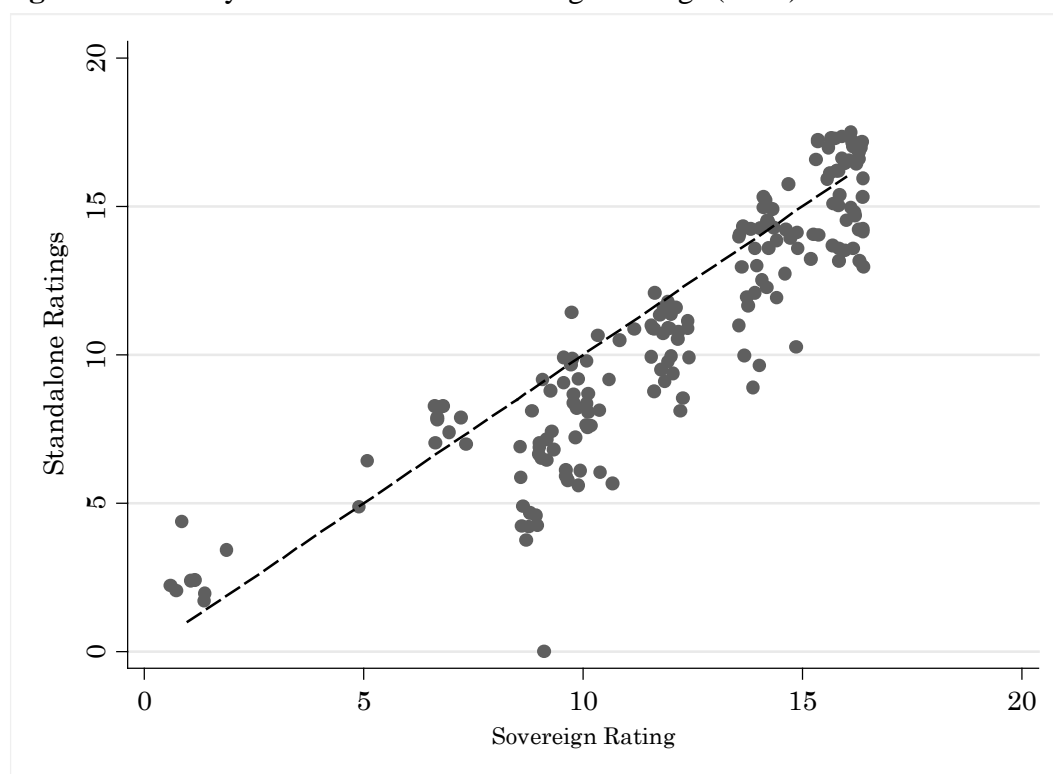
Source: Moody's Investors Services

Sovereign risk also impacts the credibility of central bailout commitments. A government on the verge of default is not well positioned to bail out lower levels of government whereas a government with little or no difficulty servicing its own debts is a more credible guarantor. This fact is explicitly recognized in Moody's algorithm for determining subnational ratings. The model discounts the positive effect of bailout beliefs as the probability of sovereign default rises. This mechanism also arose in interviews with investors in Canadian provincial bonds. Several interviewees claimed the credibility of Ottawa's bailout commitments would decrease, at least

somewhat, if Ottawa's fiscal position deteriorated to 1990s levels. A few believed Ottawa's credibility would deteriorate significantly.

Finally, sovereign risk affects market constraints by determining the base cost of borrowing. Investors use sovereign interest rates as benchmarks for pricing the debts of most borrowers, private and public, in a given country. This convention partly reflects objective credit considerations (recall the close linkages between national and subnational economies.) But the sovereign yield is, at best, a shortcut for assessing subnational credit risk and like all informational shortcuts, exerts independent effects.

A significant component of the sovereign yield is the "risk premium" or compensation investors receive for the risk of sovereign default. Sovereign risk premia have diverged significantly in recent years, largely on account of the deteriorating creditworthiness of peripheral euro area countries. These dynamics have stoked general risk aversion, increasing demand for safe assets. They have also eroded the supply of riskless paper. This has put enormous downward (upward) pressure on the yields of safe (risky) assets, resulting in significant spread widening across the developed world. Diverging risk premia have had profound implications for subnational borrowers. Australian states, Canadian provinces, German Länder, Swiss cantons and US states have seen their interest rates plunge while Spanish regions find themselves locked out of capital markets.

In some countries, safe-haven status has attracted significant foreign investment in subnational bonds. Regional securities in Australia, Canada, and other safe countries offer a number of attractive features. They are considered safe (by virtue of their sovereign context); provide a material "pickup" or yield spread over sovereign bonds; and are available in relatively liquid formats.

Canadian provinces have been direct beneficiaries of these developments. Provinces suffered a net outflow of non-resident bond holdings at the peak of the global financial crisis, as investors sought haven in US treasuries, but have experienced net gains in non-resident holdings from late 2008 onward. These gains have not come strictly from growing foreign currency issuance. They have also come from growing demand for provinces' domestic currency bonds. In early 2012, annual net purchases of provincial bonds had reached a record $12.7billion.[3]

But arguably no group of subnationals has benefited more from safe-haven flows than German states and their development banks. Immediately after the crisis, most investment in state paper came from traditional domestic sources. One was German pension and insurance funds seeking both safety and yield by buying long-dated state paper (typically in Schuldshein format). The other was the Landesbanken or state-owned banks investing in short-dated bonds, which they used as collateral for covered bond issuance. (The latter investments were spurred, in large measure, by a covered bond purchase program initiated by the European Central Bank.) More recently, however, the states have become beneficiaries of safe-haven flows. Their two principal investors, at the time of writing, were bank treasuries and official investors (i.e. Asian reserve mangers and sovereign wealth funds). The former are rapidly building their liquidity and collateral portfolios in order to comply with new capital requirements while the latter are awash in liquidity generated by their countries' current account surpluses. Both groups are scouring the globe for increasingly scarce safe assets and have come to view state bonds as cheaper, if slightly riskier and less liquid, surrogates for German national debt. The states cannot issue debt fast enough to satisfy the rising demand. In many cases, investors are not waiting for states to issue, but actively asking governments and their banking syndicates to come to market. One

---

[3] *Desjardins,* "Canada's enviable position attracts an influx of foreign investors," July 25, 2012

underwriter, interviewed for this research in late 2011, reported fielding "reverse inquiries" from China's State Administration of Foreign Exchange (SAFE) every two to three days.[4]

Underwriters are struck by the concessions global investors are willing to grant state issuers. Liquidity managers and central banks have high liquidity requirements and as such, only bid on debt issues that meet minimum issuance thresholds. Prior to the crisis, this requirement was generally €1billion. It is now €500million.[5] The lower threshold creates new issuance opportunities for smaller borrowers and sustains opportunities for issuers with shrinking borrowing programs. Underwriters ascribe this and other concessions to German states to the current seller's market in safe assets. The falling supply and increasing demand for safety have translated into rock-bottom interest rates for highly regarded sub-sovereign issuers, including German states and banks like NRW Bank and L-Bank (the development banks for the states of North-Rhine Westphalia and Baden-Württemberg, respectively). Indeed, rates had, at the time of writing, become so low that traditional investors were exiting the market---pension and insurance funds because yields were too low to cover their liabilities and the Landesbanken and mortgage banks because yields were too low to meet their re-financing needs.

Note that falling yields have corresponded, at various points, with rising national-subnational spreads. In other words, states' absolute funding costs have fallen while their relative costs have increased. Rising rates have prompted some to suggest that the states, perhaps due to rising uncertainty in global credit markets, are now subject to closer market surveillance. There may be some truth to this. Some investors interviewed for this research did, in fact, express

---

[4] Interview GB-1

[5] Interviews GB-1, GB-3, GI-1, GI-6, GI-7

concern over rising credit risk. On the other hand, absolute yields continue to plummet despite little or no improvement in certain states' finances. Thus, despite rising spreads, market pressure to balance budgets has arguably relaxed.[6]

I have focused, thus far, on the happy borrowing conditions of Canadian provinces and German states, two groups that have benefited immensely from their national governments' "halo effect." On the losing end of the flight to quality is Europe's other big group of subnational borrowers, the Spanish regions. The regions have been more or less shut out of conventional bond markets since March of 2010. Only one region, Madrid, has come to market with a sizeable bond issue since May, 2011, and it was only arguably able to do so because of the brief easing of credit conditions created by the European Central Bank's Longer Term Refinancing Operations. Madrid sold 87 percent of the three-year, €665million issue domestically, despite a banking syndicate consisting of several major international banks (the international syndicate suggests the region was hoping to distribute more securities abroad). The issue was sold at 200 basis points above Spanish bonds of similar maturity, an extremely high spread for a bond of such short duration.[7]

Having lost access to international capital markets, regions have fallen back on short-term domestic bank loans and so-called "patriotic bond" sales to domestic retail investors. These

---

[6] Some investors consider these investment patterns serious sources of moral hazard. As one liquidity manager puts it, highly rated governments and corporations are being asked to borrow whether they need to or not (Interview GI-1). The upshot, he says, will be the next credit bubble and banks that are too big to fail because of their role in supporting the public sector. He also claimed credit risk plays a decreasingly important role in determining investment decisions in relatively safe assets. He would prefer to invest more discriminately, differentiating among German states based on their credit characteristics, but his liquidity requirements and the limited supply of safe assets force him to bid on almost any and all state bonds that come available. By the same token, several investors no longer believe the risk premia on state bonds adequately compensate them for credit risk. Inadequate risk insurance, along with inadequate returns, have pushed several groups of investors, including mortgage banks and pension funds, out of the state sector (Interview GI-2).

[7] *Euroweek*, "Autonomous Community of Madrid," 16 March 2012

short-term funds have come at punishing interest rates, exposing regions to significant re-financing risk. Liquidity became so challenging in late 2011 that one region, Valencia, briefly defaulted on a loan from Deutsche Bank, though the national government stepped in within two weeks, pressuring a state bank to extend a soft loan, which was used to repay the defaulted sum.[8]

The Spanish government has taken several measures to shore up regions' liquidity. The first was a credit line from Instituto de Crédito Oficial (ICO) (the State's Financial Agency of Spain) intended to help regions refinance maturing debt. The state also approved a €35billion facility (Fund for the Provision of Financing to Suppliers) that allows ICO to take out nationally guaranteed loans aimed at helping regions and municipalities repay their suppliers. More recently, the Spanish government has been putting together the €18billion Regional Liquidity Fund (FLA), which will finance itself through a loan from the state lottery and private bond sales to banks. Four regions, Andalucía, Catalonia, Murcia, and Valencia, had requested FLA funds at the time of writing and only three regions, Madrid, Galicia, and La Rioja, had ruled out the possibility.[9] Bailout negotiations have been tense, with several regions refusing to comply with the fund's austerity conditions. Talks between the national government and Catalonian officials have triggered mass protests and even secessionist threats in that region.

6.3   UNEVEN COSTS AND BENEFITS

In short, investors' confidence in the sovereign government largely determines whether subnationals are on the winning or losing end of global safe-haven flows. But these flows do not

---

[8] House, Jonathan and David Roman "Spain's Valencia Pays Deutsche Bank Loan Late," *Wall Street Journal,* 4 January 2012. Note that a late payment still technically constitutes a default.

[9] *El Pais,* "Only three Spanish regions to snub Regional Liquidity Fund," 5 September 2012

impact national and subnational governments equally. Subnational governments have seen their borrowing costs rise relative to sovereign borrowers in both safe and unsafe countries. Chapter 3 briefly addressed these developments in Canada. National-provincial spreads were generally within 30 basis points prior to the crisis, but rose rapidly as turmoil in global financial markets grew in late 2007. Spreads between 10-year government of Canada and Quebec bonds peaked at roughly 180 basis points after the Lehman Brother's default. And although they fell shortly thereafter, have continued to rise and fall with uncertainty in global financial markets ever since. By the summer of 2012, they had breached the 100-basis point barrier yet again.

These developments are not unique to Canada. They have also occurred in Australia where spreads on 5-year state bonds had, at the time of writing, reached as high as 150 basis points. German Länder have also seen 10-year spreads exceed 100 basis points in recent years. And Spanish regions have, as I have just described, been rationed from public capital markets.

What explains this uneven distribution of costs and benefits between sovereign and subnational borrowers? It cannot, in any of these cases, be attributed to the lack of implicit guarantee, at least when it comes to rating agencies and domestic investors. As chapter 3 shows, there is broad consensus, among rating agencies and domestic investors, that Ottawa would not let a Canadian province default. This consensus should, if anything, be stronger in Australia and Germany. Unlike Canada's equalization system, which seeks to *partially* equalize disparities in *revenue-raising capacity* (see chapter 3), the Australian system seeks *full* equalization on the basis of fiscal *need* (the objective is to ensure all states have sufficient resources to provide the same levels of services and infrastructure at the same levels of tax effort and efficiency.) The program more or less obtains these objectives, signaling that the national government stands behind fiscally distressed states. Moody's and S&P agree. S&P claims the transfer system

essentially precludes an imminent default scenario, while Moody's believes that should such a scenario arise, the likelihood of a bailout is 80 percent. Australian officials have taken explicit measures to shore up investor confidence in recent years. These policies include generous infrastructure transfers; emergency aid for flood stricken Queensland (the Commonwealth has agreed to foot 75 percent of the reconstruction bill); and explicit (albeit temporary) national guarantees on new and existing state debt.

Perceptions of implicit guarantees are also alive and well with respect to German states. The German equalization system remains the most redistributive in the world, eliminating fiscal disparities among regions with grossly divergent starting points. What is more, the Constitutional Court has twice affirmed the responsibility of the national and state governments to stand by distressed Länder.[10] All major rating agencies reference these features explicitly. Moody's considers the likelihood of a bailout "very likely" or 95 percent probable (it only assigns a probability of 1 to explicitly backed entities.) Fitch considers the likelihood of bailouts so probable that it does not even differentiate among the Länder, assigning them all AAA ratings. Investors interviewed for this research also perceived a high degree of implicit support.[11] This is not to say, however, that they were unconcerned with credit risk. One asset manager, for example, claimed his portfolio was underweight on bonds issued by equalization recipients, because he expects their spreads to widen if upcoming negotiations over the equalization system

---

[10] In 1988, Bremen and Saarland sought assistance on the grounds that balancing their operating budgets (a constitutional requirement) would compromise their constitutional duty to secure 'equal living conditions' for state residents. In 1992, the Federal Constitutional Court agreed, ruling that the constitution's *'Bundestreuekonzept'* or solidarity principle made all governments responsible for supporting a state facing "extreme budgetary hardship" (Seitz 1999). The court reaffirmed this principle in 2006 when Berlin sought similar assistance (though the court actually rejected Berlin's request, because it did not consider the state's fiscal hardship sufficiently severe to warrant assistance).

[11] Interviews GI-1, GI-2, GI-3, GI-4, GI-5, GI-6, GI-7

become tense.[12] A manger of a liquidity portfolio was avoiding investing in small, fiscally challenged states, because he expects the German government to pressure bondholders to roll over their maturing debts if or when they face a liquidity crunch.[13] And others worry that a major fiscal shock will weaken the federation's capacity to assist distressed states.[14]

And yet, despite these concerns, interstate spreads have remained remarkably tight throughout the crisis, almost never exceeding 20 basis points on 10-year bonds. And many, if not most, market participants believe the spread is driven as much, if not more, by concentration as credit risk.[15]

Spanish regions also benefit from a number of implicit support mechanisms. The national government is heavily involved in regulating regional finances and borrowing and is constitutionally responsible for ensuring national standards of service provision in sensitive regional policy areas. Regions also partake in a relatively robust system of fiscal equalization. Finally, several have high profiles in capital markets, providing the center with yet another incentive to protect their solvency. Rating agencies do not think Madrid will let a region default (at least not for long). According to S&P, "regions do not walk alone; they are embedded in a

---

[12] Interview GI-3. He did not expect these negotiations to result in a fundamental reform of existing fiscal federal arrangements. His concerns were linked solely to the likely headline risk to result from the public debates. He also claimed the euro area crisis had taught him not to take anything for granted.

[13] Interview GI-4

[14] Interviews GI-2, GI-4

[15] Concentration risk refers to the risk associated with the lack of portfolio diversification. German investors typically diversify their holdings by establishing limited credit lines for some or all states. Large issuers like North-Rhine Westphalia and Berlin pay a spread over smaller issuers, because their credit lines are the first to fill. By contrast, small borrowers often receive discounts because their bonds are relatively scarce. In a sense, concentration risk is similar to credit risk in that it punishes large absolute debtors. But the desire to diversify is conceptually distinct from the desire to limit credit risk. What is more, absolute debts are poor indicators of default risk. Unlike debt-per-capita or debt-to-operating revenue ratios, they do not measure debt sustainability.

supportive intergovernmental system where the central government has historically come to the rescue in the face of systemic problems" (2010: 8). The Spanish government's recent efforts to bolster regional liquidity (see above) arguably vindicate these expectations.

Spread widening cannot, therefore, be attributed to the lack of implicit guarantee, at least among domestic investors and rating agencies. What, then, is driving national-subnational spread widening in these countries? The obvious (and arguably most important) explanation is rising risk aversion and its impact on investment behavior. Investors' first priority currently is preservation of capital. This induces disproportionate investment in the safest and most liquid assets, i.e. highly rated sovereign bonds. But shifting preferences over liquidity and safety only tell part of the story. Chapter 2 links spread widening to yet another mechanism: investors' asymmetric knowledge of government asset classes. The flight to safety has resulted in massive flows of foreign capital into and out of various countries. Again, all borrowers in a given country tend to benefit or suffer from these flows in tandem, but the costs and benefits are not evenly distributed. Sovereign borrowers tend to benefit more (suffer less) than subnational borrowers in safe (unsafe) countries, because investors have superior information on the former's credit characteristics or type. Inferior information on subnational governments causes investors to perceive subnational debts as riskier. The upshot is underinvestment in subnational assets and a consequent widening of national-subnational spreads. I attribute these asymmetries to, among other things, the costs of gathering and processing information on subnationals' fiscal federal frameworks.

These costs are reflected in the investment policies of foreign investors. The sovereign debt crisis has increased foreign interest in safe assets, but this interest does not necessarily or quickly translate into demand for safe subnational assets. As underwriters in Germany and

elsewhere regularly report, account managers often require approval from credit committees or risk management boards to invest in foreign securities. This approval is often preceded by careful credit analysis. Approval for sovereign borrowers, particularly highly rated ones, is not difficult to attain and may, in many cases, already be in place. These borrowers maintain a high profile in capital markets and data and methodologies for assessing and comparing their creditworthiness are readily available.

Next in line are explicitly guaranteed entities like, for example, the European Investment Bank, the Reconstruction Credit Institute (*Kreditanstalt fur Wiederaufbau (KFW)*) of Germany and the Canadian Mortgage and Housing Corporation of Canada. Rating these borrowers is also relatively straightforward. Provided explicit guarantees are credible, analysis shifts almost exclusively to the creditworthiness of the sovereign issuer.

But evaluating Canadian provinces, German states, and other *implicitly* guaranteed entities is more complex. Rating agencies have to gauge carefully central bailout commitments and to the extent these are uncertain, the probability of standalone default. Not surprisingly, risk boards are much slower and more reluctant to approve investments in these debts. As one Canadian banker puts it, "A typical central bank is bombarded with opportunities to invest in various jurisdictions…While they are very comfortable with Canada bonds, when they start looking at CMBs [Canadian Mortgage Bonds], or provinces, or even banks, there is another layer of name approval and credit work and this can take time."[16]

The demand for credit information has exploded in recent years. This is partly due to a generalized loss of confidence in public (and private) borrowers. The global financial crisis,

---

[16] This quote comes from Andrew Hainsworth, managing director of debt capital markets at the Bank of Montreal. He was quoted in *Euroweek,* "Public sector borrowers happy to play home and away," 2012. Similar views were expressed by several treasurers and underwriters interviewed for this research.

Greek default, and the deteriorating sustainability of sovereign debt have shattered the once ubiquitous view that developed countries do not default. These developments have also undermined investors' confidence in international credit rating agencies, whose analysts failed to predict these paradigmatic events. Thus, while credit ratings continue to play an important role, investors' reliance on internal credit analysis has grown considerably.[17] These developments affect all borrowers, but they raise special challenges for subnational issuers, whose credit characteristics are exceptionally challenging to assess.

Information demands have been reinforced by events unique to sub-sovereign debt markets, the most notorious of which has been the Norwegian government's abrupt decision to gradually unwind *Ekportfinans*, the country's implicitly guaranteed export development agency. The decision induced an immediate and significant downgrade of the agency's bonds (they almost immediately acquired junk status) and raised broader questions about the credibility of implicit bailout commitments. Implicitly backed borrowers saw immediate spikes in borrowing costs relative to explicitly guaranteed entities and their balance sheets and support mechanisms came under even closer scrutiny from international investors.[18]

Informational issues figured prominently in my interviews with underwriters and subnational treasury officials in Germany. These asymmetries have multiple roots, but arguably none more critical than the costs of determining the credit implications of fiscal federal institutions. Elucidating the ins and outs of the fiscal federal system is arguably the most

---

[17] This does not obviate the value of credit ratings data used in chapters 4 and 5. Recall the following justifications: (1) ratings and risk premia are still highly correlated, even though this correlation may be weakening in certain contexts, (2) rating agencies are arguably the only organizations with a global view of the subnational sector (a justification for using these data in cross-national analysis) and (3) rating agencies exert powerful independent effects; that is, they constrain government fiscal policy independent of their effects on subnational borrowing costs.

[18] Lewis, Julia "Eksportfinans reveals true costs of implicit guarantees," *Euroweek,* March 2012.

challenging task German treasurers and investor relations personnel face. The following

comments, from a German investment banker, are broadly representative. The banker quickly

dismisses the notion that national-state spread widening reflects meaningful variation in default

risk. Rather he attributes widening to two other factors:

> The most important factor is…liquidity…The Bund [provides] by far the most liquidity…in Europe…The other aspect is that…investors outside of Germany, with few exceptions, don't normally understand the credit relationship between the Bund and the Länder…There is a constitutional mechanism of equalization, but there is no explicit guarantee and it requires analysis and reading….to understand…[This is not] an effort easily made.[19]

State treasurers and underwriters in Australia came to a similar conclusion when asked to

comment on recent spread widening in the Land Down Under. The Australians, whose

comments appear in a series of articles in *Euroweek*, link spread widening to several factors,

including states' deteriorating creditworthiness (debts are rising and credit ratings falling) and

growing risk aversion in financial markets. But most find these explanations wanting or

incomplete. The implicit consensus is that spreads reflect, at least in part, foreign safe-haven

flows that favor national over subnational borrowers. The differential treatment is, according to

many, rooted in foreigners' unfamiliarity with states and their fiscal ties to the national

government. According to one Sydney-based underwriter:

> Foreign investors are wary of [state] credit quality…We try very hard to increase international investor appetite for…[state bonds] because we believe they offer good value for what is effectively the credit of the Commonwealth. But the fact that the guarantee is implicit rather than explicit makes global investors nervous.[20]

---

[19] Interview GB-2. This sentiment was affirmed in interviews with other bankers as well (e.g. GB-1, GB-3, GB-4).

[20] *Euroweek,* "The World's Favourite Public Sector Borrowers," July 2012: 15

State treasurers (or debt managers) express frustration with the lack of international bid.

According to a treasury official at the Treasury Corporation of Queensland:

> About 50% of our revenue comes from the Australian government…We also have a number of other important financial arrangements with the government, which is committed to meeting 75 percent of the reconstruction costs arising from natural disasters.[21] I think there is a question mark over whether…offshore investors, in particular, understand the strength of the fiscal relationship between the government and the states.[22]

A Western Australian treasury official makes a similar comment:

> We've been working very hard to improve investors' understanding of the strong relationship between the states and the federal government but it's difficult to overcome this implicit/explicit guarantee issue from a legal perspective…It's a work in progress, but my impression is that investor understanding is improving.[23]

Limited familiarity with foreign borrowers often deters investors even when the latter are nearly ready to invest. In some cases, foreigners may be unaware of subnationals' borrowing schedules and targets. In other cases, these schedules are unpublicized or non-existent. In either case, investors need to decide whether to invest when borrowers go to market, but may not have the time or capacity to undertake the requisite credit analysis. These factors often prevent foreign participation in domestic bond issues. An investor at Allianz Belgium recently raised this issue in a published roundtable discussion:

> As a Belgian investor, I know the Flemish Community very well. I understand that they are in a much better economic position than the federal government. So I don't need a rating to help me make a decision about whether to buy a bond issue from the Flemish Community. For a borrower like the Basque Region, however, I certainly need a rating. And when a borrower like that comes to the market, I need to have sufficient time to read about the issuer to learn about how much autonomy

---

[21] Queensland was the recent victim of severe flooding.

[22] Ibid., 15-16

[23] *Euroweek,* "Cost-conscious semi states look to maintain funding advantage," July 2012: 26

they have over tax revenues and so on. My personal opinion is that last year issuers tended to be closed half an hour after they were originally announced. As an investor that simply does not give you enough time to read the necessary documentation. As a result, we may have missed a few interesting opportunities.[24]

In a similar vein, one Frankfurt-based underwriter (interviewed for this research) spoke to the rapid flow of information that occurs when German borrowers go to market. He also referred to the shared information among various actors. All domestic actors – investors, underwriters, and treasurers – have been party to these transactions in the past. They are familiar with one another and the risks involved and what they do not know, they can easily learn by picking up the newspaper or the phone. The underwriter brought the point home by recalling his experience watching CNN on a recent trip to the United States. Not particularly familiar with the country, he admitted his exasperation with the breathless succession of interviews, news clips, and breaking news flashes, all overlaid by a ticker reporting everything from politics, to car accidents, and stock prices. He pondered aloud how any German investor could ever get their money through the door with so many American borrowers and so little knowledge of the depth of implicit guarantees, credit ratings, and the domestic context.[25]

And yet despite these obstacles, foreign interest in subnational debt is growing. These securities offer several attractive features, including liquidity, safety, and yield pickup in a low-yield environment. Foreigners are increasingly willing do their homework on these borrowers as a result. However, they place much of the onus of information provision onto subnational treasuries and their banking syndicates. Public borrowers in Australia, Canada, and Germany have been enhancing or launching investor relations units in order to inform and continually

---

[24] *Euroweek,* "Dexia Regional and Local Government Roundtable," 7 June 2010

[25] Interview GB-5

update investors on credit developments in their jurisdictions. Road shows are central planks in these information campaigns. Issuers and their banks have been travelling the globe educating investors on their balance sheets, credit ratings, and implicit support mechanisms. Borrowers are also making this information available on increasingly sophisticated and up-to-date websites.

The most critical information, from investors' perspective, concerns credit risk. But other types of information are also in demand. Investors request detailed information on borrowing plans and targets, so they can make timely investment decisions. Public officials also work closely with their banking syndicates to keep investors updated on spread developments in secondary markets.

Cultivating international demand is a painstaking process. "It takes a long [time] and not every issuer can afford [to put in the time]," explains one German investor relations official. "The longest it took me [to convince an investor] was nine years...I went there every year and… after nine years they started to invest."[26] Market participants report that meetings with investors are growing more frequent and detailed. Investors are asking more pointed questions and arriving at meetings increasingly prepared. Borrowers are expected to meet with major investors on an annual basis. According to a treasury official for the Australian state of Tasmania:

> [Frequent meetings are important] when you talk to an investor in Dublin who perhaps has 50 or 60 counterparties that he or she is reviewing in a year. If an issuer like [Tasmania] doesn't spend the time in places like Dublin talking to the people there and presenting its credit credentials, then those investors will quite quickly find a reason to drop you from their credit list.[27]

Some investors invest more in credit research than others. A recent report by the International Monetary Fund (IMF) suggests that the most risk-averse investors are central bank

---

[26] Interview GT-1

[27] *Euroweek,* "Cost-conscious semi states look to maintain funding advantage," July 2012: 25

reserve managers. According to the IMF, this is because "reserve managers place a premium on short-term safety in order to meet short-term contingent liabilities linked to balance of payments requirements and other financial stability considerations" (IMF 2012, 91-92). This perception was affirmed by one of the interview participants. "I would say the most skeptical investors are the central banks...It takes [them] the longest to get approval, get the understanding in place, and finally allocate the credit lines, because they really want to understand everything in detail...I have had hours of conversations with...[their] credit analysts...repeatedly asking the [same] questions to see if [my answers were consistent]."[28]

And yet despite their risk-averse nature, reserve managers (in the developing world at least) are some of the most likely investors in sub-AAA paper, largely because they are willing to do their own credit research. According to one German treasury official: "Big Asian investors, the Chinese for instance…really understand that the German federal states and...development [banks] are equal [in terms of creditworthiness] to the Bund [the national government]; that they are [part of] the same package."[29]

Reserve managers' painstaking attention to detail may help explain spread widening in Australia currently. Asian central banks have flooded the national bond market with capital, but have been much slower to turn to state paper. It is not because Australian states are not creditworthy, argue market observers (Australian states generally receive higher credit ratings than the German Länder), but because central banks have not had time to familiarize themselves with these borrowers and their institutional environments. But state treasury officials and

---

[28] Interview GT-1

[29] Interview GT-2

underwriters are confident they will eventually win the central banks over. According to an

official with Western Australia:

> Other than New South Whales and Queensland, we are all relative newcomers in
> terms of the diversification of our investor base offshore. Interest withholding tax
> was only abolished in very late 2008 and that was completely overshadowed by
> the GFC. So, in reality, the domestic semi market was only effectively opened to
> overseas funds from that time and we increased our overseas marketing in 2009 as
> a result. We're still working our way through the investor education process…so
> it's a fairly new phenomenon for us and we're coming off a very low base in
> terms of investor diversification. When we talk to central banks and credit
> portfolio managers, they tell us they like the Western Australian story, and they
> like the states' credit, but they have to get approvals from their credit committees
> which can be quite a hurdle.[30]

This, argues a treasury official for the state of Victoria, has been the trend with central

banks historically.

> If you look at the central banks that have been investing in Australia for a long
> period of time, they all own semi government bonds. It's the new players that
> have come into the market in the last few years that take a little time to understand
> the Australian market before they move into semis [state bonds], but history tells
> us that they do eventually start buying semis.[31]

They key to cultivating these investors claims one treasury official, is "explaining our

credit to new investors that have come into the Australian market through the commonwealth

curve…We need to emphasize the message that, in terms of the credit of the Australian states as

a whole, we're very closely entwined with the federal government"[32]

It should be noted that obstacles to foreign investment are not purely informational. Some

investors may face formal restrictions on investing in securities below a certain investment

---

[30] *Euroweek,* "Cost-conscious semi states look to maintain funding advantage," July 2012: 25

[31] Ibid., 33

[32] Ibid., 23

grade. Most European central banks, for example, are only permitted to invest in borrowers rated AAA by the major rating agencies. The same is true of the Bank of Japan.[33]

Attempts to attract international investors are not limited to information provision. Investors have taken a number of other measures to broaden their investor bases. One of the most common is supporting liquidity in secondary markets. This is achieved through several means, including bond buyback programs, hiring market makers, and above all, issuing in larger quantities. Increasing issuance volumes is challenging for small borrows and one of the main reasons why smaller municipalities in Scandinavia, Canada, and the United States borrow jointly through bond banks, municipal credit rating agencies, and other collectivist mechanisms. Autonomous borrowers have also sought to increase liquidity by pooling their borrowing needs. Several small German states, for example, regularly issue joint "Jumbo bonds" in an effort to diversify and internationalize their investor base.

Borrowers also try to maintain and publicize borrowing targets; issue tailor made debt products; select banking syndicates on the basis of the breadth of their international distribution networks; and issue in foreign currencies (investors often prefer to hold debts in their own currencies in order to limit exchange rate risk or the costs of swapping their foreign currency liabilities.)

Costs, Benefits, and Risks of Attracting International Investors

---

[33] Interview GT-1. Tax policy is also relevant. The tax treatment of US municipal bonds limits foreign investment in US state bonds. Unlike domestic investors, foreigners are not tax exempt. The exemption suppresses yields considerably, thereby deterring international investors who collect lower risk-adjusted returns.

It is likely apparent by now that cultivating international investors is costly. Small issuers (and sometimes even large ones) are loath or unable to issue in large volumes.[34] Others are reluctant to borrow in foreign currencies, which expose local treasuries to currency mismatches (exchange rate risk).[35] And road shows on other continents are expensive.

It is not surprising that a lot of borrowers avoid these costs unless they consider them absolutely necessary. The most aggressive marketers of debt tend to be large borrowers like Queensland and New South Whales in Australia, North-Rhine Westphalia and its development bank in Germany, Ontario and Quebec in Canada and Valencia in Spain. These borrowers are generally the first to saturate domestic demand for their bonds and have to look beyond their borders to limit their domestic borrowing costs. Smaller issuers like Prince Edward Island, Tasmania, Saarland, and Murcia have much less incentive to attract foreign demand. Most have little (or significantly less) difficulty raising funds domestically and are often incapable of issuing in the quantities international investors require.

Nevertheless, some medium-sized borrowers like Manitoba in Canada and Saxony-Anhalt and Brandenburg in Germany do aggressively market their bonds, even when domestic demand for their paper is sufficient. Others hire foreign syndicates to distribute bonds internationally, even if it is cheaper to borrow domestically.[36] These borrowers are playing the

---

[34] A treasury official for Australia's Northern Territory recently spoke to this issue: "We're not trying to compete with the likes of [Queensland] or [New South Whales] in terms of the investor base. We're trying to make sure that our investor base is large enough to meet our needs now and on an ongoing basis. But we don't want to waste investors' time either. So it's very important that when we come to market, we do so with a sufficiently-sized issue so that investors can justify going to their credit committees and putting the necessary limits in place…The constraint we operate under is that, these days, a $500m issue is generally the most that we can bring to market. That's a constraint because we have quite strong demand but we are limited in terms of how much we can supply." Quoted in: *Euroweek,* "Cost-conscious semi states look to maintain funding advantage," July 2012: 25

[35] A lot of borrowers, particularly in the developed world, swap foreign currency liabilities, but hedging can be expensive. Thus, foreign currency issuance is dictated significantly by movements in currency swap markets.

long game, seeking to broaden their investor base, even if it costs them a few basis points in the short run, as insurance against a drop in domestic demand. Whether the long game is cost-effective, however, is an open question. Many German state treasurers look disdainfully upon the aggressive marketing efforts of other states, particularly small ones like Saxony-Anhalt.[37] And even some underwriters, who generally encourage the long game, could not definitively say whether it bears fruit.[38] On the other hand, foreign investment in German state paper has grown considerably in recent years and many suggest it is due, in significant measure, to the marketing efforts of a handful of states (smaller ones included) and state development banks.

But cultivating international investors is not merely costly. It also poses potential risks. Foreign investors are the least familiar with these assets and the most likely to flee at the first sign of danger. Thus, their presence in bond markets increases the likelihood of cliff effects or sudden drops in asset prices when investors' confidence in borrowers is abruptly shaken. These dynamics may explain foreigners' recent flight from regional bonds in Spain. Here, the comments of a former Canadian investor in Spanish regional debt, first quoted in chapter 3, bear repeating:

> "I don't know one [region] from the other...We got rid of our Spanish bonds a couple years ago...just [because of] the headlines...not knowing particularly if one [region] was better or worse."[39]

One German treasury official displayed an acute awareness of this sort of threat. He explained he seeks to limit it by deepening investors' knowledge of the issuer's credit profile. He

---

[36] Interview GT-3

[37] e.g. Interviews GT-3, GT-4

[38] Interview GB-1

[39] Interview CI-15

also claims to discourage accounts from investing in his bonds unless they are completely comfortable with the investment. In this words:

> "[I'm] not hunting for every investor. I...tell investors that if we don't fit into your portfolio, just don't [invest], because once something bad happens, the first thing you [do is] sell our credit. But I want you to believe in our credit and stick to it, even when the markets are volatile."[40]

6.4   CONCLUSION

This chapter examines the relationship between sovereign risk and subnational market constraints. It makes three broad claims. First, extreme shifts in sovereign risk can trigger booms and busts in subnational credit. Second, fiscal federal institutions only weakly mediate these shifts. Even units with weak (strong) implicit guarantees can experience credit booms (busts) if sovereign conditions in their countries significantly improve (deteriorate). Third, in any given country, the costs and benefits of these shifts are unevenly distributed across national and subnational borrowers. This is particularly true in the current context, where diverging sovereign yields are driven by cross-border safe-haven flows. These asymmetries are attributable, in part, to variation in foreign investors' knowledge of national and subnational borrowers. Subnationals fare worse than sovereign borrowers, because it is costlier to gather and process information on subnational credit characteristics. These costs reflect, among other things, the complexity and variability of the systems of intergovernmental fiscal relations in which these units are embedded. I demonstrate these claims with evidence from media reports and interviews with subnational treasury officials, underwriters, and investors in key subnational debt markets.

---

[40] Interview GT-1

7 CONCLUSION

7.1 SUMMARY OF FINDINGS

This dissertation examined the relationship between fiscal federalism and the credit conditions of subnational governments. It began with the premise that fiscal federalism influences subnational credit outcomes by shaping market perceptions of credit risk. Credit risk was decomposed into three essential components or beliefs: bailout expectations and expectations of standalone and sovereign default. I then linked these beliefs to various dimensions of fiscal federal governance and tested these relationships on micro-level data.

I have advanced four key arguments. First, contrary to conventional expectations, transfer dependence does not send compelling bailout signals. Transfer systems are inherently complex and interact with several other features of the intergovernmental environment. Thus, it is difficult to imagine what, if any, bailout information markets ascertain from the level of transfer dependence alone. Second, transfer dependence limits the capacity of subnational governments to raise taxes, thereby undermining their standalone creditworthiness or independent capacity to honor their debts.

Third, I have contended that other aspects of the fiscal federal environment send crisper bailout signals. These factors include local responsibility for sensitive services, formal national commitments to redistributing risk and wealth across territorial units and heavy concentrations of output, debt, and population in a limited number of jurisdictions. These effects are conditional on

levels of national economic development. Commitments to protecting social services and local solvency are more credible in developed than developing countries.

Fourth, the importance of transfer dependence and more generally, fiscal federalism is overstated. Extreme shifts in sovereign risk can engender booms and busts in subnational credit; shifts that fiscal federal institutions only weakly mediate. I nuance these arguments by arguing that the costs and benefits of these movements are unevenly distributed across national and subnational borrowers. National governments benefit more or suffer less from safe-haven flows, because international investors perceive subnational debt as riskier. This perception stems, in part, from objective credit considerations, but it also stems from creditors' unfamiliarity with subnational borrowers and the federal and other political institutions underpinning their creditworthiness. I have argued that this ignorance reflects the costliness of gathering this political information.

Not only have these arguments challenged conventional wisdom. They also rest on a firmer empirical footing. I developed a fuller conceptualization of credit risk, linked its components to fiscal federal variables, and tested these relationships on micro-level data, including the first broadly cross-national measures of bailout expectations and standalone default risk.

My analysis began with a case study of provincial credit conditions in Canada. The provincial case was selected as a most-likely test of prevailing theories of market constraints. Like subnationals in the normative dualist model, the provinces resemble "miniature sovereigns" (Rodden 2006b). They are authoritative over distinct spheres of authority and rely heavily on own-source revenues to fund them. This dualism is reinforced by Canada's weak bicameralism and split and fragmented national party system. The preconditions for market discipline are,

therefore, in place and yet markets allow heavily indebted provinces to borrow with seeming impunity. I argued that these results represent an important challenge to received wisdom. I then linked provinces' favorable credit conditions to several hypotheses developed in chapter two. At the most general level, I attributed provincial credit conditions to three factors: market perceptions of an implicit bailout guarantee (rooted in provinces' provision of sensitive social services, the equalization system, and heavy concentrations of provincial debt in two provinces); provinces' unusually high capacity to raise taxes; and Canada's current status as an investment safe haven. Some of the most compelling evidence came from interviews with investors in provincial debt. The vast majority of lenders surveyed agreed that Ottawa is unlikely to let a province default. Their justifications broadly supported my expectations about the fiscal federal determinants of bailout beliefs. Above all, however, the chapter attributed provinces' favorable borrowing conditions to Canada's safe haven status or low levels of relative sovereign risk.

The next three chapters conducted cross-national analyses of the determinants or implications of each of the three credit beliefs. Chapter 4 focused on the determinants of bailout beliefs. It consisted of two parts: a statistical analysis of bailout probabilities assigned by Moody's Investors Services and a qualitative analysis of rating materials issued by the major international credit rating agencies. The analysis generated several key findings. First, it revealed that contrary to conventional wisdom, the relationship between transfer dependence and bailout expectation is, if anything, negative. The baseline statistical models generated negative and statistically significant results, though robustness checks suggested that significance may have been an artifact of selection bias. What is more, the qualitative analysis failed to uncover a clearly positive or negative effect. What was consistent, however, was the absence of a positive relationship.

The qualitative analysis in chapter 4 did, however, reveal a positive relationship between bailout expectations and other fiscal federal variables, including subnational responsibility for sensitive social services (especially universal services like education and healthcare), robust inter-territorial redistribution, and heavy concentrations of debt in small numbers of units. These effects were conditional on levels of economic development: They only contributed to higher bailout scores in developed economies.

Despite the importance of bailout expectations, the data in chapter 4 revealed that market participants almost always harbor some uncertainty over central bailout intentions. This implies investors are also concerned with the probability of standalone default. Chapter 4 shifted the analysis to this variable, analyzing the determinants of standalone credit ratings issued by Moody's Investors Service. A statistical analysis revealed a clear and positive relationship between standalone ratings and subnationals' access to discretionary own-source revenue. The qualitative analysis, which consisted of reviews of rating materials issued by the major international rating agencies, showed this result reflected the view, held by all three rating agencies, that tax autonomy increases units' capacity to cope with fiscal shocks. These results provided some of the clearest evidence of the negative relationship between transfer dependence and subnational creditworthiness.

The final empirical chapter examined the impact of sovereign risk. Unlike the previous two chapters, I treated this belief as exogenous. The chapter provided support for three broad claims advanced in chapter 2. First, extreme shifts in sovereign risk can trigger booms and busts in subnational credit. Second, fiscal federal institutions only weakly mediate these shifts. Third, in any given country, the costs and benefits of these shifts are unevenly distributed across national and subnational borrowers. The chapter disproportionately focused on the latter point. It

noted that the global financial and sovereign debt crises have triggered a sharp divergence in sovereign risk, resulting in significant cross-border safe-haven flows. Sovereigns generally benefit more (suffer less) than subnationals from these inflows (outflows). Relying on media reports and interviews with German treasury officials and underwriters, I linked these asymmetries to variation in foreigners' knowledge of national and subnational borrowers. Subnationals fare worse than sovereign borrowers, because it is costlier for foreigners to gather and process information on subnational credit characteristics. These costs reflect the complexity and variability of the systems of intergovernmental fiscal relations in which these units are embedded.

7.2   POLICY AUTONOMY AND THE WELFARE STATE

This dissertation contributes to research on the relationship between financial markets and government policy autonomy and the viability of the welfare state (Garrett 1998, Mosley 2000, 2003, Swank 2002). To date, this work has focused primarily on the national level. The objective has been determining whether markets induce a race to the bottom in social provision or whether national policymakers retain room to maneuver vis-à-vis mobile capital markets.

I extended this analysis to the subnational level, but focused less on the implications of capital mobility and more on the systematic pressure applied by international credit rating agencies. Indeed, though subnational capital markets remain relatively fragmented, large numbers of local and regional governments solicit ratings from one of the big three international agencies. Each of the agencies employs a single methodology and rating scale for evaluating all local and regional governments outside of the United States. These scales and methodologies provide universal metrics and criteria for attracting affordable funding, regardless of the level of

internationalization in capital markets. International credit rating agencies provide, therefore, a most-likely source of international influence.

Contrary to conventional expectations, my findings suggest that responsibility for sensitive social services improves credit ratings, largely because national officials are unlikely, in market participants' view, to allow providers of universal services to default. However, I find that this relationship is conditional, among other things, on levels of economic development. Rating analysts consider service-based bailout guarantees more credible in developed than developing countries.

Note that chapter 5 suggests service provision's positive effect on bailout expectations may be offset by its negative effect on standalone creditworthiness. Agencies suggest these borrowers may incur lower ratings because the popularity of universal services restricts their fiscal flexibility. But a recent report by Standard and Poor's claims that local capacity to cut spending is generally constrained, largely irrespective of the nature of local expenditure assignments. Provision of universal services is one source of rigidity, but there are several others, including mandatory interest payments, the essential nature of locally-oriented services like street cleaning and garbage collection, national earmarks, and pressing infrastructure needs in developing countries. It is not clear, therefore, that universal service providers are systematically disadvantaged in terms of standalone repayment capacity. This implies that the positive impact on bailout expectations does, in fact, outweigh the negative effect on standalone ratings.

My findings also identify flaws in the literature's approach to deriving preferences over government spending priorities. The literature assumes market preferences stem from efficiency considerations. Creditors and rating agencies dislike social spending and other forms of government consumption because they represent economic deadweight: They lower economic

productivity and growth in future periods, thereby undermining government revenues and repayment capacity. My analysis suggests that preferences stem less from efficiency considerations and more from concerns with political sensitivity. Rating agencies assign higher bailout probabilities to universal service providers, for example, because these services are highly valued by the median national voter.

The analysis also suggests fiscal policies are subject to greater scrutiny at the subnational than national level. In her study of national market constraints, Mosley (2000, 2003) concluded that markets are relatively indifferent over the content of government spending priorities in developed countries, because investors consider these governments highly unlikely to default. And yet chapters 3 and 4 suggest that Canadian investors and international rating agencies are keenly aware of and concerned with the nature and implications of expenditure assignments in developed countries. It is possible this interest is not unique to the subnational level, but a product of the global financial and sovereign debt crises. These events have shattered the once ubiquitous view that sovereign governments do not default and may have increased market surveillance at all levels of government. But in fact, agencies' interest in subnational expenditure assignments precedes the crisis. Another possibility is that additional monitoring reflects the fact that subunits are at greater risk of default than national governments. But perhaps the most compelling answer is that subnational expenditure assignments vary considerably - much more so than the spending profiles of national governments - and this variation has profound credit implications.

Another interesting finding is that markets appear relatively indifferent over social spending in the developing world. This is contrary to Mosley's prediction that developing countries face greater scrutiny because they pose a higher risk of default. This indifference

reflects at least two factors. First, rating agencies consider these commitments easier to retrench in developing countries, where public expectations of service provision are low. Second, these expectations, coupled with weaker national capacity to tax and borrow, decrease the probability of service-based bailouts considerably.

7.3   FISCAL FEDERALISM AND MACROECONOMIC PERFORMANCE

My findings also contribute to research on the relationship between fiscal federalism and macroeconomic performance (Rodden 2006b, Treisman 2000, Wibbels 2005). Markets support macroeconomic stability by promoting sustainable fiscal practices at the subnational level. Above all, this means discouraging local governments from accumulating unsustainable debt. Markets achieve this outcome by efficiently pricing credit risk. If risk premia are too low, local governments have incentives to borrow too much. If risk premia are too high, governments may be propelled into self-fulfilling and macro-economically destabilizing defaults, a point to which I return below.[1]

Mainstream fiscal federalism focuses on the problem of moral hazard or the under-pricing of credit risk. By and large, this problem is linked to implicit bailout guarantees. If subnational debts are implicitly backed, risk premia reflect the creditworthiness of the guarantor rather than the actual borrower. This encourages excessive borrowing.

Existing research suggests creditors are most likely to hold these beliefs if borrowers fund the bulk of their responsibilities through shared revenues or transfers from higher levels of

---

[1] Before proceeding, note that affirming these negative consequences does not go back on the claim, made in chapter 2, that fiscal federalism is a minor predictor of sovereign risk. But also note that this does not imply that fiscal federalism is unimportant. In the grand scheme of things, debt is also probably a relatively minor predictor of euro area risk premia, but no one suggests it is unimportant. It can have devastating consequences under certain conditions.

government. But my results suggest that transfer dependence stiffens market constraints. Not only does transfer dependence send, if anything, negative bailout signals, but it also restricts subnationals' capacity to raise taxes during periods of fiscal distress.

Does this suggest that transfer dependence increases macroeconomic stability by limiting moral hazard? Should, therefore, fiscal conservatives be discouraging the decentralization of taxing authority? Only a superficial reading of the results would support this conclusion. Consider the following points. First, the relationship between bailout expectations and transfer dependence is uncertain. It was negative in the baseline statistical results, but insignificant in certain robustness checks. What is more, the qualitative analysis failed to reveal either a positive or negative effect.

Second, the clearest reason autonomous units receive higher ratings is their capacity to *independently* repay their debts. They receive higher ratings because creditors believe they are willing and able to raise the requisite revenues to balance their deficits, not because they are expected to attract bailouts. In other words, investors expect autonomous governments to internalize the consequences of their fiscal decisions, which is the opposite of moral hazard.

Third, transfer dependence may not engender bailout expectations among creditors and rating agencies, but market participants only represent one group of fiscal enforcers. Thus, it is conceivable that markets constrain dependent governments, but that local voters, anticipating a bailout, counteract this affect by re-electing spendthrift politicians. All this is to suggest that dependency may still engender moral hazard in the aggregate.

What does seem clear, however, is that other aspects of the fiscal federal environment do send clearer bailout signals. These factors include full but especially partial decentralization of universal social services, formal national commitments to redistributing wealth and risk across

territorial units and heavy concentrations of population, output and debt in a limited number of jurisdictions. Here, the institutional and policy prescriptions appear, from a strictly conservative point of view, clear: centralize or (as a second-best option) fully decentralize universal services, ensure intergovernmental grants are distributed on a per-capita rather than a redistributive basis, and divide the subnational sector into more rather than less units. If these reforms are not possible, central officials might consider limiting (or trying to limit) local borrowing (Rodden 2006b). Many multi-tiered systems in Europe and Latin America appear to be moving in this direction (Hallerberg 2010).

Interestingly, these prescriptions seem less pressing for developing than developed countries. Chapter 4 shows that bailout expectations in the former are almost universally low, irrespective of expenditure assignments or the design of transfer systems. This is contrary to the view, fairly commonly held, that soft budget constraints are more pervasive in developing countries. Note, however, that this does not imply that market discipline thrives in the developing world. Indeed, the empirical record strongly suggests it does not. But what the findings do indicate is that this problem stems less from the design of intergovernmental institutions and more from factors that my data do not capture, such as access to privileged financing from state-owned banks (a serious source of moral hazard at the local level in China currently).

Thus far, the conversation has been premised on the notion that bailout expectations are unconditionally bad for macroeconomic stability. This is the view of the mainstream literature, but it is by no means uncontroversial. As I noted at the outset, creditors do not merely under-price credit risk. They have also been known to overprice it and this too can have devastating

macroeconomic consequences. This suggests that bailout beliefs can, under certain conditions, provide a potentially useful function: correcting the tendency for excessive discipline.

Nowhere is the problem of excessive discipline clearer currently than in the euro area where many observers believe the biggest threat to Portuguese or Spanish solvency is not unsustainable debt but fear of insolvency itself. In other words, these states may have the wherewithal to repay their debts, but may also be forced into insolvency by skittish investors demanding prohibitively high interest rates. In a series of recent papers, De Grauwe (2011) and his collaborators claim sub-central governments (or the constituent members of monetary unions) are especially vulnerable to these self-fulfilling defaults. The principal reason, they argue, is the lack of independent monetary policy. National governments can ease investor panic by printing money, but subnational governments cannot guarantee their bondholders liquidity. Their capacity to arrest self-fulfilling defaults is, therefore, limited.

It is tempting to claim these dynamics are unique to the euro area, a monetary union characterized by highly divergent national economies and unparalleled political and fiscal fragmentation. Presumably, units in domestic systems can count on national governments to provide the necessary fiscal or monetary support. But this dissertation shows that not all subnationals borrow with implicit backing and even those that do can be dragged into the dynamics of self-fulfilling defaults (consider Spanish regions currently or Canadian provinces during the 1990s.)

These observations have important implications for theories of federalism and macroeconomic performance. They suggest that no-bailout pledges are not unconditionally stabilizing. They may limit moral hazard, but at the risk of exposing the monetary union to waves of self-fulfilling and contagious local defaults. These considerations are important to keep

in mind when designing intergovernmental institutions. Minimizing bailout expectations may be sub-optimal, particularly for countries facing imminent macroeconomic collapse. The appropriate policy response may be a mix of explicit guarantees and hierarchal controls, though achieving the latter may be easier said than done (Rodden 2006b).

Thus far, I have focused on potential pricing distortions associated with fiscal federal institutions. However, chapter 6 highlights another source of inefficiency, namely sovereign risk or the expected probability of central default. Students of market discipline are generally unconcerned with these expectations. They appreciate that creditors use sovereign yields as floors for pricing subnational debt, but they also assume these yields reflect the systemic risks of lending to non-sovereign borrowers. But sovereign risk introduces distortions through at least three channels. First, it impacts bailout expectations, thereby distorting national-subnational spreads. A government's first priority is servicing its own debt. Commitments to lower levels of government are only as credible as this capacity. Second, sovereign yields are imperfect benchmarks for pricing subnational credit. These yields are not pure embodiments of systemic risk, but informational shortcuts and like any informational shortcut, they exert their own independent effects.

Third and most importantly, sovereign yields are imperfect measures of sovereign risk. The global flight to quality has introduced a number of distortions in government bond markets, including systematic under and overpricing of sovereign risk. By tracking sovereign yields, subnational risk premia transfer these distortions to the subnational level. Perhaps the clearest indication of these distortions is the exponential plunge in risk premia on bonds issued by Canada, Germany, the US, and other safe-haven countries. Indeed, in many countries, these yields have turned negative, implying that the probability of default is also negative. This, of

course, is nonsensical. The link between risk premia and default risk appears, therefore, to be coming undone. Some of the most striking evidence of this comes from recent developments in credit default swap (CDS) markets.[2] The relationship between CDS spreads and risk premia have, in some cases, turned negative, indicating that risk premia are falling precisely as market expectations of default are increasing. This pattern has been evident with respect to German yields during various escalations of the European debt crisis (Brookes and Daoud 2012).

Of course, the puzzle of rising risk and falling risk premia is fairly easily explained: declining creditworthiness in the US, Germany, and elsewhere is being offset by even sharper declines in the European periphery. But many believe default premia in peripheral countries are excessive (recall De Grauwe's theory of self-fulfilling defaults.)

In short, prevailing models of market discipline assume sovereign risk is efficiently priced, but sovereign debt markets are wholly inefficient. These inefficiencies are transmitted to non-sovereign borrowers, creating pricing distortions that likely swamp any distortions arising from federal and other political institutions.

Several scholars have recently argued that the conditions for successful market discipline are exacting. This dissertation provides further cause for pessimism. Even the best laid efforts to promote transparency, open capital markets, and sound institutions may fall victim to developments in global capital markets. But the broader implications of intergovernmental institutions are less certain. I have focused on credit markets, but it is conceivable that institutions promote favorable fiscal outcomes through other (e.g. electoral) channels. My empirical approach suggests a compelling strategy for examining this possibility, complimenting

---

[2] A credit default swap is insurance in the event of a default on a debt obligation. The CDS spread is the yield on the regular payment the buyer of the swap pays to the seller

analyses of macroeconomic and fiscal outcomes with careful studies of the perceptions and behavior of the actors (e.g. creditors and voters) who shape them.

APPENDIX

Interview Codes (chapters 3 and 6)

CI: refers to interview with Canadian investor

CB: refers to interview with Canadian banker (e.g. underwriter)

GI: refers to interview with German investor

GB: refers to interview with German banker

GT: refers to interview with subnational treasury or investor relations personnel

Table A3.1 Equalization Spending, 2004

	Percentage of GDP	Percentage of Government Expenditure
Australia	0.5	1.4
Austria	3.8	7.6
Canada	**1.0**	**2.5**
Germany*	2.0	4.2
Italy	3.0	6.3
Mexico	3.7	n.a.
Spain	3.0	7.6
Switzerland	3.0	8.2
Sample Avg.	*2.5*	*5.4*

Source: OECD 2008
***Data refer to 2005**

This table compares total government spending on equalization to GDP and the percentage of equalization over total government spending for six federal countries plus Italy. The figures refer to 2004. They are limited to federal or highly decentralized countries for which the OECD received survey responses. Payments refer to equalization across first-tier regions: i.e. Australian states, Austrian Länder, Canadian provinces, German Länder, Italian regions, Spanish regions, and Swiss cantons.

Table A3.2 Impact of Federal Equalization Systems, 2004

	Pre-Equalization				Post-Equalization			
	Highest Capacity	**Lowest Capacity**	**Difference**	**Variation Coefficient**	**Highest Capacity**	**Lowest Capacity**	**Difference**	**Variation Coefficient**
Australia	103.8	79.8	24.0	16.8	100.0	100.0	0	0
Austria					106.9	93.2	13.7	4.2
Canada	**177.1**	**75.0**	**102.1**	**29.8**	**156.9**	**92.9**	**64.0**	**20.1**
Germany*	116.5	67.2	49.3	13.0	104.5	97.4	7.1	2.7
Italy	146.0	24.0	122.0	39.0	115.0	89.0	26.0	6.0
Spain	142.2	67.2	75.0	26.5	117.4	83.7	33.7	10.1
Switzerland	173.0	46.0	127.0	31.8	159.0	64.0	95.0	23.2
Sample Avg.	*143.1*	*59.9*	*83.2*	*15.8*	*122.8*	*88.6*	*34.2*	*9.5*

Source: OECD 2008

***Data refer to 2005**

Table A4.1 Data Used in Bailout Analysis

Variable	Description and Source
Bailout Probabilities	.05 to 1; Source: Moody's press releases and rating reports
Transfer Dependence Mod.	0 or 1; 1 for moderate levels of transfer dependence and 0 otherwise; Source: Moody's rating reports
Transfer Dependence High	0 or 1; 1 for high levels of transfer dependence and 0 otherwise; Source: Moody's rating reports
National GDP per capita (thousands)	6.7 to 44; national GDP per capita (current US$ thousands); annual averages from 2006 to 2010; Source: World Bank
Default History	0 or 1; 1 if history of defaults at the sectoral level and 0 otherwise; Source: Moody's rating reports
Bicameralism	0-3; measure of strength of subnational representation in upper chamber; Source: Sweden 2010 and author's own calculations

Table A4.2 Descriptive Statistics: Variables Used in Moody's Bailout Analysis

Variable	Mean	Standard Deviation	Values
Mod. Transfer Dependence	.47	.30	0,1
High Transfer Dependence	.28	.51	0,1
GDP Per Capita (1,000s)	27.94	9.63	6.70 - 44.04
Bicameralism	.45	.82	0-3
Default History	.37	.49	0,1
N	46		

Table A4.3 Determinants of Moody's Bailout Probabilities, Fractional Logit Estimates

	Full Sample			Influential Outliers Dropped		
	AM4.1	AM4.2	AM4.3	AM4.4	AM4.5	AM4.6
M. Transfer Dependence	-0.625 (0.461)	-0.563 (0.465)	-0.472 (0.306)	-0.565 (0.496)	-0.382 (0.471)	-0.583** (0.262)
H. Transfer Dependence	-0.985* (0.565)	-1.028* (0.535)	-0.720** (0.323)	-0.938 (0.571)	-0.710 (0.572)	-0.791** (0.341)
GDP Per Capita	0.0690*** (0.0191)	0.0695*** (0.0194)	0.0426*** (0.0142)	0.0689*** (0.0151)	0.0782*** (0.0172)	0.0408** (0.0160)
Bicameral		0.321* (0.183)	0.365*** (0.126)		0.366** (0.185)	0.343*** (0.132)
Default History			-1.783*** (0.193)			-1.583*** (0.166)
Constant	-1.494* (0.797)	-1.669* (0.854)	-0.458 (0.583)	-1.752** (0.774)	-2.344*** (0.873)	-0.526 (0.673)
N	46	46	46	40	40	40
Clusters	23	23	23	21	21	21

Robust standard errors clustered by country in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4.4 Correlation Matrix: Variables Used in Statistical Analyses in Tables 4.3

	Bailout Probability	M. Dependence	H. Dependence	GDP per capita	Bicameral	Default History
Bailout Probability	1					
M. Dependence	0.06	1				
H. Dependence	-0.40	-0.60	1			
GDP Per capita	0.58	0.19	-0.44	1		
Bicameral	0.16	-0.15	0.10	-0.03	1	
Default History	-0.76	-0.10	0.32	-0.45	0.02	1

Table A5.1 Data Used in Standalone Rating Analysis

Variable	Description and Source
Standalone Credit Rating	0-17; numeric translate of Moody's ordinal scale **Source:** Moody's rating reports
Discretionary Revenues	0-100; percentage of discretionary over total revenues. Discretionary revenues refer to revenues from streams subnationals' control
Debt to Op. Revenues	Net direct and indirect debt as a percentage of operating revenues.
Surplus to Op. Revenues	Gross operating balance as a percentage of annual operating revenues. Gross balance refers to total operating revenues minus total operating expenditures as a percentage of operating revenues.
Short-term Debt	Short-term direct debt as a percentage of total direct debt. Short-term debt refers to all debt with a maturity of less than one year.
Interest payments	Annual interest payments on debt as a percentage of annual operating revenues.
Log of regional GDP	Log of regional GDP per capita adjusted for purchasing power parity.
Financial Transparency 1	1, 8.5, 15; tendency to meet and exceed fiscal targets. **Source:** Moody's rating reports
Financial Transparency 2	1, 8.5, 15; tendency to provide informative and comprehensive financial statements, including balance sheets, on a timely basis. **Source:** Moody's rating reports
Debt Management	1, 8.5, 15; conservativism of debt and investment management practices. **Source:** Moody's rating reports
Institutional Capacity	1, 8.5, 15; quality of rules and procedures for resolving budget and policy issues in a timely manner, limiting impasses and arbitrary uses of power. **Source:** Moody's rating reports
Institutional Framework	1, 8.5, 15; the stability, predictability and responsiveness of the institutional framework governing expenditure responsibilities and revenue structures. **Source:** Moody's rating reports
Sovereign Rating	Moody's sovereign rating. **Source:** moodys.com

Note: Unless otherwise stated, all data comes from the December 2010 edition of *Moody's Statistical Handbook: Regional and Local Governments Outside the U.S.*

Table A5.2 Descriptive Statistics:
Variables Used in Statistical Analysis in Tables 5.1 and 5.2

	Mean	Standard Deviation
Standalone Rating	9.83	4.22
Disc. Revenue	40.43	29.98
Debt	44.86	44.42
Surplus	9.61	11.31
Short-term Debt	19.67	20.80
GDP per capita (log)	9.86	.63
Interest Payments	2.18	2.11
Fiscal Management	10.96	4.57
Debt Management	10.11	4.57
Fin. Transparency	11.44	4.49
Conflict Resolution	10.36	4.75
Inst. Robustness	10.01	3.84
Sovereign Rating	11.22	3.61
N	251	

Bibliography

Adserà, Alícia, and Carles Boix. "Trade, Democracy, and the Size of the Public Sector: The Political Underpinnings of Openness." *International Organization* 56, no. 2 (2002): 229-262.

Alesina, A., & Nadler, D. A tale of two divergences. *Vox.* (2012).

Alesina, Alberto, and Enrico Spolaore. *The Size of Nations.* MIT Press, 2003.

Allison, Paul D. *Logistic Regression Using SAS: Theory and Applications.* Vol. 1. SAS Institute, 1999.

Archer, Candace C., Glen Biglaiser, and Karl DeRouen Jr. "Sovereign Bonds and the "Democratic Advantage": Does Regime Type Affect Credit Rating Agency Ratings in the Developing World?" *International Organization* 61, no. 2 (2007): 341-365.

Ascah, Robert. *Politics and Public Debt: The Dominion, the Banks and Alberta's Social Credit.* The University of Alberta Press, 1999.

Bakvis, Herman. "Political Parties, Party Government, and Instrastate Federalism in Canada." In *Parties and Federalism in Australia and Canada*, edited by Campbell Sharman, 1-22. Federalism Research Centre, Australian National University, 1994.

Bell, Bethany A., John M. Ferron, and Jeffrey A. Kromrey. "Cluster Size in Multilevel Models: The Impact of Sparse Data Structures on Point and Interval Estimates in Two-Level Models." *JSM Proceedings: Section on Survey Research Methods*, 2008: 1122-1129.

Bergsten, Fred, and Jacob Funk Kirkegaard. "The coming resolution of the European crisis." *Vox*, 2012.

Bernoth, Kerstin, and Guntram Wolff. "Fool the Markets? Creative Accounting, Fiscal Transparency, and Sovereign Risk Premia." *Scottish Journal of Political Economy* 55, no. 4 (2008): 465-487.

Bird, Richard, and Almos Tassonyi. *Constraining Subnational Fiscal Behavior in Canada:Differenet Approaches, Similar Results.* Edited by Jonathan Rodden, Gunnar Eskeland and Jennie Litvack. The MIT Press, 2003.

Blinder, Alan, Elie Canetti, David Lebow, and Jeremy Rudd. *Asking About Prices: A New Approach to Understanding Price Stickiness.* Princeton University Press, 1998.

Blöchliger, Hansjörg, and Claire Charbit. "Fiscal Equalisation." *OECD Economic Studies*, no. 44 (2008).

Block, Steven A., and Paul M. Vaaler. "The price of democracy: sovereign risk ratings, bond spreads and political business cycles in developing countries." *Journal of International Money and Finance* 23 (2004): 917–946.

Booth, Laurence, George Georgopoulos, and Walid Hejazi. "What Drives Provincial-Canada Yield Spreads?" *The Canadian Journal of Economics* 40, no. 3 (2007): pp. 1008-1032.

Boothe, Paul. "Provincial Government Debt, Bond Ratings and the Availability of Credit." In *Debt and Deficits in Canada*, edited by Richard G. Harris. Queen's University Press, 1993.

Bordignon, Massimo, and Gilberto Turati. "Bailing out Expectations and Public Health Expenditure." *Journal of Health Economics* 28, no. 2 (2009): 305-321.

Bordo, Michael D., Agnieszka Markiewicz, and Lars Jonung. "A Fiscal Union for the Euro: Some Lessons from History." NBER Working Paper No. 17380, 2011.

Brennan, Geoffrey, and James M. Buchanan. *The Power to Tax: Analytical Foundations of A Fiscal Constitution.* Cambridge University Press, 1980.

Breunig, Christian, and Marius R. Busemeyer. "Fiscal austerity and the trade-off between public investment and social spending." *Journal of European Public Policy* 19, no. 6 (2012): 921-938.

Brookes, Martin, and Ziad Daoud. *Disastrous Bond Yields.* Fulcrum Asset Management Research Paper, 2012.

Cameron, David. "The Expansion of the Public Economy: A Comparative Analysis." *The American Political Science Review* 72, no. 4 (1978).

Cameron, David, and Richard Simeon. "Intergovernmental Relations in Canada: The Emergence of Collaborative Federalism." *Publius: Journal of Federalism* 32, no. 2 (2002): 47-72.

Cantor, Richard, and Frank Packer. "Determinants and Impact of Sovereign Credit Ratings." *Economic Policy Review* 2, no. 2 (1996): 37-53.

Chandler, William. "Federalism and Political Parties." In *Federalism and the Role of the State*, edited by Herman Bakvis and William Chandler. University of Toronto Press, 1987.

Cheung, Stella. "Provincial Credit Ratings in Canada: An Ordered Probit Analysis." Bank of Canada, 1996.

CIBC. Global Positioning Strate. *Global Positioning Strate*. (2011, April).

Clemens, Jason, Todd Fox, Amela Karabegovic, Sylvia Leroy, and Niels Veldhuis. *Tax and Expenditure Limitations: the Next Step in Fiscal Discipline.* The Fraser Institute, 2005.

Courchene, Thomas. "Subnational Budgetary and Stabilization Policies in Canada and Australia." In *Fiscal Institutions and Fiscal Performance*, edited by James Poterba and Jürgen von Hagen. University of Chicago Press, 1999.

Courchene, Thomas. "Variations on the Federalism Theme." *Policy Options*, September 2006: 46-54.

Crivelli, Ernesto, Adam Leive, and Thomas Stratmann. "Subnational Health Spending and Soft Budget Constraints in OECD Countries." IMF Working Paper 10/147, 2010.

Crivelli, Ernesto, and Klaas Staal. "Size and Soft Budget Constraints." CESIFO Working Paper 1858, 2006.

De Grauwe, Paul. "The Governance of a Fragile Eurozone." CEPS Working Documents, 2011.

Deller, Steven, Judith Stallmann, Lindsay Amiel, and Craig Maher. "Tax and Expenditure and Limitations and State Credit Ratings." Working Paper, 2010.

Eckstein, Harry. "Case Study and Theory in Political Science." In *Handbook of Political Science*, edited by F.J. Greenstein and N.W. Polsby, 79-137. Addison-Wesley, 1975.

Ederington, Louis. "Why split ratings occur." *Financial Management* 15, no. 1 (1986): 37-47.

Eichengreen, Barry, Ricardo Hausman, and Ugo Panizaa. "Other People's Money: Debt Denomination and Financial Instability in Emerging Market Economies." Chap. The Pain of Original Sin, edited by Barry Eichengreen and Hausman Ricardo. University of Chicago Press, 2005.

Enderlain, Henrik. "Economic policy-making and multi-level governance." In *Handbook on Multi-Level Governance*, edited by Henrik Enderlain, Sonja Wälti and Michael Zürn, 423-440. Edward Elgar Publishing Limited, 2010.

Esping-Andersen, Gøsta. "Conclusion." In *Welfare States in Transition: National Adaptations in Global Economies*, edited by Gøsta Esping-Andersen. Sage Publications, 1996.

Estévez-Abe, Margarita, Torben Iversen, and David Soskice. "Social Protection and the Formation of Skills: A Reinterpretation of the Welfare State." In *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*, edited by Peter A. Hall and David Soskice. Oxford, 2001.

Fabozzi, Frank J. *Fixed Income Analysis.* 2. John Wiley & Sons, 2007.

Fillipov, Mikhail, Peter C. Ordeshook, and Olga V. Shvetsova. *Designing Federalism: A Theory of Self-Sustainable Federal Institutions.* Cambridge University Press, 2004.

Fitch Ratings. "International Local and Regional Governments Rating Criteria Outside the United States." 2012.

Fitch Ratings. "Rating Subnationals Above the Sovereign." 2009.

Gaillard, Norbert. "The Determinants of Moody's Sub-Sovereign Ratings." *International Research Journal of Finance and Economics* 31 (2009): 1450-2887.

Garrett, Geoffrey. "Global Markets and National Politics: Collision Course or Virtuous Cycle?" *International Organization* 52, no. 4 (1998): 787-824.

Garrett, Geoffrey, and Deborah Mitchell. "Globalization, Government Spending and Taxation in the OECD." *European Journal of Political Research* 39, no. 2 (2001).

Gerring, John. "Is There a (Viable) Crucial-Case Method?" *Comparative Political Studies* 40, no. 3 (2007): 231-253.

Gibson, Edward L., and Ernesto Calvo. "Federalism and Low-Maintenance Constituencies: Territorial Dimensions of Economic Reform in Argentina." *Studies in Comparative International Development* 35, no. 3 (2000): 32-55.

Hacker, Jacob S. "Privatizing Risk without Privatizing the Welfare State: The Hidden Politics of Social Policy Retrenchment in the United States." *The American Political Science Review* 98, no. 2 (2004): pp. 243-260.

Hacker, Jacob S., and Paul Pierson. *Winner-Take-All-Politics: How Washington Made Rich Richer--and Turned Its Back on the Middle Class.* Simon & Schuster, 2010.

Hall, Peter A., and David Soskice. "An Introduction to Varieties of Capitalism." In *Varieties of Capitalism*, edited by Peter A. Hall and David Soskice. Oxford University Press, 2001.

Hallerberg, Mark. "Fiscal Federalism Reforms in the European Union and the Greek Crisis." *European Union Politics* 12, no. 1 (2011): 127-142.

Hallerberg, Mark. "Multi-level governance, decentralization, and fiscal federalism." In *Handbook on Multi-Level Governance*, edited by Michael Zürn, Sonja Wälti and Henrik Enderlein, 124-135. Edward Elgar Publishing, 2010.

Hallerberg, Mark, and Francesco Stolfi. "Partisanship, Social Capital, and Fiscal Federalism in the Italian Regions." Hertie School of Governance Working Papers, 2008.

Hanson, Eric. *Financial History of Alberta: 1905-1950.* University of Calgary Press, 2003.

Harmes, Adam. "The Political Economy of Open Federalism." *Canadian Journal of Political Science* 40, no. 2 (2007): 417-437.

Heppke-Falk, K. H., & Wolff, G. B. *Moral hazard and bail-out in fiscal federations: evidence for the German Länder.* Deutsche Bundesbank. (2007).

Hogg, Peter W. *Constitutional Law of Canada.* Carswell, 2000.

International Monetary Fund. "Global Financial Stability Report." World Economic and Financial Surveys, 2012.

Inman, Robert P. "Transfers and Bailouts: Enforcing Local Fiscal Discipline with Lessons from U.S. Federalism." In *Fiscal Decentralization and the Challenge of Hard Budget Constraints*, edited by Jonathan Rodden, Gunnar Eskeland and Jennie Litvack. MIT Press, 2003.

Iversen, Torben, and Thomas R. Cusack. "The Causes of Welfare State Expansion: Deindustrialization or Globalization." *World Politics* 52, no. 3 (2000): 313-349.

Jaramillo, Laura, and Catalina M. Tejada. *Sovereign Credit Ratings and Spreads in Emerging Markets: Does Investment Grade Matter?* WP/11/44, International Monetary Fund, 2011.

Jensen, Carsten. "Marketization via Compensation: Health Care and the Politics of the Right in Advanced Industrialized Nations." *British Journal of Political Science* 41, no. 4 (2011): pp. 907-926.

Johnson, Craig L., and Kenneth A. Kriz. "Fiscal Institutions, Credit Ratings, and Borrowing Costs." *Public Budgeting and Finance* 25, no. 1 (2005): 84-103.

Katzenstein, Peter. *Small States in World Markets: Industrial Policy in Europe.* Cornell University Press, 1985.

Kaufman, Robert F., and Alex Segura-Urbiergo. "Globalization, Domestic Politics, and Social Spending in Latin America 1973-1997: A Cross-Sectional Time Series Analysis." *World Politics* 53 (4 2001).

Khemani, Stuti. "Party Politics and Fiscal Discipline: Evidence from the States of India." *Comparative Political Studies* 40, no. 6 (2007): 691-712.

King, Preston. *Federalism and Federation.* John Hopkins University Press, 1982.

Kneebone, Ronald. "Deficits and Debt in Canada: Some Lessons from Recent History." *Canadian Public Policy* 20, no. 2 (1994): 152-164.

Landon, Stuart, and Constance E. Smith. "Government Debt Spillovers and Creditworthiness in a Federation." *The Canadian Journal of Economics* 33, no. 3 (2000): pp. 634-661.

Lane, Timothy D. "Market Discipline." *Staff Papers - International Monetary Fund* 40, no. 1 (1993): pp. 53-88.

Lemmen, Jan. *Managing Government Default Risk in Federal States.* Special Paper 11, Financial Markets Group, 1999.

Lewis, Karen. "Trying to Explain Home Bias in Equities and Consumption." *Journal of Economic Literature* 37, no. 2 (1999): 571-608.

Liu, Lili, and Kim Song Tan. "Subnational Credit Ratings: A Comparative Review." The World Bank, 2009.

Long, S. *Regression Models for Categorical and Limited Dependent Variables.* Sage Publications. (1997).

Maas, Cora J. M., and Joop J. Hox. "Robustness issues in multilevel regression analysis." *Statistica Neerlandica* 58, no. 2 (2004): 127-137.

MacKinnon, Janice. *Minding the Public Purse.* McGill-Queen's University Press, 2003.

McKinnon, Ronald I. "The Logic of Market-Preserving Federalism." *Virginia Law Review* 83, no. 7 (1997): pp. 1573-1580.

McKinnon, Ronald I., and Thomas Nechyba. "Competition in Federal Systems: The Role of Political and Financial Constraints." In *The New Federalism: Can the States be Trusted?*, edited by John Ferejohn and Barry Weingast, 3-61. Hoover Institute Press, 1997.

Moody's Investors Services. "Assessing the Creditworthiness of Chinese Regional and Local Governments." 2012.

Moody's Investors Services. "Canadian Provinces: Conditions Remain Challenging." 2010b.

Moody's Investors Services. "Credit Opinion: Athens, City of." 2010c.

Moody's Investors Services. "Credit Opinion: Azores, Autonomous Region of." (2010d).

Moody's Investors Services. "Credit Opinion: Catalunya, Generalitat de." (2010e).

Moody's Investors Services. "Credit Opinion: Cornwall Council." (2010f).

Moody's Investors Services. "Credit Opinion: L'Aquila, City of." 2010g.

Moody's Investors Services. "Credit Opinion: Lombardy, Region of." (2010h).

Moody's Investors Services. "Credit Opinion: Lower Austria, State of." (2010i).

Moody's Investors Services. "Credit Opinion: Moscow, Oblast of." 2010j.

Moody's Investors Services. "Moody's downgrades ratings of six Spanish regions; ratings of other sub-sovereign entities are placed on review for downgrade." (2010k).

Moody's Investors Services. "The Application of Joint Default Analaysis to Regional and Local Governments." (2008).

Mosley, Layna. "'Just Talk to People?' Interviews in Contemporary." In *Interview Research in Political Science*, edited by Layna Mosley, Cornell University Press, forthcoming

Mosley, Lanya. "Room to Move: International Financial Markets and National Welfare States." *International Organization* 54, no. 4 (2000): 737–773.

Mosley, Layna. *Global Capital and National Markets.* Cambridge University Press, 2003.

Musgrave, Richard. *The Theory of Public Finance.* McGraw Hill, 1959.

Nadler, D., & Hong, S. *Political and Institutional Determinants of US Sub-Sovereign Bond Yields.* Harvard Kennedy School. (2011).

Nicolini, Juan Pablo, Josefina Posadas, Juan Sanguinetti, Pablo Sanguinetti, and Mariano Tommasi. "Decentralization, Fiscal Discipline in Sub-National Governments and the Bailout Problem: The Case of Argentina." Inter-American Development Bank, 2002.

Oates, Wallace. *Fiscal Federalism.* Harcourt Brace Jovanovich, 1972.

Obinger, Herbert, Stephan Leibfried, and Francis G. Castles. *Federalism and the Welfare State: New World and European Experiences.* Oxford University Press, 2005.

Olson, Mancur. "The Principle of 'Fiscal Equivalence': The Division of Responsibilities among Different Levels of Government." *American Economic Review* 59, no. 2 (1969): 479-489.

Papke, L., & Wooldridge. Econometric Methods for Fractional Response Variables with an Application to 401(K) Plan Participation Rates. *Journal of Applied Econometrics, 2*, (1996): 619-632.

Peterson, P. E., & Nadler, D. "Freedom to Fail: The Keystone of American Federalism." (2012).

Pierson, Paul. *The New Politics of the Welfare State.* Edited by Paul Pierson. Oxford University Press, 2001.

Plekhanov, Alexander, and Raju Singh. "How Should Subnational Government Borrowing Be Regulated? Some Cross-Country Empirical Evidence." *IMF Staff Papers* 53, no. 3 (200): pp. 426-452.

Poterba, James M., and Kim Rueben. "State Fiscal Institutions and the U.S. Municipal Bond Market." In *Fiscal Institutions and Fiscal Performance*, edited by James M. Poterba. University of Chi, 1999.

Riker, William H. *Federalism: Origin, Operation, Significance.* Little Brown, 1964.

Rodden, Jonathan. "Comparative Federalism and Decentralization: On Meaning and Measurement." *Comparative Politics* 36, no. 4 (2004): 481-500.

Rodden, Jonathan. "Federalism and Bailouts in Brazil." In *Fiscal Decentralization and the Challenge of Hard Budget Constraints*, edited by Jonathan Rodden, Gunnar Eskeland and Jennie Litvack. MIT Press, 2003.

Rodden, Jonathan. "Federalism and Inter-Regional Redistribution." In *The Political Economy of Inter-Regional Fiscal Flows*, edited by Nuria Bosch, Marta Espasa and Albert Sole. Edward Elgar, 2010.

Rodden, Jonathan. "Fiscal Discipline in Federations: Germany and the EMU." In *Fiscal Policy Surveillance in Europe*, edited by Peter Wierts, Servaas Deroose, Elena Flores and Alessandro Turrini. Palgrave MacMillan, 2006a.

Rodden, Jonathan. *Hamilton's Paradox: The Promise and Peril of Fiscal Federalism.* Cambridge University Press, 2006b.

Rodden, Jonathan. "Market Discipline and U.S. Federalism." In *When States Go Broke: Origins, Context, and Solutions for American States in Fiscal Crisis*, edited by Peter Conti-Brown and David Skeel. Cambridge University Press, 2012.

Rodden, Jonathan. "Reviving Leviathan: Fiscal Federalism and the Growth of Government." *International Organization* 57, no. 4 (2003): 695-729.

Rodden, Jonathan. "The Dilemma of Fiscal Federalism: Grants and Fiscal Performance around the World." *American Journal of Political Science* 46, no. 3 (2002): 670-687.

Rodden, Jonathan, and Erik Wibbels. "Beyond the Fiction of Federalism: Macroeconomic Management in Multitiered Systems." *World Politics* 54, no. 4 (2002): pp. 494-531.

Rodden, Jonathan, and Gunnar Eskeland. "Lessons and Conclusions." In *The Challenge of Hard Budget Contraints*, edited by Jonathan Rodden, Gunnar Eskeland and Jennie Litvack, 431-466. MIT Press, 2003.

Rodden, Jonathan, Gunnar Eskeland, and Jenny Litvack. *Fiscal Decentralization and the Challenge of Hard Budget Constraints.* MIT Press, 2003.

Rodrik, Dani. *Has Globalization Gone Too Far?* Institute for International Economics, 1997.

Rudra, Nita. "Globalization and the Decline of the Welfare State in Less Developed Countries." *International Organization* 56, no. 2 (2002).

Standard and Poor's. "Fiscal Flexibility Index for Local and Regional Governments." 2007.

Standard and Poor's. "Methodology For Rating International Local And Regional Governments." 2010.

Standard and Poor's. "Rating a Regional Or Local Government Higher Than Its Sovereign." 2009.

Samuels, David, and Richard Snyder. "The Value of a Vote: Malapportionment in Comparative Perspective." *British Journal of Political Science* 31 (2001): 651–671.

Sancak, Cemile, Lucy Liu, and Taisuke Nakata. "Canada: A Sucess Story." In *Chipping Away at Public Debt: Sources of Failure and Keys to Sucess in Fiscal Adjustment*, edited by Paolo Mauro. John Wiley & Sons Inc., 2011.

Savoie, Donald. *Governing from the Centre: The Concentration of Power in Canadian Politics.* University of Toronto Press, 1999.

Scharpf, Fritz W. "The Joint-Decision Trap: Lessons from German Federalism and European Integration." *Public Administration* 66, no. 3 (1988): 239–278.

Schuhknecht, Ludger, Jürgen von Hagen, and Guido Wolswijk. "Government Risk Premiums in the Bond Market: EMU and Canada." *European Journal of Political Economy* 25, no. 3 (2009): 371-384.

Schulz, A., & Wolff, G. B. The German Sub-national Government Bond Market: Structure, Determinants of Yield Spreads and Berlin's Forgone Bail-out. *Journal of Economics and Statistics, 229*(1), (2009): 61-83.

Seitz, Helmut. "Subnational Government Bailouts in Germany." Inter-American Development Bank, 2000.

Sercu, Piet, and Rosanne Vanpée. "Home bias in International Equity Portfolios." In *Survey of International Finance*, edited by H. K. Baker and L. A Riddick. Oxford University Press, forthcoming.

Shvetsova, Olga. "Endogenous Selection of Institutions and Their Exogenous Effects." *Constitutional Political Economy* 14, no. 3 (2003): 191-212.

Simeon, Richard. *Federal-Provincial Diplomacy: The Making of Recent Policy in Canada.* University of Toronto Press, 1972.

Streeck, Wolfgang, and Kathleen Thelen, *Beyond Continuity: Institutionalized Change in Advanced Political Economies.* Oxford University Press, 2005.

Swank, Duane. "Tax Policy in an Era of Internationalization: Explaining the Spread of Neoliberalism." *International* 60, no. 4 (2006): 847-882.

Swenden, Wilfried. "Subnational participation in national decisions: the role of second chambers." In *Handbook on Multi-level Governance* (pp. 103-123), edited by H. Enderlein, S. Wälti, & M. Zürn. Edward Elgar, 2010.

Ter-Minassian, Teresa. "Fiscal Rules for Subnational Governments: Can They Promote Fiscal Discipline?" *OECD Journal on Budgeting* 6, no. 3 (2007).

Ter-Minassian, Teresa, and Annalisa Fedelino. "Impact of the Global Financial Crisis on Sub-National Governmnets' Finances." Occasional Paper, Bank of Italy, 2010.

Ter-Minassian, Teresa, and John Craig. "Control of Subnational Government Borrowing." In *Fiscal Federalism in Theory and Practice*, edited by Teresa Ter-Minassian. International Monetary Fund, 1997.

Thorlakson, Lori. "Patterns of Party Integration, Influence and Autonomy in Seven Federations." *Party Politics* 15, no. 2 (2009): 157-177.

Tiebout, Charles. "A Pure Theory of Local Expenditures." *Journal of Political Economy* 64, no. 5 (1956): 416–424.

Treisman, Daniel. "Decentralization and Inflation: Commitment, Collective Action, or Continuity." *American Political Science Review* 94, no. 4 (2000): 837-857.

Treisman, Daniel. *The Architecture of Government: Rethinking Political Decentra.* Cambridge University Press, 2007.

Vigneault, Marianne. "Grants and Soft Budget Constraints." In *Intergovernmental Fiscal Transfers: Principles and Practice*. The World Bank, 2007.

Vir Bhatia, Ashok. "Sovereign Credit Ratings Methodology: An Evaluation." *International Monetary Fund*, 2002.

von Hagen, Jürgen, and Barry Eichengreen. "Federalism, Fiscal Restraints, and European Monetary Union." *The American Economic Review* (American Economic Association) 86, no. 2 (1996): pp. 134-138.

von Hagen, Jürgen, and Matz Dahlberg. "Swedish Local Government: Is There a Bailout Problem?" In *Fiscal Federalism In Unistary States*, edited by Per Molander. Kluwer Academic Publishers, 2004.

von Hagen, Jürgen, Massimo Bordignon, Matz Dahlberg, Bhajan S. Grewal, Per Petterson, and Helmut Seitz. "Subnational Government Bailouts in OECD Countries: Four Case Studies." Inter-American Development Bank, 2000.

Wagner, Gray A. "The Bond Market and Fiscal Institutions: Have Budget Stabilization Funds Reduced State Borrowing Costs." *National Tax Journal* 57, no. 4 (2004): 785-804.

Weingast, Barry R. "Second generation fiscal federalism: the implications of fiscal incentives." *Journal of Urban Economics* 65, no. 3 (2009): 279-293.

Weingast, Barry R. "The Economic Role of Political Institutions: Market-Preserving Federalism and Economic Development." *Journal of Law, Economics, & Organization* 11, no. 1 (1995): 1-31.

Wibbels, Erik. "Decentralized Governance, Constitution Formation, and Redistribution." *Constitutional Political Economy* 16 (2005): 161-188.

Wibbels, Erik. "Dependency Revisited: International Markets, Business Cycles, and Social Spending in the Developing World." *International Organization* 60, no. 2 (2006): 433-468.

Wibbels, Erik. *Federalism and the Market: Intergovernmental Conflict and Economic Reform in the Developing World.* Cambridge University Press, 2005.

Wibbels, Erik. "Federalism and the Politics of Macroeconomic Policy and Performance." *American Journal of Political Science* 44, no. 4 (2000): 687-702.

Wibbels, Erik. "Madison in Baghdad? Decentralization and Federalism in Comparative Politics." *Annual Review of Political Science* 9 (2006): 165-188.

Wildasin, David E. "Externalities and Bailouts: Hard and Soft Budget Constraints in Intergovernmental Fiscal Relations." *World Bank Policy Research*, 1997.

Wooldridge, Philip. "Financing activities of provincial governments and their enterprises." *Bank of Canada Review*, Spring 1996: 13-29.