Abstract:
Fiscal rules are often applied in federal systems to restrict irresponsible politicians from excessive borrowing. But why not using market discipline to install a more flexible and efficient bound? Necessary conditions and the institutional framework are discussed, especially stressing the importance of a credible no-bailout commitment by the central government. Therefore a unique dataset of yield spreads of Swiss municipal bonds is examined empirically in responds to a Supreme Court decision which clarified the fiscal relations in Switzerland. The findings suggest that the market did not react directly to changes in the bailout probability, hence further arrangements are required.

Keywords: municipal bond markets, yield spreads, no-bailout, irresponsible politicians, “too big to fail hypothesis”

* The author wishes to thank Prof. Dr. Charles Beat Blankart, Gerrit B. Köster and Sascha G. Wolf for valuable comments and assistance.
1 Introduction

The growth of budget deficits and debt levels in numerous industrialised democracies around the world has been subject to many theoretical and empirical studies over the last decades. The rising burden for future generations has been as alarming as the decreasing flexibility and decision making power of future governments as well as the implications for the upcoming economic policy. Figure 1 gives an overview on evolutions of debt levels in selected OECD countries and economic areas over the last 46 years. It shows a positive trend over time. Remarkably, not merely federations as Canada and Germany are struggling with the overflowing budget deficits, but also unitary states as France. However France is also part of the EMU and hence is part of a federal system.

Figure 1: Debt per GDP for selected OECD-Countries

Consequently, not only central states are keen on containing the indebtedness of the central government, also federal systems with multi-tier structures, where even more institutions may have the legitimization to accrue debt. Furthermore monetary unions – e.g. the EMU – are developing sustainable mechanisms to restrict the ability to accrue unsustainable levels of debt in their member states and try to achieve fiscal discipline.
Various theoretical and empirical studies argue that federations tend to accrue higher debt levels and fiscal policies are less sustainable. Hereby, in the recent debate, the design of the constitutional framework, institutional design and the interactions of the intergovernmental layers are determined as possible major drivers that undermine discipline in public spending and hence boost indebtedness. Therefore the focus of this paper lies on the interactions and fiscal relations, especially relevant in federal systems and the mechanisms intended to restrict excessive indebtednesses and contain irresponsible politicians using different theoretical approaches. The most widely used approach is a fiscal rule, but a variety of alternative mechanisms exist, aimed at containing and reducing public sector debt. They differ in the degree of flexibility and restrictiveness. This paper evaluates the market discipline hypothesis in more depth, especially regarding applicable prerequisites. Hereby the no-bailout condition is emphasised and tested empirically. The paper is organised as follows: Firstly organisational forms of federal states are described, followed by a section discussing theoretical prerequisites of the market discipline. Bailout expectations are identified as being a major requirement to install market discipline and therefore a unique Supreme Court decision regarding a restatement of the bailout policy in Switzerland is examined empirically utilizing time series and qualitative analysis. The next section develops further institutional arrangements to enhance the credible commitment of a no-bailout, in turn improving market discipline. Finally a conclusion is drawn.

2 Public Debt in Federations

A broad political-economic theory exist which tries to explain the increase of fiscal deficits and variations of the financing decision over time. Hereby the lack of fiscal discipline is often assumed to be higher in federal rather than in unitary states, since all influences on an increasing budget may occur on each federal level separately and therefore multiplier effects may evolve. Decentralised countries are therefore particularly susceptible to overspending as subnational governments are likely to put their own interests and those of their constituents before those of the larger entity, hence a common pool problem arises. Furthermore a cooperation problem evolves, which refers to the game played by the multiple subnational and national political actors (Braun and Tommasi 2004). The accumulation of debt will increase in federal rather than in unitary states if subnational governments are not facing hard budget constraints. Thus formal
policies, coordination and the institutional design describing the interactions between state levels in a multi-tier federal state are main parameters affecting the accumulation of debt by politicians and the expectation on the hardness of budget constraints (Rodden 2003), which require further research.

Basically two pure principles exist how to organise federal states: Firstly, the principle of vertical public administration, where the central government controls both taxation and borrowing and assigns all duties to the subnational governments. Subnational jurisdictions are therefore integrated branches of the central government and have to balance their budget at any time (Blankart and Klaiber 2006). The central government levies all taxes and allocates means according to the delegated tasks to the subnational governments. The local governments have their own political legitimization, but the model allows little room for local democracy and accountability, as the central government needs to control and supervise all actions (Rattsø 2003). Consequently, the federal state is the only jurisdiction which is allowed to raise debt, thus the restriction and control of indebtedness is also solely concentrated on the central government. Secondly, the principle of autonomy may be installed, where subnational governments are self-governed, politically legitimated through elections and free in their political decisions on the allocation of public goods on the local level. The central state fulfils all tasks assigned by the local levels. A bottom-up approach determines the duties which are more efficiently provided by the central government. This principle requires fiscal congruency i.e. that the circles of decision makers, taxpayers and beneficiaries coincide (Blankart 2004). Jurisdictions are responsible for the spending as well as the financing of the spending and may not shift their tax burden to other jurisdictions, thus the budget is internalized and the autonomous principle may work efficiently.

Both principles share an transparent perception of responsibilities for debt and its repayment in the market: The citizens are able to evaluate the financial position of the subnational jurisdictions – under the autonomous principle – and the central government – under the principle of vertical integration –, which induces the market to require higher interest rates with an increase in the risk of insolvency for each governmental layer.

As obvious as the choice between the two principles might be, the more astonishing is the fact that the rule is broken in most federations ranging from Argentina as an emerging economy to Germany as an industrialized country, where subnational governments are free to borrow in spite of the fact that the central governments are perceived as the
3 Approaches to limit excessive Indebtedness

A variety of different approaches tries to contain the borrowing behaviour of subnational governments and therewith seeks to diminish the high economic costs of defaults of public jurisdictions. One can summarize the major challenges regarding subnational government levels as excessive subnational deficits, excessive indebtedness, insufficient and inefficient local taxation and allocation of public goods, distortionary national taxation, pro-cyclical fiscal behaviour, rigidities in national tax policies and inadequate risk-sharing for regional authorities etc. In order to circumvent these problems, numerous institutional arrangements have been developed. The most prominent mechanisms are fiscal rules\(^1\), but also public banks (Massari 2005), direct democratic decision making (Feld and Kichgässner 2004) or for lending ceilings (Londero 2005) have seen increasing interest in the recent debate. However most of these methods neglect the possibility the market offers, which might be exploited. Therefore it is worth investigating the con-

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\(^1\) For a recent comprehensive overview see OECD (2005).
ditions required to install market discipline allowing for the highest levels of flexibility, while maintaining sustainable debt levels at any time.

3.1 Conditions influencing Market Efficiency

Lane (1993) stresses in his seminal work on market efficiency four general conditions which effectively implement market discipline. Namely, free and open markets, adequate information about the borrower’s existing debts and the prospect repayment, no bailout in case of default and finally borrowers have to respond to the market signals. A deep investigation of the applicable conditions will follow and allow for a distinct assessment of the mechanisms.

3.1.1 Transparency and Open Markets

Firstly, free and open markets are required for the market mechanisms to be implemented and function properly. Restrictions on capital flows as well as legal provisions hindering the free capital flow may delay, distort or even annul market discipline. Furthermore minimum capital requirements for banks may create a captive market for sub-national credits, allowing subnational jurisdictions to borrow below market interest rates.

Secondly, Lane (1993) proposes the availability of full information on sovereign borrowers as an essential determinant of functioning credit markets. The lenders need accurate and timely information about the solvency and the accumulated debt of the subnational jurisdiction in order to assess the credit risk accordingly. If important information is not available to lenders, an unsustainable path of borrowing might go unchecked until the problem grows so serious that the debtor not only faces an increasing interest rate, but is ultimately excluded from the market by credit rationing. An absence of reliable information may also lead to contagion effects between similar borrowers, as debt servicing difficulties by one borrower are perceived as signalling impending problems with all borrowers in the same financial category and therefore weakens market discipline by excluding all borrowers, solvent and insolvent alike, from the market (Lane 1993).

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2 In January 2001 the ‘Basel Committee on Banking Supervision’ issued a proposal which demands all banks to reassess the credit risk in their portfolios. Besides an increased supervisory review and effective disclosure, minimum capital requirements are established in order to improve the soundness of the banking sector. Remarkably the minimum capital requirements for state lending to OECD countries are zero, hence are not depending on the default risk.
As a consequence the implementation of legal provisions on transparent and effective disclosure increases the access of markets to full information and in turn the likelihood of risk adequate pricing by financial markets. Those two conditions are equally important in the private and public sector and are subject to broad academic literature. This paper will therefore concentrate on conditions which are specific for the public finance market in more detail, as the bailout expectations and the borrowers’ responds.

3.1.2 Bailout Expectations

Bailout expectations are not merely relevant for the sovereign case, but also for the other entities as banks and are a lively area of research. In order to assess the effects of uncertainty about the no-bailout of the central government on the yield spread and the functioning of the market hypothesis more closely, the simple general credit rationing model applied by Bayoumi, Goldstein and Woglom (1995) is extended, which illustrates the theoretical framework of the supply of credit. The model is extended by incorporating possible expectations on a potential bailout of the central government by market participants. The model design assumes that all state bonds are sold on a competitive market to risk neutral lenders and mature in one period. The expected return on a municipal or state bond plus a risk premium must equal the return on a safe, risk free security. This condition can be expressed as:

\[
(1 + r_f + s) P(H) + (1 + r_f + s) (1-P(H)) Q(BA) = (1 + r_f).
\]

With \(s\) being the premium required for the municipal bond over the risk free rate \(r_f\). \(P(H)\) represents the probability of a no-default of the issued debt, hence the probability of default is given by \((1-P(H))\). The influences on the default are:

\[
H = X'\beta + \pi B + \delta (r_f + s) B + \varepsilon.
\]

with \(X\) being a vector of all non-debt factors affecting the default decision and \(\beta\) representing a vector of parameters. \(B\) is the quantity of outstanding debt; \(\pi\) and \(\delta\) are non-negative parameters and \(\varepsilon\) is an error term, which contains all factors not included in the regression. The separate coefficients for the interest payments and the level of debt account for the fact, that some of the debt has been issued in the past at fixed rates. For \(P(H)\) it is assumed that the income of the jurisdiction is unknown in the next period, but

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3 For different theoretical modelling refer e.g. to Metcalf (1993), who includes tax rates, Freixas (1999) and Lemmen and Goodhart (1999) who highlight the microeconomic interactions between market par-
is drawn from a known distribution. The higher the values of $H$, the greater the probability that the income of the jurisdiction will be so low that it will default. The value of $H$ can be thought of as the highest level of income by the jurisdiction that will lead to default, and $P(H)$ is the probability that the state income will exceed this level.

In addition $Q(BA)$ represents the expected probability of a bailout of the accrued debt by the central government. For simplicity, I assumed that the entire defaulted debt load will be bailed out and that the central government is not credit constrained. Thus, no extra credit channel for the government is incorporated, which would reflect a possible effect on the financing conditions of the central government and hence other contagion and second round effects are neglected. Contrary to the basic model, the lender has to evaluate on the one hand the expected probability of a bailout $Q(BA)$ by the central government and on the other hand the probability of a default in case the expected probability for a bailout is less than one. $BA$ incorporates all influences of a possible municipal bailout of the central government. Note at this point, that determinates of the default likely differ from determinates of a bailout. Determinates which influence the bailout decision of the central state level, may be modelled as:

$$BA = Z’ \beta + \zeta g + \eta c + \theta o + \nu.$$  

(3)

g represents the size of the municipality, $c$ the implementation of a no-bailout clause in the constitution and $o$ representing the level of debt accumulated by other subnational governments under the same central government. The parameters $\zeta$, $\eta$ and $\theta$ may be determined empirically and measure the influence of the respective component on $BA$, $\nu$ incorporated remaining errors. $Z$ is a vector affecting the expected probability of a bailout, including all factors other than the ones discussed before. $\beta$ is again a parameter vector.

For $Q(BA) = 0$, the expected probability of a bailout is zero, we yield by totally differentiating of (1) with respect to debt level $B$ and premium $s$ yields:

$$\frac{ds}{dB} = \frac{-P'(H)\pi + \delta(r_i + s))(1 + r_f + s)}{P(H) + P'(H)\delta B(1 + r_f + s)}$$

(4)

This term represents the marginal change of the premium demanded by the market depending on the change of the debt level accrued by the jurisdiction. Since the numerator
of (3) is nonnegative for all levels of debt the denominator determines the sign of the slope of the supply curve. With \( B=0 \) the denominator is positive, hence the entire term is positive. With increasing debt levels the slope of the supply curve increases until:

\[
P + P' \frac{\partial B(1+r_f+s)}{\partial B} \lim_{B \to 0} = 0 \quad \text{or} \quad P \lim_{P'(1+r_f+s)} = -P
given (5).
\]

In this point, where the denominator approaches zero, the slope of the supply curve becomes vertical and hence the debtor is credit constraint at this level of debt \( B_{\text{max}} \). The borrower therefore faces a nonlinear relationship between the debt level and the market premium and is credit constrained in \( B_{\text{max}} \).

For \( Q(BA) > 0 \), the effects will differ, since the distribution of \( Q(BA) \) is unknown. Totally differentiating (1) with respect to debt level \( B \) and premium \( s \) yields:

\[
\frac{ds}{dB} = -\left[ P'(H)[\pi + \delta(r_f + s)](1 - Q(BA))(1 + r_f + s) \right] / P(H)[(1 - Q(BA)) + Q(BA) + (1 + r_f + s) P'(H) \frac{\partial B}{\partial B} [(1 - Q(BA))]
given (6).
\]

Obviously, the change of the premium does not solely depend on the level of debt, but additionally on the expected probability of a bailout. With increasing values of \( Q(BA) \), the premium \( s \) will increase slower to an increase in the amount of debt \( B \). Firstly, credit rationing will occur at higher debt levels \( B_{\text{max}} \), than under certainty about a no-bailout and secondly, the market demands lower premia for each debt level, which reduces the disciplining function of the market. For \( Q(BA) = 1 \), the market premium is not affected by the debt load of the jurisdiction at all, but rather equals the premium of the central government,\(^4\) which is assumed to be risk free. Figure 2 illustrates the relationship between the market premium and the debt level under different bailout expectations.

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\(^4\) Remember at this point, that the premium of the central government is not affected by the debt level of the subnational jurisdiction in the model.
So far one can state that the expected probability of a bailout is a key-determinant of the market discipline; consequently it is worth investigating the influences on Q(BA) more closely, which highly depend on the constitutional and political framework, primarily if an autonomous or a mixed federal system is installed. Rodden, Eskeland and Litvack (2003, p. 17) state that “if a local government is merely a branch of the central government, then punishing its citizens is useless at best. It is only as the municipality becomes a body on its own, a creature of its own citizens with powers to match its responsibilities, that the central government might credibly commit to let it face the consequences of its actions”. This refers to the principle of autonomy as previously stated, as a precondition leading to expectations of Q (BA)=0; in turn to a functioning market discipline. Thus no-bailout clause is solely credible if at least parts of the decision making power lie in the hands of the subnational jurisdiction.

Wildasin (2004) draws the intention to the difficulties to determine a bailout in the sovereign case, since “the mere existence of intergovernmental transfers does not seem to capture the intuitive notion of ‘bailouts’, which should somehow reflect ‘irregular’ or ‘extranormal’ transfers” (Wildasin 2004, p.6).

Moreover the “too big to fail hypothesis”, as supported by Wildasin (1997), leads to a strictly increasing function of Q (BA) in the size of the municipality g in the extended model. The hypothesis was proved empirically by Wildasin (1997), who showed that the probability of a jurisdiction being bailed out rises with its economic size. The more integrated the economy of the subnational jurisdiction, the higher the externalities in
3 Approaches to limit excessive Indebtedness

case of a default on the entire economy and the higher the likelihood of a bailout. In this setting the costs for a bailout are smaller for the central government than the costs of a default of the jurisdiction (Hernadez, Diaz and Gamboa 2002), which at least holds for the short-run, since the market might expect a bailout decision in all future subnational defaults. Subnational jurisdictions thus will not face credit rationing, which may boost the costs for the central government. Landon and Smith (2000) show for the Canadian case, that various intergovernmental debt spillover effects are evident and affect the risk premia and the creditworthiness of each jurisdiction; hence an implicit bailout guarantee is anticipated. This is reflected in the extended model with the variable o in equation (7), where the bailout decision and in turn the risk premium are influenced by debt levels of other subnational jurisdictions.

In contrast to those findings a “too small to fail hypothesis” is proposed by Seitz (2000), where the costs in terms of reputational damage are higher than the cost of bailing out a small jurisdiction. The bailout is considered as being “cheap”. This may be reflected in the extended model with a strictly decreasing function Q (BA) with the size of the jurisdiction. Seitz (2000) stressed that a bailout has to be in line with the financial capacity of the central government, which itself is limited in the amount of levying taxes and raise other funds. Finally, bailout expectations also depend on the capacity of the central government to force subnational governments to pay their debt. However, von Hagen et al. (2000) argue in four case studies on Australia, Germany, Italy and Sweden that not the economic size, but rather the size “in terms of importance in public opinion” (von Hagen et al. 2000, p. 32) is the most important determinant for a potential bailout. This is also in line with the political favouritism and incentives of politicians already discussed in the second chapter of the paper. In a multi-party democracy, jurisdictions which are governed by the same party might favour the ones which are governed by their own party in order to increase the overall election chances.

As a result one can manifest that a no-bailout has to be credible to utilise the market to contain excessive borrowing. In cases where the market expects a bailout the nonlinear relationship of the yield curve will not be fully observable or at least distorted and the incentives for politicians will diminish. As demonstrated in the theoretical model, the government will have various difficulties to credibly commit to the no-bailout clause, as the incentives to deviate may be high in the event of a default. Hence the government requires ex-ante methods to establish certainty on a future no-bailout. This might most easily be established by a constitutional no-bailout clause, which would result in a depo-
liticisation of the bailout-decision in the event of a default and would install clear commitments for the central government. Furthermore it would be enforceable by the citizens. In the extended model c represents the constitutional implementation. Additionally lenders, rather than taxpayers, bear the risk of the default, hence lenders would ex-ante require a higher premium depending on the financial capability of the subnational jurisdiction. The constitutional rule is transparent and allows the market to assess the reactions of the central government in case of a default more clearly. There is no need to adjust the constitutional clause from time to time, as in the case of borrowing limits as previously discussed. The bailout would hardly be circumvented by the current central government (no-exit possibility), since constitutional adjustments often require a higher majority or have other mechanisms to avoid steady restructuring. The people had decided in their contract with the state that market mechanisms should be utilized to restrict politicians in excessive borrowing on each federal level and thus abide sustainable debt levels. Politicians, who might benefit from a bailout, were unable to change the rules ex-post.

Due to the unavailability of data for bond markets and the uncertainty on some of the political variables it is not possible to estimate the entire model empirically. Nevertheless, it is possible to determine the impact of a change in the probability of a bailout by the central government on the yield spreads of municipal bonds. The estimation will be undertaken in chapter 4, in order to prove the discussed theoretical findings. The market reaction on a change of the bailout probability is so far not tested in the literature and, as already shown theoretically, the bailout expectations are considered to be main determinants of a functioning market mechanism.

3.1.3 Borrowers Responds

We have concentrated in the recent debate on the supply side of the market mechanism and evaluated conditions which are required to assure that the supply side functions according to the market discipline hypothesis. We neglected the role of political actors and the institutions responding to rising interest rate spreads and ultimately to the denial of further borrowing in case of a functioning market discipline. It is argued that if market discipline depends exclusively on market exclusion it will not be an acceptable mechanism of control (Lane 1993, pp.70). In fact the nonlinear interest spread and the rising refinancing costs should restrict politicians in power to deny further borrowing.
Therefore a smooth operation of the market discipline hypothesis requires the direct responds of politicians and policy makers to market signals and interest rates.

A rational agent responds to an increasing interest rate spread with reduced demand for further financing, since each project necessitates a higher marginal return in order to be conducted. Sustainable expenses reducing the risk of insolvency in the long-run are established. The market does not need to ration the borrower, since the borrower anticipates the higher financing costs and the maximum level of funds provided by the market. Hence the borrower would demand the optimal level of debt, depending on the financing costs and the gains of the undertaken project. Furthermore the borrower would take the knowledge of the markets into account to evaluate the project and use the information in its decision making.

But a wide range of institutional and political imponderables exist hindering the demand side to respond to the signals accordingly. Ultimately the rationing barrier will always demand politicians to contain sustainable fiscal policies and builds an ultima ratio, even though the higher interest rates appear to affect fiscal policy in particular cases in the real world, as shown by the following examples. In the US, the New York City government decided to cut its borrowing in order to uphold its bond rating and maintain the credit conditions. The City of Düsseldorf voluntarily demanded a bond rating to receive better financing conditions than in case a yardstick of all cities in the Land is being used to determine the financing condition.\textsuperscript{5} Thus the cities could reduce its financing costs by installing or upholding the rating. Therefore it might be anticipated that politicians are reacting to an increase of interest rates and the increasing proportion of the interest payments in the budget, since the decision making power will decrease if refinancing costs are the biggest portion of the budget and the influences of politicians in allocating the tax revenues will be reduced. Thus even though conditions occur where politicians do not react to increasing interest rate changes, e.g. strategic behaviour, they will in general react to increasing interest rates to avoid less influence and tied hands through budget restrictions. Prerequisite is again the credible no-bailout by any other state jurisdictions.

Moreover, when market discipline is installed, transparency will increase both in the capital market, and also in the political environment. Voters will be able to evaluate the

\textsuperscript{5} In this case the rating of the city was even better than the Land rating, which was a major driver for the city to acquire a rating.
sustainability of their governments’ policies more easily and will have a direct measure to compare political policies between jurisdictions. The accounts of subnational jurisdictions will be assessed and bureaucratic oversupply will be transparent. Thus the voters will have further possibilities to evaluate the government in the long-run according to their credit history and yield differential. Furthermore voters can more easily determine whether the higher interest payments correspond to higher supply of public goods, which is demanded in their municipality. Additionally, politicians will gain opportunities to receive third party valuation of their projects.

Nevertheless it is necessary to mention public choice problems which are not eliminated by the market mechanism. The strategic accruement of debt, stressed by Alesina and Tabelloni (1990), to tie successor government’s hands and to limit its ability to carry out spending that is not in line with the current governments’ preferences will hardly be held up by the market mechanism. Furthermore the evolvement of political struggles in weak coalition governments (Roubini and Sachs 1989) which may result in higher overall deficits will not be fully solved even though the cost of those struggles will rise more quickly which might lead to faster settlements of the conflicts, since marginal costs of the struggles should equal its marginal utility.

At this point it is also relevant to mention adverse selection, since politicians might plan not to repay their debt from the very beginning or in the knowledge of a probable default will try to raise further funds. This would obviously abrogate the market discipline. Hence the question arises why sovereign borrowers ever repay their debt and why there exists substantial demand for sovereign bonds and other sovereign financing devices? A first argument refers to the exclusion from future credit markets which is often been couched “reputation”. Thus the mere penalty of an exclusion of credit markets in the future is being seen as a sufficient incentive to repay the debt. Secondly, Ölzer (1993) showed empirically that the market is demanding a higher premium for more than 40 years after the default of the jurisdiction. Politicians therefore face incentives to be perceived as good borrowers, thus enhancing the access to credit markets in the long-run.
4 Lessons from Switzerland - Case Study and Empirics

Up to this point the chances an efficient market offers have been stressed which were accompanied by a number of conditions in the legal and economic environment. Hereby the importance of bailout expectations was highlighted.

Therefore it is meaningful to turn to the lessons we may learn from a unique Supreme Court decision on a bailout of a rather small municipality in Switzerland, which might allow controlling for some of the stated theoretical conditions empirically. The decision of the Supreme Court in Switzerland on the fiscal relations of its subnational levels provides us with a unique opportunity to isolate the effect of central governments and the legal system to commit to no-bailouts. Changes in the default risk premia paid in the market might be observable. Prior to the decision, the fiscal relations between the jurisdictions in the federal systems were not fully clear. A federal law on the “collection of debt between municipalities and the cantons” was enacted on 4th December 1947. It excluded the possibility of a bailout, but also allowed cantonal constitutions to deviate from the clause. This exemption was widely used on the cantonal levels and thus the governmental reactions were not clear. The Supreme Court specified the applicability of the law from 1947, and emphasised the no-bailout commitment of the canton. Therefore it is possible to determine reactions of the capital market to the policy change towards a no-bailout clause proclaimed by the state. The main objective is to highlight adjustments in the economic and political environment as well as the market responds to the Leukerbad decision and the commitment of the central government not to bailout the subnational jurisdiction. To better understand the political environment of the decision and to link the outcome, the Swiss federal system will briefly be described in the following chapter, followed by a short overview on the Leukerbad case. In the third part the data and the study design is presented and finally the findings are summarized and evaluated.

6 “Bundesgesetz über die Schuldbetreibung gegen Gemeinden und andere Körperschaften des kantonalen öffentlichen Rechts”

7 Art. 3 of the applicable law (“Bundesgesetz über die Schuldbetreibung gegen Gemeinden und andere Körperschaften des kantonalen öffentlichen Rechts”)
4.1 Federal System in Switzerland

Switzerland is one of the only countries within Europe which is characterised by an extensive fiscal federalism with high levels of fiscal autonomy where mostly the autonomy principle is applied throughout all levels of government. It provides economists with a unique opportunity to study the effects of political and legal interactions on federal levels in a relatively transparent political body. The small state, embedded in the middle of Europe, domiciling 7.35 million inhabitants in 2003, is organised in a three-tier system - the federation, 26 cantonal and 2902 municipal jurisdictions. The autonomy principle is applied throughout all levels of government and is manifested in the Swiss Constitution (SC)\(^8\), in the Art. 35-38. Each canton has its own democratic and revisable constitution which solely must not contradict or annul the federal constitution (Art. 51 SC). The canton and its inhabitants are free to determine or change the constitution within the cantonal borders; hence a variety of different cantonal administrations and political approaches exist, allowing the people to determine the intended level of government depending on local preferences. The bottom-up approach of the political system is explicitly stated in Art. 3 Para. 2. of the federal constitution, stating that the federal administration has to fulfil exclusively the tasks assigned by the federal constitution.\(^9\) The cantons participate in the federal decision making in the “Ständerat” which is the second chamber of the parliament. Furthermore in cases of referendum on changes of the federal constitution, at least the majority of half of all cantons, the so-called “Ständemehr”, have to approve the modifications. Additionally a steady interaction exists between the cantons and the federation to agree on federal policy issues. This might be a reason, why Switzerland belongs to the very few industrialised countries in the world, where the federal system was not further centralised during the last century (Figure 3). Instead the revenues of the federal government were decreasing during the last decades and are now at a record low of 31% of the overall state income in 2001.

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\(^8\) Federal Constitution of the Swiss Confederation, which was introduced on the 29\(^{th}\) May 1874.

\(^9\) Art. 3 Para. 2 Federal Constitution: “Der Bund erfüllt die Aufgaben, die ihm die Bundesverfassung zuweist.”
But there were also tendencies towards a further centralisation of specific state obligations, e.g. the social policy (Art. 41 SC), where a federal insurance system was established, which covers e.g. retirement, health, and unemployment benefits. Furthermore the environmental and energy policy as well as the construction of federal roads has been centralised during the 60s and 70s of the last century. Nevertheless there are no joint issues, where the federal and the cantonal administration share the responsibility and the liability for a particular issue, thus it is fairly clear who is responsible for which task assigned by the people to the state (Feld 2004). This is a major pillar which underlines the autonomous principle. The federal level is therefore mostly responsible for classical public goods (defence, legal provisions for domestic market, foreign policy) and the cantons and municipalities are responsible for the provision of local public goods.

Consequently, also the tax system is characterized by a clear separation of revenues between all levels of government. Most importantly the municipalities and cantons are free to set their taxes; hence competition is incorporated in the system. Some of the most important tax sources, and their respective collectors, are presented in table 1.
Table 1: Taxation competency in Switzerland

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<td>Withholding tax</td>
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<td>Stampede duty</td>
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<td></td>
<td>Custom duties</td>
<td>Automobile tax</td>
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</table>

Source: following Feld (2004)

The federal government is mostly financed through income and value added taxes, whereas cantons have a relatively broad autonomy regarding income tax, corporate income tax and taxes on assets. The municipalities levy their self-determined mark-up on cantonal taxes. Therefore the tax burden differs between cantons and between municipalities quite strongly. Nevertheless it is not observable that taxes are converging to a particular tax rate; they rather developed independently in the past, even though the discussion regarding tax harmonization has a long lasting tradition, which resulted in a tax harmonisation act,\(^{10}\) mainly concerned with the harmonisation of formalities and the concept of law, rather then the harmonisation of the actual tax rates. The financing and autonomy of municipalities differs widely between the cantons, since they are all eligible to self-determine the amount of autonomy the municipalities should receive. However a federal law on the “collection of debt between municipalities and the cantons” was enacted on 4\(^{th}\) December 1947,\(^{11}\) which states a standard procedure for the fiscal relation between all cantons and their municipalities. Thereby municipalities will not be bailed out by the cantonal jurisdiction. Nonetheless each canton may deviate from this clause in its own constitution: in nearly half of the Swiss cantons the municipalities are not free to determine their borrowing level. In Fribourg a limit on municipal borrowing

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\(^{10}\) Tax harmonisation act entered into force in 2001.

\(^{11}\) “Bundesgesetz über die Schuldvetreibung gegen Gemeinden und andere Körperschaften des kantonalen öffentlichen Rechts” based on Art. 64 SC, which refers to the administrative management.
was enacted; Basle Land, Valais, Appenzell, Grisons, Schwyz and Thurgau require an approval by the canton starting at a certain threshold and Basle City, Geneve, Jura, Neuchâtel and Vaud are fully controlling the municipal borrowing decisions (Wallis 1999). Consequently, the remaining 14 cantons do not demand any approval of the municipal financing. Various cantons are deviating from the federal law and control their municipalities in the accumulation of debt. In total however, 20 cantons stated in a questionnaire that they are supervising the financing decisions of their municipalities to assure their credit worthiness and solvency (Finances Publies AG 2004). As a result the no-bailout clause in the federal law was not fully credible in various cantons before the court decision, since various interactions between the state levels exist. Hence, the market is barely pricing according to the capabilities of the municipality, but rather according to the capabilities of the canton. Even if the canton is not demanding an approval the lenders might anticipate a bailout, since the financial ties between municipalities and the cantons are not fully clear. Furthermore the per capita debt levels in prices of 2000 over all jurisdictions in Switzerland rose from CHF 5.764 in 1970 to CHF 33.153 in 2004.\textsuperscript{12}

The Swiss municipal financial market is still relatively strongly depending on financing by banks and insurance companies whereas direct market transactions between lenders and borrowers occur more seldom. The bonds which are sold directly on the bond market are mostly buy-and-hold emissions, where the investor buys the bond and holds it till it matures. The bonds might be listed at an exchange, but are not traded in the secondary market. However the number of actively traded bonds increases. Additionally an institution, the Emissionszentrale für Schweizer Anleihen (ESG), was found in 1971 to ease access to bond markets for municipalities in Switzerland. It is approaching the bond market as an agent for the municipalities, which are organised in the ESG. The main purpose is the reduction of transaction costs and the decrease of interest rates for the municipalities. The credit demand from municipalities is bundled and a single high-volume bond is issued. Therewith economies of scale are utilized and the liquidity risk diminishes which results in lower interest rates for the entire bond. Additionally the bonds are secured by a joint guarantee, which reduces the default risk for the lender. Each jurisdiction is liable for the default value depending on the stake it is holding in the particular bond issuance.

\textsuperscript{12} Source: Eidgenössische Finanzverwaltung 2005, T18.4.1.1.
Thus there are various financing possibilities for Swiss municipalities, which differ in the degree of attached risk and the required premium.

### 4.2 Case Leukerbad and the Decision of the Supreme Court

Leukerbad, a municipality in the canton Valais, is the first Swiss municipality to become bankrupt in the modern history of Switzerland. The community defaulted in December 1998 and thereafter is being governed under cantonal supervision.

The economy of Leukerbad is highly concentrated in the tourism industry and in 1998 the community counted 1750 inhabitants with a total of 1800 people in the labour force. In the late 80s the municipality started to invest heavily in its infrastructure and in construction projects. For each of the projects a separate legal entity was registered, but the appointed management always consisted of the same local politicians. Additionally strong financial ties existed between all entities.

Personal enrichment of local politicians, accompanied the unsustainable development of municipal debt levels, intensified the default probability. The head of the municipal council expanded his own salaries without the approval of the municipal council and received further salaries from other legal entities, fully owned by the municipality, for his management activities. At the peak of his activities he was unifying eight chairs of corporations and the head of the municipal council, while his own accounting firm was monitoring and approving the activities of the municipality (see appendix A for an overview of the corporate integration). Thus various conflicts of interest arose for the empowered politicians, where private incentives where not in line with the sustainable development of the municipality. Furthermore creative accounting techniques were applied, such as depreciation rates for buildings - as low as 1 % of the corresponding book value- which obviously is not in line with the actual impairments. Consequently, during a period of 15 years, the municipality and the dependent eight fully owned corporations accumulated CHF 346 Million\(^{13}\) in debt and were finally unable to serve its interest payments and had to default.

The constitution of the canton Valais (KC) manifests the autonomous principle in Art. 69 KC, which states that municipalities are free to act within the bounds of the constitu-

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\(^{13}\) In 1987 the per capita debt equalled CHF 28.024 and nine years later in 1996, per capita debt rose to CHF 86.154 (Wallis 1999).
tion. The actions of the municipalities solely have to serve the interests of their citizens (Art. 70 Para. I. KC) and the assets have to be administrated with due diligence (Art. 70 Para. I. KC). The canton is required to supervise the specific actions which are stated in the constitution and additionally has to approve certain commercial operations (Art. 75 Para. 2-4 KC). Credits are commercials operations which fall under the provision, if there value is higher than 10% of the income of the previous fiscal year. Thus the constitution requires the canton to supervise commercial operations, while the municipality is independently determining the local provisions. At this point it is worth mentioning that the canton and the municipalities are liable for all actions of its agents towards third parties (Art. 21 Para. 21 I KC), hence personal liability is excluded.

In Leukerbad the cantonal supervisor published an alarming report in 1993, that the municipality would need more than 100 years to repay the accrued debt holding the tax rate constant. Therefore the cantonal supervision concluded that the municipality was highly indebted, but no consequences were drawn thereafter by the canton. The municipality was allowed to manage their property free of intervention following the principle of autonomy as stated in the constitution. In 1996 another inspection announced the same result - the debt level was too high and the repayment was hardly achievable. Furthermore they concluded that local politicians had overstepped their competencies and were not in line with current law. However, the second report also didn’t have any consequences for the local politicians in charge. Hence the cantonal provision which required at least an approval for the issuance of new debt didn’t have any impact in this case, since the municipality was receiving funds without the permission in the market. The restrictive mechanisms set by the constitution were circumvented by the politicians and the market granted credits, expecting a bailout by the canton. Finally on the 16th December 1998 the municipality was unable to serve its debt and a forced administration was installed by the canton.

The Cantonal Bank of Basle, besides other creditors filed a lawsuit on the federal level against the canton Valais to achieve a bailout by the canton. It was argued that the canton neglected his duty to supervise the municipality and therefore is obliged to pay for the bailout of the accumulated debt. The Supreme Court had to decide whether the canton could be hold liable for the default, hence whether it had to bailout the municipality. The constitution is not very precise on this point, as stated before, since the canton on the one hand has a duty to supervise, but on the other hand the municipalities have the freedom to conduct their transactions independently.
On the 3rd of July 2003 the ruling was proclaimed stating that the creditors had to bear the costs of the default and the canton could not be held liable for the defaulted municipality.\textsuperscript{14} The autonomous principle was emphasised. One of the main arguments was the access of creditors to all information regarding the municipality and its financial position. The court stated that financial data of municipalities and other state jurisdictions are even easier to obtain than most data of private companies. Hence it was the creditor’s choice to invest, with at least the realistic possibility to assess the default risk. The cantonal duty to supervise its jurisdictions does not mean that the canton is liable in case of a default, which would imply an indirect state guarantee.\textsuperscript{15} The cantonal constitution deviated from the federal law on the “collection of debt between municipalities and the cantons”, but the court concluded that the cantonal constitution is not precise enough in determining a possible responsibility and thus the federal law is still applicable.

As a result the municipality was not bailed out by the canton, and the creditors had to bear the cost of their defaulted investment. In the following negotiation process between the forced administration and all creditors, at the beginning of 2004 the parties agreed on a liquidation of all assets of the municipality in return for a devaluation of the debts by 78\% to a moderate level of 25 Million CHF which thereafter are backed by a cantonal state guarantee.

This decision affected not only the fiscal relations within the canton Valais, but also strengthened clear fiscal relations within Switzerland, which were already stated in the federal law on the “collection of debt between municipalities and the cantons”, but have been whitewashed over recent years. The market has anticipated a bailout, as shown by the filing of the lawsuit and the provision of funds independent from the financial position of the borrower, which highlights the incredibility of the no-bailout clause. Other cantons do not require their municipalities to approve their borrowing decisions which might illustrate a higher degree of autonomy, although it is arguable that the market anticipates a bailout also in those cases since a bailout procedure is not clear. Hence, two alternatives for the cantons exist to organise their municipal relations more clearly: the autonomous principle and the principle of vertical integration, as described earlier, which would be a credible signal to the market.

\textsuperscript{14} Decision of the Swiss Supreme Court (2C.4/2000 /mks).
\textsuperscript{15} Decision of the Swiss Supreme Court (2C.4/2000 /mks) 7.4.
4.3 Time Series Analysis

The following econometric time series analysis will investigate the impact of the constitutional no-bailout commitment on the risk premium required by the market. Referring to the model from chapter three the statistical influence of a constitutional implementation and the reaction of the market is estimated in the event study, regarding the modification in the legal environment.

4.3.1 Data

To compare the market reaction to the Leukerbad court decision I compiled a unique dataset consisting of all municipality bonds actively traded at the SWX Swiss Exchange in Zurich at the time the Leukerbad sentence was proclaimed on the 3rd of July 2003. The entire data set, consisting of 3549 daily data points, was drawn from the Thompson database16 and comprises 8 municipality bonds and 31 bonds from cities in Switzerland (appendix B). The data solely consist of bonds with a minimum maturity of two years after the courts decision and a minimum trading period of three month before the reference day in order to account for the increasing default risk for bonds with a longer maturity. Bonds backed by an explicit state guarantee were not considered.

One of the main problems regarding yield differentials of municipal bonds is the differentiation between liquidity and default risk as portions of the premium demanded by the market, which influence the price of the bond directly. Liquidity risk mainly refers to the financial risk due to the lack of market capability to digest buy and sell orders without large-scale price movements, but often also compounds other types of risks. If a lender has a position in an illiquid asset, its ability to liquidate that position at short notice is limited – the risk is stemming from the lack of marketability of an investment that cannot be bought or sold quickly enough or without a substantial loss in the market. Additionally Lemmen (1999) suggests the “appetite for credit risk” of international credit markets as being a major determinant of the yield spread.

Instead, default risk refers to the probability that the debtor fails to repay principle and interest in a timely manner. The yield spread of bonds always incorporates both types of risk, which are hardly to separate. Bayoumi, Goldstein and Woglom (1995, pp.1051) show that market yields for two Florida State Bonds were pricing with a spread of 22

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16 The author wants to thank Mrs. Mayer from SWX Swiss Exchange for valuable assistance in acquiring parts of the data.
basis points, although identical in all respects apart from a difference in maturities; one matured in 2010, the other in 2013 and different coupons. Moreover the bond market reacts fluctuations of other variables, as the stock market, international liquidity ratios and the interest rates set by central banks over time. Hence fluctuations on the traded bonds are observable which do not depend on the securities themselves, but on the overall market performance.

In order to minimize systematic influences of the international credit market, the municipal bonds in our sample are compared to the equivalent yield curves of government benchmark bonds. The yield spread is expressed as yield difference (bond minus benchmark) in basis points. The spreads mirror therefore the liquidity and default premium the market demands for the municipality bonds in contrast to the federal bond. Since the yield curves are based on the performance of federal bonds, the market fluctuations which hit the overall Swiss bond market are excluded from the data sample, thus the difference in yield spreads will primarily reflect differences in default risk, although some of the variation may be due to varying liquidity premia. As there are not exactly matching federal and municipal bonds available in the market, with equal maturities and yields, corresponding proxies had to be determined. A linear interpolation technique had to be used to account for the differences in maturities,\(^\text{17}\) which may be a source of imprecision in the data sample. A separation of the default premium for each municipal bond is hardly possible; however, in our setting, the unique opportunity exists that one may observe structural breaks in the time series which may be due to changes in the default risk premia.

### 4.3.2 Study Design

In order to determine the statistical effect of the courts decision, an event study framework is applied. An event-window of three month before and after the decision (04/03/2003 – 10/03/2003) is created. The univariate time series of yield spreads are tested for structural breaks on the particular date of the court decision. Therefore a

\(^{17}\) The linear interpolation formula: \(\text{yield} = Y_1 + \left[\frac{(Y_2 - Y_1)}{(l_2 - l_1)}\right] (l_3 - l_1)\) with:

- \(Y_1\) = yield of the benchmark with the lower maturity
- \(Y_2\) = yield of the benchmark with the higher maturity
- \(l_1\) = exact maturity in years of the lower benchmark
- \(l_2\) = exact maturity in years of the higher benchmark
- \(l_3\) = maturity of the bond being analysed
dummy variable is implemented to account for the differences in the legal environment, which takes the value zero for the period before the decision and one thereafter.

\[
d_{1t} := \begin{cases} 0, & t < T_1 \\ 1, & t \geq T_1 \end{cases}
\]

(7)

In other words, I tested for each time series separately whether a positive intercept adjustment in the time series occurred. Explicitly, I tested the hypothesis that the decision of the court did not have a positive effect on the structure of the interest yield spreads (H₀) against the hypothesis that there exists a statistically significant positive effect (H₁).

The univariate time series data were tested using the Mann-Whitney Test (median distribution test), which shows whether two subgroups of an overall sample have the same distribution or if they are following different distributions. In our case, one sample includes all observations of the period before the decision and the other the period after the decision of the court. Normality distribution of the data is not required. Thus the null hypothesis states that the two subgroups are independent samples from the same general distribution. The alternative hypothesis may loosely be defined as “the values of the first group tend to be smaller than the values of the second group”. The significance is tested on a 5% interval.

It is expected that the rate will be higher in the period after the court decision, as the default risk of the bonds increased due to the decreased likelihood of a bailout by a canton (Figure 4), as proposed by the theoretical considerations of the credit rationing model.

Figure 4: Expected change in yield spreads on municipal bonds

![Figure 4: Expected change in yield spreads on municipal bonds](source: author’s illustration)
As a consequence of the court decision the canton solely has to bailout the municipality in the event of own negligence of the clearly stated provisions in the cantonal constitution or if a state guarantee was being issued. Therefore the likelihood of a bailout of the canton diminishes for municipal bonds. Even if there are hints for a bailout in the cantonal constitution, as in the constitution of Valais, there is a higher risk for an overruling by the Supreme Court. Consequently, the risk premium for all municipal bonds needs to rise, since the default risk increases.

4.3.3 Empirical Results

The Mann-Whitney Test showed striking results. For the majority of bonds the null hypothesis could not be rejected (table 2) on a 5% significance interval, which implies that the distribution of interest yield spreads before the decision is not statistically different from the one after the decision. The results are summarised in table 2.

Table 2: Mann-Whitney Test results for selected time series

<table>
<thead>
<tr>
<th></th>
<th>( H_0 ) could not be rejected*</th>
<th>( H_0 ) could be rejected*</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal bonds</td>
<td>7</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>City bonds</td>
<td>29</td>
<td>2</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>37</td>
<td>2</td>
<td>39</td>
</tr>
</tbody>
</table>

*Significance on a 5% critical level

The expected break in the yield spread was not observable, although the theoretical discussion proposed a structural break. Thus we may conclude that the market didn’t significantly react to the decision, in the estimated time frame, with an increased yield spread on the examined bonds. Hence a discussion on probable explanations is indicated. There are a number of reasons which might explain the deviation from the results the theory has proposed for the market reaction:

Firstly, the market might already have incorporated a higher risk premium in the yield spread in anticipation of the court decision before the examined date. Thus the increased default risk is already incorporated in the first sample of the data and the structural break is not observable at the expected point in time. Additionally one might expect a partial adjustment of the default premia in anticipation of the decision; hence parts of the adjustment of the default premium might have already occurred before the decision.
But it is rather unlikely that the entire adjustment of the premium was performed before the court decision, since information on the decision was firstly proclaimed on the tested date. The outcome was furthermore astonishing, at least to most of the involved experts.

Secondly, the increased default risk may be rather small compared to the variation in the data due to liquidity risk and thus minor changes in the time series could not be identified in the study framework, even though the calculation of yield spreads between the municipal bond and the federal bond diminishes the effect. The adjustment therefore took place and was solely not statistically verifiable.

Thirdly, the costs to allocate information on municipalities might be too high to justify the provision for current bondholders or the financial data were not easily accessible in the given time frame. This is a relatively weak argument, since uncertainty will ultimately lead to higher spreads in the market, which would be revealed by the event study. Furthermore the court argued that the information are widely available and may be implemented in the bond pricing.

Fourthly, the market may not believe the no-bailout commitment of the federation which was stressed by the court decision. The strong self selection bias in the data, as all bonds actively traded at the SWX are issued by rather large jurisdictions, while smaller jurisdictions do not issue directly in the bond markets, but rather refer to bank loans and other financing tools, may be a reason for the unobservable reaction of the market. This would stress the “too big to fail hypothesis” illustrated in the theoretical model. Externalities for larger jurisdictions might be too high – in case of a large municipal default it is ex-post efficient for the canton to bailout the municipality. Therefore the ex-ante no-bailout clause might be considered as incredible. Smaller jurisdictions are represented in the data sample by bonds issued by the “Emissionszentrale der Schweitzer Gemeinden” (ESG), which is pooling bonds from smaller jurisdictions and places securities with joint guarantees of all involved municipalities, which reduces the default risk of the entire security and also the risk premium the market is demanding. The municipalities are thus bearing a big portion of the default risk, which is not borne and therefore not priced by the market. Hence the market may solely demand a relatively small increase in the premium, which is hardly provable empirically.

Fifthly, the market might not believe the no-bailout commitment in all jurisdictions, which are included in the sample, since the no-bailout decision could be counteracted by political signalling or indirect cantonal guarantees.
To sum up, two main arguments prevail why the market didn’t respond to the decision. On the one hand the costs of a relatively big jurisdiction to default are high, which reduce the incentives for the canton to bailout the municipality which is expected by the market and on the other hand political dilution could reduce the credible commitment of the decision in the market to reduce financing costs.

4.4 Adjustments in the Swiss Municipal Bond Market

After the determination of the empirical influences of the court decision on traded municipal bonds on the observable Swiss bond market, one might seek to discover further adjustments on the municipal bond market, which resulted from the Leukerbad decision.

On the track to a more integrated financial market an increasing demand for ratings is observable in Switzerland. The major international rating agencies are as involved as the cantonal banks to establish ratings for most entities participating in the bond market. As a consequence transparency rises and liquidity premia diminish. The first steps towards a more market based risk-adequate pricing of municipal debt are being made which will finally result in a reduction of risks regarding the excessive borrowing by irresponsible politicians.

The ESG, which was close to a liquidity crisis at the time of the Leukerbad default, also adjusted its program. Joint bonds are still offered, but additional default insurance for all newly issued bonds is being contracted with the ‘Zurich Direct Insurance’. Therefore the joint liability of the municipalities is reduced to the case where the insurance coverage, which is currently 10% of the emission value, is not sufficient or the insurance company defaulted itself. Thus, at this point, the insurance market is at least partly bearing the default risk, in contrast to the situation before the decision where all other municipalities, and finally the taxpayers were bearing the default risk of a jurisdiction. Nevertheless, the market discipline is not functioning since the joint issuance does not allow for higher premia for higher indebted municipalities, and incentives to reduce borrowing are not set. Thus the development within the ESG may be seen as an intermediate step towards a more integrated Swiss municipal bond market.

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18 For further details see: http://www.esg-ccs.ch/corebusiness/ss04-de.html (accessed on 16th December 2005)
More importantly innovative financing institutions evolved, which try to reduce transaction costs and ease the matching between supply and demand on the municipal bond market, while allowing the market discipline to restrict unsustainable debt levels. Finexgo AG\textsuperscript{19}, founded in 2001, is a company offering an online-trading platform which enables municipalities to directly contract their lenders and thus expands the number of potential investors. Consequently, competition is fostered and diversification of credit risks to more investors reduces systematic risks for the municipal credit market and thus negative spillover effects on the overall credit market is reduced and liquidity premia will ultimately diminish. It is not clear whether the business model of the ESG will survive this evolution, since a self-sorting in the market might evolve, if transaction costs are similar in both trading platforms. The financially strong investors will sort themselves and will use the online platform, which is offering low transaction costs and even more competitive interest rates than the ESG. The ESG can solely offer the interest rate the market demands for the median solvent municipality involved in the issued bond. With the contracted insurance, the ESG diversifies away the default risk to a certain extent, but needs to bear the extra costs. Thus the ESG may ultimately not be able to offer interest rates which are competitive for financially strong municipalities and thus will be left with less solvent jurisdictions.

To sum up, the decision of the Supreme Court had no statistical significant impact on the pricing of municipal bonds traded in the market, however reorganization effects in the municipal bond market are observable, which will foster markets in the long-run and reduce liquidity premia.

\section{Lessons from Switzerland – Improving Market Efficiency}

We have shown in the recent chapters how the public may efficiently protect itself against the excessive borrowing of irresponsible politicians and demonstrated empirically, that the unique court decision didn’t have a statistically significant impact on interest yield spreads of the municipal bonds traded at the SWX Swiss exchange, which was rather surprising, but is in line with the notion to establish further integrated financial markets. As Lane (1993) proposed market efficiency depends on the openness of

\textsuperscript{19} For further details on the business model see: http://www.finexgo.ch (accessed on 20\textsuperscript{th} December 2005)
financial markets, transparency, no-bailout and the response of politicians to increasing interest rates. Hereby transparency and the no-bailout commitment of the canton is the crucial point in our study, since the financial markets are of high standard in Switzerland and the political response can be expected to be similar to the one in other western democracies. Most importantly, the market did not significantly react to the no-bailout proclamation by the Supreme Court, hence it may not have been fully assumed to be credible. Consequently, in order to increase the credible commitment, not only a clear constitutional consideration of a no-bailout clause may be essential, but also the implementation of clear-cut bankruptcy procedures may have a positive effect and result in more transparency and credibility in the market. Moreover ex-ante efficiency would increase. Therefore the following part will highlight the role of rating agencies and the opportunities a bankruptcy procedure offers.

### 5.1 Improving Transparency - Credit Rating Agencies

Besides provisions the legal system may offer to increase transparency in the market,\(^{20}\) the market itself is capable to efficiently accumulate publicly available information on borrowers through the use of credit ratings, as already described for the Swiss market. Ratings are summary measures of assessment over the probability that a borrower will default (Fitch 2002). Given the large economies of scale in processing the information to assign ratings and the time necessary to build up the needed reputation, the rating agency industry is highly concentrated. There are solely three agencies with world-wide services which in general deliver similar ratings to the same borrower and improve transparency on international financial markets. Besides, ratings are often conducted by national banks or smaller rating agencies to utilize economies of scale on national credit markets and deliver third party assessment for credit markets, although conflicts of interest are not fully negligible. In general it holds that ratings are strongly inversely related to correlated yields and thus mirror capabilities and liabilities of borrowers. Most of the correlation appears to reflect similar interpretations of publicly available information by rating agencies and by market participants. Nevertheless Cantor and Packer (1996) find evidence that the rating agency’s opinion independently affect market

\(^{20}\) Review the “Code of Good Practices in Fiscal transparency” compiled by the IMF for further details on a transparent fiscal system.
spreads and therefore also deliver new information to the market. Thus transparency increases in the market.

Kopits (2001, p.7) argues that there is “considerable evidence that financial markets – as typified by credit rating agencies – tend to react with considerable lag to either a deterioration or an improvement in fundamentals. It can be argued that fiscal rules can mimic market pressures in a more rapid and efficient manner, and, above all, without the heavy penalty imposed by perceptions of fiscal misbehaviour.” This view is contrasted by various studies conducted by other researchers who found rating agencies to deliver extra information to the market and allow the market to price adequately in a timely manner.\(^{21}\) It is also argued that the market reacts to downgrades, but not in the same manner to upgrades of credit ratings, which seems to show the inadequate reaction to new information by the market and therefore contradicts the market discipline hypothesis. However Ederington and Goh (1998) deliver two main explanations for the differences: Firstly companies and jurisdictions voluntarily release favourable information, which may already be incorporated in the market rate spread before the rating change and secondly, rating agencies expend more resources in detecting deteriorations in credit quality than in detecting improvements, which implies that markets and analysts’ forecasts adjust more fully prior to upgrades than to downgrades. Secondly, it is shown in a study on Granger causality of earning forecasts and rating changes that the market reacts in a timely manner to rating changes. Thus the market discipline may be fostered through the introduction of credit ratings by the market itself. The rating agencies seem to lead the market, rather than follow and thus convey additional information to market participants (Balassone, Franco and Giordano 2004). Copeland and Ingram (1982, p.3) already stressed that “information asymmetries exist between municipal creditors and bond rating agencies because of the ability of agencies to command information for issuing or revising bond ratings” rather than depending on the issuance of reports by the authorities. Rating agencies also may affect the number of potential investors either in discouraging the more risk-averse, or because statutes and regulations of some investors demand higher provisions for lower rating assets and do not allow to buy bonds below a certain credit rating.\(^{22}\)

\(^{21}\) E.g. Ederington and Goh 1998

\(^{22}\) In this respect it should be remarked that, according to Basel accord, the use of credit assessment of the leading rating agencies is introduced to evaluate the risk of sovereign bonds. Additionally the Euro-
Although credit ratings exist in order to improve transparency the generation of the ratings is not very transparent. Fitch (2002) sketch its “international rating methodology for regional and local governments”, which considers numerous economic, social and political factors, which are divided into qualitative and quantitative ones. The former “bears greater importance” (Fitch 2002) and refers to criteria such as characteristics of the institutional framework, political factors associated with intergovernmental relations and socioeconomic factors showing the willingness to pay the financial obligation. The latter combines financial models on trends and projections of public finance and debt levels and assesses the ability and capability to repay the financial obligations. Nevertheless, Cantor and Packer (1996) showed that 90 % of the sample variation of sovereign countries can be explained by six variables\(^{23}\) and therefore the complex rating approach, as sketched by Fitch (2002), is accounting for merely 10% of the variation. Nevertheless the ratings for similar jurisdictions, with equal size of debt load of say 100% debt per GDP, vary quite substantially – while Australian and Spanish states, which are backed by an implicit state guarantee, will receive AAA ratings, US or Canadian states mostly receive AA or even lower ratings (Rodden 2005).

A puzzle regarding credit ratings is that the impact of rating announcements on below-investment-grade sovereigns is found to be higher, which underlines the impact of credit ratings on market participants in times of financial distress. Various authors stress that financial crisis are not forecasted by rating agencies, as stressed by Reinhart (2002, p. 21), who argues that “sovereign credit ratings systematically fail to anticipate currency crises--but do considerably better predicting defaults”.

Moody’s (2003) enhanced in recent years its credit assessment, using Expected Default Frequency (EDF), which is also based on market values and estimates the physical probability of default during the forthcoming year, on any point in time and is a continuous function. This shall oppose the critique that the credit changes occur in a sudden and untimely manner.

As a result one can manifest, that independent third party valuation, as credit ratings, increase transparency and support markets to price according to all available informa-

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\(^{23}\) Namely: per capita income, GDP growth, inflation, government debt, level of economic development and default history (Cantor and Packer 1996).
tion. However legal provisions are required to uphold basic principles like accounting standards and the timely and accurate disclosure of all relevant information by jurisdictions, which have to be accompanied by sanction mechanisms in case of disregard.

5.2 Reducing Bailout Expectations - Bankruptcy Procedures

Besides the market induced increase of transparency of municipal transactions, I argue that, in order to promote the credibility of the no-bailout commitment of central governments towards subnational jurisdictions, clear-cut bankruptcy procedures may be implemented. The procedures are not compulsorily required, but will strengthen the commitment and ease transparent decision making on both, the supply and the demand side of the credit market. They may serve as additional guidance and underline the constitutional commitment. Consequently, the market will develop mechanisms to reduce information asymmetries, which will ultimately amplify market efficiency.

A clear-cut bankruptcy procedure is able to signal the market the most likely outcome of a default and the cost shares which will be borne by the lenders and the creditors. While those procedures exist in all developed countries’ legal systems for private entity defaults, there are very few countries, where a clear procedure exists for bankruptcies of jurisdictions. The procedure will never be able to eliminate the entire uncertainty about the cost shares of the parties, but this is also not required in the private sector and sets positive incentives for the involved parties to non-default at any time.

The main obligation of a bankruptcy procedure is the installation of ex-post efficiency while maintaining the highest level of ex-ante efficiency. Ex-ante efficiency is reached if the market believes the commitment to the no-bailout rule of the central government and ex-post efficiency is reached if the imposed rule is furthermore installing an effective procedure in case of a default, to allow for an efficient restructuring, while “maximizing the sum of all creditors proceeds” (Cornelli and Felli 1996). Thus a bankruptcy procedure on the one hand seeks to maximize the ex-post value of the jurisdiction, while attempting to encourage adherence to the ex-ante provisions of debt - preserving the bonding role of debt in the market (Eichengreen and Portes 1995). The fundamental

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24 A number of examples exist where rating agencies did not succeed to discover shadowy transactions and financial positions (e.g. Enron Corporation, WorldCom).

25 The incentives vary internationally depending on the bankruptcy procedure. E.g. a discussion on the incentives of debtors occurred in the US, arguing that the procedure is too debtor-friendly, since filing under chapter 9 or chapter 11 is hardly a penalty.
differences between a sovereign jurisdiction and a private company are hereby the public interest in none defaulting of the former, as well as the necessity of an ongoing functionality of a jurisdiction. Furthermore assets are often absent and hence the liquidation value is limited. But this is merely partly true. Municipalities often possess assets which may be liquidated without loosing the ability to supply necessary public goods. It is arguable up to which amount municipal assets might be liquidated to allow for an unrestricted and continuous operation of the fundamental duties of the subnational jurisdiction. However, the basic functions of the municipality need to be clear to the market prior to the agreement on the debt contract. Furthermore a limited number of future tax flows should be considered in the solvency procedure to allow for a sustainable restart of the municipality. A clear procedure determining the liquidation value in combination with a constitutional no-bailout commitment would entitle the market participants to assess the value of all disposable assets and would increase the overall transparency. Hence the investor would at least partly be repaid and could calculate an individual risk premium according to the risk of non-repayment she bears. For the case of an absence of any collateral, other sanction mechanisms are required which serve as collateral in order to hinder that politicians in power misuse the bankruptcy procedure to reduce their debt load without any costs. The less clear the rules are defined in the legal framework, the more flexible are the parties in defining their contract, and the higher are the transaction and negotiation costs attached to the debt contract. The market may therefore demand a higher premium in response to the increased risk.

But let us take a step back and refer to a perfect market with complete information; contracts were perfectly enforceable and negotiation costs were negligible. There is no need for a bankruptcy procedure, as the “Coasian” bargaining among creditors and debtors will always bring them to the Pareto frontier (Cornelli and Fellini 1995). All market participants could specify the relevant contingencies and enforce the provisions applicable to the relevant outcomes. Even if the provisions were not clearly specified in the contract, the parties could re-contract directly and negotiate an efficient outcome. Property rights would be clear at any point in time and a bankruptcy procedure is not required.

However, the assumption of perfect markets and complete information is rather strong and unrealistic. Bankruptcy procedures try to reduce cost for contract enforcement, negotiation and incomplete information, which might be very high if all contingencies are to be considered in the contractual process. Moreover it is impossible to forecast all contingencies. Uncertainty about future states and the consequent strategic bargaining
might lead to inefficient outcomes which are an example of market failures, which are one of the main arguments for the installation of bankruptcy procedures. Those arguments hold for the corporate as well as for the sovereign case. An efficient procedure preserves promising projects and liquidates uneconomic ones, which includes avoiding premature liquidation and also unjustified postponement of the liquidation of unviable projects. It is impossible to refer to the same rules for the sovereign as for the company in case of a default as stated before, but there are also many similarities. Hence it is useful to determine overlaps which might be used in a framework for sovereign defaults.

Firstly, an efficient bankruptcy procedure provides incentives for gathering and dispensing information, before the contract is signed and also as it is in place, and therefore leads to increasing transparency (Franks 1995). This holds for pre-defaulting negotiations as well as for the settlement of a defaulted jurisdiction. In case of a default it is likely that conflicting parties have different incentives towards the restructuring of the jurisdiction, hence they are unwilling to share information. This may create a bias towards premature liquidation and thus an efficient outcome based on the lack of information sharing is inevitable. Furthermore strategic bargaining of the involved parties will delay the procedure and result in more costly and suboptimal outcomes. An efficient bankruptcy procedure will try to set incentives for the parties to share all available information and promote a more efficient outcome.

The prevention of a “grab race” should also be prevented by a bankruptcy procedure. In general the provisions should restrict single creditors to liquidate parts of the jurisdiction to receive compensation for their debt and leave other creditors with the reorganisation and the restructuring process – again a premature liquidation has to be prevented. The US Bankruptcy Code uses an automatic stay mechanism to solve the deficiency, however this is one, but not the only possible provision as stressed by Kerber (2005, pp. 20). Automatic stay provisions postpone the payment of interest and principal on most debts as to avoid disrupting the companies’ activities; this is to avoid the main market failure, which is the race by creditors to grab assets (Franks 1995). In the automatic stay period each debtor has an incentive to find a pareto optimal solution, since it is impossible to end the negotiations or negotiate on the expense of another debtor. Hence the automatic stay provision may be seen as a forum for a multilateral bargaining of all involved parties. This can take the form of bondholder committees as proposed by Eichgreen (1995), which will speed up the settlement process. “Closing the courts to creditors through statute or treaty” Eichgreen (1995, p.46) prevents a small band of dissident
creditors from using legal means to hold up the negotiation settlement. Thus the bondholder committee would be a stage for creditors to facilitate the negotiation process without the need of a long-lasting and costly court decision. Furthermore mediation services could be established, which provide independent consultancy for both parties to increase negotiation efficiency. But it is rather unclear whether an independent mediator might have superior access to information necessary to overcome informational asymmetries (Eichgreen 1995, p. 47).

Additionally, an efficient bankruptcy procedure minimizes direct insolvency costs, which is crucial for a successful reorganisation. This might best be implemented if parties renegotiate and reorganize on their own, as in case of a bondholder committee, without the assistance of a third party. This requires even-handed protection of the rights of the debtors and the creditors, since privileges of one party will always result in a rejection of an offer tendered outside the court and a final court decision will be inevitable. Costs will rather be maximized than minimized in that case. The flexibility of the bankruptcy procedure is another important point, since static rules tend to exclude innovations in the monitoring and the negotiation technology, which seek to reduce the bankruptcy costs. “An inflexible, bureaucratic bankruptcy code that encourages adherence to the terms of debt contracts, protects stakeholder interests and delivers other results at the cost of stifling contractual and procedural innovation will be dynamically inefficient” (Eichengreen 1995, p. 11).

Furthermore the adherence to the terms of the loan contract is an indispensable feature, which encourages both parties to solve incentive comparability problems and opportunism that would otherwise prevent mutually desirable transactions. The allocation of resources is mainly based on the reliability of contract enforcement also in case of a default. If a bankruptcy procedure provides strong incentives for either party to contract out of an agreement prematurely and surrender their claims, they may be reluctant to enter the contract in the first place. The bankruptcy procedure has to balance the incentives to stick to the contracts and enforce them, while establishing a framework according to ex-post efficiency (Eichengreen 1995). Furthermore self-fulfilling debt runs have to be avoided (Calvo 1988) - in the absence of substantial redemptions, most creditors will be willing to roll-over their current debt into new debt contracts. But if the suspicion exists that some creditors will be tempted to redeem their maturing debt may cause other creditors to attempt to get out first. As a result all creditors might be worse off. Similar mechanisms are observable in bank runs and are counteracted by regulatory
means e.g. minimum capital requirements. Therefore the danger of self-fulfilling debt runs emerges and a need for bankruptcy procedures also in the sovereign case to provide either an automatic stay, a cramdown, or a reorganisation.

In the corporate context, ex-post efficiency implies that an activity (a set of investments) should be continued if its continuation value is higher than its liquidation value. Furthermore the project should be placed in the hands of those who value it most (Cornelli and Felli 1997). This implies that the firm’s residual owners are the creditors of the firm, which is quite different in the sovereign case, where the creditors might become the owners of the assets, but not more than that. The problem is not as severe if the roots of the default are temporary in contrast to permanent ones. This is the question of financial distress as opposed to insolvency of the jurisdiction. Financial distress is defined as the situation where cash flows are insufficient to cover current obligations, whereas insolvency refers either to stock value (that is to cases in which the present value of the firm’s cash flows is less than its total obligations) or to flows (that is to cases which coincide with financial distress or illiquidity) (Cornelli Felli 1995). This distinction is important since it is difficult to determine whether a firm is insolvent or only illiquid, which is mainly due to information asymmetries. This is even more complex in the sovereign case. It is hard to determine the net worth of a firm, but it is even harder to determine the net worth of a municipality or a state as a whole (Eichengreen 1995). The question in the sovereign case will be whether it will become solvent in a reasonable amount of time and with a relatively high probability in order to avoid unnecessary delays. An easier and more accessible forecast would be a solvency assessment not on the entire jurisdiction, but rather on some specific project which is more closely connected to the debt. This might also be a possibility to provide collateral for the debtor (Franks 1995). Collateral should be chosen that makes the punishment harsh enough to have a deterrent effect on the debtor, but that is not very distortionary as to preserve allocative efficiency. As stated earlier, sovereign jurisdictions often have little to use as collateral to guarantee the value of a loan and secondly, the ability of a court to force a sovereign jurisdiction to comply with its wishes is extremely limited (Eaton and Fernandez 1994). Nevertheless it is often argued that the reputation is worth more in the sovereign rather than the private case (Ölzer 1993), as the mobility is restricted and transparency may be higher. Cantor and Packer (1996) proved empirically that the default history is incorporated in the credit rating and the yield spread for sovereign states.
Another important feature of a bankruptcy procedure is the increased certainty about the order of repayment of the debt in the event of a default. This is also known as the “absolute priority rule” which guarantees that the seniority of the debtors is respected in allocating the amount of the collateral in the event of a default. Therefore the creditor is able to price the credit at reasonable rates, depending on the additional risk she bears. Moreover monitoring costs are smaller, since the senior creditors do not have to worry about whether the debtor takes on junior debts since their interest is protected. As stated before this will incorporate all available information in a timely manner, even if contracts are long-term and the price adjustment mechanisms seem sticky. Cornelli and Felli (1995) pointed out that there are also conditions where the absolute seniority rule will result in suboptimal outcomes. If a project, which was mainly financed by debt, is solely partly completed it is usually worse very little, say zero for simplicity. But if more money is invested, the project would be worse a positive amount. The debtor is hence in a liquidity crisis and needs more financing. For the creditors as a whole it would be best to finance the rest of the project, even if they cannot retrieve the full amount of their initial investment. Thus if the new investors do not feel to be sufficiently protected by the bankruptcy law they will not finance the remainder of the project and a suboptimal outcome will result. The seniority rule per se is consequently no insurance to install efficient financing for undertaken projects. This problem arises in the absence of collateral in the same way as in case collateral for the project is existent. The “excessive liquidation” will not be avoided. Thus the jurisdiction may reduce its net worth, as the market is not offering additional credits, due to the restrictions by the bankruptcy law.

The renegotiation process prior to a possible default is another interesting subject of research. Hereby the debtor is not defaulted yet, but the probability of a default is rising. The incentive to renegotiate the existing terms of the debt contract, although desirable from an ex-post point of view, may have undesirable effects on the ex-ante efficiency in particular on the creditors’ incentives (Cornelli and Felli 1995). Contrarily, Frank and Torous (1989) show that in the shadow of the chapter 11 bankruptcy procedures often parties seek for private workouts in order to prevent the costly court decisions. The bargaining process is hereby heavily affected by the existence of the bankruptcy procedure as parties may anticipate the outcomes in case of default. This leads to less uncertainty about the bargaining positions of each party and will finally also increase information shared by the parties. The bankruptcy procedure is hereby an option which increases the
incentives for a quick resolution of the bargaining process and indirectly enhances efficiency.

Some authors argue that all stakeholder interests should be considered in the event of insolvency, because externalities may have positive effects on other jurisdictions. These spillover effects may be common benefits which are not internalized by the defaulted jurisdiction or by creditors and should be incorporated in a bankruptcy procedure (Franks and Torous 1996). The internalization of spillover effects is probably the most important and most complex challenge of a bankruptcy procedure for the sovereign case, since they are hardly determinable in its entirety. Additionally, not the contracted parties of the default are involved, but rather third parties which might have other incentives than the facile settlement of the credit crisis. As a consequence, there will be room for a court which is the ultimate decision making power to balance externalities and use sanction mechanism beyond the scope of the contractual parties. This possibility is very controversial since it leads to further unclear sanction mechanisms and may distort the ex-ante expectations of all contracted parties. Thus one may argue that the costs of lacking internalization of spillover effects might be accompanied with the gains of ex-ante efficiency.

The efficient level of investment is another interesting aspect, which is a result of an efficient bankruptcy procedure and thus underlines market discipline. Efficient refers hereby to the investment level which assures solvency and avoids default, not to a welfare optimal one. Conflicts of creditors and debtors may cause viable investment opportunities to be unexploited. Creditors may be unable to agree on the extent to which their claims should be written down and thus an amicable solution may be blocked. Also in the sovereign case this subject is highly important, since a variety of reasons for indebtedness exist, which contradicts the objective of highest levels of flexibility, while obtaining sustainable borrowing levels. As a consequence a bankruptcy procedure may implement efficient incentives to invest as long as it is sustainable for the jurisdiction. Ultimately over- and underinvestment will be avoided and the highest degree of flexibility of the jurisdiction will be implemented.

To sum up, there are various reasons why a bankruptcy procedure will increase the perception of a no-bailout and therefore increase the efficiency of the credit market for sovereign borrowers.
6 Conclusion

The severe development of budget deficits along with the accumulation of public debt in recent decades resulted in an academic discussion on the long-run containment of public deficits. This paper primarily deals with the contributions of federal structures to the evolvement of public debt and suggests an institutional design which is best suited to install sustainable market mechanisms to restrict the irresponsible politicians.

Autonomous federal states are being perceived as two-edged. On the one hand, autonomy may result in more flexibility, better matching between local needs and state provisions, more transparency and reduction of public oversupply. On the other hand systematic failures may occur, such as moral hazard, common pool problems and fiscal imbalances between the jurisdictions, which favour excessive indebtedness. Therefore methods are required to contain the excessive indebtedness, while abiding the highest level of flexibility to allow for “laboratory federalism” and competition between jurisdictions. Various approaches are installed in different federal states worldwide, which seek to circumvent failures with more or less success. This paper however argues that sustainable borrowing levels may be established using less restrictive policy tools. Market mechanisms, as the first best solution, may be exploited to allow for sustainable debt levels. Nevertheless some prerequisites are required for market discipline to operate successfully. Despite free and open financial markets, transparency, no-bailout and a responds of the borrowers to the market signals are required. In the context of developed federations transparency and no-bailout are the core concerns, which have been investigated in more detail.

This paper examines those prerequisites theoretically in a model of credit rationing and in an empirical event study on Swiss municipalities and considers further changes on the Swiss municipal bond market. Particularly the bailout commitment, which was re-stated more precisely by the Supreme Court after the default of the municipality of Leukerbad, is tested using time series of municipal yield spreads of the Swiss credit market. The results are rather astonishing. While the theory proposed a structural break in yield spreads following the proclamation of the decision, it could not be observed in the data. A possible solution of the puzzle is presented. The constitutional commitment might initiate a process which increases transparency in the market. In this respect the role of rating agencies is examined more closely. Nevertheless, it is not sufficiently reducing bailout expectations in the Swiss case. Hence, it is argued that provisions are required to
underline the no-bailout commitment; in particular the role of bankruptcy procedures is emphasized. Similar to the private sector, the procedure would strengthen the credible commitment of the constitutional no-bailout clause and diminish uncertainty in case of a sovereign default. Markets would discipline borrowers, demanding high premia in case of high indebtedness and ultimately respond with credit rationing. However, the puzzle of the non-responds of interest yield spreads in the Swiss case, discovered in the paper, is not fully solved and is intended to provide impetus for further research to increase the market expectations on a no-bailout.
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## Appendix

### Appendix A: Overview of Corporate Integration

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<td>8 entities</td>
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## Appendix B: List of considered bonds

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