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ABSTRACT

The recent financial crisis 2007-2009 was the longest and the deepest recession since the Great Depression of 1930. The crisis that originated in subprime mortgage markets was spread and amplified through globalised financial markets and resulted in severe debt crises in several European countries in 2010 and 2011. Events revealed that the European Union had insufficient means to halt the spiral of European debt crisis. In particular, no pan-European fiscal mechanism to face a global crisis is available at present. The aim of this study is to identify the characteristics of a robust common fiscal policy framework that could have alleviated the consequences of the recent crisis. This is done by using the political and fiscal history of five federal states; Argentina, Brazil, Canada, Germany and the United States.

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A fiscal union for the euro: Some lessons from history

Introduction

The euro area is a unique form of a monetary union – with no historical precedence. The member states of the euro area have assigned the framing of monetary policy to a common monetary authority, the European Central Bank (ECB), set up as a highly independent central bank to insure that it will be able to carry out a policy of price stability. Fiscal policy within the European Union (EU) remains the task of the national governments under a set of rules given in the Maastricht Treaty and the Stability and Growth Pact (SGP). These rules, pertaining to the Economic and Monetary Union (EMU), cover euro area member states as well as member states that have not adopted the euro. They are monitored centrally by the Commission in a policy dialogue with the member states. This system represents the existing fiscal policy framework of the euro area that complements the monetary union and its single currency, the euro.

Ever since the plans for a single European currency were launched about twenty years ago, the institutional system for framing fiscal policies and for preserving the fiscal sustainability of the monetary union has been the subject of a heated debate – among economists as well as among policy-makers.[2] The recent global financial crisis and mainly the European debt crisis have added new impulses to the debate about the proper fiscal policy arrangements within the European Union.

Several views exist. According to one camp, the monetary union should be supplemented with an extended supranational or pan-European fiscal union to be viable and sustainable. In short, the EU should have access to a larger budget in order to design and carry its own central fiscal policies. Some experts, like De Grauwe (2006) go further and promote the idea of a deeper political union, to ensure the success of the euro. The present debt crisis within the EMU has inspired a number of proposals for strengthening the fiscal power of EU.

Others argue that such an extension of the fiscal powers of "Brussels" would not be accepted politically by EU citizens, threatening the political support for the monetary union in some member states, in particular in Germany. Instead, it is argued that the present institutional set-up is roughly the proper one. Some commentators propose that the monetary union is not in need of any central fiscal coordination across the member states, or at least of less coordination than presently. For them, like Mckay (2005), the fiscal policy framework should be solely the business of the member states. Another school recommends improvements in the quality of the fiscal policy process and the fiscal institutions across the EU as a promising way to improve fiscal policy governance in the EU.[3]

So far the debate has shown no signs of an emerging consensus.[4] Rather, it is getting more heated due to the present crisis. One reason for the lack of unanimity is that the euro area represents a new type of monetary union. More precisely, the euro area is the first monetary union where monetary policy is set up at the central (European) level while fiscal policy is carried out at the sub-central (national) levels. Thus, the economics profession lacks historical cases to use as guidance for theoretical and empirical work. Instead, many contributions are based on either theoretical considerations or econometric calibrations and tests on data, in some cases originating prior to the launch of the euro.

The aim of our study is to contribute to this debate by turning to the political and fiscal history of five federal states for an answer to the question: Would the adoption of a fiscal union similar to the fiscal

[2] For early surveys of this debate, see for example Buti and Sapir (1998) and Hallet et al (1999). More recently, Buti and Franco (2005), Korkman (2005) and Wierts (2006) among others deal with fiscal policy issues of the EMU. See also *European Economy* (2008) on the record of the first 10 years of the EMU.

[3] See for example Wyplosz (2005) and Jonung and Larch (2006).

[4] The debate about the Stability and Growth pact before its reform in 2005 is a striking illustration of the widely divergent views – more than 100 separate contributions - within the economics profession on the role of fiscal policy in the euro area. For a survey of these views on the proper design of the SGP, see Jonung et al (2008).

arrangements currently in place in the federal countries that we study help to avoid some of the centripetal fiscal forces that threaten the stability of the European monetary union? In short, we try to bring out the lessons from the past concerning the fiscal arrangements in the euro area of today. As we are primarily concerned with macroeconomic stability issues, we focus on fiscal policy as an instrument of stabilisation. We are well aware that fiscal policy making covers many policy areas, in particular, distributional issues are closely related to questions of macroeconomic stabilization and insurance.

The recent crisis has highlighted deficiencies in both the fiscal framework and the financial regulatory framework of the euro area. In this paper, however, we do not analyze the issue whether the euro area needs a common financial stability authority. We focus solely on fiscal issues relevant for the stability of the euro area.

We organise our study in the following way. In section 1, we give a brief overview of some key concepts and central issues. Next, in section 2, we summarize past and current experience of monetary and fiscal unions in five countries: the United States, Canada, Germany, Argentina, and Brazil. In section 3, we condense lessons from our account of the evolution of fiscal federalism. Section 4 contains a comparison between these lessons and the framework for fiscal policy governance in the EU. Section 5 concludes.

1. Fiscal federalism and fiscal policy in monetary unions

1. 1. The concept of monetary and fiscal unions

A monetary union is commonly defined as a group of states sharing a single currency. In the strictest sense of the term, a monetary union means complete abandonment of regional or separate national currencies and full centralisation of monetary authority into a single joint institution. This is the case of the euro area, a subset of the Economic and Monetary Union (EMU), which covers all the 27 member states of the EU. [5]

The concept of a fiscal union entails fiscal federalism among its members, which could be either sub-national (sub-central or regional) political units or nation states. Fiscal federalism is based on a cooperative arrangement between the members of the fiscal union regarding the design and distribution of taxes and public expenditures.

There is no single definition of fiscal federalism. Sorens (2008) for example defines the "ideal type" of fiscal federalism as consisting of the following four elements: (1) sub-central political entities enjoy independence/autonomy to decide taxes and expenditures, (2) these governments face fairly hard budget constraints, that is a no bail-out rule is consistent with the ideal type of fiscal federalism, (3) there is a common market based on free trade and mobility within the fiscal union, thus there is scope for competition among sub-central governments, and (4) the system of fiscal federalism is institutionalized in a set of rules. We would like to add a fifth element to this list: (5) the common market is based on a common currency, that is, the sub-central as well as the central fiscal authorities are members of the same monetary union.

The governance structure of the EU is a challenge to put into the standard framework of fiscal federalism as there is no similar institutional set-up anywhere else in the world. The EU is different as stressed by Begg (2009): "the fact that the EU is set up as a union of citizens *and* of Member States is one of its most distinctive features." Its "federal" budget, that is the EU budget, is about 1 % of the national incomes of the Member States. This is a much smaller ratio than the size of the federal budgets in the typical federal country. As stressed initially, the centralization of monetary policy in the ECB and the decentralization of fiscal policy to the Member States of the euro area is another unique feature of the EU. Still, in our opinion there is much in the history of fiscal federalism that can bear

[5] Presently the euro area includes the following 17 countries: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Spain, Slovakia and Slovenia.

upon the design of EU governance in spite of the fact that EMU and the euro are unique institutions with no historical precedence.

Musgrave (1959) provides the classical approach concerning the policy tasks of the public sector. His scheme identifies three basic policy functions: allocation/efficiency, distribution and stabilization. These functions can be performed by different political entities within a fiscal union according to the adopted fiscal system.

The study of fiscal federalism, as defined by Oates (1999), is the study of how these roles are assigned to different levels of government and the ways in which they relate to one another through different policy instruments. The stabilization function, that is the implementation of monetary and fiscal policies, is usually the task of the central government and the central bank. The stabilization of economic activity via fiscal policy can be achieved through two main channels. The first one refers to the role of automatic stabilizers, smoothing economic activity via the automatic response of taxes and transfer systems to the business cycle. The second channel consists of discretionary fiscal policy measures.

In this paper, we will often refer to sub-national, regional, local or sub-central political entities within various federations. We will interchangeably call them jurisdictions and communities. Also, depending on the federation in question, these regions take different names; states in the United States, provinces in Canada and Argentina, Länder in Germany, and municipalities in Brazil.

1.2 The normative arguments for fiscal federalism

As stated by Oates (1972), "The traditional theory of fiscal federalism lays out a general normative framework for the assignment of functions to different levels of the government and the appropriate fiscal instruments for carrying out these functions". This theory contends that the central government should have the basic responsibility for macroeconomic stabilization and income distribution. In addition to these functions, the central government should provide national public or collective goods that service the entire population of the country such as defence.

Decentralised or lower levels of government have their *raison d'être* in the provision of public goods and services whose production and consumption is limited to their own jurisdictions. The economic argument for providing public goods at the sub-national level was originally formulated in a decentralization theorem that '… the level of welfare will always be at least as high if Pareto-efficient levels of consumption are provided in each jurisdiction than if any single, uniform level of consumption is maintained across all jurisdictions', see Oates (1972).

Thus, fiscal federalism addresses several issues. First, it has as the objective to respond to different political preferences across a country. Second, it produces positive externalities as it may generate benefits from intergovernmental competition, improve the fiscal responsibility of government, foster political participation and a sense of being member of a democratic community, and help to protect basic liberties and freedoms (Inman and Rubinfeld 1997). Finally, fiscal federalism also provides a way of maintaining the government share of GDP at a low level (Sorens 2008).

An obvious cost of federalism is the loss of autonomy by the central government. In fact, the benefits of decentralisation require that the central government's authority is limited (Rodden 2006). As a result, in highly decentralised fiscal federations, central governments might find it difficult to implement coordinated economic and other type of policies and provide federation-wide collective goods.

The conclusion that decentralised governments will provide the efficient level of public goods rests on a number of assumptions. One is that households and firms are freely mobile within the federation to generate competition between jurisdictions. If free mobility is not the case, competition among sub-central governments may lead to suboptimal outcomes. Another assumption is the lack of interdependencies between the policies of different jurisdictions. When this is not the case,

competition among sub-national governments may generate negative spillovers or externalities, and thus suboptimal outcomes.

If there are strong fiscal interdependencies between sub-national jurisdictions policy-makers might face incentives to increase their expenditure while externalising the cost to the others. Rodden (2004, 2006) argues that this incentive is higher if the central government cannot fully commit to a no-bailout rule. Furthermore, the central government's commitment becomes less credible if sub-central governments are heavily dependent on transfers from the central authority. Intergovernmental transfers, as opposed to local taxation, change beliefs about the levels of local expenditure that can be sustained by creating the perception that the central government will ultimately provide financial help. Transfer dependent local governments usually face weaker incentives for responsible fiscal behaviour. For this reason, Rodden (2004, 2006) recommends a principle of sub-central sovereign debt within fiscal federations to maintain overall fiscal discipline.

1.3. Fiscal policy in the theory of optimum currency areas

The traditional theory of optimum currency areas (OCA), based on the work by Mundell (1961), McKinnon (1963) and Kenen (1969), also labelled by McKinnon (2004) as Mundell I, is the standard approach used by economists to evaluate and study the optimality (and thus the desirability) of monetary unions, in particular that of the euro area. This approach weighs the benefits for a country of adopting a common currency against the costs of abandoning its national currency and thus its independent monetary policy.

The benefits are higher if countries willing to join the monetary union are open economies and their trade is highly concentrated with other countries willing to join the union. On the other hand, the costs are higher when macroeconomic shocks are more asymmetric (country specific) and when other adjustment mechanisms are less effective in offsetting these shocks. These mechanisms include the flexibility of wages and prices and the mobility of labour and capital. If these mechanisms are not sufficiently developed, an appropriate fiscal policy could minimize the loss of the exchange rate channel for adjustment to asymmetric shocks.

Thus, domestic fiscal policy turns into the sole tool of stabilization policy left for a member of a monetary union where monetary policy is carried out by a common central bank. Fiscal policy may also be organised and coordinated at the central level of the monetary union, implying a transfer of both monetary and fiscal policy to common central authorities.

While traditional OCA theory emphasises the trade and adjustment characteristics of regions/nation states willing to form a currency union, recent developments of the OCA approach, also labelled Mundell II inspired by Mundell (1973), focuses on the role of financial integration as a source of risk sharing (insurance) and consumption smoothing.

The OCA approach according to Mundell II suggests that monetary unification triggers financial market integration and the development of market-based risk-sharing mechanisms. These mechanisms may substitute for fiscal policies as they attenuate the effects of asymmetric shocks. As Eichengreen (1991, p. 17) notes, 'Interregional transfers accomplished through federal taxes are justifiable only if insurance cannot be provided by the market'. The Mundell II OCA-theory identifies such a channel of private insurance. It is an empirical issue to what extent this channel may fully replace fiscal transfers within a monetary union.

In case the private insurance channel is not sufficient, a monetary union requires a system of interregional and intertemporal transfers which can alleviate the consequences of negative shocks such as occurred in the financial crisis of 2007-2009. Increased public spending, necessary during economic recessions can be financed either by the federal or subnational governments which in turn could borrow domestically or internationally. The benefits from subnationals' access to the financial market are numerous. Yet subnational borrowing, left unregulated, entails the risk of insolvency, which threatens local service delivery as well as macroeconomic and financial system stability of the entire monetary union. According to Webb (2004), subnational debt markets have three important

agency problems: (i) subnational borrowers have an incentive not to repay their lenders as principals if they anticipate bailouts; (ii) subnational borrowers have an incentive not to reveal certain characteristics about themselves to lenders as principals, resulting in adverse selection; (iii) banks are implicit agents of the nation, entrusted to maintain the nation's payment system and creditworthiness, and they often abuse this trust by lending to not creditworthy subnational governments with the expectation of bailouts by the federal government in case of trouble.

These agency problems related to subnational borrowing suggest that federal debt is a superior solution. The empirical literature provides clear evidence that federal bonds are superior to state bonds because of a lower risk premium (see e.g. Amihud and Mendelson, 1991; Poterba and Rueben, 1997; Lemmen , 1999). The risk premium on federal bonds is lower because the federal government in a monetary union controls money creation, has tax autonomy and has access to more liquid markets than do lower levels of government.

A major weakness with the OCA approach, old as well as new, is the lack of attention paid to political and institutional factors.[6] The preferences of the public across the member states of a monetary union are the major determinant of the sustainability of monetary unification. These preferences are influenced by many factors, political as well as economic ones. Here the design of the institutional framework for fiscal policy making – at the national as well as at the union level - comes at the centre.

1.4. Fiscal policy in the euro area

An extensive literature analyzes the macroeconomic consequences of the institutional framework for monetary and fiscal policy making in the EMU. In particular, it investigates the impact on inflation and debt accumulation by the existence of many independent national fiscal authorities and one single central bank.

The theoretical literature on the interaction of fiscal and monetary policies identifies various mechanisms which may lead to spillover effects (externalities) across member states. For example, Dixit and Lambertini (2001) show that if monetary and fiscal authorities have different ideal output and inflation targets, Nash equilibrium output or inflation or both are suboptimal. Similarly, Chari and Kehoe (2004) find that if the central monetary authority does not commit to a future policy path, the free rider problem leads to inefficient outcomes, i.e. excessive inflation in the whole monetary union and excessive debt issued by each member. Uhlig (2002) concludes that the existence of independent fiscal authorities and one central bank within a simple stochastic model leads, in a non-cooperative Nash equilibrium, to higher deficits of the member countries than in the cooperative equilibrium where they would be set to zero.

In line with the proposition by Rodden (2004, 2006), these studies point out that a setup of a single monetary authority and numerous fiscal authorities requires binding fiscal policy constraints to avoid excessive deficits at the sub-central level, that is on the level of the member states in the case of the euro area. Default by a subnational government can impose a negative externality upon other subnational governments or the federal government by increasing the cost of borrowing for all fiscal units. An important question that arises in these circumstances is the impact of effective discipline on borrowing that is imposed by the market. These market forces can work efficiently only if subnational governments have no perceived chance of a bailout by the central government (or the central bank). Lane (1993) argues that expectations of a bailout are the most important reason for the failure of market discipline. If a bailout occurs, it might disturb or even destroy completely market forces that prevent fiscal units from over-borrowing.

To summarize this literature, the interplay between several fiscal and one monetary authority within a federation generates free-riding issues or common pool problems.[7] This mechanism works as

[6] For the shortcomings of the OCA approach, see i. a. Goodhart (1998) and Mongelli (2005). The traditional OCA theory has given a negative bias to the views of US economists on the single currency, see Jonung and Drea (2010).

[7] The common pool problem arises in situations where the costs of an activity, which benefits a small group, are shared among a wider group of individuals, countries or provinces as in our case of a monetary union.

follows. Each of the individual fiscal authorities sees itself only as a small player who has a little impact on the common monetary policy. As a result, its fiscal policy choices would be purely driven by national interests. In equilibrium, each country free-rides and the outcome is worse than the one that could be reached in a cooperative equilibrium.

2. The evolution of fiscal federalism within five monetary unions

According to Eichengreen (1991), "if a country is subject to asymmetric shocks, a system of fiscal federalism can, through regional insurance, attenuate these shocks". This proposition reflects the positive impact of fiscal federalism highlighted by theory. The argument is that a monetary union accompanied by a fiscal union is likely to operate more smoothly than a monetary union without it. A fiscal union, however, functions smoothly only if a number of assumptions, advanced in the previous section, are satisfied. History has frequently shown that the necessary conditions may not be in place. In that case, fiscal centralisation can lead to damaging fiscal policies and result in large macroeconomic imbalances reflected in high and variable inflation and unsustainable debt developments.

To isolate the characteristics that were key to the creation of durable fiscal unions , we first present an account of the historical experiences and then of the recent experience of five fiscal unions. We focus on two groups of federations: first the US, Canada, and Germany; second Argentina and Brazil. The first group largely represents cases of successful fiscal unions, as measured by inflation and debt performance, as demonstrated in Table 1 which covers the period 1980-2006. The second group of Argentina and Brazil consists of less successful examples of fiscal unions. These federations are characterized by a much higher average rate of inflation than the US, Canada, and Germany as illustrated in Table 1.

We do not aim at delivering an exhaustive description of the histories of these federations. Instead, we focus on episodes which are particularly relevant for the question under scrutiny. More precisely, we analyze (i) the circumstances in which the federations were born; (ii) the evolution of the federal-sub-national governments relationships, in particular, their transformation during the Great Depression; (iii) the debt history of the five federations including the development of bond markets and bailouts.

2.1 The United States

The United States is a constitutional republic. Its government is based on a congressional system under a set of powers specified by its Constitution. The United States Congress is a bicameral legislature. The history of fiscal federalism in the United States dates back to the founding of the Union in 1789. Prior to the establishment of the federal government, the states had exercised their powers to levy taxes and provide certain public services. The tenth amendment to the US constitution explicitly reserves to "the States or to the people" all powers "not delegated to the United States by the Constitution, nor prohibited by it to the States".

2.1.1 Creation of the US federation

During the pre-federal period, the union that existed under the Articles of Confederation constituted a league of sovereign states. It did not have the power of national taxation, or the power to control trade, and it had a comparatively weak executive. It was a "league of friendship" which was opposed to any type of national authority. Boyd and Fauntroy (1997) argue that the greatest weakness of the Articles of Confederation was that they only established state sovereignty and only delegated a few responsibilities to the central authorities. As a result, the majority of the power rested with the states. More precisely, each state had the authority to collect its own taxes, issue currency, and finance its own army. The federal government's main activity was to control foreign policy and conclude treaties. As Congress, under the Articles, did not have the power to collect taxes, the central government was unable to balance its finances. It resulted in a debt of $42 million after the Revolutionary War which

weakened considerably the government's economic credibility. This financial obligation was not paid off until the early 1800's.

The United States Declaration of Independence, an act of the Second Continental Congress, was adopted on July 4, 1776. It declared that the Thirteen Colonies were independent of the Kingdom of Great Britain. The Articles of Confederation served as a "transition" between the Revolutionary War and the Constitution. In 1789, the US constitution was ratified and in 1790 the federal government assumed responsibility for the war debt, which some have called an early form of federal aid. The Tenth Amendment, added to the Constitution in 1791, protected the rights of the states and declared that all powers not expressly delegated to the central government by the Constitution were reserved for the states. This laid the foundation for the concepts of states' rights, limited national government, and dual spheres of authority between state and national governments (Boyd and Fauntroy (1997)).

2.1.2 Evolution of the federal- states government relationship

The period from 1789 to 1901 has been termed the era of *dual federalism*.[8] It was characterised by little collaboration between the national and state governments. During this period, in particular between 1820 and 1840, the states engaged in extensive borrowing to finance their internal activities and development which resulted in high debts. Instead of introducing new taxes or adjusting their spending, numerous states demanded bailouts from the federal government. In fact, the states assumed that their debt implicitly carried a federal guarantee. However, the Congress refused to bailout indebted states and in 1840 several states defaulted on their debt and had to undertake painful adjustment measures. Thus, the federal government sent a costly but clear signal regarding the limits to its commitment to fiscal support to the states.

As a result, in the following decades, the US states developed the fiscal sovereignty that we still observe today. As Rodden (2006) puts it, states may occasionally dance around the topic of bailouts but hopes for them are not sufficiently bright that states would actually refuse to adjust while waiting for debt assumption.

Dual federalism was followed by a period of *cooperative federalism*, from 1901 to 1960.[9] This period was marked by greater cooperation and collaboration between the various levels of government.

The period from 1960 to 1968 was called *Creative Federalism* by President Lyndon Johnson's administration. President Johnson's Creative Federalism, as embodied in his Great Society program, was an important departure from the past. It further shifted the power relationship between governmental levels toward the federal government through an expansion of the grant-in-aid system and the increasing use of federal regulations.

2.1.3 Alexander Hamilton and the restructuring of US debt

United States debt history began with the Revolutionary War , which was mostly financed (85%) by the issue of fiat money by the Congress and the states. The Congress had virtually no taxing power, while that of the states was too limited to pay for more than a small fraction of total expenditure. Foreign bond finance - deteriorated by uncertainty about the war's outcome - and domestic bond issues were limited by a thin bond market. In 1782, the federal government, unable to raise taxes on its own both before and after the 1783 Articles of Confederation, had to default on both its domestic debt and debts to France.

The Constitution of 1789 gave the federal government expanded powers in monetary and fiscal affairs including the ability to raise tax revenues and the sole right to issue currency. Alexander Hamilton, the Secretary of the Treasury between 1789 and 1795, put together the plan to restructure the public debt and create deep financial markets. Bordo and Vegh (2002) posit that the package included four elements; (i) funding the national debt,(ii) creation of a Sinking Fund, (iii) securing

[8] The term "dual federalism" was introduced by Corwin (1950).
[9] The term "Cooperative Federalism" was extensively used by Elzar (1966).

sufficient tax revenue, (iv) creation of the Bank of the United States. The central idea of the plan was to convert outstanding federal and state debt obligations into long-term bonds and to create mechanisms to both service and amortize this debt. This would help in creating an effective capital market and hence to facilitate government borrowing in wartime.

Consequently, Hamilton proposed a plan designed to fund the debt which involved converting outstanding paper securities of the states and the federal government into specie denominated - securities at the official par of exchange. The debts of various maturities plus arrears were converted into a debt package that greatly reduced the effective interest rate to well below the 6 per cent rate stipulated on most securities outstanding in 1789. The issued bonds were similar to British consols with no specific retirement date. Shortly after successful conversion and funding of the debt, U.S. government securities became quickly accepted both at home and abroad and yields fell to rates comparable to bonds of the leading European powers (Perkins, 1994, p. 218)

Following the British example of 1717, Hamilton proposed a sinking fund as a way of ensuring the credibility of his funding program. The idea was to set aside revenues provided by specific taxes to be used to purchase public securities on the open market. The interest earned by the sinking fund would be used to acquire more public securities and eventually pay off the debt. A key feature was that the revenues accumulated by the fund could not be diverted by the Congress at a later date for other expenditures. The sinking fund was created by the act of May 8, 1792. An act of March 3, 1795 made explicit the revenues to be devoted to the fund, including part of import duties, excise taxes, and the sale of public lands.

Another element of Hamilton's debt package was to ensure the government's ability to collect sufficient tax revenues to continuously service the debt. Debt service was an important ingredient of the program of creating a well-functioning, credible long-term capital market. Hamilton proposed a national tariff sufficient to generate revenues equal to 10 per cent of import values. Tariff revenues were to be supplemented by excise taxes, and the sale of public land.

Alexander Hamilton's debt package had all the elements of a modern stabilization plan. It led to the creation of a U.S. government bond market which in the future would be key to long-term sustainability of the U.S. fiscal union.

2.1.4 US federalism and the Great Depression

The Great Depression played a particularly important role in the reconstruction of the relations between the central government and the states. The period from 1929 to 1941 was the most serious economic crisis in US history. Real GDP and prices fell by a third and the unemployment rate rose above 20 % in 1929-1933. Recovery to the 1929 level was not achieved until the start of World War II. The states were unable to respond effectively on their own to the economic consequences of the Great Depression leading to a major change in fiscal federal arrangements. In 1933, as a major component of his New Deal, President Franklin D. Roosevelt and the Congress greatly expanded the federal government's role in the domestic economy.

The New Deal era represented a turning point in the history of American federalism, particularly in the area of federal-state and local relations. The main change in government structure during the 1930s was the shift in expenditures from the local to the state and federal levels. Wallis (1984) argues that the emergence of "big" government in this period was a result of a change in the relative importance of federal and sub-national governments rather than an increase in the growth rate of government expenditures by itself. He shows that between 1932 and 1940 the shares of government expenditures originating in federal and local governments were almost exactly reversed. Before 1932 relative shares for each level were roughly 50 % local, 20 % state, and 30 % federal government. After 1940, 30 % of relative shares were local, 24 % state, and 46 % federal. A major part of increasing government expenditures, 75 %, came in programs administered at the federal level but in cooperation with state and local governments. Additionally, strong agricultural price supports were introduced at the federal level and were not matched by any corresponding shift in sub-national expenses.

The most important modification of the US federation framework came as a new role for the fiscal policy of the central government. Before the Great Depression, the U.S. government borrowed in time of war, and most of the time ran surpluses to pay off accumulated war debt. The possibility of using the government deficit as a tool of macroeconomic management was never considered. The Great Depression made it impossible to preserve this pattern. De Long (1996) notes that both the Hoover and the first Roosevelt administrations wished to maintain the pattern of surpluses of peacetime, but both found the austerity necessary to achieve surplus in the time of the Great Depression to be politically impossible. In the end, the US government accepted that large deficits in time of recession helped to attenuate the business cycle.

2.1.5 Contemporary federalism in the US

Contemporary federalism, the period from 1970 to the present, has been characterised by shifts in the intergovernmental grant system, the growth of unfunded federal mandates, concerns about federal regulations, and continuing disputes over the nature of the federal system. There has been some devolution of programs back to the states, reflecting, in part, dissatisfaction with the economic effects of several large federal programs.

American states are largely free in their choice of tax bases and rates, subject to only a few limitations imposed by the federal constitution. On the expenditure side, most major spending functions are located at the state or local government level, important exceptions being national defence, pensions and health insurance for the elderly and disabled. Total expenditures of local governments are almost as large as those of state governments, and the sum of these two, as can be seen in column 1 of Table 2, is roughly equal to central government expenditure, reflecting a high degree of decentralisation in the US.

Subnational governments in the United States are, in principle, free to borrow without federal involvement. In reality, however, nearly all States have some kind of constitutional or statutory balanced-budget requirement. Indeed, according to Table 2, column 5, the borrowing autonomy of the sub-central governments is rather limited. The precise nature of the requirements varies considerably across states. The U.S. federal government has followed a no-bailout policy (column 6 in Table 2).

In the US, there is neither overall federal-state coordination of fiscal policy nor a "revenue sharing" system between the federal and state governments (Shah 1995). In fact, at the federal level, there are no transfers specifically intended to deal with sub-national imbalances. The most important federal transfers are those that fund health, education and transport programs administrated by the states. Although there is an attempt in many of these programs to relate transfers to such indicators of need as income per capita income, there is no general system of equalisation similar for instance to the German one. Thus, the US states are not highly dependent on transfers. Accordingly to both measures reported in Table 2 columns 3 and 4, the transfers based revenue accounts for around 30% of the total revenue of states.

2.2 Canada

Canada is a constitutional monarchy and a parliamentary democracy with a federal system and strong democratic traditions. Originally a union of four provinces, Canada is now composed of ten provinces and three territories. It became a federation in 1867, which makes it the third oldest federation in the world today, after the United States.

Canada has a two-tiered, highly decentralised system. It can be characterised as a model of dual federalism with a coordinating central authority. Whereas federal and provincial governments are equal partners in the federation, local governments do not enjoy independent constitutional status and are simply the handmaiden of the provinces (Shah 1995). The distinct functions of the provincial

legislatures and of the Parliament of Canada were established in the British North America Act, which was later renamed the Constitution Act, 1867.

2.2.1 Creation of the Canadian federation

The evolution of the federal system in Canada contrasts significantly with the evolution of the American federation. Both the origins of the two systems and their major developments differ. Watts (1987) argues that the Canadian federation was born in pragmatism rather than from an anti-imperial revolution sentiment. The major incentive for the unification of the Canadian colonies in 1867 was the threat of political, economic and military absorption by the United States.

Two distinctive features marked the federation created by the British North America Act. First, central powers were highly concentrated. Second, the Canadian political system combined a parliamentary form of government (similar to the British) with federalism.

2.2.2 Public debt in Canada

Canada had a fairly well-established financial structure in place before the Bank of Canada opened in 1935. Canada's legal system and strong ties to Britain during its early years supported the early development of a bond market (see Nowlan 2001).

The history of Government of Canada bonds in the domestic market dates back to 1868 with the issue of 6% 10-year bonds. The Government continued to issue bonds in the domestic market to retire foreign debt which had been issued by the provinces prior to Confederation in 1867. At the same time, the Government continued to issue bonds denominated in both sterling and U.S. dollars, in the London and New York markets.

During the Great Depression, Canada borrowed abroad extensively. In spite the fact that it already had considerable borrowing from abroad, the risk premium on Dominion bonds sold abroad did not significantly increase during the 1930s. This suggests that investors did not view Canada as likely to default, and lend further credence to the view that there was no external debt crisis. Further, during the first and the second world wars, a well developed bond market allowed the Canadian government to collect funds domestically at a low cost. During World War II, the Government was able to raise about $13 billion, all domestically and most of it long term. By the early 1950's, Canada had a framework in place for a domestic bond market and had many years of experience from borrowing in both domestic and international markets. Although there was no real money market by the early 1950's, short-term Government of Canada bonds were held in large amounts outside the banking system and were actively traded.

During the recessions of the 1980s and 1990s several provinces issued excessively high levels of public debt leading to an increase in risk premia and a downgrading of their bond ratings, and pressure on the federal government for a bail out. The evolution of the share of provincial debt since the 1970s is plotted in Figure 1.

Since 1983–84, provincial-territorial program spending has declined as a share of GDP. As a result, some provinces issued excessively high levels of public debt leading to an increase in risk premia and a downgrading of their bond ratings, and pressure on the federal government for a bail out. Due to the difficult public finance situation a conflict between the federal and provincial levels of the government arose. Kneebone (1993) provides the province of Ontario as an example of such a conflict. As a consequence of the overly lax fiscal policy of Ontario, the Bank of Canada had to tighten its monetary policy. This episode demonstrates how the fiscal choices of one province influenced the decisions of the central bank and how all the provinces were indirectly affected by the behavior of this province.

In the early 1990s, Canadian provinces and territories were hit hard by the recession, which caused a significant increase in spending on social assistance and social services. By the mid-1990s, increasingly large deficits and debt burdens, especially those of the federal government, led to fiscal restraint that

culminated in significant reductions across a wide range of federal expenditures, including transfers to provinces and territories. Hence, Canadian provinces became the main providers of social programs involving public services, while the federal government is largely restricted to social programs that involve transfers. The fact that such social programs include a significant proportion of program spending at both levels of government emphasises the importance of redistribution as an objective of government policy.

The Great Depression and Canadian federalism

Like the U.S., Canada suffered a major depression from 1929 to 1939. In terms of output loss, it was similar in both timing and magnitude to the Great Depression in the United States. Between 1929 and 1933, GNP dropped by 43% and exports shrank by 50%. Commodity prices fell dramatically around the world and therefore the regions and communities dependent on primary industries such as farming, mining and logging suffered the most. The economy began to recover, slowly, after 1933. However, the Depression did not end until the outbreak of the Second World War in 1939.

The Great Depression was a turning point for Canadian economic policies. Before 1930, the government intervened as little as possible, believing the free market would take care of the economy. During the Depression, the government of Canada became much more interventionist and proposed legislation that paralleled Roosevelt's New Deal agenda. In particular, it introduced high tariffs to protect domestic manufacturing, a step that only created weaker demand and made the Depression worse. It also introduced minimum hourly wages, a standard work week, and programs such as old age assistance and unemployment insurance. The Bank of Canada was created in 1934 as a central bank to manage the money supply and bring stability to the country's financial system.

In 1937, the federal government appointed the Royal Commission on Dominion-Provincial Relations, commonly known as the Rowell-Sirois Commission. Its objective was to examine issues of taxation, government spending, the public debt, federal grants and subsidies and the constitutional allocation of revenue sources. Ruggeri (2006) argues that the most important recommendation of the Commission was the payment to the provinces by the federal government of "national adjustment grants," a set of unconditional transfers aimed at equalising provincial fiscal capacity. In return, the federal government acquired exclusive jurisdiction over personal and corporate income taxes and succession duties. This new division of responsibilities between different levels of the government represented a major shift towards fiscal centralisation.

In 1938, following the Commission recommendations, the federal government for the first time consciously decided to increase spending to counteract a downturn in economic activity. In addition to fiscal expenditures the government also offered loans to municipalities for local improvements and passed a National Housing Act to encourage the building of homes. Consistent with this Keynesian approach, the government also reduced taxes and offered tax exemptions for private investors. The idea of a static and balanced budget was abandoned. In its place fiscal policy would stimulate economic recovery via government deficits and economic measures.

The budget of 1938 marks the beginning of a new concept of the role of government in Canada. Until then the federal government had concentrated on providing public services. It had now undertaken a new and significantly different responsibility: that of smoothing economic activity. It was a most radical innovation inspired by the Great Depression.

2.2.3 Recent developments in the Canadian federation

Since the British North American Act of 1867, the provinces have been assigned an increasing number of taxes. As stressed by Shah (1995), today, they are responsible for tax collection in all areas except customs, unemployment insurance premiums, and contributions to the Canada Pension Plan.[10]

[10] Sometimes Canadian provinces share the tax responsibilities with the central government.

Canada has a highly decentralised federal system. Sub-national expenditures accounted for more than 50 % of total public expenditures during the 1990s (column 1 and 2 in Table 2). As noted by Shah (1995), in Canada, there are elaborate mechanisms for federal-provincial fiscal coordination. The majority of direct program expenditures are at the sub-national level but Ottawa (i.e. the Canadian federal government) retains flexibility and achieves fiscal harmonisation through conditional transfers and tax collection agreements.

In the past several years, provincial concern has emerged over the use of federal spending power simply as a means of transferring revenues to the provinces. Canada, like almost all federations, is characterised by a vertical fiscal gap: a mismatch between the revenue means and expenditure needs. In particular, Canadian federal revenue exceeds what is required by direct and indirect spending responsibilities of the central government. Regional governments have fewer revenues than their expenditure responsibilities with the result that excess central revenue being transferred to the provinces in one form or another. Over time, the size of the vertical gap has gradually decreased, implying that provinces have gradually become more and more self-sufficient.

Much of the discipline on public sector borrowing comes from the financial sector - monitoring deficits and debt at all levels of government. Moreover financial markets, especially bond and stock markets and provincial electorates impose a strong fiscal discipline at the sub-national level. The borrowing autonomy index in Canada is the lowest in the group of countries under study (column 5 in Table 2). Furthermore, national policies explicitly forbid bailouts of provinces at risk of default (column 6 in Table 2).

2.3 Germany

The Federal Republic of Germany consists of a federal (Bund) government, 16 Land (state) governments, and numerous municipal (or local) governments. There is a formal, indirectly elected head of state, the President of the Federal Republic. All of the federal and Land governments are organised on the basis of the parliamentary system. All Länder have unicameral legislatures, whose members are elected directly by popular vote.

2.3.1 Foundation of the German federation

Germany is a relatively recent nation-state. In the mid nineteenth century, Germany was a collection of smaller states that were linked together as a German confederation. This confederation was dominated by Austria, which as an imperial power was politically and economically superior to the smaller German states. In the 1860's, the dominance of Austria was challenged by Prussia and the process of unification and codification of German law began.

A gradual process of economic interdependence from the early stages of the Industrial Revolution through to the mid-19th century saw the German states move towards economic unification. For example, the growth of the railway network in Germany led to easier access to different resources across the confederation. This helped to stimulate economic growth and meant that economic prosperity was increasingly reliant upon strong links between different member states of the German confederation.

This led to the introduction of the *Zollverein* customs union, an agreement amongst the German states to have preferential customs policies for member states. This economic union excluded Austria, illustrating a growing German sense of identity and a lesser dependency upon the largest of the German states.

The final national unification of Germany was achieved in two steps: the creation of the North German Confederation in 1866–67 and then of the German Reich in 1871. In 1866 a war broke out between Austria and Prussia, lasting a few weeks. The Prussian victory over the Austrians led to a clearer division between Austrian and German interests. This new situation also forced the smaller

states to align themselves with the Prussians, with whom they shared more economic ties due to the common *Zollverein* customs agreement.

At the same time, between 1866 and 1870, relations between Prussia and France worsened. In 1870, France declared a war that was won by Prussia. Following victories over France, in January of 1871, Prussia persuaded other German confederation members that unification was desirable. As a result, Wilhelm, king of Prussia, was proclaimed Emperor of Germany on January 18, 1871 in Versailles. The Second German Reich was born.

2.3.2 The evolution of the German federation

With unification, Prussia inherited a set of states with already highly institutionalised governance structures in place: well-developed public education systems, effective systems of public finance, and stable populations, see Ziblatt (2004). After unification, the German Reich increased its spending so that the share of total government expenditures over GNP rose from 10 % in 1881 to 17.7 % in 1913 while the central government's share increased from 2.9 to 6.2 %, Hefeker (2001).

World War I ended in defeat for Germany. As the government financed its burgeoning deficits by the monetary printing press, saddled with enormous war debts and reparations, the economy slid into a hyperinflation in 1922-23. The hyperinflation was ended by a stabilisation package based on fiscal consolidation.

When, after the war, the Weimar Republic was founded, a drive towards a centralized state strongly dominated separatist tendencies and thus limited the possibilities for development of a federal system. The Weimar Republic is described as a "decentralised unitary state", rather than a federal state.

In early 1928, Germany's economy slipped into recession, then stabilised before turning down again in the third quarter of 1929. The decline in German industrial production during the Great Depression was roughly equal to that in the United States. Lacking adequate sources of finance, the federal government was forced to cover its budget to a large extent by issuing debt, running ultimately into a serious debt crisis. The German government did not use activist fiscal policy to attenuate the effects of the crises.[11]

In January 1933, Hitler was appointed Reich Chancellor. In terms of economic policy, the Hitler regime did not represent a radical break with past conservative policies, at least not until 1936. It increased spending for military purposes. The Nazi regime created a unitary state with all powers held by the central government while the States were relegated to administrative districts.

After the Second World War, a new type of federalism was imposed on Germany by France, United Kingdom and the United States. Because of the Nazi totalitarian experience, a unitary structure for post-war Germany was ruled out. Instead a federal solution was adopted, founded on the creation of new Länder that had not existed before. They were conceived as state units, clearly distinct from the federation. The distribution of powers between the central and Länder governments according to the German Constitution, the Basic Law (*Grundgesetz*) of 1949, still reflects some aspects of the Weimar Republic. However, since World War II, the federal government has been more limited in several areas. The creation of the structure of federalism continued in 1990 when six new Länder were established with German reunification.

The system created by the Basic Law did not facilitate cooperative federalism or even the sharing of political responsibility between federation and state. The rather competitive structure of the German federation reduced the financial responsibility of the already largely transfer-dependent Länder. As a rule, the Länder have strongly defended their authority and financial resources against the central

[11] Cohn (1992) notes that Germany opted for conservative fiscal policies because of its huge national debt.

government. Although the central government officially follows the no-bailout rule, this commitment is not fully credible. There is an incentive for the Länder to borrow excessively as their taxing authority is rather limited. Indeed, the excessive debts of some of the Länder and the financial security provided by the central government, after the Second World War, demonstrate the lack of credibility and commitment of the Lander.

2.3.3 German debt and bailouts

Although the German federal government and the Bundesbank are famous for its prudent monetary and fiscal policies, the fiscal performance of the subnational sector is far less admirable (Rodden 2005).

In the immediate post-war period, the level of the public debt was rather low and evenly distributed between the three levels of the German federation. In the 1970s and 1980s, the debts of the central government and especially of the Länder have risen at a sharp rate. Some of the Länder, which were particularly indebted and which were also used to receive high amounts of transfers, expected the central government to bail them out. In order to strengthen its credibility, the central government could have refused, as the US federal government did in 1840. Instead, in early 1987 the Länder of Bremen and Saarland began to receive special supplementary transfers form the central government explicitly aimed at coping with their high debts.

In 1992 the Federal Constitutional Court handed down a decision stipulating that the constitution required the Bund to make extra transfers to Bremen and Saarland, amounting to around 30 billion DM over the period from 1994-2000, see Rodden (2004) and Heppke-Falk and Wolff (2008).[12] Furthermore, these transfers to Bremen and Saarland have never had to be repaid.

The bail-out provided by the German government was a signal of its lack of commitment, demonstrating the difficulties to commit in the existing constitutional setting, and created incentives for further irresponsible fiscal behaviour on the part of the Länder. The huge debts at the Länder level were largely responsible for Germany's problem of following the Stability and Growth Pact in 2002.[13] Also in a federal constitutional court ruling of 2006 on Berlin, no fundamental change of the principle of solidarity was undertaken and investors continue to price German Länder essentially similarly (Schulz and Wolff (2009)).

A second, interesting feature of German federalism is that all Länder participate in the German fiscal equalization system which guarantees a minimum level of annual tax revenues. In practice, the minimum is very close to the average and some Länder are permanent net recipients while others are permanent net contributors. This fiscal equalization also affects the markets' perception of a sub-central government's credit risk, as the central government may find it hard to refuse bail-outs to states which are permanent net recipient of equalization grants. Schuknecht, von Hagen and Wolswijk (2009) find that, German regions, and, in particular, those that were consistently net recipients in the German equalization scheme, did not pay risk premiums related to their fiscal performance in excess of the German federal government.

Rodden (2005) argues that the current fiscal federalism in Germany is characterized by structural weaknesses in the German federal systems that have been present throughout the postwar period. Specifically, the collaborative intergovernmental system of revenue legislation, collection, and distribution breaks the link between taxing and spending decisions that is critical for effective government provision of goods and services. While most spending and policy implementation occurs at the *Land* or *Gemeinde* level, most revenue decisions are made at the *Bund* level. Rodden (2005)

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[12] A ruling by the Federal Constitutional Court in 1992 introduced the notion of extreme emergency as the necessary condition for support from the federal government.

[13] See Heppke-Falk and Wolff (2008) for a discussion of the moral hazard problem and the issue of bailout in the German fiscal federation.

argues that Germany's complex, interdependent, collaborative style of federalism tends to weaken fiscal accountability and soften budget constraints.

2.3.4 Recent developments in German federalism

The Basic Law divides authority between the federal government and the Länder, with the general principle governing relations articulated in Article 30: "The exercise of governmental powers and the discharge of governmental functions shall be incumbent on the Länder insofar as this Basic Law does not otherwise prescribe or permit." Thus, the federal government can exercise authority only in those areas specified in the Basic Law. The federal government is assigned a greater legislative role and the Land governments a greater administrative role. The fact that Land governments employ more civil servants than federal and local governments combined illustrates the central administrative function of the Länder.

Originally, the Basic Law divided the federal government's legislative responsibilities into exclusive powers, concurrent powers, and framework powers. The exclusive legislative jurisdiction of the federal government extended to defence, foreign affairs, immigration, transportation, communications, and currency standards. These areas were additionally enlarged by an amendment to the Basic Law in 1969, which calls for joint action in areas of broad social concern such as higher education, regional economic development, and agricultural reform. After the reform of federalism in 2006, the federal and Land governments share concurrent powers in several areas.

The Länder retain no significant powers of taxation. The revenue provided by these taxes is very low, relative to total sub-national revenue. Indeed, as indicated in column 4 of Table 2, tax rate autonomy is equal to 0.04, much less than in the US and Canada.

A key aspect of the German federal state is the solidarity between the individual Länder. However economically weak individual Länder may be, no single Land will have less than 95% of the average per capita budgetary resources. The Basic Law provides for the establishment of equal living conditions throughout the country and the maintenance of legal and economic unity in the national interest. This includes the constitutionally mandated revenue sharing with the Länder from federal taxes. Virtually all of the major federal tax revenue sources are shared in this way. These constitute extensive non–discretionary unconditional transfers to the Länder.

Watts and Hobson (2000) note that in addition there are substantial intergovernmental transfers both from the federal government to the Länder, and among the Länder, which, as a result, are highly, transfer dependent. When the measure of the latter includes revenue sharing mechanisms, Länder reach the transfer dependence of 70 % (column 3 in Table 2).

On the other hand, Länder are autonomous in their borrowing activities (column 5 in Table 2).[14] The central government has no power to place numeric restrictions on the borrowing activities of Länder. Nevertheless, Länder have their own laws imposing adequate restrictions. Most often, these are based on the golden rule, i.e. the loan is designated for investment purposes. However, as Rodden (2006) notes, investment is a slippery concept and many of the financial needs can be presented as investments.

In addition, the investment limits have often been breached with the argument that exceptional events have triggered expenditure needs. With the currently ongoing financial crisis leading to massively increasing deficits, the political response has been to impose further strict limits on deficits. These limits are supposed to apply to the federal as well as to the Länder-level.

[14] The Länder get individual ratings from rating agencies.

2.4 Argentina

Argentina is a federal republic with 24 provinces. It has a presidential government and a bicameral legislature consisting of the Chamber of Deputies (257 seats) and the Senate (72 seats). Sturzenegger and Werneck (2006) note that while the Chamber of Deputies supposedly elects deputies in proportion to their populations, the Argentine system over-represents the participation of small provinces through a minimum number of five deputies per jurisdiction.[15] The Senate is represented by three senators from each province, two from the first majority and a third from the second party.

2.4.1 Creation of the Argentinean Federation

The Argentine state was born out of the union of colonial regions with differing economic and social characteristics. The revolution of 1810 against Spanish control led to the declaration of independence of the United Provinces of the Rio de la Plata in 1816. Independence revealed strong regional disparities which had been hidden by Spanish rule. As a result, the establishment of a national government and a constitution took almost four decades accompanied by violent struggle. Finally, in 1853 the Constitution established a constitutional federal republic. The changes in the Constitution introduced in 1860, gave the provinces priority over the central government. The provinces also gained autonomy in the administration of their territories. Despite some later modifications, the essential federalist structure of the 1853-1860 Constitution remains in force today (see Tommasi (2002)).

By the beginning of the twentieth century, Argentina was one of the most developed countries in the world. However, after the Great Depression, it entered a path of economic decline largely reflecting a succession of poor economic policies based on populism.

The Argentinean Federation and the Great Depression

The Great Depression began in Argentina in the late 1920s, even before the date of the start of the Depression in the core countries of North America and Western Europe following the Wall Street crash of 1929. Like in many countries of the periphery, Argentina was exposed to commodity price shocks and, during the 1920s, its terms of trade worsened considerably. By the end of 1929, a balance of payments crisis developed, and the exchange rate was allowed to float after only two years of participation in the gold standard. Recovery began in 1931, and by 1934-35, output had regained its 1929 level.

The Argentine Great Depression was mild and short-lived by international standards. From its peak between 1929 and 1932 domestic real output fell by 14 % and by 1935 it had surpassed its 1929 level. Deflation was about 6 % in the 1929-32 period. In other gold-standard countries, such as the United States and Canada, the decline in real activity reached more than 30% and price levels declined by more than 20%.

Major monetary policy actions from 1929 to 1935 were responsible for accommodation of the negative shocks of the 1930's. In response to the economic difficulties, two major institutional changes in the conduct of monetary policy took place in the first half of the 1930s. The first was in 1931, when the decision was taken by the Conversion Office (a currency board established in 1910) to shift the monetary regime from a metallic regime standard based on gold to a fiduciary regime and to revalue the monetary gold stock and devalue the currency. This resulted in a more flexible monetary regime which could adapt to the economic crisis. Second, a Banco Central, a central bank, was created in 1936. This independent institution replaced the Conversion Office and abandoned its nominal anchor commitment device.[16]

During the depression, fiscal policies in Argentina remained even more conservative than in countries like the United States. The Great Depression created a sudden decrease in federal revenues. As a

[15] See for instance Sturzenegger and Werneck (2006).
[16] For the details of the reforms, see Della Paolera and Taylor (1999).

result, some tax collection responsibilities shifted from the sub-national to the national level. The federal government started to collect taxes that were previously assigned to the provinces, invoking the "critical situation" clause in the Constitution.

2.4.2 Argentinean debt history

The history of excessive Argentinean public debt started early. The revolution from Spain in 1810 led to the constant expansion of military expenditures and to a drop in trade revenues (result of Spanish blockade of the Rio de la Plata). As a result, the Buenos Aires authorities had to issue the first compulsory loan. During the period 1813-1821, compulsory loans amounted to 2.96 million pesos. In 1819 and 1820, in order to pay the military and public wages, the government issued small-denomination notes to be used by the customs (see Bordo and Vegh, 2002). By then the difference between the public debt and money had disappeared. At that time, the only solution to the problem was to consolidate the total debt and convert it into long-term debt. The funding operation was carried out in 1821. Further bond issues in 1823 and 1824 were necessary to complete the operation. By the end of the funding operation in 1824, 6.4 million worth of bonds had been issued (see Bordo and Vegh, 2002).

In 1825, the war with Brazil began. To finance the war, and given that the interest rate charged by the Banco Nacional was considerably below the open market rate, the Buenos Aires government relied heavily on credit from the Banco Nacional. As the credit resources of the Banco Nacional fell short of the government's borrowing requirements, the Banco Nacional had to start printing money. The resulting inflation spiral began in 1826 and continued until mid-1830. At the beginning of 1830, long-term government bonds were selling at an average discount of 40 percent.

Bordo and Vegh (2002) argue that two main economic factors would ensure that monetary instability would continue for the next 40 years. First, the Treasury continued to depend on trade taxes for most of its revenues. Second, long-term bond-financing was becoming difficult as the public became more reticent to buy additional public debt and a London loan for 5 million gold pesos contracted in 1824 was defaulted on in 1827, and servicing was not permanently restored until 1849.

By the early 1840s, the treasury continued to be heavily dependent on trade taxes and the printing of money. In a way, the exclusive reliance on money finance after 1840 completed a long process that began in 1813 with the first compulsory loan. During 1810–1821, government paper became more and more ''liquid''. In 1822, paper money was issued and soon became inconvertible. Long-term bond financing became increasingly difficult afterwards. In 1840, the Treasury concluded that bond financing was no longer worth it, and money financing became the only other important fiscal tool (in addition to trade taxes).

During the next 60 years, Argentina joined and left the Gold Standard several times. On each occasion convertibility was suspended, mainly in years of political turmoil and rising levels of money-financed government deficits. The final convertibility suspension occurred in 1914 at the outbreak of World War I. In the interwar period Argentina followed conservative monetary and fiscal policies, returned to gold during 1927–29, and in the 1930s followed mildly expansionary policies (see Della Paolera, 1995; Della Paolera and Taylor, 1997, 1999). A return to high inflation regimes, as in the 19th century, began with Peron after World War II (see Di Tella and Dornbusch, 1989).

Continuous growth of government in successive decades brought public expenditures to about 50% of GDP in the second half of the 1990's. During the 1980s, both levels of government borrowed extensively, reflecting weak fiscal management. In addition, both levels of government accumulated large debts on payments for wages and pensions, to suppliers and for debt service. Lack of financial control prevailed in particular at the provincial level, becoming an important source of financial and macroeconomic instability.

In the late 1980s, the provinces accounted for roughly 40% of the deficit of the consolidated non-financial public sector. These deficits were financed by discretionary transfers and loans from the

federal government, but also by loans from the provincial banks and other parts of the financial system, see Saiegh and Tommasi (1999). The provinces borrowed from their provincial banks, who then discounted the debt at the central bank, effectively giving the provinces a share in the seignorage from inflation. This process led, by the end of the 1980's, to a hyperinflation.

During the period 1992-94, the federal government financed special financial rescue operations for seven provinces. Nicolini et al (2002) argue that one of the main sources of deficits in provincial finances was the state provincial pension system. Financial aid to provinces in difficulties took the form of issuing national treasury bonds. Using this ad hoc mechanism, the central government granted huge loans.

By establishing a currency board arrangement, the Convertibility Law of March 1991 ended inflationary central bank financing of public sector deficits at all levels. A set of structural reforms was introduced in the 1990's, however, a budget policy or a fiscal responsibility law that would control provincial spending was not developed. The provinces, especially the Province of Buenos Aires, were spending heavily and financing their expenditures through commercial bank borrowing therefore causing *crowding out*.

As shown in Table 3, the public debt grew roughly 40 percent from 1997 until 2001. 64 percent of this growth was contracted locally, implying that the domestic debt of the government almost doubled. The domestic debt was also contracted in dollars. The annual public and private external debt service amounted to 41 percent of total exports, and the total public and private external debt stock was equivalent to almost 5 times the annual exports. The growth in the debt was not seen as worrying, partly because of its one-off nature, and partly because the economy was now believed to be on a new, higher growth path. But underneath the surface, the debt was becoming unsustainable.

In 1998, the Argentinean economy was struck by a series of shocks which plunged it into recession. The 1998's Russian crisis dramatically reduced the inflow of foreign capital available to emerging countries (see Lischinsky, 2003). The first signs of restricted credit were the high lending rates the provinces were charged, which did not impede the excessive borrowing. Further, the recession decreased tax revenues, the basis for servicing debt. In any case, Argentina's tax collection effort was not impressive, and the tax system was not capable of generating large additional resources rapidly (see Mark, 2003). Debt service as a share of exports was high, because the Argentinean economy was relatively closed, with exports hovering around 10 percent of GDP. With the resulting revision of growth prospects, Argentina's future capacity to service its debt began to look more worrisome. Mark (2003) argues that as this problem became clear to market participants, spreads rose on Argentine paper and maturities shortened, creating increasing difficulty in rolling over the debt and increasing debt-servicing costs. This again worsened the debt dynamics, eventually forcing Argentina to default on its debt.

This combination of inadequate fiscal adjustment and (external) borrowing in foreign currencies proved in the end damaging for Argentina's attempt to maintain the currency board and avoid default. In addition, Sturzenegger and Werneck (2006) argue that the irresponsible fiscal behaviour of the provinces leading to run-ups in the national debt to GDP ratio was a key ingredient in the process leading to this crisis.

2.4.3 Argentinean federalism today

Provincial governments in Argentina have abundant powers to decide their own rules of governance as well as taxing and spending decisions, while municipalities report to the provincial governments. Although the Argentine Constitution establishes substantial room for sub-national taxation, in practice, provinces have delegated to the national government the responsibility of raising a large share of their taxes. Sturzenegger and Werneck (2006) argue that, at the same time, the responsibility for key social functions is in provincial hands. For example, provinces have exclusive competence in primary and secondary education and in the provision of most social expenditures on education, health, poverty programs, and housing. As a result of expenditure decentralisation and tax

centralisation, the Argentinean federal system is characterised by a high degree of vertical fiscal imbalance gap. This gap, coupled with the relatively large fraction of government services provided at the sub-national level, creates a common pool problem across provinces. Tommasi (2002) argues that as a consequence some of the provincial governments are not aware of any hard budget constraint. Thus they increase spending and reduce local tax effort compared to the case of having to face binding budgetary restrictions.

Argentina addresses its large vertical fiscal imbalance gap through a complex and extensive system of intergovernmental transfers. These transfers and other revenue sharing proceeds account for more than half of total revenues of the provinces (column 3 in Table 2).[17] The most important component of this transfer system is the tax-sharing agreement called "Coparticipación", which refers to the process by which shares of the taxes collected by the central government are reallocated to the provinces. Over time, this tax-sharing system has been often modified and several new amendments have been added to it. Furthermore, some direct transfers appear to be determined by political considerations. Its complexity and lack of transparency resulted in its description as the "*fiscal labyrinth*".

Within Argentina's federal structure, all levels of government are generally permitted to borrow both domestically and abroad. However, in many provinces, the provincial Constitution imposes some restrictions on the borrowing ability of the government. These restrictions are very often violated, and in many provinces they are too loose to be binding. In Table 2, we see that during the 1990s among the five countries studied, Argentina had the highest degree of borrowing autonomy and reached almost full borrowing autonomy of sub-national entities.

2.5 Brazil

Brazil has a complex federation. Three government levels comprise the Union of 26 states plus the Federal District, and more than 5500 municipalities. The Constitution explicitly considers municipalities to be members of the federation, giving them a much higher status and autonomy than is generally observed in other federations, see Sturzenegger and Werneck (2006).

The republic has a presidential regime and a bicameral legislature consisting of the Federal Senate and the Chamber of Deputies. Each state is equally represented in the upper chamber by three senators. Representation in the Chamber of Deputies is not strictly proportional to state constituencies. In fact, the Constitution establishes that no state may have less than 8 deputies and more than 70. This leads to a disequilibrium similar to the one present in the Argentinean federation. The unpopulated Northern states are over-represented and the state of Sao Paulo is under-represented.

2.5.1 Creation of the Brazilian federation

The Brazilian Federation was created along with the Republic in 1889. It was born out of the decision to divide the unitary state that prevailed during the Imperial Regime. Castanhar (2003) notes that the Federal Regime was convenient mainly for the most developed provinces of the South and Southeast, in particular São Paulo. These regions were rich in the new agricultural export products at that time. These provinces would obtain additional revenues from local taxes on these exports. In return, the less developed regions were granted political representation in the government more than proportional to their population.

2.5.2 Evolution of the Brazilian federation

This fiscal federal arrangement has undergone substantial changes over Brazil's history. During most of the nineteenth century when the country had a parliamentary monarchy a high degree of centralisation prevailed. The power of provincial governments was weak until 1889 as these

[17] See also Cetrángolo and Jiménez (2004).

governments had little control over fiscal revenues. The provinces were not allowed to collect import taxes or interprovincial trade taxes, but implicitly they had the right to collect export taxes and in practice they also collected interstate taxes. In 1889, a republican movement overthrew the emperor in a peaceful revolution and established a provisional government in charge of drafting a new constitution. The first draft of the constitution was then created and submitted to the Constitutional Congress for a final revision and approval. The Constitutional Assembly passed a new Constitution on February 24, 1891, which provided states with great autonomy, in particular, the right to tax exports, to set up their own armed forces, and to have independent gubernatorial elections. By not including any limitations to the amount of debt states could issue, the Constitution implicitly gave states the right to issue debt domestically and abroad.

After the 1891 Constitution, state revenues from export taxes represented on average around 60% of total revenue between 1914 and 1916. States such as Espírito Santo and Rio Grande do Norte collected more than 85% of their revenues from export taxes. São Paulo increased its collection capacity per capita three times after 1891, collecting almost 40% of what all the states collected with only half of the total exports and less than one fifth of the population. In contrast, Góias and Rio Grande do Sul collected only 24% and 29% of their revenues from export taxes. This tax collection independence of states had large repercussions on the cost of capital. In particular, states with larger exports per capita and resulting larger tax income were able to sell more debt in international markets and paid lower interest rates for those loans see Martinez Fritscher and Aldo (2010).

The Great Depression and Brazilian federalism

During the Great Depression, Brazil, like many other commodity dependent economies went into a deep crisis. The price of coffee (70% of Brazil's exports share during the 1920’s) dropped from 22.5 cents a pound in 1929 to 8 cents in 1931. As in the other federations studied by us, the economic depression accelerated expansion and consolidation of the center’s power. In 1929, Brazil like Argentina began to devalue its currency and as a result experienced only a relatively mild downturn and had largely recovered by 1935.

The central government was strengthened further during the authoritarian Vargas regime between 1930 and 1945. The end of the Vargas dictatorship brought a new constitution. Although the new constitution did not introduce radical changes to the tax system, it promoted significant efforts of decentralisation, giving more autonomy as well as sources of revenue to state and local governments. This decentralisation wave was interrupted by 20 years of military government, from 1964 onwards. The end of this regime in 1985 led to another decentralisation movement. The interests of sub-national governments dominated the redesign of the fiscal federalism arrangement established by the 1988 Constitution.

As a reaction to the earlier dictatorial period, the new constitution delegated a large amount of revenue and political power towards the sub-national governments, and in particular towards the municipalities. Sub-national governments were directly or indirectly given a much more generous share of the aggregate taxes collected in the country. Although the Constitution already enhanced the taxing power of sub-national governments, it additionally established transfers based on revenue-sharing rules, see Sturzenegger and Werneck (2006).

Soon after the approval of the new Constitution and a new tax system in particular, the central government faced growing financial difficulties. In response, it undertook efforts to increase its tax revenue. As a result, inefficient taxes were introduced, i.e. various forms of turnover taxes that had been eliminated from the Brazilian tax system in the 1960’s.

2.5.3 Public debt in Brazil

The Republican Period was marked by difficulties in domestic and external financing and restructuring. First, the long stretch of time during which outstanding securities could not be converted (1839-89) affected its credibility. Second, due to the large diversity of instruments with different maturities and interest rates the debt was highly fragmented. The last two issues spelled

trouble for domestic debt negotiation and liquidity. In 1902 consolidation tried to solve the problem of debt fragmentation and succeeded, at least initially. Nearly all outstanding securities were exchanged for new ones, yielding interest rates of 5% a year. However, the effect of this unification was also short-lived. From 1902 to 1956 (the year of a new consolidation), 145 authorizations for bond issues were granted, but again, they were not standardized and they had different purposes: e.g., for covering budget deficits, sterilization of excess liquidity, funding civil works, acquiring fixed assets or companies, and repaying compulsory loans. The latter was crucial in the Republic's financing policy, especially for issuing war bonds, which began in 1942, and influenced the evolution of outstanding funded domestic debt.

The years of not paying interest on outstanding debt and rising inflation forced Brazil to introduce compulsory public securities. The stagnation of the voluntary issuing of public securities complicated the financing of growing budget deficits even further, especially as of the mid-1950s. Since the government had no public credit and was unable to raise the tax burden, the deficit was mainly financed by issuing currency, and hence increasing inflation.

In 1965, the Government launched the Government Economic Action Plan to reduce the inflation of previous years through a restrictive monetary policy and fiscal adjustment. This plan raised the need for reforms in the domestic financial system and actions that would make the public debt security market more efficient. The objectives of the plan included: (i) raising additional debt to cover Federal Government deficits; (ii) encouraging individual savings and (iii) developing a voluntary market for public securities. In this context, several reforms in the fiscal and financial systems were introduced.

Foreign borrowing was critical to Brazil's economic and political development after 1967. State-owned industrial corporations and banks were the biggest borrowers. The overwhelming majority of the borrowing went, directly or indirectly, to boost industrial production. In order to pay for the country's increasing debt service, the new industrial facilities were pushed to export a portion of their output. In principle, the system worked perfectly: foreign capital boosted industrial production, and enough of this production was exported to cover interest and principal payments. Output more than tripled in real terms between 1965 and 1980, industrial production quadrupled, per capita GDP doubled, and exports rose from $1.6 billion to $20.1 billion.

Brazil has experienced three major state-level debt crises between the end of the 1980s and 2000. In each of these crises, the same pattern reoccurred. The states facing unstable fiscal situations with high levels of spending on personnel and interest payments were pushed into debt-servicing crises by exogenous shocks. In order to control sub-national budget deficits, the 1988 Constitution restricts their borrowing ability which is inspected by the Senate. Despite these provisions, state deficits have been a persistent concern throughout the post 1988 period. The last state debt crisis of the mid 1990s, triggered by the soaring interest rates following the implementation of the "Plano Real" in 1994, exposed the serious macroeconomic threat posed by the risk of default of the four major debtor states of Sao Paulo, Rio de Janeiro, Minas Gerais and Rio Grande do Sul, and ended up requiring a bail-out by the central government. In fact, the federal government authorized the exchange of state bonds for federal and central bank bonds and thus relieved the states from the burden of servicing their debt. Rodden (2006) emphasizes that large, indebted states like Sao Paulo and Minas Gerais were aware of the fact that the center could not let them default because of negative spillovers onto the Brazilian economy. Of course, the knowledge that the central government will bail out the states increased moral hazard and generated excessive states' indebtedness. Accordingly, in each of the crises irresponsible states received bailouts, and the federal government responded by taking measures to assume the state debts. This led to increases in the federal debt burden – fuelling a crisis.

Table 4 shows that the State Debt in Bonds, as percentage of GDP, more than doubled between 1990 and 1996, and that more than 90% of it was concentrated in the four biggest states of the country.It is important to note that during the period between 1990 and 1996, the access of subnational governments to new debt was almost completely restricted, either by regulations or by credit risk assessment. Therefore, the increase in the outstanding debt was due, almost entirely, to the

capitalization of very high interest rates that the state debt had to bear. The inflated interest rates reflected low liquidity but mainly high default risk premia.

In the late 1990s, the regulations of subnational borrowing were strengthened, leading to the unifying framework in 2000. Statutory controls on subnational borrowing have always existed in Brazil—controls on new borrowing and the total stock of debt, expressed as percentages of revenue— but subnational governments had been creative in evading them. The federal government bailed out subnational debtors in earlier crises, but resolution of the third debt crisis in 1997 was conditioned on states undertaking difficult fiscal and structural reforms. Unconditional bailouts were avoided in 1997 in order to minimize moral hazard. The strengthened ex ante borrowing regulations were embedded in the debt-restructuring agreements between 25 states and the federal government in 1997, sanctioned by legislation. The 2000 Fiscal Responsibility Law consolidated various pieces of legislation into one unifying framework (see Webb 2004).

3.5.4 Brazil and present federalism

The decentralisation of the Brazilian federal system, initiated by the Constitution of 1988, resulted in a mismatch of the assignment of revenue and expenditure functions to sub-national governments. In particular, while the assignment of revenue sources across different levels of government is clearly specified, expenditure functions are not always devolved in a clear and systematic way to sub-national governments. There is no clear division of responsibilities across government levels in many areas like health care, education and social security. Furthermore, Afonzo and De Mello (2000) argue that, because of significant disparities in institutional capacity at the sub-national level, even in cases where expenditure mandates are clearly defined, higher level authorities (states and Federal government), do not devolve these expenditure functions to lower tiers of governments for fear of disturbances in service delivery.

Brazil has a gross tax burden of more than 36 % of GDP; a high number for an emerging economy. Officially, the majority of the taxes are collected by the federal government. The states' own revenue corresponds to slightly more than 25 %. Municipalities are left with a share of less than 5 % of the total tax collection. However, once constitutional transfers are taken into account, the distribution of the aggregate tax revenue across jurisdictions differs dramatically. After all, the states remain with roughly 25 % and the central government receives about 60 % of the tax revenues. The great net beneficiary of the redistribution is the municipalities. Local governments were able to have access to an amount of resources that roughly tripled their own revenue. Although state-level governments as a whole only benefit slightly from the constitutional transfers, individual states, the poorest ones in particular, have obtained major net gains from the redistribution.

More than three fourths of all federal transfers to sub-national governments are constitutionally mandated transfers. Afonzo and De Mello (2000) claim that constitutional requirements on revenue sharing favour sub-national governments to the detriment of the federal government without a clear devolution of expenditure functions to lower levels of government. Particularly important are the rules governing the sharing of the ICMS, the state-level value-added tax, which is the highest yielding source of revenue in Brazil.

Afonzo and De Mello (2000) state that it has been widely accepted in Brazil that state debt negotiations with the federal government could be interpreted as a bail-out operation unless accompanied by institutional changes aimed at imposing hard budget constraints at all levels of government.

Since the late 1990s, an important effort took place in order to provide a sound basis for macroeconomic stability. In particular, it required changes in the fiscal-federalism arrangement, in order to impose hard budget constraints on sub-national governments. The recent changes in the legislation have laid the foundations for a rules-based system of decentralised federalism that leaves little room for discretionary policymaking at the sub-national level. It remains to be seen how effective this new system will be.

4. Lessons from the history of fiscal federalism

4.1. General lessons

Our account of the evolution of fiscal federalism in five countries covers also their political history. The reason for this is that all the fiscal unions evolved in close interaction with the political unions forming the ultimate basis for fiscal cooperation. Friedrich (1968) notes that federalism is not only a static pattern or design, characterized by a particular and precisely defined division of powers between governmental levels. It is a continuous process by which a number of separate political communities enter into arrangements for working out solutions, adopting joint policies, and making joint decisions on common problems. Thus, each federation is an evolving entity and its structure is shaped by economic and political events.

Below we seek to identify the major driving forces behind changes in the fiscal frameworks of the five federations under study.

First, the historical account demonstrates that most of the countries created their unions for similar reasons. Many independent regions decided to found a union because of military insecurity and a consequent need for a common defence or a desire to be independent of foreign powers. This was the case of the US which was founded in revolution against the British Empire. Similarly, the British North American Act established the Canadian federation in response to the threat of political, economic and military absorption by the US. The foundation of the Argentine federation reflected a desire to gain independence from the Spanish empire. The union of provinces that founded the Brazilian Federation was mainly driven by potential economic benefits. The creation of the German federation was driven by both potential economic gains and political reasons.

Franck (1968) argues that although factors such as a common language, similar culture, complementary economies, and hope of independence, as noted above, have generally triggered the birth of federations, they are important but not sufficient conditions for the success of a federation. According to him, far more important is what Friedrich (1968) calls the "federal spirit," i.e. a commitment to the value of federalism and to compromise and adaptation. Indeed, the Canadian case shows that in spite of the cultural differences between the original units, in particular different languages, these entities desired to unite because of such a “federal spirit”.

Second, we note that institutional developments in most of the five federations were driven by exceptional events, often downturns in economic activity during deep crises. The most prominent example is the Great Depression of the 1930s which affected in a fundamental way the institutions of the five federal states. In response to the economic crisis, central governments increased their power. As a result, during and after the Great Depression, the American, Canadian, Argentine and Brazilian federations underwent a process of centralisation. In Germany, the depression contributed to the rise of the National Socialist movement, resulting in an enormous centralization of power. This centralization made it easier for the governments to either introduce (as in the Canadian case) or extend (as in the US example) measures aiming at equalization of incomes across regions. Such measures were part of the stabilization process, since the regions which were more harmed by the recession received larger financial transfers.

In addition, in Canada and Argentina, the Great Depression resulted in the creation of central banks. These two central banks were established during the Great Depression to use monetary policy under a fiat monetary regime to help extricate the economy from the slump. Their establishment also reflected the general movement in the interwar period for independent states to establish central banks.

The main policy innovation of the Great Depression was a new role for the fiscal policy of central governments. Governments increased their spending and/or cut taxes in order to stabilize the distressed economy. Later on, these policies were given an intellectual foundation by John Maynard

Keynes in the *General Theory of Employment Interest and Money.* They were formalized as part of the Keynesian revolution, with its stress on the role of fiscal policy.

In case of an important negative shock like the Great Depression the federal state must be ready to implement measures necessary to improve the conditions of the most harmed states. History also suggests that the most appropriate way to finance interregional transfers in distressed times is by national bond markets. Early Argentinean and US war experiences provide adequate examples of how the federal states can respond and prepare for the next possible distress. In the nineteenth century Argentina faced two conflicts which resulted in huge public debts. In both episodes, this debt was monetised because the federal government had access neither to stable domestic financial markets nor to adequate tax revenues.

Several decades before, the US experienced its War of Independence, which like in the Argentinean case was mainly financed by printing money. However, this episode inspired Alexander Hamilton to introduce a financial plan which helped to repay the debt and to develop domestic bonds markets that would allow for the financing of future wars. In addition, the plan involved increasing and securing tax revenue at the federal level. As a result of Hamilton's program, the Civil War and the conflict against Mexico were financed by non-inflationary means: tax revenues and bonds.

Third, we find a clear difference between well-functioning and poorly functioning federal states concerning inflation and debt accumulation. Those federal states that have maintained a relatively strict fiscal discipline among sub-national units during recent decades like the US, Canada and Germany have fared better than those that have not, like Argentina and Brazil. As a rule, they have displayed lower rates of inflation; less inflation variability and less debt accumulation (see Table 1).

Our account of fiscal federalism demonstrates that fiscal discipline has been obtained through several techniques: explicit or implicit no-bail-out clauses, constitutional restrictions and through discipline exercised by financial markets for government debt.

Once overall budgetary discipline prevails through a no-bailout rule, considerable revenue and expenditure independence of sub-national governments can be maintained. This independence for regional fiscal units is thus due to a system of rules that "anchor" their budget behaviour at a sustainable path.

The present system of budgetary discipline in successful fiscal federations is the result of a "learning by doing" process. In the presence of moral hazard, the federal government has to give a signal of commitment to the sub-national authorities. Otherwise, the latter will not learn. For example, the US government as early as in 1840 gave the lesson that it would not provide bail-outs to states in financial trouble. As a result, it gained credibility. Today, virtually all of the U.S. states have their own balanced budget rules and most importantly they respect them. Today, it is the federal government that displays high deficits.

Two out of the five federations were not able to learn from their negative fiscal experiences in the past. In contrast to the US example, the Argentine and Brazilian federations during the 1980s and 1990s experienced several financial crises, which occurred because they followed an undisciplined fiscal policy. More precisely, irresponsible fiscal behaviour of the sub-national authorities played a key factor in these crises. Moreover for them, the lesson has not yet been learnt. On the contrary, in each of these crises, the central government has bailed-out sub-national authorities. Indeed, there is still no credible mechanism in these federations to impose fiscal disciple.

4.2. Lessons for the euro area

The history of successful fiscal federalism suggests five major policy lessons of relevance for the euro area today.

The first lesson from history suggests that a no-bailout clause has helped to avoid pressures leading to disintegration of the monetary union. This has worked in combination with a system of close surveillance or monitoring of the fiscal policy and debt accumulation of the members of the monetary union. This surveillance has been carried out by an institutionalized system as well as by financial markets. It is important to note that without a strict and credible no-bailout clause, the financial market mechanism is likely to fail as an efficient disciplining device on fiscal policy.

As shown by history, weak fiscal institutions contribute to a deficit bias. A main problem of fiscal policy making in the euro area, undermining budgetary discipline and the workings of the Stability and Growth Pact, is found in the lack of efficient fiscal governance in a number of member countries.[18] The solution to this problem is then to improve weak domestic fiscal institutions through reforms, increasing their independence, accountability and transparency – much in the spirit behind central bank reforms in the past decades.

The second lesson from history for the euro area suggests that regional fiscal units can have considerable revenue and expenditure independence within a system of no-bailouts by the central government. This is clearly the case of the euro area where tax and spending decisions rest with the national governments of the Member States.

The third lesson indicates that the current euro area fiscal arrangement lacks the means to respond to a rare but economically disastrous event like the recent financial and debt crisis. History suggests that the creation of a union-wide bond market with a common bond may prove to be a successful way to finance increases in public expenditure to prevent the malaise experienced today in Europe. Federal borrowing has avoided the problems of liquidity and credibility faced by smaller members. Moreover servicing this debt by taxes collected directly by the federal government - as Alexander Hamilton instituted in the eighteenth century in the US - avoided problems of free riding. .

A fourth lesson from history is that, in the face of a global crisis like the Great Depression, all the five countries we studied increased the fiscal capacity of the central government and instituted a system of transfers and equalization payments. This pattern suggests that the recent global crisis, which is the most severe one since the 1930s, may contribute to an increase in the central fiscal power of the EU, paving the way for larger transfers to the member states hardest hit by the crisis. Indeed, the policy response of the EU since the start of the recent crisis strongly suggests that such a movement has started concerning inter alia the design of financial regulations, the common EU design of fiscal policies, the creation of a euro area financial rescue fund, and the use of the EU Globalization Fund.

The fifth lesson from the experience of successful fiscal unions is the importance of learning from and adapting to changing economic and political circumstances. Such a process has already started in the EU as witnessed by the reforms and changes in the institutional framework both at the EU-level and within several Member States. The future will reveal if these changes will prove to be sufficient to make the euro area a sustainable monetary union.

5. Conclusions

The euro area is the first case in the history of monetary unions where monetary policy-making is centralized under one central bank while fiscal policy-making is decentralized in the hands of the national governments of the member states. This institutional framework is new for economists and policy-makers alike. Economists are thus venturing into virgin territory, which allows them to hold widely divergent views about the proper design of the fiscal union for the euro area.

To answer the question raised initially concerning the role of a fiscal union in making the euro a sustainable currency, we have turned to a study of the experience of five fiscal federations. The record of these cases provides us with a number of conditions necessary for a fiscal union to function smoothly and successfully. The first and probably the most important condition is a credible

[18] See Jonung and Larch (2006).

commitment to a no-bailout rule. The second one is a degree of revenue and expenditure independence of the members of the fiscal union reflecting their preferences. The third condition is a well developed transfer mechanism to be used in episodes of distress. This transfer mechanism can be facilitated by the establishment of a common bond.[19] The fourth condition is a capacity to learn from past mistakes and adapt to new economic and political circumstances.

The euro area was created without an effective fiscal union. The institutions that were established to serve as a fiscal union (the Maastricht Treaty and the Stability and Growth Pact) – that is to discipline domestic fiscal policies - did not function as planned as revealed by the crises and recession from 2007-2009 and onwards. The lessons from the historical experience of the five federal states as surveyed in this paper could be helpful for the euro area to avoid disintegration. History also suggests that in periods of deep depression the center of a fiscal union gains more control over fiscal affairs. This process seems to be well underway in the euro area presently.

[19] Such a common bond guaranteed by the members of the EU is already issued by the European Investment Bank to finance infrastructure investment. A similar arrangement could be made for other purposes.

Table 1. Inflation, national debt and interest rate performance of five fiscal federations, 1980-2006.

Country	Inflation rate	Inflation variability	Debt-to- GDP ratio	Debt variability	Nominal LT rates for government bonds	Nominal interest rate variability
USA	3.9	2.6	39.0	6.6	7.6	2.8
Canada	3.8	3.0	42.2	9.9	8.4	3.1
Germany	2.4	1.7	25.7	8.9	6.4	1.8
Argentina	294.9	692.7	66.1	5.5	n.a.	n.a.
Brazil	403.1	856.3	40.4	8.0	23.4	9.6

Sources: OECD, World Bank, National databases.

Comment: Due to lack of data for the debt-to-GDP ratio, the statistics are calculated for the period 1989-2006 for Argentina and 1991-2006 for Brazil. Long term rates and their variability in Brazil are calculated for 1995-2006. These figures are not available for Argentina.

Figure 1: Share of provincial debt in Canada between 1977 and 2004

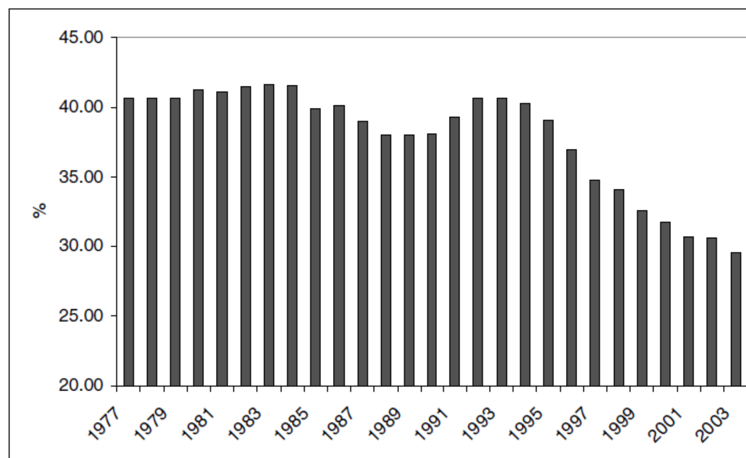

Table 2. Characteristics of federalism (averages for the 1990s).

Country	Expenditure decentralization (1)	Fiscal decentralisation (2)	Transfer dependence (3)	Tax autonomy (4)	Borrowing autonomy (5)	No bail-out rule (6)
USA	0.53	0.42	0.34	0.32	3.0	yes
Canada	0.65	0.51	0.32	0.32	2.7	yes
Germany	0.45	0.34	0.70	0.04	4.0	yes
Argentina	0.44	0.18	0.56	n.a.	4.5	no
Brazil	0.41	0.28	0.36	n.a.	n.a.	no

Sources: Government Finance Statistics (GFS) Yearbook, IMF; Taxing Powers of State and Local Governments, OECD Tax Policy Studies no. 1, OECD; Paris, Rodden (2006) and Reserve Bank of India (2006).

Comments: All indices are calculated as averages over the 1990s.
Column (1): Expenditure decentralisation: sub-national expenditures/total expenditures.
Column (2): Fiscal decentralisation: own source sub-national revenue/total revenue.
Column (3): Transfer dependence: grants plus revenue sharing/total sub-national revenue.
Column (4): Tax autonomy: sub-national tax revenue/total revenue.
Column (5): Borrowing autonomy: the index of borrowing autonomy has been constructed by the Inter-American Development Bank. It considers debt authorisation requirements and limits on the use of debt imposed by the central government. This variable ranges from 1 to 5. See Rodden (2006) for details.
Column (6): No-bailout rule: a "yes" implies that the central government is legally constrained by a bail-out rule and a "no" that a no bail-out rule does not exist.

Table 3: Composition of Argentine Debt

	1997	1998	1999	2000	2001 June	Sept.
Public Debt	101	112	122	128	132	141
External	73	81	82	81	79	87
Domestic	28	31	39	47	53	54

Source: "Quarterly Estimates of the 2000 and 2001 Balance of Payments and Foreign Assets and Liabilities", Ministry of Economy, Argentina, March 2002.

Table 4: Brazilian State Debt in Bonds – 1990 and 1996

	1990		1996	
State	As % of GDP	As % of Total	As % of GDP	As % of Total
Minas Gerais	0,5	21,7	1,3	22,4
Rio de Janeiro	0,4	17,4	0,9	15,5
São Paulo	0,9	39,1	2,1	36,2
Rio Grande do Sul	0,4	17,4	1,0	17,3
All others	0,1	4,4	0,5	8,6
Brazil	2,3	100,0	5,8	100,0

Source : Central Bank of Brazil

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