

# Institutions and Infrastructure Investments

– A Case Study of the Budget Process Reform in Sweden

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## ABSTRACT

This thesis explores the relation between budget institutions and the composition of public expenditure, more specifically quantitative budget restrictions and public investment in infrastructure. In the study existing theory is developed and additions are suggested. Thereafter a test of the theoretical implications of the additions is carried out by examining how infrastructure investment is affected by quantitative fiscal restrictions in Sweden. The study is conducted as a case-study approach investigating Sweden's governmental budget process, relying on a varied pool of empirical data. Initially, the development of investment in infrastructure, before and after the introduction of reformed budget institutions, is studied. Then the development of alternative methods of financing infrastructure investment is investigated. The findings indicate that investment in infrastructure indeed decreases as a result of quantitative budget restrictions. Most, but not all, types of examined alternative methods of financing infrastructure have increased in use. Our empirical findings also give a further indication of a causal link between the quantitative fiscal targets and the development of alternative financing. Thus, quantitative restrictions seem to not only reduce the level of public expenditure but also have effects on the composition of expenditure.

*Keywords:* Institutions, Fiscal Policy, Public Investments, Sweden, Infrastructure.

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# 1 Introduction

*“I am making the working assumption that we will rely in the next decade on very solid ground as regards financial rules and regulations[...]*”

*Jean-Claude Trichet, President of the European Central Bank (2010)*

In the past decade, the perceived importance of fiscal discipline has grown rapidly within the European Union. Over the long-term, fiscal discipline increases macro-economic stability, reduces intergenerational debt burdens, promotes favourable interest and bond rates and contributes to economic growth (Hallerberg & Wolff, 2006). Fiscal indiscipline does the opposite and limits the economic efficiency of the EMU through asymmetric shocks and divergence of national business cycles<sup>1</sup>. Despite its economic and political benefits, fiscal discipline remains elusive (Kočenda, Kutan, & Yigit, 2008). EU member budgets were in deficit even before the recent global economic crisis.

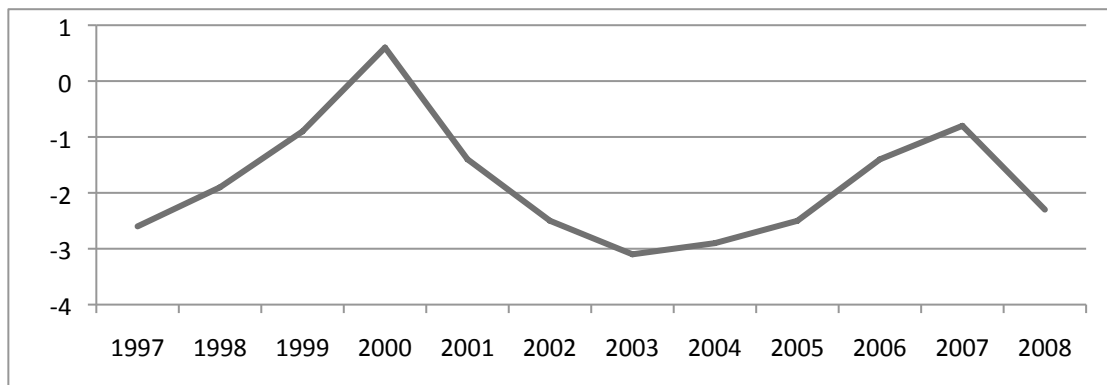


Figure 1.1 European Union (25 countries) General Government Deficit in relation to GDP, 1997-2008.

Source: Eurostat

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<sup>1</sup> Business cycle synchronization and low risk of asymmetric shocks are key aspects of Mundell's (1961) optimum currency area theory. For application to the EMU, see Darvas, Rose & Szapáry (2005).

As quoted, the European Central Bank President describes what has become seen as the primary solution to the problem of deficits and the European sovereign debt crises of 2010 – the introduction of fiscal rules and regulations, institutionally discouraging policymaker's from running public deficits. There is strong evidence that budgetary institutions increase fiscal discipline (de Haan, Moessen, & Volkerink, 1999), and fiscal rules have spread rapidly through EU, rising from 16 rules in 1990 to 67 in 2008 (European Commission, 2009).

Despite this introduction of budgetary rules throughout the EU both in the past and present, very little research has attempted to study unintended and potentially adverse effects of these rules. The few studies published on the topic suggest that besides a decrease in composite spending, there is an effect on spending composition with a bias towards entitlements and non-discretionary spending (Pitlik, 2010). If these findings are corroborated, the continuing adoption of budgetary rules might in fact be detrimental in some aspects, for example, regarding infrastructure investment, potentially leading to suboptimal growth.

This study will build upon the research on unintended consequences in a case, Sweden, which has been a very early adopter of fiscal rules. The study will construct new theoretical assumptions on the dynamics of these unintended consequences and test them empirically through investigating if alternative financing mechanisms are adopted or the fiscal rules circumvented in previously unknown ways. Before moving on to the study, in the next couple of sections, the reader will be given a background on research into why deficits occur, as well as research on how and why budgetary institutions address this problem.

## 1.1 Background

### 1.1.1 The Deficit Problem and Budget Process Reform

In the final decades of the 20th century, many OECD countries started experiencing persistent fiscal deficits and increasing accumulated public debt. Furthermore, several countries attained levels of public debt that were considered unsustainable in the long term. From a neoclassical point of view, it is not only hard to explain these levels of debt, but also why otherwise similar economies

experienced such different levels of financial strain. If the level of public debt is seen as a result of an “error term” caused by politicians, it is too large, systematic and important to ignore. (Molander, 2000)

The alternative approach for studying these phenomena is an institutional perspective – looking at how political, economic and budgetary institutions are configured and how that affects, for example, debt and deficits. Institutions are defined by Douglass North (1991) as “humanly devised constraints that structure political, economic and social interaction” consisting of both informal constraints and formal rules. The study of institutions has proven fruitful in explaining the fiscal and budgetary differences between the “otherwise similar” economies mentioned above (von Hagen & Harden, 1994).

A vast number of studies of different politico-institutional conditions have been conducted, leading up to roughly three groups of explanations of the deficit problem (Molander, 2000). The first group relies on basic economic variables, such as the conflict between private and collective interests, inter-temporal trade-off problems and incomplete information.

The second has a political focus, emphasizing for example the interplay between voters and politicians with incomplete information. The third group of explanations examines institutions surrounding fiscal policymaking and their effects on fiscal outcome (budget surplus or deficit). These explanations emphasize institutions like voting systems, party structures, lengths of tenure for governments and political majorities but also the regulatory frameworks of financial policymaking, especially rules and practices surrounding the creation of the government budget. Research of these regulatory frameworks, “budget institutions”, and particularly their unknown implications, is the starting point for this thesis, though there is some overlap with the other perspectives.

Since the beginning of the 1990s, budget institutions have gained considerable attention among both scholars and policymakers. In a seminal study, solid cross-sectional empirical evidence showed that the institutional setup of the budget process significantly affects fiscal outcome in the then twelve EC member countries (von Hagen, 1992). In the study, the budget processes were evaluated on dimensions like strictness, transparency and time horizon that were subsequently coded into an index. This model was tested against fiscal outcome and the results

showed a strong correlation between lower deficits on one hand and higher degrees of strictness and transparency (but not longer time horizons) on the other. Similar studies have confirmed the connection between budgetary procedures and fiscal outcome in other European countries (von Hagen & Harden, 1994), in the United States (Poterba, 1993) and in Latin America (Stein, Talvi, & Grisanti, 1997).

These findings combined with increased concern about public deficits among decision-makers have stimulated the introduction of budget institution reforms in line with the mentioned research (Hallerberg, Strauch, & von Hagen, 2009). By introducing institutions that encourage fiscal discipline, such as deciding on total spending before allocating resources between different spending areas and formal quantitative restrictions on expenditure and deficit, policymakers hope to solve the deficit problem.

### 1.1.2 Public investment and Budget Institutions

Even though reforming budget institutions in order to increase fiscal discipline has proved effective, relatively little attention has been given to the effects the reforms might have on other areas. Furthermore all of the studies performed on the relationship between institutional arrangements and fiscal discipline have been cross-sectional comparative studies and the causal mechanism in itself has not been given much attention. (Pitlik, 2010). Given that some of the reforms being carried through are even fixed in the constitution (with Germany as a notable example with a constitutional debt break limiting spending from 2011 onward), studying unintended consequences seems crucial.

In recent years however, the effect of budget institutions on public investment has come under some scrutiny. Mintz and Smart (2006) evaluate the effect of fiscal rules on investments and conclude that fiscal rules that discourage excessive spending and deficit finance potentially undermine the incentives for investment in public capital in relation to, for example, entitlements. Thus, they argue that the same institutions that provide politicians with incentives to exert fiscal discipline can be expected to give politicians incentives to favor current spending over investments. A recent empirical study of the relation between budgetary



institutions and public investments in Europe has shown that public investments, in relation to GDP, are negatively correlated to stricter quantitative fiscal rules (Pitlik, 2010).

Given that the main objective of budget institution reforms, including quantitative restrictions, has been to remedy the deficit problem by curbing excessive spending, it is not a far-fetched idea that there has been a negative effect on public investment. Alternative explanations however, for example that evaluation of proposed projects have become better at identifying unproductive public investments or perhaps that public investments are financed without using direct appropriations, for example co-funding or loans, can of course not be ignored. Regardless of the explanation, we find this question intriguing and an important topic for a thesis.

## 1.2 Purpose and Contribution

The aim of this thesis is to build on the research of budget institutions and their effect on public investments in order to further develop the theory in this area. We consider this valuable, especially since the introduction of the budget institutions has increased rapidly during the last decade and the absence of research on the effects beside fiscal discipline has been startling. Our ambition is to give a deeper understanding of the nature of the relationship between some budget institutions, namely quantitative restrictions, and the composition of public expenditure, in this case public investment in infrastructure.

Budget institutions are subject to ongoing political debate and we hope that our study will contribute to the development of fiscal policy frameworks. In an academic context our aim is to develop a theory on how public investment has been influenced by reformed budget institutions through an inductive approach using literature and expert interviews, and then subject that theory to initial testing. In short, we have formulated the following general research question: *How do budget institutions that facilitate fiscal discipline affect the composition of public expenditure?*

Our starting point is the empirical finding that supports the hypothesis that quantitative fiscal rules do result in a lower level of public investment (Pitlik, 2010). To better understand the dynamics of quantitative restrictions and public investment we will both examine public investment in itself but also different methods facilitating investment, and their relation to quantitative restriction. For reasons explained in the following section, we will limit our study to public investment in infrastructure. Thus, a more specific version of our research question is therefore: *How do quantitative budget restrictions affect investment in infrastructure?*

## 1.3 Limitation

### 1.3.1 General Limitations

Given the novelty of the implication that quantitative restrictions curb relative spending on public investment in relation to other spending (Pitlik, 2010) no data has been collected with the purpose of examining this relation and the same applies to the development of alternative financing of investment. Rather than conducting a cross-sectional analysis, the theoretical novelty and lack of relevant data at a national level made us choose to conduct a case study limited to one country, Sweden, for initial testing and theory building. This decision is elaborated upon in section 3.1.

We have decided to focus mainly on the time period 1985 to 2009. In some cases restrictions to even shorter periods of time have been necessary, this due to lack of data. The choice of time period is based on the fact that most countries, like Sweden, introduced their first round of reforms in the middle of 1990s (Hallerberg, Strauch, & von Hagen, 2009) and it is important to cover decisions made both before and after the reform.

### 1.3.2 Public Investment in Infrastructure

To be able to investigate our research question first we had to limit the scope of public investment and focus on one specific category. The objective of the

limitation is to increase relevance, through enabling deeper analysis of one area of investment, as well as through the possibility to focus on the public investments where evidence have been found in support of their future return in terms of growth. If a certain category of public investment has no effect on future growth, the decrease or increase of the level of investment would make no difference to the economy and thus not be covered by our argument of relevance.

In our search for a relevant category of investments we started by reviewing research on public capital's contribution to growth our finding was that this has not shown clear results when looking at cumulative public investment flows. However, when studying only physical infrastructure investments a significantly positive contribution to growth is found (Easterly, Irwin, & Servén, 2008). It is important to note however is that the growth effect tends to vary between countries and is higher in developing economies than in industrialized countries (Calderón & Servén, 2004).

Also, due to data available and to limit the scope of the study we later chose to make further limitations within the area of infrastructure and focus only on roads and railroads<sup>2</sup>. Henceforth, we will use the term “infrastructure” in the sense “roads and railways”, when not indicating otherwise. Furthermore we define public investments as investments financed by appropriations less the appropriations for repaying debt.

## 1.4 Disposition

The following section consists of a literature review of academic work relevant for the thesis, including institutional theory and its implication in fiscal policy as well as previous research that we have found on the effects of budgetary institutions on public investments. Finally we derive our additions to the existing theoretical framework and present the hypotheses we will investigate. Section 3

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<sup>2</sup> This choice was based on the finding made in the expert interviews conducted in the pre-face of the study

discusses methodological issues. The case study concept is introduced and motives for this choice are presented. Methods for collection and analysis of data are also introduced.

Section 4 gives a brief description of Sweden, its fiscal policy framework, the reform of the budget process 1997 and the events leading up to reform. Section 5 presents and analyzes the empirical findings. The structure of the empirical chapter follows the outline introduced in sections 2 and 3. A summarizing analysis is found in section 6, together with a critical discussion of the results and suggestions for future research.

## 2 Earlier Research and Theoretical framework

This section will introduce the institutional framework we use in our study, as well as earlier research in the field of budgetary institutions. First we give a brief introduction to the approach we used when developing our theoretical framework. In section 2.2, general issues of institutional theory and public finance are summarized. Section 2.3 treats the theoretical foundation to the assumption that quantitative budget constraints create a bias towards current spending, vis-à-vis investments. Finally, section 2.4 presents our theoretical additions and the framework we will use. Furthermore we present the hypotheses derived from the framework, if our theoretical additions hold, to the change on financing of infrastructure caused by quantitative fiscal targets.

The base of our theoretical additions is the theoretical framework developed and used by Pitlik (2010) with the aim of gaining support for the hypothesis that stringent fiscal frameworks are causing decreasing public investment levels. In this previous study, mentioned in the introduction of our paper, the theoretical framework was used in a cross-sectional research approach, which included twelve EC member countries. We have elaborated the framework to include our focus on other sources of financing and infrastructure. This has been done by developing the assumptions on the impact of institutions beyond the reduction of public investment levels. An illustration of our theoretical framework and research questions is found in figure 2.1.

### 2.1 Approach to Theory Development

In order to develop an initial understanding of the field of study, we began this study through a comprehensive but not systematic literature review of the effect of budgetary institutions on fiscal discipline and on development of financing of

infrastructure as well as the actors involved in the budgetary process and the procedures used. The objective was to create a base from where we could develop the theoretical framework and the implications of it in more detail in order to start to give a theoretical basis for studying our somewhat novel field.

In this initial phase we used two main methods, a literature review and expert interviews involving researchers as well as practitioners. The literature review was based on keyword searches, investigating the references in the found publications and finally the propositions that we received within the conducted interviews.

## 2.2 Fiscal Policy and Institutions

### 2.2.1 The Common Pool Problem of Public Finance

The implication of institutional theory, founded on the concept of common pool resources, is that shared resources tend to be overused but that this can be avoided by introducing institutions that encourage cooperation (Wehner, 2007). Common pool resources are in this context defined as resources that are jointly used by several individuals. In the absence of restrictions, rational utility-maximizing individuals will extract utility from the common pool resource to the extent that the sum of all individuals' extraction is unsustainable. Eventually the common pool is depleted by the overuse. To solve this "tragedy of the commons" there are two typical solutions at hand. The first one is a market solution that divides the common pool into shares of private property, limiting individuals' extraction of utility to their defined share. The other solution, a political solution, introduces a supreme ruler that limits total extraction to a sustainable level by force. As an alternative to these two external solutions, Elinor Ostrom (1990) suggests that an internal solution is possible where utility-maximizing individuals voluntarily engage in creating collective and self-regulating institutions that deter overuse.

In public finance, public revenue can be seen as a common pool resource where individual politicians, or groups or blocs of politicians, increase utility (possibility of reelection, prestige, personal gains) by public spending on "their" area of interest or responsibility. The politicians want to maximize their private

utility but at the same time keep public revenue (taxes) low. Without restrictions, if borrowing is possible, the sum of public expenses will exceed public revenues, creating a structural budget deficit. (Strauch & von Hagen, 1999). Since neither privatization nor a supreme ruler are viable solutions, only an internal solution, where politicians create collective and self-regulating institutions, remains an alternative.

### 2.2.2 Coping with the Common Pool Problem

In order to overcome the inherent problems leading to budget deficits an efficient budget procedure where the decision makers have the information needed and where the fiscal discipline is preserved is necessary (Molander, 2000).

To reach this objective research has proposed institutional arrangements that focus on how to reduce fragmentation by self-controlling regulations (Poterba, 1994). This is in line with the general theory on common pool problem – avoiding, or at least reducing the problem by introducing institutions that result in co-operation between the actors. The effect of the introduction of different institutions has been focus to several empirical studies over the last 20 years and has found strong cross-sectional support for the effects. One example is a study supporting that a centralization of the decision process increase fiscal discipline (Hallerberg & von Hagen, 1997).

Theoretically the institutions can be divided into two types; the first type is quantitative budget restrictions. The aim of these institutions is to increase incentive to achieve fiscal discipline by introducing a punishment, fines or political cost if the quantitative restrictions are not met (Pitlik, 2010). If the cost of violating targets or rules offset the benefits gained by each actor from achieving their own goal, fiscal discipline could be enforced. In other words the cost today of not focusing on what is the most beneficial for the economy as a whole increases.

The second type of institutions are procedural arrangements, the logic is that since common pool problems occur due to fragmentation in cabinet or in parliament the problems can be reduced by centralizing the decision-making process. This could be done by improving the agenda setting possibility of actors

with a comprehensive view of the budget like the minister of finance (giving the finance minister veto power over the budget: Germany) or enforce the structures for coalition parties to agree and follow on fiscal contracts (Pitlik, 2010).

Summing up, from institutional theory we can derive that there is a bias towards general overspending in the public sector. Introducing a tighter fiscal framework including quantitative targets and procedural arrangements can offset these negative incentives.

## 2.3 Public Investment and Quantitative Restrictions

Next we turn to public investments and the theoretical explanation to why there might be an inherent bias towards cutting investments rather than current spending when decision makers face a fiscal constraint. Our definition of public investment in contrast to public consumption, where the benefits occur as the expenditures are carried out, is that economic benefit is generated in the future. Thus, the project invested in is going to generate future growth in one way or another, depending on the nature of the project. In this section we will illustrate theoretically how this difference between public consumption and public investment is influenced by the incentives faced by decision makers when they decide on their levels. (Easterly, Irwin, & Servén, 2008)

To understand why current expenditures should be preferred over investments we start by investigating the general assumption that public decision makers tend to have a relatively high discount rate. The reason for the high discount rate is connected to the inherent shortsightedness of elected officials, having to manage the uncertainty of next election. The desire for re-election, rather than the electorate's informed preferences, forms the basis for politicians' discount rates. Due to cash-based budgeting the costs of new public expenditure are always immediate, while the timing of the benefits generated by investments varies. The political cost of cutting investments is therefore lower than cutting current spending since the effects on cutting the latter, for example public sector wages or pensions, occur immediately (Darby, Li, & Muscatelli, 2004).



Another reason to the bias towards cutting investment when facing constraints is the fact that there are normally no entitlements<sup>3</sup> connected to public investments, which gives decision makers more discretion in choosing levels of public investment over entitlements (Mintz & Smart, 2006).

To conclude, this section has formulated the theory of how capital expenditure from the perspective of decision makers, differs from current expenditure. This difference leads to a bias towards decreasing public investments in the event of a shrinking room for fiscal maneuver (Easterly, Irwin, & Servén, 2008).

## 2.4 Theoretical Framework

In the previous sections we introduced theoretical starting-points. We assume that a tightened fiscal framework results in increased fiscal discipline and that there is a bias towards cutting public investment spending. We base this assumptions on the empirical evidence presented within several studies, some of which we have introduced.

Below we begin with our elaborations on this existing theory through introducing alternative financing mechanisms and formulate hypothesis on what implications we can derive from these additions regarding the effects of a quantitative fiscal framework on public investments. Furthermore we apply these implications on infrastructure expenditure and finally add the use of alternative financing to the framework. The framework introduced is illustrated in figure 2.1 and is the base of the analysis as well as the methodologist approach we have chosen to perform the study.

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<sup>3</sup> Entitlements are forms of public expenditure that because of rules are not negotiable in the short term, for example pensions, social and unemployment benefits.

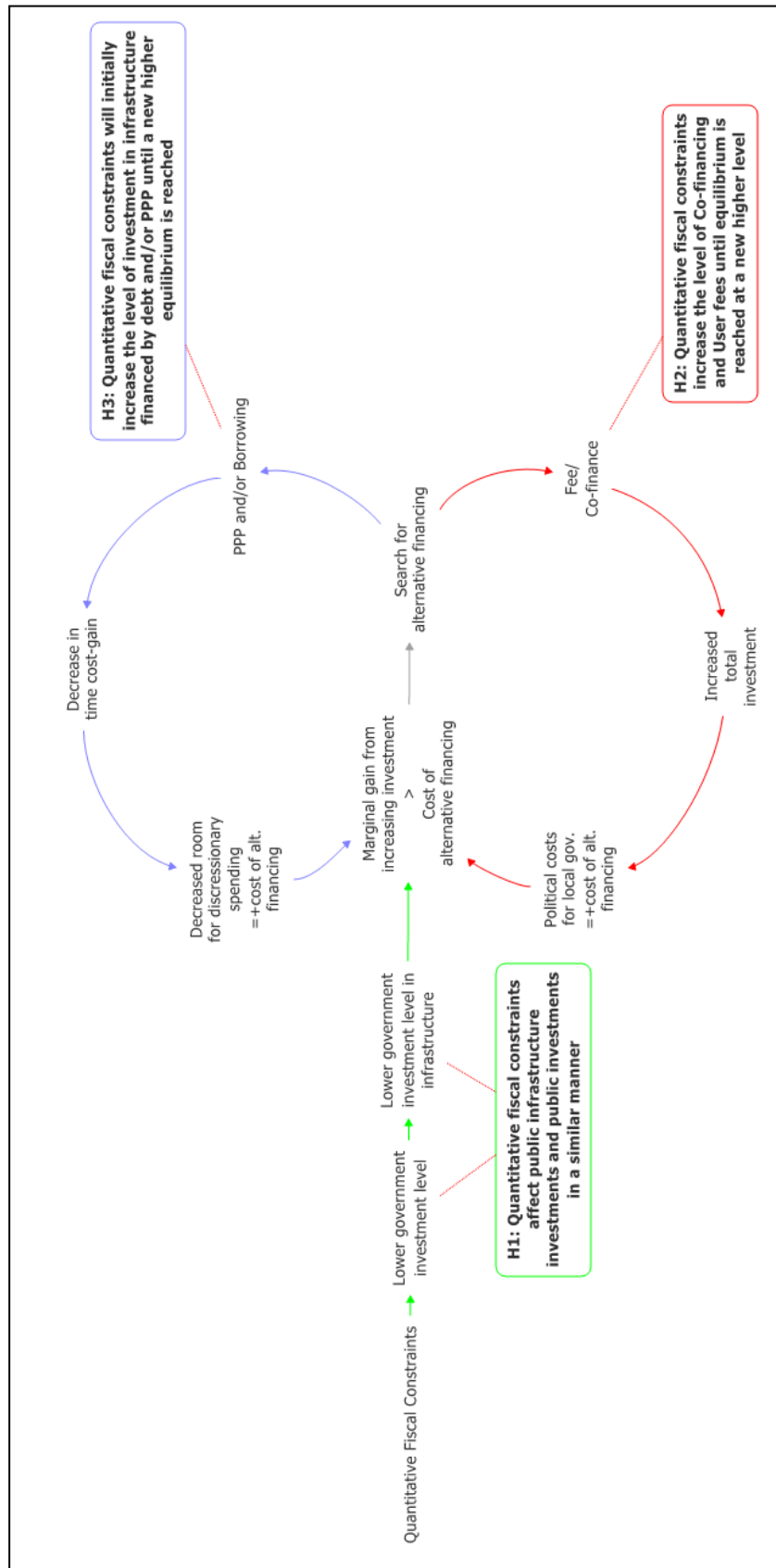


Figure 2.1

### 2.4.1 Public Investment in Infrastructure

This section discusses the degree to which research on budget institutions and public investment in general can be applied to investment in infrastructure.

First of all we have to ask: how does investment in infrastructure differ from other categories of infrastructure? The most obvious characteristic is volume; infrastructure investments are often even larger and more costly than any other kind of public investment. Infrastructure also has a significantly longer time horizon than for example machines and computer software, a characteristic it shares with some other investments, like buildings.

Returning to the theory laid out in section 2.3, its characteristics make infrastructure investments are either avoided or at least not preferred over other types of investment. This gives reason to assume that investment in infrastructure indeed is a suitable proxy for drawing conclusions on public investment in general. Thus, we introduce the following hypothesis:

**H1: Quantitative fiscal constraints affect public infrastructure investments and public investments in a similar manner.**

To corroborate this assumption, we will investigate how public investment in infrastructure has developed and how the development relates to the general development in infrastructure. This type of investigation into infrastructure has not previously been published<sup>4</sup>. This will also set the limit for the extent to which the results of this thesis can be generalized. Should infrastructure investment turn out to behave in a radically different manner than other public investment, we will have to restrict our conclusions to infrastructure investment. Nonetheless since infrastructure investment makes up a large share of total public investment, more than a third of all public investment in Sweden (Statistics Sweden). Even if

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<sup>4</sup> We state this with reservations to publications we have not come across while carrying out this study

infrastructure investment would differ radically from public investment in general, by its sheer size it will be of interest.

#### 2.4.2 Alternatives to Appropriation

When the quantitative fiscal constraints were introduced, the result according to theory is a change of incentives for the actors involved in fiscal policymaking. First the cost of appropriations, or the cost of not cutting appropriations, increases. This increase is a result of either the need to reduce another category of expenditure or that the fiscal targets are not met, incurring some sort of punishment. The former, an alternative cost and the second a political cost involved with not reaching the target or sometimes a fine.

Alternative ways of financing investments also have political costs but since these have not been the objective of reform, their political cost should now be lower in relation to the cost of using appropriations – increasing incentives for their use. Therefore we have reason to believe that the investments that have (according to our hypothesis) decreased are now in part or fully financed with other sources of funding than by appropriation made by parliament within the frame of the state budget. Through our expert interviews and literature review (detailed in the methodology section), we have identified four different possible alternatives. The alternatives are Public Private Partnerships (PPP), Deficit financing, funding with user fees and co-financing.

If the political cost of executing an investment financed by appropriations exceeds its gains after the introduction of quantitative budget restrictions, the same investment might be lucrative enough so that the political cost of alternative financing is still not too high, and politicians would thus be able to be financed through alternative measures that are not affected by quantitative restrictions.

In the second part of our study we aim to investigate how the sources of financing have been used during the period and their relation to the quantitative fiscal targets. This will give us an indication of whether there might have been a shift in responsibility between actors and if the institutions have led to a new equilibrium for the levels of different sources of financing.

We divide the above-presented alternatives to finance investments into two categories. The first category does not result in any future cost for the central government affected by the quantitative targets, instead some more or less external actor contributes to the investment lessening the burden on the public budget. This results in a shift in responsibility between actors and should occur in a situation where the central government has no incentive to carry out the investment after the introduction of the fiscal targets or if the incentive for another actor is higher and this fact is known by the central government. For example if local government is very dependent on an infrastructure project, it might support it financially to allow central government to keep within the quantitative fiscal targets. Such a pattern would be interesting for two primary reasons: firstly, it would mean that aggregate investment might not have decreased, neutralizing a potential problem, second, in the Swedish context, such a shift from state spending (revenue collected with high marginal tax rate) to local government spending (flat tax rate) would mean a de-facto shift in distributional policy that policymakers should be aware of.

The second category is alternatives that move the cost of an investment into the future, thus a temporary shift where the responsibility is moved in time. This should occur in a situation where central government still has an incentive to carry out the investment, when the gains from investment is high but the cost needs to be discounted before the investment becomes profitable.

#### *Co-financing and User Fees*

When using external contributions, others than the central government provide additional funding of the investment co-financing and user fee. This can be done through user-fees for taking benefit of an infrastructure investment, for example a bridge or a railroad, or by finding external contributors when the investment is executed. User-fees do not actually facilitate an investment at the decision point in time, but increases the future income for the government, easing the quantitative constraints somewhat. External contributions, on the other hand, reduce the investment cost for the central government at the decision point in time and make more or larger investments possible despite quantitative budget restrictions.

But who is inclined to contribute to infrastructure? Since there is generally no monetary gain of infrastructural investments, private investors are unlikely. This leaves local governments. If a local government could expect gains from a specific infrastructure investment in forms of growth, increased employment or some other effect that increases local tax revenue, there is an incentive to contribute. In a similar logic, those who can afford to pay and find it worthwhile pay user fees. Thus, these sources are combined with a cost for the contributing actor who will provide financing only up to the point where their cost equals their benefit of the investment.

The situation for the central government is an increase in cost following the introduction of the fiscal targets. Turning to theory this would predict an initial increase of co-financing and user-fees before reaching equilibrium where the cost equals the benefit for the contributors. The most important result however is that the real resources to carry out infrastructure investments increases. Based on above theoretical discussion we formulate the following hypothesis:

**H2: Quantitative fiscal constraints increase the level of Co-financing and User fees until equilibrium is reached at a new higher level.**

#### *Deficit Financing and Public Private Partnerships*

Next we will present the temporal arrangements. There are typically two ways of moving costs for public investment into the future – deficit finance and Public Private Partnership (PPP). At the decision point in time these alternatives have no effect in terms of cash flows and thus the investment initially circumvents quantitative restrictions. Future repayments of debt are however appropriations and therefore the subject to the quantitative restrictions. In a PPP the investments are financed and carried out by a private entrepreneur who is reimbursed by the government after a period of time agreed upon. Also in this case there is no effect on the budget at the decision point in time and the quantitative targets do not affect investment decisions until the repayments take place.

For these temporal arrangements our theory, as in the case of additional contribution, implicates that the introduction of quantitative fiscal targets should increase the incentive to finance investments by borrowing or by Public Private

Partnerships. The reason is in this case is that the future cost is discounted by politicians and as previously mention they are assumed to have a high discount rate. But the increase will probably only be temporary. If investments are continuously financed by deficit or PPP, interest and repayment will sooner or later take up all the space that initially was available for funding investments with appropriations. Thus the cost of using these arrangements is the decrease in discretionary space, and this cost increases as the space decreases. This is described in figure 2.2

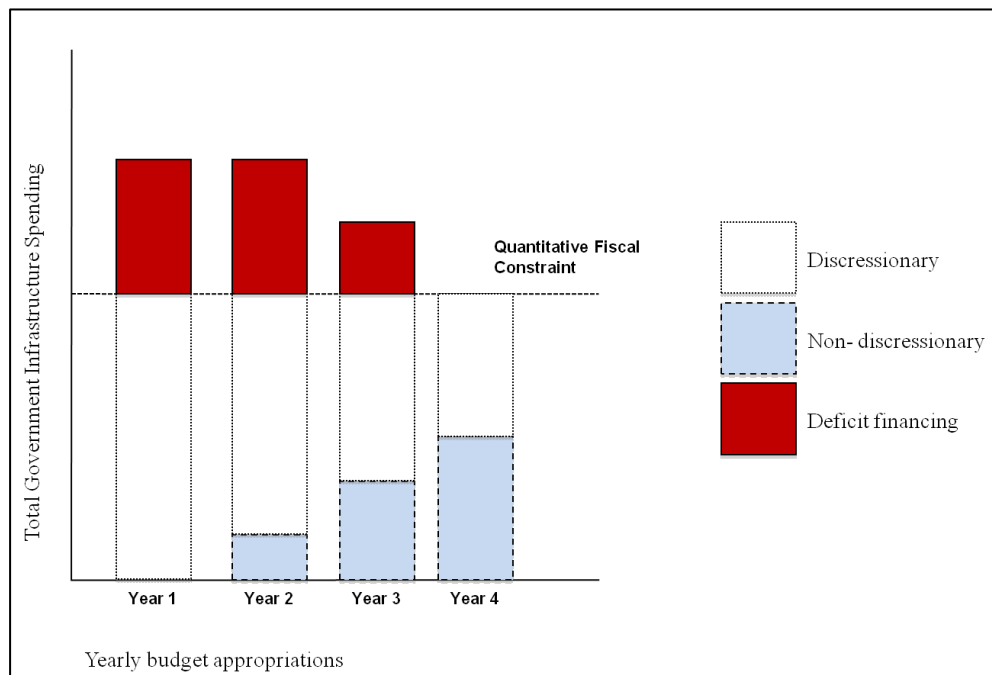


Figure 2.2

In more formal terms, a new equilibrium should occur when the cost of decreasing the discretionary space is higher than the benefit of increased investing. For each new investment, the political benefit of more investment decreases until it equals the cost of breaking the quantitative budget restrictions. Based on this, we have formulated the following hypothesis:

**H3: Quantitative fiscal constraints will initially increase the level of investment in infrastructure financed by debt and/or Public Private Partnership until a new higher equilibrium is reached.**

## 3 Methodology and Data

In this chapter we describe the method we have chosen to perform the study and discuss this choices made and its advantages and disadvantages. Further we will operationalize our hypothesis from previous section and present which data we have chosen to collect in order to find support or falsify the hypotheses, and thus lend credibility or falsify our general theoretical model.

### 3.1 Choosing a Case Study

#### 3.1.1 About Case Studies

To study the effects on public investments from reengineering the budgetary process towards a more stringent and centralized budgetary process, we will perform a case study of Sweden.

There are three main reasons for choosing the case-study approach. First, the focus on our study is to describe a phenomenon, develop a theory and perform initial tests that might validate further study. More specifically, we study how the introduced budgetary reforms affect the financing of investments in infrastructure. This descriptive and theory building focus is in favor for the case-study approach(Gerring, 2004).

Secondly our belief is that by performing a case study we will be able to use more fine-grained data than is usually the case in quantitative cross-national studies (Lieberman, 2005). One example of this is that we are able to look into the combined development of alternative financing of investments in Sweden and can use different proxies depending on what gives the best description of the development.

Finally, there is a very important practical reason for the case study choice as we will discuss further below – the field suffers from a severe lack of data in general and comparable data in particular, since governments rarely gather



statistics on alternative financing. When this is done there is standardized accounting framework for classifying it, making a cross-sectional statistical approach complicated.

In addition, a case study built on a novel theory that gains initial verification and support in a crucial case study would be a strong argument for further cross sectional studies of the type and new government data collection practices. Therefore we believe that the case study approach is well motivated in terms of relevance. A major disadvantage with using case studies is that “the relevance of case studies is inherently clouded by individual factors that may mean that they are not universally explanatory or valid.” (Wehner, 2007). When using the case study method there is always a risk that there are other variables driving relationships other than the one the study suggests. We are aware of this and in order to minimize it we have used two main strategies. First, we consequently try to use methodological triangulation and verification, having at least two types of data relating to each phenomenon, secondary data and verification through key informant interviews to minimize the risk of missing important variables. The second strategy is the careful case selection in itself, which is the topic of the next section.

### 3.1.2 Crucial case

There are different ways to select which case to study. For example it is possible to choose a typical example within the population of cases; another method is to choose a case that is an outlier in the population regarding the cross-case relationship. A third method is to find a crucial case, meaning that it is the most likely case to fulfill a theoretical prediction (Gerring, 2008).

This could be said about Sweden, first of all since Sweden has introduced the budgetary reforms to a much wider extent than other western European countries (Hallerberg, 2004). The reforms of the budget process have also been very effective to achieve the goal of fiscal discipline (Molander, 2000). Because of this, Sweden stands out and has been referred to as a natural experiment (Wehner, 2007) making it a highly suitable case for a case study attempting to validate novel theoretical expansion.

We believe that choosing a crucial case like Sweden will give us the possibility to achieve the aim of our study, to understand the side effects, in the areas of investments in infrastructure, of achieving fiscal discipline through introducing quantitative restrictions. We realize that external validity in relation to other countries will necessarily be lower than optimal, but believe that our study could form the basis of a frame for further cross sectional verification to minimize the risk of spuriousness.

## 3.2 Operationalization of Hypotheses

In the theory section we have presented our additions to the theory. We also derived three hypotheses that would necessarily be true if our theory holds. In order to investigate whether the developments in Sweden support the hypotheses or falsify it we operationalize the hypotheses as follows:

**H1: Quantitative fiscal constraints affect public infrastructure investments and public investments in a similar manner.**

- Have public expenditure on infrastructure decreased in the same manner as general public investments after the introduction of quantitative fiscal constraints?
- Do key informants in central institutions connect the development of infrastructure investments to quantitative fiscal constraints?

**H2: Quantitative fiscal constraints increase the level of Co-financing and User fees until equilibrium is reached at a new higher level.**

- Has the level of co-financing increased after the introduction of quantitative fiscal targets?
- Have there been regulatory changes facilitating the use of Co-financing and/or User fees after the introduction of quantitative fiscal constraints?

- Do key informants in central institutions connect change (potential) in Co-financing to quantitative fiscal constraints?
- Have the number of User fee funded arrangements increased after the introduction of quantitative fiscal targets?
- Do key informants in central institutions connect change (potential) in User fee funding to quantitative fiscal constraints?

**H3: Quantitative fiscal constraints will initially increase the level of investment in infrastructure financed by debt and/or Public Private Partnership until a new higher equilibrium is reached.**

- Have the number of deficit financing arrangements increased after the introduction of quantitative fiscal constraints?
- Have there been regulatory changes facilitating the use of Deficit Financing and PPP arrangements after the introduction of quantitative fiscal constraints?
- Do key informants in central institutions connect the (potential) increase in deficit financing to quantitative fiscal constraints?
- Have the number of PPP arrangements increased after the introduction of quantitative fiscal constraints?
- Do key informants in central institutions connect the (potential) increase in Public Private Partnership to quantitative fiscal constraints?

The findings related to these questions will hopefully reject or support the theoretical additions that we propose. And as previously mentioned, given that Sweden is a crucial case in this sense, initial support for our theory in the Swedish case would indicate that a cross-sectional study of this phenomenon would be desirable.

### 3.3 Collection and management of data

This section introduces our data sources, how they are managed, and reasons for choosing specific data and why we think they are relevant for the thesis. The thesis does not rely on one single type of data, partially by choice and partially by necessity. Even though we have formulated hypotheses our fundamental purpose is not to confirm or reject a certain model, but to deepen the understanding between budget institutions and public investments in order to see if further investigation would be fruitful.

Part of the reason why this phenomenon might not have been studied very intensely is the limited availability of data and the large difficulties presented in measuring the suggested questions. Examples of these difficulties include:

- No national data on the use of user-fees has been compiled, making the observation of these tricky at best,
- No data on deficit financing of infrastructure has been centrally compiled within a single agency
- No internationally comparable data on any of our variables exists, making large n studies extremely costly.

In order to attack this issue in a credible way, and give reasonable support for the theoretical expansion made within the first stage of our research, a methodologically diverse approach had to be used, including secondary data analysis of available data, primary data collection from government documents and decisions, key informant interviews etc. These research methods will be outlined in detail below and in the following section their relationship to the operationalized questions will be explained.

#### 3.3.1 Secondary data

Our secondary data consist of data-series of total public investment in Sweden supplied by Statistics Sweden. To ensure the validity of the data used and in order

to further the development of common frames of reference within academia, we use the same measure as Pitlik (2010) uses for total investments, i.e. general government gross fixed capital formation in relation to nominal GDP.

It is important to note that Pitlik analyzes total investment, not infrastructure, as this study attempts. For the period between 1993 and 2008, data are broken on central and local government level and also classified according to COFOG (Classification of the forms of government), an international standard that most countries' statistical institutions adhere to.

The available data describe gross investment, and therefore do not tell if the investment expenditure is repayment of debt or if they are direct appropriations. Also the data is not on roads and railroads only, however these are the major share. To our knowledge, there are no similar data available that cover the development of deficit financing and infrastructure financed by user-fees.

### 3.3.2 Primary data analysis

By primary data, we mean data that is collected solely for the purpose of this thesis. The primary data on deficit financing and user-fee financing was collected from parliamentary decisions from the period 1985 to 2010, through review of every budget proposition and major infrastructural decision during the period and by coding these into a time series dataset illustrating the number, nature and amount of user-fee or deficit financing. A comprehensive list of the sources used for the compilation is found in appendix.

### 3.3.3 Regulatory changes

One caveat of the theory is that if it impossible to use alternative financing for regulatory reasons, there would be an increasing pressure for regulatory change. In order to identify such changes and gather data on them during the period we conducted a literature review and combined the findings in this with information gained in expert interviews. The motives given for regulatory changes were compiled and investigated in connection with other sources, especially interviews.

Regulatory changes are not used alone to draw any general conclusions, but to confirm, or perhaps reject, conclusions drawn from other data.

### 3.3.4 Interviews

Key informant interviews were conducted in order to ensure the validity of the results in this study<sup>5</sup>. The key informants represent different stakeholders in the budgetary process and come from parliament, local and central government as well as key experts on the area. When conducting the interviews we used a semi-structured approach based on our theoretical implications. The interviews were carried out in person, recorded and transcribed.

We realize that care has to be taken as the informants are embedded and potentially biased actors. Therefore we have used a triangulation approach, using key informants in different institutions with, as far as we have been able to determine, opposite interest in relation to the process. If informants with vastly different perspectives make similar statements, this would address the issue of potential bias and might give ground for drawing more general conclusions.

In order to analyze the interview transcriptions, they were coded using the qualitative analysis data package NVivo. The use of NVivo allowed for extensive coding of the material according to our theoretical frame, as well as rigorous comparisons on each statement for the sake of triangulation.

## 3.4 Empirical and Analytical Method

Every type of data is not employed in addressing each hypothesis. Before moving on to empirical findings, we will review how data is used with each hypothesis and the implications it will have for the analysis. Finally, a graphical presentation of the method is presented.

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<sup>5</sup> Key informant interview: interviews with individuals with deep knowledge in the field

### 3.4.1 Public Investment in Infrastructure

The first step will be a secondary data analysis of a time series that describes infrastructure investments in Sweden between 1993 and 2008. This will give an indication of how expenditure on infrastructure investment has developed before and after the budget institution reforms.

Correlation, if observed, is of course not equal to causality and the secondary data analysis needs some kind of complement to further increase the robustness of results. We do this by identifying key informants with insight in budgetary processes in relation to infrastructure investments and conducting semi-structured interviews with them to see if they have identified any causal linkage.

### 3.4.2 Co-financing and User Fees

To our knowledge, no previous study on co-financing of national infrastructure in Sweden has been conducted. However, several research projects have recently been launched into the area, indicating the increasing importance of this solution. None of these seem to have made any connection between the introductions of quantitative fiscal constraints and co-financing arrangements.

We approach co-financing through a secondary data analysis, examining a previously unpublished dataset that describes the distribution of infrastructure expenditure between central and local government. This will give an indication of the development of local government's co-financing of infrastructure.

Furthermore, regulatory changes will be evaluated, in order to see if there have been enabling regulatory changes following the introduction of quantitative fiscal targets.

Finally, in order to attempt to establish causal mechanisms – key informant interviews attempt to either find support or falsification for the causality between the two. Establishing a causal link between the introduction of quantitative fiscal constraints and an increase in co-financing arrangements in a single case is complicated. There would be a temporal comparative element in the before/after comparison, however that would leave much room for error. Therefore, we rely on the key informants, in order to see if there is any linkage between decreasing

investment and quantitative fiscal constraints and the search for alternative financing.

For user-fees, no national dataset exists, meaning that we have had to gather primary data for these types of financing. This was done through a document review of government decisions with a previous report listing some of the projects as a starting point (Parliamentary Auditors, 2000). The projects were coded indicating the number of decisions per year as well as the rationale for the decisions given, in order to see if there is a direct linkage made within the decisions to the fact that a contraction in infrastructure investments has been made potentially lucrative projects unfinanced. Establishing an increase in these types of decisions would add support to the theory within Sweden and give an increased understanding of the phenomenon as well as a new dataset that could be used for further research.

In order to increase the internal validity and reliability of conclusions drawn from the available data, verification questions were asked during key informant interviews.

### 3.4.3 Deficit Finance and Public Private Partnership

There is no secondary data available for deficit financing of infrastructure projects of the type we are studying, necessitating primary data gathering within this field. Our starting point in this was a report where many of the projects carried out during the period were listed (Parliamentary Auditors, 2000).

Since there are legal constrictions on deficit financing, all decisions have to be made by parliament. Thus, the primary data is collected through reviewing parliament decisions relating to the areas between 1985 and 2010. This dataset is used to assess whether there has been an increase in deficit financing following the introduction of quantitative fiscal constraints.

In order to observe the potential causal link, key informants were solicited in order to see if a connection was made between the development of deficit financing and the introduction of quantitative fiscal constraints.

PPP has a marked difference in relation to the other types of alternative financing in that it has aroused much attention but only one project has been carried



out on the national level. Due to the wide availability of previously compiled information on this, a literature review was deemed sufficient to answer our research questions in this field.

To ascertain the reasons for the developments within the PPP area and potentially expand our theory, we asked key informants on the developments and thinking surrounding PPPs in Sweden.

|                                                        | Secondary data analysis                                                                                                                                         | Assembly and analysis of primary data                                                                                  | Literature review                                                                                        | Review of regulatory and legal changes                                                                                                  | Semi-structured key informant interviews                                                                                            |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Infrastructure                                         | Have public expenditure on infrastructure decreased in the same manner as general public investments after the introduction of quantitative fiscal constraints? |                                                                                                                        |                                                                                                          |                                                                                                                                         | Do key informants in central institutions connect the development of infrastructure investments to quantitative fiscal constraints? |
| Co-Financing and User fees                             | Has the level of co-financing increased after the introduction of quantitative fiscal constraints?                                                              |                                                                                                                        |                                                                                                          | Have there been regulatory changes facilitating the use of Co-financing after the introduction of quantitative fiscal constraints?      | Do key informants in central institutions connect change (potential) in Co-financing to quantitative fiscal constraints?            |
|                                                        |                                                                                                                                                                 | Have the number of User fee funded arrangements increased after the introduction of quantitative fiscal constraints?   |                                                                                                          | Have there been regulatory changes facilitating the use of User fee funding after the introduction of quantitative fiscal constraints?  | Do key informants in central institutions connect change (potential) in User fee funding to quantitative fiscal constraints?        |
| Co-Financing and User fees                             |                                                                                                                                                                 | Have the number of deficit financing arrangements increased after the introduction of quantitative fiscal constraints? |                                                                                                          | Have there been regulatory changes facilitating the use of Deficit financing after the introduction of quantitative fiscal constraints? | Do key informants in central institutions connect the (potential) increase in Deficit financing to quantitative fiscal constraints? |
| Deficit Financing and Public Private Partnership (PPP) |                                                                                                                                                                 |                                                                                                                        | Have the number of PPP arrangements increased after the introduction of quantitative fiscal constraints? | Have there been regulatory changes facilitating the use of PPP arrangements after the introduction of quantitative fiscal constraints?  | Do key informants in central institutions connect the (potential) increase in PPP arrangements to quantitative fiscal constraints?  |
| Deficit Financing and Public Private Partnership (PPP) | Quantitative fiscal constraints will initially increase the level of investment in infrastructure financed by debt until a new higher equilibrium is reached.   |                                                                                                                        |                                                                                                          |                                                                                                                                         |                                                                                                                                     |
| Deficit Financing and Public Private Partnership (PPP) | Quantitative fiscal constraints will initially increase the level of investment in infrastructure financed via PPP until a new higher equilibrium is reached.   |                                                                                                                        |                                                                                                          |                                                                                                                                         |                                                                                                                                     |

## 4 Introduction of the case

### 4.1 Budget institution reform in Sweden

Sweden was one of the earliest adopters of rigorous fiscal governance institutions after a period of rapid debt growth starting at the end of the 1970s and accelerating with the crises in the beginning of the 1990s.

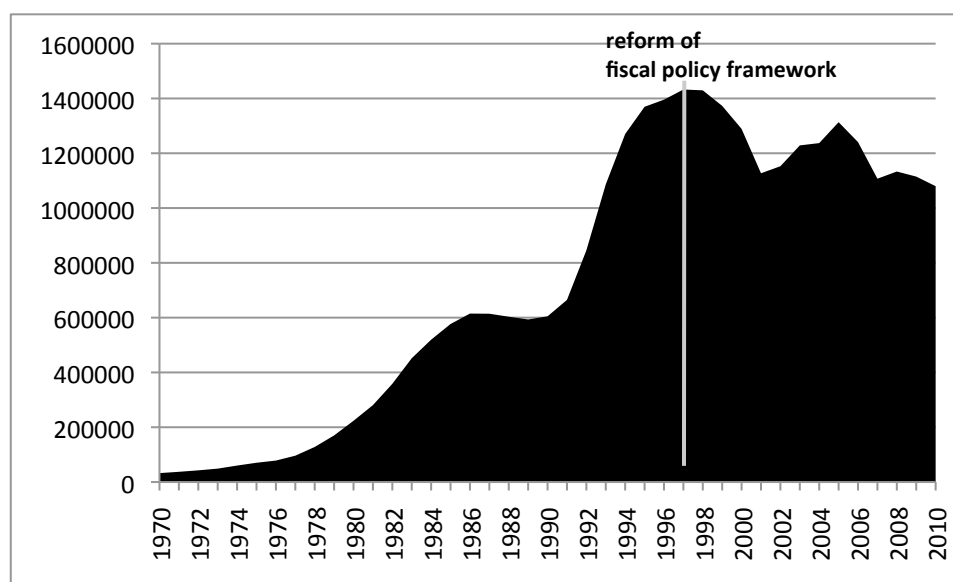


Figure 4.1: Sweden's total public debt 1970-2009. Source: Statistics Sweden

The reform of Sweden's fiscal policy framework consisted of a number of changes of rules and procedures and was introduced in 1997. Six of the most important changes are summarized by Boije et al. (2010). The first component is a surplus target that states that the surplus net lending shall be 1 per cent of GDP over a business cycle. The target concerns the public sector as a whole, i.e. also local government and the pensions systems are included when calculating surplus net lending. This means that the central government must consider the financial consequences for the whole public sector when deciding on economic policy.

The second component is a three-year expenditure ceiling for the central government and pensions system. In the budget proposition for year  $t+1$  (submitted to the parliament in year  $t$ ) the government also proposes an expenditure ceiling for year  $t+3$ . The proposition of an expenditure ceiling was voluntary until 2010 when it became mandatory for the government.

The third component is a balanced budget requirement on local government (municipalities and county councils). In reality, the requirement is only a ban on deficit budgets, since over-balancing is allowed.

The fourth component consists of procedural changes in how the central government budget is decided. The budget must adhere to the expenditure ceiling that was decided three years in advance. A preliminary version of the budget is decided upon first, specifying total spending in each of the 27 spending areas. Only after this stage, the budget is decided upon in detail and every amendment that suggests an increased appropriation has to be financed by a corresponding reduction within the relevant spending area. This contrasts to the earlier procedure, where amendments suggesting increased appropriations did not have to specify at all how the increase was to be funded. Furthermore, the budget process is more transparent. Reporting net flows is generally not allowed and each item's effect of public borrowing, if any, must be specified.

The fourth and fifth components are external monitoring and the legal status of the framework. Several government authorities monitor and evaluate the budget and economic policy publicly. Before the introduction of the State Budget Act, the budget process was virtually unregulated and relied on tradition, rather than formal rules.

## 4.2 Budget process

The central government in Sweden presents draft budget bills to the parliament two times a year. Deciding on taxing and spending is a prerogative of the parliament and constitutional practice stipulates that a government that cannot gain support for its budget must resign.

The two budget bills, “spring” and “fall”, have somewhat different content and character. The spring budget contains broader guidelines and economic forecasts for the following year. It also includes a proposed expenditure ceiling for public spending.

The fall budget is a comprehensive list of suggested taxation and spending for the following year. Spending decisions by the parliament, appropriations, authorizes the government and the government agencies to spend a certain amount of money for a defined purpose. The government handling of appropriations is audited and reported back to the parliament for review.

Borrowing is also a prerogative of the parliament. All borrowing on the market is done by a central government authority, the National Debt Office, which in turn provides internal loans to government agencies with the consent of parliament.

## 5 Empirical Findings and Analysis

As described in the methodology section, we use several kinds of empirical materials to answer our research questions. This chapter is structured according to hypotheses from our theory and the sections are divided according to the sequence of operationalized questions formulated for each hypothesis, shown in the matrix presented in the methodology section. Each empirical section starts with the operationalized question and a presentation of the empirical findings. This is followed by an analysis of the result in relation to our theoretical framework and a discussion on the implications of the findings.

### 5.1 H1: Infrastructure investment

As described earlier research give empirical support for the hypothesis that quantitative restrictions do cause decreasing public investments(Pitlik, 2010). The objective of this section is to analyze the relation between public investment in general and investment in infrastructure.

The first step is to examine the relation between public investment in general and investment in infrastructure. The measure for public investment used in the study by Pitlik (2010), general government fixed capital formation, is broken down into different categories of investment in order to evaluate the behavior of infrastructure investment during our period of interest. The second step an analysis of findings in key informant interviews for verification purposes.

The final section concludes with an analysis of the empirical findings, using the theoretical and methodological framework previously laid out.

### 5.1.1 Empirical findings

#### ***Secondary data***

*Have public expenditure on infrastructure decreased in the same manner as general public investments after the introduction of quantitative fiscal constraints?*

Table 6.1 shows Sweden's general government investment in relation to nominal GDP broken down on COFOG categories. In order to smoothen expenditure variations and mitigate the impact of extraordinary events, observations are reported in four-year averages. Table 6.2 presents data on how the COFOG categories of investments have developed in relation to each other.

|                                     | 1993-96 | 1997-2000 | 2001-04 | 2005-08 |
|-------------------------------------|---------|-----------|---------|---------|
| 01 General public services          | 0.58    | 0.54      | 0.60    | 0.63    |
| 02 Defence                          | 0.05    | 0.06      | 0.07    | 0.06    |
| 03 Public order and safety          | 0.11    | 0.11      | 0.11    | 0.12    |
| 04 Economic affairs                 | 1.31    | 0.93      | 1.00    | 1.15    |
| 05 Environmental protection         | 0.00    | 0.00      | 0.00    | 0.00    |
| 06 Housing and community amenities  | 0.13    | 0.04      | 0.04    | 0.05    |
| 07 Health                           | 0.31    | 0.32      | 0.29    | 0.29    |
| 08 Recreation, culture and religion | 0.16    | 0.12      | 0.09    | 0.12    |
| 09 Education                        | 0.53    | 0.46      | 0.41    | 0.33    |
| 10 Social protection                | 0.24    | 0.13      | 0.12    | 0.09    |
| Total                               | 3.42    | 2.72      | 2.73    | 2.85    |

Table 6.1 General government investment in relation to GDP (percent) in Sweden, 1993-2008, divided according to COFOG. Source: Statistics Sweden

Between the first and the last period, general government investment has declined on average from 3.42 to 2.85 percent of GDP, even though a small recovery of the investment level can be noted from 2001-04. Investments in COFOG category 04 "Economic affairs", interpreted as investments in

infrastructure<sup>6</sup>, have declined from 1.31 to 1.15 percent of GDP. The correlation between total investment and economic affairs over GDP is at 0.92, confirming that there is in fact a high correlation between the two.

|                                     | 1993-96 | 1997-20 | 2001-04 | 2005-08 |
|-------------------------------------|---------|---------|---------|---------|
| 01 General public services          | 17.0    | 20.0    | 21.9    | 22.2    |
| 02 Defence                          | 1.4     | 2.2     | 2.7     | 2.2     |
| 03 Public order and safety          | 3.1     | 4.1     | 4.0     | 4.1     |
| 04 Economic affairs                 | 38.3    | 34.2    | 36.7    | 40.4    |
| 05 Environmental protection         | 0.0     | 0.1     | 0.0     | 0.0     |
| 06 Housing and community amenities  | 3.8     | 1.5     | 1.6     | 1.9     |
| 07 Health                           | 9.1     | 11.7    | 10.5    | 10.0    |
| 08 Recreation, culture and religion | 4.7     | 4.4     | 3.4     | 4.2     |
| 09 Education                        | 15.5    | 16.8    | 14.9    | 11.7    |
| 10 Social protection                | 7.1     | 4.9     | 4.3     | 3.3     |
| Total                               | 100.00  | 100.00  | 100.00  | 100.00  |

Table 6.2 COFOG-divided shares of general government investment (percent) in Sweden, 1993-2008. Source: Statistics Sweden

As seen in table 6.2, the total reduction of investments is not spread evenly over the different categories. A substantially larger share of the reduction is carried by “Housing”, “Education” and “Social protection”, while investment in “Economic affairs” actually has ended up with a somewhat larger share of total investment, even though the initial reduction was substantial. The variance for economic affairs however, was the highest of all variables when measured as a % of total investment.

These results seem to demonstrate that there is indeed a very high co-variation between changes in total investment and investment in infrastructure, though infrastructure also seems to be one of the most volatile areas and varies more than the others as a share of investment.

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<sup>6</sup> Sub-categories are not used before 2000, but since then about 95 per cent of investment in Economic Affairs belong to subcategory 045 “Transport”.



## ***Interviews***

*Do key informants in central institutions connect the development of infrastructure investments to quantitative fiscal constraints?*

During the interviews we came across five different explanatory models for the reduction in infrastructure investment that the informants used. These are introduced in order of perceived importance.

### **1. Budgetary constraints**

The reason all four informants mention as main reason to the development of infrastructure investments financed by direct appropriations is that there is only a certain amount available in the budget. This makes it necessary to prioritize one informant say that *“It is necessary to compare an investment in infrastructure with for example more resources to universities or more policemen”*. The need for prioritization is mentioned by three of the four informants. Additionally one informant stated *“the political debate always boils down to which resources that are available the next year”*. One informant states that the long time horizon of infrastructure is a disadvantage since the budget is a liquidity budget and decided on a one-year basis.

### **2. Increases in profitability calculations constrain the range of possible investments.**

The second most emphasized reason, mentioned by three of the four informants, is that the calculations made by central government do not show that there are more profitable investments than those carried out. *“There is a trend towards more and more use of calculation with complex methods to decide which projects are profitable.”* One informant explains that costs are compared to benefits and that an investment has to be deemed profitable to be “approved”. This profitability calculation reduces the amount of projects that are even subject for discussion. One reason for this procedure mentioned in the interviews is that the ministry of finance is “suspicious” against investments and this might be because the ministry focuses on liquidity measures and fiscal balance. *“These measures have even become more important than effectiveness in the public administration”*. Another informant states that the *“calculations are a rather blunt instrument”* and adds that *“some of the proposed projects do not show*

*profitable in the calculations*” even though they probably are motivated. The informants agree that it is difficult to define what a profitable public investment is but the proponents of profitability calculations add that there has to be some measurements and these have proven effective.

### **3. Capacity constraints on both supply and demand side.**

Third of the most emphasized reasons is the capacity in infrastructure construction in Sweden, which was mentioned by three of the informants. This problem is twofold. First, the capacity of the infrastructure in place has not been increasing in the same pace as the increase in traffic. Secondly, it might be impossible to carry out the investments needed in a short period of time given the production capacity. However, this depends on the timing of the investments in relation to the business cycle.

### **4. Recent increases in infrastructure spending.**

A fourth reason, mentioned by two of the informants is that the government perceive that they have made a generous resource allocation with regards to regards infrastructure. This has been the opinion in the past as well as in the present it is difficult to argue against the fact that the last allocation was more generous than any other.

## **5.1.2 Analysis**

One of the goals of this study was to see whether the previously studied fiscal rule causing decreases in total investment carries through to infrastructure investment. Looking at the data, we can conclude that there is indeed a strong co-variance between the two, indicating that conclusions from previous studies on total investment are likely true for infrastructure as well. Another interesting finding is that although this correlation exists, there is also higher volatility in infrastructure than any other category of investments.

Based on this and the existence of a robust large n study indicating that total investment decrease is driven by the introduction of fiscal rules(Pitlik, 2010), it is fair to say that our hypothesis that this decrease carried through to infrastructure seems to hold.

The other part of this hypothesis was to investigate the causal mechanism for this further – if and how does the introduction of fiscal rules decrease investment in infrastructure? The materials from our interviews suggest that key informants within the institutions involved perceive four main mechanisms for this.

Firstly, the explanation getting the most support is that there is only a certain amount and possible expenditures need to be prioritized. This implies that the effect of the top-down approach in the budget process and more specifically the expenditure ceiling have had effect. Furthermore the statement that "the political debate always boils down to which resources that are available the next year" indicates that infrastructure investments is something that can be made if necessary resources are available and that there is a strong annual focus which affects large-scale discretionary expenditure like infrastructure. Turning to what this proposes with regard to our theoretical framework, we find that the links to the budgetary constraints are at least not falsified, and that the centrally positioned key informants seem to support the framework in their discussion.

Secondly, the interviews indicate that the method used by central government to drive through the fiscal tightening in infrastructure spending is an increase in usage of profitability calculations. These calculations would be a reasonable way for the finance department to make sure that with more restricted financial leeway, the most profitable projects are not scrapped. Another possible interpretation of this explanation however, is that there are no more profitable projects to carry out, implicating that the reduction in investments is a result of previous "overspending".

Thirdly, the issue of production-capacity. This explanation strikes us as unlikely and is also mentioned later as a caveat by informants, indicating it might not be the driving force.

Finally, the government's perception seems to be that the resources allocated to infrastructure are large in comparison to other expenditure areas. Using our theoretical perspective this perception is expected. Since the government face a constraint like the expenditure ceiling, comparison between different expenditure choices would have increased which combined with the short-term perspective would result in a disadvantage for large-scale investments like infrastructure.

## 5.2 H2: Co-financing and User fee funding

### 5.2.1 Empirical Findings Co-financing

#### *Secondary data*

*Has the level of co-financing increased after the introduction of quantitative fiscal targets?*

In section 5.1.1 only general government capital formation has been examined. In this section this will be broken down further for analysis. In Sweden, about 50 percent of public investments are decided upon and financed by the central government between 1993 and 2007 (figure 5.1). This relation appears relatively stable over the period.

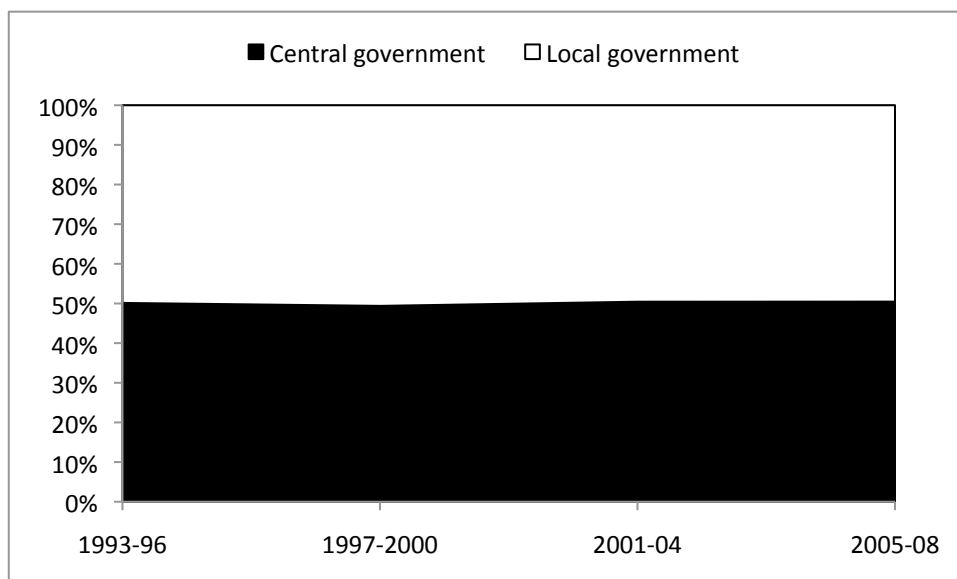


Figure 5.1 Relation between central and local government public capital formation between 1993 and 2007. Source: Statistics Sweden

When examining each sector's share of investments in infrastructure (i.e. COFOG 04) the picture is somewhat different. As can be seen in figure 5.2, local governments' share of public investment in infrastructure has almost doubled since the beginning of the 1990s.

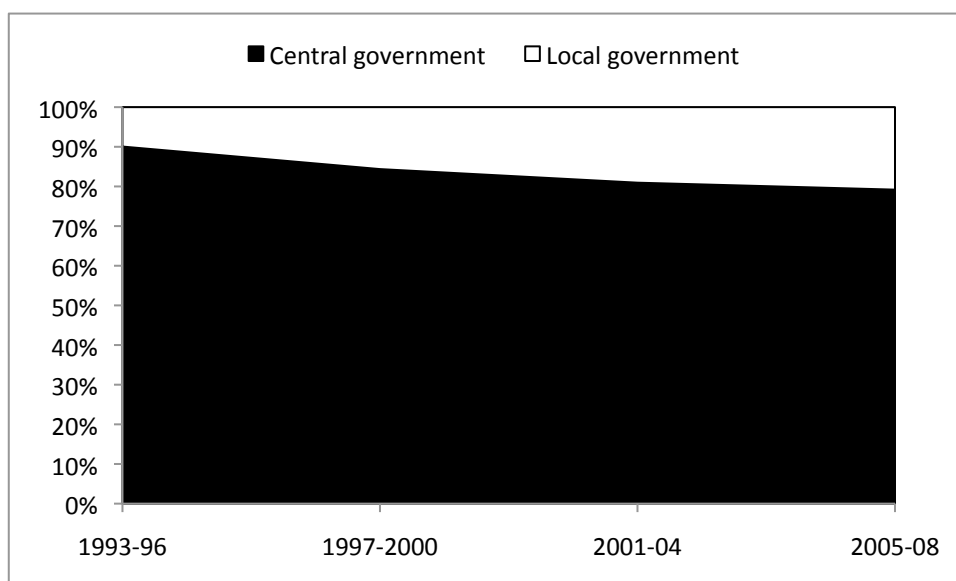


Figure 5.2 Relation between central and local government investment in infrastructure (COFOG 04) between 1993 and 2007. Source: Statistics Sweden

This shift could of course be explained by either varying rates of change in infrastructure investment that move in the same direction, or by change that moves in different directions. Figure 5.3, showing each sector's investment in relation to GDP confirms that local government investment in infrastructure has increased steadily since the middle of the 1990s. Central government investment in infrastructure initially declines and then recovers to a lower level. Local government investment in infrastructure on the other hand at first changes little and then increases slowly but steadily.

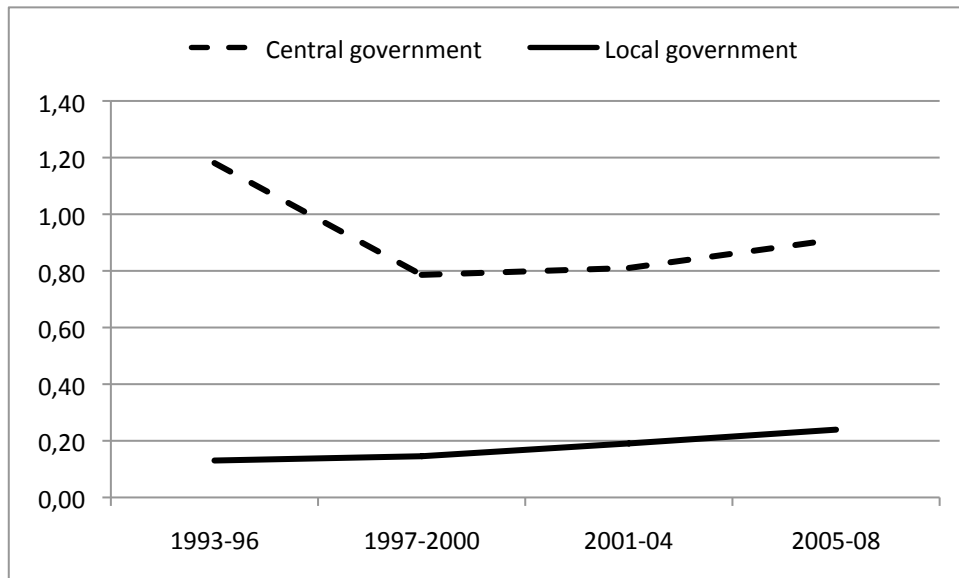


Figure 5.3 Central and local government infrastructure investment (COFOG 04) in relation to GDP between 1993 and 2007. Source: Statistics Sweden

The data seems to indicate that the impact of budgetary institutions might have caused lowered central government spending on infrastructure, but not local government, where spending has increased despite constant shares of capital formation. In summary, spending on infrastructure has as it seems to some extent been passed from central government to local government.

### ***Regulatory changes***

*Have there been regulatory changes facilitating the use of Co-financing after the introduction of quantitative fiscal constraints?*

In order to understand the dynamics of the shift described above, one of the important controls to make is to investigate regulatory changes.

One very interesting regulatory reform (prop. 2008/09:228) was introduced in the end of 2009. Up until then, the Local Government Accounting Act stipulated that all local government contributions to investments in national infrastructure projects should be considered costs. This was changed, so that contributions henceforth are activated and considered assets in the local government balance, with a depreciation time of 15 years.

In the motives for the reform, the government explicitly refers to the “increased interest for local government co-funding” and that it has “a positive

*view on increased common responsibility in transport infrastructure*". On the other hand, the motives also state that the basic responsibilities are not changed because of this reform and that local government co-funding remains voluntary.

The same year, another reform (DS 2008:11) was introduced in order to enhance local governments' legal authority to contribute to national infrastructure projects. According to the Local Government Act, municipalities and county councils are restricted to spending money on public service that benefits the local citizens. As a consequence, contributions to national infrastructure projects outside of a local government's territory are not allowed. While not altering the general rule, the reform introduces an exception, applicable under "special circumstances", that allows local government to contribute to national infrastructure projects if these are at least indirectly of benefit for the local citizens. Also in this reform's motives, the government emphasizes that the basic responsibilities are the same.

These regulatory changes point to a clear direction of facilitating more local government co-funding for projects, which might see the share increase even further in the future.

### ***Interviews***

*Do key informants in central institutions connect change (potential) in Co-financing to quantitative fiscal constraints?*

All of the informants confirm that the use of co-financing although used previously, increased significantly during the last few years. All of the informants point to two main reasons for this:

#### **1. Increasing pressure on local governments**

The main reason for the increased local government co-financing mentioned by the informants is that local government are under pressure to contribute. One of the informants states *"if you do not contribute you will get no investment and since the planning of investments is made only every 5 years, the cost to not contributing is high"*. Thus, if the local government does not contribute there will be no infrastructure in place. Another informant adds that co-financing *"is a way to create more available real resources"* and that it is a *"compromise between the*

*central government's formal responsibility over infrastructure and local governments' real interest of new infrastructure".* During the last century there has clearly been a development where the local government takes increased responsibility.

## **2. Local governments have higher incentives to invest**

Another explanation, pointed out by all informants, is that the regions that gain from an investment have an incentive to take on part of the cost. One of the informants mentions that the methods to calculate profitability at least partially are unable to capture the benefits that a specific region might gain from an investment. The general opinion among central decision makers is that if a local government has something to gain from an investment, it is positive that they are able to contribute since this means that there are more resources for infrastructure overall. Although this seems to be a general opinion it is mentioned that the finance ministry due to their responsibility over the public sector as a whole have been worried about possible debt financing at the local level.

## **3. Accounting systems**

Two informants also specifically cite the regulatory changes described above as reasons for increasing co-financing. Since local governments have the opportunity to use an accrual accounting system for investments, they can spread investment costs over 15 years.

Summarizing our findings so far, there are three important findings to take note of before moving on to the next session, and then looking at an analysis for both sections:

1. Local government co-financing has clearly increased
2. There were regulatory changes in 2009 confirming this increase and facilitating it further
3. Key informants all cite increased pressure on local government co-financing for getting infrastructure appropriations



## 5.2.2 Empirical findings – User fee financing

### **Primary data**

*Have the number of user fee funded arrangements increased after the introduction of quantitative fiscal targets?*

As earlier described infrastructure investments financed by user-fees have no effect on the state budget, thus it is a way of making a real increase in the resources available. The development of the use of user-fees is illustrated in the figure below, as the total number of approved projects financed by user fees by year. Important to note is that since the approving of user-fee financing is not a parliamentary decision we used the ones which were financed by debt from the National Debt Office that were later paid back by user fees which according to experts was the most common form.

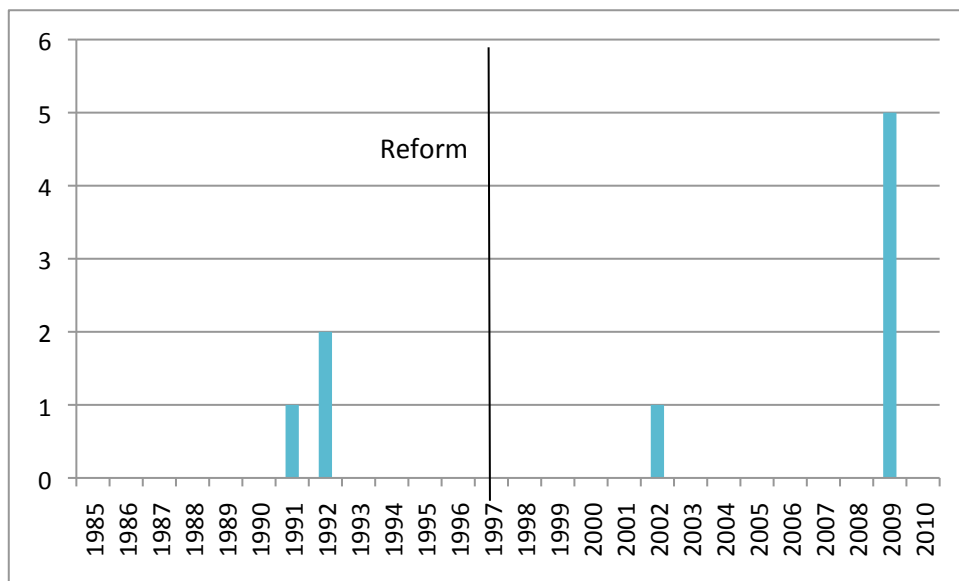


Figure 5.4 User fee financed infrastructure investments

As can be seen there were two waves of user-fee financing. The first wave occurred in the 1990s, with a package of infrastructure investments known as the “Dennis agreement”. The background to these projects was several years of debate about how these few but large investments concentrated in big-city regions

should be financed. The result was an agreement that stipulated a user-fee solution (see appendix B for references), though the fees were actually never collected but transformed into government expenditures when projects were completed. During the same period one other user-fee financed project was decided upon, this also failed and had to be taken over by the central government (Rödöbron).

The second wave has occurred during the first decade of the 21st century, with one user-fee investment in 2002 (E6 Svinesund) and a jump to a number of projects in 2009 (E4 Sundsvall, RV50 Motala, Västsvenska infrastrukturpaketet, Stockholmsöverenskommelsen and Skurubron).

The data on user-fees does not give any conclusive evidence in itself, but it allows us to conclude that there have been two “waves” of user fee financing, making it interesting to further investigate their reasons.

### ***Interviews***

*Do key informants in central institutions connect change (potential) in User fee funding to quantitative fiscal constraints?*

The informants use different explanations for the two waves of user-fee financing:

#### **1. The first wave: political disagreement.**

The reasons given for the increase of these projects in the 1990s are mainly connected to regional concerns. User fees financed the projects in metropolitan regions since this was the only arrangement that could be agreed upon at the time after long and difficult debates. However, this only seems to have been a way to postpone the financing decision since when investments were carried out, it became impossible to implement user-fees and the debt had to be paid back mainly by appropriations from the central government budget. It is clear that the future “users”, the electorate, were very strong opponents to paying fees.

#### **2. The second wave: reinterpretation of regulation**

The informants explain the large increase in 2009 with the fact that there has been a reinterpretation of regulation, resulting in that the central government cabinet can now use deficit financing without parliamentary appropriation given that a project is to be financed by user fees at a later stage, and thus does not

represent a real deficit. Two informants saw this as a direct way of intertemporal shifting of investment.

### 5.2.3 Analysis – Co-financing and User Fees

Regarding co-financing and user fees, our theoretical approach is that these arrangements increase when quantitative fiscal constraints are introduced until a new equilibrium is reached at a higher level of investment, and that enabling legislation or rule changes would be enacted if this was not possible. We will start by looking at co-financing arrangements and then user-fees.

Our first finding is that the share of local government investment to central government almost doubled after the introduction of fiscal constraints, and that while central government investment went down, local government investment went up. This pattern follows what our theory would predict.

The second interesting finding is that central government has recently enacted new regulation to facilitate this even further. Especially the regulation of allowing local government to write off the activated costs over 15 years compared to using the central government system of cash flow. This reform has not yet had time to have full consequences, but follows both main drivers of alternative financing: a temporal shift of investments as well as an actual increase because of alternative financing. Our theory would predict that this would increase the level of co-financing further in coming years.

Having established that a correlation actually exists between the introduction of fiscal constraints in central government and subsequent decrease in central government infrastructure spending *and* a subsequent relative increase in local government spending, our theoretical model has gained support. Though correlation does not equal causality, and an elaboration on the causal mechanism is in place, which was the reason for the key informant interviews.

The key informants provide three main explanations for the observed changes described above: increased pressure on local government (“if you don’t co-finance, we don’t finance at all”), local governments’ incentive to invest as well as the recent changes in accounting rules. We will put the changed accounting rules aside, since we have not seen the effects yet (theoretical predictions given

above). The causal mechanisms described by the informant match our theoretical framework very well:

Central government has become more restrictive in investment appropriations, and has used new calculation methods that demand profitability from investments. These calculations however mostly take central government profit into account and not local government profit. This means that the level of infrastructure investment by central government declines causing a subsequent increase in relative gains for co-financing from local authorities when high-profit projects can't be carried through. Thus, local government increases co-financing to the level where the marginal gain from additional co-financing is lower than the local governments gain.

All of the above seems to be corroborated by the empirical material gathered and suggests that our theory is quite successful in explaining the development of co-financing, although causality can of course not be corroborated until comparisons can be made with other cases – which is outside the scope of this study.

In the case of user fees, there are two issues to investigate. First, whether the increase in use in the beginning of the 1990s was due to the same reason as the increase during the last five years and secondly, if this is related to the introduction of quantitative fiscal targets. The findings connected to the earlier decisions indicate that these are founded on regional concerns. The investments were to be carried out in the three largest cities and since decision makers feared the political cost of using appropriations to finance the project but also faced a cost if the projects would not be carried out they agreed on a user-fee arrangement.

The reason for the recent development is less clear but from our empirical findings we can derive that the main reason seems to be a perceived possibility to increase available resources for carrying out infrastructure investments. This time the reason is not regional which is obvious since the user-fee financed projects are at several different locations and of very different size. Instead it seems like the decision is based on whether an individual project is suitable for user-fees. This gives us reason to believe that the objective is to increase real funding. The

government has also emphasized the fact that it is possible to take on debt if the project generates monetary return and thus does not affect the budget.

Our theoretical assumption was that either user-fees or co-financing would increase or both. We seem to have confirmed co-financing, but because of the lack of evidence on user-fees and with the very few projects carried out and can neither confirm nor falsify our theoretical assumptions.

### 5.3 H3: Deficit financing and Public Private Partnership

#### 5.3.1 Empirical findings – Deficit financing

##### *Primary data*

*Have the number of deficit financing arrangements increased after the introduction of quantitative fiscal constraints?*

Next we present findings on infrastructure investments financed by debt (borrowing in the National Debt Office) that has to be paid back at a later point in time. Table 5.5 below shows the projects approved by the Parliament between 1985 and 2010.

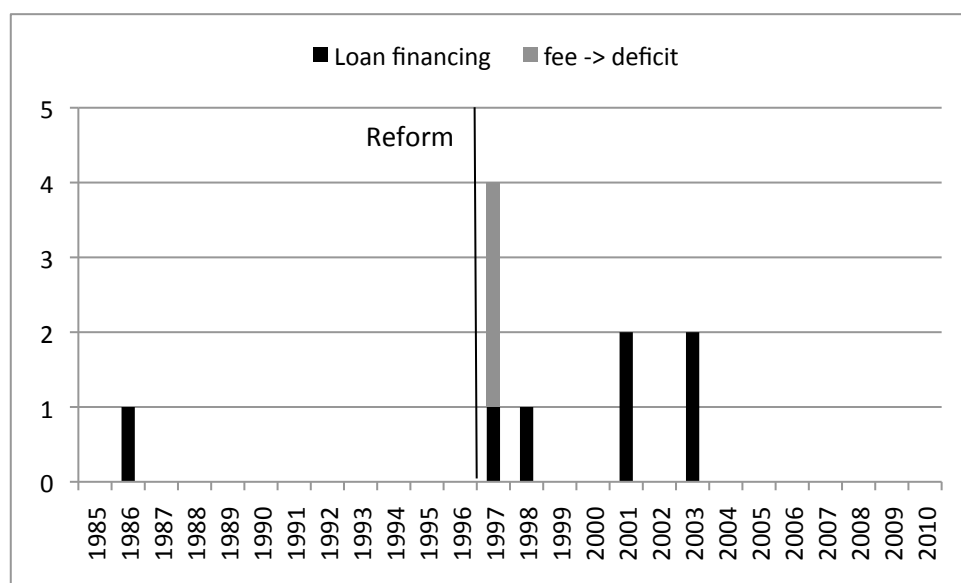


Figure 5.4 Deficit financed infrastructure investments

Although we were unable to gather data showing the development of the level of debt we believe that number of approved projects gives an indication of the development. Between 1985 and 1996 only one projects was debt-financed. This project was also a clear outlier as a part of a Swedish-Norwegian treaty where the choice of financing (initially debt provided by Nordic Investment Bank) was based on inter-country equity.

Between 1997 and 2003 six new projects were financed by deficit and three projects already in progress that had previously been user-fee financed projects (see section 5.2.2) were transferred to the central government budget. Since 2003 no new deficit financed project has been approved.

The projects that were financed by debt were of varying sizes and included railway projects as well as roads. Concerning the failure of the user-fee financed projects, these included the very comprehensive city-projects decided upon in the “Dennis agreement”. After the transfer to the central government budget, the projects were only partially carried out.

Thus, we can see a clear increase in the number of projects after the introduction of fiscal constraints, but the still relatively low number make conclusions based on this number alone very difficult. We thus attempt to verify our hypothesis through key informant interviews. First though, regulatory changes will be examined to see if these play a central part.

### ***Regulatory changes***

*Have there been regulatory changes facilitating the use of Deficit financing after the introduction of quantitative fiscal constraints?*

The motives of the State Budget Act (SOU 1996:14) emphasize that investments in infrastructure and other investments that do not provide monetary returns must be financed with appropriations. An exception allows for deficit financing in “special cases”, but the only explicit example of a “special case” is infrastructure projects funded with user fees.

In a report by the Parliamentary Auditors (2000), it is noted that the definition of a “special case” is in reality rather vague and applied to many infrastructure investments. Many of the deficit-financed infrastructure projects are very hard

distinguish as special cases and in many cases these projects were never funded with user fees.

### ***Interviews***

*Do key informants in central institutions connect the (potential) increase in deficit financing to quantitative fiscal constraints?*

The informants used two explanations the increase in the number of deficit-financed projects:

#### **1. Increase flexibility**

Based on our interviews, the main reason behind the increase in deficit financing in the end of the 1990s and beginning of 2000s was a desire to get more “flexibility” regarding the timing of the investments. This is mentioned in three out of our four interviews and is also the most common argument made in official documents. In the interviews this practice is directly related to the quantitative fiscal constraints, one informant says *“it is just a way to go round the fiscal constraints”*, another comment is *“previously deficit financing was a way to get around the fiscal constraints”*.

#### **2. Lack of resources in appropriations**

Another reason mentioned is that if the deficit financing had not been used the project had not been possible to carry out since not enough resources were available in direct appropriations. The search for “new” resources is mentioned to be the reason to deficit financing however most informants are clearly aware of the fact that deficit financing does not create any real new resources.

There are few suggestions for the sudden decrease in use of deficit financing which occurred in the middle of the 2000s. The only reason mentioned is that it became more and more evident that the decreases result in decreased flexibility in long run, which two of the informants believe.

### 5.3.2 Empirical findings – Public Private Partnership

#### ***Literature Review***

*Have the number of PPP arrangements increased after the introduction of quantitative fiscal constraints?*

The findings we made in the literature study showed that during our research period only one PPP has been carried out by the central government, the train between Stockholm and Arlanda airport.

#### ***Interviews***

*Do key informants in central institutions connect the (potential) increase in Public Private Partnership to quantitative fiscal constraints?*

The main argument against PPP is the lack of evidence that this method of carrying out infrastructure projects is more efficient than if it is financed by the government. Furthermore, since it is more expensive for a private entrepreneur than for the government to borrow on the market, PPP might even be less profitable than deficit financing. This reason was mentioned by three informants, for example: *“The use of PPP could only gain support if evidence is presented that it is more effective”* one informant answered to the question concerning the reason behind the (lack of) development. Another informant states that *“there has not been any PPP arrangement because it have not been possible to present any advantages with them”* and *“it is much more expensive for private actors to secure financing”*. However one informant adds that when focusing on this *“the risk issue is forgotten”* since in case of deficit financing the state carries the risk.

The second reason mentioned in two of the four interviews are ideological reasons, they emphasize that the Social Democratic party governed Sweden during most of the period have been averse towards private actors and this could be part of the reason. One informant adds *“this cannot be the whole explanation”* and other informants also find the fact that the position taken by center-right government's during their period in power has not been different puzzling. When



looking back at the position taken by the center-right government in the beginning of the 1990s, this was more positive and the focus on effectiveness of the private sector also resulted in the only PPP carried out in the end of that government's tenure.

We have found that there has neither been an increase nor a decrease in the use of PPP during our period of interest and that only one project has been carried out. The key informant interviews indicate that the main reason is the lack of evidence supporting that PPP arrangements are more effective than debt financing, and thus the latter is preferred. Another fact that might have affected the development is ideological differences and their support or resistance to involving private actors, this is however outside of the scope of this thesis.

### 5.3.3 Analysis – Deficit Financing and Public Private Partnership

In our theoretical framework it is indicated that following the introduction of quantitative fiscal targets the use of deficit financing and PPP should increase initially and that this development would carry on until the cost of decreased discretionary spending equals the benefit of additional investment.

In order to find out if there is support for our theory in the empirical findings we start by analyzing the development of the level of the two financing arrangements. In the case of deficit financing, it did increase following the introduction of quantitative constraints. However, it stopped suddenly in the middle of 2000s. It should be noted that since the data shows the decision and not the debt level the effect of the decision, increased debt, is lagged. This supports our theory. The use of PPP does not show any support for the theory as it has been used only one during the research period.

Since the general opinion among our informants is that the main cause of the absence of PPP solutions is the lack of evidence that it is more efficient, we conclude that deficit financing will be preferred over PPP by default, as long as PPP is not proved more efficient, or there are legal or regulatory bars hindering the use of deficit financing – enriching our theory for further studies.

In the interviews, the use of deficit financing is explicitly said to be caused by the quantitative fiscal targets. It is explained that deficit financing was used to go

around the constraints. Furthermore, the findings in the interviews indicate that the decrease in space for discretionary expenditure was the reason for halting the use of deficit financing in the middle of 2000s.

# 6 Conclusion

## 6.1 Summary

### 6.1.1 H1: Quantitative Fiscal Constraints Affect Public Infrastructure Investments and Public Investments in a Similar Manner

The thesis aimed at corroborating that the relationship between quantitative fiscal targets and government investment in general was also carried through to investments in infrastructure. We found that there was indeed a clear correlation between total investment and infrastructure investment, and that there was more volatility in infrastructure investment than other types of investment. This means that we can conclude, with reasonable certainty, that the decrease in total investment also relates to infrastructure, meaning that in the Swedish case, an introduction of fiscal constraints seems to be causally related to a subsequent decrease in infrastructure investment.

When trying to understand some of the causal mechanisms for this we found that key informants in the involved institutions corroborated that they perceived that there had been less fiscal “room for maneuver”. All informants mentioned a large increase in the usage of investment profitability calculations in relation to this, indicating that this might be the tool that the finance ministry has used to decide how to cut certain investments in infrastructure.

If Sweden is indeed a crucial case, and that the mechanisms at play in Sweden are similar to elsewhere – the massive introduction of similar budgetary institutions as those in Sweden throughout Europe and the world might lead to a decrease in infrastructure investment. This finding would be interesting to note in the design of fiscal constraints, and policy-makers should consider whether this investment can legally, regulatory or institutionally be shifted elsewhere as we explain in the case of Sweden below.

### 6.1.2 H2: Quantitative Fiscal Constraints Increase the Level of Co-financing and User Fees until Equilibrium is Reached at a New Higher Level.

Our second hypothesis was that if the decrease in total government investment translated to a decrease in infrastructure investment by central government (corroborated above), projects that are potentially lucrative for local government would not have full financing, and risk not being carried through. This would lead to a subsequent increase in the marginal value of co-financing for local governments, leading to an increase in co-financing until a new equilibrium was reached when the marginal value of co-financing was lower than the marginal cost. Alternatively, government would bring in alternative financing directly from users through user-fees, if the political cost for this was lower than gain for the decision. We will first spell out our conclusions on co-financing and then user-fees.

Looking at the evidence, our theory is not falsified, and seems to gain in strength. There has been a substantial increase in co-financing by local government (almost doubling). Key informants cite the reason for this as pressure from central government to co-finance to get any central government investments at all, as well as the high incentive for local government in co-financing potentially lucrative investment. This bares potentially important effects both for Sweden and policy makers considering adoption of fiscal constraints.

A couple of interesting notes should be made. One is that this shift of funding for infrastructure from central government to local government also means a shift in what revenue is needed to cover investment, having potentially large political implications – such as a shift from central government revenue (highly progressive) to local government revenue (flat). We would also like to note that if our theory does hold, the introduction of the possibility to activate contributions for local government investments should increase the level of investment from local government because of temporal discounting by policymakers. But this cannot be confirmed at such an early stage and would need to be studied in later studies.

For other policymakers considering the introductions of fiscal restrictions, potentials for alternative funding should be considered, and regulatory

frameworks for allowing/disallowing such spending could be a potentially important issue.

As for user fees, the number of projects was so low, and data on them so scarce that no real conclusions can be drawn. This alternative thus does not seem to have been verified by theory, though not falsified either.

### 6.1.3 H3: Quantitative Fiscal Constraints Will Initially Increase the Level of Investment in Infrastructure Financed by Debt and/or Public Private Partnership until a New Higher Equilibrium is Reached

The third hypothesis for this thesis, illustrated in the theoretical model in the theory section, was that the introduction of quantitative fiscal constraints will increase the level of debt and/or PPP financing until a new equilibrium is reached where the marginal political cost for additional decrease in the room for discretionary spending outweighed the marginal gain of additional shifting of investment costs into the future.

Our conclusions on PPP are simply that there has only ever been one project, so this form has clearly not been used in any significant extent. We can however make some inductive additions to our theory, since it seems credible to assume that if PPP's are seen as inefficient relative to their alternative – deficit financing, the second will be preferred by default, and probably the same the other way around.

When it comes to debt financing, we find a clear increase of the number of projects directly following the introduction of fiscal constraints, and then a sudden disappearance of the form a few years later. This initial finding clearly matches our theory and could suggest that there was an initial flurry of investments in order to shift costs into the future, which stopped when the new equilibrium was reached.

Our interviews do suggest that key informants in the institutions discussed do perceive that this initial increase was to “increase flexibility” and three of the informants actually use this explanation directly – saying that it was a way of avoiding fiscal constraints.

Based on this, our conclusion is that our theory has not been falsified in this regard, but empirics rather seem to support it – though more data and preferably comparisons would be needed to be able to make definite causal claims.

## 6.2 Suggestions for future research

In relation to previous research, the first interesting thing to note is that in relation to Pitlik's study (2010), which concludes that fiscal restrictions have a negative effect on public investment this might only be true for central government. In Sweden, there has actually been an increase in local government infrastructure investment. This finding should be taken into consideration in further research building on Pitlik.

Further, we believe that there might be reason to investigate this phenomenon further. We have formulated a theory that builds on the most common academic frameworks and have found some support in a crucial case study. Our weak point is of course causality – since in a case study comparison is impossible. Therefore, a larger research project that could compile and standardize data from more cases would be very valuable to further test the theory and facilitate causal claims.

We would also suggest further examination other categories of expenditure. If investments are discouraged, what are the effects on other types of expenditure? For example, what are the effects on expenditure based on entitlements vis-à-vis discretionary spending? This would increase the understanding of the mechanism causing the decrease and ensure that it is taken into consideration.

This study was limited to the effects of one specific budgetary institution: quantitative restrictions and we would further suggest exploring the effects of other deficit-reducing institutional changes.

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# 8 Appendix

## 8.1 Appendix B: Interviews

### 8.1.1 Questionnaire

- How is the responsibility for infrastructure divided between parliament, government, agencies and local government?
- What are the motives between and against more investment in infrastructure?
- How are investments in infrastructure valued? What are the perceived costs, benefits and time horizon?
- Who advocates what position and what arguments are brought forward?
- To what extent is deficit funding, public private partnerships and co-financing discussed as alternative methods of financing infrastructure?
- What are the motives between and against these alternatives?
- Who advocates what position and what arguments are brought forward?

### 8.1.2 Informants

Key informants represented following organizations:

- Swedish National Financial Management Authority, 2010-12-15
- Swedish Parliament, Committee on Finance, 2010-12-16
- Swedish Association of Local Authorities and Regions, 2010-12-14
- Ministry of Finance, 2010-12-15

## 8.2 Appendix A: Primary data

| Project                                 | References                                                                                                                                                                                                                                            | Year of decision | Category of alternative financing |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------------|
| <i>E4 Sundsvall</i>                     | Prop. 2009/10 99, rskr. 2009/10:348, 2009/10 FiU21                                                                                                                                                                                                    | 2009             | User-fee                          |
| <i>Rv 50 Motala–Mjölby</i>              | Prop. 2009/10 99,rskr. 2009/10:348,2009/10 FiU21                                                                                                                                                                                                      | 2009             | User-fee                          |
| <i>Västsvenska infrastrukturpaketet</i> | Prop. 2009/10 99, rskr. 2009/10:348, 2009/10 FiU21                                                                                                                                                                                                    | 2009             | User-fee                          |
| <i>Stockholmsöverenskommelsen</i>       | Prop. 2009/10 100, 2009/10 FiU22, rskr. 2009/10:349                                                                                                                                                                                                   | 2009             | User-fee                          |
| <i>Skurubron</i>                        | <a href="http://www.trafikverket.se/Privat/Projekt/Stockholm/Vag-222-Skurubron/Om-projektet/Brukaravgifter-pa-nya-Skurubron/">http://www.trafikverket.se/Privat/Projekt/Stockholm/Vag-222-Skurubron/Om-projektet/Brukaravgifter-pa-nya-Skurubron/</a> | 2009             | User-fee                          |
| <i>Prioriterade järnvägsprojekt</i>     | Prop. 2003/04 100,2003/04 FiU21,rskr 2003/2004 274                                                                                                                                                                                                    | 2003             | Deficit financing                 |
| <i>Prioriterade vägprojekt</i>          | Prop. 2003/04 100,2003/04 FiU21,rskr 2003/2004 274                                                                                                                                                                                                    | 2003             | Deficit financing                 |
| <i>E6 Svinesundsförbindelsen</i>        | Prop. 2002/03 16,2006 33 SOU                                                                                                                                                                                                                          | 2002             | User-fee                          |
| <i>Järnvägsinvesteringar i närtid</i>   | Prop. 2001/02 20,2001/02 TU2                                                                                                                                                                                                                          | 2001             | Deficit financing                 |
| <i>Investering i närtid</i>             | Prop. 2001/02 20,2001/02 TU2                                                                                                                                                                                                                          | 2001             | Deficit financing                 |
| <i>Botniabanan</i>                      | Prop. 1997/98:62, Prop. 2001/02:1                                                                                                                                                                                                                     | 1998             | Deficit financing                 |
| <i>Fyra vägobjekt (E4,E18/E20, E22)</i> | Prop. 1996/97 150,1996/97 FiU20,1996/97 TU2y                                                                                                                                                                                                          | 1997             | Deficit financing                 |
| <i>Södra länken</i>                     | Prop. 1997/98 123,Prop. 1990/91 87, Prop. 1996/97:160, Prop. 1993/94:86, Prop. 1997/98,01,1997/98:TU05,1993/94:TU24                                                                                                                                   | 1992/1997        | User fee -> Deficit financing     |
| <i>Övriga Stockholmsprojekt</i>         | Prop. 1996/97:160, Prop. 1997/98,01, Prop. 1993/94:86, Prop. 1993/94:TU24, Prop. 1997/98 123, 1997/98:TU05, 1990/91 87                                                                                                                                | 1992/1997        | User fee -> Deficit financing     |
| <i>Göteborgspaketet, vägar</i>          | Prop. 1993/94 169, Prop. 1990/91 87,1993/94:TU34                                                                                                                                                                                                      | 1992/1997        | User fee -> Deficit financing     |
| <i>Rödöbron</i>                         | 1992/1993 Tuy, Prop. 1998/99:1, 1998/99 TU1, Prop. 1997/98 150, Prop. 1997/98 :20, SOU 2006 33                                                                                                                                                        | 1991/1997        | User fee -> Deficit financing     |
| <i>Väg E6 Ljungskile</i>                | Prop. 1986/87 100,1986/87 TU 19,1985/86 FiU 30, 1985/86 TU13, Prop. 1985/86 100 samt 150                                                                                                                                                              | 1986             | Deficit financing                 |

### 8.3 Appendix C: Political majorities 1985-2010

- 1985-1991 Single party minority government (Social Democratic party) with unorganized support from the Left party.
- 1991-1994 Coalition minority government (Moderate party, Liberal party, Centre party and Christian Democrats) with unorganized support from New Democracy party.
- 1994-1996 Single party minority government (Social Democratic party) with unorganized support from the Left party.
- 1996-1998 Single party minority government (Social Democratic party) with organized support from the Centre party.
- 1998-2006 Single party minority government (Social Democratic party) with organized support from the Left party and the Green party.
- 2006-2010 Coalition majority government (Moderate party, Liberal party, Centre party and Christian Democrats).
- 2010- Coalition minority government (Moderate party, Liberal party, Centre party and Christian Democrats).