Working paper 415

Overcoming Incrementalism: Budget Reforms and Budget Allocations in Chile

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Governments struggle to allocate funds towards ever-changing priorities, especially when spending increases are limited by austerity. Times of recession might be especially poor moments for reallocations of funds, as budget holders try to protect what they have. This pattern has not been investigated much in the literature. Some fiscal institutions are designed to increase the allocative efficiency of public spending by making it easier for policy-makers to allocate funds towards the most important priorities. Whether fiscal institutions have an effect on allocations is still unclear.

Chile provides an opportunity to investigate both ideas. Using an interactive model, the paper finds that budget allocations were more rigid the less additional money was available, and that institutional reforms designed to increase flexibility managed to break the link between spending and reallocations, as well as having a significant and positive effect on the size of annual reallocations.

JEL Classifications: D02, D73, H11, H50, H61, H62

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Abbreviations

Abbreviation	Description
COFOG	Classification of the Functions of Government
DIPRES	Dirección de Presupuestos
GDP	Gross Domestic Product
OECD	Organisation for Economic Co-operation and Development

1 Introduction

Changes in fiscal governance are costly. Fiscal institutions may be an arcane subject to the average voter, but policy -makers tend to tread carefully, knowing that any procedural change that touches upon the way public resources are distributed needs to overcome the resistance of many stakeholders with an interest in the status quo (Wildavsky, 1964). The resulting costs make fiscal reforms relatively rare, but also not random.

Over the past half-century, two secular trends have driven fiscal reforms in most of the world, in turn inspiring a fair amount of literature.

First, fiscal shocks and a secular deterioration in the fiscal position of many advanced countries have prompted a series of reforms aiming to strengthen fiscal discipline. Countries as diverse as the United Kingdom, Australia, Sweden, Chile, South Korea, and many others have undertaken major reforms of their fiscal control regime in the last three decades, usually prompted by a sharp macroeconomic deterioration. Second, starting in the 1960s, governments became increasingly concerned about the growing rigidity of public expenditures. Driven by largely exogenous factors, such as demographic change, nondiscretionary spending has been continuously been on the rise, narrowing the space for political decisions to have an impact on public spending. Performance-informed budgeting is perhaps the most important response among OECD countries, and has become very widespread since the 1990s (Krause, 2012).

These two trends are related. Allen Schick observed that a worsening fiscal position resulted in the end of reliable increments to distribute in the budget process, disrupting the relatively predictable nature of budgeting in the United States, and making it more confrontational. Performance budgeting and other macrobudgetary tools became more widespread both because they can help facilitate reallocation toward political priorities and the most efficient use of public funds, but also precisely because such information might facilitate the implementation of cutbacks when times are bad (Schick, 1986, 1988).

The budgeting literature emerging from the 1980s mostly agreed that austerity caused the budget process to be more confrontational, thus ending the era of incrementalism, a more stable and consensus oriented process. However, there is little theory and mostly conflicting evidence on whether fiscal policy outcomes have actually become more or less incremental as a result, and if institutional changes have any bearing on this. The growing literature on policy punctuations suggests that budgetary allocations in a number of countries are mostly stable and unchanging over time, disrupted only occasionally by major policy shifts.

Many studies of budgeting studies use deficits or debt as measures of fiscal performance, but this is not appropriate when the principal interest is to see whether institutional reforms have changed the ability of governments to reallocate funds. Allocative efficiency is an equally appropriate, and yet under-studied, measure of this kind of fiscal performance. This paper will investigate the impact of fiscal institutions on fiscal performance, using reallocations in the budget as a measure of performance. The empirical investigation is based on budgetary data from Chile for the years 1990–2009.

The following section will discuss different types of fiscal institutions, their objectives, and how they relate to fiscal performance. Section 3 gives a brief overview of Chile's fiscal

reforms since the return to democracy in 1990, outlining a series of important reforms adopted in 2000, which that were intended to solidify the country's already strong fiscal discipline and, specifically, to enhance the allocative efficiency of the budget. Section 4 will then discuss different measures and definitions of incrementalism and allocative efficiency, drawing in particular on the literature on policy punctuations. Section 5 outlines the data and variables used, followed by empirical analysis and conclusions.

Following Jones, Baumgartner and others, I define allocative efficiency as the opposite of incrementalism, with both to be measured by the distribution of budgetary changes (Baumgartner and Jones, 1991). Taking their work one step further, I investigate the effect of the Chilean fiscal reform on the distribution of budgetary changes from one year to the next. I find evidence that reforms improved fiscal performance, although the strength of the analysis is limited by the relatively small number of observations. To gain a more profound understanding, I develop a different measure of allocative efficiency that relies on the relative changes in budgetary allocations between 43 functional categories in the Chilean budget over 19 years. Using an interactive model, I find that fiscal reforms positively affect allocative efficiency, conditional on the budgetary balance. I conclude that the Chilean government succeeded in making its budget less incremental, but only when times were good.

2 Incrementalism and budget reallocations

Changes to the budgetary process are costly and risky. Policy-makers initiate fiscal reforms for a reason. Senior officials, when deciding whether or not to expend scarce resources on fiscal institutional change, are at least partially motivated by an expected change in fiscal performance. This is not a trivial assumption. Self-interested bureaucrats might initiate reforms because the results would make their jobs more interesting and prestigious (Dunleavy, 1992). Governments under the influence of international advisors and organisations might simply feel that a certain type of budgetary framework is the modern, best practice tool to implement (Andrews, 2008). Self-interested politicians could initiate reforms to better direct public funds for their own particularistic purposes. However, in an environment where individual ministers put their preferences above those of the government as a whole – a common pool resource problem – the finance ministry and other central ministries act as a counterweight (Velasco, 1997; Hallerberg, 2004; von Hagen, 2004). Given that they would be the actors in charge of fiscal reforms, it is not unreasonable to assume that fiscal performance is an important concern, at least for them.

In recent literature, the budget process is generally evaluated against three objectives: fiscal discipline, allocative efficiency, and operational efficiency. According to the classical definition by Allen Schick, fiscal discipline is achieved when budgetary totals are enforced by the ministry of finance. Operational efficiency is achieved via the *'capacity to progressively reduce the cost of producing the goods and services for which resources are provided,'* while allocative efficiency refers to the *'capacity to establish priorities within the budget, including the capacity to shift resources from old priorities to new ones, or from less to more productive uses, in correspondence with the government's objectives'* (Schick, 2001:13).

Fiscal discipline is relatively straightforward to define by measuring either budget deficits or changes in debt levels. For these reasons, fiscal discipline has long been at the center of attention of both policy-makers and academics. In fiscal policy, the need to keep overall spending under control has been the perennial concern of finance ministers. In the three decades following the Second World War, the maintenance of fiscal discipline was eased by steady growth. The pressure on the executive to maintain spending discipline or to reallocate funds efficiently between portfolios remained low, because the existence of steady annual surpluses allowed budgeting to settle into a stable, incremental pattern (Wildavsky and Caiden, 2004).

Each year, ministries would start with last year's budget and add a margin based on expected revenues and inflation. Budget negotiations took place between ministries and the budget office, as well as the legislature, over how to divide that year's increase in total spending (Wildavsky and Caiden, 2004: 46). Public spending rose even as a proportion of GDP, which meant that the annual increment was quite sufficient to satisfy the centrifugal interests of spending ministries, as well as recurring contingencies (Tanzi and Schuknecht, 2000: 7-31). Real, let alone nominal cuts to existing budgets were seldom necessary.

The evolution of budgeting is closely related to the dominant macroeconomic trends, and to broader thinking on public sector reform. In the 1980s, authors observed that the pattern of incremental budgeting was falling apart, which sparked much debate about the implications for budgeting in the future (Bozeman and Straussman, 1982; Schick, 1986; Schick, 1988; Wildavsky and Caiden, 2004). By the 1990s and 2000s, this debate had moved on to the possible transformation of budgeting that resulted from fiscal reforms, and the institutional and political determinants that allowed countries to respond to fiscal stress.

Prompted by the sharp deterioration of fiscal conditions starting in the mid-1970s, many countries in the OECD and beyond embarked on a series of reforms to fiscal institutions meant to improve the ability of governments to retain control over fiscal outcomes in times of greater volatility and austerity. Macrobudgetary reforms tried to increase the ability of the central budget office to determine the direction and level of spending before the budget process would reach the level of ministerial decision-making and to reallocate funds toward areas where they might be most useful. This can be achieved by merely measuring performance and providing that information alongside the regular budget documentation for budget analysts to use or ignore, via forms of mandatory consideration of performance information to justify spending decisions, or by rigidly linking performance to allocations, so that the budget office effectively 'buys' outputs from its ministerial counterparts. In practice, a multitude of variants exists, often known by other names (Curristine, 2007; Robinson, 2007).

Directly limiting the discretion of budgetary actors with an incentive to overspend is a straightforward attempt at improving fiscal discipline. A greater ability to reallocate could also increase fiscal discipline by allowing funds to be freed up where no longer needed, which could be allocated to new priorities, thus reducing pressure to finance these with fresh funds. Conversely, greater efforts at discipline throughout the public sector would encourage managers to find savings internally and direct funds to their most important priorities: a tight rein on spending weeds out inefficient expenses and improves allocative efficiency. Instruments that allow budget officials to evaluate spending performance and reallocate accordingly would improve allocative efficiency by default.

In academic scholarship overall, allocative efficiency as an expression of fiscal performance receives very little attention. Where the literature has investigated the causal relationships between fiscal performance, fiscal institutions and the macroeconomic environment, the focus is almost exclusively on fiscal discipline as defined by the levels of deficits and debt (von Hagen, 1992; Hallerberg, 2004; Hallerberg and Marier, 2004; von Hagen, 2004; Scartascini and Filc, 2007; Hallerberg, Strauch et al., 2009). This perhaps rightly mirrors the greater concern of public policy-makers with fiscal disciple, but it is also an expression of the much greater difficulty of measuring allocative efficiency. There are two approaches to doing so: one is to measure the influence of performance information on allocations at the microbudgetary level; the other is to study patterns in allocations over time.

At the level of individual policy instruments, there is some evidence that their use can cause allocations to change. The best-studied example is the Performance Assessment Ratings Tool (PART), used by the U.S. Office of Management and Budget between 2002 and 2008. The PART rated programme performance across the federal budget and made the information public. Research suggests that poorly rated programmes suffered in subsequent budget cycles (Gilmour and Lewis, 2006). Preliminary evidence exists for a comparable institutional arrangement in South Korea, where performance assessments are carried out by a much stronger central budget office than in the United States. Consequently the effect of performance ratings on allocations seems more pronounced in South Korea (Park, 2011). This is, however, a fairly limited concept of allocative efficiency.

The policy punctuations literature (Baumgartner and Jones, 1991; Jones, Baumgartner et al., 2009). offers a different perspective on budgetary allocations. The purpose of these studies is

to investigate the hypothesis that budgetary changes over the long run resemble a punctuated equilibrium pattern, where longer periods of negligible or small changes are dramatically interrupted by a few very big changes. The reasons behind this pattern are several: issue attention cycles shift the focus of policy-makers from one policy area to another, and the nature of policy-making is such that budgetary changes carry decision costs, transaction costs, information costs, and cognitive costs (Jones, Sulkin et al., 2003). These costs create friction, and friction results in many years where policy inputs do not result in budgetary change. But once pent-up pressure for change breaks through, changes will be dramatic.

Empirically, a punctuated equilibrium distribution of changes will not be normal, but leptokurtic. A leptokurtic distribution is characterised by a narrow peak and fat tails, as opposed to the more familiar normal distribution where the tails are thin and the peak broad. In the policy punctuations literature, incrementalism is somewhat confusingly associated with normally distributed – albeit small – changes, whereas the literature on incrementalism, with few exceptions (Schick, 1966), thinks of incremental changes as small and stable changes, without accounting for any disruptions that may take place. The original work by Jones and Baumgartner has since prompted a sizeable empirical literature that confirmed punctuated equilibrium patterns for the United States (Jones, Sulkin et al., 2003), the United Kingdom (John and Margetts, 2003), Germany (Breunig, 2006) and Denmark (Breunig, Koski et al., 2010), among others.

Under the punctuated equilibrium model, institutional variation creates different levels of friction, resulting in different degrees of leptokurtosis. These institutional differences would suggest that, for instance, single-party governments have less punctuation than multiparty ones, and parliamentary systems less than presidential ones, which preliminary evidence seems to confirm (Jones et al., 2009). So far, there are no studies that try to establish whether this cross-country variation would also hold across time in one country: in other words, if institutional change can be shown to affect the distribution of budgetary changes. Data are a severe constraint in this context. For a reliable measure of distribution, one either needs many years of data or many budgetary categories for each year, preferably both. Even so, the measure of leptokurtosis collapses all data points in the distribution into a single figure, so that unless many years of data are available, *n* would be too small for robust statistical analysis.

Both the incrementalism and policy punctuations literatures state that most budgetary changes in most years are very small. They also imply that politicians and officials who find themselves constrained by too much institutional friction, or any other obstacle to major decisions, would probably prefer a context where they were less constrained. The budgetary reforms that strengthen the macrobudgetary role of finance ministries and increase the use of performance information, without using those terms, are motivated to address precisely this problem. An empirical test of whether these reforms have achieved their stated aim would therefore have to investigate budgetary changes before and after institutional reforms took place.

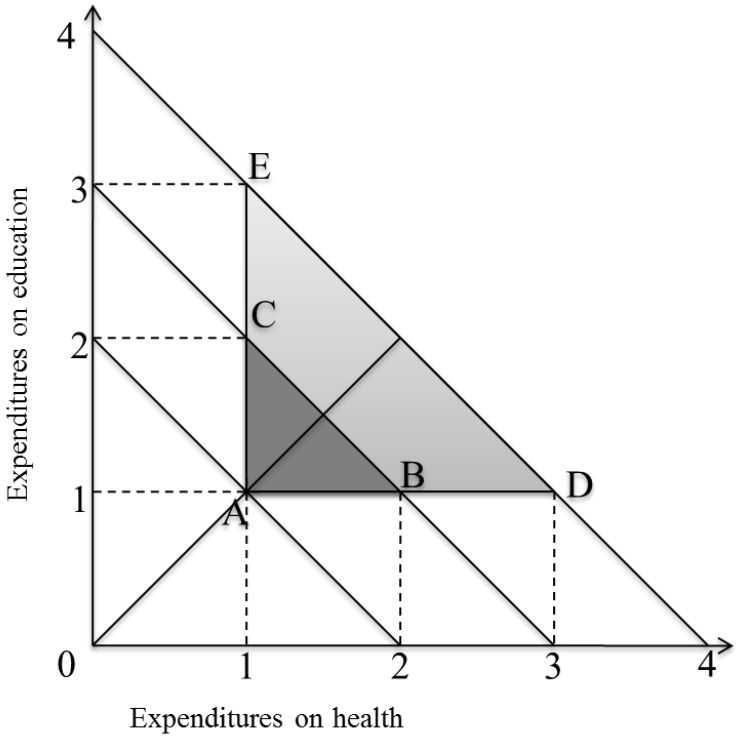
A final consideration is the possible effect of the fiscal situation on allocations. Again the literature offers somewhat contradictory directions (Kraan and Kelly, 2004), but there is much to suggest that there is some relationship between austerity or surpluses and the magnitude and direction of budgetary change. In its original formulation, incrementalism is defined by the absence of major change, and empirically found its heyday during times of consistent surpluses. It has been noted that the break-up of incrementalism is precisely characterised by greater variation and larger reallocations, which coincided with the austere budgetary environment of the 1980s (Bozeman and Straussman, 1982; Schick, 1983). This seems to suggest that austerity would increase reallocations, while good times would be more rigid, as each claimant gets their fair share. Along with other elements of incrementalism, this has been widely criticised as very hard to define and empirically unproven (Berry, 1990; Jones, True et al., 1997).

Contrary to these earlier assumptions, the most comprehensive empirical investigation of budgetary changes across time and countries (Jones, Baumgartner et al., 2009:160) finds evidence to suggest that variation of budgetary changes decreases in difficult fiscal environments and increases when times are good. The logic is that when the fiscal position allows and discretionary funds are available, governments can move rapidly into new policy areas and shift the fiscal composition as a result. During retrenchments, however, institutional friction puts up barriers to change and makes the budget more rigid.

Periods of austerity are often characterised by cuts across the board, as each budget-holder tries to protect the status quo, if not in absolute then at least in relative terms. Budget-holders are loss averse (Kahneman and Tversky, 1979; Brumby, 2007: 165); they value the baseline budget that they have more than the potential budget they may gain. In situations of austerity, where cuts (nominal or real) need to be made, every ministry will seek to block claims on their budget that might benefit other ministers. The finance ministry can overcome such resistance, but its resources to do so are limited (Brumby, 2007: 152). Many fiscal retrenchments in Europe and North America have prompted government strategies that try to distribute cuts evenly while loudly advertising that the retrenchment will hit everyone equally (Savage, 2001). Strategies of 'shared pain', in which everyone is in it together, have been applied in countries as diverse as the United Kingdome and Estonia (Clarke and Newman, 2012; Jõgiste, Peda et al., 2012).

A similar argument could be made for the reverse situation: variation increases during expansions. Since ministers fight first to defend their established base before contending for additional resources, decisions over priorities take place when budgets expand. Once additional funds are available, relative readjustments can be made without absolute losses to any budget-holder. Instead of defending their established budgetary base, ministers would have to argue why they should be able to claim additional funds. Being able to distribute a surplus allows the finance ministry to retain much more central control over allocations.

Figure 1: Possible budget allocations according to available funds



Source: Author's illustration

Figure 1 illustrates this point. It assumes that over time, as policy agendas shift, allocation decisions between two portfolios are essentially random. Any two ministers will fight for as large an increase as possible, as long as their base remains protected. Factoring in the policy priorities of the finance ministry and the head of government means that expenditures may not exceed a given level along the finance ministry's budget line (BC or DE in Figure 1). Both ministries start out with one unit (A), and no point closer to the origin than A would be acceptable to each of them, unless cuts were distributed evenly. If another unit is available for allocation, any point on the line between C (the preference of the education ministry) and B (the preference of the health ministry) is a possible solution. If two additional units are available, the solution could be anywhere on the line DE. The length of the budget line grows linearly as available funds increase, as $BC = \sqrt{AC^2 + AB^2}$ and so forth. Consequently, the larger the annual increase in the available budget, the larger the space for the distribution between any two ministries to shift in one direction or the other.

The discussion of the different approaches toward budgetary allocations suggests that fiscal reformers and academic research are primarily concerned with the relationship between institutions and fiscal discipline. It is clear from the literature that the ability of budget offices to allocate and reallocate funds to where they are most needed is another key concern, but not nearly as well studied. This is at least in part because conceptual limitations and data issues have made it a more difficult fiscal outcome to study. The literature also suggests that the allocation of funds will depend in some crucial ways on the overall fiscal situation. A good way to investigate these questions empirically would be to study the record of allocative changes over time in one country where a major change in the allocative fiscal institutions has taken place. Chile offers just such an opportunity.

Chile is a pertinent case to investigate the conditional effect of fiscal institutions on allocative efficiency for several reasons. First, its fiscal institutions underwent a well-documented reform in 2000 (prompted in particular by the fallout from the Asian financial crisis of 1998), which allows for a suitable comparison of the decades before and after the

reforms. Second, Chile's fiscal setup was already quite strong before the reforms took place, and its fiscal discipline was much better than that of its Latin American neighbours, or indeed many OECD countries. Instead, the reforms were deliberately aimed at strengthening the government's ability to pursue allocative efficiency as a means to improve Chile's ability to manage periods of austerity brought about by the economy's exposure to the volatility of the copper price. If any country could demonstrate an effect of reforms on allocations, it should be Chile.

Chile's fiscal reforms have already received much attention in the literature (Blöndal and Curristine, 2004; Panzardi, 2005; Rojas, Mackay et al., 2005; Shah and Shen, 2007, Dussauge-Laguna, 2011). A candidate for OECD membership in 2007 and a member since 2010, its record of fiscal management and public finance practices is regarded as exemplary and as comparing very favourably against even the most developed member states of the OECD. Chile has one of the most rigorously executive-centric budget processes in the world, in which the role of the legislature is sharply curtailed. Relative to other countries, Chile lies in the lowest quartile of legislative budgetary powers, comparable to Westminster-type democracies (Wehner, 2006: 781). According to the OECD Budget Practices and Procedures Database, Chile's budget office operates one of the strongest microbudgetary control systems in the world (Krause, 2009, Allen and Krause, 2012). A key component of microbudgetary control is a finance ministry's ability to dominate the bilateral negotiations with spending ministries before the draft executive budget is put together. In Chile, the budget office takes a central role in all stages of the budget process; it enjoys a very high level of formal and informal control over spending ministries during both the formulation and execution of the budget, with only minimal involvement from the legislature.

The Chilean reforms of 2000/01 took place against the background of already strong fiscal performance. The instruments adopted by the government are in line with what international organisations would suggest in order to strengthen the ability to reallocate. Allocative efficiency has also been the stated objective of the government. A particular problem faced by the Chilean economy is its vulnerability to exogenous shocks brought about commodity markets. The combination of the structural balance rule, which is designed to ameliorate revenue volatility, with performance information and the bidding fund[1] could provide an institutional set-up that makes reallocations less dependent on the availability of a budgetary surplus.

[1] The bidding fund itself was discontinued in 2004 and replaced with a system of ex-ante evaluations that served the same purpose.

3 Data and variables

To carry out the empirical analysis, I collected and assembled data from the Chilean Ministry of Finance on budgetary changes at the sub-ministry level, broken down into 42 functional spending categories in 10 sectors that range from defence research to biodiversity to hospitals. They cover the entire central government budget from 1990 to 2009. The classifications generally follow the United Nations' 'Classification of the Functions of Government' (COFOG) and should be comparable with other countries following the same standard (European Commission, 2007). These data are based on budgetary outturns: that is, on the basis of how funds were actually spent over the course of a given fiscal year, to account for any virement or over- and under-execution that might have occurred after executive preparation and legislative approval prior to the beginning of the fiscal year. Values are adjusted for inflation and denominated in constant 2009 Chilean pesos. The COFOG categories themselves are backward consistent, although five new items were added over the period studied (for instance, 'Environmental Protection' in 1996). The consistency of the data is a major advantage over the sources in other countries, where manual recoding is often required to achieve functional consistency over time (John and Margetts, 2003). Chile is a very centralised state, where throughout the 1990s and 2000s central government expenditures exceeded 85% of total spending (Daughters and Harper, 2007). The allocations into these central government spending categories can therefore be taken as a very good approximation of the allocative priorities of the government of the day.

The dependent variable captures reallocations between spending categories. The literature offers several alternatives to operationalise budgetary change. In incrementalism literature, changes are often coded as either incremental or not. This can be done using a fixed cut-off, which can easily appear arbitrary, or a floating band that adjusts for long-running magnitudes of change and the variation in any given year (Dezhbakhsh, Tohamy et al., 2003). In either case, a significant amount of variation in the data is lost as budgetary changes are compressed into a binary form. In the literature on policy punctuations, budgetary changes take the form of annual percentage changes within functional categories, which also helps to deal with problems associated with nonstationarity in panel data (Jones, Baumgartner et al., 1998:7) and retains the full variation of change.

In this paper, the research interest is not in the absolute amounts of money allocated to any particular budgetary item, but in the government's ability to reallocate between items. To reflect this interest, and to account for differences in the responsiveness of larger and smaller categories, I take not the absolute percentage change, but the annual changes in the relative weight of each category as a percentage of the total budget of that year. Importantly, this removes the potential effect that a year with a rich surplus might result in a high magnitude of change compared to the previous year's allocation that does not affect the relative balance between functions, because windfall revenues might be shared equally between categories.

Proportions vary considerably in size: in 2009, for instance, from 0.001% (community services) to 19.2% (old-age pensions). The median budgetary weight across all categories varies from 0.55% (in 1991) to 0.9% (in 1999). Because these are relative values and the number of categories does not change, the mean remains constant at 2.3%. From this stock, the mean change from year to year is 0.14% across all years and categories.

The dependent variable Y_t is therefore the size of budgetary reallocations, defined as the change in a given category's budgetary weight, measured as the change (in absolute values) in the percentage value of each category as a proportion of the total budget of that year:

$$Y_{i,t} = \frac{\frac{Program_t}{Budget_t} - \frac{Programe_{t-1}}{Budget_{t-1}}}{\frac{Program_{t-1}}{Budget_{t-1}}} \times 100$$

These changes are expressed as a percentage of the 'base' of the previous year. It is important to note that the percentages reported in the findings are not nominal or real changes in terms of absolute spending, but changes to the relative budgetary weight of each programme. For instance, if a programme takes up 2.0% of the budget in one year, and 2.2% the next, that would be a 10% increase. If, on the other hand, all items in the budget increased exactly equally by 10%, the dependent variable for that year would be zero for each programme.

Figure 2: Absolute spending on defense, health and education

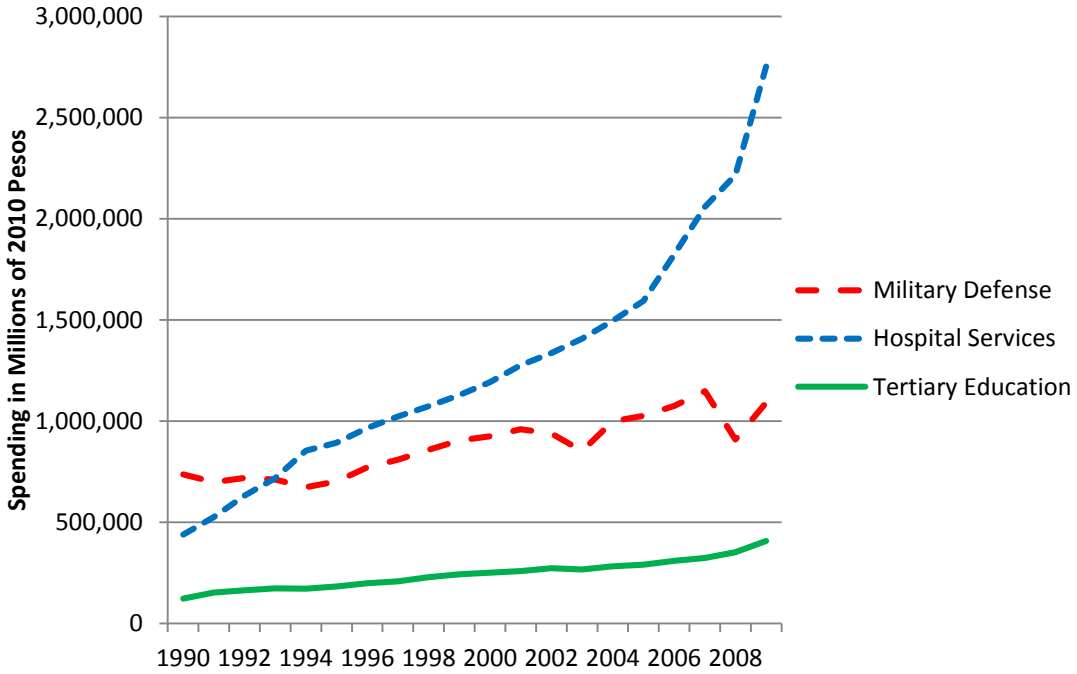


Figure 3: Budgetary proportions in defense, health and education

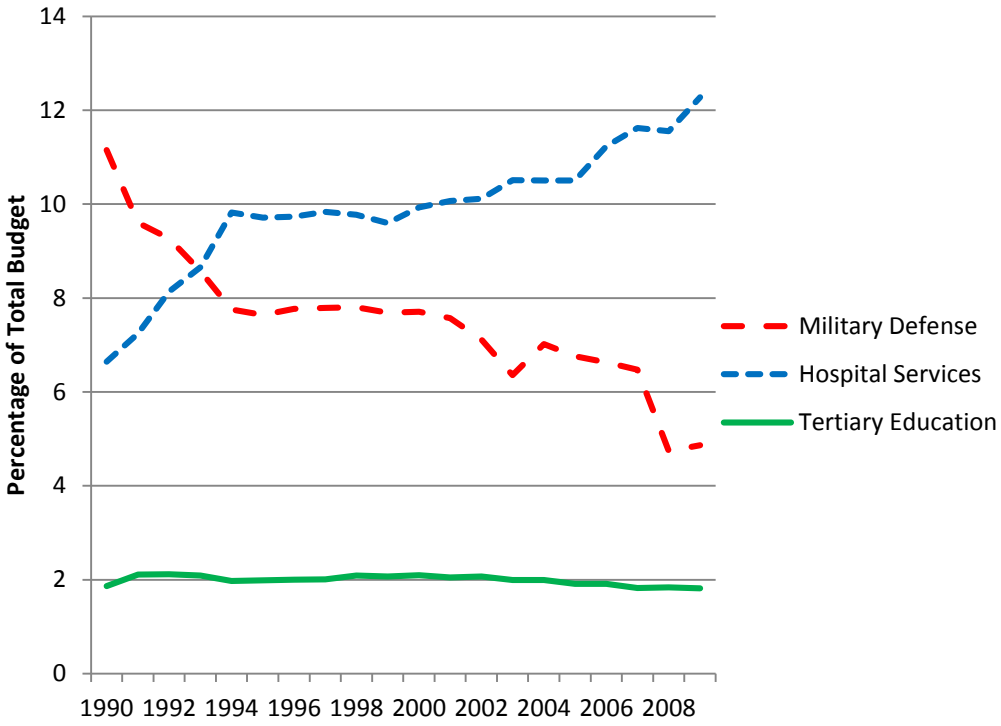
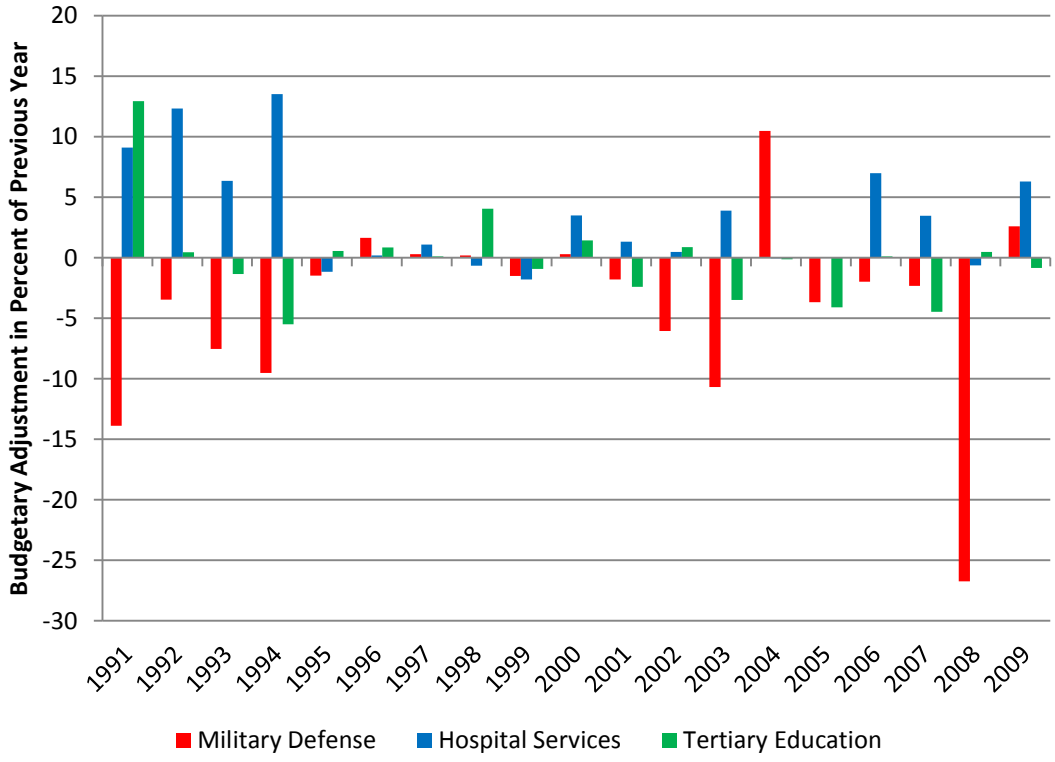


Figure 4: Annual budgetary adjustments in defense, health and education



Source: Dirección de Presupuestos (2010)

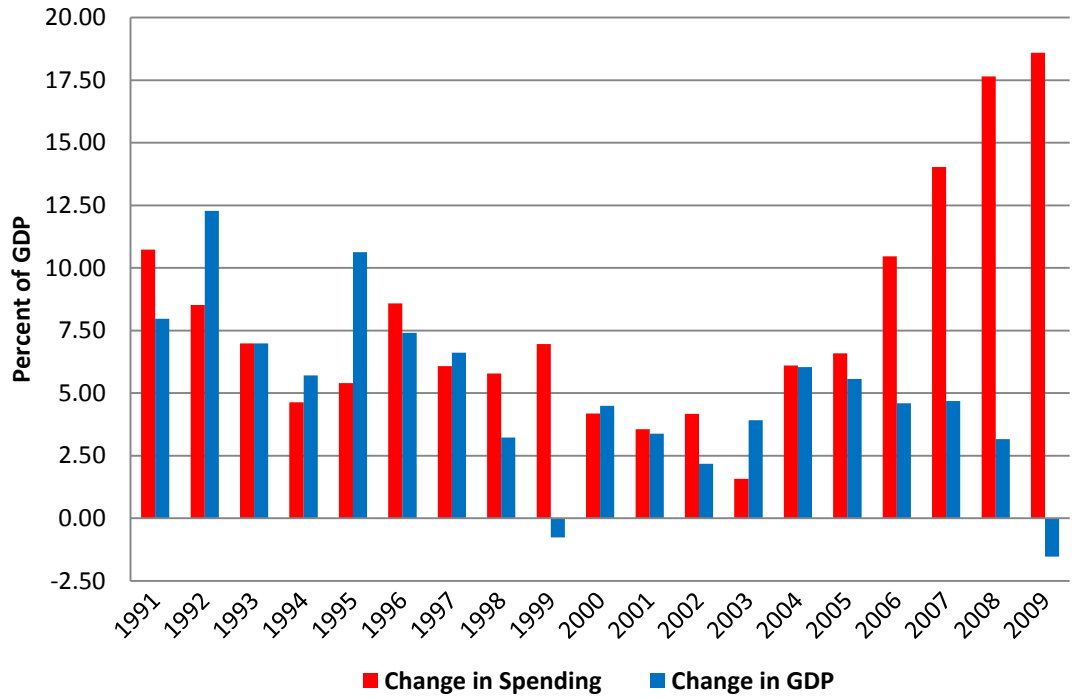
Figure 2 shows how budgets grew over time in three different spending categories that exemplify the different trajectories that spending could take. It shows that there are some real cuts to military defence in some years, but overall, total spending increases in all years, even in real terms. Figure 3, by comparison, illustrates how these changes affect the composition of the budget. They show that proportional spending on Military Defence steadily declines over the two decades, whereas Hospital Services increase just as steadily. Spending on Tertiary Education remains more or less constant as a proportion of the total budget. Figure 4 displays the same three programmes, but here the unit is the year-on-year change in the programme's proportion of the budget (i.e. $Adjustment_{i,t}$ as defined earlier). It shows that even though the accumulated effect over multiple years can be quite dramatic, the annual changes vary considerably, and often see-saw back and forth.

I take changes in this measure as a reasonable – but not perfect – proxy for a government's ability to pursue allocative efficiency as defined by Schick. It relies on the assumption that contemporary budgets in industrialised democracies are more rigid than policy-makers desire, for the reasons discussed earlier. Furthermore, what is considered an efficient allocation of resources by the central government is necessarily a constantly moving target. On the one hand, political agendas and priorities change in ways often quite exogenous to the inner workings of government, on the other hand, technological change and successful implementation of some programmes might also endogenously shift the focus of allocations over time. As a result, I assume that over the period studied, an increase in the relative allocations between functions, if it can be attributed to institutional change, shows an improvement in the government's ability to pursue allocative efficiency.

The availability of additional funds to be spent is measured by the percentage change of total central government spending year on year in constant (2009) Chilean pesos (see Figure 5). Over the two decades studied here, spending increases remained most often below 10% each year and included one dramatic expansion in the final period of 2006–2009, preceded by a notable slowdown in spending increases in 2000–2003. In several years, spending increases were smaller than the growth in GDP, but again, the most recent years show a quite dramatic expansion in the size of the state as a proportion of the total economy. The sample includes both years of austerity and of expansion, which should make it possible to study whether the availability of additional funds has any bearing on reallocations.

To capture the institutional reforms that came into force with the 2000 fiscal year, I use a dummy variable, which equals 1 for all years since reforms have been in place, and 0 for the pre-reform period.

Figure 5: Annual changes in total Chilean central government spending and GDP



Source: Ministerio de Hacienda and World Development Indicators

To control for changes in the macroeconomic environment, I used the budgetary balance and GDP growth. The budgetary balance is a possible factor because budget officials might respond to the need to close a budget deficit or to distribute a budget surplus when deciding on allocations. The budgetary balance would thus signal to officials how much of an increase in future spending is likely to be available for distribution. This is a particularly important concern in countries like Chile, where relatively prudent macroeconomic forecasts and a volatile commodity cycle cause the budget to regularly return surpluses – a rare occurrence in most OECD countries. The budgetary balance is lagged by two years to account for the fact that the actual budget of year *t* is passed in year *t-1*, which would respond to the budget balance in year *t-2*. GDP growth merits inclusion separately from the budgetary balance, because it affects spending categories differently and could distort the distribution of budgetary items without any deliberate intervention from budget officials or policy-makers. Automatic stabilisers are particularly liable to increase spending without deliberate decisions from any budget authority during fiscal contractions (Fatas and Mihov, 2001), which would reallocate the balance away from other spending categories.

I added a further control to account for political change occurring over time. The literature on fiscal performance further suggests the existence of political or electoral budget cycles (Franzese, 2002; Brender and Drazen, 2005; Wehner, 2010). As elections approach, politicians would be inclined to spend more to appease key constituencies or improve the state of the economy and thus increase chances of re-election. In the literature, this has been seen as having a detrimental effect on fiscal discipline, but it is quite possible that such politically motivated increases in spending have an uneven effect on allocations as well. The potential effect of an electoral budget cycle is covered by a dummy variable that equals 1 for each election year (1993, 1999, 2005, 2009), and 0 otherwise.

The central government budget encompasses a very broad range of policy areas, each with a potentially different mix of expenditure types (such as investment versus recurrent, or the

proportion of entitlements, or wages). To that mix, one can add the variation of bureaucratic interests and political salience. The combination of these unobserved factors can conceivably make the process of allocation quite different in each expenditure category. To limit this kind of bias, I used category fixed effects with all specifications.

4 Model and results

To understand the conditional effect of fiscal institutions on budgetary allocations, I used an interactive model. The dependent variable is the relative year-to-year budgetary adjustment of functional category *i* in year *t*, which I model as follows:

$$Adjustment_{i,t} = \beta_1(Reform_t) + \beta_2(Spending_t) + \beta_3(Reform_t \times Spending_t) + \beta_4(Controls_t) + Category_i + \varepsilon_{i,t}$$

Here, *Reform* represents the presence or absence of the 2000/01 institutional reforms and *Spending* is the annual change in spending. *Reform* × *Spending* is the interaction term, and shows how much of an influence on adjustments the instruction of the new institutions had, depending on the changes in spending of that year, and the reverse – the effect of spending on adjustments, conditional on the presence or absence of reform. The control variables, as discussed in the previous section, include the budgetary balance and GDP growth to control for changes in the macroeconomic environment, and a presidential election year dummy for the political budget cycle. The model includes category fixed effects, and ε is the error term.

In an interactive model, the individual coefficients of the constitutive terms and the interaction term cannot be interpreted straightforwardly or in isolation. The coefficient β_1 only shows the effect of *Reform* on *Adjustment* were *Spending* to be zero, which is logically possible, but not empirically the case in any year. Conversely, β_2 only shows the effect of *Spending* on *Adjustment* when *Reform* is zero. The coefficient β_3 shows the additional effect (over β_2) of *Spending* when *Reform* equals 1. The sum of β_2 and β_3 is the effect of *Spending* on *Adjustment* when *Reform* equals 1.

Based on the previous discussion, I expect spending increases to play an ambiguous role: a positive balance would facilitate relatively large adjustments, while a negative balance would make adjustments much smaller. Because of this, I expect reform to have a positive coefficient that would be much stronger once the interaction term is included to account for the conditional effect of reform. Likewise, I expect reforms to have a positive effect, given that their intent in Chile was to facilitate reallocation of resources. In line with the assumptions of how spending ministries negotiate in conditions of austerity, I would expect budgetary balance, presidential elections, and GDP growth to have a positive coefficient.

Table 1: Results of the regression analysis

VARIABLES	(1)	(2)	(3)	(4)	(5)
Reform	-0.9284*	-2.4877	13.1105*	13.1584*	19.1875**
	[0.452]	[1.858]	[7.219]	[7.228]	[9.368]
Spending	0.4983*	0.3528*	2.5978**	2.6229**	2.4647**
	[0.250]	[0.201]	[1.024]	[1.032]	[1.076]
Reform × Spending			-2.3347**	-2.3491**	-2.8938**
			[1.044]	[1.047]	[1.245]
Presidential Election				-0.4722	0.4923
				[2.246]	[2.594]
GDP					0.2571
					[0.388]
Balance (2-year lag)					1.2015
					[1.101]
Category Fixed Effects		✓	✓	✓	✓
Observations	771	734	734	734	734

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

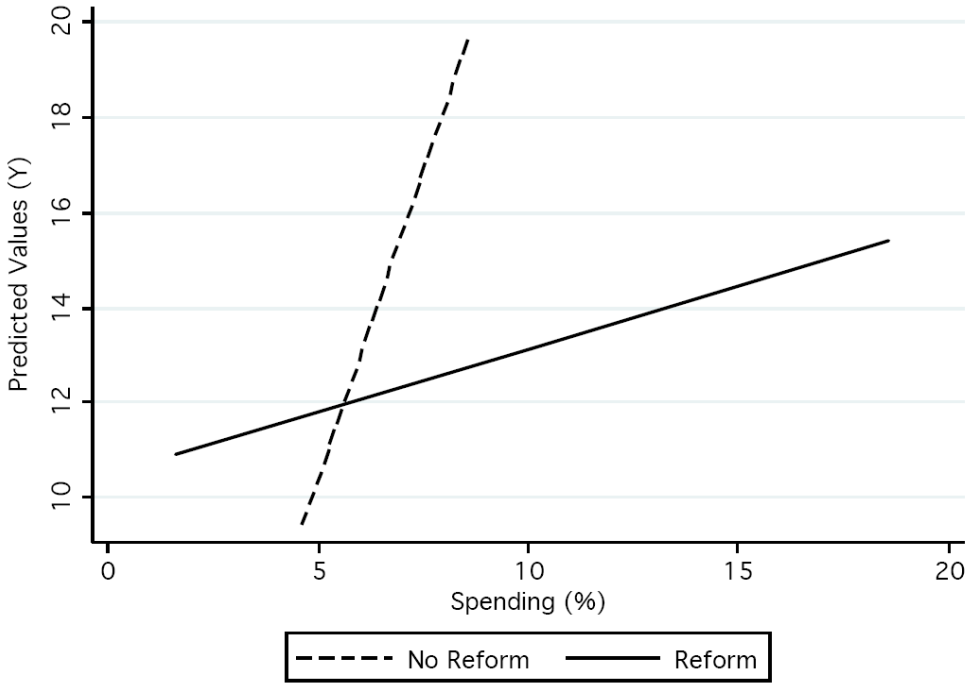
Table 1 presents the results. The first specification (1) includes the two constitutive terms, no fixed effects and no controls. All other specifications include category-fixed effects. In both specification (1) and (2), the effect of *Spending* is positive and significant (at the 10% level), the effect of *Reform* is significant without category-fixed effects (1), but not significant once they are included (2). Specification (3) includes the interaction term, and to add further robustness to the results, specifications (4) and (5) add sets of political and economic controls, respectively. The interaction term is significant at the 5% confidence level in all specifications, and the constitutive terms are also significant (either at the 5% or 10% levels) in each specification that includes the interaction term. Specifications (3) through (5) show a significant and positive effect of *Reform*, and likewise a positive, albeit smaller effect for *Spending* (assuming the other variable is zero). Interestingly, the coefficient of the interaction term itself is negative. Adding economic and political controls does not weaken the robustness of the results of the variables, and none of the controls seem to affect changes in budgetary adjustments.

The coefficient for the interaction term is considerably smaller than the effect of *Reform*, and even though the two constitutive terms are both positive and significant, the interaction term is negative and significant. The coefficient for *Reform*×*Spending* shows by how much the

effect of *Reform* on *Adjustment* changes for each unit increase in *Spending*. With all controls present, the effect of *Reform* on *Adjustment* is positive for the first 6.63% of *Spending*. In other words, in the post-reform period, when spending rises by less than 6.63%, the reforms have a positive effect on how much adjustment takes place. This is the case for six out of ten of the post-reform years within the dataset.

This result can be explained by the effect of the reforms on the relationship between reform and spending. The institutional changes seem to dampen the impact of additional spending, and the post-reform years include a period of considerable spending increases, which are not associated with as high increases in the *Adjustment* as they were in prior expansionary years. Specifically, this is the period of the financial crisis from 2007 onwards. Without any spending increase at all, the effect of the institutional reforms is quite dramatic; in fact, the effect would more than double the size of the adjustments between spending categories.

Figure 6: Predicted values of Y, with and without reform



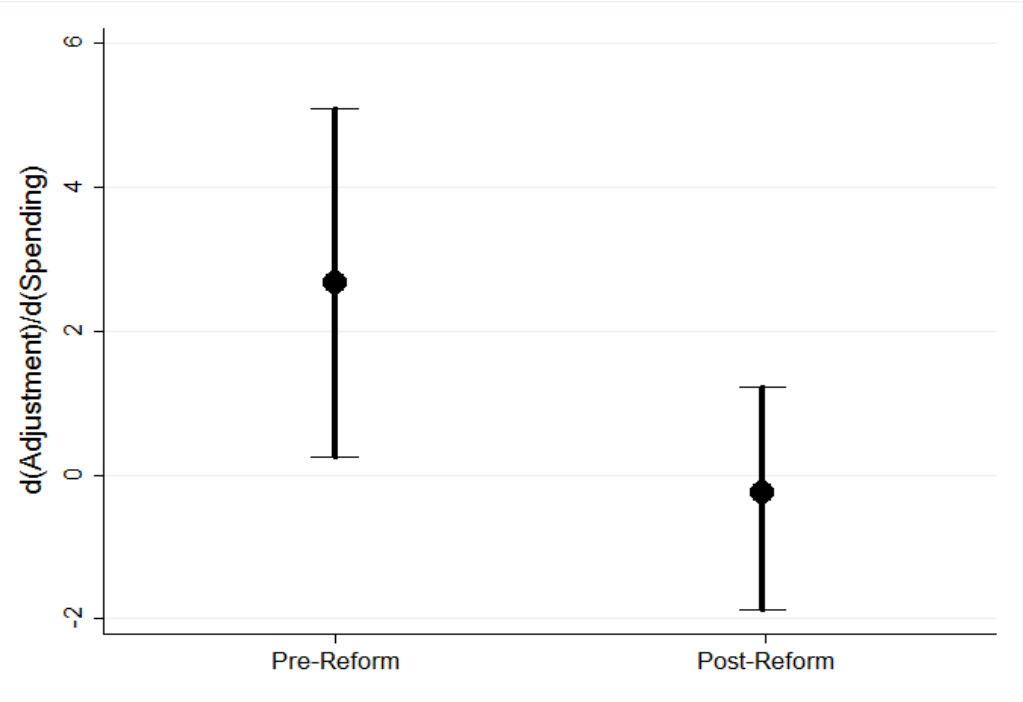
Source: Author's illustration

A look at the predicted values of y ($\hat{y}$) can be instructive (Kam and Franzese, 2003). Using the full theoretical model, I estimated $\hat{y}$ for different values of spending increases, ranging from 1.6% to 18.6% (the actual values present in the dataset), with the *Reform* variable either present or absent. The results are presented in Figure 6. This graph does not further illuminate the question of whether reform conditions the effect of spending on adjustments, but it does show how the relationship between spending and adjustment changes with and without reforms. Although the variation of spending increases in the pre-reform years was much smaller than afterward, and the small number of years limits the utility of this graph, the comparison nevertheless shows a striking difference in the relationship between budgetary allocations and spending increases before and after the reform. Prior to 2001, there was a very strong relationship between adjustments and spending increases, with steep increases in $\hat{y}$ for each additional percent of new spending. During lean years, $\hat{y}$ would be far below the value predicted for a budget without spending increases, and conversely in expansionary years, $\hat{y}$ is predicted to increase dramatically.

This strong relationship suggests that, indeed, the pre-reform budget process worked in such a way that reallocations took place primarily through the uneven distribution of surpluses and not, or at least to a much smaller extent, through selective (real-term) cuts in times of austerity. To the contrary, in austere times, reallocations were much more rigid than on average.

The presence of the reformed institutions seems to weaken the relationship between adjustments and increased spending considerably. Higher spending still predicts higher values of *y*, but the relationship is much less steeply sloped. This is a very notable finding: it suggests that the reforms made allocation decisions much more independent from the fiscal climate of the day.

Figure 7: Marginal effect of spending on adjustment



Source: Author's illustration

This point can be further explored by displaying the marginal effects of spending increases on adjustments (Kam and Franzese, 2003; Wehner, 2010). The model above can be used to identify the marginal effect, which is determined as follows:

$$\frac{d\left(Adjustment_{i,t}\right)}{d\ (Spending_t)} = \beta_1(Reform_t) + \beta_3(Reform_t)$$

It shows the marginal effect of spending on adjustment for each value of spending, both with and without *Reform* present, with 99% confidence intervals (see Figure 7). The figure shows that the confidence interval in the absence of reform does not include zero. The effect of spending on adjustment is positive and with a high degree of confidence, not random. In the presence of reform, the effect is just barely negative, and the confidence interval very clearly includes zero. In other words, there is every possibility that in the presence of reform, the effect of additional spending on adjustments has disappeared.

Scholars of budgeting are concerned about budgets being too rigid and budget offices' inability to reallocate funds. The findings show that there was a previous link between

reallocations and higher spending, so that more adjustments took place in years of plenty, and fewer in austere years. That link seems to be much weaker. Overall, the effect of reforms on adjustments is positive for a reasonable range of spending increases (between 0 and 6.63%). If any increase in reallocation increases efficiency in line with government priorities, then Chile's budget reforms seem to have been quite relevant for allocative efficiency.

5 Conclusion

The budgeting literature suggests that fiscal reformers undertake reforms not just to strengthen fiscal discipline. How to overcome incrementalism and increase allocative efficiency by strengthening the ability of governments to reallocate funds is another important priority. So far, much attention has been given to the effect of institutional reforms on fiscal discipline, but much less to the relationship between institutional change and budget reallocations and by proxy allocative efficiency. There are different approaches to measuring allocative efficiency. I propose that the most suitable one is to focus on the size of budgetary readjustments across functional categories from year to year. In the literature on policy punctuations, such changes are found to be mostly small and frequent, and only occasionally dramatic. Institutional changes might affect this balance to change the regular adjustments. The preference of budget reformers would be for adjustments to become larger. For officials in the budget office, the sum of the absolute values of adjustments is a measure of how much policy-making 'happens' at the centre of government.

The literature also suggests that the size of adjustments might depend on the fiscal environment, with more dramatic realignments taking place in years of budgetary surpluses. In this paper, I investigate the conditional effect of institutional reforms on budgetary readjustments using evidence of 19 years of central government spending in Chile. Chile is a suitable country because its fiscal institutions and fiscal performance were already very strong by international standards. A major institutional reform in 2000/01 was aimed directly at strengthening allocative efficiency, which policy-makers at the time had identified as a gap in the existing framework.

I report three significant findings. First, without the new fiscal institutions, the Chilean budget office's ability to reallocate depended quite strongly on the fiscal environment. Adjustments were notably much smaller when spending increases were small, and much larger when large increases were available for allocation. The observation of Wildavsky and others that periods of fiscal austerity lead to less rigid and more unstable budgets as programmes are cut unevenly cannot be confirmed for Chile during the 1990s and 2000s. During these two decades, the opposite seems to have been the case. Budgets were rigidly allocated when spending increases were small, and reallocations increased dramatically in years when spending grew fast. Thus, austerity does not seem to be a good time to shift spending priorities. For a resource-rich country like Chile, where government revenues are strongly affected by the price of its main export commodity (copper), the relationship between allocations and spending is particularly important. The government finds itself exposed to the volatility in commodity prices when considering changes to its expenditure priorities.

Second, there is a positive effect of the institutional change on the size of budgetary adjustments and by assumption on allocative efficiency. This finding is not unambiguous – the positive effect only holds for spending increases between 0 and 6.63%. This still indicates that the institutional reforms are likely to have worked as intended, assuming that more adjustments allowed budgetary decision-makers to overcome prior rigidities in the budget process to follow the technical advice of its officials and allocate funds to better uses. This paper departs from much of the policy punctuations literature and shifts the attention from absolute to relative changes. For officials in the central budget office these are the more relevant terms, because they will be less concerned about what an adjustment means in terms

of the affected programme, and more concerned on how the adjustment reflects on the entire budget. The significant effect of the reform also offers an interesting perspective on the policy punctuations literature. Chile's patterns of budgetary change in the 1990s and 2000s broadly resemble a punctuated equilibrium and are not normally distributed. Moreover, this paper shows that apart from occasional dramatic realignments, institutional changes can have a modest effect on the bulk of budgetary changes and make the annual budget somewhat more responsive to policy decisions.

Third, the Chilean institutional reforms appear to remove much of the influence of spending increases on reallocations. With the reforms in place, changes in the fiscal balance have much less of an effect on the predicted size of the budgetary reallocations. While this effect is intended by the institutional design, the difference between the pre- and post-reform predictions is still quite notable.

The analysis in this paper has several limitations. Without evidence from other countries, it will be difficult to ascertain how many of the findings are due to unobserved characteristics particular to Chile. Without further investigation of other similar countries, it will be difficult to base any generalisations on this one case. In particular, it should be noted that Chile's fiscal discipline performance itself sets the country apart from many other economies in the OECD and in Latin America. During the years studied here, it did not suffer from persistent deficits over any significant period of time; the budget did fall into periods of austerity on several occasions, but the adjustments were always rather quick. One might speculate that budgetary actors have come to expect austere periods to be infrequent and brief enough to be waited out, so that any realignment in the budget can be done during better times when the political costs are lower. It should also be noted that the panel is quite short, with only 19 years of data available.

Nonetheless, the findings are quite relevant for policy-makers and budget officials. Given how much importance senior budget officials attach to the limitations imposed by increasingly rigid budgets in austere times, the fact that at 5% increased spending, the predicted adjustment increases by about one-fifth, with reforms in place, is considerable. Even if it is difficult to disentangle the transferrable institutional changes from the unobserved environment that applies only to the Chilean case, it is nevertheless an important finding that a country can deliberately pursue allocative efficiency through institutional change.

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