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Creative Accounting and Electoral Motives: Evidence from OECD Countries

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Abstract

Using an unbalanced panel of 27 OECD countries over the period 1970–2011, I examine whether electoral motives influenced creative accounting. Governments engage in “below-the-line” operations, such as transactions in financial assets, that do not show up in the deficit figures but give rise to changes in debt. I use the difference between the change in public debt and the deficit (stock-flow adjustment) to measure creative accounting. The results suggest that governments strategically engaged in creative accounting before regular elections so as to sugarcoat the budget balance. I also provide an overview of government interventions that gave rise to large stock-flow adjustments.

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Keywords: Stock-flow adjustments, creative accounting, public debt, political business cycles.

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1. Introduction

Governments can engage in “creative accounting” to hide borrowing and sugarcoat the budget balance. Milesi-Ferretti (2003, p. 390) suggests using “the difference between budget deficits and the change in public debt” to measure creative accounting. Stock-flow adjustments describe the difference between deficits and the change in debt. A positive stock-flow adjustment shows that public debt increased by more than the deficit would imply, whereas a negative stock-flow adjustment shows that public debt increased by less than the deficit would imply. Some components of stock-flow adjustments, such as time-of-recording effects and valuation effects, should cancel out over time. “Below-the-line” operations, such as transactions in financial assets, however, can result in large and persistent stock-flow adjustments.¹ For example, a positive stock-flow adjustment occurs when a government uses equity injections into public companies to shift public expenditures out of the budget to public companies that are excluded from the fiscal accounts. Analogously, a negative stock-flow adjustment will occur when a government privatizes a public company.

I examine whether electoral motives influenced creative accounting as measured by stock-flow adjustments. Governments may hide deficits so as to sugarcoat the budget balance before elections. Governments also have incentives to support or bail out private and public companies before elections by providing equity injections. Governments may hesitate to engage in privatization before elections in an effort to maintain a stronger influence on the economy (see also Buti et al. 2007). Substantial equity injections from governments to private or public companies are recorded in many pre-election or election years. For example, in 2007 Eurostat reclassified the 2005 equity injections by the Portuguese government into two public hospitals as capital transfers because Eurostat was not convinced that the government had acted as a private shareholder and doubted the profitability of the investment (Eurostat 2007).

¹ See also Eurostat (2014, p. 2): “the change in the stock of debt does not originate only from the deficit but is impacted, for example, by loans granted by government or its equity injections into corporations, which do not appear in the deficit figures (except if treated as capital transfers).”

A similar case happened in 2002 when the Portuguese government provided equity injections to seven public enterprises (including Metro Lisboa). 2002 and 2005 were election years in Portugal (see also Alt et al. 2014). In 2012 Eurostat reclassified the equity injections from the Irish government to the state owned banks Allied Irish Banks and Irish Life & Permanent from a transaction in financial assets to a capital transfer, ex-post increasing the deficit in 2011 (an election year) by 3.7 percentage points (Carswell 2012).²

Using an unbalanced panel of 27 OECD countries over the period 1970–2011, I show that stock-flow adjustments increased before elections. Governments were particularly likely to engage in creative accounting before regular elections.

2. Definition of Stock-Flow Adjustments

The government's budget identity describes that the change in debt in period t equals the deficit in period t (see, e.g., Barro 1979; Bohn 2007):³

$$B_t - B_{t-1} = D_t \quad , \quad (1)$$

$$D_t = G_t - R_t \quad , \quad (2)$$

where B_{t-1} : denotes debt at the beginning of period t , B_t : denotes debt at the end of period t , D_t : denotes the deficit in period t , G_t : denotes expenditures (including interest payments) in period t , and R_t : denotes revenues in period t . The debt level in period t is thus equal to the initial debt level in period $t-n$ plus the accumulated deficits:

$$B_t = B_{t-n} + \sum_{i=0}^{n-1} D_{t-i} \quad (3)$$

² Other examples of election or pre-election years coinciding with large stock-flow adjustments include Belgium, whose government in 2007 injected capital into BAM (an Antwerp transport infrastructure project); Estonia, whose government in both 2006 and 2007 injected capital into Eesti Vedelkütusevaru Agentuur (an Estonian oil stockpiling company); the Spanish government's 2007 capital injections in ICO (an export insurance); the Finnish government's 2007 capital injections into Finnair Plc and Sponda Plc (a real estate investment company); and the U.K. government's 2005 injections of capital in the NGDF nuclear fund (Eurostat 2008).

³ The values of the variables can be nominal, real, or deflated by a scale variables (e.g., GDP), provided an appropriate measure of the interest rate. Using nominal values, r is the nominal interest rate, using real values, r is the real interest rate, and using GDP ratios, r is the real (nominal) interest rate minus the real (nominal) growth rate of GDP (Bohn 2007).

Descriptive statistics show, however, that Equation (1) does not always hold. The difference between the change in debt and the deficit is called a stock-flow adjustment (SFA) or a debt-deficit adjustment (von Hagen and Wolff 2006). If the stock-flow adjustment is positive, public debt increases by more than the budget deficit in period t would imply:

$$B_t - B_{t-1} = D_t + SFA_t \quad (4)$$

Under the Eurostat definition (ESA 1995) government debt is defined as the total consolidated gross debt at nominal value in the following categories of government liabilities: Currency and deposits, securities other than shares excluding financial derivatives, and loans. Stock-flow adjustments thus consist of four main components (Eurostat 2014):⁴

(1) Transactions in financial assets: The deficit is defined as the government's net borrowing, that is, the difference between revenues and expenditures excluding financial transactions (net concept). When computing the debt level, government assets are not netted from the liabilities (gross concept). Transactions in financial assets can thus give rise to increasing or decreasing public debt but do not affect the deficit ("below the line" operations). For example, if a government issues debt and stores the receipts as a bank deposit, gross debt increases but the transaction has no effect on the deficit. A positive stock flow-adjustment can result when a government buys financial assets (e.g., equity injections into public or private companies); a negative stock-flow adjustment can result when a government sells financial assets (e.g., privatizations of public companies).

(2) Transactions in liabilities: Certain types of liabilities are recorded as stock-flow adjustments because they are excluded from the Eurostat government debt definition, such as liabilities in financial derivatives. The net incurrence of these types of liabilities enters

⁴ Time-of-recording effects can also give rise to stock-flow adjustments. Expenditures and revenues are recorded at the time the underlying transaction takes place even if the effective cash flow has not yet occurred (accrual accounting). Changes in debt are recorded when the effective cash payments or receipts occur (cash concept). If expenditures or revenues are recorded but the effective cash flow has not yet occurred, the deficit deviates from the change in debt. For example, positive stock-flow adjustments can result from the issuance of zero-coupon bonds or the reimbursement of taxes. Negative stock-flow adjustments can result from interest accrued from zero-coupon bonds or the collection of excessive taxes that will have to be reimbursed later.

negatively in the stock-flow adjustment, since they are only recorded in the deficit but not in the debt level.

(3) Valuation effects: Valuation effects describe changes in the value of debt resulting from changes in the level and structure of prices or the exchange rate. A revaluation of debt denominated in a foreign currency changes the face value of the debt without having an impact on the budget deficit. Exchange rate depreciations can lead to positive stock-flow adjustments; exchange rate appreciations can lead to negative stock-flow adjustments.

(4) Volume effects: Volume effects result from changes in sector classifications and other volume changes in financial liabilities that arise from the reclassification of units inside or outside general government and other cases of debt reductions that are not recorded in the deficit (e.g., debt redemptions).

Stock-flow adjustments can thus be expressed as:⁵

$$SFA_t = \sum_{j=1}^7 x_{jt}^{FA} - \sum_{j=4}^6 x_{jt}^L + \sum_{j=1}^3 \Delta val_{x_{jt}^L} + \sum_{j=1}^3 \Delta vol_{x_{jt}^L} + \varepsilon_t \quad , \quad (5)$$

where x_{jt}^{FA} denotes transactions in financial assets, x_{jt}^L denotes transactions in liabilities, $\sum_{j=1}^3 \Delta val_{x_{jt}^L}$ denotes valuation effects, $\sum_{j=1}^3 \Delta vol_{x_{jt}^L}$ denotes volume effects, ε_t denotes statistical discrepancies, and j denotes the different types of financial assets and liabilities.⁶

Stock-flow adjustments are prevalent in public finance statistics because of accounting issues. Stock-flow adjustments should, however, not generate a systemic bias between the stock of debt and the sum of all deficits over time. “Large and persistent stock-flow adjustments (especially if they always have a negative impact on debt developments) should

⁵ Seiferling (2013) describes stock-flow adjustments measured as the difference between the deficit and the change in debt as a partial stock-flow adjustment and computes a total stock-flow adjustment taking the difference between total flows (budget deficit, transactions in financial assets, transactions in liabilities, valuation effects and volume effects) and changes in debt. For the purpose of my analysis I rely on the definition of (partial) stock-flow adjustments as expressed in Equations (4) and (5) because I examine whether governments use the four main components of stock-flow adjustments to sugarcoat the budget balance rather than looking at statistical discrepancies.

⁶ Currency and deposits ($j=1$), securities other than shares excluding financial derivatives ($j=2$), loans ($j=3$), shares and other equity including financial derivatives ($j=4$), insurance technical reserves ($j=5$), other accounts receivable/payable ($j=6$) and monetary gold and special drawing rights ($j=7$).

give cause for concern, as they may be the result of the inappropriate recording of budgetary operations and can lead to large ex-post upward revisions of deficit levels” (European Commission 2003, p. 82). Large and persistent stock flow adjustments can result from transactions in financial assets such as equity injections into public and private companies or privatizations of public companies (von Hagen and Wolff 2006; Weber 2012). Governments can also use transactions in financial assets to hide borrowing. Ongoing subsidies for (public) companies become a way of creative accounting when they are treated as equity injections or transaction in shares and other equity not reported in the deficit. If the public company then provides government services, the government has shifted public expenditures out of the budget and to public companies excluded from the fiscal accounts. Some positive stock-flow adjustments resulting from the acquisition of financial assets, however, do not indicate hiding borrowing, for example, if a government uses budget surpluses to accrue reserves in a pension insurance fund or a sovereign wealth fund (see also von Hagen and Wolff 2006).

3. Prior Studies and Research Framework

Governments can manipulate financial data to sugarcoat the budget balance, an issue that is well known and has been described as “creative accounting” (Milesi Feretti 2003), “accounting fudges” (Dafflon and Rossi 1999), “fiscal adjustment illusion” (Easterly et al. 1999), “fiscal gimmickry” (Koen and van den Nord 2005), and “cooking the books” (Laughland and Paul 1997). Milesi-Ferretti (2003) suggests using stock-flow adjustments, defined as the difference between the budget deficit and the change in public debt, to measure creative accounting. Von Hagen and Wolff (2006, p. 3270) arrive at the conclusion that governments “systematically use stock-flow adjustments to lower deficits.” European governments particularly engaged in creative accounting to hide borrowing after the introduction of the Stability and Growth Path (SGP) in 1998 (see, e.g., von Hagen and Wolff

2006, Buti et al. 2007, Beetsma et al. 2009, Alt et al. 2014). The SGP limits the debt-to-GDP ratio to 60% and the deficit to 3%, but the deficit limit receives more attention. Governments thus had an incentive to embellish the deficit figures via creative accounting.

Experts examine which determinants influence stock-flow adjustments. Stock-flow adjustments have been large during financial crises (Weber 2012, Seiferling 2013). To support and bail out troubled financial institutions, governments purchased assets, provided loans and equity to financial institutions and engaged in other off-balance sheet activities that increased public debt but did not show up in the budget deficit. Currency devaluations that increased stock-flow adjustments particularly occurred in emerging countries (Weber 2012). Inflation increased stock-flow adjustments (Campos et al. 2006, Weber 2012, Seiferling 2013). Stock-flow adjustments were higher during economic downturns (Alt et al. 2014). Greater transparency of the budgeting process, defined as the insight of the public into government structures and functions, fiscal policy intentions, public sector accounts and projections, reduce the incentives for creative accounting.⁷ Governments with a low fiscal transparency tend to invest more in equities that produce low returns (Seiferling and Tareq 2015). Greater fiscal transparency should also increase the quality of fiscal data and thus decrease stock-flow adjustments resulting from measurement issues (Alt et al. 2014).

Political business cycle theories describe how politicians opportunistically manipulate fiscal policy before elections, assuming adaptive (Nordhaus 1975) or rational expectations (Rogoff and Sibert 1988; Rogoff 1990) of the economic actors.⁸ In the approaches assuming adaptive expectations, opportunistic politicians can fool naive voters and stimulate the economy immediately before each election. In the approaches assuming rational expectations, the incumbent government exploits its information advantage over the voters to signal

⁷ On fiscal transparency see Alt and Lassen (2006a, 2006b) and Lassen (2010).

⁸ On empirical evidence on political business cycles see, e.g., Alt et al. (2006a), de Haan and Klomp (2013), de Haan and Sturm (1994), Klomp and de Haan (2013), Mechtel and Potrafke (2013), Mink and de Haan (2006), Potrafke (2010a, 2012), Shi and Svensson (2006), Wehner (2013).

economic competence before elections. Shi and Svensson (2006) show that politicians may behave opportunistically even if most voters know the government's policy, but some voters are uninformed. Empirical studies suggest that the incumbent government benefits from favorable economic conditions (see, for example, Hibbs 2006 for a literature survey).⁹

Following the theories of opportunistic political budget cycles I expect stock-flow adjustments to increase before elections. To signal economic competence before elections, the incumbent governments can engage in creative accounting measures to hide deficits so as to sugarcoat the budget balance ("window dressing"). Governments also have incentives to support or bail out private and public companies before elections by providing equity injections and loans. Governments may hesitate to engage in privatization before elections in an effort to maintain a stronger influence on the economy. Two previous studies test for political business cycles in stock-flow adjustments. Using a panel of 12 European countries over the period 1994–2004, Buti et al. (2007) show that stock-flow adjustments were larger in election years. Using a panel of euro-area countries over the period 1990–2007, Alt et al. (2014) show that stock-flow adjustments were lower when governments had more years left in office until the next election. The results suggest that governments are less prone to manipulate fiscal data in earlier years of the term.

I contribute to the literature on creative accounting and stock flow adjustments in the following ways: First, I extend the existing studies by using a larger dataset of 27 OECD countries over the period 1970–2011. Second, I employ a different empirical strategy. Elections may not be exogenous to fiscal policy because (unobserved) variables, such as crises or social unrest, can influence the timing of elections and fiscal policy (see Shi and Svensson 2006). For example, during the financial crisis that began in 2007, early elections were called in Greece, Portugal, and Italy, while bank bailouts gave rise to large stock-flow

⁹ On a theoretical model where the probability of winning an election depends on economic performance see Aizenman and Powell (1998).

adjustments. I thus distinguish between regular and early elections. The timing of regular elections is predetermined by the constitution and should be independent of fiscal policy. Third, I provide an overview of government interventions that gave rise to large stock-flow adjustments. My paper is one of the first to examine stock-flow adjustments during the financial crisis that started in 2007, a period during which stock-flow adjustments were particularly large.

4. Data and Descriptive Statistics

I use data on 27 OECD countries over the period 1970–2011. I use data on revenues, expenditures, debt, and GDP from the AMECO database of the European Commission, which is based on Eurostat data.¹⁰ The data apply to consolidated general government (central, state, and local governments, and the social security system). Using data from the AMECO database ensures a high level of comparability in terms of data definition and institutional coverage.

Table 1 compares the 2011 debt level of the individual OECD countries in my sample with the accumulated deficits as described in Equation (3), that is, the sum of the debt level in the initial year and all budget deficits between the initial year and 2011 as a share of 2011 GDP (in percent). Stock-flow adjustments are persistent and the difference between the stock of debt and the accumulated deficits is large for many countries. For example, in Japan, the stock of debt as a share of GDP is about 113 percentage points higher than the budget data would suggest. When calculating the budget balance of the general government, the Japanese System of National Accounts (SNA) includes surpluses in the social security funds, even though these surpluses can be viewed as a debt owed to future beneficiaries, and excludes the financial balances of public corporations (Wright 1999). “The exclusion of the substantial

¹⁰ I use data under the ESA 1995 definition because under the ESA 1995 definition longer time series are available than under the ESA 2010 definition.

surpluses on the social security fund, and the inclusion of public corporations' deficits therefore has a marked effect on the financial balance of General Government so defined. The resulting fiscal deficit is therefore much larger and more persistent than that of General Government measured according to the conventions of SNA" (Wright 1999, p. 352).¹¹ Low or even negative stock-flow adjustments, as recorded in Italy, Turkey, and some eastern European countries such as Hungary, Poland, and Slovakia, may result from the sale of financial assets and large privatization processes. In Finland, Luxembourg, and Norway, the sum of all deficits is negative, implying that the debt level should be negative. Governments in Finland, Luxembourg, and Norway thus seem to have used budget surpluses to accumulate assets instead of paying back debt (see also von Hagen and Wolff 2006; Seiferling 2013). Table A1 in the appendix shows examples of large stock-flow adjustments and corresponding government intervention in the individual countries that might explain the stock-flow adjustments.

Figure 1 shows the average stock-flow adjustments as a share of GDP in pre-election years, election years, and other years that are neither pre-election years nor election years. Voters may well consider the pre-election year budget deficit when deciding on whom to vote for because data for the election year may not yet be available, especially if elections take place early in the year. I consider parliamentary elections for countries with parliamentary political systems and presidential elections for countries with presidential systems. The average stock-flow adjustment to GDP ratio in pre-election years was 1.62%, the average stock-flow adjustment to GDP ratio in election years was 1.72%, and the average stock-flow adjustment to GDP ratio in the other years was 0.91%.

I have decomposed stock-flow adjustments in its single components. Data for the single components are, however, not available for all countries in my sample and only for years after 1994. Transactions in financial assets account for about 98% and adjustments

¹¹ The Japanese public pension fund also accumulated financial assets to a large extent (Abbas et al. 2014).

(transactions in liabilities, valuation effects, and volume effects) account for about 2% of average stock-flow adjustments (see Table A2 in the appendix). Transactions in financial assets can be decomposed in currency and deposits (35%), securities other than shares (20%), loans (12%), shares and other equity (15%), and other financial assets (19%). Figure 2 shows the development of average acquisitions of financial assets, average adjustments, and average statistical discrepancies over the period 1995-2011. Average adjustments and statistical discrepancies were relatively stationary over time.¹² Transactions in financial assets strongly increased over the period 1997-2008.

Stock-flow adjustments were particularly large during the financial crisis that started in 2007. In many countries, stock-flow adjustments reflect the acquisition of financial assets during the financial crisis. Figure 3 shows the annual stock-flow adjustment and the net acquisition of financial assets for the years 1980–2011 for the 20 countries in my sample for which data on the acquisition of financial assets are available.¹³ Belgium, for example, purchased securities from and provided equity injections to the private banks Fortis, Dexia, KBC, and Ethias in 2008. Denmark and Ireland took the precautionary measure of reinforcing cash reserves by issuing bonds or taking loans (recorded as government debt) in 2008. Ireland took the further step of injecting equity into financial institutions in 2009. The Netherlands gave loans and provided equity injections to the private banks Fortis and ABN Amro in 2008. Germany purchased securities via the special purpose vehicle SoFFin (Sonderfonds Finanzmarktstabilisierung) in 2008. Germany's high net acquisition of financial assets in 2010 reflects the establishment of two public defeasance structures (Erste Abwicklungsanstalt and FMS-Wertmanagement) and their loans (see also Reischmann 2014).

¹² The increase in adjustments in 2001 was caused by a large appreciation of debt denominated in foreign currency in Turkey, the increase in adjustments in 2008 was caused by

¹³ To calculate the net acquisition of financial assets, I use the annual change in the difference between gross and net debt because government assets are netted from gross debt to calculate net debt (see Weber 2012). I use data on gross and net debt from the IMF World Economic Outlook.

5. Empirical Analysis

5.1 Empirical Specification

The baseline panel data model has the following form:

$$\begin{aligned} \Delta \text{Stock-flow adjustment}_{it} = & \alpha \text{Election}_{it} + \beta \text{Election in next year}_{it} \\ & + \sum_l \gamma_l X_{it} + \sum_l \theta_l \Delta Z_{it} + \eta_i + \varepsilon_t + u_{it} \quad , \end{aligned} \quad (6)$$

where the dependent variable $\Delta \text{Stock-flow adjustment}_{it}$ denotes the percentage point change in stock-flow adjustments relative to GDP (in percent) in country i in period t . The variable Election_{it} assumes the value 1 if an election takes place in country i in year t and 0 otherwise. The variable $\text{Election in next year}_{it}$ assumes the value 1 if an election takes place in country i in year $t+1$ and 0 otherwise. I also distinguish between regular elections and early elections/snap elections. Distinguishing between regular and early elections mitigates the potential endogeneity of the Election_{it} and $\text{Election in next year}_{it}$ variables (see section 3). The variable $\text{Regular Election}_{it}$ assumes the value 1 if a regular election takes place in country i in year t and 0 otherwise. The variable $\text{Early election}_{it}$ assumes the value 1 if an early election takes place in country i in year t and 0 otherwise. The variable $\text{Regular election in next year}_{it}$ assumes the value 1 if a regular election takes place in country i in year $t+1$ and 0 otherwise. The variable $\text{Early election in next year}_{it}$ assumes the value 1 if an early election takes place in country i in year $t+1$ and 0 otherwise. I expect governments to strategically use stock-flow adjustments before regular elections but not before early elections because governments may not have enough time to strategically react to early elections.

The vector X includes index and dummy control variables. I examine whether political ideology influences stock-flow adjustments. Left-wing governments may try to gain more influence over the economy, for example, by acquiring company shares. Right-wing governments may be more likely to engage in privatization and deregulation (see, e.g., Bortolotti et al. 2003; Bortolotti and Pinotti 2008; Belloc et al. 2014; Potrafke 2010b). The

index *Left* takes values between 1 and 5. The index assumes the value 1 if the share of the governing right-wing parties in terms of seats in the cabinet and in parliament is larger than two-thirds, and 2 if it is between one-third and two-thirds. The index assumes the value 3 if the share of center parties is 50%, or if the left-wing and right-wing parties form a coalition government. The index is symmetric and assumes the value 4 if the share of the governing left-wing parties in terms of seats in the cabinet and in parliament is larger than two-thirds, and 5 if it is between one-third and two-thirds (see Potrafke 2009, 2011; Brech and Potrafke 2014).

To control for political constraints on the executive power which can moderate politically-driven fiscal policy manipulations I include the POLCONIII Index (Henisz 2002). The POLCONIII Index is a structurally-derived internationally comparable measure of political constraints that result from political institutions and the preferences of political agents. The dummy variable *Banking crisis* takes the value 1 for years in which a country has experienced a banking crisis because stock-flow adjustments tend to be particularly large during banking crises. The dummy variable *Balanced budget rule* assumes the value 1 for years in which a balanced budget rule is in place. Budget balance rules can be specified as overall balance, structural or cyclically adjusted balance, and balance “over the cycle.” The *Balanced budget rule* variable also covers “golden rules,” which target the overall balance net of capital expenditures (Kinda et al. 2013). I expect a positive influence of the variable *Balanced budget rule* on stock-flow adjustments. Countries with balanced budget rules might have a stronger incentive to engage in creative accounting for the purpose of hiding deficits. The dummy variable *Debt rule* assumes the value 1 for years in which a debt rule is in place. Debt rules set an explicit limit or target for public debt in percent of GDP (Kinda et al. 2013). I expect a negative influence of the *Debt rule* variable on stock-flow adjustments. The

increase of public debt, either measured in the deficit or the stock-flow adjustment, should be lower in countries with debt rules.

The vector Z includes other control variables. To control for business cycle fluctuations I include the variable *Output gap*. I use the difference between the actual value and trend value of log real GDP to calculate the *Output gap* variable (Bohn 2008).¹⁴ A positive output gap indicates an output above the trend (output surplus). The variable *Inflation* denotes the percentage change in average consumer prices.

The question arises as to whether stock-flow adjustments can always be attributed to fiscal policy or whether they might in some cases be due to expansionary monetary policy leading to depreciation and thus a rise in the value of debt denominated in foreign currency.¹⁵ To control for exchange rate valuation effects I include the variable *Valuation effect*. I calculate the *Valuation effect* variable multiplying public debt denoted in a foreign currency as a share of GDP by the real effective exchange rate. A positive change in the *Valuation effect* variable signals exchange rate depreciation. Data on debt denoted in a foreign currency is, however, not available for all countries and all years in my sample.¹⁶

I do not include a time-invariant fiscal transparency index in my regressions because I am using longer time series than previous studies and fiscal transparency may well have changed over these longer time periods. η_i describes a fixed state effect to control for state-specific characteristics. ε_t describes a fixed period effect to control for shocks that are common to all the countries in my sample. u_{it} describes the error term.

¹⁴ I calculate the trend values by using the Hodrick-Prescott filter using a smoothing parameter of 100.

¹⁵ On political business cycle and partisan effects in monetary policy, see, e.g., Dreher and Vaubel (2009) and Belke and Potrafke (2012).

¹⁶ Eurostat data on stock-flow adjustments caused by valuation effects are available for only 23 of the countries in my sample and only for years after 1995. Average stock-flow adjustments caused by valuation effects were particularly large in Hungary (0.95%) and Iceland (1.09%). Most other countries did not experience large currency revaluations.

I estimate the baseline model by using OLS with standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors; see Huber 1967; White 1980, 1982; Stock and Watson 2008). Table 2 shows descriptive statistics for all variables.

5.2 Results

Table 3 shows the regression results for the baseline panel data model. In Columns (1) and (2) I use the *Election* and *Election in next year* variables as the main explanatory variables. In column (1) I only include fixed state and fixed period effects and in Column (2) I add control variables. In columns (3) and (4) I distinguish between regular and early elections. In column (3) I only include fixed state and fixed period effects and in column (4) I add control variables. In column (5) I add the *Valuation effect* variable.

The coefficient of the variable *Election* has a positive sign but does not turn out to be statistically significant at conventional levels in columns (1) and (2). The coefficient of the variable *election in next year* has a positive sign and is statistically significant at the 5% level in columns (1) and (2). The results suggest that stock-flow adjustments increased by about 2 percentage points in years before elections. The coefficient of the variable *Regular election* has a positive sign but does not turn out to be statistically significant in columns (3) to (5). The coefficient of the variable *Regular election in next year* has a positive sign and is statistically significant at the 5% level in column (3), at the 1% level in column (4) , and at the 10% level in column (5). Stock-flow adjustments increased by about 2–2.5 percentage points in years before regular elections. The coefficient of the variable *Early election* has a positive sign but does not turn out to be statistically significant in columns (3)-(5). The coefficient of the variable *Early election in next year* has a positive sign but does not turn out to be statistically significant at conventional levels in columns (3) and (4). In column (5) the

coefficient of the *Early election in next year* variable has a negative sign and is statistically significant at the 5% level.

The coefficient of the *Left* variable has a negative sign and is statistically significant at the 10% level in columns (2) and (4). The results suggest that stock-ow adjustments were lower under left-wing governments. The coefficient of the *Political constraints* variable has a negative sign and is statistically significant at the 10% level in Column (2) and (4). The results suggest that political constraints mitigate increases in stock-flow adjustments. The coefficient of the *Banking crisis* dummy does not turn out to be statistically significant. The effect of banking crises may well be absorbed by the fixed time effects because banking crisis often occur at the same time in several countries. The coefficient of the *Debt rule* variable has the expected negative sign and is statistically significant in column (5). The coefficient of the variable *Inflation* has a positive sign and is statistically significant at the 1% level in Columns (2) and (4). The coefficients of the variables *Balanced budget rule*, *Output gap*, and *Valuation effect* do not turn out to be statistically significant.

5.3 Alternative Specifications and Robustness Tests

Following Alt et al. (2014), I count the years until the next to test for political business cycles. The panel data model has the following form:

$$\Delta \text{Stock-flow adjustment}_{it} = \delta \text{Years left in current term}_{it} + \sum_l \gamma_l X_{it} + \sum_l \theta_l \Delta Z_{it} + \eta_i + \varepsilon_t + u_{it} \quad , \quad (7)$$

where the variable *Years left in current term*_{it} assumes the value 0 if an election takes place in country *i* in year *t* and the value *n-k*, $k \in [1, n]$, in year *k* after an election year, where *n* denotes the length of the term. In countries where early elections can be called, the variable is set to the *de jure* term limit or schedule of elections and resets to 0 when an early election is called (Beck et al. 2001; Keefer 2012).

Table 4 shows the regression results for the baseline panel data model. In column (1) I only include fixed state and fixed period effects. In column (2) I include further control variables and in column (3) I add the *Valuation effect* variable. The coefficient of the *Years left in current term* variable has the expected negative sign and is statistically significant at the 10% level in columns (1) and (2). The results are in line with Alt et al. (2014): stock-flow adjustments increased at the end of the term. In Column (3) the coefficient of the *Years left in current term* variable does not turn out to be significant at conventional levels.

Creative accounting measures as a way of “window dressing” before elections requires that governments believe that voters care about and dislike deficits. In the 1970s and 1980s, however, voters in most countries were less concerned about deficits than in the 1990s and 2000s. Government debt was much lower and Keynesian thinking was very popular. Governments thus may have found it politically attractive to show deficits to signal their economic policy competence. I split the sample into a pre- and post-1992 period. In 1992 the Maastricht Treaty was signed and deficits were officially disapproved at least in Europe. Table 5 shows the regression results. Using the pre-1992 period the coefficients of the *Election in next year* and the *Regular election in next year* variables have a positive sign and are statistically significant at the 10% level. The coefficient of the *Years left in current term variable* does not turn out to be statistically significant. Using the post-1992 period, the coefficient of the *Election in next year* variable has a positive sign is statistically significant at the 10% level. The coefficient of the *Regular election in next year* variable has a positive sign and is statistically significant at the 5% level. The coefficient of the *Years left in current term* variable has a negative sign and is statistically significant at the 10% level. Bank rescue packages have resulted in a strong increase in stock-flow adjustments since 2008. Inferences do not change when I exclude the crisis years 2008–2011 from my sample.

I have replaced the dependent variable in my regression models by the individual components of stock-flow adjustments. I do not find an individual component that drives my results. Note that the data availability of the individual components is limited (see section 4). Governments may well a combination of several components of stock-flow adjustments rather than an individual component to hide deficits before elections.

I also tested whether financial crises other than banking crises influenced stock-flow adjustments. Reinhard and Rogoff (2009, 2011) provide data on banking crises, currency crashes, sovereign domestic or external default (or restructuring), inflation crises, and stock market crashes for the years until 2010. No country in my sample experienced a sovereign domestic or external default over the considered time period. Inflation crises and stock market crashes did not have a statistically significant influence on stock-flow adjustments. Currency crashes did have a statistically significant negative influence on stock-flow adjustments. The result depends, however, on the inclusion/exclusion of Canada, Iceland, or the United Kingdom, which experienced currency crises in 2008 and had negative stock-flow adjustments in the same year.

6. Conclusion

I investigate whether electoral motives induce creative accounting using a panel of 27 OECD countries over the period 1970–2011. I use the difference between the change in public debt and the deficit (stock-flow adjustment) to measure creative accounting. Not only the deficit causes changes in public debt, but also other government interventions that do not show up in the deficit figures, such as, for example, loans granted by the government, equity injections into private and public companies, or receipts from the privatization of public companies. The results show that stock-flow adjustments increased before elections. I also distinguish

between regular and early elections. The results suggest that governments strategically used stock-flow adjustments before regular elections so as to sugarcoat the budget balance.

Stock-flow adjustments are persistent and the difference between the stock of debt and the accumulated deficits is large for many of the countries in my sample. I discuss government interventions that give rise to large stock-flow adjustments. Some countries also reported low or even negative stock-flow adjustments, which may result from the sale of financial assets (e.g., Italy, Hungary, Poland, Turkey, and Slovakia). Finland, Luxembourg, and Norway appear to have used budget surpluses to accumulate assets instead of paying back debt. Stock-flow adjustments were particularly large during the financial crisis that started in 2007. To address the financial crisis and bail out financial institutions, governments bought financial assets, such as currency, deposits, securities, and loans, and injected equity into financial institutions.

Understanding the coherence between public debt and the budget deficit is indispensable for evaluating a government's fiscal performance. Borrowing in hidden accounts poses a risk to the sustainability of public finances. The International Monetary Fund (2011, p. 73) points out that "as governments seek to cut their debts and deficits in coming years, they may be tempted to supplement genuine fiscal adjustment with accounting stratagems. This happened during earlier episodes of adjustment, and there is evidence of a resurgence of the problem." Closely monitoring stock-flow adjustments can reveal data-quality problems and instances of creative accounting.

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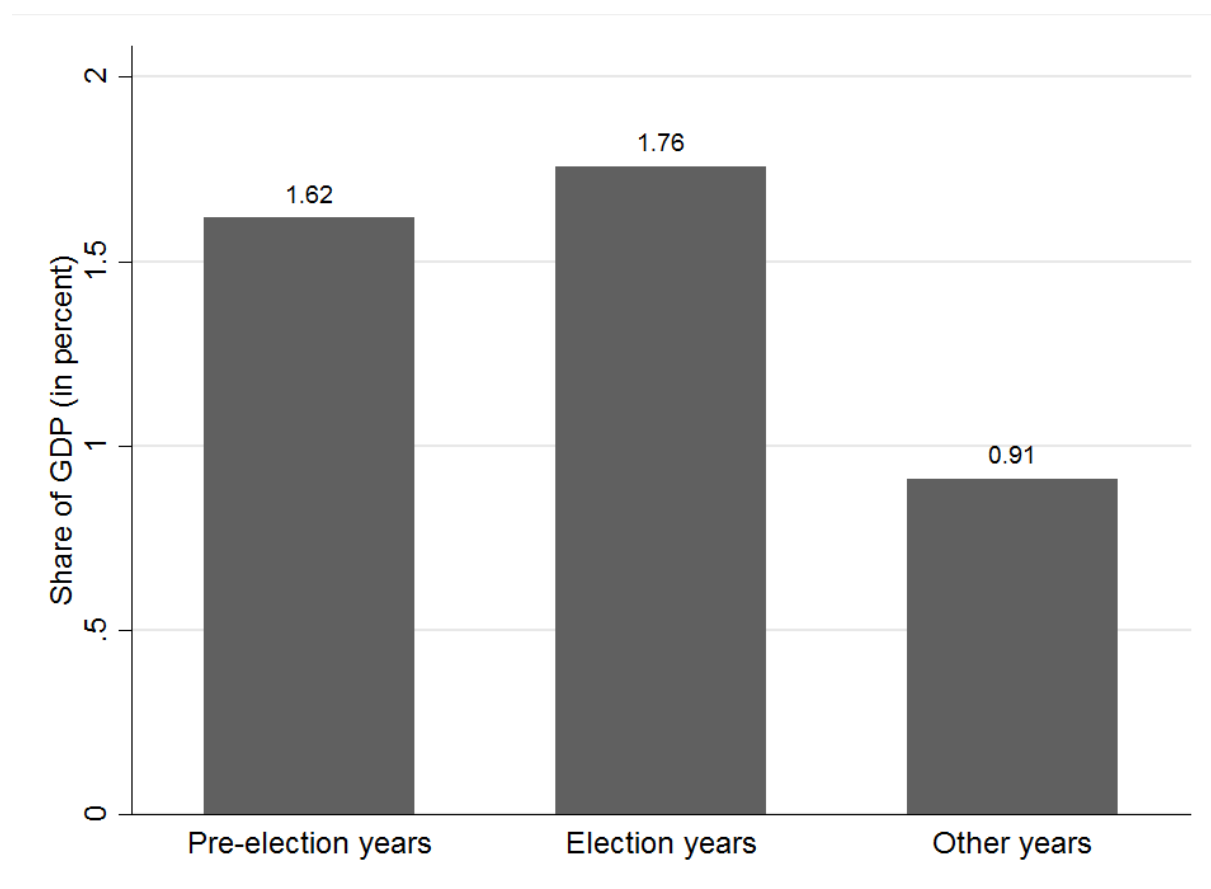
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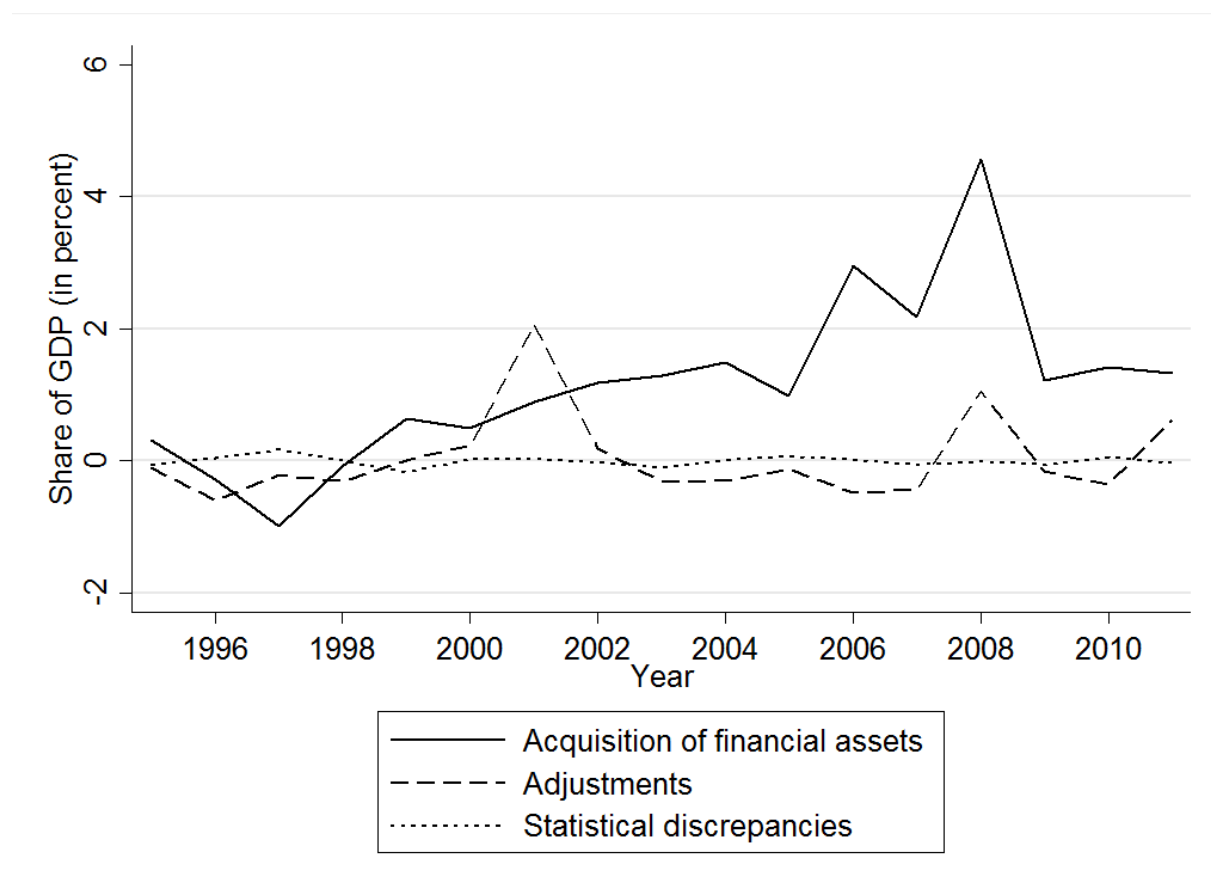
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Figure 1: Average stock-flow adjustments in pre-election years and election years

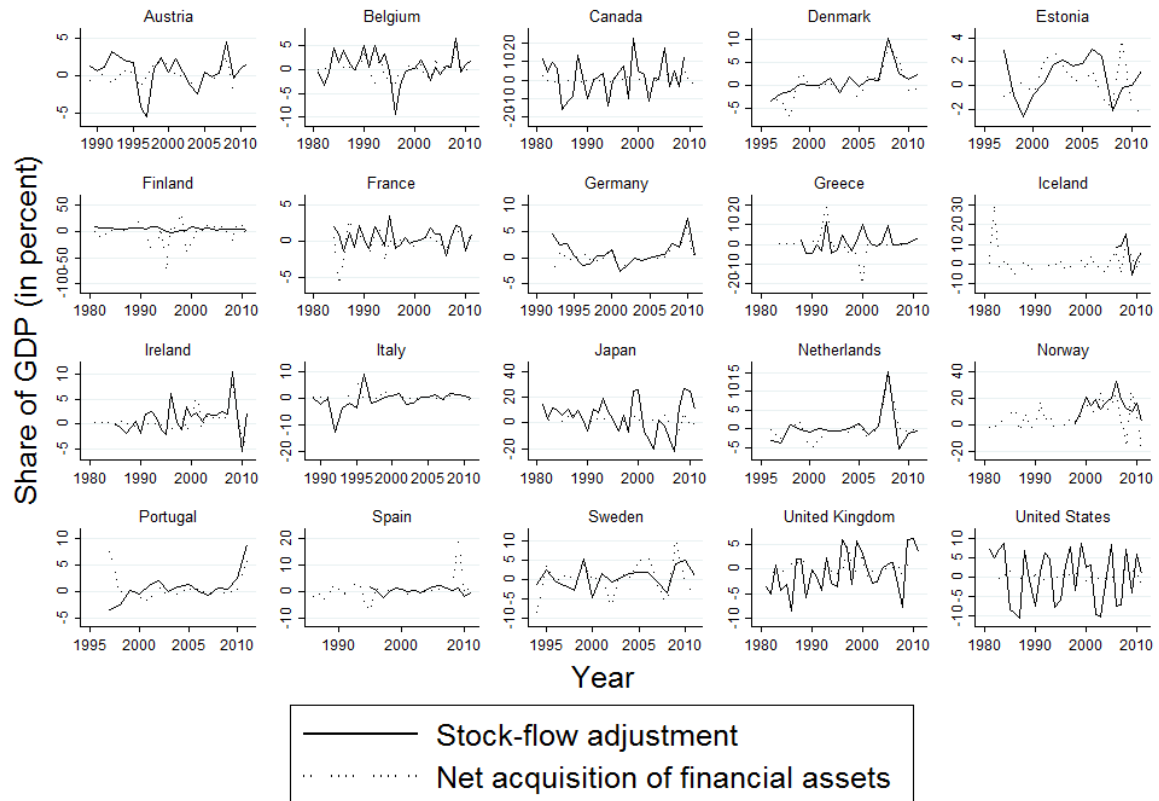
Note: The number of observations is 712 (201 pre-election years, 191 election years, 320 remaining years). Unbalanced panel for 27 OECD countries covering the period 1970–2011. Sources: AMECO, own calculations.

Figure 2: Average Components of stock-flow adjustments



Note: The sample includes Belgium, Czech Republic, France, Hungary, Luxembourg, the Netherlands, Portugal, Spain, and the UK over the period 1995-2011; Poland and Slovenia over the period 2000-2011; Estonia and Turkey over the period 2001-2011; Austria, Denmark, Finland, Germany, Greece, Ireland, Italy, Norway, Slovakia, and Sweden over the period 2002-2011; and Iceland over the period 2005-2011. Source: Eurostat, own calculations.

Figure 3: Stock-flow adjustments and transactions in financial assets



Note: Data on transactions in financial assets are available for only 20 of the countries in my sample. Sources: AMECO, IMF World Economic Outlook, own calculations.

Table 1: Difference between debt levels and accumulated deficits (in percent of GDP)

Country	Initial year	Debt in initial year A	Debt in 2011 B	Sum of deficits C	Difference (sum of SFAs) B – C
Austria	1976	28	73	58	15
Belgium	1970	60	99	84	15
Canada*	1976	42	87	61	26
Czech Republic	1996	12	39	46	-7
Denmark	1972	12	46	0	46
Estonia	1996	7	6	0	6
Finland	1975	7	49	-32	81
France	1978	21	86	66	20
Germany	1971	18	80	63	17
Greece	1988	60	170	150	20
Hungary	1996	68	73	88	-15
Iceland	2005	26	99	55	44
Ireland	1985	99	104	79	25
Italy	1980	55	121	131	-10
Japan	1981	55	230	117	113
Luxembourg	1990	5	19	-21	40
Netherlands	1976	43	66	56	10
Norway	1998	25	28	-118	136
Poland	1996	41	52	64	-12
Portugal	1977	24	108	100	8
Slovakia	1996	30	44	59	-15
Slovenia	1996	21	47	53	-6
Spain	1995	65	70	37	33
Sweden	1993	69	39	36	3
Turkey	2006	44	38	55	-17
United Kingdom	1971	73	88	88	0
United States	1970	44	107	112	-5

*Values for Canada only until 2009. Sources: AMECO, own calculations

Table 2: Descriptive statistics

Variable	Mean	Std. dev.	Min	Max	Obs.	Data source
Stock-flow adjustment	1.337	5.329	-21.96	32.43	685	AMECO, own calculations
Election	0.285	0.452	0	1	685	Own calculations
Regular election	0.164	0.370	0	1	685	Own calculations
Early election	0.121	0.327	0	1	685	Own calculations
Years left in current term	1.762	1.282	0	4	669	World Bank Database of Political Institutions
Left	2.855	0.862	1	4	667	Potrafke (2009), own calculations
Political constraints	0.456	0.123	0.120	0.720	667	Henisz (2002)
Balanced budget rule	0.579	0.494	0	1	667	Kinda et al. (2013)
Debt rule	0.517	0.500	0	1	667	Kinda et al. (2013)
Banking crisis	0.144	0.351	0	1	667	Laeven and Valencia (2012)
Output gap	0.186	2.743	-10.232	14.124	667	AMECO, own calculations
Inflation	4.194	4.011	-1.706	29.300	667	Reinhard and Rogoff (2011), IMF World Economic Outlook
Valuation effect	0.040	0.412	-2.151	2.383	187	OECD

Note: Unbalanced panel for 27 OECD countries covering the period 1970–2011. The variables *stock-flow adjustment*, *net acquisition of financial assets*, and *valuation effect* are scaled as a share of GDP (in percent). The variables *inflation* and *output gap* are expressed in percent.

Table 3: Regression results (elections)Dependent variable: Δ Stock-flow adjustment as a share of GDP

	(1)	(2)	(3)	(4)	(5)
Election	0.952 (1.48)	1.028 (1.58)			
Election in next year	2.051** (2.59)	2.124** (2.52)			
Regular election			0.676 (0.82)	0.816 (0.98)	0.356 (0.27)
Regular election in next year			2.101** (2.76)	2.273*** (2.89)	2.536* (1.95)
Early election			1.363* (1.75)	1.352* (1.73)	1.248 (0.95)
Early election in next year			2.020 (1.60)	1.957 (1.45)	-1.987** (-2.20)
Left		-0.329* (-1.74)		-0.329* (-1.80)	-0.0870 (-0.48)
Political constraints		-2.191* (-1.84)		-2.145* (-1.77)	-2.899 (-0.70)
Balanced budget rule		-0.177 (-0.18)		-0.168 (-0.17)	0.969 (1.04)
Debt rule		-0.356 (-0.36)		-0.352 (-0.35)	-2.407* (-2.07)
Banking crisis		0.339 (0.35)		0.339 (0.35)	-2.237 (-1.58)
Δ Output gap		-0.0173 (-0.16)		-0.0157 (-0.15)	0.316*** (3.12)
Δ Inflation		0.454** (2.61)		0.454** (2.60)	0.0580 (0.11)
Δ Valuation effect					0.563 (1.66)
Fixed time effects	Yes	Yes	Yes	Yes	Yes
Fixed state effects	Yes	Yes	Yes	Yes	Yes
R-squared (overall)	0.146	0.168	0.147	0.169	0.248
Number of countries	27	27	27	27	17
Number of observations	685	667	685	667	187

Note: OLS with standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors) in parentheses; ***, **, and * denote significance at the 1%, 5%, and 10% levels.

Unbalanced panel for 27 OECD countries covering the period 1970–2011.

Table 4: Regression results (years left in current term)Dependent variable: Δ Stock-flow adjustment as a share of GDP

	(1)	(2)	(3)
Years left in current term	-0.453*	-0.506*	-0.335
	(-1.84)	(-1.97)	(-1.20)
Left		-0.311	-0.125
		(-1.69)	(-0.68)
Political constraints		-2.528*	0.166
		(-1.85)	(0.05)
Balanced budget rule		-0.0522	1.066
		(-0.05)	(1.37)
Debt rule		-0.726	-2.376*
		(-0.67)	(-1.92)
Banking crisis		0.263	-1.103
		(0.25)	(-0.83)
Δ Output gap		-0.0398	0.259**
		(-0.38)	(2.51)
Δ Inflation		0.448***	0.153
		(2.80)	(0.27)
Δ Valuation effect			0.446
			(0.94)
Fixed time effects	Yes	Yes	Yes
Fixed state effects	Yes	Yes	Yes
R-squared (overall)	0.134	0.157	0.209
Number of countries	27	27	17
Number of observations	669	654	187

Note: OLS with standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors) in parentheses; ***, **, and * denote significance at the 1%, 5%, and 10% levels.

Unbalanced panel for 27 OECD countries covering the period 1970–2011.

Table 5: Alternative time periodsDependent variable: Δ Stock-flow adjustment as a share of GDP

Sample	Coefficient (t-statistic) of <i>Election in next year</i>	Coefficient (t-statistic) of <i>Regular election in next year</i>	Coefficient (t-statistic) of <i>Years left in current term</i>
Pre-1992	1.890* (0.90)	2.015* (1.13)	-0.468 (-0.36)
Post-1992	2.438* (2.11)	2.420** (2.24)	-0.575* (-1.72)
Excluding 2008-2011	2.744*** (2.93)	2.320*** (3.54)	-0.526** (-2.14)

Note: OLS with standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors) in parentheses; ***, **, and * denote significance at the 1%, 5%, and 10% levels.

Unbalanced panel for 27 OECD countries covering the period 1970–2011.

Table A1: Episodes of large stock-flow adjustments

Country	Year	SFA	Events	References
Austria	1997	-5.5	One-time payment from a state enterprise (Postsparkasse) in return for assuming pension liabilities; Reclassification of state enterprises with substantial debt (e.g., Asfinag) from government to corporate sector.	Easterly et al. (1999)
	2008	4.5	Financial crisis (accumulation of currency and deposits)	Laeven and Valencia (2012), Eurostat (2009)
Belgium	1996	-9.3	Booking operation (three-day swaps of Treasury certificates by technically independent social funds within the Belgian government) designed to show a declining debt level and therefore qualifying for EMU membership.	Dafflon and Rossi (1999), Laughland and Paul (1997)
	2008	6.7	Equity injections in private banks (Fortis, Dexia, KBC, Ethias); purchase of securities issued by a financial institution.	Eurostat (2009)
Canada	1985	-16.0	Privatizations.	Padova (2005)
Czech Republic	2002	-2.0	Privatizations.	Eurostat (2006)
	2003	-4.7	Debt cancellation.	Eurostat (2006)
	2004	1.7	Equity injections in CEPS a.s.	Eurostat (2008)
Denmark	2008	10.4	Reinforcement of cash reserves by issuing bonds or taking loans (recorded as government debt).	Eurostat (2009)
Estonia	2002	1.7	Equity injections in Riigi Kinnisvara (real estate company).	Eurostat (2007)
	2006	3.1	Equity injections in Eesti Vedelkütusevaru Agentuur (oil stockpiling company)	Eurostat (2008)
Finland	2008	-2.1	Sale of reserve assets.	Eurostat (2009)
	1992	7.3	Banking crisis associated with currency crisis (Markka).	von Hagen and Wolff (2006)
	2000	8.5	Exceptional dividend of the fully state-owned bank Leonia on eve of its merger with Sampo.	Koen and van den Nord (2005)
	2007	3.9	Equity injection in Finnair Plc and Sponda Plc.	Eurostat (2008)
	2008	4.2	Lending activities of employment pension institutions.	Eurostat (2009)
France	1995	3.5	Equity injections into Charbonnages de France.	Koen and van den Nord (2005)
	1997	-0.1	One-time payment from France Telecom, a public enterprise, to compensate the state for taking on its pension liabilities.	Milesi-Ferretti (2001)
	2003	1.8	Equity injections in France Telecom.	Eurostat (2007)
	2006	-2.1	Enhanced liquidity management by the Treasury aiming at reducing the increase in debt.	Eurostat (2009)
	2008	2.2	Financial crisis.	Laeven and Valencia (2012)

Germany	1992	4.4	German Unity Fund established to finance German reunification.	Reischmann (2014)
	1997	-1.2	Disposal of the states Telekom shares; reclassification of public hospitals from the government sector to the corporate sector, taking their debts out of general government debt; unification-related debt of the privatization agency "Treuhand" not part of general government budget any more.	Easterly et al. (1999), Dafflon and Rossi (1999), Koen and van den Noord (2005)
	2008	2.7	Purchases of securities by special purpose vehicles (Financial Market Stabilization Fund).	Eurostat (2009)
	2009	1.8	Equity injections in financial institutions.	Eurostat (2011)
	2010	7.4	Establishment of two public defeasance structures ("FMS Wertmanagement", "Erste Abwicklungsanstalt") and their loans.	Eurostat (2011), Reischmann (2014)
Greece	1993	11.3	Debt of the Greek government at the Bank of Greece was officially recorded as public debt.	von Hagen and Wolff (2006)
	1996	5.0	Equity injections in state-owned entities and enterprises.	Koen and van den Noord (2005)
	1998	-3.2	Privatizations (Hellenic Telecommunications Organization, Hellenic Petroleum, Water Supply Co., two subsidiaries of Olympic Airways); sales of shares in the Bank of Greece.	Easterly et al. (1999)
	2000	9.9	Revaluation of foreign-currency-denominated liabilities; understatement of military expenditures.	Buti et al. (2007), Alt et al. (2013), Koen and van den Noord (2005)
	2005	9.5	Equity injections in ATE Bank.	Eurostat (2007)
Iceland	2011	6.1	Financial crisis.	Laeven and Valencia (2012)
Ireland	2008	10.6	Reinforcement of cash reserves by issuing bonds or taking loans (recorded as government debt).	Eurostat (2009) Laeven and Valencia (2012)
	2009	1.7	Capital injections in private banks in the form of purchase of preference shares by National Asset Management Agency (NAMA).	Eurostat (2010)
	2011	2.3	Equity injections in Irish Life & Permanent and Allied Irish Banks.	Alt et al. (2014), Eurostat (2012)
Italy	1996	8.8	Reclassification of the national railway's debt.	Koen and van den Noord (2005), Milesi Ferretti (2001)
	1997	-2.0	Privatization of the highway management network Autostrade and the airline Alitalia.	Easterly et al. (1999)
Japan	2007	-22	Privatization of Japan Post.	
Luxembourg	2008	10.9	Equity injections in private banks.	Eurostat (2009)
Netherlands	2008	15.3	Equity injections in private banks (Fortis, ABN Amro); Loans to financial	Eurostat (2009) Eurostat (2011)

			institutions in the context of the financial crisis.	
	2009	-5.4	Repayment of short-term loans by a financial institution; Privatizations.	Eurostat (2011) Eurostat (2013)
Poland	2005	2.7	Equity injection in GAZ-System.	Eurostat (2008)
Portugal	2002	2.0	Subsidies to seven public enterprises (including <i>Metro Lisboa</i>).	Alt et al. (2014)
	2011	9.0	Transfers of pension funds from banks to the state was not used to reduce government debt but kept as deposits; Disbursements of loans granted by the EU (under the EFSM), the euro-area member states (under the EFSF), and the IMF.	Eurostat (2012)
Slovakia	1999	9.6	Banking crisis.	Laeven and Valencia (2012)
	2002	-8.4	Privatizations; Debt cancellation.	Eurostat (2006)
	2006	-0.2	Privatization.	Eurostat (2007)
Slovenia	2009	5.7	Financial crisis.	Laeven and Valencia (2012)
Spain	1997	-2.6	Privatization of Endesa (the country's main electricity group); Privatization receipts from the sale of part of Repsol treated above the line; Capital gains receipts associated with the sale of the final tranche of Telefonica.	Dafflon and Rossi (1999), Koen and van den Nord (2005)
	2007	1.1	Equity injection in ICO (export insurance).	Eurostat (2008)
Sweden	1993	-8.1	Withdrawal of the remaining funds in the Working Life Fund.	Koen and van den Nord (2005)
	2010	5.1	Financial crisis.	Laeven and Valencia (2012)
Turkey	2008	-5.8	Privatizations	Palmer (2010)
United Kingdom	2005	1.0	Equity injection in NGDF nuclear fund.	Eurostat (2008)
	2009	6.0	Equity injections in financial institutions.	Eurostat (2011)
	2010	6.3	Financial crisis.	Laeven and Valencia (2012)
United States	1987	-10.6	Privatization of Conrail (railroad company).	Kosar (2006)

Note: SFA denotes stock-flow adjustment as a share of GDP (in percent).

Table A2: Decomposition of stock-flow adjustments

Variable	Mean	Std. dev.	Min	Max
Stock-flow adjustment	1.517	4.942	-12.5	34.4
Transactions in financial assets	1.493	4.243	-10.2	34.8
Currency and deposits	0.529	2.144	-11.8	11.8
Securities other than shares	0.296	2.040	-13.9	24.7
Loans	0.185	2.100	-20.1	14.4
Shares and other equity	0.217	2.715	-13.3	21.8
Other financial assets	0.288	0.643	-2.3	3.9
Adjustments	0.036	2.010	-4.5	23.3
Valuation effect	0.165	1.916	-5.8	25.7
Statistical discrepancies	-0.013	0.309	-1.9	1.6

Note: N=304. The sample includes Belgium, Czech Republic, France, Hungary, Luxembourg, the Netherlands, Portugal, Spain, and the UK over the period 1995-2011; Poland and Slovenia over the period 2000-2011; Estonia and Turkey over the period 2001-2011; Austria, Denmark, Finland, Germany, Greece, Ireland, Italy, Norway, Slovakia, and Sweden over the period 2002-2011; and Iceland over the period 2005-2011. Source: Eurostat.

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