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**ELECTIONS AND THE STRUCTURE OF TAXATION
IN DEVELOPING COUNTRIES**

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Elections and the structure of taxation in developing countries

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Résumé. Cet article analyse l'impact du calendrier électoral sur la composition des recettes fiscales (taxes directes versus taxes indirectes) dans les pays en développement. Il constitue ainsi une extension des études traditionnelles des cycles politico-budgétaires qui considèrent l'effet des élections sur les recettes totales. L'analyse de données de panel pour 56 pays en développement sur la période 1980-2006, révèle de claires modifications de la structure fiscale en période électorale. Corrigeant pour le potentiel biais d'endogénéité lié à la date de tenue des élections, nous trouvons que les recettes issues de la fiscalité indirecte sont réduites juste avant les élections tandis qu'il n'y a pas de modification significative des recettes de fiscalité directe. En année électorale, les recettes fiscales indirectes sont inférieures de 0,3 point de pourcentage de PIB à celles hors périodes électorales, correspondant à une diminution d'environ 3,4% de la moyenne des recettes dans notre échantillon.

Mots-clés : Cycles politico-budgétaires, Elections, Fiscalité, Pays en développement
Codes JEL : D72, E62, O10.

Abstract. This article analyses the impact of the electoral calendar on the composition of tax revenue (direct versus indirect taxes). It thus represents an extension of traditional political budget-cycle analyses assessing the impact of elections on overall revenue. Panel data from 56 developing countries over the 1980-2006 period reveals a clear pattern of electorally-related policy interventions. Taking the potential endogeneity of election timing into account, we find robust evidence of lower indirect taxes being applied by incumbent governments in the period just prior to an election. Indirect tax revenue in election years is estimated to be 0.3 GDP percentage points lower than in other years, corresponding to a fall of about 3.4% of the average figure in the sample countries, while there is no such relationship with direct tax revenue.

Keywords: Political budget cycles, Elections, Taxation, Developing countries.
JEL classification: D72, E62, O10.

1. Introduction

This paper asks whether and to what extent the structure of taxation is manipulated in developing countries during election periods. Just before elections, governments may reduce certain kinds of tax in order to improve their chances of re-election. The theoretical basis of these electoral manipulations, which are known as political business cycles, dates back to the seminal papers of Nordhaus (1975) and Lindbeck (1976). Empirical tests of political business cycles were initially carried out mainly in developed countries, but produced only mixed results (Alesina and Roubini 1992; Alesina *et al*. 1997). Rather than political cycles in real macroeconomic outcomes, several articles revealed evidence of political cycles in a number of policy variables in developed economies (see, e.g., Blais and Nadeau 1992; Efthyvoulou 2011; Hakes 1988; Yoo 1998) and especially in fiscal variables. These latter were called political budget cycles (Drazen 2001).

Political budget cycles have been found to be more prevalent in countries where democracy is more recent, presumably because voters there lack the experience of the competitive electoral process (Brender and Drazen 2005). In these "new" democracies, fiscal manipulation might therefore be rewarded rather than punished. Shi and Svensson (2006) consider the relationship between elections and fiscal balances in a large sample of countries and reveal that political budget cycles are larger in developing than developed countries. They explain their findings by the greater rents that accrue to politicians from remaining in power and the relative lack of informed voters in the electorate.

A number of pieces of work have tried to distinguish which fiscal magnitude - revenues or expenditure – is the most subject to political cycles. Block (2002) confirms the presence of political business cycles in a sample of sub-Saharan African countries, both in fiscal balances

and public expenditure, but finds no significant effect on overall tax revenue. Equally, in a sample of 24 developing countries, Schuknecht (2000) finds no significant affect of elections on overall revenue. In single-country analyses, Fall (2007) for Papua New Guinea and Gonzalez (2002) for Mexico find evidence of the political manipulation of fiscal balances and public spending, but no significant effect on overall revenue.

However, the absence of any effect on overall tax revenue may mask significant electoral manipulation of some particular taxes, as found in the case of expenditure by Vergne (2009): electoral cycles may work via the structure of tax revenue rather than the overall level. With taxes, contrary to expenditure, it is difficult to target specific geographic areas, but it is possible to target voters through particular types of tax cuts. The aim of this paper is therefore to see whether governments manipulate specific components of tax revenue in election periods. We appeal to the theoretical model of Drazen and Eslava (2010) to understand which kinds of taxes are more likely to be politically manipulated, and test these theoretical predictions on a sample of 56 developing countries over the 1980-2006 period.

There is, to our knowledge, no existing work on political budget cycles in different components of tax revenue which appeals to a cross-section of developing countries. The evidence for developed economies is relatively scarce and has produced mixed results.[1] With respect to developing countries, Khemani (2004) considers Indian data and distinguishes different components of both expenditure and revenue, finding evidence of targeted commodity tax breaks prior to elections.

The existence of electoral budget cycles in non-democratic countries is open to question

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[1] Andrikopoulos *et al*. (2004) find significant election effects on indirect taxes, but only in a few EU countries. Katsimi and Sarantides (2011) find a significant relationship between elections and direct taxes in a sample of 19 OECD countries and Mikesell (1978) between election and broad-based taxes in American states. Ashworth and Heyndels (2002) find evidence of a political budget cycle in national tax structures in OECD countries, but focus on tax structure turbulence and therefore provide no information on which specific component of tax is the most affected.

but, as Rogoff (1990) notes, even in dominant-party systems where election outcomes are largely pre-determined, politicians may still care about the victory margin. They may also wish to satisfy voters in order to reduce the risk of a coup d'etat. With the advent of democracy in developing countries, elections have become more frequent over time (in our sample of countries, 82 elections were held in the 1980s, 114 in the 1990s, and 83 in only 7 years between 2000 and 2006). This multiplication of elections may well, as highlighted by Chauvet and Collier (2009), increase government accountability and lead to better policy. However, if the elections are badly conducted, the cyclic negative effect of elections on economic variables may predominate. It would therefore seem crucial to establish whether this greater frequency of elections will go hand-in-hand with more political manipulation of tax revenue, creating obstacles to tax reform.

Theoretical models (Rogoff 1990; Drazen and Eslava 2010) predict how incumbents may change the composition of government expenditure to influence voters. However, there is to our knowledge no existing theoretical model predicting an electoral effect on tax structure. We here apply the model of Drazen and Eslava (2010) to tax composition. The resulting prediction for developing countries is lower indirect taxes in election years (compared to non-election years) and a corresponding pre-election rise in direct taxes. Our empirical results, using a GMM-system estimator and taking the potential endogeneity of election timing into account, do indeed suggest that lower indirect taxes are the preferred channel via which incumbents in developing countries attempt to curry favour prior to elections. This result continues to hold when we consider only predetermined elections and when we use an alternative method of dating elections.

The paper is divided into five sections. The theoretical model of the political budget cycle in tax revenue composition is presented in Section 2. Section 3 then describes our empirical framework, the results of which are set out in Section 4. Last, Section 5 concludes.

2. A theoretical model of political budget cycles in tax composition

There are two theoretical approaches to political business cycles: opportunistic and partisan. Partisan models (Hibbs 1977; and Alesina 1987) assume a two-party political system in which each party has a different policy platform, with political business cycles arising due to politicians' pursuit of ideological goals; opportunistic cycles, as initially developed by Nordhaus (1975), are created by incumbents manipulating economic variables in order to maximize their re-election chances just prior to elections. Opportunistic political cycles in fiscal policy variables occur both in developed and developing countries, although they are larger in the latter. A consensus has emerged that political cycles in macroeconomic real outcomes in developed economies are mainly due to temporary partisan rather than opportunistic electoral effects (Alesina 1987; Alesina and Roubini 1992). This received wisdom has however been questioned by Grier (2008), who finds robust evidence of sizeable opportunistic political business cycles in US real GDP growth.

Given that our focus here is on developing countries and fiscal policy variables, we will adopt an opportunistic rather than partisan approach to political cycles. In opportunistic political budget-cycle models (Rogoff and Sibert 1988; Persson and Tabellini 1990), political budget-cycles arise due to information asymmetry between electors and politicians regarding the latter's competence. Voters infer policymakers' competence from observable economic data, which incites opportunistic governments to manipulate policy variables in order to appear competent prior to elections. Some of the theoretical models predict cycles in the composition of expenditure rather than total expenditure itself. In the signaling model of Rogoff (1990), the incumbent has an incentive to "signal" her competence by redirecting fiscal policy towards easily-observed consumption expenditure and away from government investment. Drazen and Eslava (2010) suggest a different approach to this "competence" argument, and present a model

of voter-friendly opportunistic changes in the composition of expenditure arising because citizens and politicians have different preferences over types of government spending.

We here draw a parallel to Drazen and Eslava's (2010) model of tax-revenue composition, but first of all need to determine citizens' preferences over tax policy in developing countries.

In developing countries, a distinction can be made between indirect taxes, representing on average 9% of GDP in our sample countries, and direct taxes (3.8% of GDP). Indirect taxes consist of taxes on international trade and domestic broad-based consumption taxes, namely sales or value-added taxes and excises. The reliance on taxes on international trade has been falling since the 1990s in developing countries, while domestic consumption tax revenue has risen (Baunsgaard and Keen 2010). Among these domestic consumption taxes, excises are tools for the regulation of the consumption of particular goods. However, there is a tension between their regulatory and revenue aspects (Shughart II 1997). Direct taxes consist of taxes on both individual and company income.

Citizens' preferences over the different components of taxes, direct or indirect, can be determined by taking two elements into account. First, in developing countries, given that the stock of capital owned by the median voter is less than the average endowment, this voter bears a relatively larger burden of taxes on consumption than on income from capital. She should therefore have a preference for lower indirect taxes and higher direct taxes. Second, given that a considerable number of the citizens work in the informal sector, which is particularly prominent in developing countries (Schneider and Enste 2000 and Dreher and Schneider 2010), only relatively few people pay income tax on wages. Contrary to developed economies, where personal income tax raises a significant share of tax revenue, the bulk of direct tax revenue in developing countries comes from corporate income tax. Individual income tax plays at most a

limited role (Bird and Zolt 2005). Voters in developing countries should then prefer lower indirect taxes to lower direct taxes.

We then propose a poltical budget cycle model of tax composition drawing on Drazen and Eslava (2010), which refers to the electoral manipulation of expenditure composition. The incumbent here may modify tax composition instead of the composition of expenditure. We have suggested that individuals in developing countries prefer lower indirect taxes. We here consider that citizens only value lower indirect taxes, whereas politicians will value lower levels of other components of tax revenues, namely direct taxes.[2]

Two types of policymakers are assumed in Drazen and Eslava (2010), who put different weights on citizen welfare compared to their own interests. On the one hand, the "people" policymaker puts a large weight on citizen welfare, and will implement the citizens' preferred policy, low indirect taxes, in both election and non-election periods. On the other hand, a "desk" policymaker puts considerable weight on her own interest and will prefer, in non-election periods, relatively high indirect taxes, in order to provide firms with low direct taxes. These weights are not known to voters, but are crucial to the latter's choice. Voters will try to infer how socially-oriented the incumbent is from the pre-election level of indirect taxes. The probability of re-election therefore depends on tax-policy decisions.

The equilibrium outcome depends on whether the desk policymaker values re-election more than lower direct taxes. Intuitively, the desk policymaker may retreat from the preferred policy of lower direct taxes during election periods in order to mimic a people policymaker and increase re-election chances. A political budget cycle will then exist as the desk policymaker

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[2] As explained in Drazen and Eslava (2010), the second component should be one that politicians may value but voters do not. We can think, for instance, of politicians who value low direct taxes in order to favor companies and potentially receive contributions. However, we assume here that changes to the second component do not help influence election success.

chooses, with some probability, low indirect taxes in the election year, while in non-election years low direct taxes and high indirect taxes will prevail. By shifting the composition of taxes toward voters' preferences, the incumbent tries to signal preferences that are close to those of voters. Hence, if re-election is valuable enough, a political budget cycle will exist with indirect taxes that are lower in election than non-election years. Given that the government's budget constraint is assumed to be binding, direct taxes will vary in the opposite direction.

We will now assess the empirical validity of the above theoretical predictions using a sample of developing countries.

3. The empirical framework

We carry out the empirical test of the electoral effect on tax policy using panel data on 56 developing countries[3] (see Appendix 1) over the 1980-2006 period. For both type of tax, direct and indirect, we estimate the following equation to look for evidence of electoral tax manipulation:

$$Taxrev_{i,t} = \alpha_1 Election_{i,t} + X_{i,t}^{'} \alpha_2 + \mu_i + \lambda_t + u_{i,t}$$

where i and t are country and year indicators, respectively, and *Taxrev* is the dependent variable. This latter is defined as either direct or indirect tax revenue divided by GDP. Direct taxes correspond to income tax (corporate plus individual tax revenue) whereas indirect tax comprises taxes on international trade and domestic taxes on consumption (sales tax, value-added tax and excises). The "Election" dummy takes the value 1 in election years and 0 otherwise, and the

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[3]We consider all the developing countries listed as low, lower-middle or upper-middle income in the World Bank classification, but require that they have data for at least 15 years over the 1980-2006 period to be included in our sample. Four of the remaining countries (Bhutan, Jordan, Myanmar and the Syrian Arab Republic) held no elections in the period under consideration, and are thus excluded from the sample.

vector X captures the other explanatory variables, discussed further below, affecting direct and indirect tax revenues. The term μ is a country-specific effect,[4] λ are time dummies and u is an unobserved random error term.

The data on election years come from the Database of Political Institutions (DPI) of Beck *et al*. (2001), the "Voter Turnout Since 1945 to Date" of the Institute for Democracy and Electoral Assistance (IDEA), and the election guide of the International Foundation for Electoral Systems (IFES). We consider legislative elections for countries with parliamentary systems and presidential elections for those with presidential systems. Appendix 1 summarizes both the type of political system in place in 2000 and the timing of elections in all of our sample countries. Two-thirds of the elections in our sample took place in democratic countries (countries with a positive Polity2 index on the scale ranging from -10 to +10). The tax data for African countries come from Keen and Mansour (2010), who compiled an almost balanced data set from IMF Government Finance Statistics (GFS) and Article IV reports. For the other developing countries, the data are taken from the same sources, namely GFS and Article IV data.

Drawing on the empirical literature that models the share of tax revenue in GDP (Adam *et al*. 2001; Khattry and Rao 2002; Keen and Lockwood 2010), we include a number of control variables. The lagged dependent variable controls for persistence in tax revenues over time. The theoretical prediction we test here is based on comparative statics, and the corresponding econometric specification is therefore static also. The lagged dependent variable is however required as tax revenues are persistent; this variable appears regularly in tests of electoral budget cycle models based on comparative statics (see e.g. Block 2002; Shi and Svensson 2006; Vergne 2009; Drazen and Eslava 2010). GDP per capita is a proxy for overall development, and is

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[4] The inclusion of country fixed effects helps to control for institutional heterogeneity across countries, which is greater in multi-country studies than in cross-sectional units within the same country.

usually positively correlated with tax revenue. The structure of the economy is picked up by the degree of urbanization, which is expected to have a positive impact on tax revenue since it is arguably easier to collect taxes in urban areas. We also introduce a demographic variable, namely the share of the population aged 14 or less: the correlation should be positive here as those out of the market are associated with a greater need for tax revenue. Higher inflation should reduce tax revenue via the Tanzi-Olivera effect. Finally, the share of imports should increase indirect tax revenue given that, in developing countries, a considerable part of value-added taxes come from levies on imports. All of these variables come from the World Development Indicators (WDI) database. The table in Appendix 2 lists the descriptive statistics for all of the variables included in the analysis.

The inclusion of the lagged dependent variable may yield biased coefficient estimates with the fixed-effect estimator, since the lagged level of tax revenue is by construction correlated with the error term (Nickell 1981). We therefore check the robustness of the OLS-fixed effect results via GMM estimation. We use the GMM-system estimator, rather than the difference-GMM estimator, since the former minimizes the potential bias and imprecision associated with the latter (Arellano and Bover 1995; Blundell and Bond 1998). The GMM-system estimator combines, in a system, level equations where the right-hand side variables are instrumented by the lagged (one period or more) first-differences of the series and an additional set of first-difference equations, using lagged levels of the series as instruments. We test the validity of the GMM-system estimation via a Hansen test of over-identification. The null hypothesis is that our instruments are valid since they are not correlated with the residual. We also present a test of serial correlation in the residuals, which assesses the presence of first-order serial correlation and the absence of second-order serial correlation. Since our time dimension (27 years) is relatively long compared to the number of countries (56), we can also check the stationarity of the

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dependent variable to ensure that our estimation technique is appropriate. The Maddala-Wu test of stationarity on direct and indirect tax revenue as a percentage of GDP rejects the null hypothesis that the series are non-stationary.

Since the timing of elections is set out in the Constitution, assuming exogeneous elections seems reasonable. However, governments do sometimes call mid-term elections or postpone elections for political reasons. Here election timing may no longer be exogenous to government policy. We use two alternative strategies to deal with the potential endogeneity of elections from reverse causality or shocks which affect both the election date and tax revenue. First, as in Block (2002) and Shi and Svensson (2006), the GMM estimator can partly resolve the endogeneity problem, since we treat the election variable not as exogenous but rather as predetermined (Arellano and Bond 1991). The election variable is therefore instrumented by its past values. The second strategy, which tests whether or not the GMM results are robust and unbiased, is to distinguish pre-determined elections,[5] defined as those which occur according to constitutionally-established intervals, from those which are "endogenous". In our sample, 190 out of 279 elections (68%) count as pre-determined.

4. Results

This section presents the results of both OLS fixed-effect and GMM-system estimation of the electoral manipulation of direct and indirect taxes. We then assess whether the results are sensitive to an alternative measure of the election variable, and whether changes also appear in the year following elections. We then distinguish between predetermined and endogenous elections.

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[5] Using the data from Brender and Drazen (2005).

4.1. The effect of elections on the components of tax revenue

Table 1 presents a number of specifications of both the fixed-effect and GMM-system estimator. The first four columns of Table 1, referring to fixed-effect estimation, reveal a significant fall in indirect tax revenue during election years and a positive but insignificant effect of elections on direct tax revenue. The GMM-system estimator (columns 5 and 6), which controls for the potential endogeneity of election timing, confirms these results. Including the share of the population aged below 14 as an additional control variable (columns 7 and 8) does not alter the conclusion that indirect tax revenue falls before elections. This empirical finding suggesting the use of lower indirect tax revenue by governments to increase their popularity at elections can be illustrated by a number of country experiences. First, the recurrent demonstrations in developing countries when changes in consumption taxes are seen as unfair, as in the one month-long street protests against the new VAT rules (Niger in 2005), show that people do care about the level of indirect taxes. Indirect tax exemptions for sensitive goods, such as rice or oil, which directly benefit voters may therefore be enacted in election periods. For example, in Ghana, sharp cuts in petroleum taxes were announced just before the 2008 elections.

There are a number of patterns in the control variables. GDP per capita is positively and significantly related to direct tax revenue, but has no effect on indirect tax revenue. Adam *et al*. (2001) also find an insignificant effect of GDP on indirect taxes and trade taxes. Khattry and Rao (2002) even suggest that GDP per capita is associated with lower trade taxes in lower-middle income countries. As expected, imports as a share of GDP are positively and significantly related to indirect tax revenues. Inflation often significantly reduces direct taxes, as found by Adam *et al*. (2001) and Ghura (1998). This is consistent with the Tanzi-Olivera effect, whereby, in an inflationary environment when actual tax payments lag the transactions to be taxed, the tax obligations are lower in real terms at the time of payment. The Hansen, AR(1) and AR(2) tests

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confirm that the estimates are reliable.

The results then largely support our theoretical prediction that governments may reduce, for electoral reasons, only one specific type of tax, indirect taxes, in order to attract voters. The size of this reduction is non-negligible: in our preferred specification (column 8), indirect tax revenue is 0.31 percentage points of GDP lower in election than in non-election years. This corresponds to a fall of 3.4% in indirect tax revenue as a share of GDP in election years compared to the mean level in our sample (9.1% of GDP).

However, since we measure tax revenue as a share of GDP, we do not know whether this lower revenue reflects lower tax rates on some commodities, which translate into lower consumer prices, or less effort in tax collection, as a favor to companies. In the context of local government elections in India, Khemani (2004) concludes that, as local governments cannot change tax rates, the lower commodity tax revenue close to elections reflects less effort in tax collection. In our case, elections are at the national level, and incumbents can easily change tax rates on some sensitive goods consumed by a large share of voters. The significant fall in indirect tax revenue can therefore be considered as voter-friendly manipulation. However, contrary to the theoretical prediction, direct taxes are not significantly increased to counter these lower indirect taxes in election periods. This suggests that it may be less easy for governments to increase taxes, perhaps for structural reasons, than to reduce them. Our finding that governments only reduce one particular type of tax, indirect taxes, for electoral reasons is an interesting insight. This adds to the work that has found no electoral manipulation in overall taxes. A significant fall in indirect taxes but no significant change in direct taxes might well lead to overall tax revenue remaining statistically flat in election periods.

4.2. Election dates

Our dummy variable for there being an election, following much of the literature, equals one in the election year, regardless of when in the year that election was held. For elections during the last six months of the year, the dummy mostly captures the pre-election period. However, for earlier elections, any pre-electoral tax changes likely took place in the year before the election, so that the dummy primarily captures post-electoral effects.

We appeal to two alternative measures to tackle these issues. We first split elections into those that occurred in the first and second half of the year (Brender and Drazen 2005). Second, as in Chauvet and Collier (2009), Drazen and Eslava (2010) and Vergne (2009), we test an alternative definition of the election variable in which an election held during the first half of the year is coded with the previous year equal to one and zero otherwise. When the election occurs during the second half of the year, the dummy variable remains coded as previously. Table 2 shows the results using these two approaches.

In the first four columns, for elections held in the second half of the year (in which the election variable is arguably less noisy), we find as previously a significantly negative effect of elections on indirect tax revenue and no effect on direct tax revenue. We now turn to the results from coding the election dummy differently (columns 5 to 8). We note that the resulting estimates on the dummy variable continue to have the same sign as above, regardless of the month in which the election occurred. Indirect tax revenue falls significantly immediately before an election while direct taxes remain unchanged. If we compare the results in Table 2 to those in Table 1, via the *p*-value, the original coding of the election variable slightly outperforms the alternative dating system. Having confirmed that our main result is robust to alternative coding, we retain the original election dummy for the remainder of the analysis.

4.3. Post-election effects on tax revenue

With indirect tax revenues falling significantly during election years, we may also wonder whether there is a post-election effect. The theoretical model suggests that tax revenue changes only during election years, returning to the normal non-election level in the year following the election. We thus include a Post-election$_{i,t}$ dummy variable, for t being a post-election year in country i. The results in Table 3 show that there is no significant change in indirect tax revenue in the year following an election. This absence of a post-election reaction is consistent with Brender and Drazen (2005). Indirect tax revenue is therefore not significantly higher following an election to make up for the 0.3 percentage point of GDP lower indirect tax revenue during the election year.

4.4. Pre-determined versus endogenous elections

In order to check that the GMM-system results really reflect a causal relationship from elections to indirect tax revenue, and do not suffer from endogeneity, we follow Brender and Drazen (2005) and Shi and Svensson (2006) by distinguishing constitutionally-determined from endogenous elections. Any effect of strictly exogenous constitutionally-planned elections on taxes will be unbiased. The results in Table 4 suggest that the previous GMM-system estimations did a good job of dealing with any endogeneity bias: the significant negative effect of predetermined elections on indirect tax revenue is of a similar size to that established previously. There is again no significant change in direct tax in election years. In developing countries, the incumbent therefore seems more likely to reduce broad-based taxes that could benefit a large number of voters than to reduce direct taxes which affect mainly firms.

5. Concluding remarks

Most political budget cycles analysis has considered total tax revenue without paying attention to tax types. In this paper we appeal to the model in Drazen and Eslava (2010) to explain political cycles in the composition of tax revenue. In developing countries, where the median voter's share of capital is lower than the mean capital endowment in the population, and only a few citizens pay income taxes, the median voter is more likely to favor lower indirect taxes rather than lower direct taxes. A political cycle will then arise in tax composition as voter and politician preferences over tax policy differ. Voters prefer lower indirect taxes, whereas politicians prefer lower direct taxes in order to favor companies. If re-election is valuable enough, a political budget cycle will result with indirect taxes that are lower in election than in non-election years. These theoretical predictions are confirmed empirically in a sample of 56 developing countries over the 1980-2006 period. Our results revealed significant pre-electoral political budget cycles with a non-negligible fall in indirect taxes. There is however no evidence of a statistically significant rise in direct tax revenue, which remains unchanged in election periods. The lower indirect tax revenue in election years thus allows governments to target the mass of voters rather than firms. This result continues to hold for predetermined elections only, and when we use an alternative method of dating elections. Last, these significant cuts in indirect taxes during election years are not counterbalanced by any significant tax rise in the year following the election.

6. Appendices

Appendix 1 - 56 Countries in the sample, type of regime and election years

Argentina (PR)	83, 89, 95, 99, 03	Lesotho (PA)	93, 98, 02
Belize (PA)	84, 89, 93, 98, 03	Madagascar (PR)	82, 89, 93, 96, 01, 06
Bolivia (PR)	80, 85, 89, 93, 97, 02, 05	Malawi (PR)	94, 99, 04
Botswana (PA)	84, 89, 94, 99, 04	Malaysia (PA)	82, 86, 90, 95, 99, 04
Burkina Faso (PR)	91, 98, 05	Mali (PR)	92, 97, 02
Burundi (PR)	84, 93, 05	Mauritania (PR)	92, 97, 03
Cameroon (PR)	80, 84, 88, 92, 97, 04	Mauritius (PA)	82, 87, 91, 95, 00, 05
Cape Verde (PR)	85, 91, 96, 01, 06	Mexico (PR)	82, 88, 94, 00, 06
Central African Rep. (PR)	86, 93, 99, 05	Morocco (PR)	84, 93, 97, 02
Chad (PR)	96, 01, 06	Mozambique (PR)	94, 99, 04
Chile (PR)	89, 93, 00, 06	Niger (PR)	89, 93, 96, 99, 04
Colombia (PR)	82, 86, 90, 94, 98, 02, 06	Nigeria (PR)	83, 93, 99, 03
Congo Rep. (PR)	92, 02	Pakistan (PR)	90, 93, 97
Costa Rica (PR)	82, 86, 90, 94, 98, 02, 06	Peru (PR)	80, 85, 90, 95, 00, 01, 06
Cote d'Ivoire (PR)	80, 85, 90, 95, 00	Philippines (PR)	81, 86, 92, 95, 98, 04
Dominican Rep. (PR)	82, 86, 90, 94, 96, 00, 04	Rwanda (PR)	83, 88, 03
Ecuador (PR)	84, 88, 92, 96, 98, 02, 06	St Vin.&Grenad. (PA)	84, 89, 94, 98, 01, 05
Egypt Arab Rep. (PA)	84, 87, 90, 95, 00, 05	Senegal (PR)	83, 88, 93, 00
El Salvador (PR)	84, 89, 94, 99, 04	Sierra Leone (PR)	85, 96, 02
Ethiopia (PA)	00, 05	Sri Lanka (PR)	82, 88, 94, 99, 05
Fiji (PA)	82, 87, 92, 99, 01, 06	Sudan (PR)	80, 81, 96, 00
The Gambia (PR)	82, 87, 92, 96, 01, 06	Tanzania (PR)	80, 85, 90, 95, 00, 05
Ghana (PR)	92, 96, 00, 04	Thailand (PA)	83, 87, 92, 95, 96, 01, 05, 06
Guatemala (PR)	82, 85, 90, 95, 99, 03	Togo (PA)	86, 94, 99, 02
Guinea-Bissau (PR)	94, 00, 05	Tunisia (PR)	89, 94, 99, 04
India (PA)	80, 84, 89, 91, 96, 99, 04	Uganda (PR)	96, 01, 06
Iran (PR)	89, 93, 97, 01, 05	Uruguay (PR)	84, 89, 94, 99, 04
Kenya (PR)	83, 87, 92, 97, 02	Zambia (PR)	83, 88, 91, 96, 01, 06

PR: Presidential Regime; PA: Parliamentary Regime in 2000

Appendix 2 - Summary statistics

Variable	N	Mean	Std. Dev.	Min.	Max.
Indirect Tax Revenue (%GDP)	1379	9.101	4.066	0.652	31.153
Direct Tax Revenue (%GDP)	1201	3.795	1.990	0.174	12.0175
Election	1512	0.177	0.382	0	1
Election 1st half	1512	0.075	0.263	0	1
Election 2nd half	1512	0.101	0.302	0	1
Election (datation 2)	1512	0.176	0.381	0	1
Post-election	1512	0.167	0.373	0	1
Election Predetermined	1512	0.1237	0.329	0	1
Election Endogenous	1512	0.0536	0.225	0	1
GDP per capita (log)	1492	7.343	0.979	5.278	9.475
Urbanization	1456	39.702	20.110	4.3	92
Imports (%GDP)	1490	36.608	20.355	2.982	130.923
Inflation (log)	1444	4.122	0.413	3.525	9.376
Share of population below 14	1512	5.140	0.206	4.731	6.322

7. References

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Table 1: Estimation of the election effect on the tax structure (Direct Taxes and Indirect Taxes (%GDP))

VARIABLES	OLS - Fixed Effect				GMM-System			
	Direct Taxes	Indirect Taxes	Direct Taxes	Indirect Taxes	Direct Taxes	Indirect Taxes	Direct Taxes	Indirect Taxes
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Election	0.0375	-0.166**	0.0359	-0.171**	0.0343	-0.294***	0.0305	-0.311***
	(0.045)	(0.077)	(0.046)	(0.077)	(0.056)	(0.076)	(0.057)	(0.077)
Y_{t-1}	0.706***	0.692***	0.705***	0.686***	0.727***	0.630***	0.716***	0.636***
	(0.045)	(0.028)	(0.045)	(0.029)	(0.12)	(0.069)	(0.12)	(0.064)
GDP per capita (log)	0.394*	-0.428	0.474**	-0.0201	0.461**	0.308	0.447*	-0.0710
	(0.22)	(0.31)	(0.21)	(0.36)	(0.21)	(0.51)	(0.25)	(0.60)
Imports (%GDP)		0.0201***		0.0203***		0.0384***		0.0367***
		(0.006)		(0.0067)		(0.012)		(0.012)
Inflation (log)	-0.299**	-0.166	-0.289**	-0.148	0.495	0.340	0.571	0.335
	(0.12)	(0.19)	(0.12)	(0.18)	(0.60)	(0.23)	(0.61)	(0.23)
Urbanization	-0.0114	0.00518	-0.0103	0.0107	-0.0125	-0.000783	-0.0078	0.00131
	(0.014)	(0.016)	(0.014)	(0.017)	(0.0098)	(0.020)	(0.0094)	(0.017)
Population below 14			0.0140	0.0735**			0.0191	-0.0610
			(0.015)	(0.031)			(0.022)	(0.046)
Observations	1,070	1,238	1,070	1,238	1,070	1,238	1,070	1,238
R-squared	0.591	0.549	0.591	0.552				
Number of countries	56	56	56	56	56	56	56	56
Nb of instruments					40	44	42	45
Hansen Test (p-val)					0.220	0.397	0.250	0.456
AR(1) Test (p-val)					0.000	0.000	0.000	0.000
AR(2) Test (p-val)					0.786	0.851	0.748	0.861

Notes: Robust standard errors in brackets. *** p-value<0.01, ** p-value<0.05, * p-value<0.1. Constant and time fixed effects included in all estimations. GMM-system estimations are two-steps estimations with Windmeijer (2005) finite-sample correction. Urbanization and the share of population under 14 are considered as exogenous; election, the lagged dependent variable and imports are instrumented with first-order to third-order lags and inflation and GDP are instrumented with second to third-order lagged values. The matrix of instruments has been collapsed.

Table 2: Alternative datation of elections and their effect on the tax structure (Direct Taxes and Indirect Taxes (%GDP))

VARIABLES	OLS-Fixed Effects		GMM-System		OLS-Fixed Effects		GMM-System	
	Direct Taxes	Indirect Taxes	Direct Taxes	Indirect Taxes	Direct Taxes	Indirect Taxes	Direct Taxes	Indirect Taxes
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Elect - 1st half	0.0796	-0.0809	-0.0145	-0.295				
	(0.068)	(0.15)	(0.095)	(0.18)				
Elect – 2nd half	0.0071	-0.236**	0.0693	-0.273***				
	(0.059)	(0.089)	(0.072)	(0.093)				
Election (datation 2)					-0.0108	-0.200**	0.0224	-0.207**
					(0.051)	(0.082)	(0.052)	(0.094)
Y_{t-1}	0.705***	0.687***	0.705***	0.632***	0.705***	0.686***	0.705***	0.641***
	(0.045)	(0.029)	(0.11)	(0.067)	(0.045)	(0.029)	(0.11)	(0.074)
GDP per capita (log)	0.473**	-0.0191	0.562**	-0.0192	0.480**	-0.00792	0.597**	-0.0555
	(0.21)	(0.36)	(0.25)	(0.64)	(0.21)	(0.36)	(0.26)	(0.69)
Imports (%GDP)		0.0202***		0.0317***		0.0203***		0.0381***
		(0.0067)		(0.010)		(0.0067)		(0.012)
Inflation (log)	-0.292**	-0.152	0.533	0.244	-0.290**	-0.161	0.288	0.179
	(0.12)	(0.19)	(0.55)	(0.23)	(0.12)	(0.18)	(0.51)	(0.27)
Urbanization	-0.0103	0.0107	-0.00964	0.000308	-0.0103	0.0107	-0.0109	0.00184
	(0.014)	(0.016)	(0.010)	(0.018)	(0.014)	(0.017)	(0.0096)	(0.020)
Population below 14	0.0136	0.0729**	0.0279	-0.0611	0.0144	0.0739**	0.0274	-0.0522
	(0.015)	(0.030)	(0.020)	(0.053)	(0.015)	(0.030)	(0.021)	(0.053)
Observations	1,070	1,238	1,070	1,238	1,070	1,238	1,070	1,238
R-squared	0.591	0.552			0.591	0.553		
Number of countries	56	56	56	56	56	56	56	56
Nb of instruments			45	49			41	45
Hansen Test (p-val)			0.290	0.254			0.281	0.166
AR(1) Test (p-val)			0.000	0.000			0.000	0.000
AR(2) Test (p-val)			0.773	0.908			0.865	0.768

Notes: Robust standard errors in brackets. *** p-value<0.01, ** p-value<0.05, * p-value<0.1. Constant and time fixed effects included in all estimations. GMM-system estimations are two-steps estimations with Windmeijer (2005) finite-sample correction. Urbanization and the share of population under 14 are considered as exogenous; elections, the lagged dependent variable and imports are instrumented with first-order to third-order lags and inflation and GDP are instrumented with second to third-order lagged values. The matrix of instruments has been collapsed.

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Table 3: Post-election effects on the tax structure (Direct Taxes and Indirect Taxes (%GDP))

VARIABLES	OLS-Fixed Effects		GMM-System	
	Direct Taxes (1)	Indirect Taxes (2)	Direct Taxes (3)	Indirect Taxes (4)
Election	0.0167	-0.171**	-0.000685	-0.311***
	(0.046)	(0.078)	(0.054)	(0.079)
Post-election	-0.0837	-0.000213	-0.0876*	0.00104
	(0.056)	(0.10)	(0.051)	(0.099)
Y_{t-1}	0.706***	0.686***	0.721***	0.651***
	(0.044)	(0.029)	(0.093)	(0.063)
GDP per capita (log)	0.484**	-0.0201	0.565***	-0.222
	(0.21)	(0.36)	(0.20)	(0.62)
Imports (%GDP)		0.0203***		0.0378***
		(0.0067)		(0.013)
Inflation (log)	-0.0100	0.0107	-0.0114	0.00698
	(0.014)	(0.017)	(0.0077)	(0.019)
Urbanization	-0.286**	-0.148	0.545	0.332
	(0.12)	(0.18)	(0.49)	(0.25)
Population below 14	0.0149	0.0735**	0.0233	-0.0635
	(0.015)	(0.031)	(0.021)	(0.047)
Observations	1,070	1,238	1,070	1,238
R-squared	0.592	0.552		
Number of countries	56	56	56	56
Nb of instruments			43	47
Hansen Test (p-val)			0.514	0.409
AR(1) Test (p-val)			0.000	0.000
AR(2) Test (p-val)			0.805	0.863

Notes: Robust standard errors in brackets. *** p-value<0.01, ** p-value<0.05, * p-value<0.1. Constant and time fixed effects included in all estimations. GMM-system estimations are two-steps estimations with Windmeijer (2005) finite-sample correction. Urbanization, the share of population under 14 are considered as exogenous; the lagged dependent variable, imports, election and postelection are instrumented with first-order to third-order lags and inflation and GDP are instrumented with second to third-order lagged values. The matrix of instrument has been collapsed.

Table 4: Estimation of the effect of pre-determined and endogenous elections on tax structures

	OLS - Fixed Effect		GMM-System	
VARIABLES	Direct Taxes	Indirect Taxes	Direct Taxes	Indirect Taxes
	(1)	(2)	(3)	(4)
Election Pre-determined	0.0694	-0.208**	0.0231	-0.374***
	(0.053)	(0.095)	(0.057)	(0.097)
Election Endogenous	-0.0297	-0.0706	0.0360	-0.195
	(0.075)	(0.104)	(0.082)	(0.141)
Y_{t-1}	0.705***	0.687***	0.707***	0.646***
	(0.045)	(0.029)	(0.110)	(0.066)
GDP per capita (log)	0.471**	-0.0143	0.531**	-0.101
	(0.210)	(0.363)	(0.239)	(0.613)
Imports (%GDP)		0.0203***		0.0374***
		(0.0067)		(0.012)
Inflation (log)	-0.287**	-0.144	0.575	0.308
	(0.121)	(0.188)	(0.551)	(0.234)
Urbanization	-0.0102	0.0106	-0.0107	0.00354
	(0.014)	(0.017)	(0.0097)	(0.018)
Population below 14	0.0140	0.0734**	0.0222	-0.0573
	(0.015)	(0.031)	(0.021)	(0.046)
Observations	1,070	1,238	1,070	1,238
R-squared	0.592	0.552		
Number of countries	56	56	56	56
Number of instruments			39	43
AR(1) Test (p-val.)			0.000	0.000
AR(2) Test (p-val.)			0.762	0.865
Hansen Test (p-val.)			0.225	0.314

Notes: Robust standard errors in brackets. *** p-value<0.01, ** p-value<0.05, * p-value<0.1. Constant and time fixed effects included in all estimations. GMM-system estimations are two-steps estimations with Windmeijer (2005) finite-sample correction. Urbanization, the share of population below 14, predetermined and endogenous elections are considered as exogenous; the lagged dependent variable and imports are instrumented with first-order to third-order lags and inflation and GDP are instrumented with second to third-order lagged values. The matrix of instrument has been collapsed.

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