Oil, Non-Tax Revenue, and the Redistributio nal Foundations of Regime Stability

Kevin M. Morrison
Department of Government
Cornell University
kmm368@cornell.edu

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Abstract: Non-tax revenues make up a substantial amount of government revenue around the world, though scholars usually focus on individual sources of such revenue (for example, foreign aid and state-owned oil companies). Using a theory of regime change that builds on recent models of the redistributive foundations of dictatorships and democracies, I generate hypotheses regarding all non-tax revenue and regime stability. I argue that an increase in non-tax revenue should be associated with less taxation of elites in democracies, more social spending in dictatorships, and more stability for both regime types. I find support for all three of these hypotheses in a cross-sectional time-series analysis, covering all countries and years for which the necessary data are available. Significantly, I show that the particular source of non-tax revenue does not make a difference: they all act similarly with regard to regime stability and the causal mechanisms.

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Given the prominence of oil in international affairs, it is not surprising that scholars have generated a considerable amount of research about its effects on politics. Perhaps more surprising is the general conclusion at which much of this literature has arrived. One of oil’s most important effects seems to be the simple fact that it gives political regimes more money with which to pursue their various strategies for staying in power.\(^1\) As Nathan Jensen and Leonard Wantchekon state, “The key mechanism linking authoritarian rule and resource dependence, both in democratic transition and democratic consolidation, is an incumbent’s discretion over the distribution of natural resource rents.”\(^2\) Similarly, Benjamin Smith notes, “While scholars approach the political economy of oil from diverse methodological origins, the theoretical arguments about the structures and nature of the rentier state flow from the state’s access to externally obtained revenues from the sale of oil.”\(^3\) By this argument, the ways in

\(^1\) Though this is a central message of research on the “rentier” state, the particular arguments developed within this literature vary, as do governments’ strategies for staying in power, which range from “buying” political consensus to repressing various social groups (e.g. Anderson 1995; Chaudhry 1997; Goldberg, et al. 2008; Karl 1997; Moore 1976; Shambayati 1994. In addition, there are subtle differences in the hypothesized effects of oil revenues. Some (e.g. Ross 2001; Ulfelder 2007) argue that oil bolsters authoritarianism, whereas others (e.g. Smith 2004) suggest that it stabilizes all regimes.

\(^2\) Jensen and Wantchekon 2004, 821.

\(^3\) Smith 2004, 233, emphasis added.
which governments use oil revenue are just a reflection of their preferences over the use of state finances.\[^{4}\]

This way of thinking about the relationship between oil wealth and political regimes raises an important question: If it is oil \textit{revenue} doing the work, why is oil revenue different from other kinds of revenue, particularly others that are also “externally obtained”? In fact, there may be a variety of such revenues, whose key characteristic is that they are not derived from taxation but rather available mainly as “windfalls” to the government. Along these lines, several scholars have suggested that the literature on oil revenues may have relevance for another fungible, external resource: foreign aid.\[^{5}\] The implication is that oil revenues may not be particularly unique, except for the fact that they make up a large percentage of such externally obtained revenues.

While a revenue perspective reveals certain similarities between foreign aid and oil rents, it should be noted that conventional wisdom about these two revenue sources often seems to imply opposite predictions about their effects on political regimes. This wisdom is reflected in

\[^{4}\] It should be noted that while the rentier hypothesis, revolving around revenue, is the dominant strand in the oil literature, there are some hypotheses relating oil to political regimes that do not revolve around revenue. For example, oil’s dominance of the economy may lead to less emphasis on education and less urbanization, thereby breaking a possible “modernization” link between economic development and democratization (Ross 1999).

\[^{5}\] See, for example, Bräutigam 2000; Moore 1998; Smith 2008; and Therkildsen 2002. It is interesting to note in this context that Hussein Mahdavy’s (1970, 428) original definition of a rentier state was a state that received substantial rents from “foreign individuals, concerns or governments” (also see Herb 2005).
the contrasting titles of two important recent studies: while Michael Ross asks “Does Oil Hinder Democracy?”, Stephen Knack asks “Does Foreign Aid Promote Democracy?”⁶ Despite the efforts of some scholars discussed below, the prevailing assumption is that oil generally has negative (i.e. anti-democratic) implications for political regimes, while aid has positive ones. What would it mean if aid and oil were to have similar political properties? Should rich countries interested in democracy avoid giving foreign aid to poor countries?

This paper argues that foreign aid and the majority of oil revenues do indeed have similar effects, because they are examples of non-tax revenue, a class of revenue that has not received much scholarly attention despite its prevalence throughout the world. However, these revenues do not have “anti-democratic” properties, or even “pro-democratic” properties. What they have are stabilizing properties, in the sense that their presence reduces the probability of a regime transition in both democracies and dictatorships. These revenues enable a regime to stay in power by whatever means are best for that regime, and this is as true in democracies as it is in dictatorships. This different way of thinking about revenue has particular implications for policy, and it suggests that the recent rise in—and increasing diversity of—non-tax revenue may lead to a period of greater stability in both the developing world and the international system. I will return to these implications at the end of the paper.

To explore the impact of these revenues, I first review the relevant literature on revenue and regime stability, and then develop a theoretical framework based on a distinguished body of work that has related political regime changes to redistributional pressures in society. Using this framework, I generate hypotheses not only about the stabilizing effects of non-tax revenues, but also about the causal mechanisms through which they might work. I then discuss the data on

non-tax revenue and provide descriptive statistics on its prevalence, showing that this revenue makes up about a quarter of government revenue around the world. Finally I analyze the 1973-2001 period and demonstrate that non-tax revenue led to more regime stability in all countries, whether they were democracies or dictatorships. I also provide evidence in support of certain causal mechanisms suggested by my theoretical approach: non-tax revenue is associated with increased social spending in dictatorships and less taxation of elites in democracies. Significantly, the paper shows that the particular source of non-tax revenue—state-owned enterprises, aid, or other sources—does not make a difference: they all act similarly with regard to regime stability and the causal mechanisms.

**Theoretical Perspectives on Regime Change and Stability**

An important body of work has arisen from the emphasis placed on the importance of revenue for the nature of regimes in landmark works by Joseph Schumpeter, Richard Musgrave, Geoffrey Brennan and James Buchanan, and Margaret Levi.\(^7\) For the purposes here, the existing research is usefully divided into that focused on tax revenue and that focused on non-tax revenue (there is no work I know of that addresses them both within a theoretical framework).\(^8\)

\(^7\) Brennan and Buchanan 1980; Levi 1988; Musgrave 1959; and Schumpeter 1918 (1991).

\(^8\) It should be noted that this paper is focused on regime stability in the sense of authoritarian regimes switching to democratic ones, and vice versa. The literature on this topic has existed parallel to a literature on regime stability in the sense of political regimes succumbing to civil war. For a recent work that examines revenue in the context of this latter kind of regime stability, see Snyder and Bhavani 2005. Ideally, these literatures would coincide—theoretically and empirically—more than they do now.
The literature on tax revenue and regime stability has typically concentrated on the hypothesized linkage between taxation and representation in the transition from autocracies to democracies. The principal argument is that important western democracies arose as a result of a bargain: rulers in need of resources were forced to grant representation in exchange for taxes. As Michael Ross points out, there are two different versions of this argument. One, seemingly supported by scholars like Brennan and Buchanan and Samuel Huntington, is that citizens demand representation in exchange for higher levels of taxes. The other argument, seemingly supported by the likes of Robert Bates and Da-Hsiang Donald Lien, is more conditional: citizens demand representation if the ratio of government services to taxes falls below a certain threshold. Ross provides cross-national statistical tests for these theses, finding support for the latter but not the former.

There is no work I know of that focuses on non-tax revenue, as such, and its relation to regime stability. However, particular kinds of non-tax revenue have been studied on their own. Revenues from oil—the presence of which was shown by Smith to increase regime stability—can be considered an example of non-tax revenue. The majority of government revenue generated from oil comes not through taxes (such as on foreign companies) but rather through state-owned companies, which control an estimated 75 percent of the world’s oil production and

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90 percent of its reserves.\textsuperscript{15} Ross and Pauline Jones Luong and Erika Weinthal have suggested that this state ownership of oil companies may be a factor in the association of oil wealth with poor economic performance.\textsuperscript{16} More importantly for the purposes at hand, state ownership of oil companies may also be important for the association of oil wealth with regime stability.

Another kind of non-tax revenue that has been studied on its own is foreign aid. Research has indicated that foreign aid is a highly fungible resource\textsuperscript{17} and acts similarly to oil in that it provides extra resources the government can use to distribute to its key constituencies without taxation.\textsuperscript{18} For example, Nicolas van de Walle has argued that democratization in Africa was encouraged by a fiscal crisis resulting from, among other things, an increased willingness on the part of donors to restrict aid to countries that did not respect human rights: “With fewer resources at their disposal and an increasingly decrepit state apparatus, leaders found it harder to sustain critical clientelist networks, with the result that the old political aristocracy was more likely to fractionalize”.\textsuperscript{19} To my knowledge, no one has directly tested statistically whether aid leads to increased regime stability.\textsuperscript{20}

\begin{flushleft}
\textsuperscript{15} Ivanhoe 2000.
\textsuperscript{16} Jones Luong and Weinthal 2006; Ross 1999.
\textsuperscript{17} Feyzioglu, et al. 1998.
\textsuperscript{18} For example, Bratton and van de Walle 1997.
\textsuperscript{19} van de Walle 2001, 240.
\textsuperscript{20} There have been some works analyzing statistically the effect of aid on a country’s level of democracy. Goldsmith 2001 and Dunning 2004 find a small but significant positive correlation between level of democracy in Africa and aid as a percentage of GNP, but Knack 2004 finds no
\end{flushleft}
There are, then, several different revenue sources that one might consider to be important for regime stability. However, we lack a theory that could help us understand how these different kinds of revenue affect one another and interact to affect regime stability. A potentially productive way to start constructing such a theory—and the way in which hypotheses will be generated for this paper—is to build on works that focus on redistributinal conflicts as central to regime change. This approach to regime change has a distinguished history, including the landmark analyses of Barrington Moore and Dietrich Rueschemeyer, Evelyne Huber Stephens, and John Stephens.\(^\text{21}\) Because the more recent contributions of Carles Boix and Daron Acemoglu and James Robinson have specifically modeled the ways in which government revenue interacts with demands from society in the context of political regime transitions, they provide a useful framework on which to build.\(^\text{22}\)

In order to understand the background of the hypotheses generated in this paper, it is necessary to recognize five defining aspects of these theories. First, these theories assume that political regimes are essentially a way of allocating resources in society.\(^\text{23}\) As such—almost by definition—conflict over the political regime is conflict about the nature and extent of redistribution in society. Second, these theories tend to assume that conflict over redistribution

\[^{21}\text{Moore 1966; Rueschemeyer, et al. 1992. Also see Therborn 1977.}\]

\[^{22}\text{Acemoglu and Robinson 2001, 2006; Boix 2003.}\]

\[^{23}\text{Kitschelt 1992.}\]
takes place between citizens and wealthy elites.\textsuperscript{24} And third, they assume that the elites in society are a smaller group than the citizens. This characteristic is important because it leads to the association of dictatorial regimes with elites and democratic regimes with citizens. Dictatorial regimes are ones in which a minority group—the wealthy elites in society—have decision-making power over resource allocation. Democratic regimes are ones in which the citizens have that power.

The key implication is that transitions to democracy should generally involve (a) an incorporation of poorer elements into the country’s electorate and (b) an improvement in the government’s treatment of those parts of society. Although there are certainly exceptions, this is a plausible way of viewing the history of enfranchisement, which has generally been one of widening the electorate to include poorer groups in the “social hierarchy”.\textsuperscript{25} Furthermore, as these theories would predict, the expansion of the franchise has resulted in important policy changes. Peter Lindert, for example, has carefully documented how the extension of suffrage rights to poorer social groups in western countries at the end of the 19\textsuperscript{th} and beginning of the 20\textsuperscript{th} centuries led to an expansion of both social insurance and public education provision.\textsuperscript{26} Bruce Bueno de Mesquita and his co-authors have also provided support for this approach, showing

\textsuperscript{24} It may be noted that the central theoretical claims of the work by Acemoglu and Robinson are robust to the presence of other societal divisions (such as ethnic divisions), but it is important for their model that there are elites and citizens \textit{within} these societal groups (see, e.g., Acemoglu and Robinson 2006, 203-207).

\textsuperscript{25} Jack and Lagunoff 2006; Kousser 1974.

\textsuperscript{26} Lindert 2004.
that as the size of the winning coalition in a regime increases, so do important education and health indicators.\textsuperscript{27}

The fourth important characteristic of these theories of regime change and stability is that, in their focus on redistribution, they have ignored the possibility of a “distributive” state.\textsuperscript{28} In particular, the models of Boix\textsuperscript{29} and Acemoglu and Robinson\textsuperscript{30} build off the benchmark model of redistribution by Allan Meltzer and Scott Richard.\textsuperscript{31} The state has no resources of its own, but rather redistributes—through taxation—resources owned by the societal groups. Largely ignored is the possibility that the state might have resources of its own: non-tax revenues.

Finally, the fifth characteristic is that redistribution is generally considered to be transfers from elites to citizens, and not the other way around.\textsuperscript{32} It is a rather quick jump from this characteristic to the critical source of conflict in these models: citizens prefer higher redistribution than elites. In fact, elites prefer no redistribution at all.

\textsuperscript{27} Bueno de Mesquita, et al. 2003.
\textsuperscript{28} Delacroix 1980.
\textsuperscript{29} Boix 2003.
\textsuperscript{30} Acemoglu and Robinson 2006.
\textsuperscript{31} Meltzer and Richard 1981.
\textsuperscript{32} Acemoglu and Robinson (2006, 107-109) do explore the possibility of targeted transfers, which would allow elites in nondemocracy to funnel all tax proceeds to themselves, and the citizens in a democracy to do similarly to themselves. The result is to increase the level of conflict in society, but the comparative statics are generally the same, particularly with regard to inequality.
Together, these characteristics lead to specific predictions about the source of threats to democracies and dictatorships. For dictatorships, the threat is from citizens, who are unhappy about the amount of transfers they are receiving. In the Acemoglu and Robinson theory, for example, dictatorships fall during transitory moments when citizens have solved their collective action problem and can mobilize against the elites. If the elites cannot credibly promise enough transfers to keep citizens from launching a revolution, elites democratize, thereby putting allocation decisions in the hands of the citizens. For democracies, the threat is exactly from those elites, who are now unhappy with the level of taxation and can threaten a coup. In the transitory moments when the rich solve their own collective action problem and mobilize against the regime, citizens may not be able to credibly promise lower amounts of taxation of elites. In this scenario, the rich overthrow the democracy and impose a dictatorship.

As mentioned above, however, theories within this framework have assumed that government revenue only comes from taxation. What happens in these theories when there is non-tax revenue available to the different political regimes? In a recent article, I have used a model similar to that of Boix and Acemoglu and Robinson to show that non-tax revenue should lead to greater regime stability in dictatorships (preventing democratization). The causal mechanism is that this revenue provides the regime with a greater ability to appease citizens (the threat to the regime in this framework), and thereby prevent a revolution or transition to democracy. In democracies, the causal mechanism is different, since the threat to the regime is instead from the elites. Using a similar model in an appendix to this paper available on my website, I present a proof that non-tax revenue should lower the preferred tax rate of citizens in

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33 Acemoglu and Robinson 2006.

34 Morrison 2007.
democracies.\textsuperscript{35} If there are diminishing marginal returns to government spending, the presence of non-tax revenue will reduce the desire of citizens to raise tax revenue.\textsuperscript{36} With a lower tax burden, elites have less dissatisfaction with democracy. The result is that non-tax revenue should lead to increased regime stability in democracies.

The theoretical approach advanced here therefore leads to three testable hypotheses. The first concerns the end result: the presence of non-tax revenue should be associated with greater regime stability in both democracies and dictatorships. The second and third hypotheses concern the causal mechanisms: non-tax revenue should lead to certain changes in the finances of democracies and dictatorships. In democracies, non-tax revenue should be associated with less taxation of richer elites. In dictatorships, non-tax revenue should be associated with increased spending on poorer citizens. The empirical sections of this paper explore these three hypotheses, first examining the relationship between non-tax revenue and regime stability and then establishing that the causal mechanisms hold.

**Non-tax Revenue around the World**

As the conception of non-tax revenue advanced above is relatively new, it is useful to begin with a discussion of the extent to which such revenue is an important source of finance for countries around the world. The best available data on revenue is from the International Monetary Fund’s *Government Finance Statistics (GFS)*. Unfortunately for researchers interested

\textsuperscript{35} http://www.people.cornell.edu/pages/kmm368/  Thad Dunning (Forthcoming) has developed a similar model specifically focusing on oil rents.

\textsuperscript{36} Such diminishing returns are usually assumed to come from distortions that high levels of government spending can create in the economy (Alesina, et al. 2002; Landau 1985).
in revenue over a long time period, the IMF recently changed the way it categorizes government finance.\textsuperscript{37} However, the data for the previous coding by the IMF is available over a time period of 1973-2001.\textsuperscript{38} Therefore, to attain a longer time-series, I have used the previous coding of revenue and spending.

In my theory, non-tax revenue includes not only foreign aid and natural resource revenue attained through state-owned enterprises, but also borrowing (from abroad or the Central Bank) and all other revenue besides taxation (e.g. other state-owned enterprise revenue, fines, and so forth).\textsuperscript{39} Essentially, non-tax revenue is what the government can spend without having to tax its citizens. This is obviously quite a diverse category of revenue, and it should be noted at the outset that—despite scholars’ claims that aid and oil revenues might have something in common—asserting that they can be aggregated into one category constitutes a hypothesis in its own right. Therefore I will take steps below in my empirical analysis to ensure that this hypothesis is valid.

However, if aggregating seemingly different forms of revenue into one category seems counter-intuitive at first, consider that research on taxation and political regimes has primarily focused on aggregate taxation, despite the evident differences that exist between various forms of taxes.\textsuperscript{40} Much insight, similarly, has been gained by focusing on aggregate government spending, discounting differences between various kinds of expenditure.\textsuperscript{41} Research on non-tax

\textsuperscript{37} International Monetary Fund 2001.

\textsuperscript{38} The previous coding is detailed in International Monetary Fund 1986.

\textsuperscript{39} This can be seen in the equations in Morrison 2007.

\textsuperscript{40} See, for example, Cheibub 1998; Ross 2004.

\textsuperscript{41} See, for example, Rodden 2003; Rodrik 1998.
revenue to date (though not positioned as such) has instead focused primarily on disaggregated
types of revenue, such as oil revenues or foreign aid. As in works that have focused on
aggregate taxation and spending, this paper will offer evidence that leverage on understanding
certain phenomena can be gained by aggregating different kinds of non-tax revenue. And in fact,
unlike the large majority of works focusing on aggregate taxation and spending, I will
demonstrate that disaggregated forms of non-tax revenue do in fact have similar effects.

Given the encompassing theoretical definition of non-tax revenue, the simplest way of
calculating the aggregate value of such revenue is to subtract total tax revenue from total
expenditures. This gives a direct measure of the revenue other than tax revenue that the
government can use to finance expenditures. Non-tax revenue defined in this way is available
for 2055 observations over 118 countries, and the variable exhibits variance both cross-
sectionally (a “between” standard deviation of 689 constant $US per capita) and across time (a
“within” standard deviation of $582 per capita). Analyzing the related descriptive statistics
reveals that this kind of revenue is critical to many countries in the world. It accounts for an
average of 27% of government expenditures in the sample, and in some countries it accounts for
the large majority of expenditures, as Table 1 details.

[TABLE 1 ABOUT HERE]

As further evidence of their importance, these non-tax revenues are also large relative to
the size of the economy. Table 2 lists some major components of revenue as a share of GDP by
region, as well as the specific definitions of these variables utilized in the statistical analysis
below. Included are tax revenue and two of the major components of non-tax revenue: foreign
aid receipts and an approximation of income from state-owned enterprises. This latter variable
includes income from state-owned oil companies. The table also lists the regional averages of oil exports as a share of GDP, a common indicator of oil dependence. Comparing these various indicators serves notice that the geographical extension of a theory of non-tax revenue is likely to be different than a theory focused on oil or aid exclusively. For example, while many oil revenues will be included in my non-tax revenue variable, the correlation between my non-tax revenue variable and oil exports as a share of GDP is only 0.18. While the Middle East is ranked first in terms of both non-tax revenue and oil, its oil/GDP ratio is almost three times that of the next highest region, and twenty times that of the lowest ranked region. In contrast, the Middle East’s non-tax revenue/GDP ratio is only about 1.5 times that of the next highest region, and only about four times that of the lowest ranked region. Similar comparisons can be made between the geographical extensions of theories of non-tax revenue and theories of foreign aid. The tables accordingly underline the importance of non-tax revenue to governments around the world, highlighting the gap in our understanding of the political impact of this kind of revenue.

[TABLE 2 ABOUT HERE]

Analysis of the Regime Change Hypothesis

I begin the statistical analysis by establishing that my first hypothesis holds: non-tax revenue should be associated with greater regime stability. To assess this hypothesis, I draw upon a binary dependent variable (Regime instability) that takes a value of “1” if there is a regime change from one year to the next, and zero otherwise. Similar to Smith in his study of regime instability, a regime is considered to have changed if it receives a zero in Polity IV’s

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42 Ross 2001; Smith 2004.

Durable variable, which counts the number of years since the most recent regime change.\textsuperscript{44} A regime change in Polity IV is defined by a change of three points or more in the Polity variable—which ranges from -10 (most authoritarian) to 10 (most democratic)—or the end of a transition period. By this definition, there are transitions in about five percent of the observations reported below.

The key independent variable in the model is Non-tax revenue per capita.\textsuperscript{45} It is calculated, using the IMF’s GFS, by subtracting tax revenue from total expenditures (both in constant 1995 US dollars) and dividing by total population as reported in the World Bank’s World Development Indicators. It should be noted that if different kinds of non-tax revenue had different effects on regime stability, it would be difficult for me to find a significant result for this variable (e.g. variables with both negative and positive effects would be aggregated into one variable). However, to be sure that combining them into one indicator is justifiable, I begin my analyses by including various components of non-tax revenue separately in the regressions, as I will discuss shortly.

A simple logit regression of the regime instability dependent variable on non-tax revenue yields a negative and significant coefficient (indicating that non-tax revenue has a stabilizing effect), with a p-value of 0.024. However, it is important to control for other variables that might also be affecting regime stability, to ensure confidence in the results regarding non-tax revenue.

\textsuperscript{44} Marshall and Jaggers 2003.

\textsuperscript{45} The standardization by population is suggested directly by the formal models in Morrison 2007. It captures the intuition that a given amount of revenue is less useful to regimes if it needs to be distributed among more people.
I therefore generally use the same control variables as Smith.\textsuperscript{46} First, I control for \textit{Ethnolinguistic fractionalization}, since some scholars have argued that social fragmentation increases regime instability.\textsuperscript{47} The measure I use is the probability that two randomly chosen individuals in a country do not speak the same language. Philip Roeder’s dataset provides observations of this variable for both 1961 and 1985.\textsuperscript{48} For all observations prior to and in 1980, I use the 1961 measure, and for all subsequent years I use the 1985 measure. Second, I control for the natural log level of, and growth in, \textit{GDP per capita}, following many scholars who have shown a relationship between these indicators and regime stability.\textsuperscript{49} Third, I control for the change in the percent of the population that is urban (\textit{\% Population Urban}), since some scholars have found that urbanization can be destabilizing for regimes.\textsuperscript{50} Fourth, I include the level of population density, to control for the possibility of a relationship between population, land, and regime stability.\textsuperscript{51} These last three variables come from the World Bank.\textsuperscript{52}

The estimation technique used is logistic analysis with errors clustered by country. However, as Nathaniel Beck and his co-authors have detailed, cross-sectional time-series data with a binary dependent variable are likely to violate the independence assumption of ordinary

\textsuperscript{46} Smith 2004.

\textsuperscript{47} For example, Horowitz 1985.

\textsuperscript{48} Roeder 2001.

\textsuperscript{49} For example, Lipset 1959; Przeworski, et al. 2000; and Remmer 1991.

\textsuperscript{50} For example, Huntington 1968.

\textsuperscript{51} Fearon and Laitin 2003; Herbst 2000.

\textsuperscript{52} World Bank 2004.
logistic analysis. \(^{53}\) Therefore, as recommended by Beck and his co-authors and implemented by others \(^{54}\), I control for *Past regime instability* in a country, measured as the number of all past regime changes in that country in the sample. In addition, following Beck and his co-authors, I included cubic splines of the age of the political regime in a given year, to capture temporal dependence in the data. \(^{55}\) F-tests revealed that these splines were necessary to include in the regressions. As Beck and his co-authors detail, including these splines makes logistic analysis identical to survival analysis techniques.

Table 3 reports the results. I first make sure that combining the non-tax revenue categories into one variable is justified. Column 1 reports the results of the regression with three categories of non-tax revenue entered separately. These components are foreign aid, an indicator of state-owned enterprise revenue, and a residual category consisting of the aggregate non-tax revenue variable minus these two components (definitions are presented below Table 2). An important component of this third category is borrowing (e.g. deficit spending). \(^{56}\) These disaggregated components are available for a smaller set of observations than the aggregate non-tax revenue variable, which is calculated using two more widely available indicators (tax revenue

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\(^{54}\) For example, Przeworski, et al. 2000; Smith 2004.

\(^{55}\) Specifically, the age of a political regime was coded as the lagged value of the *Durable* variable in Polity IV, which means that it is the number of years since there was a change of at least three in the Polity score.

\(^{56}\) In response to a reviewer’s suggestion, I also ran the disaggregated analyses in Tables 3, 5, and 6 with an explicit measure of per capita borrowing instead of the residual category. The results did not change significantly.
and total spending). However, before using the aggregate indicator to achieve greater data coverage, we should be sure that we are not combining elements that do not belong together.\footnote{57}

As seen in Column 1, the coefficients on all three non-tax revenue components are negative and significant (a negative coefficient indicates a stabilizing effect), and a linear

\footnote{57} Ideally, good instruments would exist for all these variables. However, I believe my operationalization lessens the possible concern about endogeneity driving the results. The dependent variable is a regime transition (or lack thereof) in year $t$, while all of the non-tax variables are in $t-1$. Strictly speaking, it is therefore not possible that the dependent variable is causing the independent variable of consequence. In addition, though the underlying level of stability in time $t-1$ could be both correlated with stability in time $t$ and a cause of, for example, aid flows in time $t-1$, there are two variables in my regressions that account for exactly this underlying level of stability in time $t-1$. The first is the age of the regime (and its cubic splines), and the second is the number of regime transitions a country has experienced. While of course these two variables do not perfectly account for the level of regime stability in a country in the period before time $t$, they likely account for much of its variation across countries and time, and to the extent that that stability is correlated with non-tax revenue, the inclusion of these variables would make it more difficult for me to observe significant coefficients on the non-tax revenue variables. It is also possible that expectations about regime stability—rather than the past level of stability—might be doing some work, but it is quite likely that these expectations would be driven in large part by past experience in the country, such as that accounted for by the variables I have just discussed.
combination of the three coefficients is also negative and significant (with a p-value of 0.008). This result is important in its own right, as it demonstrates that foreign aid, state-owned enterprise revenue, and other kinds of non-tax revenue—including borrowing—have similar effects. While other scholars have suggested that foreign aid and oil revenues might have similar effects, this is the first systematic evidence to show that they do. In addition, the evidence indicates that even other kinds of non-tax revenue, such as borrowing, have similar effects.

It is worthwhile to take a moment to discuss the results with regard to borrowing. On the one hand, the fact that borrowing has an effect similar to foreign aid and other non-tax revenue may not be too surprising, as there is much evidence that loans to developing countries are often either forgiven or simply rolled over into new loans over the years.\footnote{Birdsall, et al. 2003; Easterly 2002.} On the other hand, there certainly exist examples of countries that experience political instability due to financial crises brought on in part by extensive borrowing in previous years. This paper offers a particular perspective on such instability: it is caused in part by an inability to access non-tax revenue. The problem for the stability of regimes in the midst of (for example) a financial crisis is not, strictly speaking, that the government in power or its predecessors borrowed a lot of money in the past. The problem is that the government cannot borrow more \textit{now}, because creditors have lost confidence that there is any hope for repayment.\footnote{The result is a tradeoff for governments: a decision about when and how much to tap into credit markets, when tapping into them at the present moment may mean a lack of access in the future. This kind of tradeoff is also relevant to other kinds of non-tax revenue. For example, extracting more of a non-renewable resource today means less of it will be available in the future.} This inability to borrow more would be reflected in a decline in my measure of non-tax revenue.

\begin{footnotesize}
\begin{enumerate}
\item Birdsall, et al. 2003; Easterly 2002.
\item The result is a tradeoff for governments: a decision about when and how much to tap into credit markets, when tapping into them at the present moment may mean a lack of access in the future. This kind of tradeoff is also relevant to other kinds of non-tax revenue. For example, extracting more of a non-renewable resource today means less of it will be available in the future.
\end{enumerate}
\end{footnotesize}
As I believe the results with the disaggregated non-tax revenue variables provide support for aggregating non-tax revenue, Column 2 reports the results with the aggregated non-tax revenue variable. In the much larger sample, non-tax revenue is negative and significant, indicating that non-tax revenue reduces regime instability as predicted. Again, in addition to the evidence in Column 1, it might be noted here that it would be difficult to find a significant coefficient on this aggregated variable if its disaggregated components did not each work similarly. With respect to the other independent variables, there is evidence that economic growth is stabilizing to political regimes while urbanization is destabilizing, consistent with prior literature. There is weaker evidence that political regimes in more developed societies are more stable.\footnote{The reason for the weakness of this evidence is probably that the level of development works differently in democracies and dictatorships, as discussed later in the text with regard to Table 7.}

The other variables do not reach standard levels of significance.

I submitted these results to a variety of robustness tests. First, I included a dummy variable in the regression that indicated whether the country belonged to the OECD, to be sure that the dynamics observed were not driven by rich countries.\footnote{I also ran the regression on a sample only of developing countries, with similar results.} Second, I included dummy variables marking the 1970s and 1980s to control for temporal effects. Third, to control for regional effects, I included dummy variables representing the different regions of the world. None of these additions had any impact on the important results.\footnote{In response to a reviewer, I also ran a regression with both year and country fixed effects.}

Using country fixed effects on regime transition data is problematic, as the many countries that
the inclusion of the *change* in non-tax revenue made a difference. The lagged value of non-tax revenue remained negative and significant (with a p-value of 0.002), while the change variable was also negative and significant (with a p-value of 0.015).

I also explored whether the results were different for different types of regimes. Given that the existing literature on oil and aid has focused on transitions to democracy, we might expect the effect of non-tax revenue to be much stronger in dictatorships. I therefore included an interaction term of a country’s *Polity* score and its level of non-tax revenue. The results of this regression are included in Column 3 of Table 3. They indicate that non-tax revenue has a stabilizing effect in both dictatorships and democracies. In fact, the effect is stronger for more democratic regimes. For a country with a *Polity* score of negative 7, a drop from the 90th percentile of non-tax revenue to the 10th percentile of non-tax revenue would increase the probability of a regime transition 132%. For a country with a positive 7 in the *Polity* ranking, the same drop would increase the probability of regime transition by 1171%.63

have never had a regime transition simply drop out of the dataset. For this reason, Beck and Katz (2001) argue that country fixed effects should never be used in this type of analysis. Nevertheless, with a sample 53% smaller than the original (846 observations versus 1808), non-tax revenue was correctly signed and significant, with a p-value of 0.083 (as is to be expected when using fixed effects, in order to get the regression to converge I had to exclude ethnic fragmentation, a variable that does not change much over time). .

63 The change from the 90th percentile to the 10th is of course particularly dramatic. However, a less severe drop, from the 75th to the 50th percentile, also produces strong effects (an increase in the probability of transition of 30 percent for dictatorships and 125 percent for democracies). These simulations were generated by the useful STATA command *prvalue*, written by Long and...
Finally, I repeated the regression in Column 2 using alternative codings of regime change. First, I used the coding of Adam Przeworski and his co-authors, who define democracies as regimes with functioning elections. Specifically, a regime is coded as democratic if the chief executive is elected, the legislature is elected, there is more than one party, and incumbents lose elections. If all of these characteristics are not present, the regime is a dictatorship. There are therefore no “in-between” regimes—either a regime is a democracy or a dictatorship. Non-tax revenue in this regression was again negative and significant (with a p-value of 0.003). Second, I used the regime coding of Bruce Bueno de Mesquita and his Freese 2006. The effect of non-tax revenue is negative and significant at all levels of the Polity score. At the suggestion of an anonymous reviewer, I also ran this regression including a dummy variable for “anocracies”, coded as a regime between -5 and +5 on the Polity scale. These regimes are thought to be more unstable, and the concern was that they might account disproportionately for regime changes and confound the estimation of the effect of non-tax revenue in democracies and dictatorships. The anocracy variable was significant and indicated increased instability in these regimes, but non-tax revenue remained statistically significant and substantively important (simply excluding these anocracies from the regression yielded similar results). Specifically, in the regression with the anocracy dummy variable included, the change from the 90th percentile to the 10th percentile increased the probability of a transition in dictatorships by 103%, and the probability of a transition in democracies by 537%. In a regime coded as a zero on the Polity scale, the same drop increased the probability of a transition by 234%.

colleagues, who focus on the size of the winning coalition in a political regime.\textsuperscript{65} Using various indicators from the Polity dataset, they create a five-point scale to represent coalition size. I considered a regime change any shift on this five-point scale, and with this binary dependent variable, the important aspects of my results were again unchanged.

**Exploring the Causal Mechanisms**

Having established a robust association between non-tax revenue and regime stability, in this section I explore the causal mechanisms suggested by my approach. Again, the theoretical framework suggests that threats to democracies come from wealthy elites, whereas threats to dictatorships come from citizens. Therefore, having seen that non-tax revenue is associated with regime stability, we should also be able to observe that non-tax revenue is associated with (a) less taxation of wealthy elites in democracies and (b) greater spending on poorer citizens in dictatorships.

To address these hypotheses, it is important to determine which taxes fall on the wealthy and what types of spending benefit citizens. Following Jeffrey Timmons, I use for my indicator of taxation of elites a measure of revenue from taxation of “income, profits, and capital gains”, a tax that falls heaviest on the rich.\textsuperscript{66} Similarly, I use social spending as an indicator of spending that benefits poorer citizens.\textsuperscript{67} While the benefits of social spending often are hard to pinpoint, it is reasonable to use such spending to approximate more progressive government action. As Timmons reviews, “empirical data from the United States and elsewhere…show that lower-

\textsuperscript{65} Bueno de Mesquita, et al. 2003.

\textsuperscript{66} Timmons 2005.

\textsuperscript{67} Specifically, social spending is spending on health, education, housing, and welfare.
income groups systematically prefer more government involvement in healthcare, social welfare, industry, and the economy. Upper-income individuals, by contrast, do not need—and may not even want—government to provide basic public services\(^{68}\) As with non-tax revenue in the regime change regressions, both of these variables are standardized by population. They are calculated using the International Monetary Fund’s GFS data on revenue and spending, as well as data from the World Bank’s World Development Indicators on population.

The statistical estimations are based on the fixed-effects error-correction model that has become standard in recent research on government finance\(^{69}\). The equation estimated is as follows:

\[
\Delta Y_{i,t} = \beta_0 + Y_{i,t-1} \beta_1 + X_{i,t-1} \beta_2 + \Delta X_{i,t} \beta_3 + \epsilon_{i,t},
\]

in which \(Y_{i,t}\) is the revenue or spending variable in country \(i\) in time \(t\), \(X\) is a matrix of independent variables (including country fixed effects), and \(\Delta\) is the first difference operator. Therefore the dependent variable is the change in income tax revenue or social spending per capita from one year to the next. Table 4 gives the descriptive statistics of these variables for the main regressions below.

[TABLE 4 ABOUT HERE]

As has been discussed elsewhere, this type of model assumes a moving equilibrium relationship between variables, and it allows the estimation of both permanent and transitory relationships\(^{70}\). The coefficient on the lagged level of the dependent variable (\(\beta_1\)) is an indicator

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\(^{68}\) Timmons 2005, 541.

\(^{69}\) For example, Iversen and Cusack 2000; Kaufman and Segura-Ubiergo 2001; Rodden 2003; Wibbels 2006. Also see Beck 2001.

\(^{70}\) See, for example, Beck 1991.
of equilibrium properties—that is, it should be between -1 and 0, so that the effects of shocks in an exogenous variable are reduced over time and the system returns to equilibrium. The parameter of the lagged level of an independent variable ($\beta_2$) indicates the permanent effect of a one-off change in that variable, while the parameter of the change variable ($\beta_3$) is a measure of the transitory effect of that one-off change. In general, as has been noted elsewhere, the coefficient of interest is on the lagged value, which indicates the lasting effect of the variable in the long-term moving equilibrium.\footnote{Remmer 2004; Rodden 2003.} As is standard in the literature, the equation was initially estimated using ordinary least squares (OLS) with panel-corrected standard errors with panel-specific patterns of first-order autocorrelation, to accommodate the problems that plague cross-sectional time-series research designs, notably heteroskedasticity and serial correlation.\footnote{Beck and Katz 1995.}

Again, the principal variable of interest is the non-tax revenue variable defined above (Non-tax revenue per capita). Since my objective is to estimate the impact of non-tax revenue on taxation and spending, I must also control for other factors that might affect government finance. Based on previous studies, I include four other control variables. Perhaps the most important is GDP per capita, to account for the effect of economic development on the size of the public sector.\footnote{For example, Boix 2001.} With only this variable and the non-tax variable as independent variables in the error-correction regression described above, the coefficient on lagged non-tax revenue is correctly signed and significant for both income tax in democracies (p-value of 0.030) and social spending in dictatorships (p-value of 0.001). Adding other control variables does not significantly alter the results. These variables include the percentage of the population that is 65
years and older (% population over 65), since this tends to drive pensions and thereby social spending\textsuperscript{74}; and trade dependence, measured as exports plus imports as a percent of GDP (Trade/GDP), building off work that asserts a relationship between trade openness and the size of the public sector\textsuperscript{75}. In addition, in the regressions with taxation as the dependent variable, I include total government spending per capita as an independent variable, to isolate the effect of non-tax revenue from increases or decreases in taxation simply due to changes in spending needs.\textsuperscript{76} Similarly, in the spending regressions, I include total tax revenue per capita as a control. All of these variables are attained from the World Bank.\textsuperscript{77} Finally, as is standard in this research area, I include country dummies (fixed effects) in all of the regressions to avoid bias due to omitted variables that help determine long-term cross-country differences in government activity.\textsuperscript{78}

Table 5 reports the results for the first set of estimations, which focus on democratic regimes. Following a convention established by prior research, the analysis is limited to countries scoring 7 or above on Polity IV’s Polity measure of political regimes (discussed above).\textsuperscript{79} It may be noted, however, that the results of the statistical analysis are robust to changes in the Polity threshold.

\textsuperscript{74} For example, Perotti 1996.

\textsuperscript{75} For example, Rodrik 1998.

\textsuperscript{76} See, for example, Remmer 2004.

\textsuperscript{77} World Bank 2004.

\textsuperscript{78} See, for example, Beck 2001; Hsiao 2003; Rodden 2003. I confirmed the need for fixed effects in the regressions using an F-test.

\textsuperscript{79} See, for example, Kadera, et al. 2003; Reiter 2001; Rousseau, et al. 1996.
As with the regime change regressions, I first examined the results of a regression with the three disaggregated components of non-tax revenue. As shown in Column 1, the lagged values of all three components are negative and significant, and the linear combination of the three coefficients is also negative and significant (with a p-value of 0.001), indicating again that combining the indicators into one variable is justified.

Column 2 reports the results of the model with the aggregated non-tax revenue indicator. The sample jumps from 769 to 991 observations, and aggregated non-tax revenue is negative and significant. With respect to the other independent variables, the coefficients for both the change and lagged level of total expenditures are statistically significant and consistent with theoretical expectation. Similarly, the lagged level of income tax revenue is significant and negative, with a value between 0 and -1 as required for equilibrium in the error correction model. None of the other level variables are significant, though there is evidence of some short-term effects of changes in the elderly population and openness to trade.

I subjected this model to a variety of robustness checks not reported here due to space constraints. The inclusion of an OECD dummy, decade dummies, and regional dummies had no effect on the main results. I also used different estimation techniques, as there is little consensus in the literature about the appropriate technique to use in this type of analysis. I first used generalized least squares with a panel-specific first-order autoregressive structure, and then used ordinary least squares with robust standard errors clustered by country. The important results were unchanged.
Finally, because income inequality plays an implicit role in the redistributional theoretical framework advanced above (in determining the demand for redistribution), I explored the effect of inequality in these regressions. Measures of inequality are of notoriously bad quality, and are only available for a subset of years and countries. For my measure of inequality, I used the Gini coefficient, employing the data of David Dollar and Aart Kraay\textsuperscript{80}, who restrict their sample to income distribution measures based on nationally representative samples from the UN-WIDER World Income Database and the databases of Klaus Deininger and Lyn Squire, Mattias Lundberg and Lyn Squire, and Shaohua Chen and Martin Ravallion.\textsuperscript{81} Even if I follow Boix\textsuperscript{82} and use the five-year average of the Gini coefficient, to minimize volatility in the measure and maximize the number of observations, my sample drops considerably. To address this problem, I ran a reduced form model, only including the non-tax revenue variable, GDP per capita, the measure of inequality, and the fixed effects. In this regression of 631 observations, inequality was positive but not significant (in both its change and lagged forms), while the non-tax revenue variable remained negative and significant. In sum, all of these regressions provide evidence that non-tax revenue leads to decreased taxation of elites in democracies.

I proceeded similarly with the regressions analyzing social spending in dictatorships (countries with a \textit{Polity} score equal to or below 6), reported in Table 6.\textsuperscript{83} I first ran the

\begin{itemize}
  \item \textsuperscript{80} Dollar and Kraay 2002.
  \item \textsuperscript{81} Chen and Ravallion 2000; Deininger and Squire 1996; Lundberg and Squire 2003; United Nations World Institute for Development Economics Research (WIDER) 2000.
  \item \textsuperscript{82} Boix 2001.
  \item \textsuperscript{83} In all of my analyses, I excluded all observations in which Polity coded the country as -77, which indicates a collapse of central state authority.
\end{itemize}
regression with the three separate components of non-tax revenue. As shown in Column 1, all of
the components had positive and significant coefficients except the indicator of state-owned
enterprise revenue, which was positive but not significant. However, a Wald test could not reject
the hypothesis that the coefficients on these variables were equal. In addition, the linear
combination of the three coefficients is positive and significant (with a p-value of 0.006), again
providing evidence that combining the indicators into one variable is justified.

[TABLE 6 ABOUT HERE]

Column 2 reports the results with the aggregated non-tax revenue variable. In the larger
sample, the coefficient on the lagged indicator is positive and significant, indicating support for
the hypothesis that non-tax revenue is associated with higher social spending in dictatorships.
With regard to the other independent variables, the coefficients for both the change and lagged
level of tax revenue are statistically significant and consistent with theoretical expectation. This
is particularly important since the redistributinal framework upon which my theory is based
would assume this relationship holds. In addition, the lagged level of social spending is
significant and negative, with a value between 0 and -1 as required for equilibrium in the error
correction model. There is also evidence that dictatorships respond to older populations with
increased social spending, and that more economically open dictatorships tend to spend less.
Interestingly, richer dictatorships (i.e. with higher GDP per capita) tend to spend less on social
spending per capita than poorer dictatorships. Finally, there is also evidence that economic
growth results in a short-term increase in social spending, as one would expect.

I submitted these results to the same robustness checks as the taxation regressions above.
No substantive difference was observed with an OECD dummy variable, decade dummies,
regional dummies, or different estimation techniques. I also ran a reduced form model with the inequality indicator, in which inequality was positive and significant (with a p-value on the lagged term of 0.003). The results for the non-tax revenue variable were again unchanged.

These two sets of results—regarding elite taxation in democracies and social spending in dictatorships—provide support for my causal hypotheses linking non-tax revenue to regime stability. However, these are not the only hypotheses that might link non-tax revenue to regime stability, and it is important to consider alternatives. I will address here the three most evident alternative hypotheses related to government finance (my principal focus) and leave other hypotheses for future work. The alternative hypotheses within the arena of government finance are (a) non-tax revenue’s effect on some other form of taxation (besides taxation of elites) is at the center of the relationship between non-tax revenue and democratic stability; (b) non-tax revenue’s effect on some other form of spending (besides social spending) is at the center of the relationship between non-tax revenue and authoritarian stability; and (c) “booms” in non-tax revenue are more important than levels of such revenue.

I assessed these alternative hypotheses by dividing my sample into dictatorships and democracies and running the regime change regression (from Column 2 of Table 3) with additional control variables. The results are reported in Table 7.84 For democracies, I included

84 I am grateful to Tim Büthe for pointing out that the dependent variable in these regressions does not necessarily only pick up transitions from democracy to dictatorship, and vice versa. For example, a regime coded as a -4 in the Polity dataset would be considered a dictatorship. In the Polity coding, this dictatorship would experience a “regime change” if it moved to a -7, but the new regime would be more authoritarian. A similar example would exist with democracies moving from 7 to 10 on the Polity scale. To ensure that these types of changes were not
the additional control variable of all tax revenue other than that raised from taxes on income, profits, and capital gains. The goal was to isolate the causal mechanism of non-tax revenue’s effect on income tax, and rule out the possibility that non-tax revenue’s effect was due to the reduction in other kinds of taxation. Non-tax revenue remained significant and positive. For dictatorships, I included the additional control variable of all non-social spending per capita. This includes, for example, spending on the military and other spending on government projects such as infrastructure. The goal was to isolate non-tax revenue’s effect through social spending and rule out the possibility that non-tax revenue’s effect was due to spending in other areas. Again, non-tax revenue remained significant. Finally, in both of these regressions, I included the change in non-tax revenue per capita, to account for a “boom” effect. The boom effects were insignificant in both of the regressions.

In sum, while it is impossible to rule out other causal links between non-tax revenue and regime stability, there is considerable support for the causal hypotheses advanced in this paper. It is also interesting to note in passing some of the results of the control variables in these regressions. For example, the variable for all other tax revenue (besides income tax) has a destabilizing effect in democracies, contrary to what might be suggested by the literature on affecting my results, I split the sample into dictatorships and democracies and limited the dependent variable to positive changes for dictatorships and negative changes for democracies. That is, regime changes in these regressions were only counted if dictatorships moved three or more points in a democratic direction, or democracies moved three or more points in an authoritarian direction. The main results were unchanged.
taxation leading to representation. In addition, the split samples reveal opposite effects of higher income per capita: a stabilizing effect in democracies and a destabilizing one in dictatorships, similar to what would be predicted by modernization theory. Economic growth is stabilizing in both, whereas urbanization and ethnolinguistic fractionalization only seem to be destabilizing to democracies.

**Conclusion**

This paper has presented a theoretical framework for understanding why we should expect various kinds of non-tax revenue to increase regime stability in both democracies and dictatorships. Based on theories of regime change that focus on redistributional conflicts, I have argued that non-tax revenue should not only stabilize regimes, but stabilize them through particular causal mechanisms. I have tested these hypotheses on all countries and years for which data are available, and found strong support for them. Non-tax revenue is associated with less taxation of elites in democracies and increased social spending in dictatorships, and more stability in both kinds of regimes.

In addition to the implications of its findings for the study of political regime stability, this paper suggests some important new directions for the study of the political economy of government revenue. One of these implications concerns the aggregation and dis-aggregation of revenue types. As mentioned above, scholars studying non-tax revenue have in general focused on disaggregated types of it: oil revenues, foreign aid, borrowing, and so forth. In contrast, political scientists studying tax revenue have generally ignored disaggregated types of it, such as

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85 For example, Epstein, et al. 2006.
taxes on the rich or poor, and focused instead on aggregate tax revenue.\footnote{Though see Timmons 2005.} This latter approach has also generally been taken with regard to government spending, though an important exception is the study of social spending. This paper offers evidence that leverage may be gained from taking new approaches to tax and non-tax revenue, disaggregating the former while aggregating the latter. At the very least, propositions suggesting that certain types of non-tax revenue act differently than others need to be defended, not assumed, as do propositions about aggregating tax revenue.

Another implication of this paper for future research concerns our assumptions about the likely effects of revenue. As discussed in the introduction, existing research regarding different kinds of non-tax revenue has tended to assume that certain kinds of revenue have what might be called “normative properties”. That is, these various revenues have independent effects, pushing a country either toward dictatorship (in the case of oil for example) or toward democracy (in the case of aid). This paper has taken a different approach, arguing that the effect of these revenues in terms of dictatorships and democracies is very much contextual: they stabilize the regime in which they appear. The results in Table 3 and Table 7—showing that non-tax revenues are stabilizing in both dictatorships and democracies—provide support for this latter approach, and not the “normative” one.

From a policy perspective, this different approach has quite important consequences. For example, an approach that assumed foreign aid has democratic properties would imply that politicians interested in promoting democracy should favor giving aid to dictatorships. The findings of this paper suggest precisely the opposite. While policymakers might be able to devise various modalities of aid that could avoid the stabilizing effects demonstrated in this
paper, it should be emphasized that most of the current modalities do not.\textsuperscript{87} The key aspect of non-tax revenue in this theory is that it enables a dictatorship to spend money to satiate poorer citizens. Most aid works this way. Even with conditions attached, it is generally in the form of money that either goes directly to the government or bypasses the government and goes to projects that benefit poorer citizens. Conditionality attached to such aid has usually been ineffective, and far more focused on economic conditions than on political ones.\textsuperscript{88} One aid modality that may be exceptional is “technical assistance”, which is often provided by donors in the form of people (i.e. experts), not money.\textsuperscript{89} However, this kind of aid makes up a clear minority of global aid flows.

The fact that aid seems to stabilize dictatorships might not be particularly concerning if global aid tended to flow to democracies. However, despite the end of the Cold War, this is not the case. In the latest year for which data are available (2006), almost two-thirds (64\%) of net overseas development assistance from all donors went to countries not considered fully democratic by Freedom House. The United States was indicative of this trend, as 67 percent of U.S. aid that year went to countries not considered fully democratic.\textsuperscript{90} In other words, the

\textsuperscript{87} See, for example, Morrison 2007.

\textsuperscript{88} See, for example, Collier 1997.

\textsuperscript{89} See Collier 2006; Gibson and Hoffman 2007.

\textsuperscript{90} These are my calculations, based on OECD data on foreign aid and Freedom House’s coding of countries as “not free”, “partially free”, or “free” (at the time of writing, Polity data does not yet exist for 2006). Countries “not considered fully democratic by Freedom House” include those countries considered “not free” or only “partially free” by Freedom House. Excluding Iraq
majority of the world’s foreign aid continues to go to—and stabilize—countries not fully democratic.

The policy implications of the approach of this paper are also apparent with regard to oil. As an example, consider Mexico, a new democracy whose oil deposits are rapidly decreasing. The traditional perspective—arguing that oil rents hinder democratization—would predict that the decline in oil revenues would have a positive effect on Mexico’s political regime. The perspective offered by this paper would call for more caution. As Mexico’s oil revenues continue to decline, there is likely to be increased pressure from citizens to redistribute resources from Mexico’s elite. If history is a guide, the implications may not be positive for the future of Mexican democracy.

While these policy examples of aid and oil are important in their own right, one of the central findings of this paper is the interchangeability of these and other resources. The implications of shifts in the availability of oil or aid revenues for political stability in developing regions of the world therefore need to be assessed in relationship to broader patterns of international financial flows. According to the World Bank, for example, the last several years have seen a massive decline in net official lending to developing countries. Given the documented impact of non-tax revenue, one might anticipate rising instability and conflict in the developing world; however, this article emphasizes the importance of focusing on all non-tax revenue. The World Bank explains in the same report that the decline in official lending has

(coded as “not free” by Freedom House), the figures are 59 for all foreign aid and 60 percent for U.S. aid.

91 Luhnow 2007.

92 World Bank 2007, 36.
been driven by high oil prices, which have allowed major oil-exporting countries (such as Algeria, Nigeria, and Russia) to rapidly repay their debt and alleviated the need for further official borrowing. This broader perspective would indicate that non-tax revenue has not declined, and that therefore regimes in the developing world are not necessarily becoming less stable.

In fact, there are indications that non-tax revenue sources seem to be proliferating around the world, resulting in shifting patterns of international influence and regional stability. In Latin America, the obvious example is Venezuela’s Hugo Chavez, whose influence both within and outside the region revolves around the provision of non-tax revenue to other countries. His proposal to form a regional “Bank of the South” (paid for and run by Latin American countries only)—as an alternative to the International Monetary Fund, the World Bank, and the Inter-American Development Bank—can be seen in a similar light. In Asia, the desire to maintain exclusive control over large sources of non-tax revenue was almost certainly behind the United States’ vigorous resistance to the idea of an “Asian Monetary Fund” in the wake of the region’s financial crisis in the late 1990s. In May 2007, finance ministers from 13 Asian nations brought the main ideas of this Fund to fruition, agreeing to pool part of their $2.7 trillion of foreign-exchange reserves to prevent future economic crises. And in Africa, where European countries and the United States have long dominated the purse strings, a major new player has entered the non-tax revenue game: China. In late 2006, China promised $5 billion in soft loans and grants to African states over the following three years. That average of $1.67 billion annually would have made China the fourth largest bilateral donor in Africa over the period of

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93 Lipscy 2003.
2001-2005 (behind the United States, the United Kingdom, and France). Already western countries are complaining that China’s influence will undermine their goals in the region, particularly with regard to democratization. However, China is only one of several new sources of finance for African and other governments, as low-income countries have begun to access international debt markets in several ways.

What is likely to be the effect on systemic stability of new and increasing sources of government finance, besides a likely decline in the influence of international financial institutions and the western donors that have dominated them? This article suggests that these new resources are likely to have a stabilizing effect on the world’s regimes, as both democracies and dictatorships access increased non-tax revenues. The implication would be a period of less regime transition, reducing a major source of political uncertainty and conflict in the developing world. A specific testing of this hypothesis is of course beyond the scope of this article, but it should be noted that much work on international finance and political regimes has explored whether financial flows are pro- or anti-democratic in general. This article indicates the possibility that, at least for flows to governments, this question might be poorly formulated. Like other non-tax revenues, they may simply have stabilizing effects on whatever regime they enter.

These policy and research implications to one side, the arguments here will hopefully spur work toward a more complete theory of political regimes and revenue. It was more than 85

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94 This comparison is made using data on overseas development assistance from the OECD (2007).

95 McGreal 2007.


97 See, for example, Rudra 2005.
years ago that Joseph Schumpeter wrote, “The public finances are one of the best starting points for an investigation of society, especially though not exclusively of its political life”. In this tradition, scholars have produced major statements on the relationship between revenue and political regimes. However, these works—like the vast majority of work on the politics of taxation and spending—largely ignore the fact that much government revenue comes from non-tax sources, many of which are more international than domestic in nature.

Now that scholars working on case studies of oil and aid have demonstrated how the availability of non-tax revenue affects taxation and spending decisions, and as cross-national statistical studies of taxation and spending have explored the influence of oil, aid, and other non-tax revenues, it is apparent that a revenue approach to political regimes that focuses only on taxation is incomplete. Such a significant portion of government revenues are derived from non-tax sources that any research that deals with government finance, from theories of redistribution to theories of state-building, needs to take such revenues into account. The implications are clear for the important literature linking redistributational pressures to political regime change. Future theoretical and empirical work will need to account for the importance of non-tax revenues and their stabilizing impact on political regimes.

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99 For example, Brennan and Buchanan 1980; Levi 1988.

100 For example, Chaudhry 1997.

101 For example, van de Walle 2001.

102 For example, Cheibub 1998; Remmer 2004; Rodden 2003.
References


Development 34(9): 1482-1497.
Deininger, Klaus, and Lyn Squire. (1996). A New Data Set Measuring Income Inequality. The
Growth 7: 195-225.
Dunning, Thad. (2004). Conditioning the Effects of Aid: Cold War Politics, Donor Credibility,
Cambridge: Cambridge University Press.
Easterly, William. (2002). How Did the Heavily Indebted Poor Countries Become Heavily
Indebted? Reviewing Two Decades of Debt Relief. World Development 30(10): 1677-
1696.
Political Science Review 97(1): 75-90.
Gibson, Clark C., and Barak D. Hoffman. (2007). Can Foreign Aid Help Produce Democracy?
A Political Concessions Model of Africa's Transition Period. Processed: University of
California, San Diego.
Goldberg, Ellis, Erik Wibbels, and Eric Mvukiyehe. (2008). Lessons from Strange Cases:
Democracy, Development, and the Resource Curse in the U.S. States. Comparative
Political Studies 41(4-5): 477-514.
Herb, Michael. (2005). No Representation without Taxation? Rents, Development, and
Herbst, Jeffrey. (2000). States and Power in Africa: Comparative Lessons in Authority and
University Press.
University Press.
Oklahoma Press.
Washington, DC: International Monetary Fund.
Monetary Fund.
King Hubbert Center for Petroleum Supply Studies, Colorado School of Mines.


Table 1: The importance of non-tax revenue in some countries’ revenue streams

<table>
<thead>
<tr>
<th>Country</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahrain</td>
<td>77</td>
<td>5</td>
<td>68</td>
<td>84</td>
</tr>
<tr>
<td>Bhutan</td>
<td>84</td>
<td>2</td>
<td>80</td>
<td>87</td>
</tr>
<tr>
<td>Bolivia</td>
<td>42</td>
<td>10</td>
<td>26</td>
<td>56</td>
</tr>
<tr>
<td>Burundi</td>
<td>44</td>
<td>6</td>
<td>34</td>
<td>56</td>
</tr>
<tr>
<td>Congo, Rep.</td>
<td>59</td>
<td>17</td>
<td>31</td>
<td>82</td>
</tr>
<tr>
<td>Egypt</td>
<td>44</td>
<td>6</td>
<td>35</td>
<td>61</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>46</td>
<td>7</td>
<td>34</td>
<td>56</td>
</tr>
<tr>
<td>Greece</td>
<td>32</td>
<td>11</td>
<td>16</td>
<td>51</td>
</tr>
<tr>
<td>Iran</td>
<td>67</td>
<td>12</td>
<td>38</td>
<td>86</td>
</tr>
<tr>
<td>Israel</td>
<td>34</td>
<td>8</td>
<td>24</td>
<td>56</td>
</tr>
<tr>
<td>Japan</td>
<td>28</td>
<td>12</td>
<td>3</td>
<td>44</td>
</tr>
<tr>
<td>Mali</td>
<td>46</td>
<td>18</td>
<td>17</td>
<td>62</td>
</tr>
<tr>
<td>Nepal</td>
<td>54</td>
<td>7</td>
<td>43</td>
<td>65</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>35</td>
<td>14</td>
<td>0</td>
<td>59</td>
</tr>
<tr>
<td>Pakistan</td>
<td>38</td>
<td>7</td>
<td>24</td>
<td>48</td>
</tr>
<tr>
<td>Romania</td>
<td>47</td>
<td>30</td>
<td>6</td>
<td>77</td>
</tr>
<tr>
<td>Syria</td>
<td>50</td>
<td>22</td>
<td>16</td>
<td>78</td>
</tr>
</tbody>
</table>

Table 2: The importance of non-tax revenue, in economic terms
*All variables are as a percent of GDP (100 = 100 percent).*

<table>
<thead>
<tr>
<th>Region</th>
<th>Oil exports</th>
<th>Tax revenues</th>
<th>State-owned enterprise revenue</th>
<th>Foreign aid</th>
<th>Total non-tax revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle East and North Africa</td>
<td>20</td>
<td>17</td>
<td>15</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>South Asia</td>
<td>1</td>
<td>12</td>
<td>5</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>4</td>
<td>18</td>
<td>3</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Europe and Central Asia</td>
<td>2</td>
<td>29</td>
<td>4</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Latin America and Caribbean</td>
<td>4</td>
<td>18</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>East Asia and Pacific</td>
<td>4</td>
<td>16</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

NOTE: Regional breakdowns are as defined by the World Bank. Oil exports as a share of GDP are from the World Bank. “Tax revenues” as defined by the IMF’s (1986) *Government Finance Statistics* (*GFS*) are “compulsory, unrequited payments to government” (p. 118). “State-owned enterprise revenue” is approximated here by the variable “non-tax revenue” in the *GFS*. While this category also includes administrative fees and charges, the majority of this revenue is the government’s “entrepreneurial and property income”. “Foreign aid” is the “grants” variable in the *GFS*, and includes “all nonrepayable unrequited payments received from other governments or programs, for general budget support, or any other purpose” (p. 130). “Total non-tax revenues” are as defined in the text.
Table 3: Non-tax Revenue’s Effect on Regime Instability  
(DV = 1 if regime changes in current year; 0 otherwise)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-tax rev. per capita&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>-0.0007*** (0.0002)</td>
<td>-0.0009*** (0.0002)</td>
<td></td>
</tr>
<tr>
<td>GDP growth</td>
<td>-0.0534* (0.0319)</td>
<td>-0.0565*** (0.0200)</td>
<td>-0.0552*** (0.0181)</td>
</tr>
<tr>
<td>GDP per capita (ln)&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>0.0497 (0.1584)</td>
<td>-0.1922* (0.1059)</td>
<td>0.0391 (0.1226)</td>
</tr>
<tr>
<td>Δ% Population Urban</td>
<td>0.3557 (0.3638)</td>
<td>0.5699** (0.2491)</td>
<td>0.2014 (0.2334)</td>
</tr>
<tr>
<td>Ethnolinguistic Fractionalization</td>
<td>0.3161 (0.6058)</td>
<td>-0.0315 (0.5412)</td>
<td>0.0710 (0.5294)</td>
</tr>
<tr>
<td>Population density (ln)&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>-0.0632 (0.1211)</td>
<td>-0.0161 (0.0894)</td>
<td>0.0344 (0.0832)</td>
</tr>
<tr>
<td>Past regime instability</td>
<td>0.0888 (0.0579)</td>
<td>-0.0109 (0.0559)</td>
<td>0.0193 (0.0548)</td>
</tr>
<tr>
<td>Grants per capita&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>-0.0175** (0.0076)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOE rev. per capita&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>-0.0016** (0.0006)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other nontax rev. per capita&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>-0.0012** (0.0006)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polity&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td></td>
<td>-0.0700*** (0.0229)</td>
<td></td>
</tr>
<tr>
<td>Polity* Non-tax rev. per capita&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td></td>
<td>-0.0001*** (0.0000)</td>
<td></td>
</tr>
<tr>
<td>Regime age</td>
<td>-0.3470*** (0.0753)</td>
<td>-0.3704*** (0.0562)</td>
<td>-0.4067*** (0.0615)</td>
</tr>
<tr>
<td>Spline(1)</td>
<td>0.0013*** (0.0003)</td>
<td>0.0013*** (0.0002)</td>
<td>0.0014*** (0.0002)</td>
</tr>
<tr>
<td>Spline(2)</td>
<td>-0.0001*** (0.0000)</td>
<td>-0.0001*** (0.0000)</td>
<td>-0.0001*** (0.0000)</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.576 (1.203)</td>
<td>0.4205 (0.9691)</td>
<td>-1.253 (1.084)</td>
</tr>
</tbody>
</table>

Observations | 1307 | 1808 | 1808 |
Countries    | 98   | 104  | 104  |
Prob > χ²     | 0.0000 | 0.0000 | 0.0000 |
Pseudo R-Squared | 0.19 | 0.18 | 0.21 |
AIC           | 425.97 | 667.00 | 647.85 |
Area under ROC curve | 0.827 | 0.810 | 0.833 |
% Correctly classified | 95.3 | 94.4 | 94.3 |

NOTE: SOE rev is State-Owned Enterprise revenue. Table entries are logistic regression estimates with standard errors (in parenthesis) clustered by country. *p ≤ 0.10; **p ≤ 0.05; ***p ≤ 0.01

47
<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in income tax per capita</td>
<td>Overall</td>
<td>37.1</td>
<td>151.0</td>
<td>-824.8</td>
</tr>
<tr>
<td></td>
<td>Between</td>
<td>37.4</td>
<td>-19.4</td>
<td>177.0</td>
</tr>
<tr>
<td></td>
<td>Within</td>
<td>145.4</td>
<td>-784.6</td>
<td>753.8</td>
</tr>
<tr>
<td>Change in social spend. per capita</td>
<td>Overall</td>
<td>1.18</td>
<td>93.1</td>
<td>-1017.6</td>
</tr>
<tr>
<td></td>
<td>Between</td>
<td>24.7</td>
<td>-104.8</td>
<td>114.0</td>
</tr>
<tr>
<td></td>
<td>Within</td>
<td>89.3</td>
<td>-911.6</td>
<td>570.9</td>
</tr>
</tbody>
</table>

NOTE: These statistics refer to the dependent variables in the regressions in the second columns of Tables 5 and 6.
Table 5: Non-tax Revenue’s Effect on Taxation of Elites in Democracies  
(DV: Change in per capita Revenue from Taxes on Income, Profits, or Capital Gains)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-tax rev. per capita_{t-1}</td>
<td>-0.0466**</td>
<td>(0.0224)</td>
</tr>
<tr>
<td>GDP per capita_{t-1}</td>
<td>0.0000</td>
<td>(0.0062)</td>
</tr>
<tr>
<td>% population over 65_{t-1}</td>
<td>16.39**</td>
<td>(6.755)</td>
</tr>
<tr>
<td>Trade/GDP_{t-1}</td>
<td>0.0041</td>
<td>(0.0053)</td>
</tr>
<tr>
<td>Total expenditures per capita_{t-1}</td>
<td>0.2549</td>
<td>(0.3542)</td>
</tr>
<tr>
<td>Grants per capita_{t-1}</td>
<td>0.0299*</td>
<td>(0.0161)</td>
</tr>
<tr>
<td>SOE rev. per capita_{t-1}</td>
<td>0.0836</td>
<td>(0.3551)</td>
</tr>
<tr>
<td>Other non-tax rev. per capita_{t-1}</td>
<td>-0.1336***</td>
<td>(0.0472)</td>
</tr>
<tr>
<td>ΔNon-tax rev. per capita</td>
<td>-0.4352***</td>
<td>(0.0252)</td>
</tr>
<tr>
<td>ΔGDP per capita</td>
<td>-0.0108</td>
<td>(0.0141)</td>
</tr>
<tr>
<td>Δ% population over 65</td>
<td>45.53</td>
<td>(35.69)</td>
</tr>
<tr>
<td>ΔTrade/GDP</td>
<td>0.6058</td>
<td>(0.3950)</td>
</tr>
<tr>
<td>ΔTotal expenditures per capita</td>
<td>0.3396***</td>
<td>(0.0276)</td>
</tr>
<tr>
<td>ΔGrants per capita</td>
<td>0.7408**</td>
<td>(0.3687)</td>
</tr>
<tr>
<td>ΔSOE rev. per capita</td>
<td>-0.3016***</td>
<td>(0.0791)</td>
</tr>
<tr>
<td>ΔOther non-tax rev. per capita</td>
<td>-0.5439***</td>
<td>(0.0607)</td>
</tr>
<tr>
<td>Income tax rev. per capita_{t-1}</td>
<td>-0.1924***</td>
<td>(0.0407)</td>
</tr>
<tr>
<td>Constant</td>
<td>dropped</td>
<td>dropped</td>
</tr>
</tbody>
</table>

| Observations | 768 | 990 |
| Countries    | 60  | 66  |
| R-Squared    | 0.56 | 0.58 |
| Prob > χ²   | 0.0000 | 0.0000 |

NOTE: SOE rev is State-Owned Enterprise revenue. All regressions include fixed effects. Table entries are OLS estimates corrected for panel-specific autocorrelation. Panel-corrected standard errors are in parenthesis. *p ≤ 0.10; **p ≤ 0.05; ***p ≤ 0.01.
Table 6: Non-tax Revenue’s Effect on Social Spending in Dictatorships
(DV: Change in per capita spending on health, education, welfare, and housing)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-tax rev. per capita&lt;sub&gt;τ₋₁&lt;/sub&gt;</td>
<td>0.2095*** (0.0418)</td>
<td></td>
</tr>
<tr>
<td>GDP per capita&lt;sub&gt;τ₋₁&lt;/sub&gt;</td>
<td>-0.0063 (0.0056)</td>
<td>-0.0289*** (0.0104)</td>
</tr>
<tr>
<td>% population over 65&lt;sub&gt;τ₋₁&lt;/sub&gt;</td>
<td>0.4836 (3.486)</td>
<td>35.58*** (11.78)</td>
</tr>
<tr>
<td>Trade/GDP&lt;sub&gt;τ₋₁&lt;/sub&gt;</td>
<td>-0.2922*** (0.0984)</td>
<td>-0.3232* (0.1788)</td>
</tr>
<tr>
<td>Total tax revenue per capita&lt;sub&gt;τ₋₁&lt;/sub&gt;</td>
<td>0.2260*** (0.0472)</td>
<td>0.2641*** (0.0479)</td>
</tr>
<tr>
<td>Grants per capita&lt;sub&gt;τ₋₁&lt;/sub&gt;</td>
<td>0.2251** (0.0916)</td>
<td></td>
</tr>
<tr>
<td>SOE rev. per capita&lt;sub&gt;τ₋₁&lt;/sub&gt;</td>
<td>0.0219 (0.0274)</td>
<td></td>
</tr>
<tr>
<td>Other non-tax rev. per capita&lt;sub&gt;τ₋₁&lt;/sub&gt;</td>
<td>0.0454* (0.0239)</td>
<td></td>
</tr>
<tr>
<td>ΔNon-tax rev. per capita</td>
<td></td>
<td>0.2412*** (0.0460)</td>
</tr>
<tr>
<td>ΔGDP per capita</td>
<td>-0.0193 (0.0151)</td>
<td>0.0532*** (0.0201)</td>
</tr>
<tr>
<td>Δ% population over 65</td>
<td>-9.889 (27.50)</td>
<td>182.2** (71.73)</td>
</tr>
<tr>
<td>ΔTrade/GDP</td>
<td>-0.2670*** (0.1020)</td>
<td>-0.3390* (0.2058)</td>
</tr>
<tr>
<td>ΔTotal tax revenue per capita</td>
<td>0.4464*** (0.0540)</td>
<td>0.4135*** (0.0570)</td>
</tr>
<tr>
<td>ΔGrants per capita</td>
<td>0.5658*** (0.1006)</td>
<td></td>
</tr>
<tr>
<td>ΔSOE rev. per capita</td>
<td>0.2574*** (0.0309)</td>
<td></td>
</tr>
<tr>
<td>ΔOther non-tax rev. per capita</td>
<td>0.2251*** (0.0241)</td>
<td></td>
</tr>
<tr>
<td>Social spending per cap.&lt;sub&gt;τ₋₁&lt;/sub&gt;</td>
<td>-0.2354*** (0.0890)</td>
<td>-0.5545*** (0.0823)</td>
</tr>
<tr>
<td>Constant</td>
<td>dropped</td>
<td>dropped</td>
</tr>
<tr>
<td>Observations</td>
<td>339</td>
<td>569</td>
</tr>
<tr>
<td>Countries</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.78</td>
<td>0.82</td>
</tr>
<tr>
<td>Prob &gt; χ²</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

NOTE: SOE rev is State-Owned Enterprise revenue. All regressions include fixed effects. Table entries are OLS estimates corrected for panel-specific autocorrelation. Panel-corrected standard errors are in parenthesis. *p ≤ 0.10; **p ≤ 0.05; ***p ≤ 0.01.
Table 7: Testing Some Additional Hypotheses with Regard to Regime Instability  
(DV = 1 if regime changes in current year; 0 otherwise)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Democracies</th>
<th>Dictatorships</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-tax rev. per capita&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>-0.0021** (0.0009)</td>
<td>-0.0004** (0.0002)</td>
</tr>
<tr>
<td>GDP growth</td>
<td>-0.1446*** (0.0527)</td>
<td>-0.0541** (0.0252)</td>
</tr>
<tr>
<td>GDP per capita (ln)&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>-0.2422 (0.3836)</td>
<td>0.5689** (0.2498)</td>
</tr>
<tr>
<td>Δ% Population Urban</td>
<td>1.367* (0.7379)</td>
<td>-0.2212 (0.3686)</td>
</tr>
<tr>
<td>Ethnolinguistic Fractionalization</td>
<td>3.955*** (1.502)</td>
<td>-0.0287 (0.7548)</td>
</tr>
<tr>
<td>Population density (ln)&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>0.1537 (0.2955)</td>
<td>-0.1202 (0.1493)</td>
</tr>
<tr>
<td>Past regime instability</td>
<td>-0.3659 (0.3396)</td>
<td>0.0618 (0.0916)</td>
</tr>
<tr>
<td>Δ Non-tax rev. per capita</td>
<td>-0.0006 (0.0006)</td>
<td>-0.0006 (0.0004)</td>
</tr>
<tr>
<td>Non-income tax rev. per capita&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>0.0006** (0.0003)</td>
<td></td>
</tr>
<tr>
<td>Non-social spending per capita&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td></td>
<td>-0.0004 (0.0004)</td>
</tr>
<tr>
<td>Regime age</td>
<td>-0.2472 (0.2676)</td>
<td>-0.4112*** (0.0728)</td>
</tr>
<tr>
<td>Spline(1)</td>
<td>0.0005 (0.0010)</td>
<td>0.0017*** (0.0004)</td>
</tr>
<tr>
<td>Spline(2)</td>
<td>0.0000 (0.0001)</td>
<td>-0.0002* (0.0001)</td>
</tr>
<tr>
<td>Constant</td>
<td>-3.242 (3.034)</td>
<td>-4.070** (1.874)</td>
</tr>
</tbody>
</table>

| Observations                                  | 860                   | 627                   |
| Countries                                      | 57                    | 57                    |
| Prob > χ²                                      | 0.0000                | 0.0000                |
| Pseudo R-Squared                              | 0.25                  | 0.16                  |
| AIC                                           | 72.17                 | 366.83                |
| Area under ROC curve                          | 0.881                 | 0.768                 |
| % Correctly classified                         | 99.42                 | 90.43                 |

NOTE: Table entries are logistic regression estimates with standard errors (in parenthesis) clustered by country. *p ≤ .10; **p ≤ .05; ***p ≤ .01