

# **Non-Tax Revenue and the Redistributional Foundations of Regime Stability**

Kevin M. Morrison  
Department of Political Science  
Duke University

kevin.morrison@duke.edu

July 2007

Revise and resubmit: *International Organization*

**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 redistributional 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 lead to 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.

**Acknowledgments:** I am grateful to Dylan Fagan for excellent research assistance; to Despina Alexiadou, David Brady, Tim Büthe, John Doces, Clark Gibson, Joyee Ghosh, Marcela González Rivas, Torben Iversen, Seth Jolly, Robert Keohane, Dan Kselman, Brendan Nyhan, Michael Ross, Matt Singer, Camber Warren, and anonymous reviewers for suggestions on earlier versions; and to Karen Remmer for suggestions and overall guidance. All errors are my own. Earlier versions of this paper were presented at the Annual Meeting of the American Political Science Association, the Harvard University Comparative Political Economy Workshop, the Advanced Graduate Workshop on Poverty, Development, and Globalization at the University of Manchester (UK), and seminars at Duke University, the University of Chicago, and Emory University. I gratefully acknowledge financial support from a National Science Foundation (NSF) Graduate Research Fellowship, a James B. Duke Fellowship, and a Vertical Integration Grant from the Duke University Graduate School. Any opinions, findings, conclusions, or recommendations expressed in this paper are those of the author and do not necessarily reflect the views of the NSF or any entity of Duke University.

Non-Tax Revenue and the  
Redistributional Foundations of Regime Stability

Given the prominence of oil in international affairs, it is not surprising that scholars have generated a considerable amount of scholarship about its effects on politics. Perhaps more surprising is the general conclusion at which much of this literature has arrived. Instead of causing political regimes to act in particular ways, oil's principal effect seems to be the simple fact that it gives political regimes more money with which to pursue their various strategies for staying in power.<sup>1</sup> 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."<sup>2</sup> 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."<sup>3</sup> By this argument, the ways in which governments use oil revenue are just a reflection of their preferences over the use of state finances.

This way of thinking about the relationship between oil wealth and political regimes raises an important question: If it is oil *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

---

<sup>1</sup> These strategies vary considerably, from "buying" political consensus to repressing various social groups. See, for example, Anderson 1995; Chaudhry 1997; Karl 1997; Moore 1976; Shambayati 1994.

<sup>2</sup> Jensen and Wantchekon 2004, 821.

<sup>3</sup> Smith 2004, 233, emphasis added.

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.<sup>4</sup> 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 leads to diametrically opposed predictions about their effects on political regimes. This wisdom is reflected in the contrasting titles of two important recent studies: while Michael Ross asks “Does Oil Hinder Democracy?”, Stephen Knack asks “Does Foreign Aid Promote Democracy?”<sup>5</sup> 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

---

<sup>4</sup> See, for example, Bräutigam 2000; Moore 1998; and Therkildsen 2002. It is interesting to note in this context that Hussein Mahdavy’s original definition of a *rentier* state was a state that received substantial rents from “foreign individuals, concerns or governments” (1970, 428, cited in Ross 2001).

<sup>5</sup> Knack 2004; Ross 2001.

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 whatever type of regime they are present. That is—as indicated by the literature on oil—non-tax revenues do not cause regimes to act in certain ways. They merely enable the 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, to which I will return at the end of the paper.

To explore the impact of these revenues, I first review the surprisingly sparse 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 redistributive 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 led to 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**

The literature on government revenue and regime stability is surprisingly sparse, despite the emphasis 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.<sup>6</sup> The research that does exist 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).<sup>7</sup>

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.<sup>8</sup> As Michael Ross points out, there are two different versions of this argument.<sup>9</sup> One, seemingly supported by scholars like Brennan and Buchanan and Samuel Huntington, is that citizens

---

<sup>6</sup> Brennan and Buchanan 1980; Levi 1988; Musgrave 1959; and Schumpeter 1918 (1991).

<sup>7</sup> 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.

<sup>8</sup> Bates and Lien 1985; Levi 1988; North and Weingast 1989; Tilly 1990.

<sup>9</sup> Ross 2004.

demand representation in exchange for higher levels of taxes.<sup>10</sup> 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.<sup>11</sup> Ross provides cross-national statistical tests for these theses, finding support for the latter but not the former.<sup>12</sup>

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<sup>13</sup>—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 90 percent of its reserves.<sup>14</sup> 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.<sup>15</sup> 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.

---

<sup>10</sup> Brennan and Buchanan 1980; Huntington 1991.

<sup>11</sup> Bates and Lien 1985.

<sup>12</sup> Ross 2004.

<sup>13</sup> Smith 2004.

<sup>14</sup> Ivanhoe 2000.

<sup>15</sup> Jones Luong and Weinthal 2006; Ross 1999.

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<sup>16</sup> and acts similarly to oil in that it provides extra resources the government can use to distribute to its key constituencies without taxation.<sup>17</sup> 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”.<sup>18</sup> To my knowledge, no one has directly tested statistically whether aid leads to increased regime stability.<sup>19</sup>

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. Such a theory would not only have to address the supply of both tax and non-tax revenue, but also address the *demand* side: the demand from society for expenditures.

---

<sup>16</sup> Feyzioglu, et al. 1998.

<sup>17</sup> For example, Bratton and van de Walle 1997.

<sup>18</sup> van de Walle 2001, 240.

<sup>19</sup> 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 correlation between improvements in level of democracy and aid as a percentage of either GNP or government spending.

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 off works that focus on redistributive conflicts as central to regime change. This approach to regime change has a distinguished history, including the landmark analyses of Barrington Moore and Dietrich Rueschmeyer, Evelyne Huber Stephens, and John Stephens.<sup>20</sup> Because the more recent contributions of Carles Boix and Daron Acemoglu and James Robinson have specifically modeled the ways in which demands from society affect the amount of revenue raised and distributed by governments, they provide a useful framework on which to build.<sup>21</sup>

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.<sup>22</sup> 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 takes place between citizens and wealthy elites.<sup>23</sup> 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

---

<sup>20</sup> Moore 1966; Rueschmeyer, et al. 1992. Also see Therborn 1977.

<sup>21</sup> Acemoglu and Robinson 2001, 2006; Boix 2003.

<sup>22</sup> Kitschelt 1992.

<sup>23</sup> It may be noted that the central theoretical claims of the work by Acemoglu and Robinson (2006) 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 *within* these societal groups.

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".<sup>24</sup> 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<sup>th</sup> and beginning of the 20<sup>th</sup> centuries led to an expansion of both social insurance and public education provision.<sup>25</sup> Bruce Bueno de Mesquita and his co-authors have also provided support for this approach, showing that as the size of the winning coalition in a regime increases, so do important education and health indicators.<sup>26</sup>

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.<sup>27</sup> In particular, the models of Boix<sup>28</sup> and Acemoglu and Robinson<sup>29</sup> build off the benchmark

---

<sup>24</sup> Jack and Lagunoff 2006; Kousser 1974.

<sup>25</sup> Lindert 2004.

<sup>26</sup> Bueno de Mesquita, et al. 2003.

<sup>27</sup> Delacroix 1980.

<sup>28</sup> Boix 2003.

<sup>29</sup> Acemoglu and Robinson 2006.

model of redistribution by Allan Meltzer and Scott Richard.<sup>30</sup> 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.<sup>31</sup> 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.

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.<sup>32</sup> 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

---

<sup>30</sup> Meltzer and Richard 1981.

<sup>31</sup> 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.

<sup>32</sup> Acemoglu and Robinson 2006.

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 forthcoming article<sup>33</sup>, 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 the availability of more resources with which to appease citizens, 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. In the Appendix, using a similar model, I present a proof that non-tax revenue should lower the preferred tax rate of citizens in democracies, because of diminishing marginal returns to taxation and spending. The more non-tax revenue there is, the less desire there is to tax. 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 lead to 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 lead to less taxation of richer elites. In dictatorships, non-tax revenue should lead to increased spending on poorer citizens. The

---

<sup>33</sup> Morrison 2007.

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 in revenue over a long time period, the IMF recently changed the way they categorize government finance.<sup>34</sup> However, the data for the previous coding by the IMF is available over a time period of 1973-2001.<sup>35</sup> Therefore, to attain a longer time-series, I have used the previous coding of revenue and spending.

In my theoretical model, 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).<sup>36</sup> 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

---

<sup>34</sup> International Monetary Fund (IMF) 2001.

<sup>35</sup> The previous coding is detailed in International Monetary Fund (IMF) 1986.

<sup>36</sup> This can be seen in equation (3) in the Appendix, in which the budget is balanced. I provide empirical evidence below that these different components of non-tax revenue act similarly.

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.<sup>37</sup> Much insight, similarly, has been gained by focusing on aggregate government spending, discounting differences between various kinds of expenditure.<sup>38</sup> Research on non-tax 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 2066 observations over 119 countries, and 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.

---

<sup>37</sup> See, for example, Cheibub 1998; Ross 2004.

<sup>38</sup> See, for example, Rodden 2003; Rodrik 1998.

[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. 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. It also lists the regional averages of oil exports as a share of GDP, a common indicator of oil dependence.<sup>39</sup> 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 the correlation between my non-tax revenue variable and oil exports as a share of GDP is statistically significant and positive, it 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 3.5 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.

[TABLE 2 ABOUT HERE]

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.

---

<sup>39</sup> Ross 2001; Smith 2004.

## Analysis of the Regime Change Hypothesis

I begin the statistical analysis by establishing that my first hypothesis holds: non-tax revenue should lead to 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<sup>40</sup>, a regime is considered to have changed if it receives a zero in Polity IV’s *Durable* variable, which counts the number of years since the most recent regime change.<sup>41</sup> 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.

The key independent variable in the model is *Non-tax revenue per capita*.<sup>42</sup> It is calculated, using the IMF’s *GFS*, by subtracting tax revenue from total expenditures 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 was justifiable, I begin my analyses by including various components of non-tax revenue separately in the regressions, as I will discuss shortly.

---

<sup>40</sup> Smith 2004.

<sup>41</sup> Marshall and Jagers 2003.

<sup>42</sup> The standardization by population is suggested directly by the formal models. 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 also include important control variables to ensure confidence in the results regarding non-tax revenue, using generally the same control variables as Smith.<sup>43</sup> First, I control for *Ethnolinguistic fractionalization*, since some scholars have argued that social fragmentation increases regime instability.<sup>44</sup> 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.<sup>45</sup> 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, *GDP per capita*, following many scholars who have shown a relationship between these indicators and regime stability.<sup>46</sup> Third, I control for the change in the percent of the population that is urban (*% Population Urban*), since some scholars have found that urbanization can be destabilizing for regimes.<sup>47</sup> Fourth, I include the level of population density, to control for the possibility of a relationship between population, land, and regime stability.<sup>48</sup> These last three variables come from the World Bank.<sup>49</sup>

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

---

<sup>43</sup> Smith 2004.

<sup>44</sup> For example, Horowitz 1985.

<sup>45</sup> Roeder 2001.

<sup>46</sup> For example, Lipset 1959; Przeworski, et al. 2000; and Remmer 1991.

<sup>47</sup> For example, Huntington 1968.

<sup>48</sup> Fearon and Laitin 2003; Herbst 2000.

<sup>49</sup> World Bank 2004.

logistic analysis.<sup>50</sup> Therefore, as recommended by Beck and his co-authors and implemented by others<sup>51</sup>, 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.<sup>52</sup> 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.<sup>53</sup> An important component of this third category is borrowing (e.g. deficit spending). 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 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.

[TABLE 3 ABOUT HERE]

---

<sup>50</sup> Beck, et al. 1998.

<sup>51</sup> For example, Przeworski, et al. 2000; Smith 2004.

<sup>52</sup> Specifically, the age of a political regime was coded as the lagged value of the *Durable* variable in Polity IV.

<sup>53</sup> Details of these variables are in Table 2.

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 combination of the three coefficients is also negative and significant (with a p-value of 0.015). 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.<sup>54</sup> 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 *now*, because creditors have lost confidence that there is any hope for repayment.<sup>55</sup> This inability to borrow more would be reflected in my measure of non-tax revenue.

---

<sup>54</sup> Birdsall, et al. 2003; Easterly 2002.

<sup>55</sup> 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

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.<sup>56</sup> 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 or not the country belonged to the OECD, to be sure that the dynamics observed were not driven by rich countries.<sup>57</sup> 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. In addition, I tested whether or

---

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. Exploring how governments make these tradeoffs, and the possible implications for regime stability, is a very interesting avenue for future work.

<sup>56</sup> 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 6.

<sup>57</sup> I also ran the regression on a sample only of developing countries, with similar results.

not 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 0.022).

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 90<sup>th</sup> percentile of non-tax revenue to the 10<sup>th</sup> 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%.<sup>58</sup>

Finally, I repeated the regression in Column 2 using codings of regime change different than the one in the *Polity* dataset. First, I used the coding of Adam Przeworski and his co-

---

<sup>58</sup> These simulations were generated by the useful STATA command *prvalue*, written by Long and Freese 2006. The effect of non-tax revenue is negative and significant at all levels of the *Polity* score. Note that, because of the fact that more democratic countries in the sample tend to be more stable than dictatorial ones (as represented by the negative and significant coefficient on the *Polity* score in the regression), the probability of regime transition in the democracy with the 10<sup>th</sup> percentile of non-tax revenue in this example would still have a slightly lower probability of transition than the dictatorship with the 90<sup>th</sup> percentile of non-tax revenue.

authors, who define democracies as regimes with functioning elections.<sup>59</sup> 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 colleagues, who focus on the size of the winning coalition in a political regime.<sup>60</sup> Using various indicators from the Polity dataset, they create a five-point scale to represent coalition size. I considered a “regime change” a change of two or more 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 relationship 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 leads to regime stability, we should also be able to observe that non-tax revenue leads to (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

---

<sup>59</sup> Przeworski, et al. 2000.

<sup>60</sup> Bueno de Mesquita, et al. 2003.

of taxation of elites a measure of revenue from taxation of “income, profits, and capital gains”, a tax that falls heaviest on the rich.<sup>61</sup> Similarly, I use social spending as an indicator of spending that benefits poorer citizens.<sup>62</sup> 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-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”.<sup>63</sup> 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, 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.<sup>64</sup> The equation estimated is as follows:

$$\Delta Y_{i,t} = \beta_0 + Y_{i,t-1}\beta_1 + X_{i,t-1}\beta_2 + \Delta X_{i,t} \beta_3 + \varepsilon_{i,t},$$

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

---

<sup>61</sup> Timmons 2005.

<sup>62</sup> Specifically, social spending is spending on health, education, housing, and welfare.

<sup>63</sup> Timmons 2005, 541.

<sup>64</sup> For example, Iverson and Cusack 2000; Kaufman and Segura-Ubiergo 2001; Rodden 2003; Wibbels 2006. Also see Beck 2001.

capita from one year to the next. 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.<sup>65</sup> The coefficient on the lagged level of the dependent variable ( $\beta_1$ ) is an indicator 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.<sup>66</sup> As is standard in the literature, the equation was estimated using ordinary least squares (OLS) with panel-corrected standard errors, to accommodate the problems that plague cross-sectional time-series research designs, notably heteroskedasticity and serial correlation.<sup>67</sup> The estimation accounts for panel-specific patterns of first-order autocorrelation.

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. The first three are: (1) *GDP per capita*, to account for the effect of economic development on the public sector<sup>68</sup>; (2)

---

<sup>65</sup> See, for example, Beck 1991.

<sup>66</sup> Remmer 2004; Rodden 2003.

<sup>67</sup> Beck and Katz 1995.

<sup>68</sup> For example, Boix 2001.

the percentage of the population that is 65 years and older (*% population over 65*), since this tends to drive pensions and thereby social spending<sup>69</sup>; and (3) 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 size of the public sector<sup>70</sup>. Fourth, 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.<sup>71</sup> 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.<sup>72</sup> 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.<sup>73</sup>

Table 4 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).<sup>74</sup> It may be noted, however, that the results of the statistical analysis are robust to changes in the *Polity* threshold.

---

<sup>69</sup> For example, Perotti 1996.

<sup>70</sup> For example, Rodrik 1998.

<sup>71</sup> See, for example, Remmer 2004.

<sup>72</sup> World Bank 2004.

<sup>73</sup> See, for example, Beck 2001; Hsiao 2003; Rodden 2003. I confirmed the need for fixed effects in the regressions using an F-test.

<sup>74</sup> See, for example, Kadera, et al. 2003; Reiter 2001; Rousseau, et al. 1996.

[TABLE 4 ABOUT HERE]

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 redistributive 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<sup>75</sup>, 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.<sup>76</sup> Even if I follow Boix<sup>77</sup> 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 *Polity* score equal to or below 6), reported in Table 5.<sup>78</sup> I first ran the 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

---

<sup>75</sup> Dollar and Kraay 2002.

<sup>76</sup> Chen and Ravallion 2000; Deininger and Squire 1996; Lundberg and Squire 2003; United Nations World Institute for Development Economics Research (WIDER) 2000.

<sup>77</sup> Boix 2001.

<sup>78</sup> 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.

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 5 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 leads to 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 redistributive 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 6.<sup>79</sup> For democracies, I included

---

<sup>79</sup> 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 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

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.

[TABLE 6 ABOUT HERE]

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 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.<sup>80</sup> Economic growth is stabilizing in

---

more points in a democratic direction, or democracies moved three or more points in an authoritarian direction. The main results were unchanged.

<sup>80</sup> For example, Epstein, et al. 2006.

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 redistributive 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 enables less taxation of elites in democracies and increased social spending in dictatorships, stabilizing 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 taxes on the rich or poor, and focused instead on aggregate tax revenue.<sup>81</sup> 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

---

<sup>81</sup> Though see Timmons 2005.

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 6—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 approach taken by this paper would argue just 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 would not.<sup>82</sup> 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 in the form of money that either goes directly to the government or bypasses the government and goes to projects that

---

<sup>82</sup> See, for example, Morrison 2007.

benefit poorer citizens. Conditionality attached to such aid has usually been ineffective, and far more focused on economic conditions than on political ones.<sup>83</sup> 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.<sup>84</sup> However, this kind of aid makes up a clear minority of global aid flows.

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.<sup>85</sup> 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, social spending in Mexico will come under pressure, resulting in demands for greater redistribution from elites in Mexico’s highly unequal society. If history is a guide, it is far from clear that this will have positive implications for Mexico’s democracy.

These policy 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 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”.<sup>86</sup> In this tradition, scholars have produced major statements on the relationship between revenue and political

---

<sup>83</sup> See, for example, Collier 1997.

<sup>84</sup> See Collier 2006; Gibson and Hoffman 2007.

<sup>85</sup> Luhnnow 2007.

<sup>86</sup> Schumpeter 1918 (1991), 101.

regimes.<sup>87</sup> 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.

Now that scholars working on case studies of oil<sup>88</sup> and aid<sup>89</sup> 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<sup>90</sup>, 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 redistributive 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.

## **Appendix**

To see the relationship between non-tax revenue and citizens' taxation preferences, start by defining an individual's utility as

$$U^i = z^i + K(S) \tag{1}$$

where  $U^i$  is the utility of an individual,  $z^i$  is her consumption, and  $S$  is per capita government spending.  $K(\cdot)$  is a function such that  $K: [0, \infty] \rightarrow \mathfrak{R}_+$ , where  $K(0) = 0$  so that there is no utility

---

<sup>87</sup> For example, Brennan and Buchanan 1980; Levi 1988.

<sup>88</sup> For example, Chaudhry 1997.

<sup>89</sup> For example, van de Walle 2001.

<sup>90</sup> For example, Cheibub 1998; Remmer 2004; Rodden 2003.

gained from no expenditure;  $K'(\cdot) > 0$ , so utility is increasing in the level of spending; and  $K''(\cdot) < 0$  to capture the diminishing returns to government size due to the economic distortions it can create.<sup>91</sup> Consumption for an individual is assumed to be equal to:

$$z^i = (1 - \tau)y^i \quad (2)$$

where  $\tau$  is a proportional income tax levied on all citizens and  $y^i$  is individual  $i$ 's pre-tax income.

Government spending is assumed to be financed by tax revenues and other non-tax resources. It therefore equals:

$$S = \frac{1}{n} \left[ \sum_{i=1}^n \tau y^i \right] + N = \tau \bar{y} + N, \quad (3)$$

where  $n$  is the number of people in the society,  $\bar{y}$  is the average income in the economy, and  $N$  is the per capita amount of non-tax revenue. It is important to note here that the tax system in this model is progressive, indicating that the tax rate is a measure of redistribution. This can be seen by noting that every individual receives the same benefit from government spending, while the amount of tax paid by individual  $i$  ( $\tau y^i$ ) increases as the individual's income increases. Models like this are often used to predict levels of redistribution.<sup>92</sup>

Substituting equations (2) and (3) into (1) yields the indirect utility function:

$$V^i = (1 - \tau)y^i + K(\tau \bar{y} + N)$$

---

<sup>91</sup> Alesina, et al. 2002; Landau 1985.

<sup>92</sup> See Persson and Tabellini 2000.

The conditions on  $K(\cdot)$  imply that  $V^i$  is a strictly concave function, which is a sufficient condition for preferences to be single-peaked.<sup>93</sup> At this point, without loss of generality, I use an example of a strictly concave function for the sake of presentation. I define  $V^i$  as:

$$V^i = (1 - \tau)y^i + \ln(\bar{y} + N + 1) \quad (4)$$

I follow Acemoglu and Robinson and define the incomes of the citizens ( $y^c$ ) and elites ( $y^e$ ) as follows:<sup>94</sup>

$$y^c = \frac{\theta \bar{y} n}{\lambda n} = \frac{\theta \bar{y}}{\lambda} \quad (5)$$

$$y^e = \frac{(1 - \theta) \bar{y} n}{(1 - \lambda) n} = \frac{(1 - \theta) \bar{y}}{1 - \lambda} \quad (6)$$

Here,  $\lambda$  is the share of citizens in the population, and  $\theta$  is their share of the economy. Intuitively, the income of a citizen can be thought of as the share of the economy accruing to citizens, divided by the number of those citizens. Note that an increase in  $\theta$  represents a fall in inequality, and that since

---

<sup>93</sup> It should also be noted that the construction of the  $K(\cdot)$  function implies that spending financed by  $\bar{y}$  and  $N$  have exactly the same effect on individual utility. This may not be true. However,

any functional form would work as long as  $\frac{\partial^2 K}{\partial \tau \partial N}$  is less than zero.

<sup>94</sup> Acemoglu and Robinson (2006: Chapter 9) show that these expressions can be derived from a standard Cobb-Douglas production function. In addition, while the expressions enter exogenously into the model, any disincentives to work caused by taxation are incorporated by Acemoglu and Robinson into a deadweight cost function. The  $K(\cdot)$  function in this paper can be seen as incorporating such deadweight costs.

$$y^c < \bar{y} < y^e, \quad (7)$$

$$\frac{\theta \bar{y}}{\lambda} < \frac{(1-\theta)\bar{y}}{1-\lambda}, \quad (8)$$

which implies that  $\theta < \lambda$ .

I can now plug equations (5) and (6) into (4) to attain the indirect utility function of elites and citizens in society:

$$V^e = (1-\tau) \frac{(1-\theta)\bar{y}}{(1-\lambda)} + \ln(\bar{y} + N + 1) \quad (9)$$

$$V^c = (1-\tau) \frac{\theta \bar{y}}{\lambda} + \ln(\bar{y} + N + 1) \quad (10)$$

To find the preferred tax rate of the elite, I need to solve equation (9) through unconstrained maximization. Taking the derivative of equation (9) with respect to  $\tau$  yields:

$$\tau^e = \left(\frac{1}{\bar{y}}\right) \left(\frac{1-\lambda}{1-\theta} - N - 1\right). \quad (11)$$

Because  $\theta < \lambda$ ,  $\tau^e$  is always less than zero. In other words, elites will never prefer a positive tax rate, and since tax rates are assumed to be nonnegative, the preferred tax rate of the elite is zero.

This is in line with the characteristics of the theoretical approach discussed in the main text.

Proceeding similarly with equation (10) to find the preferred tax rate of citizens, we see that:

$$\tau^c = \left(\frac{1}{\bar{y}}\right) \left(\frac{\lambda}{\theta} - N - 1\right). \quad (12)$$

This equation indicates that non-tax revenue tends to decrease the preferred tax rate of citizens.

## References

- Acemoglu, Daron, and James A. Robinson. (2001). A Theory of Political Transitions. *American Economic Review* 91: 938-63.
- . (2006). *Economic Origins of Dictatorship and Democracy*. New York: Cambridge University Press.
- Alesina, Alberto, Silvia Ardagna, Roberto Perotti, and Fabio Schiantarelli. (2002). Fiscal Policy, Profits, and Investment. *American Economic Review* 92(3): 571-589.
- Anderson, Lisa. (1995). Peace and Democracy in the Middle East: The Constraints of Soft Budgets. *Journal of International Affairs* 49(1): 1995.
- Bates, Robert H., and Da-Hsiang Donald Lien. (1985). A Note on Taxation, Development, and Representative Government. *Politics and Society* 14(1): 53-70.
- Beck, Nathaniel. (1991). Comparing Dynamic Specifications: The Case of Presidential Approval. *Political Analysis* 3: 51-87.
- . (2001). Time-Series--Cross-Section Data: What Have We Learned in the Past Few Years? *Annual Review of Political Science* 4: 271-93.
- Beck, Nathaniel, and Jonathan N. Katz. (1995). What to Do (and Not to Do) with Time-Series Cross-Section Data. *American Political Science Review* 89(September): 634-47.
- Beck, Nathaniel, Jonathan N. Katz, and Richard Tucker. (1998). Taking Time Seriously: Time-Series-Cross-Section Analysis with a Binary Dependent Variable. *American Journal of Political Science* 42(4): 1260-1288.
- Birdsall, Nancy, Stijn Claessens, and Ishac Diwan. (2003). Policy Selectivity Foregone: Debt and Donor Behavior in Africa. *World Bank Economic Review* 17: 409-435.
- Boix, Carles. (2001). Democracy, Development, and the Public Sector. *American Journal of Political Science* 45(1): 1-17.
- . (2003). *Democracy and Redistribution*. Cambridge: Cambridge University Press.
- Bratton, Michael, and Nicolas van de Walle. (1997). *Democratic Experiments in Africa: Regime Transitions in Comparative Perspective*. Cambridge: Cambridge University Press.
- Bräutigam, Deborah. (2000). *Aid Dependence and Governance*. Stockholm: Almqvist & Wiksell International.
- Brennan, Geoffrey, and James M. Buchanan. (1980). *The Power to Tax: Analytical Foundations of a Fiscal Constitution*. Cambridge: Cambridge University Press.
- Bueno de Mesquita, Bruce, Alastair Smith, Randolph M. Siverson, and James D. Morrow. (2003). *The Logic of Political Survival*. Cambridge, MA: MIT Press.
- Chaudhry, Kiren Aziz. (1997). *The Price of Wealth: Economies and Institutions in the Middle East*. Ithaca: Cornell University Press.
- Cheibub, José Antonio. (1998). Political Regimes and the Extractive Capacity of Governments: Taxation in Democracies and Dictatorships. *World Politics* 50(3): 349-376.
- Chen, Shaohua, and Martin Ravallion. (2000). How Did the World's Poorest Fare in the 1990s? Policy Research Working Paper 2409. Washington, DC: World Bank.
- Collier, Paul. (1997). The Failure of Conditionality. In Catherine Gwin, and Joan Nelson (Eds.), *Perspectives on Aid and Development*. ODC Policy Essay No. 22. Washington, DC: Overseas Development Council.
- . (2006). Is Aid Oil? An Analysis of Whether Africa Can Absorb More Aid. *World Development* 34(9): 1482-1497.

- Deininger, Klaus, and Lyn Squire. (1996). A New Data Set Measuring Income Inequality. *The World Bank Economic Review* 10(3): 565-591.
- Delacroix, Jacques. (1980). The Distributive State in the World System. *Studies in Comparative International Development* 15(3): 3-20.
- Dollar, David R., and Aart Kraay. (2002). Growth Is Good for the Poor. *Journal of Economic Growth* 7: 195-225.
- Dunning, Thad. (2004). Conditioning the Effects of Aid: Cold War Politics, Donor Credibility, and Democracy in Africa. *International Organization* 58(Spring): 409-423.
- 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.
- Epstein, David L., Robert H. Bates, Jack Goldstone, Ida Kristensen, and Sharyn O'Halloran. (2006). Democratic Transitions. *American Journal of Political Science* 50(3): 551-569.
- Fearon, James D., and David D. Laitin. (2003). Ethnicity, Insurgency, and Civil War. *American Political Science Review* 97(1): 75-90.
- Feyzioglu, Tarhan, Vinaya Swaroop, and Min Zhu. (1998). A Panel Data Analysis of the Fungibility of Foreign Aid. *World Bank Economic Review* 12: 29-58.
- 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.
- Goldsmith, Arthur A. (2001). Foreign Aid and Statehood in Africa. *International Organization* 55(1): 123-148.
- Herbst, Jeffrey. (2000). *States and Power in Africa: Comparative Lessons in Authority and Control*. Princeton: Princeton University Press.
- Horowitz, Donald. (1985). *Ethnic Groups in Conflict*. Berkeley: University of California Press.
- Hsiao, Cheng. (2003). *Analysis of Panel Data*. Second edition. Cambridge: Cambridge University Press.
- Huntington, Samuel P. (1968). *Political Order in Changing Societies*. New Haven: Yale University Press.
- . (1991). *The Third Wave: Democratization in the Late 20th Century*. Norman: University of Oklahoma Press.
- International Monetary Fund (IMF). (1986). *A Manual on Government Finance Statistics*. Washington, DC: International Monetary Fund.
- . (2001). *Government Finance Statistics Manual 2001*. Washington, DC: International Monetary Fund.
- Ivanhoe, L.F. (2000). World Oil Supply -- Production, Reserves, and EOR. Golden, CO: M. King Hubbert Center for Petroleum Supply Studies, Colorado School of Mines.
- Iverson, Torben, and Thomas R. Cusack. (2000). The Causes of Welfare State Expansion: Deindustrialization or Globalization? *World Politics* 52(April): 313-49.
- Jack, William, and Roger Lagunoff. (2006). Dynamic Enfranchisement. *Journal of Public Economics* 90: 551-572.
- Jensen, Nathan, and Leonard Wantchekon. (2004). Resource Wealth and Political Regimes in Africa. *Comparative Political Studies* 37(7): 816-841.
- Jones Luong, Pauline, and Erika Weinthal. (2006). Rethinking the Resource Curse: Ownership Structure, Institutional Capacity, and Domestic Constraints. *Annual Review of Political Science* 9: 241-63.

- Kadera, Kelly M., Mark J.C. Crescenzi, and Megan L. Shannon. (2003). Democratic Survival, Peace, and War in the International System. *American Journal of Political Science* 47(2): 234-47.
- Karl, Terry Lynn. (1997). *The Paradox of Plenty: Oil Booms and Petro-States*. Berkeley: University of California Press.
- Kaufman, Robert, and Alex Segura-Ubierno. (2001). Globalization, Domestic Politics, and Social Spending in Latin America: A Time-Series Cross-Section Analysis, 1973-1997. *World Politics* 53(4): 553-87.
- Kitschelt, Herbert. (1992). Political Regime Change: Structure and Process-Driven Explanations? *American Political Science Review* 86(4): 1028-1034.
- Knack, Stephen. (2004). Does Foreign Aid Promote Democracy? *International Studies Quarterly* 48: 251-266.
- Kousser, J. Morgan. (1974). *The Shaping of Southern Politics: Suffrage Restriction and the Establishment of the One-Party South, 1880-1910*. New Haven: Yale University Press.
- Landau, Daniel L. (1985). Government Expenditure and Economic Growth in the Developed Countries: 1952-76. *Public Choice* 47(3): 459-477.
- Levi, Margaret. (1988). *Of Rule and Revenue*. Berkeley: University of California Press.
- Lindert, Peter H. (2004). *Growing Public: Social Spending and Economic Growth since the Eighteenth Century*. Cambridge: Cambridge University Press.
- Lipset, Seymour Martin. (1959). Some Social Requisites of Democracy: Economic Development and Political Legitimacy. *American Political Science Review* 53(1): 69-105.
- Long, J. Scott, and Jeremy Freese. (2006). *Regression Models for Categorical Dependent Variables Using Stata (Second Edition)*. College Station, TX: Stata Press.
- Luhnow, David. (2007). Dying Giant: Mexico Tries to Save a Big, Fading Oil Field. *The Wall Street Journal* April 5: A1.
- Lundberg, Mattias, and Lyn Squire. (2003). The Simultaneous Evolution of Growth and Inequality. *The Economic Journal* 113(487): 326-344.
- Mahdavy, Hussein. (1970). The Patterns and Problems of Economic Development in Rentier States: The Case of Iran. In M.A. Cook (Ed.), *Studies in the Economic History of the Middle East: From the Rise of Islam to the Present Day*. London: Oxford University Press.
- Marshall, Monty G., and Keith Jagers. (2003). Polity IV Project: Political Regime Characteristics and Regime Transitions, 1800-2002. <http://www.cidcm.umd.edu/inscr/polity/>.
- Meltzer, Allan, and Scott Richard. (1981). A Rational Theory of the Size of Government. *Journal of Political Economy* 89(5): 914-27.
- Moore, Barrington. (1966). *Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World*. Boston: Beacon.
- Moore, Clement Henry. (1976). Petroleum and Political Development in the Maghreb. In Naiem A. Sherbiny, and Mark A. Tessler (Eds.), *Arab Oil: Impact on the Arab Countries and Global Implications*. New York: Praeger.
- Moore, Mick. (1998). Death without Taxes: Democracy, State Capacity, and Aid Dependence in the Fourth World. In Mark Robinson, and Gordon White (Eds.), *The Democratic Developmental State: Politics and Institutional Design*. 84-121. Oxford: Oxford University Press.

- Morrison, Kevin M. (2007). Natural Resources, Aid, and Democratization: A Best-Case Scenario. *Public Choice* 131(June): 365-386.
- Musgrave, Richard A. (1959). *The Theory of Public Finance*. New York: McGraw-Hill.
- North, Douglass C., and Barry R. Weingast. (1989). Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England. *Journal of Economic History* 49: 803-32.
- Perotti, Roberto. (1996). Growth, Income Distribution, and Democracy: What the Data Say. *Journal of Economic Growth* 1: 149-88.
- Persson, Torsten, and Guido Tabellini. (2000). *Political Economics: Explaining Economic Policy*. Cambridge, MA: MIT Press.
- Przeworski, Adam, Michael Alvarez, José Antonio Cheibub, and Fernando Limongi. (2000). *Democracy and Development: Political Institutions and Well-Being in the World, 1950-1990*. New York: Cambridge University Press.
- Reiter, Dan. (2001). Does Peace Nurture Democracy? *Journal of Politics* 63(3): 935-49.
- Remmer, Karen L. (1991). The Political Impact of Economic Crisis in Latin America in the 1980s. *American Political Science Review* 85(3): 777-800.
- . (2004). Does Foreign Aid Promote the Expansion of Government? *American Journal of Political Science* 48(1): 77-92.
- Rodden, Jonathan. (2003). Reviving Leviathan: Fiscal Federalism and the Growth of Government. *International Organization* 57: 695-729.
- Rodrik, Dani. (1998). Why Do More Open Economies Have Bigger Governments? *Journal of Political Economy* 106(October): 997-1032.
- Roeder, Philip G. (2001). Ethnolinguistic Fractionalization (ELF) Indices, 1961 and 1985: <http://weber.ucsd.edu/~proeder/elf.htm> (accessed March 2, 2005).
- Ross, Michael L. (1999). The Political Economy of the Resource Curse. *World Politics* 51: 297-322.
- . (2001). Does Oil Hinder Democracy? *World Politics* 53: 325-61.
- . (2004). Does Taxation Lead to Representation? *British Journal of Political Science* 34: 229-249.
- Rousseau, David L., Christopher Gelpi, Dan Reiter, and Paul K. Huth. (1996). Assessing the Dyadic Nature of the Democratic Peace, 1918-88. *American Political Science Review* 90(3): 512-33.
- Rueschemeyer, Dietrich, Evelyne Huber Stephens, and John D. Stephens. (1992). *Capitalist Development and Democracy*. Chicago: University of Chicago Press.
- Schumpeter, Joseph A. (1918 (1991)). The Crisis of the Tax State. In Richard Swedberg (Ed.), *The Economics and Sociology of Capitalism*. pp. 99-140. Princeton: Princeton University Press.
- Shambayati, Hootan. (1994). The Rentier State, Interest Groups, and the Paradox of Autonomy: State and Business in Turkey and Iran. *Comparative Politics* 26(3): 307-31.
- Smith, Benjamin. (2004). Oil Wealth and Regime Survival in the Developing World, 1960-1999. *American Journal of Political Science* 48(2): 232-246.
- Snyder, Richard, and Ravi Bhavani. (2005). Diamonds, Blood, and Taxes: A Revenue-Centered Framework for Explaining Political Order. *Journal of Conflict Resolution* 49: 563-97.
- Therborn, Goran. (1977). The Rule of Capital and the Rise of Democracy. *New Left Review* 103: 3-41.

- Therkildsen, Ole. (2002). Keeping the State Accountable: Is Aid No Better Than Oil? *IDS-Bulletin* 33(3): 41-50.
- Tilly, Charles. (1990). *Coercion, Capital, and European States, AD 990-1990*. Cambridge, MA: Basil Blackwell.
- Timmons, Jeffrey F. (2005). The Fiscal Contract: States, Taxes, and Public Services. *World Politics* 57(July): 530-67.
- United Nations World Institute for Development Economics Research (WIDER). (2000). World Income Inequality Database. Available online at <http://www.wider.unu.edu/wiid/wiid.htm>.
- van de Walle, Nicolas. (2001). *African Economies and the Politics of Permanent Crisis, 1979-1999*. New York: Cambridge University Press.
- Wibbels, Erik. (2006). Dependency Revisited: International Markets, Business Cycles, and Social Spending in the Developing World. *International Organization* 60(Spring): 433-68.
- World Bank. (2004). *World Development Indicators CD-ROM*. Washington, DC: World Bank.

**Table 1: The importance of non-tax revenue in some countries' revenue streams***Percentage of total expenditures covered by non-tax revenue (100 = 100 percent)*

|                    | <b>Mean</b> | <b>Std. Dev.</b> | <b>Min</b> | <b>Max</b> |
|--------------------|-------------|------------------|------------|------------|
| <b>Bahrain</b>     | 77          | 5                | 68         | 84         |
| <b>Bhutan</b>      | 84          | 2                | 80         | 87         |
| <b>Bolivia</b>     | 41          | 10               | 26         | 56         |
| <b>Burundi</b>     | 44          | 6                | 34         | 56         |
| <b>Congo, Rep.</b> | 59          | 17               | 31         | 82         |
| <b>Egypt</b>       | 44          | 6                | 35         | 61         |
| <b>Ethiopia</b>    | 46          | 7                | 34         | 56         |
| <b>Greece</b>      | 32          | 10               | 16         | 51         |
| <b>Iran</b>        | 67          | 12               | 38         | 86         |
| <b>Israel</b>      | 34          | 8                | 24         | 56         |
| <b>Japan</b>       | 28          | 12               | 3          | 44         |
| <b>Kuwait</b>      | 94          | 5                | 80         | 100        |
| <b>Mali</b>        | 46          | 18               | 17         | 62         |
| <b>Nepal</b>       | 54          | 8                | 43         | 65         |
| <b>Nicaragua</b>   | 35          | 14               | 0          | 59         |
| <b>Pakistan</b>    | 38          | 7                | 24         | 48         |
| <b>Romania</b>     | 47          | 30               | 6          | 77         |
| <b>Syria</b>       | 50          | 22               | 16         | 78         |

Note: Calculated using data from the IMF's *Government Finance Statistics*. Figures are for observations in my sample covering 1973-2001.

**Table 2: The importance of non-tax revenue, in economic terms**

*All variables are as a percent of GDP (100 = 100 percent).*

|                                     | <b>Oil exports</b> | <b>Tax revenues</b> | <b>State-owned enterprise revenue</b> | <b>Foreign aid</b> | <b>Total non-tax revenues</b> |
|-------------------------------------|--------------------|---------------------|---------------------------------------|--------------------|-------------------------------|
| <b>Middle East and North Africa</b> | 20                 | 17                  | 15                                    | 3                  | 20                            |
| <b>South Asia</b>                   | 1                  | 12                  | 5                                     | 4                  | 13                            |
| <b>Sub-Saharan Africa</b>           | 4                  | 18                  | 3                                     | 2                  | 9                             |
| <b>Europe and Central Asia</b>      | 2                  | 30                  | 4                                     | 1                  | 7                             |
| <b>East Asia and Pacific</b>        | 5                  | 16                  | 4                                     | 2                  | 6                             |
| <b>Latin America and Caribbean</b>  | 7                  | 17                  | 3                                     | 1                  | 6                             |

NOTE: Regional breakdowns are as defined by the World Bank. Oil exports as a share of GDP are from the World Bank. “Tax revenue” is so called in the IMF’s (1986) *Government Finance Statistics (GFS)*. It is defined as “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)

| <i>Independent Variable</i>                           | <i>1</i>   |          | <i>2</i>   |          | <i>3</i>   |          |
|---|------------|----------|------------|----------|------------|----------|
| Non-tax rev. per capita <sub><i>t-1</i></sub>         |            |          | -0.0007*** | (0.0002) | -0.0009*** | (0.0002) |
| GDP growth  | -0.0534*   | (0.0319) | -0.0565*** | (0.0200) | -0.0552*** | (0.0181) |
| GDP per capita (ln) <sub><i>t-1</i></sub>             | 0.0497     | (0.1584) | -0.1922*   | (0.1059) | 0.0391     | (0.1226) |
| Δ% Population Urban                                   | 0.3557     | (0.3638) | 0.5699**   | (0.2491) | 0.2014     | (0.2334) |
| Ethnolinguistic Fractionalization                     | 0.3161     | (0.6058) | -0.0315    | (0.5412) | 0.0710     | (0.5294) |
| Population density (ln) <sub><i>t-1</i></sub>         | -0.0632    | (0.1211) | -0.0161    | (0.0894) | 0.0344     | (0.0832) |
| Past regime instability                               | 0.0888     | (0.0579) | -0.0109    | (0.0559) | 0.0193     | (0.0548) |
| Grants per capita <sub><i>t-1</i></sub>               | -0.0175**  | (0.0076) |            |          |            |          |
| SOE rev. per capita <sub><i>t-1</i></sub>             | -0.0016**  | (0.0006) |            |          |            |          |
| Other nontax rev. per capita <sub><i>t-1</i></sub>    | -0.0012**  | (0.0006) |            |          |            |          |
|   |            |          |            |          |            |          |
| Polity <sub><i>t-1</i></sub>                          |            |          |            |          | -0.0700*** | (0.0229) |
| Polity* Non-tax rev. per capita <sub><i>t-1</i></sub> |            |          |            |          | -0.0001*** | (0.0000) |
|   |            |          |            |          |            |          |
| Regime age  | -0.3470*** | (0.0753) | -0.3704*** | (0.0562) | -0.4067*** | (0.0615) |
| Spline(1)   | 0.0013***  | (0.0003) | 0.0013***  | (0.0002) | 0.0014***  | (0.0002) |
| Spline(2)   | -0.0001**  | (0.0000) | -0.0001*** | (0.0000) | -0.0001*** | (0.0000) |
| Constant  | -1.576     | (1.203)  | 0.4205     | (0.9691) | -1.253     | (1.084)  |
|   |            |          |            |          |            |          |
| Observations  | 1307       |          | 1808       |          | 1808       |          |
| Countries   | 98         |          | 104        |          | 104        |          |
| Prob > $\chi^2$                                       | 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

**Table 4: 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)**

| <i>Independent Variable</i>                  | <i>1</i>   |          | <i>2</i>   |          |
|--|------------|----------|------------|----------|
| Non-tax rev. per capita <sub>t-1</sub>       |            |          | -0.0466**  | (0.0224) |
| GDP per capita <sub>t-1</sub>                | 0.0000     | (0.0062) | 0.0041     | (0.0053) |
| % population over 65 <sub>t-1</sub>          | 16.40**    | (6.753)  | 9.809      | (6.080)  |
| Trade/GDP <sub>t-1</sub>                     | -0.0846    | (0.3549) | 0.2539     | (0.3540) |
| Total expenditures per capita <sub>t-1</sub> | 0.0477**   | (0.0197) | 0.0299*    | (0.0161) |
| Grants per capita <sub>t-1</sub>             | -0.1336*** | (0.0472) |            |          |
| SOE rev. per capita <sub>t-1</sub>           | -0.0895**  | (0.0400) |            |          |
| Other non-tax rev. per capita <sub>t-1</sub> | -0.0700*** | (0.0261) |            |          |
|  |            |          |            |          |
| ΔNon-tax rev. per capita                     |            |          | -0.4352*** | (0.0252) |
| ΔGDP per capita                              | -0.0108    | (0.0141) | -0.0096    | (0.0123) |
| Δ% population over 65                        | 45.55      | (35.68)  | 80.16**    | (34.30)  |
| ΔTrade/GDP                                   | 0.6035     | (0.3941) | 0.7391**   | (0.3683) |
| ΔTotal expenditures per capita               | 0.3396***  | (0.0276) | 0.3429***  | (0.0273) |
| ΔGrants per capita                           | -0.3016*** | (0.0791) |            |          |
| ΔSOE rev. per capita                         | -0.5440*** | (0.0606) |            |          |
| ΔOther non-tax rev. per capita               | -0.4296*** | (0.0270) |            |          |
|  |            |          |            |          |
| Income tax rev. per capita <sub>t-1</sub>    | -0.1924*** | (0.0407) | -0.1670*** | (0.0345) |
| Constant                                     | Dropped    |          | dropped    |          |
|  |            |          |            |          |
| Observations                                 | 769        |          | 991        |          |
| Countries                                    | 60         |          | 66         |          |
| R-Squared                                    | 0.58       |          | 0.58       |          |
| Prob > $\chi^2$                              | 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 5: Non-tax Revenue's Effect on Social Spending in Dictatorships**  
**(DV: Change in per capita spending on health, education, welfare, and housing)**

| <i>Independent Variable</i>                  | <i>1</i>   |          | <i>2</i>   |          |
|--|------------|----------|------------|----------|
| Non-tax rev. per capita <sub>t-1</sub>       |            |          | 0.2095***  | (0.0418) |
| GDP per capita <sub>t-1</sub>                | -0.0063    | (0.0056) | -0.0289*** | (0.0104) |
| % population over 65 <sub>t-1</sub>          | 0.4836     | (3.486)  | 35.58***   | (11.78)  |
| Trade/GDP <sub>t-1</sub>                     | -0.2922*** | (0.0984) | -0.3232*   | (0.1788) |
| Total tax revenue per capita <sub>t-1</sub>  | 0.2260***  | (0.0472) | 0.2641***  | (0.0479) |
| Grants per capita <sub>t-1</sub>             | 0.2251**   | (0.0916) |            |          |
| SOE rev. per capita <sub>t-1</sub>           | 0.0219     | (0.0274) |            |          |
| Other non-tax rev. per capita <sub>t-1</sub> | 0.0454*    | (0.0239) |            |          |
|  |            |          |            |          |
| ΔNon-tax rev. per capita                     |            |          | 0.2412***  | (0.0460) |
| ΔGDP per capita                              | -0.0193    | (0.0151) | 0.0532***  | (0.0201) |
| Δ% population over 65                        | -9.889     | (27.50)  | 182.2**    | (71.73)  |
| ΔTrade/GDP                                   | -0.2670*** | (0.1020) | -0.3390*   | (0.2058) |
| ΔTotal tax revenue per capita                | 0.4464***  | (0.0540) | 0.4135***  | (0.0570) |
| ΔGrants per capita                           | 0.5658***  | (0.1006) |            |          |
| ΔSOE rev. per capita                         | 0.2574***  | (0.0309) |            |          |
| ΔOther non-tax rev. per capita               | 0.2251***  | (0.0241) |            |          |
|  |            |          |            |          |
| Social spending per cap. <sub>t-1</sub>      | -0.2354*** | (0.0890) | -0.5545*** | (0.0823) |
| Constant                                     | dropped    |          | dropped    |          |
|  |            |          |            |          |
| Observations                                 | 339        |          | 569        |          |
| Countries                                    | 45         |          | 55         |          |
| R-Squared                                    | 0.78       |          | 0.82       |          |
| Prob > $\chi^2$                              | 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: Testing Some Additional Hypotheses with Regard to Regime Instability  
(DV = 1 if regime changes in current year; 0 otherwise)**

| <i>Independent Variable</i>                   | <i>Democracies</i> |          | <i>Dictatorships</i> |          |
|---|--------------------|----------|----------------------|----------|
| Non-tax rev. per capita <sub>t-1</sub>        | -0.0021**          | (0.0009) | -0.0004**            | (0.0002) |
| GDP growth                                    | -0.1446***         | (0.0527) | -0.0541**            | (0.0252) |
| GDP per capita (ln) <sub>t-1</sub>            | -0.2422            | (0.3836) | 0.5689**             | (0.2498) |
| Δ% Population Urban                           | 1.367*             | (0.7379) | -0.2212              | (0.3686) |
| Ethnolinguistic Fractionalization             | 3.955***           | (1.502)  | -0.0287              | (0.7548) |
| Population density (ln) <sub>t-1</sub>        | 0.1537             | (0.2955) | -0.1202              | (0.1493) |
| Past regime instability                       | -0.3659            | (0.3396) | 0.0618               | (0.0916) |
|   |                    |          |                      |          |
| Δ Non-tax rev. per capita                     | -0.0006            | (0.0006) | -0.0006              | (0.0004) |
| Non-income tax rev. per capita <sub>t-1</sub> | 0.0006**           | (0.0003) |                      |          |
| Non-social spending per capita <sub>t-1</sub> |                    |          | -0.0004              | (0.0004) |
|   |                    |          |                      |          |
| Regime age                                    | -0.2472            | (0.2676) | -0.4112***           | (0.0728) |
| Spline(1)                                     | 0.0005             | (0.0010) | 0.0017***            | (0.0004) |
| Spline(2)                                     | 0.0000             | (0.0001) | -0.0002*             | (0.0001) |
| Constant                                      | -3.242             | (3.034)  | -4.070**             | (1.874)  |
|   |                    |          |                      |          |
| Observations                                  | 860                |          | 627                  |          |
| Countries                                     | 57                 |          | 57                   |          |
| Prob > $\chi^2$                               | 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 ≤ 0 .10; \*\*p ≤ 0 .05; \*\*\*p ≤ 0 .01