REDISTRIBUTION AND MILITARY COUPS

JOSÉ CUESTA*
McCourt School of Public Policy
Georgetown University
37th and O Streets NW 100 Old North
Washington, DC 20057, United States.

This paper explores the link between redistribution and coups, typically overlooked in the coup literature dealing with incomes, growth and, recently, inequality. The model features three agents—government, opposition, and the military—and maximizes their utilities under two possible scenarios: peace and coup. Using real data from Honduras, the welfare losses associated with a breach of the country's social contract are estimated to exceed 11 percent of gross domestic product for the opposition to conspire to stage a coup.

Keywords: coup, redistribution, conflict, Honduras

1. INTRODUCTION

A comprehensive body of literature has already analyzed the roles of poverty and economic growth as determinants of civil conflict, including the influential works by Collier and Hoeffler (2004), Miguel, Satyanath, and Sergenti (2004), and a recent review by van der Ploeg (2011). But there has not been an in-depth analysis of one of the most common forms of violent conflict: coups d'etat (Acemoglu, Ticchi, and Vindigni 2010). The few studies exploring the relationship between income and coups report mixed results. Londregan and Poole (1990) find that lagged income per capita and past coups explain the risk of coups, while economic growth does not. Belkin and Schofer (2003), in a model focusing on what they describe as structural causes (rather than triggers), find that per capita income is a statistically significant inhibitor of coups. In contrast, Leon (2011) finds that the effect of per capita gross domestic product (GDP) on coup incidence varies across specifications, and is close to zero once controlling for past coups and country fixed effects. Only one study, Acemoglu, Ticchi and Vindigni (2010), analyzes the role of inequality as a condition

for military coups. The study finds that greater inequality makes democracy consolidations more difficult and increases the probability of (military) repression in nondemocratic regimes. However, the analysis—theoretical in nature—fails to provide empirical evidence of the significance of these effects.

This paper adds three contributions to the very thin literature on incomes and coups. First, except for Acemoglu, Ticchi and Vindigni (2010), the focus on income levels and growth has overlooked the equity aspect, which the civil conflict literature finds to be an important factor behind different forms of conflict.[1] Complementing the Acemoglu, Ticchi, and Vindigni (2010) argument that prevailing inequality is a *condition* for military coups, this paper argues that the redistribution of wealth[2] across players is potentially a key *driver* of coups. To be more precise, this paper argues that it is not only the level of reigning inequality in a society, but also the potential redistribution expected from key players' decisions that determines the decision to stage coups.

Second, the present analysis focuses on three players: the government, the opposition, and the military. This setup expands the Acemoglu, Ticchi, and Vindigni (2010) model of military behavior, which includes nondemocratic elites. This three player structure allows for the possibility that military coups do not necessarily have the ultimate goal of retaining power, as increasingly observed since the Cold War. In practice, the military can serve its own interests or those of the elite (as in Acemoglu, Ticchi, and Vindigni [2010]), but it can also align itself and defend the democratic regime against elite's interests.

Third, the economic angle of this analysis highlights the specific political setting, which often has been overlooked in empirical analyses and imprecisely captured through country and regional dummies, fixed effects, or omitted variables. Rather, in developing the coup model, this analysis considers a concrete setting, the Honduran coup of 2009, and identifies the disruption of, or more precisely, the feared disruption of the political status quo of power sharing as the fundamental cause underlying the coup. This paper then explores both analytically and empirically under what conditions the decisions made by the government, the opposition, and the military led to the coup. As such, this paper brings together a theoretical model of coup attempts with real life empirics, moving away from approaches that either theorize behavior of the military; estimate cross-sectional reduced form equations; or conduct case studies.

Of course, this has a cost. By anchoring the analysis to a specific country setting, the model is not a general theory of coups, and it is not applicable to all contexts or all types of coups. In fact, the model focuses on a subset—admittedly important (see Powell and Thyne [2011])—of coups, those perpetrated by the military to gain or regain power. This is mainly relevant for countries where the military plays a key influential role in its political life, while neither constituting a de facto military dictatorship or, contrarily, subordinating itself

1. Civil conflict literature routinely includes socioeconomic disparities in addition to lack of social cohesion, polarization, ethno-linguistic fractionalization, and religious heterogeneity as factors determining civil conflict, both as a grievance factor and as motivation, but also as an opportunistic factor influencing the mobilization of social groups into violent conflict (see Collier and Hoeffler [2004] or Regan and Norton [2005]).

2. It is worth noting that welfare, wealth, and income are used as interchangeable concepts in this paper, given the simplified model of utility maximization and optimal payoffs presented below.

to national defense functions under a democratic rule. Indeed, the model describes best situations with a strong opposition—typically elite based, but also extensible to a unified, cohesive, opposition—and a unified military. This setting is therefore capable of capturing weak and/or transitioning democracies, with an influential military unwilling or unable to take direct control of the government. This description would apply to a wide range of countries from Central and South American regimes in the mid-20th century and later (such as Fujimori's Peru); the Marcos' regime in the Philippines; to recent administrations in Madagascar, to name a few.

The Honduran coup is a relevant case for analysis. The Honduran military toppled President Zelaya's administration just five months before his term was complete. The coup took place after a ruling by the Supreme Court that Zelaya's aspirations to reform the Constitution were illegal. Article 239 of the Honduran Constitution states that no citizen that has held the top executive office can be reelected as president, and further declares that if a president violates or proposes a reform to this law, he will be immediately removed from public office (an article called *petreo*, literally, "cast in stone"). In practice, the reelection ban implies a de facto sharing of power among elite political groups that is relatively frequent and predictable. Zelaya's proposed constitutional reform threatened that status quo, which would have implied altering the sharing of power among elites and, ultimately, potentially a substantive redistribution of wealth among these groups. The removal of Zelaya from power can be considered a (military) coup because even though the perpetrators claimed to be acting on behalf of preserving the constitutional order, the military first breached the Constitution by removing the president without a legal (and legitimate) request from Congress, and second by sending him into exile, also explicitly prohibited by the Constitution.

The model and its empirical application to Honduras predict the level of wealth transfers among agents that make a coup feasible. Ultimately, this analysis shows that it was the opposition's fear of a sizable loss of wealth following disruption to the power sharing and the expectations of substantive transfers to the military that prompted the coup in Honduras. In other words, it is how the pie is shared—or perceived to be shared—and not the size of the pie itself that ultimately causes a coup. The exact quantification of the feared distribution results from a number of simplifications in the model, which assumes a certain degree of myopia among involved agents, cohesion within their ranks, and the exogeneity of income sources. This implies that the model predicts coups, but not necessarily *successful* coups, and that the estimated magnitude of the feared redistribution is an absolute upper bound of this particular driver of coups.

This paper is organized as follows: section 2 reviews the relevant literature; section 3 lays out the theoretical model; section 4 explores the main findings of the model and quantifies the welfare implications using real data from Honduras; and section 5 concludes by reviewing the model's findings for Honduras and the role of the international community.

2. literature review on wealth as a cause of coups

2.1. Definitions and trends

Illegal seizures of power or "sudden overthrows of governments" (Ferguson 1987; Evans and Newnham 1998) happen in many ways: bloody or bloodless, military or civilian led, hierarchically executed or "noncommissioned" within the military, or either led by a small but critical segment of the political establishment (Luttwak 1969), or by a spontaneous massive popular protest. Their purposes are also manifold, from altering the current order ("revolutionary"), to protecting an existing order ("veto"), or for extricating maladies such as corruption or inefficiency without a major structural transformation ("guardian").[3] In more concrete terms, Powell and Thyne (2011, 252) provide an operational definition of coup attempts as "illegal and overt attempts by the military or other elites within the state apparatus to unseat the sitting executive." Powell and Thyne warn about the difficulties of defining success among coup attempts[4]—especially if the exact motivation of the perpetrator is not known—and the need to restrict the definition of a coup to an overthrow of chief executive through illegal tactics, whether or not violent.

During the last 50 years,[5] coups have been most common in Africa (36.5 percent) and Latin America (31.9 percent), followed by the Middle East (15.8 percent) and Asia (13.1 percent), and then Europe with a much smaller share (2.6 percent). Coup attempts (and successful coups) have declined over time, although with recurrent spikes in the mid-1960s, mid-1970s, and early 1990s. The success rate averages 48 percent, although that rate was substantially higher during 2000–2009 (67 percent).

2.2. Explanations of coups

Definitions and trends apart, different strands of literature emphasize distinctive factors behind the risk of a coup. One of these strands refers to the nature of the **civil-military relationship**. Ngoma (2004) summarizes within the African context three types of relationships: the organizational model (Cox 1976), the Praetorian model (Frankel 1984), and the greed-based model (Omoigui 2004). In the organizational relationship, the military is seen as a prestigious, efficient, and capable institution—an organizational success—supervising the development of the state and intervening if the government in power deviates from what the military considers the best interests of the country. A close relationship between military officials and the middle or emerging classes exists, and this alliance is critical in the running of state affairs (Nordlinger 1977). In the Praetorian model, the military is a dominant player in the nation's politics, easily securing a large budget and a very influential position in the running of the country (Frankel 1984; Firth, Fraenkel, and Lal 2009). Although the military is not seen as cohesive or necessarily well managed, all groups in society accept that it takes charge when the situation demands it. In the greed-

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[3.] Using Huntington's (1957) seminal categorization.

[4.] Success is typically acknowledged when the ruling arrangement after the coup remains in place for at least a week (Powell and Thyne 2011).

[5.] See Powell and Thyne (2011) and sources reviewed there; the period covers 1960 to 2010

based model, there is a fertile environment for coups when either society's expectations for economic development are high and states are unable to satisfy them, or when expectations are low and economic growth is stagnant (Ngoma 2004). If, in addition, there are few opportunities to access wealth (Omoigui 2004), political contenders will do anything to gain power and remain in it, seeking alliance with the military, the "ultimate weapon of persuasion" (Ngoma 2004).

Greed is the main motivation for the unconstitutional access to power by one group among the competing groups, and the military is the instrumental vehicle. Typically, the military becomes extortive or extractive itself, either aligning with or conspiring against the incumbent, with greed driving its decisions. This is emphasized in a recent—and currently the only known—theoretical analysis of the relationship between the military and an elite social group (Acemoglu, Ticchi, and Vindigni 2010). In effect, payments to the military are key to avoiding coups and repress—on behalf of the elite—citizens' aspirations of democracy. However, this creates a "political moral hazard" problem (ibid, 2) as the military can turn against the elite and take direct control of the government to create a greater redistribution toward its members. So, the military can certainly engage in extractive greedy behavior, which the Acemoglu, Ticchi, and Vindigni model predicts to be more likely the higher the income inequality in the society and if the country has natural resources. That would explain why every civilian government that reduced military spending in Peru between 1912 and 1964 was overthrown, while increasing military budgets allowed Venezuelan President Betancourt to advance large-scale agrarian reforms and industrialist policies in the early 1960s (Leon 2011). Differentials in income inequalities are also believed to explain the lack of involvement (and eventual demobilization) of the military in Costa Rica compared to the highly repressive behavior of the military in other Central American countries (Acemoglu, Ticchi, and Vindigni 2010).

Evidence in Leon (2011) supports the premise that military payments reduce the risk of a coup. Using a panel of 153 countries for the period 1963–99, he finds that military spending has a negative and statistically significant impact on the likelihood of a coup, consistent across specifications that control for endogeneity and fixed effects. In Leon's preferred specification, a 1 percent increase in military spending (as a percentage of GDP) decreases the probability of a coup by 0.3 percentage points. However, per capita GDP does not have a systematically significant effect on coup incidence after country-specific effects are introduced; current GDP is instrumented with lagged levels and past coups are included. The analysis reveals that the evidence of income being the strongest predictor of coups (as argued in other strands of literature, see below) is questionable.

The distinction between opportunistic factors and military motivations is central in the **literature on coup risks** (Hibbs 1973; Zimmerman 1983; O'Kane 1987; Bueno de Mesquita, Siverson, and Woller 1992; Belkin and Schofer 2003). This literature analyzes triggers or proximate causes for coups, such as level of military professionalism, domestic political crises, external threats, reigning national security doctrine, and (lack of) coup-proofing strategies. More recently, Belkin and Schofer (2003) distinguish between structural factors that do not change quickly and render the country vulnerable to conflict. Structural factors refer to socioeconomic, political, and historical features such as regime legitimacy,

history of coups, military size, strength of civil society, colonial legacy, and economic development or wealth, among others. Interestingly, Belkin and Schofer do not consider wealth among their three most important drivers of coup risks—which are strength of civil society, regime legitimacy, and past coups—because they argue that wealth may either cause (as indicated by Londregan and Poole [1990]) or avoid coups (as argued by Janowitz [1964]). Belkin's and Schofer's own empirical estimates for 144 countries between 1960 and 2000 show that wealth (log of GDP per capita) was significant and negatively associated with coup incidence, whether or not the three-indicator structural coup risk is included. In a very similar line, Londregan and Poole's (1990) analysis of 121 countries between 1950 and 1982 points to (one year, lagged) per capita GDP inhibiting coups: they report that coups are 21 times more likely among the poorest countries than among the wealthiest countries in their sample.[6] Zimmerman (1983) finds that the effect of wealth on coup incidence may be distinctive among levels of development, with increasing wealth in low-income countries increasing the probability of coups, because it may be mostly associated with increasing inequality, and decreasing the probability in middle-income countries, because it may be mainly associated with poverty. What Londregan and Poole (1990) fail to find is economic growth rates affecting coup incidence. In fact, coups have no major effects on short-term economic growth, which sets them apart from revolutions. Londregan and Poole argue that coups frequently involve the seizure of preexisting power structures, but not their destruction. Coups spawn countercoups, however, leading to what they describe as coup-traps.

The role of wealth—either associated with greed and/or with grievance—as a fundamental driver of conflict has also been acknowledged by the **economic literature on civil conflict** (Addison and Murshed 2002; Walter 2002; Azam 2001; Rothchild 2005; Murshed and Verwimp 2008). But when compared with previous strands focused on coups, this literature also analyzes how wealth is redistributed among different players. Azam (2001) blames interethnic conflict in Africa on the states' failures to distribute resources fairly among ethnic groups. In this case, peace cannot be restored and sustained if grievances over the distribution of rents, resources, and public spending (and taxes) are not resolved. Addison, Le Billon, and Murshed (2002) present a model in which the appropriation of natural resource rents, along with lingering historical grievances, motivates civil war. At the center of this theoretical approach lies the notion of conflict as the result of a breach of agreement between groups, or a deviation from a contract (Hirshleifer 1995). Cuesta and Murshed (2010) define a social contract as a framework of widely agreed upon rules, both formal and informal, that govern the allocation of resources, including resource rents, and the peaceful settlement of grievances. Critically, political change—either in the form of democratization or autocratization—creates instability. In the case of delegitimized regimes, instability induces dissatisfied groups to struggle against the government (Hegre

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[6.] In fact, the incidence of successful coups is constant among the three lowest quintiles of incomes for their sample, to then decrease dramatically for the fourth and fifth quintiles. This contrasts with the relationship between income and other political events such as failed coups, riots and death from political violence (inverted U relationship), elections (increasing monotonically with income), and political executions (decreasing monotonically with income).

et al. 2001). In other words, for greed, grievance, or both to lead to large-scale violence, there must be some specific weakening of an agreement between parties (Addison and Murshed 2002).

Empirically, however, evidence is inconclusive on the dominant cause of civil conflict. Some studies reject the merits of the grievance hypothesis (Collier and Hoeffler 1998; 2004), others stress it (Stewart 2000; Deininger 2003; Østby 2008), and some argue that grievances may coexist with greed (Murshed and Tadjoeddin 2009; Cuesta and Murshed 2010). More eclectically, Kaldor (2001) suggests that globalization leads to new internal conflicts that blend political and criminal motives.

2.3. The case of Honduras

In 1981, Honduras returned to democratic rule after years of intermittent military dictatorships preceded by coups. Since its return to democracy, there have been seven elections, one every four years, with four shifts of power between the two major parties, Partido Liberal and Partido Nacional, both widely considered conservative. In part because presidents are precluded from seeking reelection (either consecutive or nonconsecutive), analysts consider the Honduran democracy to be in a continuous electoral state (Rápalo 2001) based on strong rent-seeking and clientelist behavior (UNDP 2002) and insufficient—albeit increasing—participation of civil society, especially in developmental processes such as poverty reduction policies (Cuesta 2007). A few families constitute the Honduran elite, 14 according to Third World Network (2009), which controls pharmaceuticals, textiles, agroindustry, telecommunications, retail, energy, real estate, construction, hospitality, banking, and media businesses. The elite group comprises traditional *hacendados* or land owners in the interior highlands and valleys; descendants from late 19th and early 20th century immigrants; and an emerging group—in the second half of the 20th century—of former members of the military (McGaffey and Spilling 1999; Cal 2009). Politically, it is believed that there are as many conservatives—supporters of the Partido Nacional—as there are liberals—supporters of the Partido Liberal (McGaffey and Spilling 1999). The composition, political affinities, and competition within the elite underscores the importance of a well- functioning, predictable, and frequent mechanism for power sharing for the stability of the political system.

In November 2005, Zelaya unexpectedly won the presidential election with 46 percent of the total vote. His subsequent years in office were marked by international oil, food and financial crises, which exacerbated the country's structural economic troubles (declining labor productivity, no diversification strategies, and scarce reform) as well as its political troubles (corruption, reform paralysis, and insecurity). The Zelaya administration deprioritized the poverty reduction strategy that had guided policy making in previous administrations. Moreover, President Zelaya turned his initial conservative ideological position toward leftish positions, adhering in August 2008 to the Bolivarian Alliance for the Peoples of Our America (*Alianza Bolivariana para los Pueblos de Nuestra América*, ALBA), the left-wing coalition of Latin American and Caribbean nations, with the República Bolivariana de Venezuela as its powerhouse.

That shift generated fear and uncertainty in a significant section of Honduran society. Those feelings intensified when, eight months before elections, President Zelaya announced his intention to call for a constitutional reform that would explicitly revoke the prohibition of reelection. Congress, the political establishment (including his own party), and the judiciary (both Supreme Court and Supreme Electoral Tribunal) declared the referendum illegal in June 2009. The military publicly warned Zelaya of the dire consequences of his plans, but, after this warning, he dismissed the Armed Forces General in Chief, General Vasquez. The day after, June 27, Zelaya headed for an air force base accompanied by supporters to recover the seized electoral material for the consultation. The following morning, the military arrested Zelaya and exiled him to Costa Rica.

3. A Coup Model, Feared Welfare Losses, and Redistribution

For modeling purposes, the events in Honduras can be summarized as the military staging a coup on behalf of the opposition against a democratically elected government to maintain the status quo. In other words, the coup was not an attempt to break away from the preexisting social contract, but to maintain it. As noted above, the status quo in Honduras allows for political groups (or the elites controlling those parties) to "alternate in power" every four years; this power sharing was threatened by President Zelaya's attempt to reform the constitution.

Even though there are multiple cases of coup plotters not overtly seeking power, the type of coup seen in Honduras is interesting in that it does not seek to alter the pre-established order but, rather, to remove the executive chief to preserve a stable power-sharing rule under threat. As mentioned by Powell and Thyne (2011), the 2005 Mauritania coup led to elections in which coup leaders banned members of the military from running for office. In Honduras, the president's party participated in what were widely deemed competitive elections. In the 1960s, military leaders in Vietnam dissolved the High National Council and the legislature, but did not remove the president from power. In Honduras, the military removed Zelaya from office.

In any case, the model developed here captures how much of current opposition wealth is—or is perceived to be—at risk of being channeled away into the incumbent's camp had a new political order been established. The model also measures the gain for the military from effectively changing sides and executing the coup. Importantly, the military is assumed to be an instrument to either maintain peace or stage a coup.[7] By comparing gains for the opposition and for the military, the model estimates the magnitude of net resources left for the opposition to improve the welfare of its constituency after paying for the services of the military.

[7.] The fact that the military is an instrument or the last weapon of persuasion (as argued by some, see section 2.2 above) denotes an influential but not uncontested dominant position of the armed forces, more like a greedy model rather than a Praetorian army model. This is in line with the view that the political role of the armed forces in Honduras has evolved in the last two decades. Salomon (2010) describes civil-military relations in Honduras as "pendular," with repressive militaries in the 1960s and 1980s, reformist in the 1970s, and respectful of the civilian order since the mid-1990s. Since the coup in 2009, Salomon (2010, 247) argues that the military again "moves away from society," which it now sees as the enemy and itself as the savior of the state.

This setup allows the analysis to concentrate on the estimation of feared losses from a breached social contract and the redistribution to specific groups —including the military— based on greed and not ideological factors, assumed away from the model. The ideological similarities of the two main parties (conservative) and the successive interventions of the military against administrations of both major parties during the democratic lifespan of the country both suggest that it is a reasonable assumption. This setup is relevant not only for Honduras, but also for those contexts where the military does not ally to a particular ideology or group (on ethnic or religious bases, for example), but rather becomes the de facto referee of the political life of the country. The model allows for the self-interest of the military, which aligns to a particular camp based on the highest expected benefits. To the extent that the military acts for nobler motivations, estimates from a greed model are an upper bound of the coup payoffs (this point is discussed in more detail later in section 4).

The model setup allows for two possible scenarios, one in which peace rules, and another in which a coup takes place. There are three key players: the government, the opposition, and the military. The government and opposition are not restricted to the political establishment alone, but they generally include supporters within the population. In contrast with civil conflict models, there are no longer two armed factions, a military and a guerrilla, but two civil groups and a unique military, which either supports the prevailing political rule and social contract or, alternatively, disrupts it through a coup. The time frame for decision making is as follows:

- The government announces its intention to break the social contract, which the opposition rejects.
- The government stands firm on its decision to break the status quo, and the opposition seeks the help of the military to stage a coup.
- The military estimates the benefits of each scenario, peace or coup, and decides on the most profitable decision (that is, largest payoff) for its own benefit.

At peace, the government has access to fiscal revenues and provides public services to both its supporters and opponents. Given the public good nature of most of these services (either because they are universal in nature or ill-targeted in practice), the model assumes initially that the public goods are distributed to each group based solely on their respective size. Governments receive external resources in the form of investments and aid that in turn can be destined to economic development, military activities, and the financing of public transfers. The opposition may receive foreign investment as part of its economic activities, but it does not receive official aid. The opposition also receives public transfers as stipulated in the social contract (basically a universal provision). Because they do not constitute an organized rebel group, the opposition does not receive military aid from external governments or diasporas, nor engage in such spending. Remittances contribute to the welfare of both government and opposition supporters. During peace, the military receives a share of the government's total budget to fund its regular activities and personnel costs. It does not receive any direct transfer from the opposition group.

In the coup scenario, the overwhelming expectation of an imminent social contract breach by the government prompts the opposition to take action. In reality, the opposition

approaches the military to stage a coup on its behalf. The military decides which side to support, that is, whether it remains loyal to the constitution and therefore defends the incumbent, or stages a coup and supports the opposition's aspirations. The expected transfers that the military receives under each scenario differ as spelled out below. Citizens will stop receiving public transfers as a result of the coup, and the country will no longer receive foreign aid in the immediate postcoup scenario until a democratic regime is restored. In fact, it took Honduras five months to regain access to international loans.

In that context, the model predicts the conditions under which staging a coup maximizes the utility of the military and opposition and the conditions in which the government's optimal decision is a peaceful response that avoids the repression of the opposition and, ultimately, a civil war, as in Libya, or protracted and brutal repression, as in the Syrian Arab Republic. The following sections present the model and its measure of government, opposition and military utility.

The model: Government utility

The expected utility of the government, *G*, is given by:

$$G = \begin{cases} G^P \text{if peace} \\ G^C \text{ if coup} \end{cases} \tag{1}$$

where G^P and G^C denote utilities under peace and coup scenarios, respectively.[8] These probabilities are made endogenous to some action that is parameter based, for example, on access to conflict technology or fighting effort (Hirshleifer 1995). In this coup model, the probability of peace or coup depends exclusively on the decision by the military to support the incumbent or the opposition, which ultimately depends on expected benefits to the military in each possible scenario. The military decision depends on the credible promises of future payoffs.

G is assumed to be a simple linear additive function on net incomes from each state. The gross income of the government, Y^G, is defined in (2) and includes *fungible* aid, which needs to be netted out of other spending. *T* is the "peace transfer" made by the government to the citizens and is financed by government gross incomes, aid, and debt relief resources. For simplicity and because of the fungibility of those sources, this analysis simply considers a gross income category, Y^G. Each group's shares will depend on their actual size ($0 < n, n_R < 1$; $n_G + n_R = 1$). In other countries, *T* typically includes broad-based social and development expenditures extended to the rebels (such as El Salvador and Colombia), power sharing (recently in Kenya), the inclusion of the otherwise excluded group in government jobs (Rwanda and Burundi), or state contracts. In Honduras, *T* refers to all public services provision, which roughly accounts for one-fifth of total GDP, as seen below. F^G denotes defense and security expenditures that the military receives in peaceful periods. If the government perceives a high risk of coup from the opposition, it may transfer to the military more resources to prevent that coup. Those additional resources to defend the government under the threat of an opposition's coup is captured by the parameter δ,

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[8.] Each is weighted by the probabilities of the two states, peace (π) and coup ($1 - \pi$) to determine the expected payoff for the government as: $G = \pi \, G^P + (1 - \pi) \, G^C$. For theoretical models of civil conflict, see Cuesta and Murshed (2010).

which is the incremental public military and security spending that would prompt the military to remain loyal to the government. The extent to which greed drives decisions by the military will determine the size of δ . When the military acts based on the defense of the constitution, δ should be expected to equal 0; otherwise, $\delta > 0$:

$$
\begin{aligned}
G^P &= Y^G - F^G - n_R T \\
G^C &= Y^G - (1 + \delta)F^G \\
\delta &\geq 0.
\end{aligned}
\tag{2}
$$

The model: opposition utility

Turning to the opposition group, its expected utility, *R*, is given by:

$$
R = \begin{cases} R^P \text{if peace} \\ R^C \ \text{if coup} \end{cases}
\tag{3}
$$

where

$$
\begin{aligned}
R^P &= Y^R = + n_R T \\
R^C &= Y^R + S - M
\end{aligned}
\tag{4}
$$

The payoffs from each state depend on both privately earned incomes, Y^R , and public transfers, *T*, from the government according to the group size ($n_R = 1 - n_G$). In the current model, the opposition's private incomes come from their legitimate business activities and remittances.[9] Another term, *S*, captures the opposition's welfare at risk, or that perceived at risk, from the government's potential breach of the social contract. *S* can also be conceived as the increased welfare that the coup may generate for the opposition, as a result of keeping resources that would otherwise be appropriated by the government following a social contract breach. Out of those (*S)* resources, the opposition group needs to buy the loyalty of the military, which expects to receive a transfer of *M* if it supports the coup.

The model: military utility

It follows that the military receives different payoffs from different scenarios based on its alliances. See table 1 to map such payoffs. It is clear that for the military to stage a coup, *M* must exceed the two possible outcomes of supporting the government during peace or precoup states: F^G and $(1+\delta)F^G$, respectively.

$$
M \geq (1 + \delta\ )F^G \geq F^G
\tag{5}
$$

Table 1: Payoffs for the Military across Possible Scenarios

Option	Peace	Coup
Support government	F^G	$(1 + \delta)\ F^G$
Support opposition	*Not possible*	*M*

Source: Author's elaboration.

[9.] In civil conflict models, the income of the opposition group, which is a rebel group, comes from exports of narcotics (Colombia), natural resources, such as alluvial or blood diamonds (Angola, Liberia, and Sierra Leone), and/or own legal economic activities as well as contributions from diasporas (Armenia, Sri Lanka, and Eritrea). Interestingly, in the case of a coup, not only do international donors transfer resources to "buy" peace, but diaspora may "buy" a coup through money, weapons trafficking, or lobbying for international support. For simplicity, these sources are all grouped into one category, Y^R.

It is worth noting that this model assumes away any uncertainty around the military payoffs, ruling out the possibility that the opposition or the government might default in their promises of incremental resources to buy the military's support. In Honduras, the strength of the military and the lack of paramilitary groups or guerrillas justify this assumption. Also, the model assumes nothing about the future stability after the coup if the military decides to support the opposition—or the government for that matter. In fact, there is evidence that modern coups—that is, after the Cold War period—have increasingly shorter life spans before competitive elections take place, which would consistently point to perpetrators' planned horizon being deliberately short, as shown by Goemans and Marinov (2008). Similarly, Powell and Thyne (2011) report a 52 percent failure rate for coup attempts between 1950 and 2010. Not surprisingly, competitive elections took place in Honduras five months after President Zelaya was removed from office.

4. Solving The Model

To solve the model, it is necessary to find the conditions that determine simultaneously peaceful behavior by the government and a preference for a coup by the opposition and the military as their optimal individual decisions. Given the simplicity of the utility functions assumed, a linear combination of the net income determinants—optimizing utility—implies maximizing the expected net incomes of each group. Intuitively, the government prefers (that is, maximizes its utility with) peace through military escalation against the opposition when the net incomes from peace exceed those from a military offensive. The opposition will seek the help of the military for a coup when the fear of wealth lost from government decisions is sufficiently large and exceeds the transfers they receive in peace. The military will stage a coup if expected net incomes under that scenario exceed net incomes at peace.

Critical in the application of this model to the Honduran case is the assumption that the president planned and publicly announced his intention to breach the social contract, regardless of the contingent actions of the opposition and the repeated warnings of the military (see section 2.3 above). By the same token, the model assumes that the military plans to stage a coup not mainly or necessarily in defense of the constitutional arrangement that the government announces it will violate, but because the resulting gains of the coup (and maintaining the status quo) exceed the benefits of the alternative, that is, supporting the incumbent. Finally, the model does not predict a *successful* coup, that is, a coup in which the opposition and the military's preferred arrangement takes place immediately and is sustained over time. The model simply predicts when the military is willing to stage a coup against the incumbent.

The government will therefore seek a peaceful state if $G^p \geq G^c$, which holds if:

$$Y^G - F^G - n_R T \geq Y^G - (1 + \delta)F^G \tag{6}$$

The opposition will instead stage a coup if $R^c \geq R^p$, which holds if:

$$Y^R + S \geq Y R + n_R T. \tag{7}$$

As indicted above, the military will engage in a coup if:

$M \geq (1 + \delta)F^G \geq F^G$, which for $\delta > 0$, that is, a greedy military, implies:

$$M \geq (1 + \delta)F^G \tag{8}$$

Rearranging all conditions, the following conditions are obtained:

$$n_R T \leq \delta F^G \tag{9}$$
$$S \geq n_R T, \text{ and} \tag{10}$$
$$M \geq (1 + \delta)F^G \tag{11}$$

Reassuringly, these results are fairly intuitive. Government will not engage in military interventions against the opposition if the proportion of public transfers to the opposition supporters that "buy peace" is lower than the required increment of military expenditures necessary to discourage the opposition from acting violently against the government. By contrast, the opposition will conspire to stage a coup if the expected welfare losses from the social contract breach exceed its share of public transfers during peace. The military only stages a coup on behalf of the opposition if the increment of resources that it expects to obtain after the coup exceeds the increment of resources from the government to dissuade the opposition to rebel against the government.

Changes in factors shaping conditions (9), (10), and (11) affect the probability of a coup. Table 2 reports the predicted outcomes: the model predicts that changes in the composition of supporting groups have ambiguous effects on the final outcome, which ultimately depends on the magnitude of the resulting composition shift. When both the expected welfare loss for the opposition and the government's military and defense expenditure increase, the probability of a coup also increases. Likewise, when the military's expected gains from the coup increase, the probability of a coup increases. In contrast, when the military receives increased revenues from the government to discourage the opposition from rebelling, the probability of a coup diminishes.

Table 2: Predicted Effects of Changes in Coup Determinants

Increases on	Effect on government's peace condition $n_R T \leq \delta F^G$	Effect on opposition's coup condition $S > n_R T$	Effect on military's coup condition $M \geq (1 + \delta)F$	Predicted combined effect
n_R	Pro-coup	Pro-peace	No effect	Ambiguous
T	Pro-coup	Pro-peace	No effect	Ambiguous
S	No effect	Pro-coup	No effect	Pro-coup
δF^G	Pro-peace	No effect	Pro-peace	Pro-peace
M	No effect	No effect	Pro-coup	Pro-coup

Source: Author's compilation.

A critical assumption in this model of military coups that sets it apart from civil conflict models is that each party, the government and the opposition, lacks its own organized forces to fight against the other. This assumption simplifies the increasing evidence that governments may engage in coup-proofing behavior by creating organizational coordination obstacles to divide the military (Quinlivan 1999; Powell 2012). As a result, there is only one institution, the military, that leverages the violent intentions of both government

and opposition and decides whether to maintain its support to the democratically elected government or, instead, the opposition. Therefore, a coup will not take place based on the ability of each party to mobilize its supporters to fight the other's group, as shown in the civil conflict literature. Rather, a coup takes place based on the ability of each party to credibly promise additional resources to the military to act against the other group.

Next, the model uses real data for Honduras; table 3 presents the values, definitions, and sources for the variables included in the model.

Table 3: Definitions, Sources, and Values of the Coup Model for Honduras

Factor	Definition	Source	Value
n_g	Percentage of votes in the last (2005) presidential election, which was won by President Zelaya	Supreme Electoral Tribunal (2009)	45.6 percent
n_R	Percentage of votes in 2005 presidential election that went to other candidates	Supreme Electoral Tribunal (2009)	54.4 percent
T	Total public spending except for defense, security, and debt repayment as a percentage of GDP; includes public general services, education, health, social protection, economic, and special programs—such as the Honduran Social Investment Fund (FHIS) and the Family Allowance Program (PRAF)[a]	World Bank (2007) *Public Expenditure Review*	20.4 percent
F^G	Public spending on defense and security as percentage of GDP	World Bank (2007) *Public Expenditure Review*	1.4 percent
Miscellaneous			
Per capita GDP	2008 per capita GDP at current prices	Central Bank of Honduras (2009)	US$1,858
Total GDP	2008 total GDP at current prices	Central Bank of Honduras (2009)	US$14.32 billion
Population	2008 population	Central Bank of Honduras (2009)	L 7,707,000

Source: Author's compilation.

[a.] FHIS provides monetary transfers to communities to finance infrastructure in social sectors, such as education and health. PRAF provides conditional cash transfers to families that ensure their children's school attendance, health visits, and adequate nutrition.

The model predicts the values for variable *S*, the expected or feared welfare (income) loss that prompts the opposition party into a coup; δ, the incremental public defense and

security spending needed to prompt a government-armed intervention; and M, the resources promised to the military by the opposition following a coup. Data for T and FG were obtained from the World Bank's (2007) *Public Expenditure Review* (referring to fiscal year 2005). Consolidated budget execution data typically lag two years in Honduras, and private access to ministerial sources has been discontinued since the ousting of President Zelaya. Thus, it is not possible to use data for a year more recent than 2005. The implicit assumption is that those proportions in 2005 are representative of 2009 values. If the past is a good indication of the future, the last 10-year average shows that these proportions have remained relatively stable at 19.9 percent and 2.3 percent of GDP for non-security-related public services and defense and security spending, respectively. Finally, a Gallup (2009) opinion poll carried out days before the coup reports that support for Zelaya at that time was 46 percent, very similar to the share of votes received in the 2005 presidential elections.

Based on the coup conditions—equations (9) to (11)—and the specific values for Honduras of the key variables reported in table 3, the model predicts a coup if:

$$6.7 \leq \delta, \tag{12}$$
$$S > 11.1 \text{ percent of GDP, and} \tag{13}$$
$$M \geq 10.8 \text{ percent of GDP} \tag{14}$$

Unless the government is willing to engage in massive increases in military spending (close to seven times current levels, up to 9 percent of GDP), the government's preferred policy is one of peaceful transfers of resources. Such increased levels of military spending would have placed Honduras behind only Eritrea, Saudi Arabia, and Oman's military budgets, the top three military spenders worldwide, excluding the Democratic People's Republic of Korea, for which no information is available, and well above Israel, the United States, the Russian Federation, and China (SIPRI 2010). For expected welfare gains equivalent to 11.1 percent of GDP or more, the opposition would be ready to buy off the support of the military to stage a coup. The resources required by the military to stage a coup against the government are reassuringly close to the welfare feared to be lost by the opposition: 10.8 percent of GDP. The analysis interprets this result to be consistent with the presumed behavior of a greedy military that holds the monopoly in the use of force. The opposition will buy off the military only if it is willing to transfer most of the loot to the military: that is, maintaining the status quo of power transfer does not come cheap for the opposition. Supporters of the opposition group will not gain much in net terms from the coup after the military is paid off (especially so if the time horizon of such transfers is short lived). If the opposition shifts the burden of these payments to the military onto government supporters, the government supporters will clearly be the losers of the coup.

These figures, albeit large, are not implausible. The military should not be expected to act against the opposition unless substantive improvements in capacity and economic privileges have previously taken place. The required increase in resources to buy the military needs to be large indeed, otherwise coups would take place more frequently. It should be also noted that the estimates assume that the military's only resources are those reflected in the budget, which is clearly a low-bound (upper-bound) estimate of military

revenues (required payoffs to act).[10] As for expected benefits, even though 11 percent of GDP constitutes a massive redistribution of resources within a society, such transfers roughly amount to the annual total resources spent on the poverty reduction strategy in previous years—around 10 percent of GDP. It is also reassuringly close to Collier's and Hoeffler's (2004) gross estimate of a 15 percent GDP loss in an average civil war.

5. Conclusions

The literature on economic causes of coups is: incomplete—it looks only at poverty and economic growth, but not redistribution; inconclusive—it reports either a negative impact of or no impact of income on coup risk; and disappointing—on the treatment of specific political settings, using instead dummy variables or fixed effects in the analysis. This paper aims to help fill these gaps, focusing on the Honduran coup in 2009.

The model developed in this paper brings together the disruption of the status quo of orderly and predictable power sharing with extortive militaries influencing the political life of the country (but unable or unwilling to directly take control of government). Specifically, the model describes the military as a self-interested agent that referees the relationship between two groups, the government and the opposition, and sells its alliance to the highest bidder. In this context, the opposition perceives the incumbent's proposal of legalizing reelections as a breach of the status quo and a way for the incumbent to perpetuate himself in power and extract resources. Estimates using Honduran data show that the feared redistribution of wealth associated with the rupture of the status quo amounts to the tune of 11 percent of GDP. The government could have avoided the alliance of the military with the opposition only by increasing the current military budget sevenfold, something totally infeasible—and undesirable for both the government and the elite, because it would increase the ability of the military to take control of government. But the military only changes sides in return for much of the wealth that the opposition fears to lose. In other words, the coup ends up being a large transfer of resources from society to the military with little welfare improvement for opposition supporters and a very large loss for government supporters.

To the extent that the military is not the greedy player assumed in this model and instead has rooted, democratic convictions or ideological motivations, the required additional government payoff would expectedly diminish, and, from the results analyzed here, the required payoff from the opposition would increase. If the military conviction is solid enough (or more concretely, its support to the incumbent group), the payoff required from the opposition might well exceed the feared income loss resulting from the potential breach of the social contract. That would imply that it is no longer a rational decision for the opposition to seek the military's support to stage a coup, even though the breach of the status quo means a large loss of wealth for them. That is precisely the situation in many

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[10.] Research could not find estimates on the exact weight of the military-owned industries, firms, and businesses in the Honduran economy. It is known, however, that the military owns and runs its own old-age insurance pension fund, a cement plant, and a weapon factory. The military's presence in banks, public telecommunications, and port management firms has declined over time (Salomon 2010).

repressive states; the opposition cannot buy off the favor of the military to put an end to flagrant disparities and grievances.

The model has a number of simplifications that cannot be overlooked. The proposed analysis is not a general theory of coups, but a framework that best describes contexts in which the military is an influential player in national politics but does not assume the direct control of government. Players are allowed to act with a short-term view, making them potentially myopic agents. In a sense, players are not playing a repeated game and do not have an infinite horizon, which is consistent with the impossibility of being reelected in a number of countries. The model assumes away any potential endogeneity in the observed levels of incomes and military funding—prior to the decision to stage a coup or not—and also removes any uncertainty surrounding the coup. Specifically, the military will stage a coup if that is how it maximizes its expected returns, because there are no other players that can fight the military. In this respect, the model assumes that the military has the monopoly on violence, which is appropriate in countries that lack rebels, guerrillas, or paramilitary groups. The model also assumes internal cohesion within each group, including the military, and each group's maximization of its own self-interest. In this sense, the model predictions are an upper-bound estimate of the role of redistribution in a scarcely cooperative setting, with different players seeking their own well-being. Unfortunately, history teaches that this is an accurate description for a significant number of armed forces across countries.

Specific to Honduras, the findings in this paper complement the political and legal discussion on the democratic legitimacy of a coup and the democratic right to defend the Constitution—still a passionate discussion among Hondurans. But that discussion is not necessarily the central question for the future development of the country. What is critical to know is whether deliberate efforts to reform the economy, tackle daunting levels of poverty and inequality, and make the Honduran democracy more participatory will meet the same fate as Zelaya's purported reelection ambitions if those attempts are feared by the elites as threats to their wealth.

More generally, the predictions in this paper indicate that even in countries—including heavily indebted poor countries—subject to continuous monitoring by the international community and dependent on aid and debt relief, the influence of the international community is rather limited if the internal redistribution of resources at stake (real or perceived to be at risk) is sufficiently large. This result supports Bussmann's and Schneider's (2007) finding that compensatory measures by the international community, in the form of foreign direct investment and concessional or non-concessional aid, are not systematically linked to the risk of domestic conflicts. But, the international community may still have a key role: Goemans and Marinov (2008) argue that since the Cold War, the international community is more willing to make aid contingent upon elections *following* a coup d'etat, which may partly explain the lower incidence and longevity of modern coups and the reduced time lag before elections resume.

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