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The Economics of Small Arms Demand:

Polarization and Rent-seeking
in Haiti and Latin America



Maps courtesy of the Central Intelligence Agency (CIA) World Factbook (2005).

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Introduction

In 2001, the Small Arms Survey (2001) reported that there were at least 550 million firearms in circulation around the world. In its latest yearbook it estimates that small arms were implicated in 60 to 90 percent of an approximate 100,000 direct war deaths in 2003 (Small Arms Survey, 2005). In spite of these alarming figures on the prevalence and fatal use of small arms, the same publication asserts that "reducing the demand for firearms is a fundamental factor regularly overlooked in the rush to secure peace" (Small Arms Survey, 2005, p. 268). It is not that the international community is blind to the problem of small arms—only, perhaps, that it has been distracted by a penchant for the regulation of their supply.

The Quaker United Nations Office (2005, p. 5) agrees that the " 'demand' agenda has not received sufficient emphasis from the international community" and that "much of the policy response to the small arms problem has been focused on regulating the supply and transfer of these weapons." I proceed in this paper with the shared belief that the objective of small arms control should not and can not be reduced to the forced removal of weapons through regulation. Rather, it should and must involve the creation of incentives to cede them freely.

The weak demand agenda of policy-makers is attributed in part to the lack of serious attention the subject has received in research circles; the silence of the economists on the matter has been particularly noted. This paper provides an economic account of demand for small arms as a response to politico-economic motivations arising from polarization and rent-seeking. Polarization has already been employed in the existing literature as a measure of the potential for conflict between groups of opposing political and economic interests. It is a measure based on sound economic theory, employing a simple model of rent-seeking. The sum of resources devoted to rent-seeking behavior by groups is linked by formula to the population shares of those very groups. Greater polarization implies greater rent-seeking. In this paper it is postulated that heightened polarization and rent-seeking also imply elevated levels of small arms demand.

In order to design effective disarmament policies, one first needs a theory of small arms demand. Insights from the theory of polarization and rent-seeking may provide at least some terms in the demand equation. Disarmament programs that do not address the underlying sources of polarization and rent-seeking will

provide only temporary reprieve at best. Broader development initiatives that ignore these sources do so at the peril of exacerbating small arms demand and leading to a deterioration of the overall security situation.

This paper is divided into two parts. Part I provides a theoretical framework on the economics of small arms demand, with an elaboration of the concepts of polarization and rent-seeking and of their relevance to the small arms problem. Part II applies this framework in a case study of Haiti, followed by comparisons of Haiti to two, sometimes three, relevant reference countries, and then provides some econometric results with data from a cross-section of countries in Latin America. The approach taken in Part II is therefore somewhat novel in that it combines case, comparative and econometric study. But this structure is truest, I believe, to the natural, graduated process by which ideas are born and tested.

Throughout this paper, what I often refer to as small arms demand should probably more properly be called small arms prevalence. This distinction is more than just an issue of semantics. Brauer and Muggah (2004, p. 10) submit that "it is the stock, not the flow, of guns that is at the heart of the abuse problem". However, in keeping with terminology in the existing literature, I will continue to refer to small arms demand.

Part I: The economics of small arms demand

The means and motivations of small arms demand

In the first formal and comprehensive theory of small arms demand that I have encountered, Brauer and Muggah (2004) argue that demand is a function of "means and motivations". By 'means', they refer to resources and relative prices, which act as binding constraints on otherwise unlimited wants. Resources include monetary resources such as credit, grants, earned income from work, and income drawn from the investment, or depletion, of financial or physical assets, but also, more interestingly, non-monetary resources such as "a person's or group's drive, inventiveness, organizational capacity, and networks that make arms acquisition possible or impossible" (Brauer and Muggah, 2004, p. 6). Relative price in this instance refers to the price of small arms relative to the price of other desired goods and services, which may be either substitute or complement goods. Substitutes might include machetes or police forces; complements could be anything from bullets to an asset worth defending. All price increases directly diminish the purchasing power of one's resources and generally result in adjustments to one's consumption decisions. Specifically, higher prices of complement goods will decrease small arms demand, while higher prices of substitutes will increase it.

'Motivation' "refers to a person's private beliefs and attitudes, the social relations in which an individual is embedded and of which he/she forms a part, and the large-scale cultural and historical environment that form and shape the person's world" (Brauer and Muggah, 2004, p. 5). Note that motivations are not necessarily confined to the individual, but can also be collectively realized. Two motivations have typically been cited elsewhere in the limited small arms demand literature: insecurity, and gun culture. In the first type of characterization of preferences for small arms, insecurity is said to rise from many aspects of people's lives, such as a lack of:

- basic physical needs such as food and shelter
- work, land and education
- prestige goods
- protection from others
- access to influence, decision-making and political power (Quaker United Nations Office, 2005).

However, if those individuals suffering from a lack of any of the above are to contribute to generalized insecurity, it must be that they can conceive of some person or group that is preventing them from satisfying that need. Analogously, those who already possess all of the above must conceive of some person or group against which to defend their position. The notion of a probabilistic return to the gun holder's "investment" in offense and defense is fundamental to any rational model of small arms demand.

In the second type of characterization of preferences for small arms, the existing literature refers vaguely to 'gun culture', or worse yet a 'culture of violence', and passes the problem off to the anthropologists, psychologists and sociologists. But what is gun culture? Cock (1997, p. 157) insists that the Kalashnikov is "not just a gun" but a "mythic icon", and a "marker of group identity, serving as a kind of code to assert one's political allegiance." Brauer and Muggah (2004), in their ambitious and laudable effort to develop a multidisciplinary approach to small arms demand, make short shrift of some of the insights that economics can bring to an analysis of these "cultural" motivations.

Economics is also, if not above all else, a science of incentives. In this paper, I take the view that even insecure and so-called gun-loving societies are rational and, more precisely, that insecurity and gun culture are inextricably linked to polarization and rent-seeking. Countries with a long history of the former are quite possibly those with a long history of the latter.

Defining economic motivations: Polarization and rent-seeking

Marxian theory provides an apt introduction to the concept of polarization. In *The Communist Manifesto* of 1848, Marx describes a process whereby "the whole society breaks up more and more into two hostile camps, two great, directly antagonistic classes: bourgeoisie and proletariat." Deutsch (1971) clarifies this example by adding that "(t)he classes polarize, so that they become internally more homogeneous and more and more sharply distinguished from one another in wealth and power." More generally, polarization is driven by an individual's sense of identification with a given group and by the collective alienation of this group from all others. Esteban and Ray (1994, p. 819) considered that "every society can be thought of as an amalgamation of groups, where two individuals drawn from the same group are 'similar', and from different groups, 'different' relative to some given set of attributes or characteristics." A highly

polarized distribution of these attributes must therefore exhibit the following features:

- there must be a high degree of homogeneity within each group
- there must be a high degree of heterogeneity across groups
- there must be a small number of significantly sized groups.

Garcia-Montalvo and Reynal-Querol (2003) assume for simplicity that the difference or “distance” between groups is generated by a discrete metric: a distance of ‘0’ when two individuals are of the same group, ‘1’ otherwise. In preserving the spirit of the axioms of polarization posited by Esteban and Ray (1994), they specify the following measure of polarization (P)

$$P = 1 - \sum_i \left(\frac{0.5 - \pi_i}{0.5} \right)^2 \cdot \pi_i$$

where

- \sum_i is a summation operator—the sum over all groups i
- π_i is n_i/N , the ratio of people in a given group, n_i , to the total population N

In the two-group case, polarization is maximized at unity when both groups are of equal size ($\pi_i = 0.5$). Graphically, the distribution would appear as two equally sized poles—a bimodal distribution. If we move away from the bimodal distribution, polarization falls. As π_i approaches 1, only one homogenous group exists ($n_i = N$) and polarization is nil. It turns out that this measure of polarization, based on the population shares of groups, is inextricably linked to the concept of rent-seeking.

Economic rent is defined as income which is unmatched by corresponding labor or investment. In contrast then to wages or profit, rent arises not from productive activities but from manipulation of the political or economic environment. Because rents are the easiest form of income, it is natural for rational agents to want to maximize their income from rents. This motive is called “rent-seeking”. Typically, it constitutes actions by political agents to implement taxation, spending and regulatory policies that confer financial benefits or other special advantages on themselves, at the expense of all others. But rent-seeking also occurs when economic agents exploit imperfections in the market, such as monopolies and oligopolies or inefficient credit markets for example. It is in this sense primarily that rent-seeking is a more general concept than corruption. Also, while corruption is

often perceived as resulting from individual greed, rent-seeking is not restricted to individual motivations. In fact, the primacy and intensity of group rent-seeking has long been argued, and its negative consequences in the political and economic spheres feared.

Hayek (1979, p. 150) emphasizes the effect of rent-seeking on the political system: "So long as it is legitimate for government to use force to effect a redistribution of material benefits (...) there can be no curb on the rapacious instincts of all groups who want more for themselves. Once politics becomes a tug-of-war for shares of the income pie, decent government is impossible." With an equally dire prognosis, Olson (1982) maintains that the effect of the increase in specialized pressure groups is to gradually strangle the economy. Rent-seeking gives rise to a serious "tragedy of the commons"; even if it is obvious to all that not everyone can live off the wealth of everyone else and that the best mutually beneficial strategy is for everyone to give up rent-seeking, it is equally obvious that the best strategy for each group is to get *every other group* to give up rent-seeking while they alone continue to collect their rents. The end result is a higher level of rent-seeking behavior than is optimal in the aggregate. Particularly in economies with extensive government intervention, groups will opt to apply their ingenuity to activities that redistribute income rather than those that create growth. In zero-growth, zero-sum economies where no surplus is being created, when one group extracts rents from the economy, another else loses this same amount. It is thus that rent-seeking generates distrust and erodes social capital, leading to what Stewart (2001) calls the "failure of the social contract".

For the purposes of this paper, I will identify rent-seeking more concretely by the expenditure of resources, broadly defined, in order to bring about an uncompensated transfer of wealth from one group to another. The primacy of group rent-seeking suggests that a highly polarized society will be one characterized by high levels of rent-seeking. Indeed, the theoretical underpinnings behind the polarization formula presented above rest in a simple economic model of rent-seeking whereby groups try to alter the outcome of a zero-sum contest by spending resources to lobby in favor of their preferred outcome. Interestingly, a mathematical result of this model is that the total resources devoted to this contest will depend on the population shares of the different

groups¹. In fact, the total resources devoted to rent-seeking can be thought of as an indicator of the level of polarization; the greater the polarization, the greater the threat to one's interests, and the greater one's incentive to commit resources to rent-seeking to advance and protect those interests.

This rent-seeking model of polarization was originally conceived in the context of a discussion on the potential for social conflict within countries. Several other socio-economic measures of the potential for social conflict have already been explored, the most commonly cited is income inequality—the extent to which income is not divided equally amongst income or wealth groups. The theory of economic inequality has a deeply entrenched tradition in welfare economics, starting with Dalton (1920). The most common measure of inequality, the Gini index, can be thought of in terms of the Lorenz curve, which plots the cumulative share of total income earned by households from poorest to richest. The Gini index corresponds to the area below the Lorenz curve, divided by the area below the 45° line. It ranges in value from 0 in a perfectly equal country, to 1 in a perfectly unequal country.

The influential work of Collier and Hoeffler (1998, 2002, 2004) found no role for inequality in fomenting conflict². In contrast, Garcia-Montalvo and Reynal-Querol (2002) provide some revealing statistics on the significance of ethnic polarization. Of the ten most ethnically polarized countries covered in their study, nine had suffered a civil war during the sample period. Of the ten most religiously polarized countries, seven had also suffered the same fate. In econometric terms, if the level of ethnic polarization increases from the sample average (approximately 0.5) to the level of Nigeria (0.95), the probability of conflict will double. Reynal-Querol (2001) also contends that ethnic dominance—

¹ One of the technical assumptions made is that the cost of resources, or disutility of effort, is rising at an increasing rate. Another critical assumption is that the contest success function, which defines the probability of a given group's success in the contest, depends on the resources spent by that group in support of their favored outcome in relation to the total spent by all groups combined. If we accept these assumptions as a reasonable representation of reality, then the above measure of polarization has sound theoretical backing.

² This may come as a surprise to readers of Sen's (1973) celebrated book *On Economic Inequality*, in which he surmises that the relation between inequality and rebellion is a close one, running in both directions of causality.

whereby a group represents between 45 and 90 percent of the population, as defined by Collier (2001)—is irrelevant when polarization is considered. Ethnic dominance measures ignore that society is more prone to conflict when there is a sizable, well-defined and somewhat coordinated “dominated” group to oppose the dominant group than when the opposition is fragmented. This intuition, supported by empirical evidence, tends to also favor polarization over group fragmentation as a measure of the potential for conflict (Garcia-Montalvo and Reynal-Querol, 2002)³.

Polarization and rent-seeking in a theory of small arms demand

Polarization has been posited in the economics literature as a measure of the potential for social conflict within countries. But predicting conflict is not necessarily the same as predicting small arms demand, which is thought to predate conflict in fact (Brauer and Muggah, 2004). In this section, I will argue that polarization and rent-seeking are also strong predictors of small arms demand. The thrust of the argument is that if polarization acts as a signal of the potential for conflict, and if rent-seeking is only a partially actualized response to that potential, then groups may be compelled to resort to other means of predation or defense. The total mobilization of resources may occur on the basis of perceptions, regardless of whether conflict actually ensues, and without any explicit association of members within the groups.

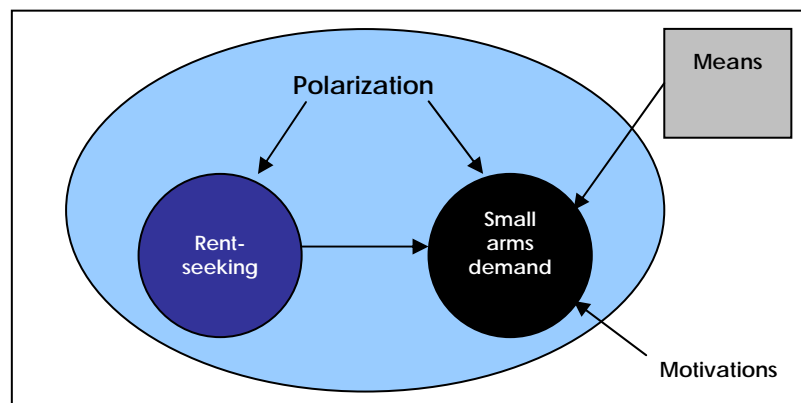
As mentioned in a footnote to the previous section, the measure of polarization is arrived at using a rent-seeking model in which the probability of any given group’s success in the outcome of a contest is given by the resources it dedicates to this contest as a proportion of the total amount of resources devoted by all groups combined. The resources will typically go to lobbying the government, or else forming the government outright. However, in countries where the monopoly of force of the state is incomplete, small arms presents a cheap and efficient alternative to lobbying and politics. There is reason to believe that rent-seeking and small-arms are substitutes at the individual or group level, while complement goods (or ‘bads’ really) at the aggregate level; since

³ Fragmentation can perhaps best be thought of as the probability that two randomly selected individuals in a country will belong to different groups. In contrast to polarization measures, a fragmentation index increases as the number of groups increases.

political and economic rent-seeking is likely restricted to the ruling political and economic elite, due to institutional limitations and market imperfections, there are other groups that will have no recourse but to counter their rent-seeking through the threat or use of small arms. Stewart (2001) posits that “Group differences only become worth fighting for (...) if there are other important differences between groups, particularly in the distribution and exercise of political and economic power (...) . Where political redress is not possible (deprived groups) may resort to war.” And though the elite may have preferred to stick to political and economic rent-seeking, ultimately they know that they may have to respond in kind.

Figure 1 depicts how polarization contributes to small arms demand directly, as a signal of the potential for conflict, as well as through its influence on the level of rent-seeking, as a complement to small arms. Small arms demand is also determined by the means available to purchase them, as well as on other possible motivations which are not the focus of this paper.

Figure 1: Polarization and rent-seeking in a theory of small arms demand



It is worth considering at this point why the income inequality measures do not provide as sound a theory of small arms demand as polarization. The theoretical flaw in using income inequality as a measure of the potential for social conflict is that it captures individual (vertical), not group (horizontal) inequality. The problem is that no lone individual has the resources to wage political or economic ‘war’ on all others. So rather than eliminate each and every competitor, individuals classify their adversaries in groups (from most alienating to least alienating) and, in so doing, implicitly identify themselves and combine resources with the least

alienating of these. In fact, even when these groups do not exist in any formal sense, individuals may act precisely as if they did. Imagine a scenario in which groups are not easily distinguishable but are known to exist in specific proportions, and suppose further that there are large costs associated with trusting a group that is not one's own and somewhat smaller costs associated with distrusting your own group. If individuals are risk-averse, then it is reasonable to conclude that in a society comprised of two groups of 50 percent, the aggregate level of distrust is likely to be *at least* 50 percent of what it would be if groups were easily identifiable. Analogously, small arms demand will be at least as high when groups are informal as when they are formal.

I must emphasize that while polarization and rent-seeking create the conditions propitious to small arms demand, it is not the case that this polarization necessarily leads to an actual armed contest for power between the opposing groups. Nonetheless, there must be some non-zero probability of real, widespread conflict if, as Stewart (2001) maintains, individual war-profiteers act on a private motivation to invest in small arms and actively try to instigate it. As a likely signal of this probability, polarization may coordinate the rent-seeking and small arms decisions of otherwise uncoordinated individuals within otherwise invisible groups. In this sense, perceived polarization can be self-fulfilling, by flagging the potential for outright conflict, thereby triggering small arms demand and creating in turn a very real security threat. Polarization and rent-seeking lead to distrust, fear and other forms of eroded social capital, creating an environment in which the common criminal prospers alongside the rebel, and driving a demand for small arms that may or may not have anything to do with the original basis of polarization.

Note also that the theory of polarization does not imply that groups are static entities. As outlined in Box 1, in a zero-sum economy characterized by increasing poverty and dwindling "spoils of war", groups will become increasingly fragmented and small arms demand increasingly individualistic and criminalized.

I will continue with an analysis of the Haitian experience with small arms demand in Part II of this paper. I will apply some of the insights gleaned from the model of polarization and rent-seeking to small arms demand, and present some preliminary empirical results for a cross-section of seventeen countries in Latin America.

Box 1: Poverty and small arms demand

Though poverty is popularly associated with social conflict and small arms demand, the link between them is no theoretical certainty. Brauer and Muggah (2004) have effectively argued that poverty may actually reduce the demand for small arms simply by making them unaffordable. In contrast, proponents of “green wars” suggest that poverty influences conflict and small arms demand through its interaction with the environment (Stewart, 2001). In his seminal work on ‘environmental scarcity’, Thomas Homer-Dixon (1999) defines ‘resource capture’ as rent-seeking behavior that occurs when elite groups anticipate water, forest and land scarcity and manipulate the state’s property laws and development plans to secure a supply for themselves. ‘Ecological marginalization’ results when other groups react—often through migration, sometimes through uprising—to this unfair distribution of limited resources. He explores how environmental strain may contribute to social polarization and conflict, by sharpening animosities between groups. Polarization and conflict, in turn, undermine society’s “ingenuity”, or capacity to invest the physical, human and social capital needed to deal with the underlying stresses.

Consider that small arms may be an input into the ‘production’ (protection and predation) of scarce environmental resources. Local scarcity increases the price of all locally produced goods, and basic economics dictates then that an increase in the price of the product will increase demand for the inputs used to produce it. So even in the presence of extreme poverty, small arms demand may be efficient from the standpoint of individual groups. But they are certainly not efficient from the standpoint of society as a whole; resources sacrificed to conflict assets such as small arms would be better devoted to peace assets—public goods contributing to ingenuity. In a classic vicious circle, scarcity contributes to polarization and small arms demand, undermining ingenuity and exacerbating the scarcity, and leading to a ratcheting up of small arms demand.

On the other hand, past a certain threshold, increasing scarcity may, by decreasing the potential spoils of war, lead to group fragmentation. For example, suppose poles are initially formed according to existing poverty levels in a highly polarized society, say 50 percent are ‘poor’ and 50 percent are ‘rich’. Then suppose that increasing scarcity means that only 25 percent of the population will eventually be able to live above the poverty line.

Even if successful in defending their position against the 'poor', the 'rich' will not have enough resources for all to remain 'rich'. Likewise, even if successful in wresting resources away from the 'rich', the 'poor' will not have enough resources with which to make all 'poor' 'rich'. Superficial group structures may continue to reflect the most sizable and imminent opponent, but the very possibility of victory (however far off) will immediately create criminalized elements and in-fighting within both groups. Small arms demand will be determined less by polarization and more by individualistic, criminalized motivations. Ultimately, the effect that poverty and scarcity have on small arms demand can only be determined empirically.

I provide a glimpse of the case of Haiti here, because it is so pertinent to the point at hand. Fatton (2002, p. 151) writes that "the utter lack of resources characterizing Haitian society has meant that the top membership of the original Lavalas coalition was too large to enjoy fully the fruits of power (...) . The ruling cadres of Lavalas were thus bent on creating minimum winning alliances". Haitian politics was transformed into "a Hobbesian war between small personalistic clans of big men" and a "zero-sum game characterized by the mergence of militarized gangs loosely attached to different political blocs" (Fatton, 2002, pp. 13, 199). Looking forward, the potential for armed conflict in Haiti over dwindling resources seems boundless. Experts estimate that it takes half a hectare of good land to feed a person for a year, and that each person needs at least 1,000 cubic meters of water each year to survive, and 1,500 to "maintain health". Alarming, Howard (1998) calculates that by 2050 there will be about one-tenth of a hectare of cultivable land per Haitian, and between 500 and 675 cubic meters of water per Haitian per year.

Part II: Small arms demand in Haiti and Latin America

Haiti's long history of polarization and rent-seeking in short

Haiti's ills have often been attributed to the way in which the Haitians treat compromise as a foreign concept and to the corruption of its politicians. While this particular characterization is at best simplistic and at worst outright racist, it is true that much of Haiti's history has been characterized by polarization and rent-seeking. Those who manage to sort out cause from consequence are those from whom the more enlightened conclusions emerge. Fatton (2002, p. 199), whose thinking shapes much of the following exposition, summarizes the Haitian problem thus: "Haiti's predatory democracy reflects a class structure based on an extremely weak economic foundation and therefore lacking both a classical bourgeoisie and a large working class. The result has been a *politique du ventre* generating a class of *grands mangeurs* bent on monopolizing public power to advance private interests." This assessment is made without moral righteousness, for "in a country where destitution is the norm and private avenues to wealth are rare, politics becomes an entrepreneurial vocation, virtually the sole means of material and social advancement for those not born into wealth and privilege" (Fatton, 2002, p. xi).

Ceded to France from Spain in 1697, Saint-Domingue became the richest of the French colonies in the New World, earning the name "Pearl of the Antilles" on the backs of African slaves working its sugarcane and coffee plantations. Resources were exploited and exported at the tip of a bayonet. In the colonial period, the French imposed a three-tiered social structure with *les grands blancs* at the top and *les noirs* at the bottom. Between these were *les affranchis*—the freedmen—most of whom were mulattos descended from unions of slave-owners and slaves. Of a population of 519,000 in 1791, 87 percent were slaves, 8 percent whites and 5 percent freedmen (Haggerty, 1989). In 1802, Jean-Jacques Dessalines led the slaves to victory over a French army sent by Napoleon Bonaparte. In 1804, he declared independence of the world's first black republic and named it Haiti. No more than two years later, following his assassination, Haiti was split into a mulatto republic in the south and a *noir* kingdom in the north. Though reunified in 1820, Haiti would remain victim to a dizzying political disorder—with more than twenty changes in government between 1843 and 1915 alone. The Haitian Revolution eliminated the colonial ruling class, and most of the white population with it; land redistribution among former slaves resulted

in a new Haitian upper class. These mulattos turned away from agricultural pursuits in favor of more urban—and apparently urbane—positions in government, which was as it is now, Haiti's primary employer.

According to Trouillot (1990), the early Haitian state was transformed by an alliance between the black military elite and the urban mulatto economic elite into a bloated bureaucracy and a tool of extraction of the surplus value created by the peasantry. With somewhat more nuance, Fatton (2002) describes the modern-day Haitian ruling class as: 1) the possessing class of mulattos and Arabs, which owns and controls the means of production, including large portions of land and the economic institutions, and 2) the government class, black, which controls government funds and the military. The latter "extract resources not only from their exploitation of the subordinate classes but also from formal and informal taxation of the possessing class" (Fatton, 2002, p. 10). Though there has therefore been a conflictive relationship between these two factions of the dominant class, "tensions dissipate (...) when subordinate classes mobilize to challenge the existing distribution of power, privilege, and property" (Fatton, 2002, p. 10). Membership in the elite group has historically been determined by birth, and reinforced through intermarriage. Comprising only about 5 percent of the populations by the 1980s, it nonetheless controlled upwards of 50 percent of national income (Haggerty, 1989). Living alongside the elite geographically but certainly not socially was the urban lower class. This class of urban poor comprised about 15 to 20 percent of the total population but even as late as the 1980s remained heterogeneous and with little class-consciousness (Haggerty, 1989). As their numbers and plight grew through combined economic stagnation and urbanization, so too did this class-consciousness.

The peasants, according to Leyburn (1941), were manual workers, illiterate, spoke only Creole, lived in the countryside, practiced common-law marriage and Vodou, and were black. Although the Haitian peasantry constituted approximately 75 percent of the total population, it was largely excluded from national affairs (Haggerty, 1989). Peasants generally had control over their landholdings, but many lacked clear title to their plots. There were strata within the peasantry based on the amount of property owned, and so, like the urban poor, they typically lacked a sense of class-consciousness and did not express unified

resentment toward the upper classes (Haggerty, 1989). In fact, they often depended on patron-client and fictive-kin relationships with economically successful individuals as a safety net providing relief in case of emergencies (World Bank, 1998). These rural bonds, convenient as they were, would however not overcome the increasingly dire conditions in which peasants would soon find themselves, nor would they carry over into the urban environment.

By 1957 the brutal dictatorship of the Duvalier family had begun, first at the hands of Francois "Papa Doc" Duvalier and then, starting in 1971, at those of his son Jean-Claude "Baby Doc". The Duvalier dynasty was a relatively stable, albeit all the more brutal, period in Haiti's history. The use of violence in advancing political and economic interests reached new heights under the Duvalier dynasty, with the formation of the notorious *Ton Ton Macoute*. An estimated 30,000 Haitians were killed for political reasons during his tenure, and thousands of others were forced to emigrate for either political or economic reasons (Haggerty, 1989). Economic rents enriched the dictator's closest supporters: "(T)he black middle classes monopolized political power through their command of the public sector; the mulatto bourgeoisie had economic power vested in its control of the private sector; and both benefited from the protection of the repressive machine against popular demands" (Fatton, 2002, p. 56). The result was even greater polarization between rich and poor, and between urban and rural dwellers, with Port-au-Prince housing 20 percent of the population but consuming 80 percent of state expenditures (Trouillot, 1990, p. 183). The rural population began to move to the urban centers, in pursuit of these rerouted resources. This process of urbanization came to undermine much of the vertical linkages that existed in the rural areas. In the urban areas, the population was more transient. Also, the excesses of the elites became all the more evident to the existing poor and newly arrived migrants; "Baby Doc" was to prove particularly profligate.

Already minimal, public services deteriorated as Jean-Claude's kleptocracy pursued various fraudulent schemes to misappropriate funds from the national treasury. In the 1980s, as economic conditions worsened in Haiti, despair turned into desperation, and desperation into anger. The rumblings of discontent began in March 1983, when Pope John Paul II visited Haiti and declared: "Something must change here." He went on to call for a more equitable distribution of income, a more egalitarian social structure, more concern among the elite for the well-being of the masses, and increased popular participation in

public life. This message contributed to expanded political and social mobilization. A full-out revolt began in the provinces two years later, starting with street demonstrations and raids on food-distribution warehouses in Gonaïves and spreading to many other parts of the country. Jean-Claude Duvalier fled Haiti on 7 February 1986, leaving behind a country ravaged by polarization and rent-seeking, and with more of the same on the horizon.

In March 1987, a constitution was ratified that provided for an elected, bicameral parliament, an elected president as head of state and a prime minister, cabinet, ministers, and supreme court appointed by the president with parliament's consent. Jean Bertrand Aristide took office on 7 February 1991 after a convincing win in the country's first ever democratic presidential election. Aristide had an obvious appeal to the Haitian peasantry and the urban poor, who grew tired of the excesses of upper classes. But just 236 days after his inauguration, the *Forces Armées d'Haiti* (FAd'H) ousted Aristide in a bloody coup supported by many of the country's economic elite. Raoul Cédras seized power and came down hard on Aristide supporters in the slum towns surrounding Port-au-Prince. The ensuing embargoes only increased opportunities for rent-seeking. Werleigh (1995, p. 161) writes that while shortages of goods hit the informal sector first and foremost, "for political reasons, the number of employees in the public sector increased." This military *de facto* regime governed Haiti from October 1991 to September 1994, when the first contingents of what would become a 21,000-member international force touched down to oversee an end to military rule.

President Aristide and other exiled officials returned on 15 October 1994. Aristide promptly disbanded the army and concentrated authority in the Haitian National Police (HNP) and his own armed gangs. These increasingly repressive gangs were to later become known as the *chimères*. A pro-Aristide, multi-party coalition called the *Organisation Politique Lavalas* (OPL) swept into power in the nation-wide local and parliamentary elections of June 1995. René Préval, a prominent Aristide political ally, was elected and sworn in as President on 7 February 1996 in what was Haiti's first-ever transition between two democratically elected presidents. But Aristide would eventually break away from the OPL and create a new political party, the *Fanmi Lavalas* (FL), to regain the presidency in the highly controversial and largely boycotted elections of November 2000. Fatton (2002) sees the "explosion of the Lavalas movement into competing blocs engaged in a naked

struggle for power" as the predictable consequence of the Haitian government's inability, in the face of the embargo, a stagnant economy and an individualistic *saive-qui-peut* mentality, to continue supporting the growing class of new political claimants.

By the time of Aristide's inauguration, US troops had already departed the country. Political gridlock and a worsening security situation ensued, characterized by protest strikes and government-supported gang attacks on opposition followers. Small armed groups opposed to Aristide emerged and seized control of several towns. In 2002, the Group of 184 established a coordinated front against Lavalas, and eventually a resistance force to match, consisting of exiled members of the FAd'H. Following their 29 February 2004 assault on Port-au-Prince, and bowing to international pressure, Aristide submitted his resignation and was flown to the Central African Republic. He remains exiled to this day in South Africa, though vows to return to Haiti. Boniface Alexandre, President of the Supreme Court, assumed interim presidency of the nation and chose Gerard Latortue as interim Prime Minister. In April 2004, the United Nations Security Council adopted Resolution 1542, creating the UN Stability Mission in Haiti (MINUSTAH), authorizing 6,700 troops and 1,622 civilian police. After repeated postponements, Haitian elections are now slated for early 2006, but look unlikely in light of the widespread insecurity—which has often been ascribed to the ubiquity of small arms in the country.

Haitian small arms demand and demanders

Muggah (2005, p. xxiv) writes that "firearms are widely possessed by middle-class and 'bourgeois' homeowners throughout the country, though especially in the capital, Port-au-Prince. Weapons are also widely distributed among the poorer strata of Haitian society." Civilians are in possession of an estimated 170,000 small arms, primarily pistols (0.38s, 9mms) and revolvers (including home-made or 'creole' weapons). This figure corresponds to about one firearm per ten households on average, although elite households own more than one weapon.

There are at least a dozen distinct types of armed groups in possession of between 16,000 and 18,150 arms (Muggah, 2005). Leaders of these groups hold mostly semi-automatic firearms (such as M16s, M14s, PMKS, Uzis) and handguns (including 0.38s and 0.45s), while the rank and file tend to use 'creoles' (Muggah, 2005). The groups range in motivation from political and economic rent-seeking to pure criminality, and include everything in between.

Indeed it is difficult, if not impossible, to completely distinguish between the two.

Popular Organizations (OPs), for example, are “community-based organizations that ordinarily enjoy tight relations with political leaders, redistribute resources, gather votes, and orchestrate vigilance brigades” (Muggah, 2005, p. 50). Nonetheless, OPs such as the *chimères*, tied to the Fanmi Lavalas, can employ highly violent and criminal means to achieve their political and economic rents. The *baz armés*, or youth gangs, are often contracted by the OPs to undertake acts of intimidation. Some join the brigades, while others operate autonomously. Likewise, the so-called resistance fronts and pro-opposition groups are composed of individuals seeking a combination of both legal and illegal rents. These include former soldiers from the FAd'H and former leaders, as well as the educated elite. Indeed, even the HNP is known to pursue illegal rents. It is notoriously corrupt and regularly accused of human rights violations and politicization (Muggah, 2005).

There are many armed groups in Haiti that stand to benefit from ongoing insecurity. Private security companies and the self-defense militias, common in wealthy urban neighborhoods, are examples; likewise, the ‘zero tolerance groups’, which are not police forces but “special units made up of armed civilian thugs” operating in urban police stations and providing security functions for key political figures (Muggah, 2005, p. 52). In particular, these armed actors protect the interests of the existing and entrenched elite of political and economic rent-seekers.

In spite of the mixed bag of incentives motivating armed groups, there are some criminal groups whose sole intention is to operate outside of the law. Organized criminal gangs, for example, pursue illegal rents both internationally and nationally with no intention of gaining *formal* political or economic power—“these groups are generally involved in narcotics and weapons trafficking and organize youth gangs for defensive and commercial purposes” (Muggah, 2005 p. 50). The *zenglendas*, or petty criminals, also pursue illegal rents primarily in the urban areas, but are mostly uneducated youth from impoverished districts and do not form part of any large scale or efficient crime syndicate.

Many of the above groups are tied, implicitly if not explicitly, to the civilian population. Muggah (2005, p. xxiii) says of the armed groups in Haiti that “(t)he alliances among these groups are fluid, and motivations stem from a complex combination of predatory

and protective behavior—itself firmly tied to local interests. These armed groups are embedded in communities and are characterized by robust local support.” In this paper, I am primarily concerned with the demand for small arms by those in pursuit of primarily political and economic rents, plus the larger body of civilians whom they purport to represent. Depending on how one distinguishes between rent-seekers and common criminals, this portion of the arms stockpile in Haiti consists of between 170,000 and 188,150 small arms (Muggah, 2005). As a conservative estimate of the prevalence of small arms in Haiti, I will use the figure of 170,000 for the empirical analysis in the second part of this paper⁴.

The failure of disarmament in Haiti

Upon entering Haiti in September of 1994, US troops were confronted by the thousands of small arms in the hands of ex-soldiers, paramilitaries and private citizens alike. With the goal of minimizing armed opposition and preparing for a peaceful handoff to UN peacekeeping forces, they sought to disarm the population, both by seizure and buy-back operations. In the end, 15,000 weapons were confiscated and no more than 13,000 low-quality weapons were bought-back. This disarmament effort cost US \$1,924,950, that is US \$522 per returned firearm (Muggah, 2005). The total amount exchanged for each firearm amounted to, on average, US \$413—almost 1.5 times gross national income (GNI) *per capita* at the time. It seems that the buy-back program had in fact degenerated into little more than a lucrative business for a few ‘enterprising’ groups (O’Connor, 1996).

Subsequent disarmament efforts have also produced few results. Muggah (2005, p. xxv) writes that: “Most have focused narrowly on weapons collection rather than the broader objectives of reconciliation, violence reduction, or peace-building (...). Virtually every disarmament effort in Haiti has failed.” By aggregating the 1995–2004 weapons-collections activities cited in Muggah (2005), one gets a picture of the true failure. The absolute numbers of weapons collected has indeed been minimal, at only one percent of the minimum 195,210 non-MINUSTAH weapons in circulation today. But more telling is the ratio of weapons collected through seizure to those collected through voluntary

⁴ In a much less detailed analysis, International Crisis Group (2005) estimates 300,000 illegal weapons in Haiti.

and buy-back programs—more than four times. Disarmament activities have concentrated almost exclusively on supply, to the exclusion of demand.

Beginning in October 1994 and running parallel to, though separate from, the US military's 1994/95 disarmament effort, the US Agency for International Development (USAID) implemented a program to demobilize the Haitian armed forces and assist in their reintegration into Haitian civilian society. The main thrust was a six-month, paid vocational training course. The program extended beyond the disarmament effort, ending in November of 1996. Of an estimated 7,000 FAd'H soldiers, about 6,250 were demobilized. The remaining 750 joined the ranks of the Haitian National Police (HNP). Dworken, Moore and Siegel (1997) calculate that total spending attributable to the demobilization program was approximately US \$8.67 million, or US \$1,781 per demobilized soldier completing training—almost six times GNI *per capita* at the time. The demobilization program was “unlike most other USAID projects in that its goals were political and process-oriented—not economic.” (Dworken, Moore and Siegel, 1997, p. 1) These were to:

- neutralize the short-term threat of the former FAd'H to US forces
- provide longer-term “breathing space” from possible FAd'H disruption of transition activities
- lay the foundation for eventual reintegration of the former FAd'H into Haitian society.

So, in fact, the intention was never to reintegrate. Program “success” was not measured by reintegration, but by enrolment, and by the fact that there were few incidents against US forces.

The program suffered the usual controversy—providing assistance to a group that had overthrown a democratically elected President and long oppressed the population. With the exception of a small number of missionaries and church groups, most non-governmental organizations (NGOs) in Haiti did not want to become involved with the demobilization program, for fear of tainting their long-term projects (Dworken, Moore and Siegel, 1997). Micro-credit programs were therefore not made available to the ex-soldiers. According to a USAID poll cited by Dworken, Moore and Siegel (1997), 79 percent of the former FAd'H believed they would have trouble finding work because of their status as ex-soldiers. Of the 304 who ultimately found employment, 136 found work in the informal sector (self-employed or working on contract),

and 168 found employment in the formal sector (28 of which were employed as guards). Dworken, Moore and Siegel (1997, p. 51) report that "informed observers estimate that the total employment rate of former soldiers is probably 5 to 10%," whereas the average employment rate in Haiti at the time was 20 to 30 percent. Highlighting the dismal employment figures, the authors point out, "one may expect the ex-FAd'H to perform better than average because they have a high education level by Haitian standards, and received top-quality vocational training" (Dworken, Moore and Siegel, 1997, p. 51).

In their lessons learned, Dworken, Moore and Siegel (1997, p. 4) timidly recommend to "try to promote reconciliation" between former soldiers and society "so that soldiers can find jobs and become fully reintegrated into society." They claim that "(a)lthough such reconciliation is outside the control of demobilization program managers, they should attempt to promote it when possible, perhaps through embedding demobilization programs in efforts to aid the local community" (Dworken, Moore and Siegel, 1997, p. 4). The lack of emphasis by donors on reconciliation efforts did especially little to encourage buy-in of the most powerful classes, who had their own interests in mind. Dworken, Moore and Siegel (1997, p. 2) remark that the "IOM had difficulty coordinating with high-level Haitian officials. (...) They exhibited repeated unwillingness and capability to pay stipends, pensions and savings, as well as to make public announcements to promote reconciliation." Former soldiers were also unlikely to be hired by the government, which controlled or funded most formal sector employment.

Ultimately, disarmament efforts failed so dismally in Haiti because they failed to address the polarized nature of Haitian society. In other words, they attempted to reduce the supply of small arms without addressing its demand. Demobilization and reintegration were equally doomed; reintegration without the reconciliation of opposing poles could produce no real reintegration at all. The authors admit that one of the reasons that the ex-soldiers remain outcasts is that "there has been no reconciliation among other parts of society, such as the elite families, rural peasants and urban workers" (Dworken, Moore and Siegel, 1997, p. 54). Their assessments may not refer explicitly to persisting polarization, but the connections are clear.

The 'means' of small arms demand in Latin America

The end result of Haiti's failed experiences with disarmament is that the country is still awash in small arms. Nonetheless, with 'only' one gun for every 48 people, Haiti is nowhere near the top of a list of Latin American arms demanders—not in absolute or even *per capita* terms. Given the frequent reports of gun violence in Haiti, this statistic may come as a bit of a surprise. But it reflects that small arms demand need not be perfectly correlated with small arms usage. In fact, demand may be determined by entirely rational and economic considerations. With the lowest gross national income (GNI) *per capita* in international dollars (derived from purchasing power parity or PPP exchange rates), it could be that Haiti is simply the country least able to afford small arms (see Figure 2).

Figure 2: Small arms demand in Latin America⁵

	Civilian small arms (1000s)	Civilian small arms* per 1000 people	GNI <i>per capita</i>**
Uruguay	900	367	7,690
Colombia	4,200	163	6,160
Brazil	20,1000	140	7,480
Venezuela	1,200	140	5,240
Argentina	4,100	126	10,380
Chile	1,400	108	9,440
Mexico	3,500	97	8,830

⁵ The number of small arms per 1000 people and total number of civilian small arms are averages of the high and low estimates from the following sources: Godnick, Muggah and Waszink (2002); Muggah (2005); Small Arms Survey Yearbook (2004). Gross national income (GNI) in international dollars is the most recent available (2002) from the World Bank's HNPStats website (available via <http://devdata.worldbank.org/hnpstats/>).

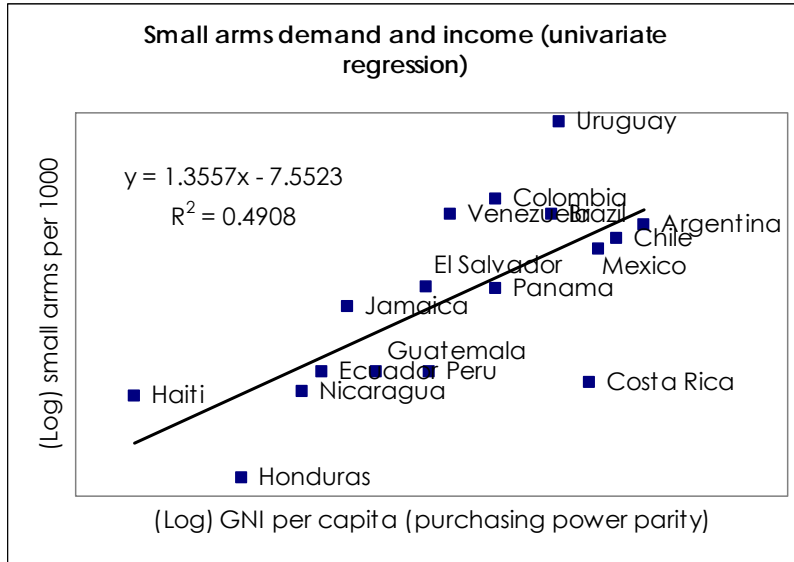
	Civilian small arms (1000s)	Civilian small arms* per 1000 people	GNI <i>per capita</i> **
El Salvador	400	65	4,820
Panama	193	64	6,150
Jamaica ⁶	80	53	3,670
Ecuador	200	27	3,350
Guatemala	295	27	4,040
Peru	500	27	4,880
Costa Rica	86	24	8,560
Nicaragua	105	22	3,130
Haiti	170	21	1,730
Honduras	55	9	2,530

For the sample of countries listed in Figure 2, the 'small arms per 1000' statistic is strongly and positively related to GNI *per capita* (see Figure 3).

This preliminary data would therefore tend to favor the 'means' component of small arms demand. But it also begs the question: Why might Haiti have a comparable level of small arms demand to that of Nicaragua, for example, in spite of the fact it has a GNI *per capita* of only a little over half that of the latter. Similarly, why is gun prevalence more than twice as high in Haiti as it is in Honduras, in spite of the fact that income is nearly 40 percent higher in the latter?

⁶ Note that Jamaica is technically not part of Latin America, but is included to augment the sample. None of the conclusions in the remainder of this paper are discernibly affected by its inclusion.

Figure 3: The relationship between small arms demand and income

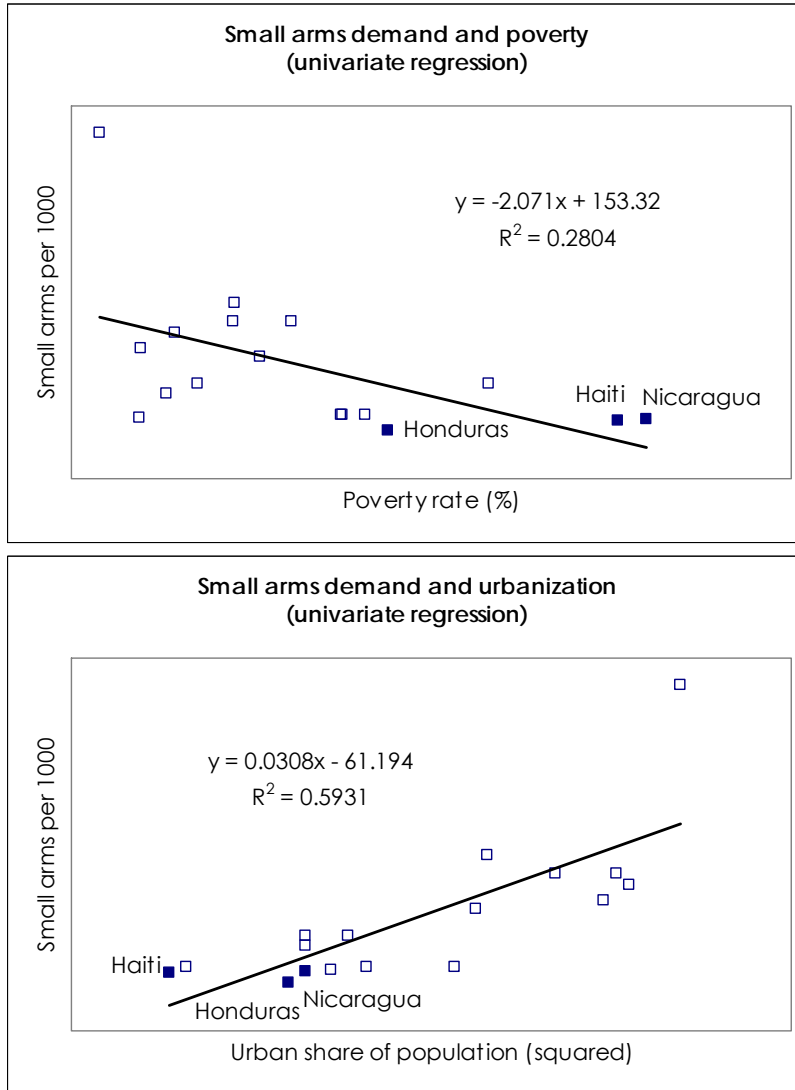


Since aggregate income is something of an economic catch-all, I decompose its effect on small arms demand into two possible means and motivations components. On the means side, I employ poverty rates from the World Bank, calculated as the share of the population living on less than US \$2 a day. If small arms demand has a fairly low point of satiation, beyond which buying an extra gun provides no real benefit, then poverty rates may be a more appropriate measure of the 'means' constraint which binds that demand. Poverty may also be a proxy for scarcity, and for the implications that scarcity might have on polarization (see Box 1). The motivation variable is the urban share of the population, which serves as a proxy for the erosion of social capital in urban centers, as well as for the spatial polarization that may be driving part of the urbanization process (see Box 2). Both poverty and urbanization are highly correlated with GNI, with correlation coefficients of -0.74 and 0.72 respectively. Consult Appendix I for a full list of the data for each of the seventeen countries in the sample.

Univariate regressions of 'small arms per 1000' on poverty and urbanization suggest that small arms demand in Haiti is higher than might be expected on the basis of either of these variables alone (see Figure 4). Given the strongly negative relationship between poverty and small arms demand, Haiti's widespread poverty

should be constraining demand more than is actually the case. Likewise, given the strongly positive relationship between urbanization and small arms demand, Haiti's relatively limited urbanization cannot be triggering all of the country's small arms demand. In comparison, Nicaraguan and Honduran small arms demand, appear to be more limited than what one might predict on the basis of urbanization alone.

Figure 4: The relationship between small arms demand and poverty and urbanization⁷



⁷ Urban population shares are the most recent available (2002) from the World Bank's HNPStats website (available via <http://devdata.worldbank.org/hnpstats/>). The poverty rates, defined as the percentage of households with income less than US \$2 a day, are the most recent available (various years) from the World Bank's PovertyNet website (available via <http://www.worldbank.org/>), except in the case of Haiti, for which data was obtained from Egset and Sletten (2004). For other sources, see the note to Figure 2.

One facile explanation to Haiti's "abnormally" high level of small arms demand might be that small arms are less expensive in Haiti, relative to other goods, because of greater supply. But given that Haiti does not have an active arms production capability, was under embargo for a number of years, and is no more accessible geographically than either Nicaragua or Honduras, this is an unsatisfactory answer. An equally facile though more accurate explanation is that Haiti is in a greater state of insecurity. But if one takes as given that there is less insecurity in Nicaragua and Honduras than in Haiti, on what does one base this conclusion? And what does one mean by insecurity? Does one mean active conflict? This line of argument would imply that small arms demand follows gun violence, instead of preceding it. Empirical analysis in the United States, however, suggests that the direction of causality goes from acquisition in time 't' to gun use in time 't+1', not from gun use in time 't' to self-defense in time 't+1' (Cook and Ludwig, 2000).

Alternatively, by insecurity does one mean some predictability of conflict? And if so, what is the basis on which one assesses this potential for conflict? Many questions are left unanswered by simply ascribing small arms demand to the existing state of insecurity in a given country. It is hoped that the economic model of polarization and rent-seeking elaborated in Part I of this paper will shed some light on these questions. Therefore, with the economic toolbox firm in hand, I undertake the remainder of the study with the objective of uncovering whether polarization and rent-seeking explain some portion of Haiti's unexplained demand for small arms. Throughout this analysis I will attempt to bring context to the discussion of polarization and rent-seeking in Haiti by drawing comparisons where possible to the cases of Nicaragua and Honduras.

Box 2: Urbanization and polarization

Urbanization has been used as a control variable in a number of studies on violent crime (see, for example, Kennedy et al., 1998). The reasons given for why urban areas might be particularly susceptible to gun crime are varied. For one, it is theorized that urbanization results in decreased social capital. According to Anderson (1990), a critical factor is the loss of the formal and informal networks that foster social cohesiveness. Moreover, the concentration of deprived groups in urban slums may create subcultures that value toughness, excitement, and fatalism (Blau and Blau, 1982).

Howard (1998, p. 8) insists that: "The context of endemic poverty is important for understanding recent turmoil, and observers are correct to look into class, corruption, and voodoo culture. (...) However, mob violence in the streets of Port-au-Prince and other major urban centers has disrupted national politics more than protest in rural communities, and it is important to understand how and why these urban slums formed." In the developed world, the process of urbanization has been driven by increases in agricultural productivity and commerce. In under-developed countries, environmental scarcity and ecological marginalization have been proposed as one possible reason for the trend (Homer-Dixon, 1999). Given the title of this paper, it should come as no surprise to the reader that I also submit that urbanization may be both a cause and a consequence of polarization and rent-seeking.

The incentive for rural dwellers to move to urban centers has been particularly strong in Haiti. Far removed from the capital—geographically, but mainly politically and economically—they have few opportunities to protect their interests in the decisions that are made there. Of the 4.8 million people living in rural areas, 80 percent are poor. Compare this to 45 percent in the metropolitan area and 57 percent in urban areas overall (Egset and Sletten, 2004). What is more, the poverty of households in rural areas cannot be attributed to characteristics such as the age, education or employment status of the main provider (Egset and Sletten, 2004). Under-five chronic malnutrition is 35 percent in rural areas, 30 percent in urban areas outside of Port-au-Prince, and 20 percent in the Port-au-Prince metropolitan area (World Bank, 1998). Similarly, childhood mortality is 144 deaths per 1,000 live births in rural areas, 135 in urban areas excluding Port-au-Prince,

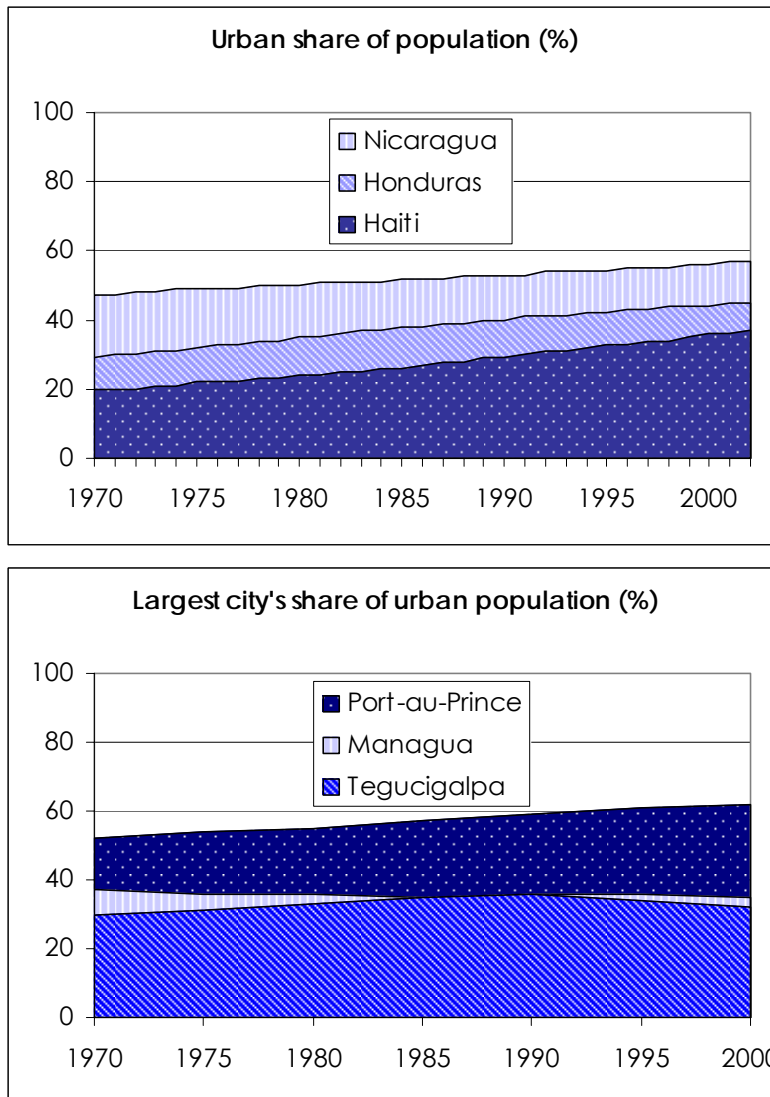
and 131 in Port-au-Prince (World Bank, 1998). The gap between urban and rural well-being is caused at least in part by the inequitable distribution of public resources, which favors urban areas. Access to improved sanitation and to clean water has always been highly spatially polarized. Public spending on education also demonstrates a clear urban bias; of the total 2.5 percent of gross domestic product spent by the government on education, for example, only 20 percent goes to the rural areas, where at least 60 to 70 percent of the population lives (World Bank, 1998).

Many poor Haitians blame the difficult conditions in rural areas for their decision to migrate to the cities.⁸ Estimates put at as many as 13,000 the number of people arriving every year from all regions of the country (Howard, 1998). In Haiti, urbanization has led to a drop in the rural population from 80 percent to about two-thirds in three decades. And though Haiti's urban population share still lags that of Nicaragua and Honduras, the process of urbanization is now faster and more concentrated in the former (see Figure 5).

Unemployed and impoverished rural migrants amass primarily in the *bidonvilles* in and around Port-au-Prince. The vertical linkages of fictive-kin and patron-client relationships that existed in the rural areas lose their relevance in an urban setting and other allegiances soon form to take their place. Howard (1998, pp. 7-8) explains that "(b)y the mid-1980s many of these people had organized groups based around small church parishes" and that "densely populated slums provided conditions for building solidarity between people with common grievances." Urbanization has also led to increasing stresses on the urban infrastructure: "rapid growth has strained local infrastructure and formed the political cauldron in which violent protests, strikes and riots have simmered." (Howard, p. 8) A Haitian I spoke to recounted how in the span of six years, electricity availability in the capital had gone from eight hours a day to under one (Author's interview, Montréal). There can be no doubt that decrepit conditions in the cities have engendered resentment of the entrenched classes to the new arrivals, and vice versa. Urbanization also introduces the geographical proximity that makes any threat to one's interests all the more salient.

⁸ "Enquete sur les Conditions de Vie en Haïti", Institut Haïtien de Statistique et d'Informatique, summary statistics available via <http://haiticci.undg.org>.

Figure 5: Urbanization in Haiti, Honduras and Nicaragua⁹



⁹ Urban share of population and largest city's share of urban population are the latest available data (2000, 2002) from the World Bank's HNPStats website (available via <http://devdata.worldbank.org/hnpstats/>).

The measurement of polarization and rent-seeking

In this section, I propose specific variables on which to base the measurement of polarization and rent-seeking. These variables are used in a comparison of Haiti to Nicaragua and Honduras, and later, in a more general analysis of seventeen Latin American countries. It turns out that ethnicity and the cost of starting a business are strong indicators of the type of polarization and rent-seeking that may lead to small arms demand.

Ethnic polarization and political rent-seeking

Ethnicity has been the focus of much of the economic literature on civil wars (see, for example, Reynal-Querol, 2001; Collier, 2001). It is therefore a good place to start in our analysis of the role of polarization in small arms demand. Ethnicity, following Horowitz (1985), can be broadly defined to include skin color, religion, language or any other attribute of common origin. At first glance, Haiti does not appear to be particularly polarized in terms of ethnicity, and certainly not any more ethnically polarized than either Nicaragua or Honduras. With a 95 percent black population, Haiti is racially quite homogenous. Still, both Nicaraguans and Hondurans are more united by language than are Haitians. For each of these countries, polarization indices are calculated on the basis of racial, religious and linguistic population shares, and provided in Figure 6.

Nonetheless, the below data from the CIA World Factbook omits one important characteristic of the ethnic polarization of Haitian society, as many superficial analyses tend to do. It is important to acknowledge that roughly half of all Haitians practice Vodou alongside Christianity. In spite of this prevalence and in spite of the fact that animist traditions have existed in Haiti since the importation of African slaves, Vodou was only recognized as a religion by the government in April of 2003. This 'oversight' indicates that those practicing Vodou have neither the political nor economic clout to protect their interests, and constitute what is referred to in Creole as the *moun andeyo*. For these outsiders "Vodou is a way of life that provides them a haven from the harsh realities of poverty and powerlessness" (Fatton, 2002, p. 54). If, in fact, polarization is determined by animist versus non-animist beliefs, then Haiti is a highly polarized society, with a maximum polarization index of 100.

Figure 6: Ethnic polarization by race, religion and language¹⁰

	Races	PI*	Religions	PI*	Languages	PI*
Haiti	black 95%, mulatto and white 5%	19	Roman Catholic 80%, Protestant 16%, none 1%, other 3%	56	French 10%, Creole 90%	36
Honduras	mestizo 90%, Amerindian 7%, black 2%, white 1%	34	Roman Catholic 97% Protestant 3%	12	Spanish	0
Nicaragua	mestizo 69%, white 17%, black 9%, Amerindian 5%	73	Roman Catholic 85% Protestant 15%	51	Spanish	0

Note: PI = Polarization Index

Obviously, one cannot conclude that arms demand in Haiti is driven by ethnic hatred—of animists by the Christians, or vice versa. Ethnic groups are, after all, more fluid than religious doctrine or even skin color might seem to allow. Stewart (2001) is of the opinion that in wars “political leaders may deliberately ‘rework historical memories’ to engender or strengthen this identity in the competition for power and resources.” Fatton (2002, p. 55) invokes the Haitian Creole proverb “*Neg riche sé mulat, mulat pov sé noua*” (a rich black is a mulatto, a poor mulatto is a black) to illustrate that ethnic divisions are often motivated by economics. He insists that “the line that divides Haitians most (...) is not colour but class” and that ethnicity has only been exploited by both the mulatto and black elites to hide their own contempt for the poor black majority (Fatton, 2002, pp. 53, 55). Elsewhere, Weiss (2003) has remarked that “Ethnicity is just another dividing line used by those in power to perpetuate conflicts for political and economic

¹⁰ Race, religion and language population shares were obtained from the Central Intelligence Agency (CIA) World Factbook (available via <http://www.cia.gov/cia/publications/factbook/>). Polarization indices were calculated using the formula from Part I of this paper, multiplied by 100 to obtain the indexed value.

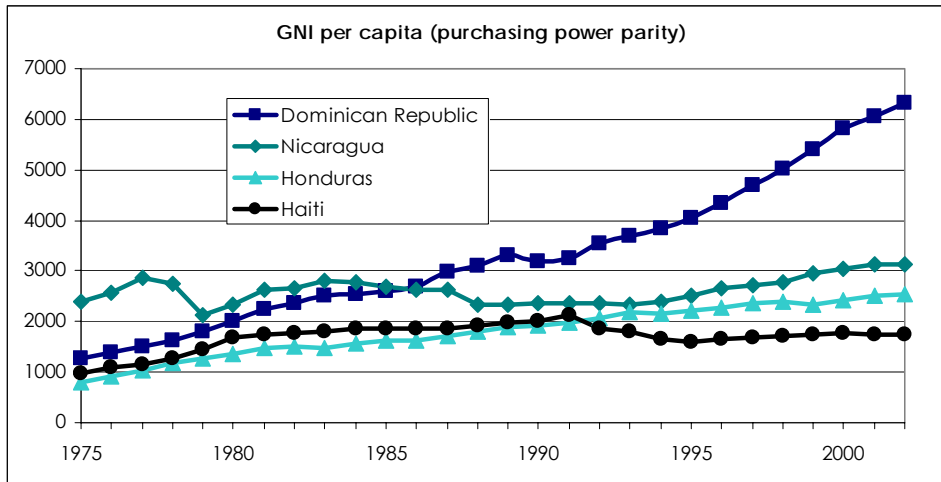
gain. (...) The rise of civil tension usually stems from economic, social and political grievances with no other outlet. Extreme poverty, competition for resources, political power brokering, and other factors make disenfranchised groups (whether ethnicity-based, age-based or other) easy prey for those seeking to build their own militias or crime syndicates." Whether real or constructed, this ethnic division may nonetheless serve as a signal of the potential for conflict, and thereby lead to small arms demand even if such divisions are initially fairly innocuous.

For the empirical tests that follow, I calculated the ethnic polarization variable for a sample of seventeen Latin American countries as the maximum of racial and religious polarization. I justify the use of the maximum as opposed to the average, for example, by the belief that ethnicity is often little more than a tool of political manipulation. In this sense, it makes sense to look at the largest possible divisions liable to exploitation by those in power, and to consider ethnic polarization, in particular, as the maximum potential level of political rent-seeking in a given society. For economic rent-seeking, I will now propose another measure.

The cost of starting a business and economic rent-seeking

I have already theorized in this paper that polarization and rent-seeking deflect human and physical capital away from productive endeavors. They may also increase transaction costs between economic agents by decreasing trust and other forms of social capital. Indeed, Garcia-Montalvo and Reynal-Querol (2003) have proven empirically that religious polarization has negative effects on economic development. Rent-seeking has certainly not been without economic consequence in Haiti. While much of the Americas prospered, Haitian GNI *per capita*, expressed in international dollars, has remained unchanged since the early 1980s (see Figure 7). In this respect, Nicaragua and Honduras have fared somewhat better.

Figure 7: GNI per capita over time for Haiti and selected countries¹¹



Of course, not all of Haiti's economic ills can be attributed to polarization and rent-seeking; Haiti has also been geographically susceptible to hurricanes, flooding and environmental scarcities. But even with regards to these scarcities, it is mostly Haiti's polarized politics and tendency for rent extraction that has left it unable to apply the 'ingenuity' needed, to employ a term from Homer-Dixon (2000), to address the 'acts of god'. Compare economic performance in Haiti to that of its neighbor, the Dominican Republic, which shares similar environmental conditions. While the latter has had some of the highest growth rates in the Western Hemisphere over the last decade, Haiti has stagnated.

Note that there are a number of years in which growth in Haiti was negative—most notably in 1992, when GNI *per capita* fell 13 percent. In an economy of zero or negative growth, self-enrichment can only occur through redistribution from another segment of the population. A subtle but particularly pernicious source of rents for Haiti's entrenched economic elite is the high barrier to entry that keeps formal commercial activities strongly monopolistic. Haitian entrepreneurs can expect to go through 12

¹¹ Gross National Income (GNI) in international dollars derived by purchasing power parity (PPP) exchange rates, available from the World Bank's HNPStats website (<http://devdata.worldbank.org/hnpstats/>).

steps, wait 203 days and expend 153.1 percent of GNI *per capita* in order to launch a business.¹² Furthermore, they must deposit at least 155 percent of GNI *per capita* in a bank for the simple privilege of obtaining a business registration number. The cost of borrowing for small businesses is equally exorbitant. One Haitian put it to me this way: "It reached the point that in order to secure a loan of 10,000 gourdes, you would have to provide the banker with a guarantee of 10,000 gourdes." (Author's interview, Montréal) Overall, the situation in Honduras and Nicaragua is noticeably less antagonistic toward new business ventures (see Figure 8). The World Bank's *Doing Business Report* describes it thus: "Economies differ significantly in the way they regulate the entry of new businesses. Some have a straightforward and affordable process. Others have procedures that are so burdensome that entrepreneurs have to bribe officials to speed up the process or they opt to run their business informally."¹³

Figure 8: The cost of starting a business¹⁴

	Number of procedures	Time (days)	Cost of launch ^a	Minimum capital requirement
Haiti	12	203	153.1	155
Honduras	13	62	64.1	34.1
Nicaragua	8	42	139.1	0

Note: ^a percent of GNI *per capita*

Start up costs and minimal capital requirements pose a grave and largely unnecessary impediment to enterprising but poor Haitians in their efforts to better their economic situation, particularly when credit markets are not efficient. Howard (1998, p. 23) writes that "(l)ike other growing Latin American cities, most of the new migrants (to Port-au-Prince) became entrepreneurs because they were excluded from the few formal employment opportunities by urban dwellers who feared competition." As a consequence, 80 to

¹² World Bank's (2005) *Doing Business Report* (available via <http://www.doingbusiness.org/>).

¹³ World Bank's (2005) *Doing Business Report* (available via <http://www.doingbusiness.org/>).

¹⁴ Data on the cost of starting a business was obtained from the World Bank's (2005) *Doing Business Report* (available via <http://www.doingbusiness.org/>)

90 percent of the city's inhabitants are engaged in the informal sector, comprising at least two-thirds of goods and services exchanged (Howard, 1998; World Bank, 1998). Unfortunately, even the most enterprising Haitians earn less in the informal sector and are much more likely to suffer from poverty than those in the formal sector (Egset and Sletten, 2004). Clearly, the consequences of lower wages on the incidence of youth crime in particular are quite clear (Grogger, 1997).

In the empirical work that follows, I employ start-up costs as proxies for the extent of rent-seeking by the economic elites in a sample of Latin American countries. Having therefore proposed two specific measures of political and economic rent-seeking, I will now attempt to test whether the theory linking polarization, rent-seeking and small arms demand plays out in the data.

The 'means and motivations' of small arms demand in Latin America

Figure 9 provides summary statistics for a cross-section of Latin American countries of data on possible means and motivations for small arms demand. Complete data is provided in Appendix I, and a cross-correlation table in Appendix II.

Figure 9: Explanatory variables for small arms demand in Latin America¹⁵

	Civilian small arms per 1000 people	Poverty rate (in percent)	Urban population share (in percent)	Ethnic polarization index	Costs of starting a business (% of GNI per capita)	Income inequality index	Homicides per 100,000 people	Avg. cocaine seizures (1000s kg)
Mean	87.1	32.0	67.5	72.6	47.1	54.0	19	11.7
Median	64	26.3	64	77	25.3	55	12	4
Standard Deviation	87.8	22.5	16.6	21.9	46.2	5.3	21	24.1
Minimum	9	3.9	37	28	8.3	44.6	0.2	0
Maximum	367	79.9	92	100	153.1	65	85	102
Count	17	17	17	17	17	17	17	17

The variables listed in the Figure 9 are largely the same as those employed in a regression of small arms demand, the results of which are provided in Figure 10. The means component is given by the poverty rate, according to World Bank data and the standard US \$2 a day measure. The motivations variables are ethnic polarization and the cost of starting a business. I also include urbanization to control for social capital.¹⁶ The Gini index controls

¹⁵ Sources for small arms per 1000, poverty rate, urban population share, ethnic polarization and cost of starting a business are as in Figures 1, 4 and 6. The homicide rate is the latest available data (various years) from the Pan American Health Organization Regional Core Health Data Initiative (available via <http://www.paho.org>). Cocaine seizures (in 1000s of kilograms) are six-years average (1998-2003) obtained from the United Nations Office for Drugs and Crime *2005 World Drug Report* (available via <http://www.unodc.org/>).

¹⁶ Note that in the regression I employ the square of the urban population share to reflect non-linearity in the relationship. That is, the effects of urbanization on social capital become progressively worse as urbanization increases. Note also that the urbanization

for income inequality and provides a counterpoint to the theory of polarization and rent-seeking.¹⁷

Finally, to test how small arms demand responds to the existing level of crime, I employ an instrumented homicide rate. The modified variable is intended to capture the effects of insecurity on small arms demand, while minimizing the feedback effect of small arms prevalence on the homicide rate. In other words, it is designed to distinguish cause from consequence. The instrument employed is a six-year average of cocaine seizures in kilograms. The assumption is that the illegal drug trade, and the probability of seizure in particular, leads to highly armed criminal elements, an increased homicide rate and decreased overall security, but that the extent of this trade is itself determined by geography and not by the number of small arms in that country. I regress regular homicide rates on cocaine seizures, and use the obtained predicted values to construct the instrumented homicide variable.¹⁸

variable may also control for rural-based small arms demand attributable to hunting.

¹⁷ Note that there is no variable for the price of small arms. Due to limited data availability, I assume that the countries under analysis are small enough in terms of the world arms market such that the price of small arms is exogenous and unrelated to any of the other variables included in the regression. In the case of Haiti, this assumption seems quite reasonable. It is reassuring to note that even in Brazil, the number of small arms in circulation represents only 3.6 percent of Small Arms Survey's (2001) world total estimate. In any case, prices reflect choices regarding quality and age, which the small arms numbers themselves do not capture, leading me to conclude that, even if available, price measures would be very noisy.

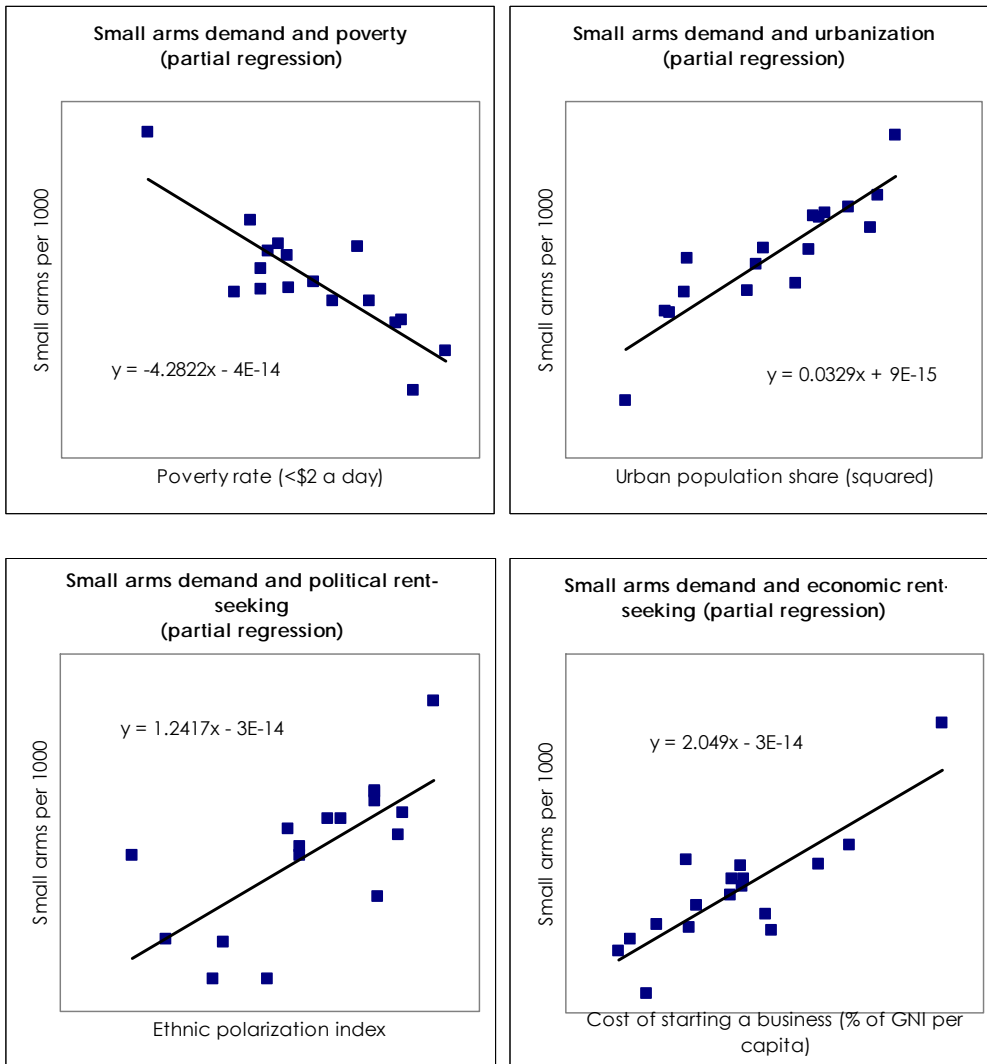
¹⁸ The cocaine seizure and homicide rate are highly correlated (0.82). The R-squared for this univariate regression is 0.64, and the coefficient is both positive and highly significant. Including the other variables alongside cocaine seizures as instruments for the homicide rate has no important impact on the final regression results, except to make the coefficient on the homicide (instrument) even less significant.

Figure 10: Multivariate regression results for small arms demand

	Coefficient	t-stat	p-value
Intercept	-151.097	-1.255	0.238
Poverty rate (%)	-4.282	-4.705	0.001
Urban population share (squared)	0.033	6.195	0.000
Ethnic polarization index	1.242	3.071	0.012
Cost of starting a business (% of GNI per capita)	2.049	4.835	0.001
Income inequality index	0.154	0.077	0.940
Homicides per 100,000 people (instrumented)	0.907	1.422	0.186
Number of observations	17		
R-squared	0.91		
Adjusted R-squared	0.85		

The data suggests that with only the six above variables, we can explain approximately 90 percent of the variation in small arms demand amongst the countries considered. Given the small sample size, conclusions can only be made cautiously. Nonetheless, it appears that higher ethnic polarization and a higher cost of starting a business do significantly elevate small arms demand. The poverty and urbanization variables also appear to have important, though countervailing, implications for small arms demand; increased poverty lowers small arms demand while increased urbanization raises it. Figure 11 charts the relationships between each of these four significant variables and small arms demand, maintaining all other variables constant.

Figure 11: The relationship between small arms demand and poverty, urbanization, ethnic polarization and the cost of starting a business



Income inequality does not seem to have any impact on the level of small arms demand. In light of the highly significant role of the cost of starting a business, one might postulate that it is not the inequality of the present so much as unequal access to the economic opportunities of the future that drives small arms demand. In other words, it seems that in order to reduce small

arms demand it is more important to tackle opportunity inequality than it is to eradicate income inequality.¹⁹

The result for the homicide rate is less conclusive; it appears to be only weakly (positively) related to small arms demand. This result may not hold in an analysis of small arms usage. It is sufficient for the purposes of this paper, however, to recognize that the inclusion (or not) of this and other alternative variables had no real impact on the coefficients related to poverty, urbanization or polarization and rent-seeking in particular.²⁰

Consider what Haitian small arms demand might be if the country were more similar to its neighbors in terms of the six regression variables. Figure 12 details how the 'small arms per 1000' statistic in Haiti would change if, *ceteris paribus*, each of the respective variables fell or rose to the Latin American average.

¹⁹ To test the robustness of these results, I examined alternative specifications with alternative proxies for the most contentious variable: I replaced cost of starting a business with minimum capital requirements (also available from the World Bank's (2005) *Doing Business Report*), and with the Transparency International Corruption Perceptions index (available via <http://www.transparency.org/>). I even enlarged the sample size by including data from a high income country, Canada. In all cases, the qualitative results remain the same. In particular, the coefficients on the polarization and rent-seeking variables are positive and statistically significant in all cases.

²⁰ To test the robustness of the result for the security proxy (homicide rate), I employed the Economist Intelligence Unit security risk index, the homicide rate proper (without the cocaine seizures variable), and the number of years (post-1946) since the last armed conflict, based on data from Gleditsch et al. (2002).

Figure 12: Scenario analysis of Haitian small arms demand

Scenario		Increase (decrease) in number of civilian small arms per 1000 people
↓ Poverty rate	to the Latin American average	188
↑ Urban population share		113
↓ Ethnic polarization index		(34)
↓ Cost of starting a business		(217)
↓ Income inequality index		(2)
↓ Homicide rate		(12)

What are the policy implications of these results? Certainly, one cannot reasonably conclude that in order to control small arms demand in Haiti, one should maintain a high poverty rate such that small arms remain unaffordable to the average civilian. Fortunately, there exist other policy levers to curb small arms demand. Given the results on urbanization, which is a consequence of policy but not an instrument in itself, one might want to adopt policies that improve the situation in rural areas, such that there is less incentive to migrate to Port-au-Prince. This will require better water and sanitation services, schools, hospitals, and micro-credit programs in the secondary cities.

Ethnicity is typically regarded as a given and immutable trait. Nonetheless, attempts can be made to bridge the ethnic divide in Haiti by ensuring that otherwise innocuous differences are not exploited by political rent-seekers for their own advantage. Legalization of the Vodou religion in 2003 was a step forward in reducing ethno-religious discrimination. In a country where only a small fraction of the population can read, Haitian radio is a tool, which should be fully exploited to foster dialogue between the ethno-linguistic groups and facilitate good political governance. Results from Reynal-Querol (2001) suggest that consociational democracies, with consensual multi-ethnic power sharing as opposed to majority rule, are best equipped to overcome the potential for ethnic conflict. Proportional representation in the police force, in civil service, and in other national and civic segments of society appears to be of particular importance.

The most promising area of change, however, is in mitigating the opportunities for economic rent-seeking. Figure 13 suggests that if Haiti lowered the cost of starting a business to the Latin American average then, holding all else constant, small arms demand would decline by 217 small arms per 1000 citizens. Obviously, this number is indicative only, since Haitian small arms demand 'only' stands at 21 small arms per 1000 and because, in the real world, variables do not move independently of one another. One might expect, for example, that the poverty rate would decline parallel to the drop in the cost of doing business. Nonetheless, the direction and relative importance of a decline in the cost of starting a business relative to the other variables is quite clear. If these costs cannot be directly reduced through changes to Haiti's economic governance structures, micro-credit initiatives from donor countries would help enterprising Haitians overcome some of the barriers to entry in the formal economy.

Naturally, no business start-up will flourish in a state of persistent insecurity. It is for this reason primarily that the presence of peacekeeping troops is so important in Haiti, as are continued disarmament efforts. At the same time, however, the basic premise of this paper is that even well executed peacekeeping and disarmament programs cannot impose security in the long-term. These supply-side tactics may in fact best serve as counter-signals to polarization and rent-seeking, coordinating amongst economic agents to resolve the negative externalities associated with small arms demand, by minimizing any self-fulfilling perceptions of the potential for violent conflict. Ultimately, however, the underlying demand-side problems of polarization and rent-seeking must be addressed, lest this counter-signal lose its credibility.

Disarmament initiatives that address small arms demand will necessarily be developmental in nature. Indeed, international development agencies are beginning to emphasize "a unified approach that includes controlling both the supply and demand for small arms" (Quaker United Nations Office, 2005, p. 7). In the final section of this paper, I will elaborate how disarmament and development issues are intertwined, though not of the same root. Given the proven role of polarization in breeding a climate of both conflict and underdevelopment, it provides, I think, the proper theoretical framework in which to analyze and tackle the security-development nexus. I will conclude with some thoughts on "development for depolarization and disarmament", and on how

it may create not just group-wide, but cross-group incentives for economic cooperation.

Development for depolarization and disarmament

Haiti clearly suffers from both insecurity and underdevelopment, which are obviously inextricably linked—the current truism in the field is that you cannot have development without security, and you cannot have security without development (United Nations, 2004). One such linkage occurs through polarization and the associated rent-seeking behaviors that lead both to small arms demand and to an inefficient use of resources. But contrary to the conventional wisdom, the fact that they are linked does not imply that their solutions are the same. As pointed out by Brauer and Muggah (2004), development success may raise small arms demand by increasing the resources available to spend on them. In fact, development can also contribute to small arms demand and insecurity by ignoring the effects that economic growth may have on polarization and rent-seeking. In the latest Small Arms Survey (2005, p. 277), one reads that “misguided, rapid, or uneven development can itself fuel insecurity and armed violence.” Examples of the unintended ill effects of development initiatives in Haiti abound:

- Food aid, administered through bureaucratic decision-making instead of being channeled through markets, has resulted in market distortions that have lowered food prices and disadvantaged the rural population to the benefit of the urban population, contributing to spatial polarization and urbanization (World Bank, 1998).
- Infrastructure projects financed from the considerable aid Haiti received in the mid-1990s have been directed in large part at low return activities in inefficient public enterprises, with little or no impact on economic growth save for the creation of greater opportunities for rent-seeking (World Bank, 2002).
- Foreign direct investment, via the Caribbean Basin Initiative in the 1980s for example, has occurred almost exclusively in Port-au-Prince and has advantaged primarily the urban economic elite (Howard, 1998).

More generally:

- Advances in education and literacy, without concomitant increases in employment opportunities, may only force greater numbers of people to use their newfound and otherwise underexploited skills in the pursuit of both legal and illegal rents.
- Privatization of state assets in nations lacking clean and effective political and economic governance structures may result in the enrichment of the privileged business elite and in increasing—not decreasing—monopoly rents.

Still, there is some justification for cautious optimism about the prospects for development and security in Haiti. Though its resource scarcity is broad and deep, Haiti is close to extensive North American markets, has some of the lowest labor costs in the Western hemisphere, a relatively prosperous Haitian Diaspora, and its foreign debt is small and manageable. One often-cited possibility is the development of a tourism industry. At the end of the 1980s, long before the most recent resurgence of violence, Haiti was receiving nearly 300,000 tourists a year and nearly US \$70 million in revenue (Howard, 1998). The Dominican Republic stands as an example of the tourism potential of Haiti's remaining coral reefs and mangrove forests; in 2004, it received 3.5 million visitors and collected US \$1.4 billion in tourism revenues.²¹

The development of a tourism industry of benefit to all Haitians would also certainly provide an incentive for disarmament; tourism, as a peace industry, is particularly susceptible to insecurity. It is critical, however, that it be of benefit to all Haitians if it is to provide a counter-signal to polarization, a counter-incentive to rent-seeking, and an alternative to small arms demand. Linking the erstwhile divergent interests and incentives of groups would require that ownership of this industry be widespread. Ownership rights over the proceeds of a Haitian tourism industry could be vested over a long-term schedule and given to female heads of households as a one-time endowment. Haitian entrepreneurs could use these rights as guarantees for loans. A yearly US \$4 billion industry comparable to that of the Dominican Republic would provide additional revenue of some US \$824 a year to Haiti's 1.7 million households, or almost double GNI *per capita* in 2004.

²¹ World Tourism Organization's *Tourism Highlights 2004*, available via www.world-tourism.org/facts/menu.html.

Whatever the development approach taken, it should not suppress the informal economy, which has long been the engine of development in Haiti. Haiti's competitive informal sector continues to offer a diverse range of goods and services with high efficiency and at a low price. The informal economy should be allowed to slowly formalize with the increased economic freedom of Haiti's entrepreneurs, critical to development and disarmament alike. The prohibitive cost of starting a business must be addressed. Especially now, at the close of this International Year of Micro-credit, there should be renewed focus on micro-enterprise lending initiatives in the non-metropolitan areas of Haiti, designed at the community level so that they create aligned, inter-group incentives for cooperation.

Summary and conclusion

This paper endeavored to provide a rational account of small arms demand, based on economic concepts of polarization and rent-seeking. Group polarization was posited as a signal of the potential for social conflict, and group rent-seeking as a partial response to that potential. It was hypothesized that in a society where the monopoly of power of the state is incomplete and access to political and economic rent-seeking unevenly distributed, small arms demand completes the response to that same potential. Conflict need never actually break out and the groups need never exist formally in order for small arms demand to occur. In this sense, the perception of conflict can be self-fulfilling. Polarization, rent-seeking and small arms demand all lead to an erosion of social capital and create an environment in which rebel and common criminal commingle.

After having developed a theory of small arms demand, this paper sought to provide supporting evidence from a case study of Haiti. The country's long history of polarization and rent-seeking began with colonialism and continues today with predatory democracy. The Haitian case study was augmented by comparisons with selected neighboring countries and, finally, by an econometric study of small arms demand across seventeen countries in Latin America.

The primary empirical findings from the econometric analysis support the theory that polarization and rent-seeking contribute to small arms demand. In particular, ethnic polarization serves as a good indicator of the political rent-seeking of the political elite, and the cost of starting a business performs well as a measure of the economic rent-seeking of the economic elite. Poverty and urbanization also contribute to small arms demand, although the former lowers it while the latter raises it. Income inequality of the present is not shown to have any effect on small arms demand, suggesting that 'opportunity inequality', leading to continued income inequality in the future, is a more important determinant. Once all the other variables are controlled for, the existing level of insecurity, given by the homicide rate, cannot be conclusively proven to cause small arms demand, though tautologically it is a consequence of it.

The results obtained in this paper have specific implications for both disarmament and development initiatives in Haiti, Latin America and beyond. The essence of the security-development nexus is that disarmament and development objectives must be

planned in concert. This paper suggests that security and development can both be pursued coherently and consistently by instituting programs that tackle polarization and rent-seeking. To put it more soberly, development initiatives that ignore the polarization and rent-seeking characteristics of the countries in which they intervene risk contributing to small arms demand, fostering insecurity and going against that most sound of tenets from the medical field: *primum non nocere*—first, do no harm.

Appendix I: Data for regression variables

	Civilian small arms per 1000 people	Poverty rate (%)	Urban population share (%)	Ethnic polarization index	Cost of starting a business (% of GNI per capita)	Income inequality index	Homicides per 100,000	Avg. cocaine seizures (1000s kg.)
Argentina	126	14.3	88	28	13.4	52.2	7.0	2
Brazil	140	22.4	82	92	10.1	59	31.0	8
Chile	108	9.6	86	39	10.3	57.1	5.3	3
Colombia	163	22.6	76	77	25.3	57.6	84.6	102
Costa Rica	24	9.5	60	63	23.8	46.5	6.2	4
Ecuador	27	40.8	64	80	38.1	56.2	15.7	8
El Salvador	65	58	62	56	118	53.2	43.4	1
Guatemala	27	37.4	40	97	58.4	58.3	23.1	6
Haiti	21	76	37	100	153.1	65	18.6	1
Honduras	9	44	55	34	64.1	55	9.4	2
Jamaica	53	13.3	57	90	8.3	52	0.2	2
Mexico	97	26.3	75	86	15.6	54.6	11.1	24
Nicaragua	22	79.9	57	73	139.1	55.9	12.3	2
Panama	64	17.6	57	70	24.8	56.4	13.7	6
Peru	27	37.7	73	87	38	49.4	4.5	11
Uruguay	367	3.9	92	86	43.9	44.6	5.2	0
Venezuela	140	30.6	87	77	15.7	45.8	32.4	17

Sources: The number of civilians small arms per 1000 people and total number of civilian small arms are averages of the high and low estimates from the following sources: Godnick, Muggah and Waszink (2002); Small Arms Survey Yearbook (2004) and Muggah (2005). The poverty rates, defined as the percentage of households with income less than US \$2 a day, are the most recent available (various years) from the World Bank's PovertyNet website (available via <http://www.worldbank.org/>), except in the case of Haiti, for which data was obtained from Egset and Sletten (2004). Urban population shares are the most recent available (2002) from the World Bank's HNPStats website (available via <http://devdata.worldbank.org/hnpstats/>). Race, religion and language population shares were obtained from the Central Intelligence Agency (CIA) World Factbook (available via <http://www.cia.gov/cia/publications/factbook/>). Polarization indices were calculated using the formula from Part I of this paper. Data on the cost of starting a business as a percentage of per capita income was obtained from the World Bank's (2005) Doing Business Report (available via <http://www.doingbusiness.org/>). The homicide rate (per 100,000 people) is the latest available data (various years) from the Pan American Health Organization Regional Core Health Data Initiative (available via <http://www.paho.org>). Cocaine seizures (in 1000s of kilograms) are six-years average (1998-2003) obtained from the United Nations Office for Drugs and Crime 2005 World Drug Report (available via <http://www.unodc.org/>).

Appendix II: Cross-correlation matrix for regression variables

	1. Civilian small arms	2. Poverty rate	3. Urban population share	4. Ethnic polarization index	5. Cost of starting a business	6. Income inequality index	7. Homicides	8. Avg. cocaine seizures
1. Civilian small arms per 1000 people	1.00							
2. Poverty rate (%)	-0.53	1.00						
3. Urban population share (%)	0.77	-0.59	1.00					
4. Ethnic polarization index	0.06	0.18	-0.26	1.00				
5. Cost of starting a business (% of GNI per capita)	-0.32	0.90	-0.57	0.13	1.00			
6. Income inequality index	-0.41	0.48	-0.50	0.16	0.39	1.00		
7. Homicides per 100,000 people	0.16	0.14	0.05	0.13	0.08	0.26	1.00	
8. Avg. cocaine seizures (1000s kg.)	0.21	-0.13	0.17	0.13	-0.22	0.13	0.82	1.00

Sources: See Appendix I.

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