Completing the Circle: Building a Theory of Small Arms Demand

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Abstract: This paper presents a theory of small arms demand and provides initial evidence from on-going case studies in the Solomon Islands, Papua New Guinea, South Africa, and Brazil.

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INTRODUCTION

This paper presents a general theory on the demand for small arms and light weapons (small arms, for short) and provides initial evidence drawn from case studies in the Solomon Islands, Papua New Guinea, South Africa, and Brazil.[1] Although the two are of course related, our central concern is with the factors that influence the acquisition, rather than the (ab)use, of arms.[2] The aim is to elaborate a comprehensive research agenda on small arms demand. By examining the demand for small arms, we contribute to an analytical understanding of the "inputs" (causes) of armed violence that result in victims (the "output," or consequences). Such understanding, combined with data derived from fieldwork, is important for the design of effective interventions to prevent armed violence and victimization occurring in the first place.

The paper proceeds as follows. Section 1 briefly presents our rationale for initiating a demand-side approach to the small arms issue. Section 2 lays out a multi-disciplinary, general theory of demand for small arms. Section 3 discusses social science contributions to the general theory of demand, and section 4 presents initial evidence from four field research-based case studies. Section 5 summarizes and concludes this paper.

1. RATIONALE

Much research, writing, and policymaking has been devoted to generating awareness of, and responses to, the supply side of the small arms market, such as export-control regimes, weapon registries, and arms and ammunition marking and tracing.[3] It is hoped that by regulating the international and regional supply of small arms, and by preventing or tracking illegal flows that drift into open markets, arms acquisition and hence armed violence can be reduced.

Yet, a growing cadre of academics, practitioners, and policymakers question the emphasis on the supply side and seek to examine and understand factors that drive the demand side.[4] For example, both the United Nations *Program of Action* (UNPoA) and the then-Organization of African Unity's *Bamako Declaration* refer to a number of areas where demand reduction can be pursued. While proposed interventions are vague and often amount to keeping the *status quo*, they conclude that the promotion of security, conflict prevention and resolution, crime prevention, and the promotion of health and development can reduce people's desire to acquire (and ultimately use) small arms.[5] Although a discussion on small arms demand is thus launched, the majority of the policy recommendations emerging from these and other texts continue to advance predominantly supply-side oriented approaches to arms control.[6]

A more convincing articulation of the demand perspective is emerging from among those not directly concerned with international arms control and

disarmament. For example, development agencies such as the United Nations Development Program (UNDP), the United Nations Children's Fund (UNICEF), the World Health Organization (WHO), World Vision, and Oxfam-UK have long been concerned with armed violence and its causes and consequences for their work. As part of their overall poverty-reduction strategies these agencies have begun to explore aspects associated with small arms acquisition. Many have launched projects designed to reduce the supply and demand for small arms,[7] and efforts to refine the demand perspective are appearing (Atwood and Buchanan, 2003).

While policymakers – at the insistence (and persistence) of relief and development groups – are gradually recognizing the need for more focused research on demand, the research community lags behind. With notable exceptions, current research on demand is theoretically disparate.[8] Practice has led theory. Even where research is undertaken, it is frequently imbued with normative and bureaucratic interests that encourage a prescriptive (as opposed to an empirical) approach to arms control. Such research variously emphasizes people-centered approaches to promoting security (Hubert, 2001), the rights of children (McIntyre and Weiss, 2003), human development (Muggah and Batchelor, 2002), and the implementation of the UNPoA (Regehr and Gebrewold, 2003) but usually without evidence-based analysis of individuals' motivations and means and of the institutional and structural conditions that shape demand to begin with. What is required is robust theory that lends itself to operational research needs. This would combine the growing interest of the relevant communities of practitioners with the focused disciplinary approaches and methods advanced by social scientists exploring armed violence more generally. By putting forward such a research framework here, this paper contributes to our understanding of small arms acquisition and abuse.

2. BUILDING A THEORY OF SMALL ARMS DEMAND

Motivations and means

Demand is a function of *motivations* and *means*, either of which can serve as inhibitors (lack of motivation, lack of means) or as stimulators. Instead of the phrase "motivations and means," one might think of "willingness and ability," or similar word pairs.

While small arms demand is ultimately expressed at the individual level – an individual person actually acquires a firearm even if on behalf or at the direction of others – the motivation for acquisition is at least partly "socially constructed and embedded in various social practices and cultural forms" (Cock, 1997, p. 77).[9] This motivation or willingness aspect 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 that person's world. This complex of factors might be called

"subjective" or "intrinsic" inasmuch as they are internal to a person's decision making, a process that may (or may not) lead to arms acquisition.

Importantly, motivations can stimulate as well as constrain the demand for small arms acquisition. Just as there are culturally and socially mediated preferences for firearm acquisition, possession, carrying, and use, so there are mediated preferences for non-acquisition, non-possession, non-carrying, and non-use (see for example the case of the Solomon Islands later on in this paper). Field-based research must be open-minded to explore the motivations gradient (from low to high) as it exists in a particular community at a particular point in time, as well as be perceptive to changes in this gradient over time and from one location to another. Useful contributions to explore small arms acquisition (or non-acquisition) motivations can be made by anthropologists, criminologists, psychologists, sociologists, and others.

As to the means, a similarly flexible framework applies. By means we mean resources and prices. Resources include monetary resources such as credit, grants, earned income from work, and income drawn from the investment in, or depletion, of financial or physical assets. Non-monetary resources include, but are not limited to, a person or group's drive, inventiveness, organizational and social capacity, and networks that make arms acquisition possible or impossible. Prices directly influence the purchasing power of one's resources. Higher prices reduce purchasing power; lower prices increase it. Prices are thus handily packaged within the means rubric. Means, especially if expressible in monetary terms, might be thought of as primarily an "objective" or "extrinsic" constraint that operates to a greater or lesser extent.

The ultimate expression of demand for small arms acquisition is governed by the interplay of motivations and means. In the extreme, a surfeit of means will not result in arms acquisition if accompanied by an utter lack of motive; conversely, the highest degree of motivation will not result in acquisition if the means – as broadly defined as we propose – are lacking. Both aspects must join for a choice to be made, for demand to be expressed, and for acquisition to take place.[10]

The arms acquisition choice can be (imperfectly) observed. Observance of the acquisition outcome, i.e., measuring the number of new or used small arms actually acquired, is an important part of the field-based research that needs to be carried out. But beyond establishing (new or used) quantities of small arms acquired – the question of "what is acquired" – the more interesting part of the research lies in beginning to unravel the motivations and the means – the "why and how is it acquired" questions – and how motivations and means interact to produce arms acquisition choices of a certain quantity.

Differentiations in motivations and means research

Several distinctions need to be kept in mind, and researchers need to specify which aspect of small arms demand their work addresses. We delineate some

examples of differentiations here. They are illustrative, not exhaustive.

Users of small arms

Acquirers and non-acquirers. To understand why people do not acquire arms is as important as to understand why they do. And, once acquired, to understand why people lay down arms and dispose of some or all of their arsenal is as important as to understand why they might add to their inventory of arms. It is from the difference in the two choice behaviors that we may expect to learn what accounts for the switched state, or the act of switching from one state to another. Professor Jacklyn Cock (1997) for example explains that with the end of apartheid in South Africa, the country became flooded with small arms not merely because of bungled disarmament and demobilization efforts in neighboring Mozambique – supply does not compel demand – but also because of the powerful symbolism of the weapon, both as a tool of repression as well as an icon of resistance during the apartheid decades. Guns became socially sanctioned and normalized symbols of liberation. The gun came to substitute for other status symbols – the cell phone, the glamorous woman, and gold chains – as a means of displaying (male) status and power. Removal of means-related constraints with the end of apartheid unleashed simmering motivations and lead to an explosive expression of demand for arms in the marketplace. This will be difficult to reverse. Whereas means are generally rising, or do not at any rate appear to impose a binding constraint unless small arms prices were to increase drastically, it is difficult to imagine how motivations might be reigned in. And yet, as we shall see in a case study further on in this paper, there are a few successful gun-free zones throughout South Africa, communities that stemmed and reversed communal penetration with arms, albeit at high and potentially unsustainable cost.

Likewise, some communities have never been penetrated with arms. It is important to study them.[11] Were they merely lucky to escape, were they too poor, too remote, or did they possess or acquire particular defensive mechanisms – and if so, which ones – that worked to prevent small arms penetration? It bears repeating that as important as it is to study arms acquisition *per se*, we can expect to learn more by comparing arms with non-arms acquisition. Research on arms acquisition is incomplete if it does not also address non-acquisition.[12]

Acquirers and possessors. Another distinction is that between acquirers and possessors of weapons. In many private households, adults acquire weapons but adolescents can take authorized or unauthorized possession of a gun. It is reported that in a number of rebels groups and gangs – and, of course, in most police and military divisions – weapons are made available for the day's (or night's) activities but are then expected to be turned in again. Thus, demand for arms acquisition is different from possession, use, misuse, and abuse. One may, perhaps crudely, compare this to the relation between employer and employee

where the former acquires tools and equipment for production but the latter is the primary user. Importantly, a single gun can have multiple users. Just like an aircraft is valuable when it spends most of its time in the air, flown by a succession of pilots, a single gun is most "productive" in defensive and predatory situations when it is cycled among several users. Intriguingly, groups of people (e.g., families, households, gangs, clans, police forces, etc.) must develop an effective internal control system to prevent gun abuse within the group (see the case study on Brazil further on in this paper).

Research on how these smaller groups maintain internal cohesion and prevent within-group gun abuse may provide important clues to unraveling motivations and means within larger social entities. For instance, in these smaller groups, individual and group identity is presumably well established and strong; lines of authority are recognized and not forcibly contested; avenues of recognition and progression ("promotion") are clearly, if implicitly, articulated; and livelihood, social services, and material rewards are offered. But families can split, rebels can form factions, and police and military units can become corrupt, in each case turning temporary possession into (illegal) acquisition. The larger point of interest is that learning what makes groups *with* guns cohere is not the gun but a set of motivations and means not dissimilar to what makes groups *without* guns cohere. It is not often appreciated that parallel to the forces of societal dissolution there are forces of accretion, a perhaps desperate attempt to recreate *with* the gun what groups *without* the gun have lost.[13]

Consumers and producers. Research on demand for small arms needs to separate out demand by those regarded as "consumers" of small arms – such as those who acquire weapons for self-defense, recreation, or sport-hunting purposes – and those for whom weapons acquisition is an input into the production of a good or service such as commercial hunting, pest-control, or security services (or the production of disservices such as rebellion, banditry, and crime).[14] These two broad categories of potential demanders should not be conflated, not only because the underlying motivations differ but also because it is likely that the means both groups bring to bear on demand are vastly different. While research may yield counterintuitive findings, we would ordinarily expect gun collectors to finance gun acquisition from earned income or to trade one asset for another (e.g., liquidate financial holdings for a gun collection, hoping that the latter will appreciate faster than the former); in contrast, drug gangs may well get started with informal credit to be repaid with a share of the loot obtained by gun abuse. The demand for small arms between these two groups of acquirers would be expected to follow markedly different trajectories and dynamics. Within each group, further differentiations exist. The self-defender is different from the gun collector, the bandit different from the rebel (moreover, any one may, over time, transfigure into the other).

The theory would make somewhat different predictions of arms acquisition behavior for consumers and producers. For example, explicitly or implicitly

consumers will need to consider the tradeoff of resource expenditure on a gun to resource expenditure on other goods and services. Even in the presence of high motivation, limited resources and high prices erect an effective barrier to the means of acquisition. Resources can be augmented in that plentiful supplies of certain types of small arms reduce prices and thus make acquisition affordable. In contrast, producers – those with the intent to abuse small arms for criminal purposes – view guns as a tool that needs to earn a (perverse) return on investment. Theory would also predict (perverse) forms of competition such that producers of armed violence constantly search for improved technologies of violence – hardier, lighter, more easily concealed, and more powerful firearms. On the one hand it is heartening to be able to view producers as an industry in the business of armed violence, heartening since economists in particular know much about regulating industry. On the other hand it is disheartening to view armed violence as an industry since economists also know that effective regulation of a bad or disservice requires well-defined property rights and a capable and effective enforcement apparatus, the very things that are missing in so many regions of the world. Crucially, it is precisely the *absence* of this apparatus that provides the space that brings producers of violence into sustained existence. The study of community governance is thus intricately linked to the study of arms acquisition, possession, use, misuse, and abuse.

Final and intermediate demand. Asking about small arms flows is akin to asking about the supply chain. A supply chain is not equivalent to supply. If between the original supplier (S) and the final demander (D) a chain consists of one or more intermediaries – say A, B, and C – then we may depict this symbolically as

S => A => B => C => D.

Thus S supplies to intermediary A who demands from S. Intermediary A then supplies to B who demands from A. Likewise, B supplies to C who demands from B. Finally, C supplies to D who demands from C – not from S. Put differently, a supply chain consists of a series of supply and demand relations; a *set* of markets, not a single market for small arms. In our example there are four suppliers (S, A, B, and C) and four demanders (A, B, C, and D), and hence four separate markets (S-A; A-B; B-C; and C-D). While the *final demand*, rather than the *intermediate demand*, drives the entire set of markets, it is important to appreciate that the small arms problem may possibly best be addressed at the various stages of intermediate demand than at the final demand stage. Whatever are the motivations and means of final demanders is an interesting and important question; but to ask what are the motivations and means of the intermediate parts to the chain is equally important as it is likely easier to intervene with one thousand dealers than with one million final demanders.

The symbolic representation can be expanded by also including ammunition and parts suppliers and maintenance and repair services. At each stage there may

be opportunities to affect final demand, and possibly much more effectively so than at points S or D. (See the case study on Papua New Guinea later on in this paper.)

Characteristics of small arms

Advantages of and alternatives to small arms. Like other animals, humans harbor a violent streak – both defensive and offensive. It is well-known from physical anthropology that pre-literate human societies were not "noble savages" but – on the contrary – frequently exceedingly violent and brutal (e.g., Keeley, 1996; LeBlanc, 1999). Likewise, it is well-established that the *incidence* of violence, and violent crime in particular, does not depend on the availability of guns, even if its *intensity* does. The United States for example is not distinguished from other developed states so much for high levels of violent crime as for high levels of violent *gun* crime (Cook and Ludwig, 2000, p. 29).

Small arms offer distinct advantages over alternative means of violence. They are cheap, light, durable, powerful, and easy to operate; they work with compelling accuracy and from a great distance to the target. Ammunition is generally plentiful and inexpensive. Thus, once guns have infiltrated a community they are difficult to dislodge. Indeed, the alternative cannot usually be to return to a pre-gun state of fists, knives, and spears – there is a ratchet effect – and the non-gun alternative therefore entails the more difficult challenge of reducing violence altogether. While conflict, aggression, and violence are not unique to humans, learning to manage and control these singularly are. We would expect that the availability of effective alternatives to armed violence, i.e., non-violent conflict management and conflict resolution skills, would play a large role, and the study of just how to supply effective alternatives at an attractive cost (a public goods problem) is highly important to the study of small arms demand.

Stocks and flows. Small arms and light weapons are durable goods. Indeed, they are very long-lived products, counted in decades rather than years of product life. The existing world-wide stock of small arms is much larger than the annual net flow (i.e., the net effect of annual destruction and new production). Much like the case of automobiles where the stock of existing cars is more important for congestion, pollution, and injuries than is the annual net addition to the stock, so it is with guns. Moreover, gun stocks are mobile assets and can be shipped from place to place with relative ease. Just as a single gun can be used during different "shifts" by different people in the same general location, a gun can be just as easily cleaned, refurbished, packed, and shipped to different geographic locales. In a word, it can readily be recycled. Thus there are two types of flows – of new and of used weapons. In practice, research may find it difficult to disentangle which is which. Key informant interviews with gun dealers may illuminate some of the details. As regards demand, it may be of interest to attempt to learn whether demand is expressed for general categories of small arms or instead

consists of rather more specific requests for particular models of small arms. Just who demands what type of weapon, and why (motivation) and how (by what means)? How do weapons flow through the system? Where are the injection points, and where are the points at which guns are withdrawn from the system (e.g., gun buy-back efforts), and what is the net effect?

In this regard it should be noted that up-to-date research confidently argues, at least for the case of the United States, that the direction of causality goes from gun acquisition and possession in time *t* to gun abuse and homicide in time *t+1*, not from general homicide in time *t* to more arms acquisition (for self-defense) in time *t+1* (Cook and Ludwig, 2000; Hemenway, 2004). Likewise, clusters of gun possession provide familiarization with, and normalization of, the gun. It turns out for instance that teen involvement with guns is most pronounced in high-prevalence gun areas: guns beget guns. It is the stock, not the flow, of guns that is at the heart of the abuse problem. Policies that single-mindedly focus on arms *trade*, i.e. flows, are unlikely to much affect the problem of arms stocks that communities struggle with.

Small arms and light weapons (SALW) categories. While proper use of any firearm does require at least a modicum of training, their misuse and abuse frequently does not rely on training. In contrast, some weapons included in the SALW category, such as anti-tank weapons and rocket-propelled grenade launchers do require (sometimes considerable) training and training facilities. Training and facilities come at a price and require resources to access them. Our theory thus enables us to group training-related issues under the rubric of the means to express demand. For a given level of motivation and resources, pricier weapons – e.g., because of the training and facility requirements – can be predicted to elicit more reduced demand than would be expected otherwise.

Other differentiations

Other differentiations – not further mentioned in this paper, but very important in their own right and entirely legitimate to expend research resources on – include distinctions in arms acquisition behavior between adolescents and adults, between males and females, between current owners who wish to add to their private arsenal and new owners who acquire their first firearms, between gun-collectors and those intend on carrying and using guns, among peace-time, war-time, and post-conflict demand, and so forth.[15]

Ultimately, empirical research will need to precisely delineate the subject matter and specify exactly which part of the amalgam "demand for small arms" it addresses. Similarly, research should aim not to be static but dynamic, i.e., where possible it should address changes over time. The research agenda our theory lays out is huge, but so are the potential insights and private and public rewards.

3. SOCIAL SCIENCE CONTRIBUTIONS

The general theoretical model – *demand is a function of motivations and means* – is complex on account of the many combinations it permits. Yet it is compact, complete, and compelling. No potential demand-determining factor is excluded. It is a framework to which scholars of various backgrounds can make contributions. The motivations component probably is best worked by psychologists, sociologists, anthropologists, behavioral economists, and others. The means component, how resources and prices may stimulate or inhibit the expression of underlying small-arms motivation as overt demand in the market place, is best analyzed by economists. Indeed, the general theoretical model used here is easily reworded into a form familiar to all economists: demand is a function of preferences, resources, and relative prices. Preference formation and preference shifts are not traditionally studied by economists; other experts can illuminate this aspect of demand much more in-depth than economists would. It is the resource and price aspects, the means, that economists primarily focus on, and that other disciplines tend to overlook. It is also the aspect most overlooked by those who have already written on the topic.

Economists interpret "resources" and "prices" flexibly. For instance, effective law enforcement raises the relative price of illegal acquisition, possession, carrying, and gun use, misuse, or abuse. The probability of being caught, coupled with the probability of conviction and expected severity of punishment, likewise can be thought of as raising the relative price of arms acquisition. In the extant studies of demand for arms acquisition, these more purely economic angles of analyses have mostly been left out. This is perilous for a number of reasons. There is no question that a "culture of violence" foments motivation, no question that the presence and placement of gun advertisement taps into and reinforces images and stereotypes that stoke the desire to acquire arms, no question that many states – especially but not only fragile or failed states – not only abdicate responsibility for domestic law, order, peace, and security but fan the flames of private security and public disorder. None of this however translates into demand unless accompanied by the means – sufficient resources and relatively low prices – in light of competing ends for a finite pool of means.

Should the constraint on the means suddenly fail to be binding, for example by an influx of diaspora financing, deflation, unexpected new access to profitable natural resources, or an inundation with arms supplies that lowers their price, motivations – thus far "hidden" by lack of means – may be revealed in a spasm of arms acquisition and, most likely, arms abuse. To the economist "sudden" outbreaks of arms acquisition are not mysterious at all. They may merely reflect the relaxation of a previously binding resource-constraint.

Take another example: it is frequently observed that small arms abuse is particularly a problem for and among young unemployed men or youth. The gun affords an alternative livelihood, or so the argument goes. Economic development – including the provision of micro-credit, grants, and training – is

regarded as one way to provide alternative opportunities for these men. But the theory warns that such interventions, while potentially providing alternatives for young, unemployed men, can also provide additional targets for predation and means for weapons acquisition. Moreover, an economist is likely to point out, alongside demographers, that if small arms acquisition and abuse is concentrated among adolescent and young adult males, it is in all likelihood going to grow much worse.[16] In order to simultaneously increase legitimate income-earning opportunities for youth, as well as to reduce predation targets and resources for arms acquisition, economic development must therefore go hand-in-hand with community-based protection measures.[17]

4. INITIAL EVIDENCE

To illustrate our theory more concretely we draw for initial evidence on four recent case studies, all associated with the work of the *Small Arms Survey*, some so fresh that they are as yet unavailable in regular published format. These case studies are drawn from the Solomon Islands and Papua New Guinea (Nelson and Muggah, 2004; Muggah, 2004), South Africa (Kirsten, *et al*., 2004), and Brazil (Lessing, 2005). Each case highlights different aspects of how motivations and means combine to stimulate or inhibit small arms acquisition or (ab)use. The field research was undertaken while the demand framework was still being developed so that our extraction of findings here is somewhat *ex-post*. Field-based research guided more explicitly by the demand framework is now being planned for other states (e.g., Burundi, Congo-Brazzaville, and Macedonia).

The Solomon Islands: uneasy interaction of motivations and means

The Solomon Islands saw an outburst of armed violence in the late 1990s (the "tensions," as it is referred to locally). While the number of firearms-related injuries and deaths were comparatively small by international standards, around 50,000 to 60,000 people were displaced by the violence (out of a population of about 400,000). Field research revealed that the cluster of motivations for firearms acquisition was so high and robust during the conflict that it occurred even in the face of below-subsistence levels of economic conditions.

A combination of interventions were introduced to reduce armed violence on the islands. Whereas a formal peace agreement crafted in 2000 failed to generate confidence by the warring parties, by July 2003 a Regional Assistance Mission to the Solomon Islands (RAMSI) deployed a 2,250-member force with police-like functions on the islands. RAMSI was granted considerable enforcement powers and erected stiff penalties for anyone found in possession of unauthorized firearms. This "stick" was effectively combined with the "carrots" of a concerted islands-wide Weapons-Free Villages (WFV) campaign and gun-collection efforts backed by compelling societal pressure to lay down firearms. Importantly, and in keeping with Melanesian traditions, the social pressures operated collectively

(rather than individually), and individuals could be shamed by the collective into compliance (Muggah, 2004). Both the stick and the carrots combined to effectively increase the social price attached to weapons-possession and (ab)use. Nonetheless, the field research established that latent firearm demand persists. Ultimately, if the grievances underlying the conflict are not fully addressed and resolved, focus group interviews suggest that a renewed acquisitions spree may erupt if and when RAMSI leaves to islands, especially since the economy has recovered and thereby provides new means of small arms acquisition.

During the "tensions," strong motivational forces pushed up small arms demand and resulted in measurable (and strong) increases in weapons prices. In the immediate aftermath of the conflict, the WFV-campaign and other interventions (e.g., the demobilization of the Special Constables, various weapons amnesties, and peace-building activities) reduced the motivation for small arms acquisition. But these reductions took place against a backdrop of relative price increases generated by the enforcement of strict penalties by RAMSI enforcement and strong societal disapproval for those bucking the norm.

RAMSI has been very effective at putting the "lid" back on the boiling water, whereas the WFV-campaign and other socio-cultural measures have been the equivalent of turning down the "flame" under the pot. Lingering difficulties relate to legitimate, traditional needs for firearms for hunting and pest-control purposes (particularly since firearms offer a more efficient substitute to spears and clubs) and to the difficulty of fully accounting for weapons and ammunition stocks and flows. Applying a health analogy, one could say that the patient has been stabilized but is not healed. Still, the combination of sticks and carrots provides important lessons: as one measure reinforced the other, it created temporary conditions to address some of the underlying causes of violent conflict. While this provides respite for the Solomon Islands and provides insight into the interaction of motivations and means, the approach is not necessarily stable nor readily replicable in other venues. An important observation is that much of RAMSI is financed by the Australian government. In the absence of public good provision by Australia, individuals in the Solomon Islands may have continued to view small arms acquisition as their best alternative.

Papua New Guinea: focus on the means

Papua New Guinea (PNG) has been affected by continuous conflict throughout its known history. It is generally accepted that violent conflict is a latent property of many of PNG's multitude of socio-cultural groupings. With the comparatively recent arrival and use of modern firearms, however, this violence has escalated to levels that threaten to exceed local capacities to cope. Since the early 1990s, the Southern Highlands in particular have experienced severe outbreaks of firearm-related violence. While the range of firearms types are surprisingly diverse, a study found that the number of such arms are comparatively modest, at least in part because of unusually high ammunition prices. Since firearms and

ammunition are complements in use, as outlined in the theory section above, this is a most intriguing research finding as it points to the possibility that at least in certain cases policy interventions may most usefully focus not on firearms *per se*, but on their supply-chains or, indeed, on complementary products and services.

Field research also documented interesting dynamics of local trade in small arms. For example income and assets of various types (e.g. pigs, crops, and women) were found to be exchanged for firearms. Again, in the theory section we outlined that means of small arms acquisition refer not only to the exchange of earned income for arms, but can go far beyond that, including the depletion of assets. Further, key informant interviews in PNG revealed weapons acquisition not only by individuals but also by village or tribal collectives. This also was anticipated in our theory section when we distinguished between acquirers and possessors. In this case, tribal collectives are acquirers but individual tribe members are temporary possessors and users of firearms. Moreover, purposive surveys revealed that tribes would readily rent weapons, or the services of mercenaries, to pursue violent, armed conflict with neighbors. Given their high motivations and limited means, the tribes display sophisticated choice behavior to achieve their objectives.

In parts of the Southern Highlands latent firearms demand is very high and waits for resources to be expressed as actual demand in the marketplace (Muggah, 2004). The endemic, potentially culturally-embedded nature of violence among PNG tribes may reduce the likelihood of success for motivations-based demand intervention. Rather, initiatives may be more successful if they focus resources on raising the price of firearms, ammunition, and related repair and service, as well as raising the price of firearm (ab)use through strict (and accountable) law enforcement. The larger point here is to suggest that demand-based research helps to narrow the set of options policy may wish to consider.

South Africa: the difficulty to create viable small arms alternatives

South Africa's widespread problems with gun-related violence are well known. A recent study administered key informant and focus group interviews to assess the influence of Gun-Free Zones (GFZ's) on the frequency and distribution of armed violence (Kirsten, *et al.*, 2004). GFZ's did not emerge in response to a common threat, nor are they bound together by an overarching institutional or organizational logic. Rather, GFZ's have emerged spontaneously by the hundreds and are voluntarily, self-declared organizations. GFZ's are diverse in their geographic distribution and generally consist of highly specific spaces, such as private and public buildings, rather than of communities and neighborhoods as a whole. Because of this heterogeneity, there are considerable challenges in evaluating their effectiveness and contribution to violence reduction.

The study was administered in three geographic areas, in which four GFZ-types were examined (a health clinic, a bar, a public community space, and a public high school). According to Kirsten, *et al.* (2004), the expectation of GFZ's

was (and is) that collectively they would help generate a gun-free social norm or expectation among the patrons and clients associated with a specific GFZ location. Although meant to inhibit gun use, our theory suggests that this attempt to establish a new social norm is unlikely to affect underlying demand for small arms acquisition, much less the underlying causes. This is indeed what the study found. GFZ's effect is uneven since the climate of gun-based crime continues to predominate throughout South Africa. Although the incidence of reported gun-shots declined and perceptions of safety increased within each of the GFZ's evaluated, this did not necessarily translate into gun-reduction *per se*. In fact, compliance is voluntary, and many people within specific GFZ's claim that they continue to own and carry (concealed) weapons, if only for protection on their way to and from GFZ's.

The study further found that GFZ's have generated only limited effects on transforming attitudes toward guns and firearms-related practices. Moreover, they do not appear to have contributed to a marked reduction in gun-related crime and victimization. The study's authors note that "realizing the potential for GFZ's depends on a socially inclusive process conducted in a socially cohesive community." But the absence of "socially cohesive" communities appears to be one of the main obstacles to the success of GFZ's. Other challenges to the GFZ's include the lack of standardized GFZ implementation, an absence of adequately vigorous gun-law enforcement, and comparatively high GFZ maintenance costs in both monetary and non-monetary terms. All of these challenges call the sustainability and replicability of GFZ's into question. This is not to say that GFZ's are a failed experiment but that on average GFZ's do not appear to have been particularly cost-effective. Ultimately, crime still pays at the margins of GFZ's, and carrying a weapon still generates a considerable "return on investment."

The contrasts between South Africa's GFZ's and the Weapons-Free Villages (WFV) in the Solomon Islands are instructive. An obviously strong desire for and emphasis on changing social norms without concomitant credible, reliable, system-wide, and evenly-applied enforcement mechanism facilitates deviation and non-compliance. As for the Solomon Islands as a whole, GFZ's in South Africa were found most effective in areas that scored high on "social cohesion," but the study notes that "effective enforcement is critical to [GFZ's] success." A scissor with one blade does not cut. As pointed out in the theory section, strong public goods supply of anti-crime enforcement is an important element in reducing motivations for small-arms demand.

Brazil: different communities, different motivations and means, different results

The case study on firearms demand in Rio de Janeiro is particularly instructive in its assessment of demand-related issues (Lessing, 2005). In addition to statistical material collected from other sources, the study drew from a survey of 1,187 people who participated in a firearm buy-back program as well as on

structured interviews with *favela* residents and former and current *traficantes*.[18] A recently passed disarmament statute (signed into law in December 2003) created the conditions for broad participation in a firearm buy-back program (with an average of 2.3 guns returned per person). But participants came predominantly from the educated, elderly, and reasonably well-off middle-class. Small arms demand in this group appeared to be driven primarily by the perceived inadequacies of community policing: about two-thirds of those survey respondents who were self-declared owners of the weapons they handed in cited "protect home" or "personal defense" as their reason for having acquired a firearm. Why then turn in the weapon? While the most-cited responses referred to fear of weapons-accidents or unauthorized weapons use, at least some impetus came from price-related factors. Specifically, these included the increased time and money cost of weapons registration and license renewal and harsher penalties introduced for possession of unregistered firearms. Yet the strongest motivation came from an awareness-raising disarmament campaign that accompanied the roll-out of the new disarmament law. But registration and license renewal costs affects rich, middle-class, and working-class poor disproportionately. The poor might therefore be expected to own and carry guns illegally, wherefore the emphasis on law-enforcement acquires additional importance.

In the *favelas* – Rio's (and Brazil's) vast shanty towns – the firearms markets appear to have adopted a range of different dynamics as compared to those that prevail on the outside. Oddly, the research found that the *favelas* are relatively safe communities; the soaring crime that terrifies the middle class is rare in the *favelas*. Instead, firearms use is almost exclusively generated by police corruption and the real and perceived impunity of police actions.[19] Equally, weapons use is driven by the drug-trade which employs guns as a "business tool" to protect monopolies and the associated "turf." Among themselves, *favela* residents exhibit robust personal bonds and mutual support strategies, leading to strong social identification with one's *favela*, ties that appear to be comparatively weak in middle-class neighborhoods. In this respect at least, Rio's *favelas* show a striking resemblance to the social cohesion in Solomon Islands villages and a dissemblance to many South African communities. Similarly, Rio's drug-trade, with its emphasis on the show of force and the protection of turf, shows eerie similarities to Papua New Guinean tribal warfare where violence, and increasingly gun-based violence, is culturally embedded.[20]

As described in the theory section, personal gun ownership and possession in the *favelas* is highly circumscribed. Gun possession is restricted; a degree of social sanctioning is required, or else the gun-carrier's own personal security will be at risk. The research indicates that gun ownership in the *favelas* is not about personal safety and security as it is with the middle class; instead, it is about the drug trade. Firearm possession is essentially a labor market issue: those who join the drug market will live (and die) with guns.

Again, as pointed out in the theory section, firearms are bought and owned by the supervising drug lord for his collective of agents (though each *favela* tends

to be a monopolized turf, territorial challenges and incursions are frequent). Firearms are loaned to the rank and file for the period of their daytime or nocturnal "shift," much like security guards punch in their time-cards and put on a firearm at the beginning of their shift and return the weapon and punch out when the shift ends. Even firearms ammunition is provided by the *boca* (the drug faction dominating a *favela*), and "employees" are reprimanded for firearm abuse, if only because it leads to community strife or draws unwelcome attention from the police. Demand for firearms is thus clearly derived from the demand for drugs; it is a corporate tool, a business expense. Like any piece of equipment, it is an asset use of which the business owner (the *dono*, or drug lord) needs to monitor and control. It plays, at least in part, a demonstrative role, to signal to other *donos* that a particular *favela* is well-protected from incursion.

Regrettably, this demonstration effect also signals the types of firepower available on "the other side" and can encourage under-powered *donos* to bolster their arsenals. A micro-arms race commences. Small arms demand is driven at least in part by the need of show firepower superiority. Such demand will be difficult to reign in unless each *favela* becomes a more secure fief under each *dono* (e.g., through an inter-*dono* cartel).[21] There is probably little that can be done in relation to price, as the demand for firearms appears inelastic: it is simply too crucial a tool for business. Moreover, guns are cheap relative to drug income. Thus, unless the drug trade itself is brought under control (reduced drug demand within the *favelas*), it is unlikely that the derived demand for small arms can be reduced either. The likeliest firearm demand reduction will have to come, uncomfortably, from securing *dono*'s turf more surely.

5. SUMMARY AND CONCLUSION

The previous sections outline how one may build and apply the theory of demand to think broadly and flexibly about the factors that affect the motivations and means (preferences, prices, and resources) for small arms and for armed violence (although the two are not synonymous). They also show how each of these factors may or may not be susceptible to various types of policy interventions. The initial evidence from the four case studies suggests that even though specific firearms problems present distinct features, the demand framework nonetheless generates a compact way of framing issues and thinking about available interventions. A comparative research agenda on small arms demand is of great value, as it allows communities, themes, policies, and interventions to be compared with greater ease.

Finally, a theme touched upon, but not fully explored here, is that of reversibility. For example, in the Solomon Islands many of those interviewed expressed concern that the withdrawal of the RAMSI intervention force could facilitate the reigniting of underlying grievances; the current peace is reversible. Likewise, in South Africa there is little doubt that the moment one leaves a gun-free zone one has reentered a gun zone; the calm within the GFZ's is reversible.

At the moment, researchers, policymakers, and community and advocacy groups are too absorbed simply with stemming the current gun problems they face than to also think about reversibility. But in the long-run, an intervention that is reversible is not the kind of intervention communities want. The peace they seek must be irreversible.

Notes

1. A prior, much more detailed, version of this paper was extensively reviewed between August and December 2003. Comments were provided by David Atwood, Jackie Cock, Caroline Moser, Andres Villaveces, Peter Batchelor, and Nic Florquin. Some of them, and others, notably economists David Hemenway of Harvard University (see Hemenway, 2004) and Phil Cook of Duke University (see Cook and Ludwig, 2000), then discussed the draft paper with us at an experts meeting in Geneva, Switzerland, in March 2004, sponsored by the Small Arms Survey project of the Graduate Institute of International Studies and the Quaker United Nations Office, also of Geneva. The usual disclaimer applies. Subsequent to the meeting, a revised draft of the paper, which includes extensive methodological appendices, was published as a discussion paper by the School of Economics and Management at the University of KwaZula-Natal, Durban, South Africa (see Muggah and Brauer, 2004) at which time initial field research was in progress. The paper published here emphasizes demand theory and presents some of the initial field research evidence; a version to be published as a chapter in the 2006 *Small Arms Survey* yearbook is expected to reverse the balance and discuss the field research evidence more fully.

2. Armed violence is a global phenomenon, differently encountered over time as well as across geographic space and personal experience (geographic: cross-national, national and sub-national; personal: ethnic, familial, household, and individual). Temporal, spatial, and personal variations suggest that the behaviors that lead to armed violence may be modifiable, perhaps even preventable, for while conflict is an inevitable part of being human, there is no behavioral logic that prescribes violence – armed or otherwise – as the necessary response to conflict. But armed violence requires prior arms acquisition, and we therefore primarily examine factors that shape choices regarding arms acquisition.

3. For an exhaustive review of this literature, consult the *Small Arms Survey* (annual since 2000).

4. With respect to conventional weaponry, consult Brauer (1991, 2000). For a review of the literature on the demand for firearms in the U.S. context, consult Cook (see references).

5. The 2001 United Nations Conference referred to four areas: development, the promotion of cultures of peace, conflict resolution, and security sector reform. Regehr and Gebrewold (2003) also outline specific references to demand in the UNPoA.

6. These encourage states to improve, *inter alia*, oversight over arms and ammunition manufacturing, the strengthening of export laws, the regulation of end-user certificates, and legislation and activities related to stockpile management.

7. See, for example, the UNDP web site at www.undp.org/bcpr/smallarms, UNICEF's workshop on "Disarming Children and Youth: Raising Awareness and Addressing the Impacts of Small Arms" (Ghana, September 2002), and Eshete and O'Reilly-Cathorpe (2000).

8. The exceptions come from a growing number of U.S.-based criminologists and economists that have been studying the small arms issue in relation to youths and criminals. This research provides considerable insight into the motives underpinning small arms acquisition, the carrying of weapons in public, and the use firearms in violent crime. See, for example, the work of Cook (1991), Cook, Moore and Braga (2002), Cook and Ludwig (1997, 1998, 2000, 2003), and Cook and Leitzel (1996). In a technical background paper, Brauer (2003) discusses small-arms supply, demand, and the small-arms market.

9. For an extensive example on social embedment of weapons – in Yemen – see Miller (2003).

10. It is frequently thought that arms "availability" (supply) is a component in arms demand. This is incorrect. The determinants of supply are independent of the determinants of demand. Instead, arms supplies enter the demand side indirectly either through the motivations-side (one crude example: "if everyone has a gun, I might have one as well") or through the means-side (e.g., ample availability usually lowers price; scarcity raises it).

11. An interesting contrast is offered by Botswana and Zimbabwe, the former without, the latter with, a gun problem.

12. Powerful statistical tools are available with which to study binary dependent variables.

13. Needless to say that participant-observer research along those lines is dangerous (quite apart from the difficult ethics of undertaking this kind of research). But a review of primary literature authored by, and interviews with, *former* gang or rebel members might yield valuable insights in this regard. For an example, see the summary of the case study in Rio de Janeiro further on in this paper.

14. Although the boundaries of the distinction are usually clear, gray zones do exist. Security services, in particular, may be viewed as legitimate or not (e.g., a well-trained, well-functioning police force vs. a corrupt police force).

15. For example, suppose that the use of a Kalashnikov AK-47 assault rifle in war-time is superior to any other weapons. If so, this would influence war-time demand that carries over into a post-war stock where that weapon has no legitimate use and yet adversely affects the community in which it is housed.

16. While earth may already have passed the peak of human population growth, we are nonetheless expecting the addition of several billion more people over the next hundred years. This will add hundreds of millions of young men to the population rolls.

17. From 1999 to 2003, the Quaker United Nations Office (QUNO) conducted workshops in South Africa, Kenya, Cambodia, Jordan, and Haiti. Among the findings is the recognition across all communities that proposed interventions need to be well-integrated. For further information, contact David Atwood at datwood@quno.ch.

18. Locally, the term *traficante* refers to drug dealers and anyone else associated in any manner whatsoever with the drug trade.

19. The study states that the average citizen of Rio is more likely to be killed by a policeman than the average New Yorker is likely to be killed by anyone. This is even more true of *favela* residents: between 1993 and 1996, police killed sixteen percent more people in these neighborhoods than in the remainder of Rio even though the *favelas* comprise only about

eighteen percent of the city's population.

20. An interesting contrast is offered by Yemen, a culture in which gun-ownership is culturally embedded, but gun-abuse is not (Miller, 2003, p. 40).

21. Cartels, however, rarely can be sustained for any appreciable period of time.

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