Karimojong cattle herders display their weapons near Moroto, Uganda. © Crispin Hughes/Panos Pictures

Enemy Within

AMMUNITION DIVERSION IN UGANDA AND BRAZIL

9

INTRODUCTION

In October 2006 warriors in the Karamoja region of northern Uganda shot dead 16 Ugandan soldiers who were conducting forcible disarmament operations in the region (*New Vision,* 2006). The findings in this chapter suggest that some of those soldiers may have been killed by bullets that were destined for their own use. In Rio de Janeiro, Brazil, 52 police officers were killed on duty in 2004 (AI, 2005). The evidence presented in this study indicates that some of them may have been killed by bullets originally issued to their own forces.

Ammunition has recently gained prominence on the international agenda. This chapter investigates the mechanics of its proliferation at the local level in Karamoja and Rio de Janeiro. Most notably, it looks at the problem of ammunition diversion from the stocks of state security forces to non-state actors.[1]

Karamoja is home to several pastoralist groups whose warring and cattle raiding have escalated in recent years with the proliferation of modern assault rifles. The study finds that ammunition that should have been manufactured exclusively for state security forces is in the hands of Karimojong warriors.

Brazil is a well-documented example of very high small arms-related crime and homicide rates. The intricacies of the ammunition trade that fuels this dynamic are less-well documented. The study finds that a significant quantity of ammunition seized by the police from criminals is of the same type used by the police of Rio de Janeiro.

Findings in the studies presented in this chapter were generated by taking samples of ammunition from non-state actors. Importantly, the two studies use slightly different data collection and analysis methods. In the Karamoja case, a Small Arms Survey researcher collected ammunition directly from the private stocks of warriors in the region.[2] This data was then compared with data about ammunition stocks of state security forces, which was recorded in the same way. In Rio de Janeiro, police had seized the ammunition from criminals.

In both cases, a selection of the sampled ammunition was compared with trends in security force ammunition of the same calibre and origin. Each study uses the markings on individual rounds of ammunition to determine the year of manufacture and the factory in which the ammunition was produced. The data on this 'headstamp' is then used to create profiles of the ammunition in the hands of various groups of actors and to compare among them. The results of these analyses are then reviewed in light of qualitative research findings, including field research, interviews, government documents, and press reports.

In Karamoja and Rio de Janeiro, the similarity between state and non-state stocks of assault rifle ammunition suggests that cross-border traffic of this type of ammunition may not be the main conduit for illicit trade. The specific findings of the chapter are as follows:

- In Karamoja and Rio de Janeiro, non-state actors possess ammunition that is produced almost exclusively for the state security forces of each country.

- In both cases, these types of ammunition in the hands of non-state actors correspond in volume and origin to types used by state security forces.
- In each case study, state and non-state actors exhibit very 'young' stocks of ammunition, suggesting a short chain of supply.
- Other sources of information corroborate the findings from the ammunition data. These sources include reports of diversion and other evidence of trade between state and non-state groups.

The chapter concludes that the ammunition-tracing methodologies presented here are vital research tools for understanding illicit flows of ammunition. The cases of Karamoja and Rio de Janeiro re-emphasize the role of state security forces in the acquisition of ammunition by non-state armed groups. There is a clear need to address this problem if the forces that are employed to curtail armed violence are not to contribute to it.

THE USUAL SUSPECTS? THE CASE FOR LEAKAGE FROM STATE STOCKS IN KARAMOJA, NORTHERN UGANDA

As its title suggests, the first part of this chapter presents a strong case for the leakage of ammunition from Ugandan security forces to non-state actors in Karamoja. The Karimojong are semi-nomadic pastoralist groups who have fought what is essentially a low-intensity, inter-clan conflict with small arms since the 1970s. Despite numerous state-led initiatives to disarm the Karimojong warriors, such attempts appear to be in part undermined by flows of domestic ammunition to these non-state actors. Governments in the region claim illicit cross-border trade is a major reason for sustained insurgency, crime, and general violence in their countries. But in the case of Karamoja, and indeed elsewhere, the roots of the problem may well lie at home rather than abroad.

The roots of the problem may well lie at home rather than abroad.

This part of the chapter finds that stocks of ammunition in the hands of Karimojong warriors match closely those of state armed forces in Karamoja. From the evidence of ammunition data collected in August 2006, press reports, military statements, and key informant interviews it presents clear evidence of the illicit transfer of ammunition from members of Uganda's military and auxiliary forces to the Karimojong.

Aims and methodology

This study was designed to compare the stocks of ammunition in the hands of various state and non-state groups in Karamoja. Underpinning the analysis is the following hypothesis: groups that display very similar ammunition profiles may do so because they trade or capture ammunition from the same sources, or from one another.

The study involved noting the markings on individual live (unfired) rounds of ammunition. These rounds were taken directly from the magazines of the Karimojong and from state security forces, including the Uganda Wildlife Authority (UWA), the Local Administration Police (LAP), and, indirectly, Uganda People's Defence Forces (UPDF) stocks.[3] All the actors who contributed ammunition to the study were located within 40 kilometres of one another.

Table 9.1 lists the number of rounds recorded from each group of actors in the sample. It shows clearly that there were significant variations in the numbers of rounds recorded from each group. This variation was due to a number of factors—most notably security—that made some groups less willing or able to share information. In each case, it was only possible to record ammunition information because of sustained contact and dialogue between the researcher

Table 9.1 **Numbers and percentage of 7.62 x 39 mm rounds sampled from groups in Karamoja, August 2006**

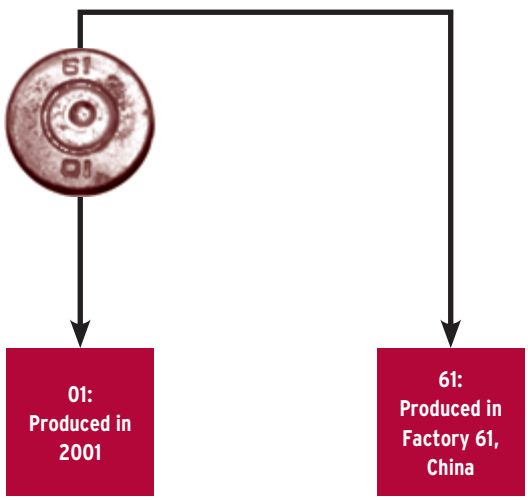
Group		Number of rounds	Percentage of total
Non-state:	Karimojong 1	8	1.8
	Karimojong 2	69	15.8
	Karimojong 3	89	20.3
	Karimojong 4	66	15.1
	Karimojong 5	61	13.9
State:	LAP	82	18.7
	UWA	28	6.4
	UPDF	35	8.0
Total		**438**	**100.0**

and the parties concerned. Despite variations in sample size, the objective of the study was to compare state and non-state forces (the Karimojong and state groups listed in Table 9.1),[4] and, when aggregated into two groups, the samples are sufficiently large to permit such a comparison.

From the markings or headstamps, the Small Arms Survey was able to trace the majority of rounds in the sample to a manufacturer and to identify the year in which they were produced.

Figure 9.1 shows the headstamp of a spent (used) 7.62 x 39 mm cartridge case that was retrieved from the scene of a shooting in Karamoja. This round was not in the sample, but it is illustrative of the types of ammunition proliferating in Karamoja. The upper marking (61) indicates the factory in which the round was produced. In the case of 7.62 x 39 mm ammunition, this mark is usually numerical, although other types of ammunition display various configurations of characters, numerals, and symbols.

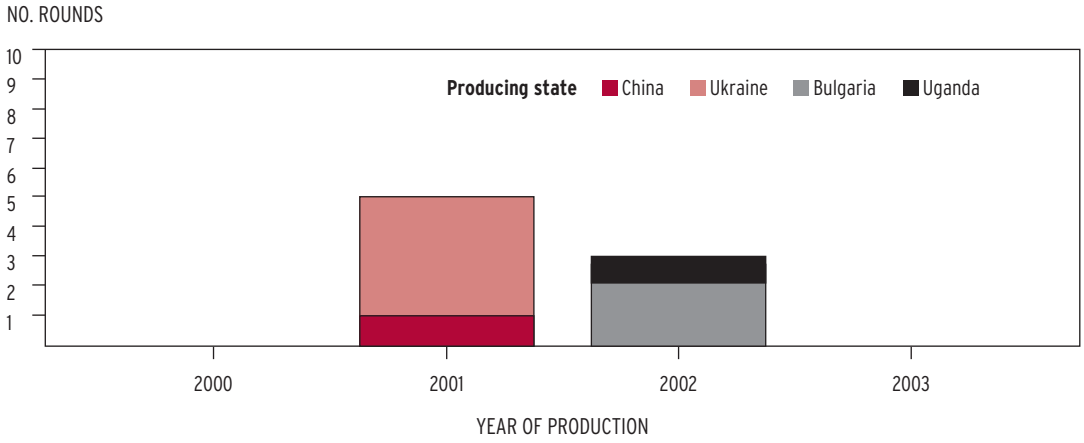
Figure 9.1 **Head-stamp of a spent 7.62 x 39 mm cartridge, Karamoja, 2006**



This particular mark is specific to Factory Number 61 in China—a state-owned manufacturing facility of China North Industries Corporation. Its origin was identified using the *Cartwin Professional Edition* identification software for small-calibre cartridges (Cartwin, 2006), in conjunction with the comprehensive *Culots de Munitions* reference books (Jorion and Regenstreif, 1995a; 1995b). These sources permit cross-referencing of ammunition calibres, headstamps, and dates of production runs, as well as general factory information.

Figure 9.2 gives a hypothetical example of how this kind of data can be used to create the ammunition profile of an armed group.

Figure 9.2 **Hypothetical ammunition profile of an armed group created using data from the headstamps of single rounds of ammunition**



The lower marking on the cartridge in Figure 9.1 indicates the date of manufacture: in this case, 01 means the round was produced in 2001. Together with information about the current 'owner' of the ammunition, data from several such cartridges can be combined to create an 'ammunition profile' for that owner. As Figure 9.2 illustrates, this is a chronological profile of a particular actor's ammunition stocks—indicating the date and origin of the rounds stocked. This does not mean that the actor in question acquired these rounds on the date indicated, nor does it mean that the actor obtained them directly from the country in which they were produced.

Given the numerous ages and origins of ammunition available in most markets, a profile such as Figure 9.2 should be fairly unique for any individual or group. It is highly improbable that any two actors or groups would display exactly the same ammunition profile—i.e. we would expect variations in combinations of ammunition age or origin.

It is important to note that, for reasons of clarity, the ammunition in Figure 9.2 (and in subsequent figures) is not displayed by headstamp or manufacturer, but by country of origin. The sheer number of different headstamps and manufacturers involved would make the task of plotting manufacturer data in a chapter such as this impossible.[5] The ammunition recorded in Karamoja displayed 49 different headstamps—i.e. 49 variations of manufacturer code and year. Sixteen different factories around the world were represented (excluding unmarked rounds). But despite such a multitude of manufacturers, ammunition in the sample was produced in only eight different countries (excluding unknown cases). Table 9.2 lists the producer states and factories, along with the number of rounds each contributed to the sample.

The study recorded a total of 438 rounds of 7.62 x 39 mm ammunition (Table 9.2). Of these, 396 could be traced to a specific factory and date of manufacture; 36 rounds were unmarked (i.e. they were unstamped and bore no identifying marks whatsoever); and 6 rounds carried factory marks that could not be traced to a specific producer, but nevertheless could be identified by year of manufacture. The latter rounds were included in the study under the category 'unknown' in Table 9.2 and 'other' elsewhere. In addition, some of the countries listed in Table 9.2 comprise only a tiny fraction[6] of the overall sample and are also condensed into 'other' in Figures 9.3 and 9.4. The working sample of Karamoja ammunition was therefore 402 rounds of 7.62 x 39 mm ammunition (i.e. the original 438 rounds, excluding the 36 unmarked rounds).

Table 9.2 **Manufacturers of 7.62 x 39 mm rounds in the sample**

Producer state and factory	No. of rounds	Percentage of total*
China, Factory Number 72	1	0
China, Factory Number 811	1	0
Bulgaria, Dirjavna Voenna Fabrika, Kazanlak	2	0
China, Factory Number 311	2	0
East Germany (GDR), VEB Spreewerk	3	1
China, Factory Number 312	4	1
China, Factory Number 31 (Jing An Factory)	5	1
China, Factory Number 51	5	1
Czechoslovakia, Sellier and Bellot/Zbrojovka Vlásim	7	2
Ukraine (USSR), Factory Number 270, Lugansk	9	2
Yugoslavia, Igman Zavod, Konjic	15	3
Russia (USSR), Ulyanovsk Machinery Plant	20	4
Russia (USSR), Tulski Patronny Zavod	28	6
China, Factory Number 71	41	9
Unknown (unmarked or unidentifiable)	42	10
Uganda, Luwero Industries	59	13
China, Factory Number 61	194	44
Total	**438**	**100**

* Figures are rounded, so the figures in this column do not total precisely 100.

Comparing ammunition profiles

Overall, there is a great deal of similarity between stocks of ammunition in the hands of the five Karimojong groups and Ugandan security forces. Figure 9.3 presents ammunition profiles of the five Karimojong groups and the three security forces sampled.

Perhaps the most striking aspect of the Ugandan samples is the volume of relatively new ammunition. While most Karimojong weapons are old, more than 65 per cent of ammunition in the hands of the Karimojong groups was produced between 2000 and 2005. Similarly, state security forces stock just under 50 per cent of ammunition of this age. Overall, around 60 per cent of ammunition in the entire sample was produced during or after 2000.

More than 65% of ammunition in the hands of the Karimojong was produced in 2000–05.

The profiles displayed in Figure 9.3 illustrate the traces of procurement decisions, the legacy of alliances and supply networks, and the inheritance patterns whereby groups of actors acquire ammunition from other groups. Quite plausibly, the profiles of the state and non-state groups in Figure 9.3, when combined, yield a broad history of Uganda's arms and ammunition acquisition (addressed below). But why should the Karimojong, who have no history

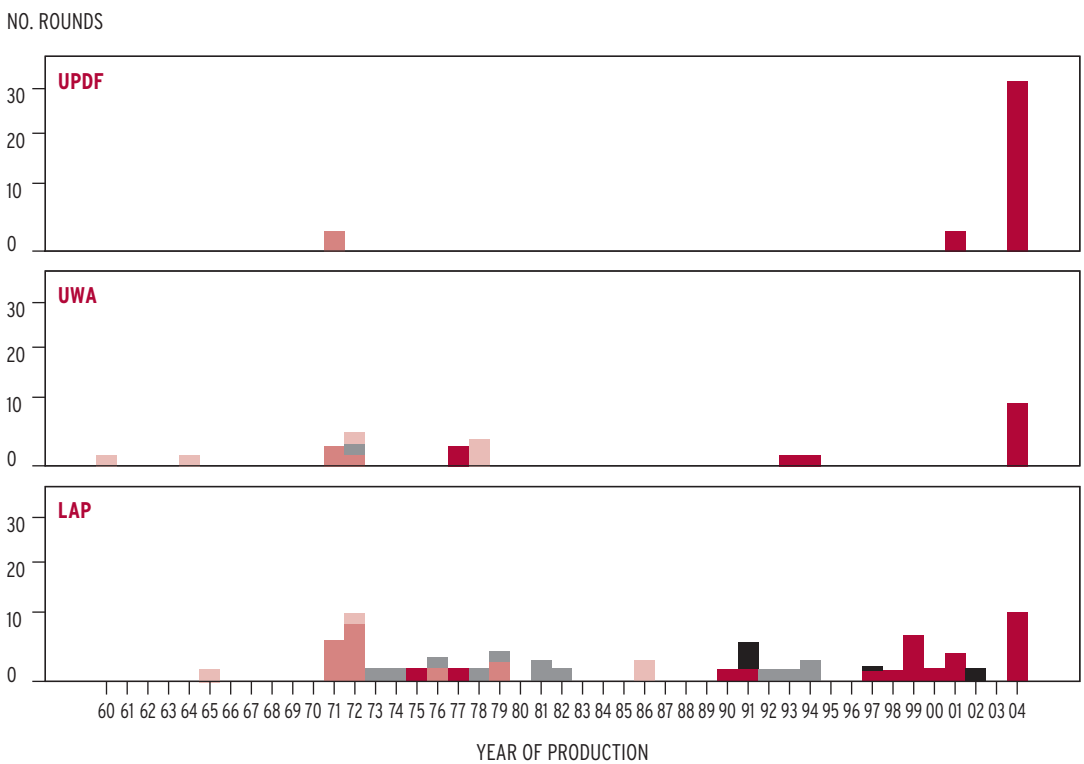
of direct trade with foreign powers such as China and Russia, display such similar profiles to those of state forces? If their ammunition is sourced elsewhere—for instance, in Kenya, Sudan, or Ethiopia—their profiles could differ greatly.

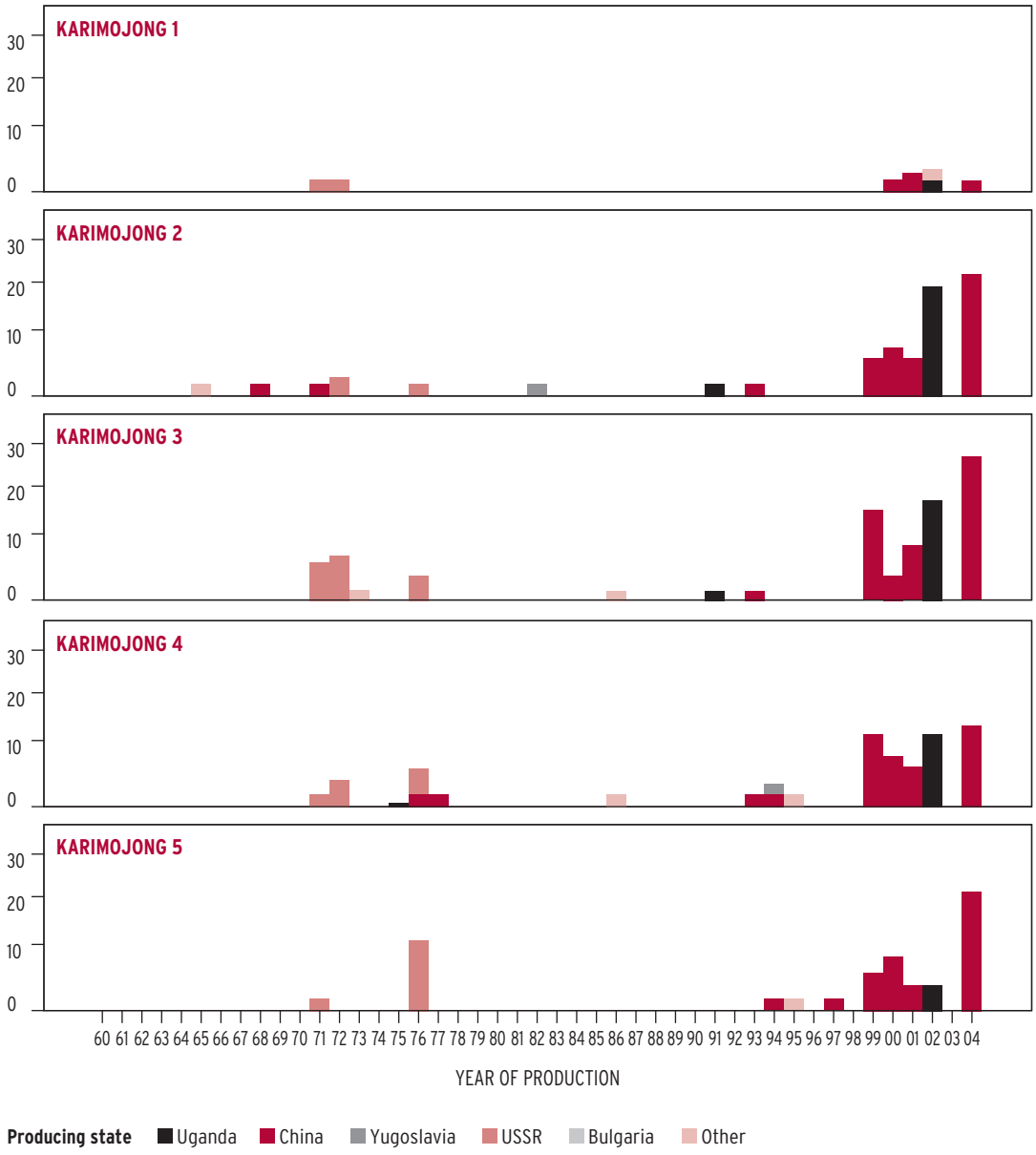
Such observations suggest that state and non-state actors in Karamoja, who have very similar ammunition profiles, may have sourced their ammunition from the same or similar channels. Before investigating whether this is likely to be the case in Karamoja, it is necessary to first investigate the ammunition characteristics of the actors concerned and what these mean.

Profiling Ugandan state forces

Uganda People's Defence Forces: The sample of UPDF ammunition displayed in Figure 9.3 is for the most part very new, produced in China by Factory Number 61 of China North Industries Corporation and dated 2004. That it originates in China is not unexpected. Uganda entered into a trade agreement with China in 1996, and in that year its defence staff also exchanged visits with high-ranking Chinese military figures (China. Ministry of Foreign Affairs, 2003; Xinhua, 1996a; 1996b). Comtrade data and secondary sources suggest considerable defence cooperation and military trade between Uganda and China beginning around that date and continuing to this day (AI, 2006; UN Comtrade, 2006). Despite the fact that China consistently under-reports its defence exports to Comtrade, it has reported large exports of small arms ammunition to Uganda.

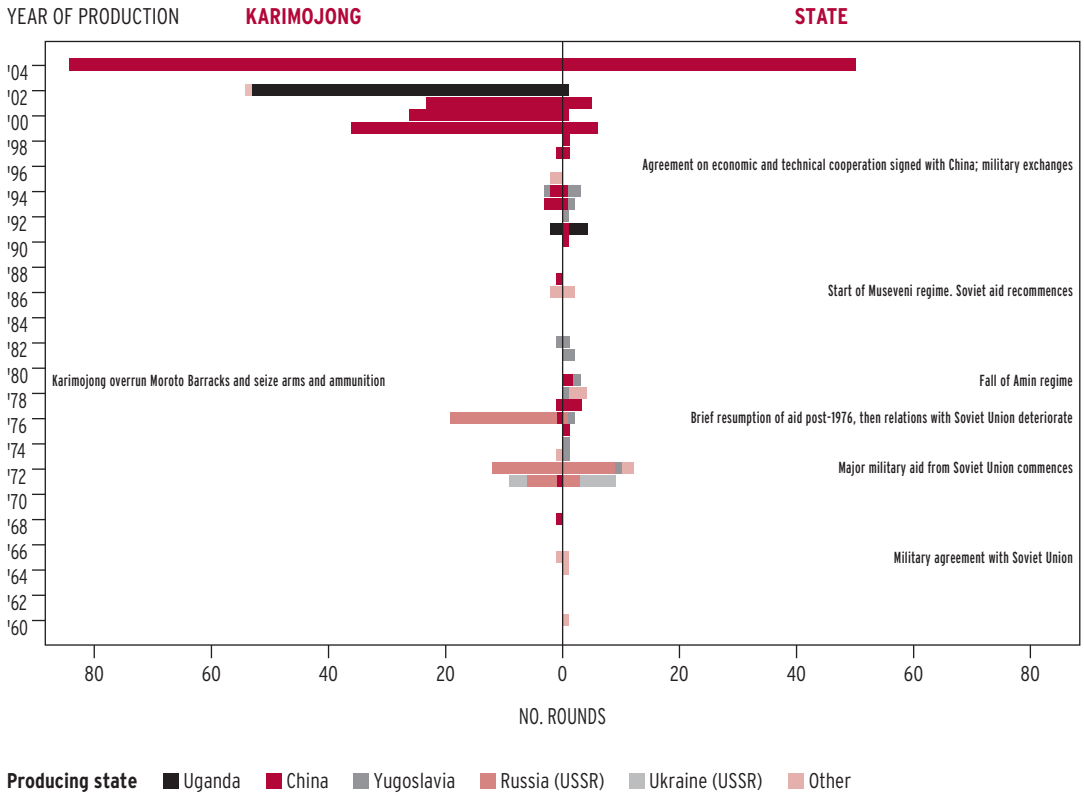
Figure 9.3 **Origin and year of manufacture of 7.62 x 39 mm ammunition stocked by groups in Karamoja, Uganda (n = 402)**





The UPDF undoubtedly retains older stocks of ammunition. Interviews conducted by the Small Arms Survey in August 2006 indicate that the UPDF supplies a number of Ugandan actors with ammunition, including district officials, LAPs, local defence units (LDUs), and the UWA. Much of this ammunition is old, indicating that the UPDF itself stockpiles older types, but may well prefer to issue its active forces with newer ammunition, leaving the remaining, older stocks to auxiliary forces. These stocks are largely the legacy of former defence agreements between Uganda and foreign powers—notably the former Union of Soviet Socialist Republics (USSR) in the early to mid-1970s (Byrnes, 1990)—but also of recent, albeit relatively low-scale, domestic production (Figure 9.4).

Figure 9.4 **Ammunition stocked by state forces and Karimojong: a history of Uganda's military alignment and arms imports (n = 402)**



Source: Byrnes (1990); interviews in Uganda, various dates

Uganda Wildlife Authority: The UPDF supplies ammunition to the UWA.[7] The UWA ammunition profile (Figure 9.3) is commensurate with this. It stocks old ammunition, but like the UPDF that supplies it, also possesses Chinese ammunition produced in 2004. The UWA, when interviewed, appeared smarter in appearance and generally better equipped than the LAP or the similar LDUs, although less-well equipped than the UPDF. Its ammunition supplies appear to reflect this 'mid-range' position in the logistical hierarchy.

Local Administration Police: LAP stocks are generally older than those of the other state forces in the sample. As in the case of the UWA, LAP stocks include 2004 Chinese ammunition, but LAP members are open about the fact that they are primarily equipped with poor-quality arms and ammunition, and concede that the UPDF retain the newest stocks.[8] The similar LDUs (not in the sample) also note the same poor-quality ammunition.[9] Both forces are auxiliary troops, poorly paid, often shabby in appearance, and use arms and equipment that are surplus to regular forces. Perhaps because of this, the LAP ammunition profile in this sample contains the most variation of ammunition origins and ages of all eight groups in the study (Figure 9.3).

The varied ammunition profile of the LAP includes Ugandan-produced ammunition, which is notably absent in the profiles of either the UPDF or the UWA. This ammunition, produced by Luwero Industries, Nakasongola, was

Four 7.62 x 39 mm rounds in the possession of the Karimojong's neighbours, the Turkana of Kenya. On the Uganda-Kenya border, December 2006. © James Bevan

marked '91' and '02'.[10] The probable reason why it only appears in LAP stocks is its reportedly poor quality. The ammunition was heavily criticized by the inspector general of police. For this reason, the police chose to equip their forces with foreign-made ammunition rather than use the Ugandan-manufactured rounds (*Monitor,* 2002b; *Red Pepper,* 2004, pp. 1–2). LAP personnel report that the ammunition is unreliable and fouls the barrels of their weapons.[11] It is plausible that the UPDF shun the ammunition, given its questionable reliability, and instead issue it to secondary defence forces, such as LAPs and LDUs.

Taken together, the ammunition profiles of the three state security forces illustrate broadly what one would expect to find. The UPDF, as better-equipped, frontline troops, possess the most recent ammunition. Their stocks are illustrative of Uganda's newest acquisitions of defence material—from China. The UWA and LAP forces reveal a more holistic profile of the Ugandan state's ammunition stocks. Unlike the UPDF, they are issued with older varieties of ammunition from Ugandan state arsenals. These stocks include ammunition that may have been transferred from the Soviet Union in the 1970s and also ammunition from recent, albeit relatively low-scale, domestic production (Figure 9.4).

Profiling the Karimojong

Broadly speaking, the combined ammunition profile of the five Karimojong groups is very similar to that of the Ugandan state forces (Figure 9.4). This suggests that the state and non-state groups might share similar sources of ammunition, but what are these?

A brief review of the history of arms proliferation among the Karimojong reveals that they first came into possession of large quantities of arms and ammunition during the fall of the Amin regime in 1979. After troops loyal to Amin abandoned the barracks in Moroto, the Matheniko Karimojong overran the armouries, taking large quantities of arms and ammunition. In a second wave of mass acquisition in 1986, demobilized Karimojong from the defeated Uganda National Liberation Army returned to their communities with their weapons and ammunition (Mkutu, 2006, pp. 9–10). One would expect, therefore, to see this reflected in the ammunition profiles of the five Karimojong groups studied, and it is indeed the case. Karimojong stocks reflect Soviet transfers of the 1970s that are also present in the ammunition profiles of the Ugandan state forces (Figure 9.4). This may account for some of the 1970s stocks, but what of newer ammunition?

There is no record of a single, major capture of state stocks by the Karimojong since 1986, so why do the Karimojong hold a high number of Ugandan-produced rounds, manufactured after 1991? State forces do not appear to stock this ammunition in such high numbers, and it is highly unlikely that the Karimojong groups are in a position

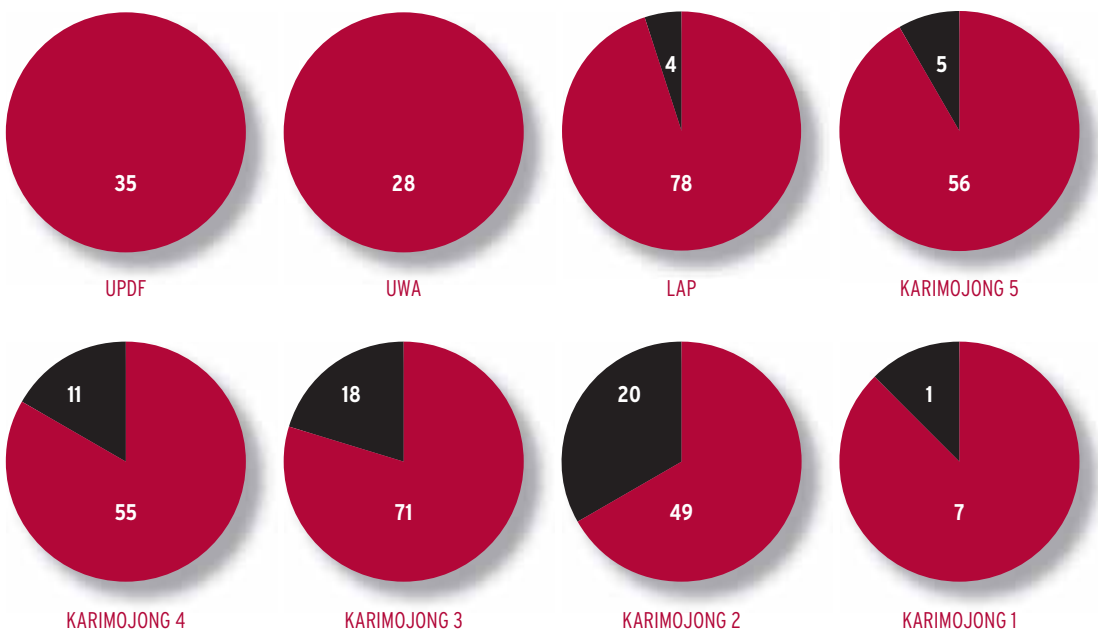
to procure it directly from the manufacturer. These stocks provide a particularly strong reason to suspect the Ugandan armed forces of 'losing' ammunition (through trade or capture) or distributing ammunition to other parties who subsequently 'lose' it, through trade or capture, to the Karimojong.

As noted above, a high level of trade or capture between groups should yield similar profiles. But this is not always the case. For example, if a group, (a), were to consistently trade only its old ammunition with another group, (b), then we would expect group (a) to have a considerably younger ammunition profile than group (b). The same kind of differences would appear if group (a) discriminated according to ammunition type or origin.

State forces have criticized Ugandan-produced ammunition. If trade does occur, members of the Ugandan state forces may well discriminate, according to quality, as to which rounds they distribute to other actors. Such actors could include local civilian officials, civilians armed by the military in the regions to the west of Karamoja, or the Karimojong (who would acquire ammunition through unofficial trade between themselves and security forces). Whichever source is more prolific (and all may be so), the offloading of poorer-quality ammunition is a plausible explanation for a high number of Ugandan-produced rounds in the hands of the Karimojong, but comparatively lower numbers in the hands of the state forces they were intended for (Figure 9.5).

What of the other newer stocks? The prime means of Karimojong acquisition are trade or capture, or a mixture of the two. In the first instance, the Karimojong certainly trade with neighbouring clans, including those on the Sudanese and Kenyan sides of the border. They also trade with members of the Lord's Resistance Army (LRA) on

Figure 9.5 **Luwero Industries (Uganda) 7.62 x 39 mm ammunition stocked by groups in Karamoja (proportion of each group's stock) (n = 402)**



Note: Figures on the pie charts give numbers of individual rounds.

occasions and with other Ugandan non-state actors to the west of Karamoja. In terms of capture, the Karimojong report that they have captured ammunition from the LRA, the Turkana and Pokot in Kenya, and in isolated incidents from UPDF soldiers.[12] Both trade and capture are therefore likely to be responsible for a portion of the rounds in the sample.

One feature of the sample, however, suggests that these sources cannot account for all acquisitions by the Karimojong. The prevalence of relatively new ammunition in the sample suggests a short chain of supply from place of manufacture to Karamoja. The most-recent ammunition in the sample originates predominantly in China, with a particular concentration of rounds manufactured in 2004 (Figure 9.4). It is highly improbable that China trades directly with any of the non-state armed groups in the region. This means that, in less than two years, ammunition has been manufactured in China; transported to one or more state parties in the region; and lost, captured by, or sold to the Karimojong. The time period between manufacture and acquisition by the Karimojong is very brief, and briefer still if one considers that the ammunition may have been stored in China before shipment, or stored in the arsenal of a state in the region prior to diversion or retransfer.

Is it possible that the trade and capture noted above could transfer this ammunition to the Karimojong in such a short space of time? The answer is yes, but probably not in such quantities.

There are a number of potential sources of the newer Chinese- and Ugandan-manufactured Karimojong ammunition, and all of them are plausible. Firstly, the Ugandan government long supported the Sudan People's Liberation Army (SPLA) in southern Sudan, which is (in arms trade terms) only a stone's throw from Karamoja. If Uganda no longer supplies the SPLA, this source is doubtful, but without conducting similar studies of ammunition in the regions of Kenya and Sudan proximate to Karamoja, it is difficult to ascertain whether this is the case and whether these stocks are available to the Karimojong.[13] Secondly, the Karimojong could acquire ammunition from the civilian population of Acholiland in Uganda, where the arming of civilians by the government has been pervasive in the past decade. A third option is that Ugandan state forces in Karamoja trade ammunition to the Karimojong. The data presented here, alone, cannot determine which explanation is more likely, and all may well be the case. However, when viewed together with interviews and reports by the Ugandan military and local press, the third explanation appears most valid.

Karimojong warriors interviewed in August 2006 were adamant that their main supply of ammunition was from individuals in the UPDF. The warriors reported how they would be approached by troops in town, who would later arrange a transfer of arms and/or ammunition at a discrete location in exchange for money or produce.[14] Other visual indicators of trade lend credence to such reports. Karimojong warriors have traditionally worn items of military apparel, such as combat jackets and military insignia, as symbols of victory over the soldiers they have killed in combat. There are simply too many such items in circulation today in Karamoja—and too few reports of hostile exchanges between the UPDF and Karimojong—for trade not to be a factor.[15]

Interviewed warriors did not implicate LDUs or LAPs in the trade in arms and ammunition, and mentioned only the UPDF, but this does not mean that only the UPDF may be involved.[16] Members of the UPDF have claimed that LDU units, formed during the 2001–02 disarmament initiative and composed of local Karimojong, have supplied fellow warriors with ammunition. As one UPDF commander claimed to the mainstream Ugandan press: 'The racket is very common whenever we despatch the LDUs to carry out operations in areas where they hail from' (*New Vision,* 2002). Warriors may be unwilling to implicate LDUs because of these family/clan ties—hence their implicating the UPDF. But the fact that the Karimojong profiles appear to be a good deal less varied than those of auxiliary forces

(Figure 9.3) and that their ammunition is a good deal younger could be evidence that, if they trade with a number of state forces, they may trade to a greater extent with the UPDF.

Implicated state forces

Despite a number of caveats, the evidence presented in this chapter suggests that Ugandan regular and auxiliary forces are a source of ammunition for the Karimojong. These findings do not, it should be stressed, implicate the Ugandan armed forces at the institutional level: there is no plausible reason to suggest any official policy of transfer to the Karimojong. The process is likely to be attributable to the actions of individuals within those forces. But the trade nevertheless appears to exist.

There are five mutually supporting reasons for this conclusion. Firstly, although ammunition profiles are not mirror images of one another, they are sufficiently similar to conclude that state and non-state actors have very similar sources of ammunition. Secondly, statements by the military, made in the Ugandan press, admit to trade between LDU members and their brethren Karimojong warriors. Thirdly, poor-quality, Ugandan-manufactured ammunition—which has been publicly criticized by members of the security forces—circulates among the Karimojong in relatively high numbers. Importantly, it is far less frequent in the hands of state armed forces, suggesting an 'off-loading' phenomenon on the part of state forces. Fourthly, there is considerable evidence of trade in military commodities other than arms and ammunition. Finally, and by no means least, Karimojong warriors are emphatic that their primary source of arms and ammunition is the UPDF and are angered at having been disarmed—in some cases a number of times—and then having to buy back arms and ammunition.[17]

These findings have a number of important, policy-relevant implications. Of particular significance is the illicit cross-border trade. The results suggest that it could be over-emphasized as a source of illegal arms acquisition in the region. More than likely, some of the ammunition in the hands of the Karimojong analysed in this study has been traded with non-state actors in other states. But the findings in this chapter—particularly the proliferation of recently manufactured Chinese and Ugandan ammunition—suggest domestic sources are also a component of the problem.

Fundamentally linked to this is the question of due diligence for the supplier states to the region. If states supply to other states that have little control over their stocks of arms and ammunition, then the former may indirectly perpetuate protracted internal conflicts. This study, and other research highlighting poor stock controls, may help to provide evidence to the supplier states concerned so that they may adapt their arms and ammunition transfer policies accordingly (TRANSFERS).

Also linked to these questions is the perennial issue of security sector reform and its absence in many states in the region and elsewhere. If troops are so poorly paid that it makes financial sense to sell relatively inexpensive munitions to non-state actors, there is a clear need to invest more heavily in salaries (or at least ensure regularity in payments) and to institute greater accountability over ammunition expenditure. One considerable problem in this regard, which is particularly acute in the case of Uganda, is the creation of non-state armed groups over which the state has little control. The profusion of quasi-state groups, such as LDUs and militias, in the region opens yet another avenue for loss of ammunition from state stocks. Little oversight, and even less pay than their regular counterparts, conspires to make these groups a high-risk factor in small arms leakage from state stocks.

At present this study contains too small a sample to give accurate weights to the volume of cross-border and domestically sourced ammunition, but it makes a clear case for the presence of Ugandan state forces' ammunition

in the hands of the Karimojong. This trade undermines successive disarmament initiatives and contributes to the high levels of armed violence that characterize the region. It would take a wider sampling frame—and one that extends to the proximate regions of Kenya and Sudan[18]—to assess more accurately the role of cross-border trade into Karamoja. Future study requires increased attention to the trading habits of states, combined with data on how that ammunition is marked. The findings of this study are the first publicly available outcome of efforts to trace ammunition, systematically and comparatively, at the regional level.

WHOLESALING DEATH: THE CYCLE OF AMMUNITION DIVERSION FROM STATE ACTORS TO ORGANIZED CRIME IN RIO DE JANEIRO, BRAZIL

The setting and the problem: drugs; violence; corruption; and many, many bullets

The problem of armed violence is particularly serious in the Brazilian city of Rio de Janeiro. Since the mid-1980s, criminal organizations have gained territorial control of several poor neighbourhoods (*favelas*) of the city. These factions wage armed competition for control of profitable cocaine and marijuana retailing points and also confront public security forces.[19] Ammunition plays a fundamental role in fuelling this violence, but it seems that its origins are not solely the international illicit trade or diversion from legal civilian stocks. Much of this ammunition appears to have been diverted from state security forces.

This study focuses on ammunition that was seized by police from predominantly criminal organizations annually, between 2003 and 2006, and sent to the Forensic Institute Carlos Éboli (Instituto de Criminalística Carlos Éboli, or ICCE) for analysis. It profiles this ammunition by date, year of production, and manufacturer and compares it with trends in ammunition acquisition by state security forces. Together with qualitative research, including interviews and analysis of official documentation, the data shows a strong convergence between the types and volumes of state stocks and those in the hands of criminals in Rio de Janeiro.

Ammunition circulating in Rio de Janeiro

The diversion of small arms and ammunition from official stockpiles and inventories to criminal organizations and illegal armed groups in Latin America has been documented in several works.[20] However, this study is the first attempt to trace ammunition in Rio de Janeiro using ammunition headstamp data.

The study was designed to determine whether diversion from state security force stocks was the most likely reason for the high numbers of assault rifle rounds found to be circulating among criminal factions in Rio de Janeiro.

As with the case of Karamoja, discussed above, it compares the ammunition of state security forces with that of non-state armed groups. The analysis was designed to assess three possibilities regarding where the illicit ammunition could have been sourced. These were: (1) the ammunition was sourced abroad; (2) it was stolen or traded from legal civilian stocks; and (3) it was diverted from the security forces.

Data collection and analysis

This study adopts a similar methodology to the analysis of the situation in northern Uganda. It profiles ammunition that was seized from criminals and aggregates this into a single 'criminal ammunition profile'. However, unlike the Uganda case, it was not possible to record data directly from the stocks of state security forces. Instead, trends in state forces' acquisition of ammunition were compared with the criminal ammunition profile to identify similar trends.

Criminal ammunition data: This data was collected from ammunition stocks that were seized by the police in the city of Rio de Janeiro.

The study accumulated 2,860 rounds of live ammunition that had been collected in 2004, 2005, and 2006 by forensic experts of the Scientific and Technical Department (DPTC) of the police of Rio de Janeiro. Pending analysis, the ammunition had been stored at the ICCE,[21] which is the usual procedure for handling ammunition seized by the military and civilian police in the northern, southern, and eastern districts of the city.[22]

The DPTC records only the manufacturer and calibre of each round of ammunition. Rarely is more detail noted than the characteristics of the bullets (i.e. whether full-metal jacketed or not). For that reason, it was necessary to reinvestigate the ammunition to yield the information required for this kind of analysis. Personnel from the DPTC, working with Viva Rio and the Small Arms Survey, compiled the following data for the ammunition:

- the police station where the seized ammunition was received;
- the police file case number (indicating in which police operation the ammunition was seized);
- the quantity of seized ammunition in each police operation;
- the calibre;
- the model;
- the make and/or manufacturer;
- the year of manufacture (if available);
- the date of seizure;
- the lot number (if available);
- whether it was original or reloaded ammunition;
- the place of seizure (street, *favela,* etc.);
- the neighbourhood in which the ammunition was seized; and
- the related crime (the crime the seizure was related to).

While the sample in this study is far from statistically representative of all the ammunition seized in Rio de Janeiro,[23] it is nevertheless a strong indicator of the possible paths that ammunition follows from manufacturer to crime.

CBC cartridge with engraved lot number. © DPTC

State security forces ammunition data: The study did not retrieve stocks of ammunition directly from the security forces. Instead, it used reports and interviews to build up a broad outline of the types of ammunition used by them, when this ammunition was adopted, and in what quantities. These sources included the statistical yearbook of the Brazilian Army (Ministério da Defesa, 1998–2003), official small arms acquisition information provided by the Government of

the State of Rio de Janeiro, information provided by the ammunition manufacturer Companhia Brasileira de Cartuchos (CBC) to the Brazilian Securities and Exchange Commission on ammunition sales, and information on exports and imports of Brazilian-manufactured ammunition.[24] Additional information was obtained through interviews.

In some countries, manufacturers are required by law to mark each round with a lot number, which is a code that identifies the recipient of the ammunition—such as a specific battalion of the police or army. By using this information it would have been easy to determine whether any of the ammunition found in criminal hands had been diverted from state security forces stocks.

However, the seized ammunition in the sample was not lot-marked. While Brazil is one of few states to do so, Brazilian legislation has only governed the lot-marking of ammunition since January 2005. At the time of writing, the State of Rio de Janeiro had not purchased ammunition from CBC in the previous 12 months (i.e. since lot-marking began), because of a surplus of ammunition purchased in previous years (*En la Mira,* 2006).[25] None of the seized ammunition was manufactured after 2004.

It is very important to mention that this chapter was finished almost at the same time that a Congressional Hearing Commission of the Lower House of the Brazilian Congress (CPI) that was investigating small arms trafficking activities closed its work and published its final report. The commission was set in place in March 2005 and published the report in November 2006. The members of the CPI listened to the declaration of government officials, protected witnesses, and imprisoned criminals (including policemen indicted under corruption charges). Viva Rio collaborated with members of the CPI particularly with the analysis of data of more than 10,500 small arms seized from 1998 to 2003 by the police of the State of Rio de Janeiro and traced back by the producers following a request by the CPI. Although the report does not particularly focus on ammunition, its information does not contradict the results of this chapter and also supports the chapter's findings, since the report finds evidence of small arms diversion from Brazilian state security institutions, particularly police forces, to criminal outfits (Câmara dos Deputados, 2006, pp. 358–72).

Identifying potential state stocks: restricted-use ammunition

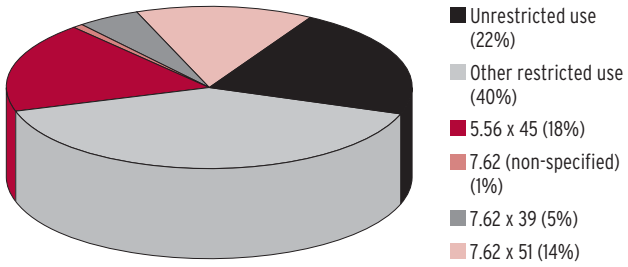
As the study of Uganda in this chapter illustrates, comparing ammunition profiles of groups can give insights into whether groups' stocks are linked through trade or capture (including theft). In the Ugandan case, this was made easier because all of the groups sampled used the same ammunition. In the case of Brazil, the study retrieved many types of ammunition. The most practical way of assessing whether ammunition has been diverted from state security forces, therefore, was to focus on the specific types of ammunition used by those services and whether those types were present in the sample of 2,860 rounds seized by the police.

For this reason, the present study analyses a sub-sample of 'restricted-use' rifle ammunition. Restricted-use ammunition is distinguishable from unrestricted-use ammunition in Brazil. Although it can also be used by a small number

Box 9.1 Restricted-use ammunition

Restricted-use ammunition is defined by Brazilian legislation as ammunition for handguns with a muzzle energy superior to 407 joules, and ammunition for long barrel small arms with a muzzle energy superior to 1,355 joules, such as 357 Magnum, 9 Luger, .38 Super Auto, .40 S&W, .44 SPL, .44 Magnum, .45 Colt, .45 Auto, .22-250, .223 Remington (or 5.56 x 45 mm), .243 Winchester, .270 Winchester, 7 Mauser, .30-06, .308 Winchester (or 7.62 x 51 mm), 7.62 x 39, .357 Magnum, .375 Winchester, and .44 Magnum (Presidência da República, 2000, arts. 16, 17, chs. VIII and IX of Title V; 2004, art. 19).

Figure 9.6 **Remaining 2004 and 2005 ammunition stored at ICCE by calibre, 22% unrestricted use and 78% restricted use (n = 2,860)**

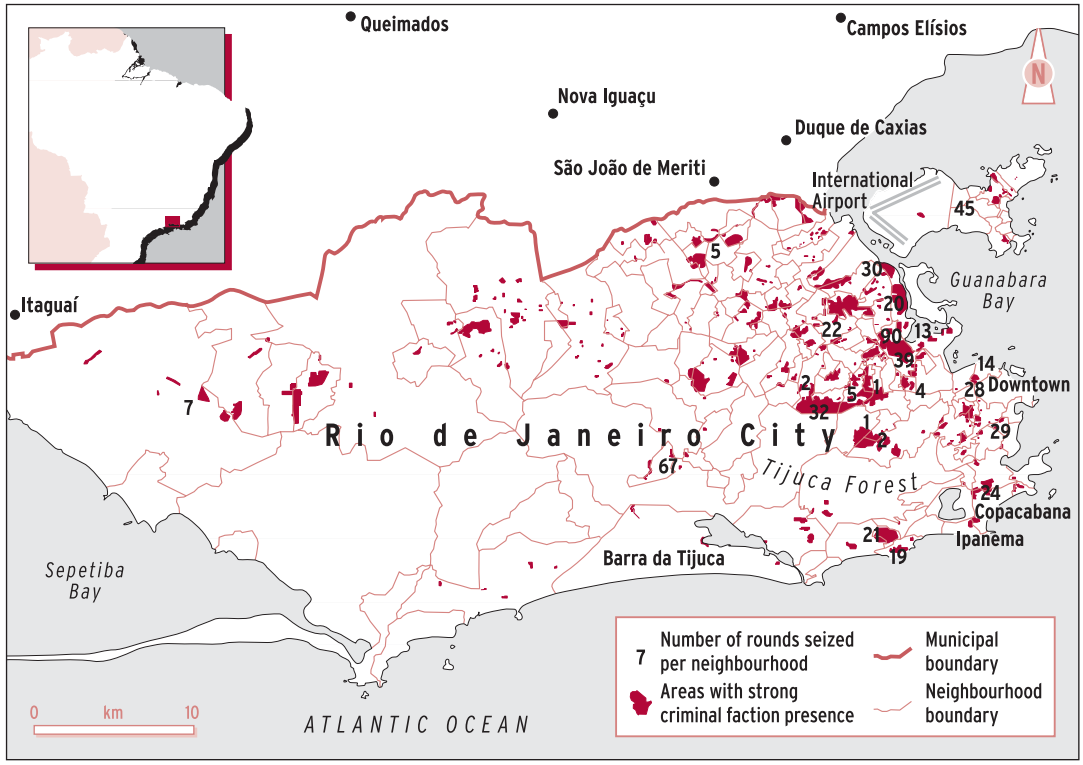


Source: Data supplied by DPTC, analysed by Viva Rio
Note: 'Other restricted use' includes mainly 9mm; .45; and .40 cartridges

of civilian users, such as sporting shooters, hunters, and collectors, state security forces are, by far, the primary recipients of restricted use rifle ammunition.[26] In short, it is used predominantly by state security forces.

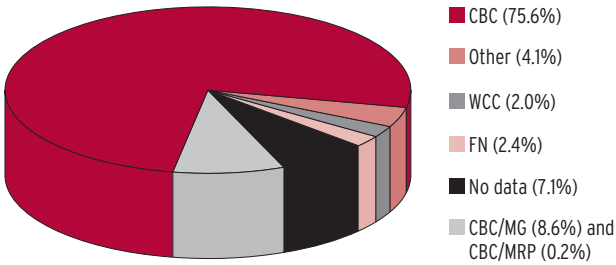
Interestingly, the sample as a whole is composed predominantly of restricted-use calibres, particularly calibres used in assault rifles and light machine guns—5.56 x 45 mm and 7.62 x 51 mm, respectively (Figure 9.6). This can be explained (Map 9.1) by the fact that most of the ammunition was seized in areas of the city were there is a strong presence of one of the four criminal organizations that dominate the cocaine trade—Comando Vermelho, Comando Vermelho Jovem, Amigos dos Amigos, and Terceiro Comando—or in areas with high crime rates (Dowdney, 2003, pp. 265–69). Numerous studies report that Rio de Janeiro's criminal factions favour assault rifles. This is linked not only to these weapons' firepower and potential to cause damage, but to their

Map 9.1 **Selected ammunition seizures in Rio de Janeiro, 2003–06**



Notes: n=520. The ammunition seized was CBC restricted-use 7.62 (non-specified), 7.62 x 51 mm, and 5.56 x 45 mm rifle rounds. This map only shows cases in which the place of seizure was specified.
Sources: DPTC for the number of rounds; Dowdney (2003, p. 265) for the distribution of areas with strong presence of criminal factions

Figure 9.7 **Date-marked ammunition by manufacturer (n = 1,045; CBC n = 882)**



Notes: CBC-manufactured rounds were marked variously. They included ammunition marked CBC/MRP (Magtech Recreation Products) and CBC/MG. Magtech is the trade name used by CBC for its commercial exports and CBC/MG denotes production for the Brazilian Ministério da Guerra–ammunition produced exclusively for the armed forces before 1969 (Munición.org, 2006). WCC stands for Western Cartridge Co., Illinois, United States. FN is the mark of Fabrique Nationale d'Armes de Guerre, Belgium.
Source: Data supplied by DPTC, analysed by Viva Rio

symbolic significance vis-à-vis rivals and the police. Assault rifles are the weapons of choice of the 'soldiers' of the organizations. They are used to defend strategic drug retailing points, as well as arms and ammunition caches (Dowdney, 2003, pp. 39–117; Rivero, 2005; Small Arms Survey, 2006, pp. 84–86).

Is most of this ammunition in criminal hands therefore sourced from state security forces? The two predominant calibres—5.56 x 45 mm and 7.62 x 51 mm—are certainly the two used in the assault weapons of the Brazilian armed forces and the police of Rio de Janeiro.[27] Rio de Janeiro is one of the few states in which the police use automatic weapons routinely (Dreyfus and de Sousa Nascimento, 2005, p. 132). This does not, however, mean that ammunition used in crime is necessarily sourced from state security forces.

To further investigate paths of possible diversion, the data had to be filtered in two ways. Firstly, the study retained only rounds marked with the year of manufacture. This was needed to determine whether the ammunition seized from criminals matched the dates when state security forces acquired ammunition of that same type. Secondly, it retained ammunition manufactured by the same factories as those used by state security forces.

Domestically manufactured ammunition is in the hands of Rio de Janeiro's criminal gangs.

Of the 2,860 rounds in the entire sample, 1,045 were marked with year of production. Of these, 882 rounds were manufactured by CBC—the exclusive national supplier to the Brazilian state security forces (Figure 9.7).[28] For even greater specificity, only assault rifle calibres manufactured by CBC were chosen for further analysis. This sub-sample of 612 CBC rounds comprised both 7.62 x 51 mm and 5.56 x 45 mm assault rifle rounds—which became the working sample for this study. It is important to note that from this sample (612 rounds) only one round was identified by ICCE forensic experts as reloaded ammunition, and only three cases show no data on that particular field. Therefore 99.3 per cent of the sample is composed of non-reloaded ammunition.[29] This fact would exclude the possibility of these cartridges being the result of the collection of empty cases and illegal reloading by criminals.

Potential sources of CBC ammunition in the hands of criminal organizations

The presence of 612 assault rifle rounds in the sample means that domestically manufactured ammunition, destined for use by security forces, is in the hands of Rio de Janeiro's criminal gangs. Does this therefore imply diversion from the stocks of Brazilian state security forces?

There is a particularly high concentration of security force users of CBC's restricted-use ammunition in the State of Rio de Janeiro—22% of total active duty and retired military personnel in the country and over 60,000 policemen (Dreyfus and de Sousa Nascimento, 2005, pp. 124–29). But this alone does not necessarily implicate state security forces as a source. There are two plausible alternatives.

Firstly, CBC exports military-calibre ammunition to a number of neighbouring countries. It is possible that this ammunition could re-enter Brazil via illicit channels to fuel Rio de Janeiro's violent crime. Secondly, since restricted-

use ammunition can be acquired by (an albeit small number of) civilian users, such as sporting shooters, hunters, and collectors, these could be further sources of illicit ammunition. No single option can be excluded entirely, but the following sections give some idea of the probable magnitude of each source of ammunition in the hands of criminals.

Possible transfer from neighbouring countries

CBC is one of the region's largest exporters of ammunition. Could the ammunition in the hands of Rio's criminal gangs have been transferred illicitly from CBC clients in one of Brazil's neighbouring states?

A review of Brazil's arms exports suggests that its top ten export partners between 1980 and 2004 numbered several South American countries—most of them bordering on Brazil. Of particular note is Paraguay, which is known to be a major diversion point for state forces' ammunition into the illicit market, and hence a possible source of illicit re-entries of CBC ammunition (Dreyfus and Bandeira, 2006; Dreyfus, Lessing, and Purcena, 2005, pp. 75, 77–78).

However, while Paraguay was among the top ten importers of Brazilian ammunition during the mid-1990s, Brazilian small arms and ammunition commercial exports to that country were halted after 1999 (Dreyfus and Bandeira, 2006). Much of the ammunition in the sample post-dates 1999. In addition, since 2001, and with the exception of Mexico, Ecuador, Chile, and Argentina, commercial exports to Latin American and Caribbean countries have been virtually eliminated by a 150 per cent export tax on commercial exports of arms ammunition to the latter countries (Dreyfus and Bandeira, 2006, p. 12).

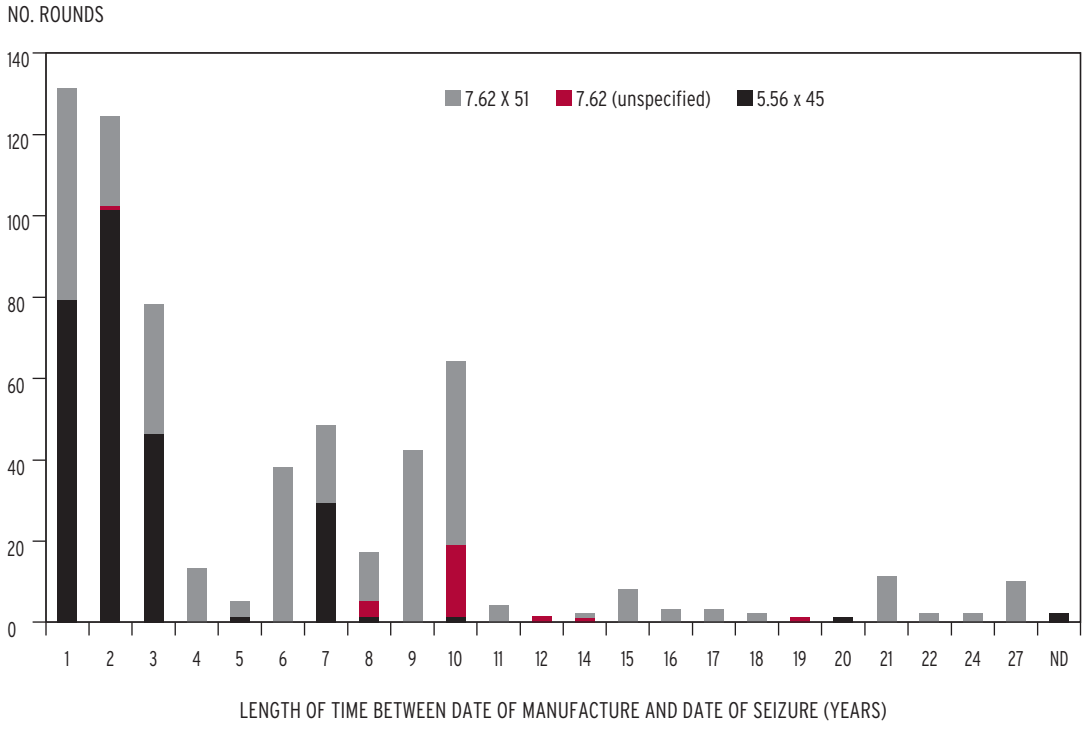
Colombia, Argentina, Chile, Peru, Bolivia, Venezuela, and Uruguay have also been important export destinations for Brazilian ammunition since the mid-1990s. However, there are several reasons why these states are very unlikely to be the source of Rio de Janeiro's illicit ammunition (Dreyfus and Bandeira, 2006; Dreyfus, Lessing, and Purcena, 2005, pp. 75, 77, 78).

Colombia is an unlikely source. Most of CBC exports to Colombia are of 5.56 x 45 mm ammunition and cases of the same calibre. However, these items, produced for the Colombian armed forces, are marked IM (the logo of INDUMIL—the Colombian state arms factory) prior to export.[30] There are no rounds marked IM in the sample seized by police in Rio de Janeiro.

This would leave the possibility of CBC restricted-use rifle ammunition exported for the armed forces (which are the state armed institutions that predominantly use that kind of ammunition) of other neighbouring countries, particularly Bolivia (which has domestic, although not significant, ammunition production), and Uruguay, Suriname, and Guyana (which do not have domestic ammunition production at all) (Dreyfus and Lessing, 2003; Small Arms Survey, 2004, pp. 17–27).[31] However, according to CBC sources, the company has not exported rifle and machine gun ammunition to the military of these countries 'for a long while'.[32]

Regarding civilian users in the remaining countries in the region, CBC ammunition is marked differently to the majority of the assault rifle ammunition in the sample. Ammunition produced by CBC for the civilian market (sporting shooters and hunters) is marked in inches instead of millimetres.[33] The percentage of .223 inch (5.56 x 45 mm) and .308 inch (7.62 x 51 mm) ammunition is insignificant (1.2%) in the sample seized in Rio de Janeiro. There are only 23 .223 calibre cartridges in the overall sample, of which only 6 were manufactured by CBC, and 12 .308 calibre cartridges, none of which were manufactured by CBC.

Figure 9.8 **Length of time (years) between date of manufacture and date of seizure by Rio de Janeiro police of restricted-use CBC assault rifle ammunition (n = 612)**



ND = no date
Source: Data supplied by DPTC, analysed by Viva Rio

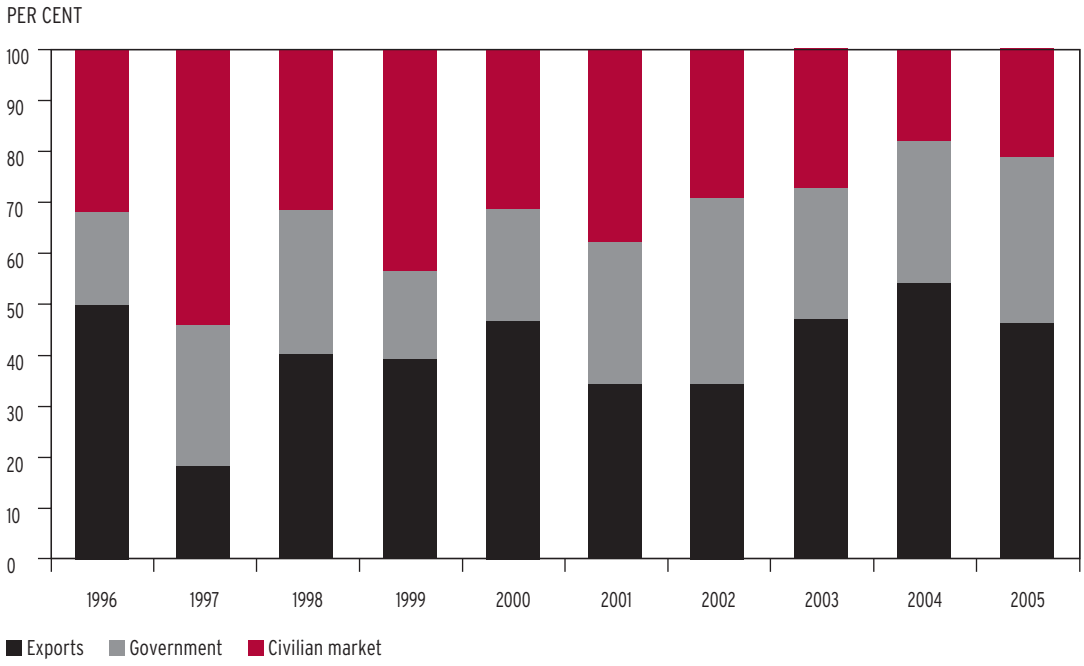
If ammunition has been diverted from the Brazilian-supplied armed forces of proximate states, it is likely to constitute a relatively small fraction of the sample seized from criminals. Given the fact that Brazilian security forces are equipped with the most common varieties of assault rifle ammunition in the sample, are they the source?

As in the case of Uganda, analysis of the period between date of production and the date on which the ammunition was seized, by its sheer brevity, may suggest domestic sources. Figure 9.8 indicates that, for the majority of rounds, time spans between production and seizure are between one and ten years, but rounds aged between one and three years at the date of seizure clearly predominate. Older ammunition stocks are likely to have a longer chain of supply. As noted in the Ugandan study, this is simply a function of 'being around longer'. The reverse is true of newer stocks of ammunition: there is a potentially shorter chain of supply. Given the age of the rounds seized by the police in Rio de Janeiro, a greater proportion of this illicit ammunition is likely to have been diverted from domestic security force stocks than from abroad. However, it could also have been diverted from the limited number of civilian users who are allowed to use restricted-use ammunition.

Possible loss from legally held civilian stocks

Diversion from civilian stocks within Brazil—and particularly within Rio de Janeiro—is another plausible source of illicit ammunition, but civilian stocks are likely to contain only a small volume of the assault rifle calibres found in

Figure 9.9 **CBC's gross ammunition sales by market segment, 1996–2005**



Source: CVM (1996–2005a; 1996–2005b)

the sample. As mentioned before, ammunition produced for the civilian market is marked in inches, and ammunition marked that way is insignificant in the analysed sample.

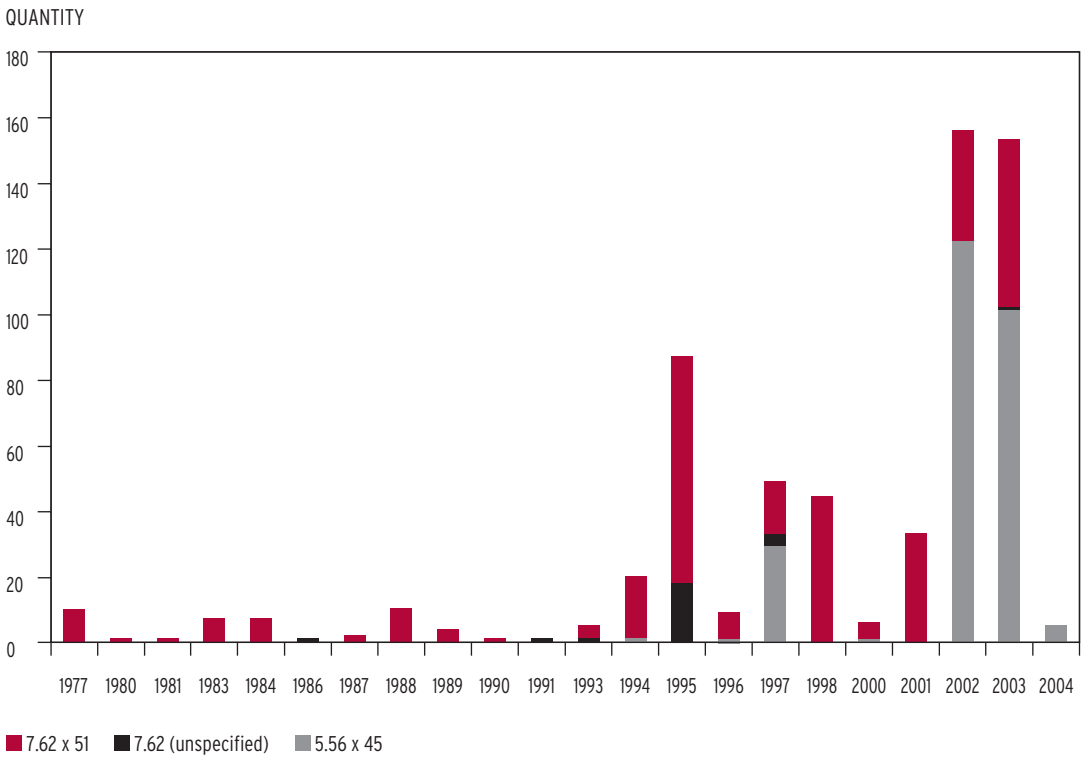
As Figure 9.9 illustrates, in the last ten years the bulk of CBC ammunition sales have been to foreign markets and to Brazilian government institutions (CVM, 1996–2005a; 1996–2005b). Of its total sales, 46 per cent were derived from exports and 33 per cent from supplying the Brazilian police and military. The civilian market comprises 21 per cent of total sales—a contender for a source of illicit restricted-use rifle ammunition, but not a large one.

Moreover, the 21 per cent civilian market segment consists of many different types of ammunition, and it is possible that restricted-use rifle ammunition comprises a very small percentage of this share as it cannot legally be sold to most civilian users. It cannot be sold at gun shops, but may only be purchased directly from the factory or imported by the armed forces, with authorization from the Ministry of Defence and by law enforcement agencies, collectors, shooters, and hunters with special authorization from the Brazilian Army. Small arms collectors may only store inert ammunition of this type. Its only other legal civilian users are registered sporting shooters and hunters who have authorization from the Directorate of Controlled Products of the Brazilian Army.[34] Therefore, the majority of legal civilian users of restricted-use ammunition are unlikely to use assault rifle calibres.[35] Given the small civilian share of the restricted-use ammunition market and the large proportion of restricted-use ammunition in the seized sample, legal civilian users are unlikely to be a significant source of the assault rifle ammunition found in the hands of Rio de Janeiro's criminals.

Possible loss or diversion from state forces

Several features of the profile of assault rifle ammunition seized in Rio de Janeiro make it likely that much of it comprises rounds that have been diverted from state security forces.

Figure 9.10 **Quantity of seized restricted-use CBC assault rifle ammunition by calibre and year of manufacture (n = 612)**



Note: No cartridges manufactured in 1978, 1979, 1982, 1985, 1992, and 1999 were found in the sample, which is why these years are not represented in the figure.
Source: Data supplied by DPTC, analysed by Viva Rio

Firstly, as Figure 9.10 illustrates, there is a high concentration of 7.62 x 51 mm manufactured in the mid- and late 1990s—most notably from 1995 onwards. The calibre has been used by the Brazilian Army since the 1960s, but in the mid-1990s (especially in 1995, 1996, and 1997) the army donated 7.62 x 51 mm FAL rifles to the police of Rio de Janeiro.[36] The police began adopting assault rifles in order to match the rising firepower of the drug-trafficking organizations (Câmara dos Deputados, 2005c, p. 7; Dreyfus and de Sousa Nascimento, 2005, p. 132; Lessing, 2005, p. 218). We must assume that this also necessitated the transfer—and continued supply—of the appropriate 7.62 x 51 mm ammunition. Figure 9.10 shows higher concentrations of 7.62 x 51 mm ammunition in the sample after 1995.

However, the Brazilian Marines (Fuzileiros Navais), a 14,600-strong force, maintains bases near Rio de Janeiro. These troops replaced their 7.62 x 51 mm FAL rifles with US-made M16A2 5.56 x 45 mm calibre rifles at around the same time as the police (1997 and 1998). Surplus FAL rifles were kept for training (Dreyfus and de Sousa Nascimento, 2005, p. 114). The possibility of a diversion of 7.62 x 51 mm surplus ammunition resulting from that shift in the type of weaponry should also not be discarded.

The 5.56 x 45 mm ammunition in the sample is more recent, having been manufactured primarily in 2002 and 2003 (Figure 9.10). This relative youth suggests a very rapid migration from legal manufacture to illicit use—0 to 4 years.

Again, there are some interesting parallels between the profile of the seized ammunition and the procurement policies of Rio de Janeiro police. The police first acquired 5.56 x 45 mm weapons in 1999 and 2000, when the

Table 9.3 Ammunition purchased by the law enforcement agencies of the State of Rio de Janeiro, 2001–05

Year	Purchased ammunition (rounds)
2001	2,900,000
2002	–
2003	1,210,000
2004	7,400,000
2005	552,000

Note: Information for 2002 was provided in only in values (totalling USD 1.8 million) rather than quantities.
Source: Governo do Estado do Rio de Janeiro (2001)

Secretariat of Public Security purchased 1,500 Colt M-16 assault rifles (Partido Socialista Brasileiro, 2006).[37] The police forces of the State of Rio de Janeiro also purchased large quantities of ammunition from 2001 to 2005 (Table 9.3). Figure 9.10 shows a high concentration of 5.56 x 45 mm ammunition in 2002 and 2003.

Both 7.62 x 51 mm and 5.56 x 45 mm ammunition could plausibly have been diverted from police stocks into the hands of Rio de Janeiro's criminal factions. Between 2001 and 2004, over seven million rounds were purchased for the military police (preventive uniformed police) of Rio de Janeiro and over five million for the civilian police (investigative police) of Rio de Janeiro (Secretaría de Segurança Pública do Estado do Rio de Janeiro, 2004, p. 4). Both police forces (military police and civilian police) could potentially have been the source of the rounds in the sample.

The police of Rio de Janeiro are a strong candidate for diversion.

The data suggests that the police of Rio de Janeiro are a strong candidate for diversion. Recent disclosures of police involvement in the diversion of ammunition support this observation. In July 2005 the man who had for 16 years been the head of the ammunition depot of the civilian police of Rio de Janeiro was arrested together with nine other policemen on charges of diversion of at least 10,000 rounds to drug-trafficking organizations (Secretaría de Segurança Pública do Estado do Rio de Janeiro, 2005; Dreyfus, 2006).

According to Under Secretary of Public Security of Rio de Janeiro Cesar Campos, the number of rounds used in shootings in the *favelas* decreased after the arrest (*En la Mira,* 2006). Decreasing ammunition consumption may have been directly linked to a reduction in supply.

The case for leakage from state stocks in Rio de Janeiro

A combination of several factors suggests that state security forces—most notably the police—are the source of much of the assault rifle ammunition identified in this study as leaking to criminal gangs. No single indicator is sufficient to point the finger with any degree of certainty, but taken together these findings are mutually supportive.

Firstly, the ammunition is restricted-use, assault rifle ammunition used by the police of Rio de Janeiro. Its civilian customers are limited in number. Secondly, the prevalence of 5.56 x 45 mm ammunition in the sample manufactured in 2002 and 2003 coincides with the years in which the police forces of Rio de Janeiro purchased large quantities of 5.56 x 45 mm ammunition. There is a similar parallel between increases in 7.62 x 51 mm ammunition and the adoption by the police of weapons of that calibre in the mid-1990s. Thirdly, the July 2005 revelation of police involvement in large-scale diversion of ammunition implicates the police as a source of ammunition entering the illicit market. Fourthly, the time period between the ammunition's date of manufacture and its seizure on the illicit market is short, indicating a short supply chain and a source proximate to the place of seizure.

Some of the illicit ammunition may also re-enter Brazil from abroad, but little of this ammunition is marked in the same way as the ammunition destined for Brazil's security forces. The domestically manufactured assault rifle ammunition in the sample is mostly very young, and the factors listed above suggest that leakage from the security forces may play a part in facilitating Rio de Janeiro's high crime and mortality rates.

The Brazilian state has recognized that combating theft from these institutions is a priority. Lot-marking of ammunition sold to state institutions has already commenced. The observations made in this study suggest that such measures are required to ensure security force accountability for ammunition stocks in Brazil, and particularly in Rio de Janeiro. Its implications for illicit ammunition proliferation are clear—cleaning up the illicit market begins at home.

One by-product of this study, conducted by Viva Rio in conjunction with the DPTC, is that it may well improve the data collection methods of the latter. This is especially so with regard to statistical methods for the identification and detection of diversion patterns.

CONCLUSION

Karamoja in Uganda and the city of Rio de Janeiro in Brazil experience high levels of armed violence: levels that are well in excess of their country or regional averages. In both instances, ammunition is a vital ingredient in the armed violence that claims hundreds, if not thousands, of lives each year.

The two studies in this chapter have used different data collection and analysis methods. In the Karamoja case, the data was collected directly from the private stocks of warriors in the region. In Rio de Janeiro, the ammunition had been seized by the police prior to the study taking place. Both studies, however, reveal a worrying trend. Each can make a strong claim that a considerable quantity of ammunition used by non-state actors was sourced from state security forces.

In the Ugandan case, the evidence points firmly to members of the security forces transferring ammunition to the Karimojong. This is in direct opposition to successive and ongoing disarmament initiatives aimed at halting the conflict in this part of Uganda. In the case of Rio de Janeiro, there is insufficient evidence to suggest this kind of trade. There is, nevertheless, evidence that, whether through trade, loss, or theft, security forces' ammunition is fuelling some of the city's extreme armed violence.

Both Uganda and Brazil display a further trend of concern. The ammunition found in the hands of warring non-state actors is, for the most part, new. In Brazil, much of the ammunition was seized from criminals between one and three years after manufacture. Similarly, much of the Karimojong ammunition is dated 2004. Both findings indicate a short chain of supply—ammunition has been manufactured, issued to state forces, and 'lost' to non-state actors within the space of two or three years at most.

The findings of this chapter suggest that, in some countries, the principal supply of illicit ammunition may not be the international illicit market, but a flourishing domestic market with its origins in the state security forces. The issue of stockpile security has long been on the small arms policy radar. Research of this kind re-emphasizes just how important a focus on stockpile security is.

What happens when the very forces that are supposed to be diffusing conflicts actually fuel them? The outcome, in the absence of interventions in the form of security sector reform and efforts to introduce accountability over ammunition stocks, is a self-perpetuating dynamic. Security forces, with associated heavy firepower, are stationed in

a region for the purposes of preventing or resolving armed violence. But by being there, they add to that very conflict or criminal violence, sustaining or even escalating it.

These findings should send a clear message to all governments: controlling small arms begins at home. It is extremely likely that time and again, the domestic security sector is a source of arms and ammunition to non-state actors.

LIST OF ABBREVIATIONS

CBC	Companhia Brasileira de Cartuchos	LDU	Local Defence Unit
CPI	Congressional Hearing Commission, Brazil	LRA	Lord's Resistance Army
DPTC	Departamento da Polícia Técnico-Científica	SPLA	Sudan People's Liberation Army
		UPDF	Uganda People's Defence Forces
ICCE	Instituto de Criminalística Carlos Éboli	USSR	Union of Soviet Socialist Republics
LAP	Local Administration Police	UWA	Uganda Wildlife Authority

ENDNOTES

1 The term 'state security forces' is used in this chapter to denote state-controlled armed forces and law enforcement forces.

2 The researcher was James Bevan, who also conducted all the interviews in Karamoja.

3 Some standard issue UPDF ammunition was supplied by the UPDF to an intermediary, who cannot be identified here for security reasons, two weeks prior to its being recorded in this study.

4 For purposes of anonymous identification, the five Karimojong groups from which ammunition was sourced were labelled Karimojong 1–5.

5 Theoretically, plotting ammunition this way could seriously affect assumptions made about whether any two sets of ammunition of the same year and country of origin are indeed the same. For example, ammunition in the hands of the Karimojong dated 2004 and originating from China and marked with a hypothetical 71 04 would differ from ammunition in the hands of the UPDF, for instance, marked 61 04—each having been produced in a different factory, albeit in the same year and country. In practice, cross-tabulating actor, headstamp, producing state, and year of manufacture revealed that cases of ammunition produced in only one country but by two different factories in a single year occurred only 5 times in 438 rounds sampled.

6 The category 'other' includes unknown producers (9.5 per cent), Czechoslovakia (1.6 per cent), and the former East Germany (0.7 per cent). They are omitted from the graphs presented in the chapter for reasons of clarity.

7 Interviews with UWA personnel. Karamoja, northern Uganda, August 2006.

8 Interviews with LAP personnel, Karamoja, northern Uganda, August 2006.

9 Interviews with a knowledgeable source, Karamoja, northern Uganda, June and August 2006.

10 Just prior to publication, the Small Arms Survey received a report that some Luwero Industries ammunition marked '02' (assumed 2002) is likely to have been produced in years other than 2002. Institutional marking practices are sometimes inconsistent and should thus be taken into consideration in any study of this kind.

11 Interviews with LAP personnel, Karamoja, northern Uganda, August 2006.

12 Interviews with Karimojong members, Karamoja, northern Uganda, May and August 2006.

13 Initial results from an expanded Small Arms Survey ammunition tracing project in Kenya, Uganda, and Sudan suggest that little of the ammunition circulating among the Karimojong is sourced in Kenya or Sudan. Results of the study will be published in late 2007.

14 Interviews with five separate groups of Karimojong warriors, Karamoja, northern Uganda, August 2006.

15 The November 2006 clash between Karimojong warriors and the UPDF mentioned in the introduction to this chapter indicates increasing hostilities in the region. Such attacks have been uncommon in the past, and it is important to stress that escalating hostilities occurred after the research for this chapter had been completed.

16 Interviews with five separate groups of Karimojong warriors, Karamoja, northern Uganda, August 2006.

17 Interviews with Karimojong members, Karamoja, northern Uganda, May and August 2006.

18 This study is already underway. See note 12 above.

19 Dowdney (2003); Misse (1999); Lessing (2005); Rivero (2005); Stefanini (2005).

20 Schroeder (2004, pp. 21–26); Small Arms Survey (2004, pp. 50–60); Câmara dos Deputados (2006); Dreyfus (2006, pp. 186–89); Small Arms Survey (2006, pp. 83–87).

21 Once at the ICCE, the seized material is analysed and studied by forensic experts. Details about the ammunition are written up, and the ammunition is sent to the vault of the Firearms and Explosives Control Division. These 2,860 rounds had not been analysed and were the remainder of stocks that had been collected by the ICCE for analysis. Since no accurate records had been kept, it was impossible to determine how many thousands of other rounds passed through the ICCE during that period.

22 Excluding the metropolitan area, the State of Rio de Janeiro, and the western districts of the city.

23 According to police sources, between 2002 and 2004 the firearms enforcement unit of the civilian police of Rio de Janeiro seized a total of over 440,000 rounds of ammunition of various calibres (Câmara dos Deputados, 2005b, p. 33; Dreyfus, 2006, p. 179).

24 This included information on ammunition exports by Brazil and imports of Brazilian ammunition by neighbouring countries, particularly Paraguay. As mentioned in other works (Dreyfus, 2006; Dreyfus and Bandeira, 2006), the illicit trafficking of ammunition legally exported to neighbouring countries is a source of supply for criminal organizations in Brazil. However, it is worth noting that since 1999 Brazil no longer exports ammunition for the civilian market in Paraguay. In addition, since 2001, and with the exception of Ecuador, Chile, and Argentina, commercial exports to South American, Central American, and Caribbean countries have been virtually eliminated by a 150% export tax on commercial exports of arms ammunition to these areas (Dreyfus and Bandeira, 2006). This information was compiled using the NISAT database and a private foreign trade consultant company in Paraguay (OCIT Trade).

25 In Brazil, marking by lot is relatively easy to implement, since only one company—CBC—produces ammunition for the civilian, police, and military markets.

26 According to Brazilian regulations, collectors can only hold disabled (inert) ammunition (Ministério da Defesa, 2000, art. 6).

27 With the exception of specialized units of the civilian police of Rio de Janeiro, which occasionally use Kalashnikov rifles, the standard calibres of the Brazilian armed forces and police forces are 5.56 x 45 mm and 7.62 x 51 mm. This is also the case for all the armed forces in South America, with the exception of Venezuela since 2005, when the country adopted the AK-103 as it standard assault rifle (Small Arms Survey, 2006, p. 87). In the sample used in this study there is a small quantity (26) of restricted-use rifle ammunition marked as just 7.62 without specifying the length of the case.

28 CBC is the only small arms ammunition producer in Brazil and the largest ammunition-manufacturing company in Latin America. Seventy-seven per cent of its sales derive from ammunition (CVM, 1996–2005a; 1996–2005b).

29 As explained in previous works, illicit ammunition reloading is considered to be only a minor problem by Rio de Janeiro's forensic analysts. CBC original primers are marked with a letter 'V' (Dreyfus, 2006, p. 193). This is not, however, the only method of identifying this feature used by the forensic experts, who have special techniques and observations in order to determine whether or not a cartridge has been reloaded.

30 Interview with INDUMIL officials and Colombian intelligence officials, Bogotá, October 2004.

31 All the other South American countries have domestic production of ammunition for their armed forces (Dreyfus and Lessing, 2003).

32 Inteview with a CBC official, Riberão Pires, São Paulo, October 2006.

33 Interview with a CBC official, Riberão Pires, São Paulo, October 2006.

34 Ministério da Defesa (2000, art. 6); Presidência da República do Brasil (2000, arts. 16, 17, 196, and 197, chs. VIII and IX of Title V); Presidência da República do Brasil (2004, arts. 19, 51. and 53); Dreyfus (2006, p. 180). According to a regulation from the Ministry of Defence, since 2001 sporting shooters cannot purchase and/or use .223 (5.56 x 45 mm) ammunition (Ministério da Defesa, 2001, art. 8).

35 In 2004 there were an estimated 15,091 hunters and sporting shooters in Brazil holding 60,364 small arms (not all of them restricted-use rifles), in a country were it is estimated that civilians (excluding hunters, collectors, and sporting shooters) hold about 4.4 million unrestricted-use small arms (Ministério da Defesa, 1998–2003; Dreyfus and de Sousa Nascimento, 2005, pp. 107, 120).

36 Interview with a high-ranking officer of the military police of Rio de Janeiro, Rio de Janeiro, December 2006.

37 Interview with a small arms importer and broker, Rio de Janeiro, July 2006.

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