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Identifying a Surplus

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Overview

There is no ‘quick-fix’ solution to the problem of identifying a surplus of conventional ammunition. Surplus identification must differentiate functioning, operational ammunition, which is required for a nation’s armed services, from ammunition that either fails to meet or exceeds those requirements. The identification process requires making qualitative and quantitative assessments of ammunition and maintaining a precise ‘balance sheet’ that can be used to calculate projected ammunition expenditure rates against the types, quantities, and condition of ammunition within national stockpiles. Surplus identification therefore depends on having a comprehensive monitoring and accounting system that covers the entire national stockpile. When these systems are not in place, states have no means to determine whether their stockpiles meet or exceed requirements.

Estimates and calculations

It is important to make a distinction between a *surplus estimate* and the process of *calculating a surplus*. The first is a broad gauge of a given state’s propensity to accumulate surplus. The second is an accurate assessment of a country’s ammunition needs and how the composition and scale of its stockpile relate to these needs.

Surplus estimates are constructed from incomplete information to assess whether a given national stockpile *may* contain excessive surpluses of arms and ammunition. They are not, and should not, be used by national stockpile

managers, but are a tool to be used by external observers, such as prospective donors and researchers. The methods used are indicative of potential excess accumulations of surplus, but cannot be employed to determine whether surpluses (or indeed the broader national stockpile) pose safety or security risks. Surplus estimates derive from assessments made of the changes to the structure and dimensions of security forces and how these changes relate to the size of national stockpiles. They include, among other things: force reductions; changes in doctrine; and defence acquisitions—sometimes in conjunction with information (where available) on the size of national stockpiles.

Calculating a surplus, on the other hand, requires knowing the exact composition, condition, and size of a national stockpile. It is the only way to accurately determine whether the national stockpile is sufficient for the requirements of a state's security forces, or whether the stocks within it are excessively large, unsuitable in the context of military doctrine, or unreliable. Because states are reluctant to make this information available to other parties, it is usually a task for national stockpile managers. However, it is an essential task, and the failure to implement the comprehensive monitoring and accounting procedures necessary to achieve it is the reason why many states accumulate large surplus stocks of conventional ammunition and, in the final analysis, fail to address the problem of surpluses.

Surplus estimates

A range of estimates can be used to determine whether states may be at risk of accumulating excessively large surpluses of conventional arms and ammunition. The following sections briefly outline how these estimates operate.

Force reduction

Reductions in the size of security forces can result in states retaining quantities of armaments that were previously stockpiled to supply much larger armed forces. Major changes to national security forces are easily apparent because they are either the consequence of major politico-military reorientations (such as the break-up of the Soviet Union), or result from military

modernization programmes, which states are usually keen to advertise. Force reductions are well documented in publications, such as the International Institute for Security Studies' *Military Balance* series (e.g. IISS, 2007). Time series data derived from these sources can often indicate states that have large surpluses, or countries that may become prone to surplus accumulation in the future.

Changes to military doctrine

Military doctrine shapes the composition of national security forces and the relative size of their component parts. Major doctrinal changes usually result in states adopting different types of weapons and ammunition or making alterations to the quantities of armaments stocked by specific units within national armed forces. Either measure often results in the redundancy or displacement of weapons systems, and hence in the potential for surplus accumulation. Analysis of national doctrine, in a variety of forums, can indicate where, within a given nation's armed forces, surpluses may accrue.

Acquisition trends

The acquisition of new or improved military materiel displaces older varieties of weapons and ammunition. These relegated weapons may be used to supply reserve forces. However, given that these forces probably possess weapons already, acquisition often has a cascading effect (Bevan, 2006, p. 25), whereby new and improved arms and ammunition displace older varieties through successively 'lower' strata of the national defence establishment. The result can be surplus accumulation, and, given knowledge of large-scale acquisitions of defence materiel, it may be possible to ascertain what kinds of surplus may accrue. Defence acquisitions are generally not transparent, but larger purchases are often documented in the public domain in publications such as the Stockholm International Peace Research Institute's annual *Yearbook* (e.g. SIPRI, 2007).

Stockpile size estimates

Estimating the scale of national stockpiles in comparison to the size of national armed forces may indicate cases in which stockpiles are sufficiently large

that they might indicate excessive surplus. This technique is limited by deficient data on the size of most national stockpiles. The method relies on calculating a ratio of national stockpiles (in tonnes) to numbers of serving personnel. As Table 10.1 illustrates, these ratios indicate excessive national stockpile-to-personnel ratios for countries that are internationally recognized as having excessive surplus. These countries contrast distinctly with countries where the development of surplus is (or has been) better controlled, such as the United States, illustrated in Table 10.1, with a ratio of only 0.5 tonnes per person for the US Army.

Table 10.1
Ratios of ammunition (metric tonnes) to military personnel

| Country | Year | Total tonnes | Total military personnel | Total tonnes/person |
|------------------------|------|--------------|--------------------------|---------------------|
| Albania | 2000 | 180,000 | 11,020 | 16.3 |
| Moldova | 2007 | 40,000 | 6,750 | 5.9 |
| Bosnia and Herzegovina | 2005 | 33,500 | 11,865 | 2.8 |
| US Army | 2003 | 540,000* | 1,164,394 | 0.5 |

* 600,000 non-metric tonnes converted to metric tonnes.

Sources: Albania: SEESAC (2005, p. 28; 2006, p. 17); Bosnia and Herzegovina: SEESAC (2006, p. 6); Moldova: SEESAC (2005, p. 115); US Army: Erwin (2003); military personnel (active and reserve) data: IISS (2007)

To some extent, the ratio method is superfluous, because it relies on some assessment of national stockpile size, which in turn necessitates a basic audit that might have revealed an extreme case of surplus accumulation in the first place.

For states that do not audit their stockpiles, the aggregate data necessary to calculate an ammunition-to-personnel ratio would not exist. In fact, it could plausibly be argued that analysis of force reduction, changes to military doctrine, or acquisition trends is potentially just as indicative of extreme cases of surplus accumulation and, moreover, does not depend on the (scant) availability of information on national stockpile size.

The limitations of surplus estimates

Surplus estimates are arguably useful, particularly from the perspective of external observers, such as other states, multilateral organizations, and the research community. They indicate where surplus stockpiles might have accrued, or where national defence policies might lead to future surplus excess. However, they are limited on two counts:

1. They make no qualitative assessment of the stability (CHAPTER 6) of surplus ammunition (should it exist) and hence no analysis of the possible risks it might pose to public safety.
2. They offer no indication of the physical security (CHAPTER 7) that states apply to the stockpiles in question to prevent them becoming diverted to the illicit market (CHAPTER 15).

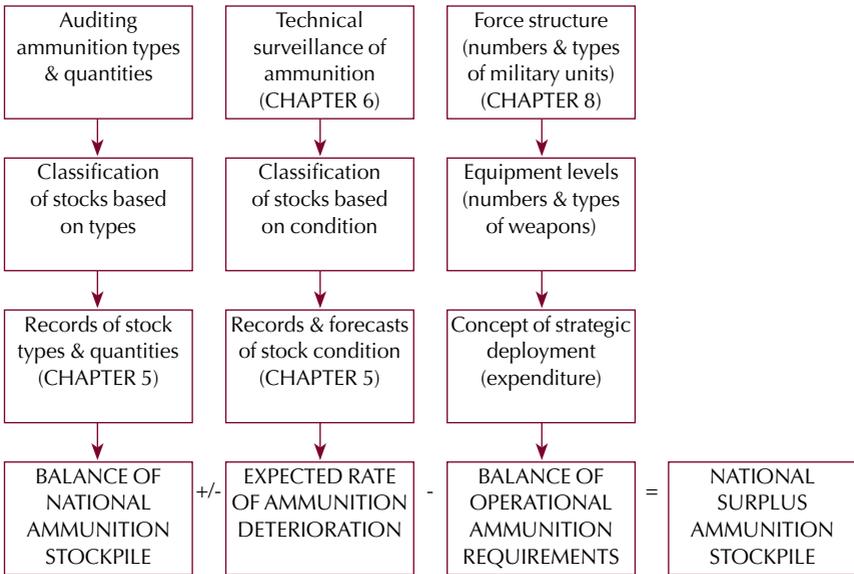
In short, these methods of estimating a surplus are not reliant on comprehensive systems for monitoring and recording the size, composition, or condition of national stockpiles, and therefore can offer no assessment of the risks they pose. Estimates are restricted to identifying states where surplus has the *potential* to become problematic. Moreover, they do not identify cases where the entire national stockpile poses safety or security risks.

Calculating surplus

Calculating surplus requires comprehensive national stockpile management systems and procedures. As Figure 10.1 illustrates, these measures are required to: 1) sustain an accurate inventory of the types and quantities of ammunition in the national stockpile; and 2) monitor, classify, and continually reclassify ammunition based on technical surveillance (CHAPTER 6) of its condition (stability and serviceability). These two processes comprise part of the same, comprehensive management system, which is often called a 'systems-based' approach to stockpile management (CHAPTER 8). Together with a parallel system of forecasting the ammunition requirements of national security forces, this is the only means of accurately assessing the relative balance of operational and surplus ammunition.

Figure 10.1

Processes required for calculating surplus (simplified)



Some of the necessary considerations for calculating a surplus (with reference to small arms and light weapons) are explored in the Organization for Security and Cooperation in Europe’s *Best Practice Guide on the Definition and Indicators of a Surplus of Small Arms and Light Weapons* (OSCE, 2003a). Further guidance related to identifying conventional ammunition in surplus will be published by the OSCE as a result of a commitment in the *OSCE Document on Stockpiles of Conventional Ammunition* (OSCE, 2003b).

Progress to date

A lack of transparency is the most obvious feature of national conventional arms and ammunition stockpiles. This has posed considerable obstacles for external analysis of surplus accumulation. As a result, it remains very difficult to ascertain to what extent states retain surplus stocks. In most cases, outside observers can only point towards extreme cases of surplus accumulation. Surplus estimation, however, should not be dismissed for its lack of specificity.

For example, one of the core complaints made by international stockpile management assistance personnel is that they have too few requests for assistance²—something that can be attributed to the fact that many states do not recognize that they have a problem with surplus or unsafe or insecure stockpiles. Surplus estimates may point the way to more active outreach strategies for the assistance agencies concerned, strategies that could be based on identifying and approaching the states that might be most at risk of accumulating surpluses.

Additionally, when used in conjunction with information pertaining to national export practices, surplus estimates may also help to identify states that a) might have accrued surplus and b) might be tempted to transfer it to regions where its presence might have destabilizing consequences.

However, while externally generated surplus estimates may point towards potential problems, they do not offer solutions. Comprehensive national stockpile management is the only way to accurately calculate and address a potential surplus. Many states do not have the systems to do so and will continue to generate surplus unless these failings are addressed.

Conclusion

Systemic failings in the management of arms and ammunition allow surplus stockpiles to grow unchecked. Without adequate systems to monitor, classify, and account for national stockpiles, there is no accurate way of determining a surplus. Externally derived surplus estimates do not, and cannot, replace comprehensive ammunition management systems. Unless these systems are in place, states will remain unable to discriminate between operational and surplus stock. Moreover, entire national stockpiles will remain unsafe or insecure, regardless of whether they contain surplus. ❏

Notes

- 1 Author's conversations with representatives of the UK Joint Arms Control Implementation Group and the US Defense Threat Reduction Agency.

Further reading

- OSCE (Organization for Security and Co-operation in Europe). 2003. *Best Practice Guide on National Procedures for Stockpile Management and Security*. FSC.GAL/14/03/Rev.2. Vienna: OSCE. 19 September.
- SEESAC (South Eastern and Eastern Europe Clearinghouse for the Control of Small Arms and Light Weapons). 2006. *RMD5/G 05.50: Ammunition and Explosives Stockpile Management*, 4th edn. Belgrade: SEESAC. March. <<http://www.seesac.org/resources/0550e.pdf>>
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