



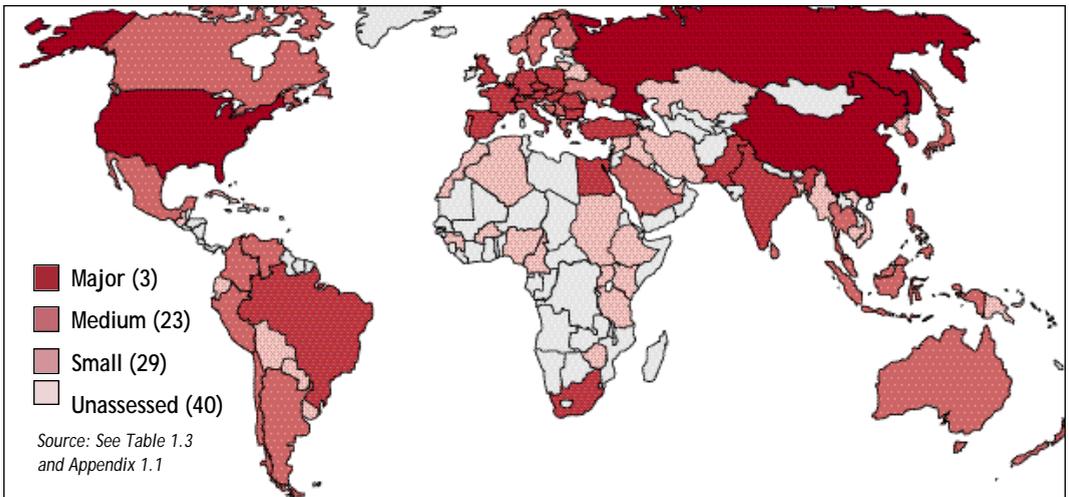
Small Arms, Big Business:

Products and Producers

Introduction

The production of small arms is a big, and growing, business—at least in terms of the number of countries that produce them. Based on existing information, small arms are legally produced in more than 600 companies in at least 95 countries worldwide—even more if those countries in which illicit production takes place are included.

Map 1.1 The world's legal small arms producers



The myriad problems—security, humanitarian, and developmental—associated with the widespread proliferation, availability, and use of small arms are often blamed on the re-circulation of existing stocks or the sale of surplus weapons. But that is only half the story.

New and better small arms products are also contributing to these problems. These weapons—lighter, more accurate, easier to operate, and sometimes cheaper—are appearing on the international arms market at an alarming rate. In addition, new production of weapons and ammunition continues unabated in a large, and growing number of countries and companies, thus contributing to the ever expanding global supply of small arms.

The small arms industry is the most widely distributed sector of the global defence industry. While its absolute size, in terms of capacity, has declined in recent years, the number of actors, both companies and countries, that manufacture small arms, has increased since the end of the Cold War. Furthermore, most production now takes place in private companies, thus reducing the ability of governments to control the manufacture, possession, and trade in small arms.

The growing number of small arms products and producers, both legal and illicit, has far-reaching consequences. First, in terms of sheer numbers, the diffusion of small arms makes their

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Box 1.1 Defining small arms and light weapons

The definition of small arms and light weapons used by the *Small Arms Survey* covers both military-style weapons and commercial firearms (handguns and long guns). It follows the guidelines set out in the 1997 *Report of the Panel of Governmental Experts on Small Arms* (United Nations document A/52/298, 27 August 1997):

- **Small arms:** Revolvers and self-loading pistols, rifles and carbines, assault rifles, sub-machine guns, and light machine guns;
- **Light weapons:** Heavy machine guns, hand-held under-barrel and mounted grenade launchers, portable anti-tank and anti-aircraft guns, recoilless rifles, portable launchers of anti-tank and anti-aircraft missile systems, and mortars of less than 100mm calibre.

The *Survey* uses the terms 'small arms', 'firearms', and 'light weapons' interchangeably. Unless otherwise noted, there is no distinction to be made between commercial firearms (e.g. hunting rifles), and small arms and light weapons that are designed for military purposes (e.g. assault rifles).

accessibility, even to civilians, an issue of concern. For example, in the United States, there is the equivalent of one weapon for every one of the country's 250 million residents (STOCKPILES, EFFECTS). Secondly, this burgeoning growth threatens to undermine attempts to control their legal manufacture and trade. Some of the countries allegedly committed to dealing with the small arms proliferation problem are also some of the world's major producers. Thus, it is important for governments to be held accountable for both the legal and illicit production of small arms that takes place within their territories.

Any analysis of this critical aspect of the small arms issue is inhibited by a lack of data. This absence of official and unofficial information about companies, countries, and the value and volume of global production makes it difficult to produce a clear picture of the nature and scope of the global small arms industry.

On the basis of current information and research, this chapter attempts to provide a comprehensive survey of global small arms production. It analyzes the world's small arms industry in terms of its geographic distribution, key trends, and patterns, and provides some estimates of the current value and volume of global production. It identifies the most important producer countries and offers a tentative ranking of all the world's known and assessed legal small arms producers. It provides information on some of the world's most widely-distributed and popular small arms products—specifically handguns, assault rifles, sub-machine guns, and machine guns—that are in the hands of government forces, rebel groups, and/or individuals.¹

The global small arms industry is not homogenous. There are significant differences between the nature of production in different areas of the world. This chapter, therefore, also presents a number of regional and country case studies, as well as information about particular companies, to illustrate some of the key characteristics of the global small arms industry. The following questions are addressed:

- What is the nature and scope (i.e. defining features, size, distribution, trends, and major producers) of the global small arms industry?
- How many countries legally produce small arms? Who are the major producers?
- What are the world's most popular legal and illicit small arms products in terms of numbers produced and distribution?
- In which countries does illicit production of small arms occur?

All the material presented in this chapter is based on information obtained from open public sources, including official information, annual and specialized defence publications, corporate and

Box 1.2 Types of small arms production

Legal Production: This includes production, or assembly of, small arms from components or parts that are legally acquired, or production with a license from a competent governmental authority; it may also include licensed production.

Licensed Production: A company in country A contracts with a company in country B to undertake the legal production of its products (e.g. weapons). In terms of a licensed production agreement, the licensing company in country A usually provides technical data or copies of the products to be produced in country B, and sometimes provides machine tools or assists in the setting up of production facilities.

Illicit Production: This refers to the production, or assembly of, small arms from components or parts that are illicitly acquired, or production without a license from a competent governmental authority. It may include craft or homemade production. In some cases, the state itself engages in illicit production, by manufacturing another country's or a company's products without permission.

Craft/homemade Production: This type of production occurs in small private workshops or homes without any legal (i.e. governmental or company) authorization. This type of production tends to be crude and small-scale (e.g. single weapons or small batches) and is usually done by hand rather than via complex manufacturing processes (e.g. production lines). Most craft production involves the manufacture of simple single-shot weapons, and/or illicit copies of existing types of small arms.

non-governmental information services, defence exhibitions, company promotional information, and primary field research in selected countries and regions.

The global small arms industry

Much has been written about the global defence industry, particularly the major producers of conventional weapons. However, far less attention has been focused on the global small arms sector, which is part of the defence industry in general, but is also distinctive in many ways.

This section analyzes the defining features of the global small arms industry. It focuses on the distribution of production (i.e. the number of countries and companies that produce small arms), general trends and patterns, and the size and scope of the industry (i.e. the value and volume of production). It also identifies the world's most significant small arms producers and presents a tentative ranking of all known arms-producing countries.

Distribution

The production of small arms has been a growing worldwide industry since the 1960s, even predating the global production of many types of conventional weapons. In recent years, a number of studies have attempted to quantify the worldwide distribution of small arms production.² According to information supplied by 77 countries to the United Nations (UN) International Study on Firearm Regulation (1999), 45 countries acknowledged that firearms, components, and/or ammunition were legally produced in their territories for domestic and/or export markets. The 1999 report of the UN Group of Governmental Experts stated that small arms 'continue to be produced in large numbers, mostly in developed countries, although they are now manufactured in over 70 countries' (UN, 2000b, p.8).

One study estimated that there were at least 385 companies in 64 countries producing small arms in the 1990s, compared to 196 companies in 52 countries in the 1980s (Abel, 2000). However,

The production of small arms has been a growing worldwide industry since the 1960s.

recent data from the 1997 US Census of Manufacturers provide information on 304 US small arms and ammunition companies. This, combined with more recent Canadian data, suggests that the total number of companies is closer to 600 (See Fig. 1.1).

The data in Figure 1.1 suggest a substantial increase in the number of companies and countries producing small arms between the 1980s and the 1990s. The greatest increases occurred in Europe, with slight increases in Africa and the Middle East. The increase in the number of producers does not necessarily indicate an increase in the global production capacity for manufacturing small arms (Abel, 2000, p. 83). In fact, in terms of the volume of production, the global small arms industry was smaller in the 1990s than it was in the 1980s.

Figure 1.1 Global distribution of small arms production, 1980s and 1990s

Region	1980s		1990s	
	Countries	Companies	Countries	Companies
Africa	5	10	7	22
Asia Pacific	14	23	14	31
Europe/CIS	22	100	30	203
Middle East	4	6	6	13
South/Central America	5	15	5	17
North America	2	42	2	99
Total	52	196	64	385*

* More recent data from the 1997 US Census of Manufacturers provide information on 304 US small arms and ammunition companies. This, combined with more recent Canadian data, suggests that the total number of companies is closer to 600. (See section 3 for further details)

Source: Abel, 2000

Based on current information and research, it is estimated that small arms are legally produced in at least 95 countries (see Appendix 1.1). The global distribution of producer countries is given in Figure 1.2.

The increased number of producing countries, compared with earlier studies, reflects the creation of a number of 'newly independent states' following the break up of the Soviet Union, including states in Eastern Europe and the Balkans. It is also related to the desire of a growing number of countries, particularly developing countries, to be self-sufficient in small arms production.

Figure 1.2 Global distribution of small arms producing countries, 2000

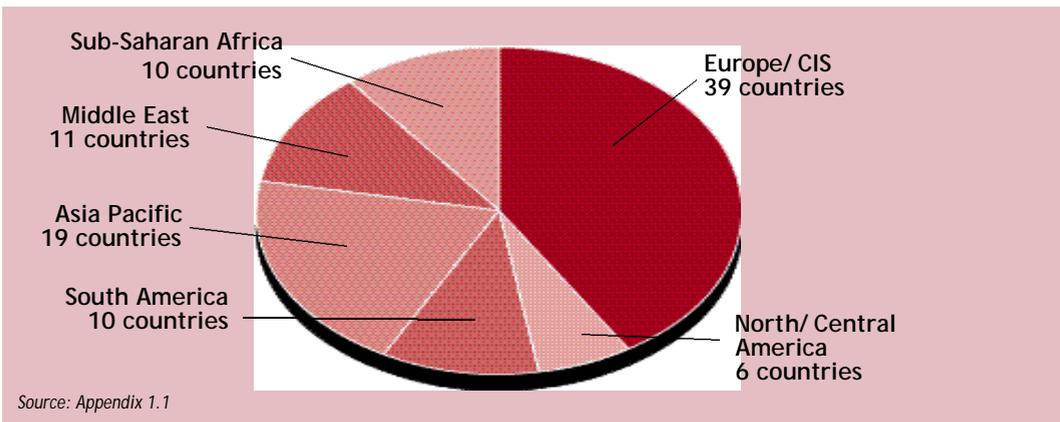


Figure 1.2 shows that the largest geographic concentration of producer countries—over 40 per cent—is in Europe and the Commonwealth of Independent States (CIS).

This estimate of the total number of small arms producing countries should be treated with caution. In some countries (e.g. Cambodia, Ethiopia), the lack of reliable information, both official and unofficial, makes it difficult to ascertain whether small arms production is taking place, and if so, whether it occurs consistently or only on an ad hoc basis. Some countries are only involved in the production of components, rather than final products; while in others, small arms production involves relatively marginal activities, such as loading or filling ammunition cartridges.

The total number of companies that produce small arms is much more difficult to quantify. This is because it is often difficult to distinguish between end producers that sell final products (e.g. rifles) to buyers, and intermediate producers—companies that produce parts or components for small arms that are then sold by end producers. In addition, small arms are often produced in different divisions, subsidiary companies, or plants that are part of a larger company. Thus, the total number of end producers is likely to be much lower than the total number of producers, including intermediate producers.

Based on current information and research, it is estimated that there are more than 600 companies worldwide that are involved in some aspect of small arms production, either as intermediate and/or end producers.³ This is an increase on estimates during the 1990s, largely because of the release of more recent information about the small arms industry in the United States, where more than half of all the world's small arms companies are located. The rest are concentrated in Europe and the CIS with smaller numbers in Latin America, sub-Saharan Africa, the Middle East, and the Asia Pacific region.

The types of companies are extremely diverse, ranging from small family-owned businesses to subsidiaries or business units of large, multinational, defence-industrial conglomerates. Some firms produce thousands of arms annually, while others produce as little as one gun a year. The size of the companies ranges from establishments with less than 20 to over 1,000 employees. In the US, for example, only 55 out of a total of a 191 small arms producers have more than 20 employees (BATF, 2000a).

The diversity of countries and companies in which small arms production takes place means that it is difficult to generalize about the nature and scope of the global small arms industry. The regional survey in Section 3, which includes country and company case studies, attempts to provide a more detailed picture of the industry's distinguishing features.

Trends and patterns

What have been the major trends and patterns in the global small arms industry in the last decade? Has the size of the industry increased or decreased since the end of the Cold War?

In general terms, the global defence industry has experienced a dramatic process of downsizing, restructuring and consolidation over the last decade.⁴ Total employment in arms production during the period 1988–98 declined by more than 50 per cent (BICC, 2000, p. 68). The downsizing of the global defence industry was prompted by the more than 30 per cent cuts in defence spending that have occurred since the late 1980s (BICC, 2000; SIPRI, 2000). These aggregate figures do not, however, capture the significant variations in defence industry employment that have occurred at the regional, sub-regional, and national levels; nor does it reflect the sectoral differences (e.g. small arms) within the overall defence industry.⁵

This downsizing has certainly affected the size of the global small arms industry, at least in terms of employment and manufacturing capacity. However, given the significant country and regional variations, and the lack of detailed information about the value and volume of small arms production, it is impossible to quantify its impact precisely.



There are more than 600 companies worldwide that are involved in some aspect of small arms production.

The United States is home to more than half of all the world's small arms companies.

The global defence industry has experienced a dramatic down-sizing over the last decade.

The absolute size of the world's small arms industry has actually shrunk in recent years.

At first glance, the increasing number of countries and companies that produce small arms might indicate that the global small arms industry has been growing in recent years. However, more suppliers do not necessarily translate into an increase in the size of the industry, as measured by the value and volume of global small arms production, or manufacturing capacity. In fact, the current estimates for both the value and volume of small arms production suggest that the absolute size of the world's small arms industry has actually shrunk in recent years.

During the Cold War, small arms production was largely confined to state-owned factories. As a result of restructuring and privatization in many parts of the world (e.g. Australia, Western Europe, East Central Europe, South Africa), it now takes place increasingly in private firms. Privatization, together with the trends in licensed production, has important implications for national and multilateral attempts to regulate and control the legal, as well as illicit, manufacture and transfer of small arms.

The technology needed to produce small arms is relatively mature and there are few technical obstacles to entering the small arms market. This has meant that a growing number of countries, including developing countries, have been able to establish their own domestic production capabilities with relative ease—a development that has had a negative impact on the markets of established small arms producers in the Russian Federation, the US, and Europe.

Licensed production is an important feature of the global small arms industry, and has been occurring since the 1960s. In many countries, particularly developing countries, legal production of small arms involves the licensed production of foreign weapons.⁶ According to current information and research, companies such as FN Herstal (Belgium) and Heckler & Koch (Germany/UK) are among the world's most significant small arms licensors; their products are produced under license in a large, and growing number of countries.⁷

Between 1960 and 1999, at least 14 countries established small arms licensed production agreements with some 46 countries.

Some countries, such as China and Croatia, have emerged as extremely sophisticated copiers of various small arms products, and tend to produce very good copies of existing products, rather than under license from the original producer (licensor). Some studies have documented the increase in licensed defence production, including small arms, in developing countries.⁸ From 1960-99, at least 14 countries established small arms licensed production agreements with some 46 countries (Abel, 2000, p. 88).

Value and volume

How many small arms are currently produced per annum by the global small arms industry, and how does this compare with the previous decade? What is the value and volume of small arms production relative to the production of its ammunition? Detailed information is difficult to obtain, however, a commercial market-analysis company, Forecast International, in their Ordnance and Munitions Forecast (October 2000) provides some estimates for past, current, and future volumes of small arms production.⁹

Volume: Forecast International (2000) estimates that more than 43 million military-style small arms of all types were produced in Europe, the Russian Federation, and all other countries, excluding the US, between 1980-99, and that 778,000 such weapons were produced during the year 2000. This figure is significantly less than the annual average production of 2.1 million during the period 1980-99 (see Table 1.1).

These estimates of global production have to be treated with a high degree of caution as it is not possible to verify their accuracy or reliability. In addition they exclude the production of commercial style small arms, including handguns and long guns, and thus may underestimate quite significantly the total number of small arms produced. Furthermore, many of the countries and companies identified as current small arms producers (see Appendix 1.1) are not included in these estimates. They also are not comparable with other figures which suggest that at least 150 million military-style small arms have been produced since 1945 (see Table 1.4).

Table 1.1 Estimated global production of military-style small arms (excluding US), 1980-2000 ⁽¹⁾

	Total 1980-99	Average:1980-1999 ⁽²⁾ excluding the US	Total 2000
Military Sidearms (Pistols/Revolvers)			
Europe	6,292,200		272,000
Other countries (excl. US)	3,937,100		249,000
Total	10,229,300	511,465/year	521,000
Military Rifles			
Europe	20,102,700		65,700
Other countries (excl. US)	5,218,700		102,370
Total	25,321,400	1,266,070/year	168,070
Sub-Machine Guns			
Europe	2,242,300		14,700
Other countries (excl. US)	1,363,429		29,300
Total	3,605,729	180,286/year	44,000
Machine Guns			
Europe	2,965,700		23,440
Other countries (excl. US)	1,121,300		21,600
Total	4,087,000	204,350/year	45,040
Total	43,243,429	2,162,171/year	778,110

Notes: (1) Figures exclude the United States. (2) Includes sidearms (pistols and revolvers), rifles, sub-machine guns and machine guns.
Source: Forecast International, 2000

According to Forecast International (2000) more than 1.4 million military-style small arms of all types were produced for the armed forces in the US between 1970-99, including more than 650,000 of various models of the M-16 series assault rifle (FN Manufacturing and Colt's Manufacturing) and 240,000 of the M-9 pistol (Beretta). It is estimated that 37,000 small arms were produced for the US armed forces during 2000, which is significantly less than the average of 46,000 per year during the period 1970-1999. These estimates highlight the fact that the market for military-style small arms in the US has declined in recent years, and may continue to decline in the coming years.

While the military market for small arms in the US may be in decline, private sales are increasing. According to information from the Bureau of Alcohol, Tobacco and Firearms (BATF), nearly 127 million firearms¹⁰ were produced in the US during the period 1970-98 with an average of 4.37 million firearms per annum (BATE, 2000a).

Given the premise that at least 40 million small arms were produced in Europe, the Russian Federation, and other countries (excluding the US) between 1980-98 (Forecast International); and that over 78 million firearms were manufactured in the US during the same period (BATF, 2000a), then it is possible to assume that at least 120 million small arms were produced worldwide during the period 1980-98, with an average of 6.3 million per year. Extrapolating these figures, it is estimated that at least 347 million small arms were produced worldwide between the end of World War II in 1945 and 2000 (STOCKPILES).¹¹

Reflecting the recent downturn in production, it is estimated that, during the year 2000, around 4.3 million small arms were produced worldwide. This includes at least 3.5 million in the US—substantially down from its peak production period of over 5 million per year in 1993-94 (BATE, 2000a)—and roughly 800,000 from producers in Europe, the Russian Federation, and other countries, based on estimates from Forecast International.

Value: The value of global small arms production is also difficult to estimate, given the lack of detailed information from small arms producers. According to the latest information from the BATE

The military market for small arms in the US may be in decline, but private sales are increasing.

Nearly 127 million firearms were produced in the US during the period 1970-98 with an average of 4.37 million firearms per annum.

The value of global small arms production in 2000 was at least US\$ 1.4 billion.

the total value of small arms shipments (production) in the US in 1997 was US\$ 1.2 billion, and the total number of new firearms produced in that year was 3.5 million. This means that the average price of each firearm produced in the US in 1997 was US\$ 335.¹² Using this figure as a rough proxy, it is possible to assume that the value of global small arms production in 2000, based on the production of roughly 4.3 million units, was at least US\$ 1.4 billion.

According to Forecast International (2000) the total international market for small arms ammunition has declined in the last ten or more years, and is considerably smaller than it was during the Cold War period.

With regard to ammunition, it is estimated that at least 15 billion units of all types and calibres were produced worldwide in 2000, a number which is significantly lower than the annual average of 21 billion units for the period 1980-99 (Forecast International, 2000). While it is difficult to verify the accuracy or reliability of these figures, they do suggest that the volume of production for small arms ammunition among producers in the US, Europe, and the Russian Federation beyond 2000 is likely to be lower than the average levels of production during the period 1980-99.

Table 1.2 Estimated global production of small arms ammunition, 1980-2000

Region	Figures in billions of units of all types and calibres		
	Total: 1980-1999	Annual Average: 1980-1999	Total: 2000
Europe/Russian Federation	204.9	10.2/year	8.7
US	105.5	5.2/year	1.0
Other countries (1)	115.6	5.7/year	5.7
Total	426.0	21.1/year	15.4

Note: (1) Includes all countries outside Europe, the Russian Federation, and the US.
Source: Forecast International, 2000

Again, according to Forecast International (2000), while the volume of production in Europe, the Russian Federation, and the US is expected to decline in the coming years, the volume of production in other countries is forecast to remain relatively constant in relation to the annual average level of production during the period 1980-99.

The value of global small arms ammunition production in 2000 was worth at least US\$ 2.6 billion.

Detailed information, including estimates, on the value of global small arms ammunition production is much more difficult to obtain. The BATF estimates that the total value of small arms ammunition shipments (i.e. production) in the US in 1997 was US\$ 859 million. If we assume, based on the estimates from Forecast International, that roughly 5 billion units of small arms ammunition were produced in the US in that year, then the estimated average cost of each unit of ammunition was 17 US cents. Using this figure as a rough proxy, it is possible to assume that the value of global small arms ammunition production in 2000, based on the production of at least 15 billion units, was worth at least US\$ 2.6 billion.

These estimates highlight the fact that the value of global ammunition production was almost double the value of global small arms production. This is not surprising, and demonstrates the importance of focusing on the production and control of ammunition as a critical measure to control the trafficking in, and proliferation of, small arms.

The total value of small arms production, including ammunition, in 2000 was estimated at US\$ 4 billion. However, this figure should be treated with caution as it may underestimate the value of global small arms production, given the lack of detailed information about major producers such as the Russian Federation and China.

While these figures seem, at first glance, to be inconsistent with the US\$ 4-6 billion estimate of the annual global legal trade in small arms (LEGAL TRANSFERS), these apparent inconsistencies between global production and global trade can be explained as follows:

- The lack of detailed information on the value of production means that it is not possible to calculate the profit margin between the total value of global production and the total value of global export sales;
- Information on the value of small arms exports from a number of countries, including the US, is not consistent, and therefore may under- or overestimate the actual value of arms exports;
- In some countries, the figures for small arms exports reflect the value of authorizations rather than value of actual deliveries; and
- In some countries, the value of annual small arms exports includes categories of weapons that are not defined as small arms (e.g. missile launchers, howitzers, heavy-calibre ammunition).



The world's major small arms and ammunition producers

During the Cold War, the global market for small arms was dominated by the former Soviet Union and the US, leaving a few European countries (e.g. Belgium, Germany) to squabble over the 'spoils'. Since the mid-1990s, the market has become much more fragmented and thus competitive. Although the two former major producers retain their pole positions, the rest of the global market is now hotly contested by a number of established European actors, plus a group of other countries as far-ranging as Brazil, China, India, Israel, Pakistan, Singapore, South Africa, and Taiwan (International Defence Review, 1 October 2000).

Despite changes in the size and structure of the global small arms industry that have occurred in the last decade, it is still dominated by a handful of countries—Austria, Belgium, Brazil, China, France, Germany, Israel, Italy, the Russian Federation, Spain, Switzerland, the UK, and the US. These countries are consistently identified as the most important small arms producing countries worldwide.

The global market for small arms ammunition, which is worth more than the market for small arms, is dominated by a handful of companies in the US, the Russian Federation, and Europe, including Nordic Ammunition (Norway), Steyr-Mannlicher (Austria), Dynamit Nobel (Germany), Giat Industries (France), FN Herstal (Belgium), and Royal Ordnance (UK) (Forecast International, 2000). A group of other countries, including Brazil, China, Pakistan, and Singapore are also significant actors in the international market for small arms ammunition (Forecast International, 2000).

Based on a qualified assessment of existing official and unofficial information, it is possible to produce a preliminary ranking of 55 of the world's 95 known legal small arms producing countries based on the following criteria:

- Value and volume of production;
- Total employment;
- Range of small arms products, including ammunition;
- Number of companies; and
- Global distribution and use of products.

The global small arms industry can be divided into at least four categories—major producers, medium producers, small producers, and unassessed producers. At least three countries—China, the Russian Federation, and the US—can be identified as major producers.¹³ Another 20 or so countries, mainly in Europe and Asia, can be identified as medium-sized producers.

Brazil and South Africa are the most significant medium-sized producers outside of Europe and Asia. Many of these medium-sized producers, including Austria, Belgium, Brazil, Czech Republic, France, Germany, Hungary, Italy, and Spain, are among the major foreign suppliers to the US domestic small arms market (Diaz, 1999).

Nearly 30 countries can be identified as small producers. Some of them (e.g. Yugoslavia) are

The US, the Russian Federation, and China are the world's major small arms producers.

Brazil and South Africa are the most significant medium-sized producers outside of Europe and Asia.

Table 1.3 Ranking of world's small arms producers

Major	Medium	Small	Unassessed*
China Russian Federation United States	Austria Belgium Brazil Bulgaria Czech Republic Egypt France Germany Hungary India Israel Italy Pakistan Poland Romania Singapore South Africa South Korea Spain Switzerland Taiwan Turkey United Kingdom	Argentina Armenia Australia Canada Chile Colombia Croatia Denmark Finland Greece Indonesia Japan Luxembourg Malaysia Mexico Netherlands New Zealand Norway Peru Philippines Portugal Saudi Arabia Slovakia Slovenia Sweden Thailand Ukraine Venezuela Yugoslavia	Albania Algeria Bangladesh Belarus Bolivia Bosnia and Herzegovina Burkina Faso Cambodia Cameroon Cuba Cyprus Dominican Republic Ecuador Estonia Ethiopia Guatemala Guinea Iran Iraq Kazakhstan Kenya Lithuania Macedonia Malta Moldova Monaco Morocco Myanmar Nigeria North Korea Papua New Guinea Paraguay Sudan Syria Tanzania Uganda United Arab Emirates Uruguay Vietnam Zimbabwe
3	23	29	40

* Inadequate information currently available to permit ranking.

Source: Appendix 1.1

potentially medium-sized, but are ranked as small producers because of a lack of detailed information about current production. In most cases, these countries produce only to meet their domestic requirements. At least 40 countries are identified as unassessed producers, because there is insufficient information to rank them.

Box 1.3 The Kalashnikov assault rifle: The world's most widely distributed weapon

The AK-47 is named after its designer, Mikhail T. Kalashnikov, a Red Army staff sergeant with limited formal engineering training, who began designs for a new assault rifle in 1941. It began mass production in 1947 at the Izhmash plant in Izhevsk, in the former Soviet Union, and entered into service in 1949.

While the term 'AK-47' is often used to mean the entire family of Kalashnikov-designed weapons, over the course of the last five decades numerous derivatives and copies have emerged. The Soviet AK-47 was modernized in 1959, becoming the AKM, and in 1974, becoming the AK-74 which, together with its derivatives, is today thought to be the world's most widely distributed single weapon model. There are more than 160 derivatives of the various models of the AK series. These include assault rifles, light machine guns, sub-machine guns, carbines, rifles, grenade-launching sub-machine guns, sporting rifles, sniper rifles, and shotguns in at least eleven calibres.

None of the designs underlying the AK family were ever patented until Izhmash finally attempted to do so in 1998. Thus, copies of the AK family have been produced in at least 19 countries, including China, Bulgaria, Egypt, Finland, Yugoslavia, and Iraq. The original AK series assault rifle is no longer produced in its country of origin, and no new AK series rifles have been manufactured by the Izhmash plant since 1995, although the plant is producing various sporting and commercial derivatives, including shotguns. The AK series rifle is still produced in Bulgaria, China, and Romania (*International Defence Review*, 1 October 2000).

Estimates of the total number of AKs in circulation range as high as 100 million (*National Defense*, January 2000). According to a recent study (Walter, 1999), more than 70 million AK series assault rifles have been produced worldwide. AKs and their derivatives are held in the inventories of more than 80 countries; the Russian Federation armed forces alone possess ten different versions (*Jane's Infantry Weapons*, 2000-01). The national flag of Mozambique, as well as six national coats of arms, bear an AK image.

Due to their ease of production, their excellent performance under adverse conditions, and especially their ease of use and disassembly, the models of the AK family have achieved unparalleled levels of availability on the global arms market. The simplicity of Kalashnikov's design has been exploited to devastating effect; with only nine moving parts, this 4.5kg assault rifle is easily handled by child soldiers. Such is the ubiquity of the AK that it has become a symbol for resistance and guerrilla movements worldwide, including Afghanistan's mujahideen, the African National Congress, the Irish Republican Army, UNITA, and the Kosovo Liberation Army.

Estimates of the mean price of a Kalashnikov on the black market range from US\$ 200-1,000.¹⁴ According to Russian Federation sources, the current export price of an Izhmash AK-74 is US\$ 100; this is still two to three times more expensive than those produced in Asia (e.g. China). In areas of high availability, such as Southern Africa, the price can drop to as low as US\$15—the equivalent of one large sack of maize (Boutwell and Klare, 2000a).

Sources: Kenkel, 2000a; Walter, 1999



The AK-47 and its derivatives is the world's most widely distributed single weapon model. Estimates of the total number of AKs in circulation range as high as 100 million.



With only nine moving parts, the AK-47 assault rifle is easily handled by child soldiers.

Popular small arms products

Austria, Belgium, Brazil, China, France, Germany, Israel, Italy, the Russian Federation, Spain, Switzerland, the UK, and the US dominate the global market for both commercial and military-style small arms.

In recent years, there has been a noticeable increase in the number of types and models of small arms that are currently available on the international market. According to Terry Gander, the editor of Jane's Infantry Weapons, 'as a new millennium begins the number of infantry weapons types and models seems to be expanding ... the infantry weapon scene has probably never been busier ... the number of products on offer is seemingly greater than ever' (International Defence Review, 1 October 2000).

This section provides information on a selection of the most popular types of small arms products, both legal and illicit, that are in service with government forces and in the hands of rebel groups and/or private individuals. It focuses specifically on handguns (pistols and revolvers), rifles, sub-machine guns, and machine guns. Light weapons will be examined in subsequent editions of the Small Arms Survey.

Legal products

Despite the lack of detailed information about small arms producers, there is a considerable amount of public information about the types of small arms that are legally available for sale to companies and private individuals and/or that are in service with various countries' security forces. For example annual publications, such as Jane's Infantry Weapons, Jane's Ammunition Handbook, Jane's World Armies and the IISS Military Balance, together with other specialist defence publications (e.g. Military Technology's World Defence Almanac) provide extensive details of the various types of small arms in the inventories of national defence forces. Information on the most popular commercial products for sale to private individuals is readily available from the companies themselves, as well as in a number of commercial publications, such as Guns & Ammo, American Rifleman, and Small Arms Review.

A selection of the world's most popular small arms is presented in Table 1.4. Based on current information and research, it is clear that the world's most popular small arms products, in terms of numbers, distribution, and use originate from a relatively small number of countries. Austria, Belgium, Brazil, China, France, Germany, Israel, Italy, the Russian Federation, Spain, Switzerland, the UK, and the US dominate the global market for both commercial and military-style small arms. Another group of countries, namely the Czech Republic, India, Pakistan, South Africa, Singapore, and Taiwan are also regarded as significant or emerging actors in the international small arms market.

Handguns (pistols/revolvers): The global market for handguns (pistols/revolvers) is dominated by a number of European and US companies. The world's most popular military-style handgun, in terms of sheer numbers, is the Makarov 9mm pistol, produced by the Izhmash plant in the Russian Federation for at least 50 years. However, the 9mm Browning Series pistol, produced by FN Herstal (Belgium), is the most widely distributed handgun. Glock (Austria), Beretta (Italy and US) and Sturm, Ruger & Co (US) are some of the world's largest suppliers of handguns, both for the military and commercial markets.

Assault rifles: The market for assault rifles is dominated by three weapons—the Kalashnikov AK series (The Russian Federation), the M-16 series (US), and the FN-FAL (Belgium). Rivals to the three 'giants' include the following rifles: G3 (Germany), SIG 540 Series (Switzerland), AUG (Austria), the Galil (Israel), and the FAMAS (France). Other new, or emerging producers of assault rifles include Brazil, China, the Czech Republic, India, Singapore, South Africa, and Taiwan (International Defence Review, 1 October 2000).

Sub-machine guns: The world's most popular sub-machine guns (SMG) are produced by companies in Germany, Israel, and the UK. The 9mm Sterling SMG was originally produced by the

The world's most popular military-style handgun, in terms of sheer numbers, is the Makarov 9mm pistol, produced by the Izhmash plant in the Russian Federation for at least 50 years.

Box 1.4 The Uzi sub-machine gun

The standard 9mm Uzi sub-machine gun was designed in the years following Israel's wars for independence. Regular production began in 1953, and it entered into regular service two years later (Jane's Infantry Weapons, 2000-2001). The Uzi is produced by Israel Military Industries (IMI) near Tel Aviv. A miniature version dubbed the 'mini-Uzi', as well as a semi-automatic model, have been in production since 1987; the even smaller 'micro-Uzi' entered production in 1994. IMI also produces a pistol based on the Uzi design (Jane's Infantry Weapons, 2000-2001).

Throughout its 47-year history, the Uzi has been either copied or produced under license in several countries. Belgium's FN Herstal ceased licensed production in the 1970s. The 9mm S-1, a copy of the standard Uzi, was produced by LIW of South Africa as a reserve weapon for that country's National Defence Forces. China's Norinco produces an unlicensed Uzi-based 9mm SMG for export. The 9mm ERO SMG produced by Croatia's RH-Alan is in essence an unlicensed copy of the standard Uzi. RH-Alan's 9mm MINI ERO appears to be an amalgam of 'mini' and 'micro' versions of the Uzi. There are also reports of the unlicensed production of Uzi-type weapons in Eastern Europe. IMI has authorized the assembly of Uzis in Estonia (*International Defence Review*, 1 March 1994).

Estimates of the number of Uzis produced are made difficult by its copying and unlicensed production. IMI itself claims that 1 million standard Uzis have been produced in Israel alone since 1953. A recent estimate suggests that a total of 1.5 million units of the entire Uzi family have been produced (*Jane's Defence Weekly*, 3 November 1999). However, estimates of total global production range as high as 10 million (Renner, 1999). IMI claims to produce 20,000 units a year across all models. The standard 9mm Uzi is in service in at least 50 countries, while the mini-Uzi is in service in Israel and in eight other countries (Jane's Infantry Weapons, 2000-2001).

Given their high fire rate, reliability, and the ease with which they can be concealed, Uzis are popular with soldiers in non-combat roles, special forces, commandos and law enforcement agencies. The price of an Uzi varies widely. In the US, where a ban on automatic weapons is in effect, pre-ban Uzis are valued at no less than US\$ 1,300. In the war-zones of Africa, they can cost at least US\$ 500. In Western Europe, governments, the sole legal buyers, pay between US\$ 1,100-1,700, while civilians pay half that sum on the black market. Forecast International estimates that the current price for the latest model Uzi is US\$ 708.

Source: Kenkel, 2000b



Estimates of total global production of the entire Uzi family range as high as 10 million.

Sterling Armament Company (UK) but the rights were bought by Royal Ordnance (BAE Systems) in 1988. It is no longer in production in the UK but has been produced under license in India and Canada and is in service in more than 90 countries (Jane's Infantry Weapons, 2000-2001). The 9mm MP5 SMG is produced by Heckler & Koch (Germany). It is also produced under license in Greece, Iran, Mexico, Pakistan, Saudi Arabia, Turkey, and the UK and is in service in over 50 countries (Heckler & Koch Company Information).

Machine guns: The world's most popular machine guns are manufactured by companies in Belgium, Germany, the Russian Federation, and the US. The FN 7.62mm MAG is manufactured by FN Herstal (Belgium). It is also produced under license in Argentina, Egypt, India, Singapore, the UK, and the US. An estimated 150,000 - 200,000 have been produced and are in service in over 90 countries (Jane's Infantry Weapons, 2000-2001). The 7.62mm MG1/2/3 series is manufactured by Rheinmetall (Germany). It is produced under license in Greece, Iran, Italy, Pakistan, Portugal, Spain, and Turkey and is in service in 13 countries.

The Browning M2 heavy machine gun is manufactured by Saco Defense (US). It is produced under license by FN Herstal (Belgium) and Manroy Engineering (UK), and is in service in over 30

The world's most popular machine guns are manufactured by companies in Belgium, Germany, the Russian Federation, and the US.

Table 1.4 The world's most popular small arms products

	Original Producer	Licensed Producers	Number Produced	In Service
Handguns				
FN 9mm Browning Series	FN Herstal (Belgium)	Argentina, Bulgaria, Canada, India, Israel, China, Venezuela	> 1.3 million	64 countries
Glock 9mm Series 17	Glock (Austria)		> 1 million	> 50 countries
Beretta 9mm 92 Series	Beretta (Italy/US)	Brazil, Egypt, France	n/a	> 15 countries
Makarov 9mm	Izhmash (Russian Fed.)	Bulgaria, China	20 million	14 countries
Assault Rifles				
Kalashnikov AK Series	Izhmash (Russia)	19 countries incl. China, Bulgaria, Egypt, Finland, Yugoslavia, Iraq	70-100 million	> 80 countries
M-16 Series	Colt's Manuf. (US)	Canada, Philippines, South Korea, Singapore	> 7 million	67 countries
G3	Hechler & Koch (Germany)	18 countries incl. Myanmar, Greece, Iran, Mexico, Pakistan, Portugal, Saudi Arabia, Sweden, Turkey, UK	> 7 million	> 64 countries
FN-FAL	FN Herstal (Belgium)	15 countries incl. Argentina, Australia, Brazil, India, Indonesia, Mexico, South Africa, UK, US, Venezuela	5-7 million	94 countries
AUG	Steyr-Mannlicher (Austria)	Australia, Malaysia		24 countries
SIG 540	SIG Arms (Switzerland)	Chile, France, Portugal		> 20 countries
Galil	IMI (Israel)	Estonia, Italy, South Africa	> 500,000	15 countries
FAMAS F1	Giat Industries (France)		400,000-500,000	6 countries
Sub-Machine Guns				
Uzi	IMI (Israel)	Belgium, China, Croatia, Estonia, South Africa	1-10 million	> 50 countries
Sterling	Sterling Armament Co.(UK)	Canada, India		> 90 countries
MP5	Hechler & Koch (Germany)	Greece, Iran, Mexico, Pakistan, Saudi Arabia, Turkey, UK		< 50 countries
Machine Guns				
7.62 MAG	FN Herstal (Belgium)	Australia, Argentina, Egypt, India, Israel, Singapore, Taiwan, UK	150,000-200,000	> 90 countries
7.62 MG1/2/3	Rheinmetall (Germany)	Greece, Iran, Italy, Pakistan, Portugal, Spain, Turkey		13 countries
Browning M2	Saco Defense (US)	Belgium, UK		> 30 countries
HK21 Series	Heckler & Koch (Germany)	Greece, Mexico, Portugal, Thailand		14 countries
7.62 RPK	State Factories (Russian Fed.)	Bulgaria, Iraq, Romania		> 30 countries

Sources: Ezell, 1995; Ezell, 1988; Gander, 2000; Gander and Cutshaw, 2000; Reed, 2000; Renner, 1999; Brom and Shapir, 2000; Heyman, 2000; Forecast International, 2000; OMEGA Foundation Company Database; Company Information.

Box 1.5 Popular small arms in South Africa¹⁵

As of August 1999, there were 4.5 million registered small arms in South Africa, excluding those weapons in service with the military and police. The most popular type is the 9mm parabellum pistol, with 155,517 licensed in 1998, and over half a million in total licensed between 1994 and 1998. Other popular types include the 9mm short pistol, the 7.65mm pistol, the .38 special revolver, and the 6.35mm pistol (Chetty, 2000, p. 37). The most popular makes of small arms, in terms of numbers licensed to civilians, are manufactured in Brazil, China, Spain, South Africa, the Czech Republic, and the US (Chetty, 2000, p. 38). Foreign types of small arms, especially those made by Norinco (China) dominate the local civilian market.

Table 1.5 Top manufacturers of civilian firearms, South Africa, 1997-99

Year	1st	2nd	3rd	4th	5th
1997	Lorcin 107,920	Norinco 55,453	CZ 16,837	Rossi 10,963	Vektor 8,685
1998	Norinco 72,669	Lorcin 39,451	Astra 18,750	CZ 16,641	Vektor 10,960
1999*	Norinco 41,574	CZ 12,469	Lorcin 10,952	Vektor 6,123	Astra 3,416

Note: * 1 January - mid-November 1999

Source: Chetty, 2000

countries (Jane's Infantry Weapons, 2000-2001). The HK21 series machine gun was originally produced by Heckler & Koch (Germany). It is no longer produced in Germany, but has been produced under license in Portugal, Greece, Mexico, and Thailand and is in use in 14 countries (Renner, 1999). The 7.62mm RPK light machine gun is manufactured by various state factories in the Russian Federation. It is also produced under license in Bulgaria, Iraq, and Romania and is in service in at least 30 countries (Jane's Infantry Weapons, 2000-2001).

Illicit products

Information on the most popular small arms products in illicit hands—whether used by rebel forces or criminals—is obviously much more difficult to obtain. However, in some countries, such as Brazil and South Africa, the police publish information on the types and makes of illicit small arms that are seized or collected as a result of police operations. In the US, annual figures on the types of weapons used to commit crimes provide some indication of the most popular 'crime guns', some, not all, of which are illicit.

South Africa: There are no accurate figures for the numbers and types of illicit small

Table 1.6 Illicit small arms seized by the South African Police, 1994-99

Firearms	Total	% of Total	Annual Average
Rifles (1)	13,436	12	2,239
AK-47s	6,121	6	1,020
Pistols (2)	52,802	50	8,800
Revolvers	17,026	16	2,838
Homemade Weapons	16,781	16	2,797
Total	106,166	100	17,694
Ammunition			
7.62mm all types	284,309	21	47,385
Other	1,040,842	79	173,474
Total	1,325,151	100	220,859

Notes: (1) Includes all rifles (except AK-47s), shotguns, sub-machine guns, and carbines. (2) Includes machine pistols.

Source: Chetty, 2000

arms in circulation in South Africa. However, it is estimated that there are 500,000 illicit firearms in circulation, of which at least 200,000 have been 'lost' by the state, including theft from state armouries (e.g. SANDF, SAPS). Other estimates of the number of illicit firearms in circulation range from 400,000 to 8 million (Oosthuysen, 1996).

Between 1994 and 1999, the Illegal Firearm Investigation Unit of the South African Police Service (SAPS) seized over 106,000 illicit small arms, an average of over 17,000 per annum. Home-made weapons account for 16 per cent of the total. Handguns (pistols and revolvers) account for 66 per cent of the total number of illicit firearms seized by the police. The numbers and proportions of handguns (e.g. pistols) have been increasing in recent years. These trends are similar to the trends for small arms apprehended by the police in Rio de Janeiro, Brazil.

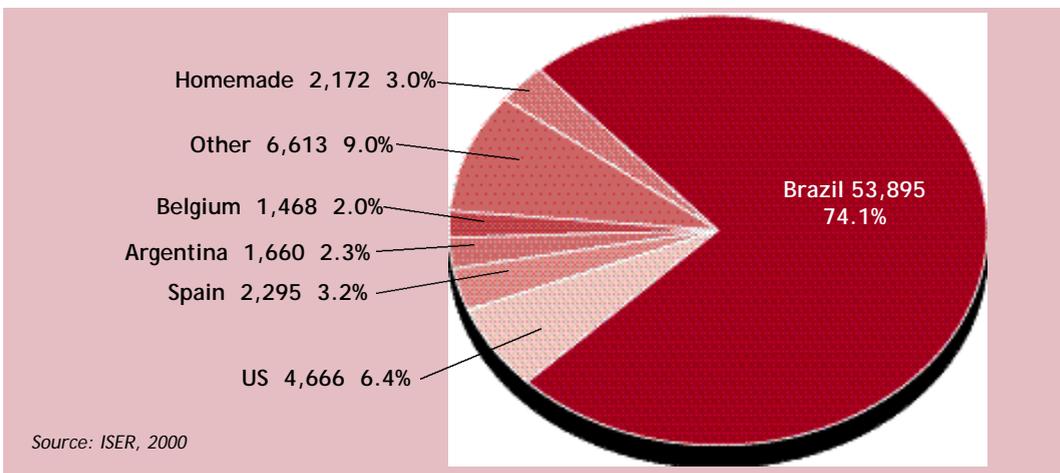
The total number of illicit small arms seized by the police has increased quite significantly since 1997. It is unclear whether this trend is related to better reporting, police efficiency, or an actual increase in the total number of illicit weapons in circulation. The number of small arms lost or reported stolen increased from 15,309 in 1994 to 30,220 in 1998, an increase of 97 per cent. The total number of small arms lost and/or reported stolen between 1994 and 1998 is 112,692. During the same period 63,703 (56 per cent) were found or recovered (Chetty, 2000, p. 40).

The type of small arms used/preferred by criminals depends on the type of crime. In most countries in Southern Africa, including South Africa, handguns (pistols and revolvers) are the weapons of choice in most crimes, although assault rifles tend to be used in specific crimes, such as cash-in-transit heists. For example, during 1998 handguns were used in 49 per cent of all reported murders, and 85 per cent of all robberies (Chetty, 2000, p. 18).

Brazil:¹⁶ A non-governmental organization, the Institute for Religious Studies (ISER), in partnership with the police force in the state of Rio de Janeiro, Brazil has analyzed the numbers and types of small arms apprehended by the police since 1990. These include weapons used in crimes, weapons from security companies that have closed down or gone bankrupt, illicit weapons, or weapons that are legal but not allowed to be visibly displayed/carried.¹⁷ Currently, the police database in the Division of Weapon and Explosive Control¹⁸ contains records for a total of 72,769 weapons for the period January 1990-August 1999.¹⁹ In analyzing the data, a number of trends are evident.

Over 80 per cent of the small arms apprehended by the police in Rio are handguns: 65 per cent revolvers and 15 per cent pistols. This contradicts the prevailing perception in Brazil that automatic

Figure 1.3 Apprehended small arms by country of origin, Rio de Janeiro, 1990-99



weapons, such as assault rifles, are responsible for most of the crimes committed in the country. Automatic weapons do obviously exist, and are used in certain crimes, but they are a minority of the weapons apprehended by the police in Rio.

Nearly 75 per cent of small arms apprehended by the Rio police are made in Brazil. This evidence contradicts another perception that the weapons used in crime tend to be foreign weapons illegally smuggled into the country, whereas the arms produced and sold legally in Brazil are used mostly for purposes of self-protection. The other major supplier countries include Argentina, Belgium, Spain, and the US. At least three per cent of the weapons apprehended are home-made, suggesting the presence of a significant home-made weapons industry in Brazil and in surrounding countries.²⁰ Most of the revolvers (85 per cent) that are apprehended are manufactured in Brazil, whereas pistols and other types of small arms are more divided between domestic and foreign producers. Sizeable proportions of the apprehended automatic weapons are manufactured in the US.

Half of the small arms apprehended by police are manufactured by two Brazilian companies: Taurus (27.1 per cent) and Rossi (23.5 per cent). In addition, there are also other local and foreign manufacturers that account for a significant amount of the weapons apprehended by the police (see Table 1.7).

Nearly 75 per cent of small arms apprehended by the Rio police are made in Brazil.

Table 1.7 Apprehended weapons by manufacturer, Rio de Janeiro, 1990-99

Company	Country	Number	Per cent
Taurus	Brazil	19,687	27.1
Rossi	Brazil	17,130	23.5
US Repeating Arms	US	8,891	12.2
INA	Brazil	2,122	2.9
Beretta	Brazil, Italy, US	1,535	2.1
Smith & Wesson	US	1,370	1.9
Colt's Manufacturing	US	1,135	1.6
Castelo	Brazil	1,108	1.5
FN Herstal	Argentina, Belgium, Brazil, Mexico, US, Venezuela, and others	980	1.3
IMBEL	Brazil	912	1.3
Other		17,899	24.6
Total		72,769	100.0

Source: ISER, 2000

Crime guns in the US: The 1999 Crime Gun Trace Report in the US issued by the BATF provides detailed information regarding the types of firearms (handguns and long guns) that are used to commit crimes in that country. According to information for both 1998 and 1999, nearly 13 per cent of crime guns were manufactured outside the US (BATF, 2000b, p. 6). More than 20 per cent of all small arms sold in the US in 1998 were imported (BATF, 2000b). This suggests that local guns were more likely to be used to commit crimes than foreign guns.

The most popular type of handgun used to commit crimes in the United States is the 9mm semi-automatic pistol. This type of weapon is used in more than 20 per cent of all crimes committed with handguns in the US. The top domestic manufacturer of crime handguns is Smith & Wesson.²¹ The company's .38 revolver is the top crime handgun, used in nearly six per cent of all crimes committed with handguns during 1999. The company's 9mm semi-automatic pistol is the 5th most popular crime handgun. The major foreign manufacturers of crime handguns include Taurus of Brazil (.38 revolver), Glock of Austria (9mm semi-automatic pistol), and Rossi of Brazil (.38 revolver) (BATF, 2000b).

Table 1.8 Handguns: top US crime guns by manufacturer, calibre, and type, 1999

No.	Manufacturer	Calibre	Type	Number of Crime Guns	Percentage of Crime Guns
1	Smith & Wesson	0.38	Revolver	2,968	5.9
2	Lorcin Engineering	0.380	Semi-Automatic Pistol	1,911	3.8
3	Sturm, Ruger & Co.	9mm	Semi-Automatic Pistol	1,636	3.2
4	Raven Arms	0.25	Semi-Automatic Pistol	1,394	2.8
5	Smith & Wesson	9mm	Semi-Automatic Pistol	1,376	2.7
All Handguns				50,676	100.0

Source: Bureau of Alcohol, Tobacco and Firearms, 2000

The most popular type of long gun used to commit crimes in the United States is the 12GA Shotgun. This type of weapon is used in more than 35 per cent of all crimes committed with long guns in the US. The top domestic manufacturer of crime long guns is Mossberg. The company's 12GA Shotgun is used in over nine per cent of all crimes committed with long guns. Norinco of China is the most common foreign supplier of crime long guns. The company's 7.62mm rifle is used in six per cent of all crimes committed with long guns (BATF, 2000b).

Table 1.9 Long guns: top US crime guns by manufacturer, calibre, and type, 1999

No.	Manufacturer	Calibre	Type	Number of Crime Guns	Percentage of Crime Guns
1	Mossberg	12GA	Shotgun	1,287	9.3
2	Marlin	0.22	Rifle	907	6.6
3	Norinco (China)	7.62mm	Rifle	873	6.3
4	Remington Arms	12GA	Shotgun	705	5.1
5	Winchester	12GA	Shotgun	639	4.6
All Long Guns				13,822	100.0

Source: Bureau of Alcohol, Tobacco and Firearms, 2000

Regional survey of small arms producers

The global small arms industry is not homogenous, and the production of small arms and ammunition varies considerably between countries. Some countries have been producing small arms for more than a century, while others have only recently established production facilities for the manufacture of small arms, components, and/or ammunition. In some countries, production takes place in state arsenals or state-owned companies, while in other countries it occurs in private companies that are often part of larger, local, or multi-national defence-industrial companies.

Production in some countries occurs in modern, technologically advanced, manufacturing facilities using sophisticated production processes, while in others it occurs in small, craft facilities using fairly basic production processes. Furthermore, the quality of information, both official and unofficial, concerning small arms production in specific countries and regions also varies considerably. In some countries there is little or no information, or the information is of such poor quality that it is unclear whether production is taking place at all. As a result, it is difficult to make generalizations about the nature and scope of the global arms industry.

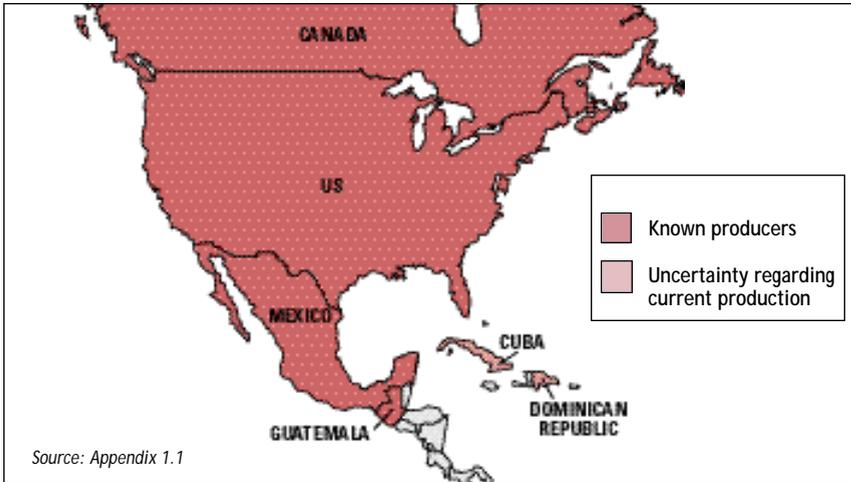
Based on the distribution of small arms producing countries listed in Appendix 1.1, this section undertakes a regional survey of small arms producers, and provides some case studies of particular

countries and companies. The case studies are illustrative rather than comprehensive and are intended to highlight some of the general and specific patterns and characteristics of the global small arms industry. While it is not possible for this regional survey to be comprehensive, given the constraints of existing information, those companies, countries, and regions that are not covered in this chapter will be dealt with in future editions of the Survey.

The Americas

North and Central America: All the countries of North America—Canada, Mexico, and the US—have well-established domestic small arms industries. Most countries in Central America do not possess a domestic small arms production capability, given the low levels of economic and industrial development in many parts of the region. Guatemala has a state-owned small arms production facility in Alta Verapaz (Jane’s Sentinel Security Assessment, 11 June 1999). There is some uncertainty regarding current production in Cuba and the Dominican Republic. In Central America, most production of small arms takes place in state-owned companies, while in North America, with the exception of Mexico, small arms are manufactured by private companies.

Map 1.2 Small arms producers: North and Central America



The United States: The US, together with China and the Russian Federation, is one of the world’s major producers of small arms. Over 300 companies, all privately-owned, serve both the commercial and military small arms markets. According to the US Department of Commerce there were 191 small arms companies in the US in 1997, of which only 55 had 20 or more employees. In the same year, there were 113 ammunition companies in the US, of which only 19 had more than 20 employees (Department of Commerce, 1997a; 1997b). Three states alone—Connecticut, Massachusetts, and New York—were the largest domestic producers (by volume) of small arms, accounting for 77 per cent of the total volume of domestic small arms production between 1975 and 1997 (Violence Policy Center, 2000).

The small arms industry is not a particularly significant sector of the US economy. Total employment amounted to 16,770 people in 1997, comprising 9,907 in small arms producers, and 6,863 in ammunition producers. The total value of production (shipments) was US\$ 2.059 billion (US\$ 1.2 billion for small arms and US\$ 859 million for ammunition) (Department of Commerce, 1997a; 1997b). Thus, the small arms business is worth about US\$ 2 billion a year to the American economy.²²



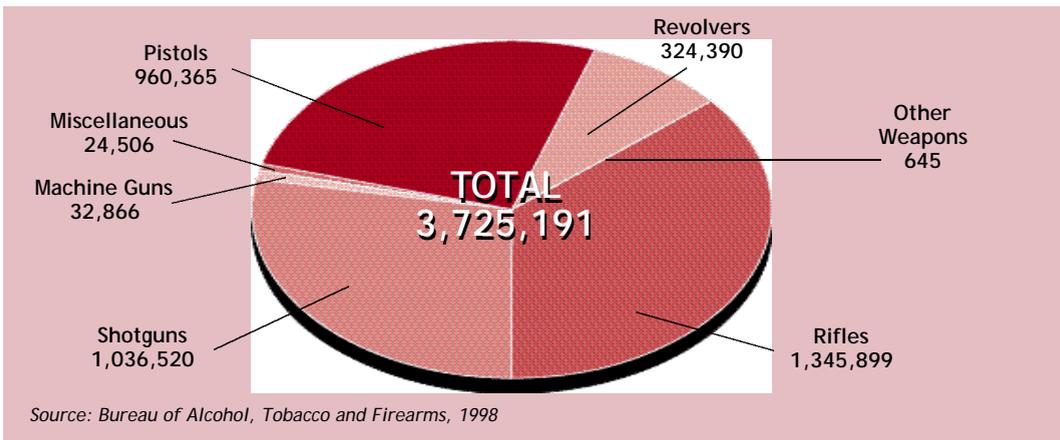
The small arms business is worth about US\$ 2 billion a year—not a particularly significant amount—to the American economy.

Between 1980-98, a total of 78 million small arms were produced in the US— an average of 4.1 million per annum.

According to a recent study, the domestic small arms industry in the US is 'like a pyramid in terms of companies, and an upside-down pyramid in terms of volume ... a few giant manufacturers make most of the guns ... [and an] assortment of many other small manufacturers make the rest, some as few as one gun a year' (Diaz, 1999, p. 23).

The BATF's Firearms Manufacturing and Export Report (1998b) provides detailed statistics on the numbers of small arms manufactured and exported by US companies. In 1998 a total of 3.7 million small arms were locally produced, of which less than six per cent (215,096) were exported. More than 1.2 million (34 per cent) of the total number of firearms produced were handguns (pistols/revolvers), the most popular being the 9mm pistol (284,374). Over 1.3 million rifles (36 per cent) were produced. Total domestic production in 1998 increased slightly over the previous year, but was significantly lower than the peaks of over five million per annum in 1993 and 1994, which were the highest levels of production since 1990 (BATF, 2000a). Between 1980 and 1998 a total of 78 million small arms were produced in the US, with an average of 4.1 million per annum (BATF, 2000a).

Figure 1.4 Total numbers of small arms produced (US), 1998



Three companies constitute the core of the US military's small arms industrial base. They are Saco Defense (part of General Dynamics), Colt's Manufacturing, and FN Manufacturing (part of Groupe Herstal of Belgium). Saco Defense produces the M-2, M-19, and M-60 machine guns. Colt's Manufacturing produces the M-4 carbine and the M-16 rifle. FN Manufacturing produces the M-16 rifle, the M-249 light machine gun, and the M-240 medium machine gun (Jane's Infantry Weapons, 2000-2001).

In the US, Sturm, Ruger & Co is the largest producer of pistols and rifles. Smith & Wesson is the largest producer of revolvers while Remington Arms is the largest producer of shotguns.

The commercial small arms market in the US is dominated by a few well-known and well-established firms, such as Sturm, Ruger & Co., Smith & Wesson, Beretta US Corp. (a subsidiary of Beretta of Italy), The Marlin Firearms Co., Remington Arms Co., US Repeating Arms Co. (part of Groupe Herstal of Belgium), H&R 1871, and O.F. Mossberg & Sons (Diaz, 1999). Sturm, Ruger & Co. is the largest producer of pistols and rifles in the US. Smith & Wesson is the largest producer of revolvers, while Remington Arms is the largest producer of shotguns (see Figure 1.5). The ranking of major domestic producers has not changed significantly in recent years. In 1995 the major producers were: pistols (Smith & Wesson); revolvers (Smith & Wesson); rifles (Sturm, Ruger & Co.); and shotguns (Remington Arms) (BATF, 1995).

A number of foreign producers are also major suppliers to the US domestic market. At least 1 million firearms (handguns, rifles, and shotguns) were imported into the country during 1998. During the period 1980-98, foreign suppliers accounted for over 20 per cent of the total sales of firearms in the US domestic market (BATF, 2000a). The leading suppliers of handguns (pistols and

Figure 1.5 Major US domestic small arms producers, 1998

Category	Company	Number produced
Pistols:	Sturm, Ruger & Co.	161,058
Revolvers:	Smith & Wesson	139,583
Rifles:	Sturm, Ruger & Co.	332,538
Shotguns:	Remington Arms	336,527

Source: Bureau of Alcohol, Tobacco and Firearms, 1998

revolvers) to the United States between 1991-96 were Austria, Belgium, Brazil, Germany, Italy, and Spain. China was one of the major suppliers of rifles (e.g. SKS assault rifles) to the US during the period 1987-94, accounting for more than 40 per cent of total US rifle imports, including military-style weapons (Diaz, 1999, p.73).

Most military-style small arms ammunition is produced at state-owned plants, which are usually operated by private sector companies. Alliant Techsystems (ATK) manages the Lake City Army Ammunition Plant in Independence, Missouri. The plant, which supplies all the US Army's requirements for small-calibre ammunition, has the capacity to produce an average of 450 million rounds of small calibre ammunition per year (Defence Systems Daily, 16 August 2000). ATK is the largest supplier of small arms ammunition to the US military and one of the largest small arms companies in the world (SIPRI, 2000).

Primex Technologies, which was recently acquired by General Dynamics for US\$ 520 million, is also one of America's most important small arms ammunition producers. ATK and Primex dominate the US military market for small arms ammunition. ATK employs more than 6,000 people, and in 1999 had a turnover of over US\$ 1 billion (Extel Cards Database, 2000). However, its small arms business is worth approximately US\$ 100 million per annum (Defence Systems Daily, 16 August 2000). Primex employs more than 2,800 people and in 1999 had a turnover of US\$ 544 million, of which approximately half came from its arms business (SIPRI, 2000).

Canada: Canada's defence industry has experienced a dramatic process of restructuring and consolidation in recent years (Edgar and Haglund, 1995). The manufacture of small arms is concentrated in a few companies, including Diemaco (assault rifles), Para-Ordnance (pistols), Savage Arms (sniper rifles), and Armament Technology (tactical rifles). Diemaco is the major supplier of small arms to the Canadian Department of National Defence. Most small arms for domestic purposes are produced under license to American (e.g. Colt's Manufacturing) or European (e.g. FN Herstal of Belgium) companies. SNC Industrial Technologies, Royal Canadian Cartridge and Munitions Corp., Challenger Ammunition, and Wolf Bullets are Canada's major small arms ammunition producers.²³ SNC is the major supplier of small arms ammunition to the Canadian armed forces, and is a major exporter (NISAT, 2000).

Mexico: Mexico has a relatively small, but well-established domestic defence industry. Various types of small arms, some of them of indigenous design, have been manufactured since the beginning of the 20th century. The country's major small arms producers include the state-owned Fabrica de Armas Nacionales (rifles) and the Departamento de Industrias Militares. Private companies include Productos Mendoza (machine guns) and Industrias Technos Aquila.²⁴

ATK is the largest supplier of small arms ammunition to the US military and one of the largest small arms companies in the world.

Canada's SNC is the major supplier of small arms ammunition to the country's armed forces, and is a major exporter.

At least ten countries in South America possess some form of domestic small arms production capability. The major producers in the region are Argentina, Brazil, and Chile.

South America: At least ten countries in South America possess some form of domestic small arms production capability. Some countries, such as Ecuador, manufacture only ammunition and, in many cases, production is geared towards meeting domestic requirements. The major producers in the region are Argentina, Brazil, and Chile, where production is geared towards both local and foreign markets. Brazil is the most successful South American exporter of small arms. In countries such as Bolivia, Paraguay, and Uruguay there is some uncertainty regarding current production of small arms. With the exception of Argentina and Brazil, most production of small arms takes place in state-owned companies. Most small arms products are manufactured under license from European companies such as FN Herstal (Belgium), SIG (Switzerland), and Beretta (Italy).

Argentina: One of Latin America's oldest and largest small arms producers, Argentina has been manufacturing small arms since the 1930s (Dreyfus, 2000; Solingen, 1998). During the 1980s, there were more than 20 private sector small arms producers, in addition to the various production facilities that were part of Dirección General de Fabricaciones Militares (DGFm) (see box 1.6).

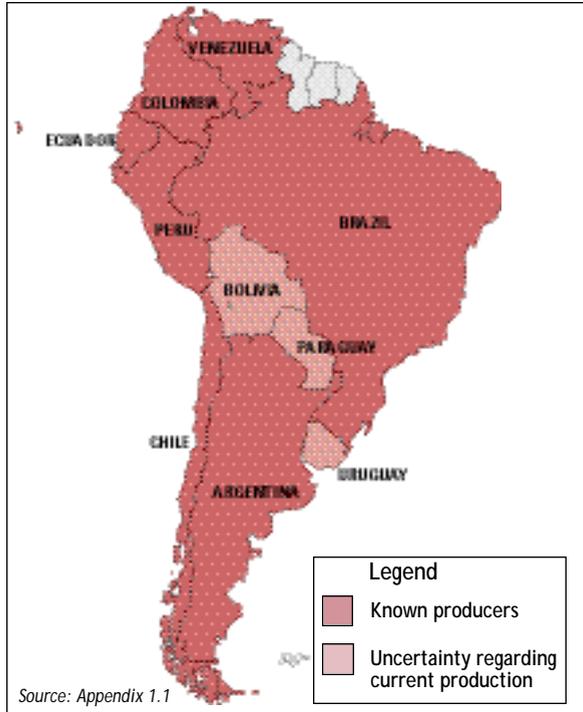
The major private producers include Bersa, Rexio, and Mahely Ind. & Co. All three companies are located in Buenos Aires Province and produce a wide range of products for civilian and military markets. A large number of private sector producers went out of business in the late 1980s and early 1990s, brought down by the collapse of Argentina's traditional arms export markets (Middle East), the liberalization of the Argentine economy, and the introduction of stricter domestic gun control legislation.

According to industry sources, during the 1980s and early 1990s, the private sector industry produced over 300,000 units per annum, but since 1994, the industry has been producing an average of only 24,000 units a year (Dreyfus, 2000). Argentina's state-owned small arms industry, which is part of DGFm, is currently in deep crisis and its future is unclear (see Box 1.6).

Brazil is South America's largest small arms producer and has been manufacturing for both local and export markets since the early 1960s (Solin, 1998). Its defence industry emerged as one of the major developing countries' arms producers in the 1970s and 1980s, accounting for eight per cent of the global arms market (Jane's Defence Weekly, 21 June 2000). In the last decade the local defence industry has been struggling to survive, largely as a result of the loss of its major export markets in the Middle East. Many of the major companies have disappeared or exited the defence business in the last few years.

Brazil is South America's largest small arms producer. Its defence industry accounts for 8 per cent of the global arms market.

Map 1.3 Small arms producers: South America



Box 1.6 Dirección General de Fabricaciones Militares (DGFM)

In 1941 the Argentine Government created the state-owned military industrial complex, Dirección General de Fabricaciones Militares (DGFM). The DGFM was placed under the control of the Army Command, and, by the early 1990s, included 12 factories, whose output was directly linked to meet the requirements of the Argentinian armed forces.

In 1946 the first production plant for small arms, Fabrica Militar de Armas Portátiles Domingo Matheu (FMAP), was established and began to produce Mauser carbines and Colt pistols. During the 1950s and 1960s, the FMAP produced various types of small arms under license from FN Herstal (Belgium) and Beretta (Italy). Until the early 1990s production was concentrated in three DGFM factories: FMAP (small arms) located in Rosario, Sante Fe; Fabrica Militar Fray Luis Beltrán (ammunition) located in Fray Luis Beltrán, Sante Fe; and Fabrica Militar Río Tercero (light weapons) located in Río Tercero, Córdoba.

Since the early 1990s, DGFM has been restructuring as part of a larger government policy of privatization of public enterprises. In 1996, it was placed under the control of the Ministry of Finance, and FMAP closed and merged with the Fray Luis Beltrán (FLB) ammunition factory. The merging of the two plants took three years, and the new plant is now producing FN 9mm pistols, FMK5 rifles, FMK3 sub-machine guns, and .22 sports carbines. In addition, the factory still provides general maintenance and produces parts for the various types of weapons produced under license from FN Herstal (Belgium) for the Argentinian armed forces.

In 1999, the FLB produced 200 carbines (350 in 1998) and 4,500 pistols (1,800 in 1998), and current production is estimated at 400 pistols per month. Turnover in 1999 was US\$ 5.2 million (US\$ 5.4 million in 1998), of which 41 per cent was sales to the Argentine security forces (34 per cent in 1998). The Fabrica Militar Río Tercero (FMRT) factory is still active, having produced various types of mortars for the Argentinian armed forces in the past. However, the plant has no current orders for production.

Future prospects for Argentina's local small arms industry are uncertain as a result of budgetary constraints, including cuts in defence spending, the abolition of conscription in 1994, competition from Brazil's industry, and the fall-out from DGFM's illicit arms sales to Croatia and Ecuador in the early 1990s (Dreyfus, 2000, p. 21).

During 2000 the Argentine Congress established an *ad hoc* commission to examine future options for the DGFM. It appears clear that privatization is inevitable. However, the capability to produce small arms and ammunition is considered strategically and logistically indispensable so it is possible that the state may retain a controlling interest or share in FLB.

Source: Dreyfus, 2000



The major ammunition producers in Brazil include Fábrica Nacional de Cartuchos e Munições in São Paulo, Companhia Brasileira de Cartuchos (CBC) in São Paulo, and Fabrica Realengo in Rio de Janeiro. CBC is the largest and oldest ammunition producer in Brazil, and is considered one of the largest ammunition producers in the developing world. In 1999 it employed 900 people and had total sales of US\$ 35 million (Worldscope, 2001). Brazil's major small arms producers include the state-owned Indústria de Material Bélico Brasil (IMBEL) and a number of private companies including Companhia de Explosivos Valparaíba (grenades, mortars), Condor SA Indústria Química (grenades), Mekanika Indústria e Comércio (machine guns), Forjas Taurus (handguns and sub-machine guns), Amadeo Rossi (handguns), Viera de Mello (machine guns and sub-machine guns), and Indústria Nacional de Armas (INA) (sub-machine guns).²⁵

IMBEL, which was established in 1974 as part of the Ministry of Defence, manufactures FAL assault rifles under licence from FN Herstal (Belgium), and a wide range of small arms. IMBEL is a non-quoted, state-owned company, and currently employs 2,220 people (The Major Companies Database, 25 July 2000). IMBEL and CBC have a joint venture with Royal Ordnance (UK) in South

CBC, the largest and oldest ammu - nition producer in Brazil, is also considered one of the largest ammu - nition producers in the developing world.

In 1996, Brazil was the second largest supplier of handguns to the US, having been the largest supplier throughout the period 1991-95.

American Ordnance. Forjas Taurus produces pistols under licence from Beretta (Italy), as well as a range of small arms for both domestic and export markets. It has 1,620 employees and total sales of US\$ 74 million in 1999 (Worldscope, 2001). Exports account for nearly 50 per cent of the firm's turnover. Rossi has 1,354 employees and had total sales of US\$ 3.9 million in 1999 (Worldscope, 2001). More than 40 per cent of the company's production is sold in the US. Both Rossi and Taurus are major suppliers of small arms to the US and other foreign markets. In 1996, Brazil was the second largest supplier of handguns to the US, having been the largest supplier throughout the period 1991-95 (Diaz, 1999, p. 76).

The main Brazilian small arms companies (CBC, IMBEL, Taurus, Rossi, INA) currently employ 4,153 people, and in 1999 total revenues for the five companies amounted to US\$ 110 million (São Paulo Valor, 16 August 2000). In July 2000, the Brazilian Ministry of Defence effectively 'closed' the local small arms market to foreign competitors, in an attempt to protect the local small arms industry (Sao Paulo Valor, 12 July 2000).

Chile: Chile has a long history of producing small arms. Its local defence industry expanded considerably during the 1970s, when many countries imposed an arms embargo against it in response to the overthrow of the Allende government.²⁶

Chile's small arms industry is dominated by the state-owned organization, Fabricas y Maestranzas del Ejército (FAMAE), which is part of the Ministry of Defence. FAMAE employs 3,000 people in factories distributed around the country and produces ammunition and various types of small arms (mortars, pistols, sub-machine guns, and assault rifles) for the domestic and export markets (Jane's Sentinel Security Assessment, 6 August 2000). The company produced the FN-FAL assault rifle under licence from FN Herstal (Belgium) until the early 1980s. Since 1991, it has been producing the SIG 540 series assault rifle under licence from SIG (Switzerland) (Jane's Infantry Weapons, 2000-2001). The company also produces mortars under licence from TDA (France). FAMAE has a strategic alliance with Forjas Taurus (Brazil) to produce machine guns (based on the SIG 540 assault rifle) for the security forces in Brazil. There are only two private small arms producers: Complejo Químico Industrial del Ejército (CQIE) is involved in ammunition assembly filling and ordnance retrieval and recycling;²⁷ and Metalnor Industria, which is part of the large private defence company, Cardoen Industries, produces hand grenades.²⁸

Europe and the CIS

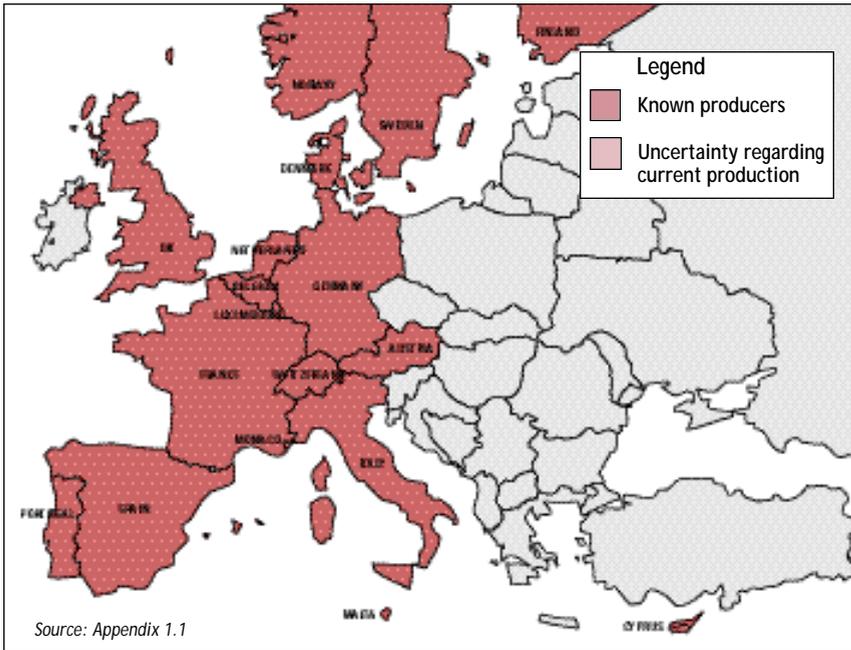
There are at least 39 countries in Europe and the CIS that currently produce small arms. Eight of the world's 13 top producers are located there.

There are at least 39 countries in Europe and the CIS that currently produce small arms. The Russian Federation, one of the world's major producers, and most of the world's medium-sized producers (including Austria, Belgium, France, Germany, Italy, Spain, Switzerland, and the UK) are located in this region (Hébert, et al., 2000). There are also a number of well-established producers in East Central Europe and the Balkans. There is some uncertainty regarding current production in Belarus, Estonia, Kazakhstan, Lithuania, and Moldova.

Over 200 companies, at least one-third of the total number of known companies in the world that produce small arms, are found in this region. Some of the most important small arms producers include: Glock (Austria), Steyr (Austria), FN Herstal (Belgium), Giat Industries (France), Beretta (Italy), Rheinmetall (Germany), Santa Barbara (Spain), Celsius (Sweden), SIG (Switzerland), Heckler and Koch (UK/Germany), and Royal Ordnance (UK).²⁹ The major ammunition producers include FN Herstal (Belgium), Giat Industries (France), Nammo (Norway), Rheinmetall (Germany), Bofors (Sweden), and Royal Ordnance (UK) (Hébert, et al., 2000).

Western Europe: The defence industry in Western Europe has been undergoing a major process of re-structuring and consolidation since the end of the Cold War (BICC, 1998; Brzoska and Markusen,

Map 1.4 Small arms producers: Western Europe



2000). Much of this restructuring has included downsizing and privatization initiatives, while consolidation has involved a series of company mergers and acquisitions (Hébert, et al., 2000). These processes have also had an impact on the size and structure of the small arms industry in the region.

Austria: Glock and Steyr-Mannlicher are the two major small arms producers in Austria.³⁰ Glock produces a wide range of pistols, including nearly 40 different models in various sizes and eight calibres. Since its founding in 1963, Glock has supplied more than 2.5 million pistols to security forces and civilians in more than 100 countries. The Glock 17 series pistol is in service in more than 5,000 police departments and agencies in the US, and over half a million pistols are carried daily as service handguns in the US (Jane's Infantry Weapons, 2000-2001). Steyr-Mannlicher, in which Daewoo (South Korea) has a controlling interest, produces a comprehensive range of small arms including the AUG 5.56mm assault rifle, which is in service in at least 24 countries and is produced under license in Australia and Malaysia (Jane's Infantry Weapons, 2000-2001).

Belgium: FN Herstal is one of the world's most famous small arms producers, and the most important producer of small arms in Belgium. The company is part of Groupe Herstal, which was, until 1997 owned by Giat Industries (France), but since then has been owned by the Walloon Regional Government (Mampaey, 2000). FN Herstal was established in 1889 to produce German Mauser rifles under license for the Belgian Army.

Today FN Herstal produces 450,000 weapons in nine countries every year. Its products include pistols, rifles, sub-machine guns, and machine guns. The company recently stated that 'two-thirds of the American Army's "portable" arms are made (by FN Herstal) in Belgium' (Groot Bijgaarden De Standaard, 7 December 2000). In 1999, FN Herstal employed 940 people and had a turnover of US\$ 93 million, which represented 22 per cent of the total turnover of the Groupe Herstal (Mampaey, 2000). The Groupe Herstal has a subsidiary in the US, FN Manufacturing, that produces assault rifles (M-16 series) and machine guns, mainly for the US armed forces.

France: Despite being a major producer of conventional arms, France does not enjoy such a high profile as a producer of small arms as certain other countries in Europe, such as Belgium,

Over 200 companies, at least one-third of the total number of known companies in the world that produce small arms, are found in Europe and the CIS.

According to FN Herstal, 'two-thirds of the American Army's "portable" arms are made in Belgium.'

Germany, and Italy. Small arms production in France is dominated by the state-owned defence company, Giat Industries.³¹ The company produces a wide range of small arms and ammunition, including pistols, assault rifles (FAMAS F1 Series), and grenades, and is the major supplier of small arms to the French armed forces. The company has experienced a number of financial problems in recent years, and has posted losses of about US\$ 2.7 billion in the last ten years (Jane's Defence Weekly, 10 May 2000).

Despite improving financial figures, the company is still losing money, and remains heavily reliant on government bail-outs to keep production lines moving. Since 1998, the company has been undergoing a major restructuring. This has resulted in the closure and/or rationalization of a number of production facilities, including the ammunition facilities at Le Mans, Salbris, and Rennes. It sold its share in the Herstal Group in 1997 to the Walloon Regional Government in Belgium. Currently the company employs 7,800 people, down from over 10,000 in 1998 (Jane's Defence Weekly, 10 May 2000).

Italy: Small arms production in Italy is dominated by one company—Beretta, which is owned by Giat Industries of France (36 per cent), and Beretta family interests (64 per cent). Beretta owns a number of Italy's other major small arms producers, including Luigi Franchi (shotguns, machine guns) and Benelli Armi (shotguns) (Jane's World Defence Industry, 2000).³² Beretta has over 1,800 employees and, in 1999, recorded total sales of US\$ 233 million. The company produces rifles, shotguns, and pistols. Its sporting arms account for 75 per cent of total production. Over 70 per cent of production is exported to almost 100 countries. Beretta also has a subsidiary in the US, Beretta US Corporation, which has 170 employees and registered sales of US\$ 30 million in 1999 (Directory of Corporate Affiliations, 2000).

Small arms production in Italy is dominated by one company—Beretta. Over 70 per cent of its production is exported to almost 100 countries worldwide.

Germany: In recent years, Germany's small arms industry has become increasingly consolidated in one company—Rheinmetall.³³ The company's small arms business is concentrated in Rheinmetall DeTec, and produces a wide range of small arms and ammunition (Lock, 2000). The company has also begun to dominate the European small arms market in recent years as a result of a number of local and cross-border acquisitions. The company recently acquired a number of other well-known local producers, such as Mauser Werke (rifles, machine guns) and Buck Werke (mortars). During 1999 it increased its stake in Eurometaal, a Dutch small arms producer, to 66 per cent; and, in 2000, acquired 100 per cent of Oerlikon Contraves (Switzerland). In 1999 Rheinmetall DeTec had annual sales of US\$2 billion and employed about 11,500 people (Jane's Defence Weekly, 7 June 2000).

Spain: In Spain, the major small arms producers include Empresa Nacional Santa Barbara (ENSB), which is state-owned, and a number of private companies including Astra-Unceta y Cia, Llama Gabilando, and Star. ENSB produces various types of small arms and ammunition including machine guns, rifles, and grenade launchers, and is the main supplier to the Spanish armed forces (Jane's World Defence Industry, 2000). The company, which employs around 2,000 people at nine locations, has been experiencing severe financial difficulties in recent years. In 2000, it had projected losses of US\$ 22 million, 85 per cent higher than the previous year (Jane's Defence Weekly, 18 October 2000). The Spanish government has acknowledged that ENSB is 'technically bankrupt', and has accumulated losses of over US\$ 800 million in the past decade. It is currently the target of a take-over tug of war between the US's General Dynamics Group and Germany's Rheinmetall and Krauss-Maffei (Defense Daily, 13 November 2000). Astra and Star, the major private sector producers of military-style handguns have recently consolidated their operations under the ASTAR name (Forecast International, 2000).

Switzerland: Although a neutral country, Switzerland supports a fairly significant domestic small arms industry, which is helped by the structure of its militia army. The major ammunition producer is Oerlikon Contraves, which is 100 per cent owned by Rheinmetall (Germany) and employs about 2,400 people (Jane's World Defence Industry, 2000). The Swiss Ammunition Enterprise (SM

and the Swiss Ordnance Enterprise (SW), both of which are located in Thun, are important local producers of grenades, mortars, and machine guns. Both operate as independent companies within the state-owned RUAG Suisse Group (Military Technology, May 2000).

Schweizerische Industrie-Gesellschaft (SIG) based in Neuhausen Rheinfalls, produces a wide range of pistols, rifles, and grenade launchers, including the famous Mauser and Sauer brands. The company has facilities in Germany (SIG Arm Sauer in Eckernforde), Switzerland, and the US. The SIG540 series assault rifle is in service in more than 20 countries (including ten countries in Africa), and is produced under license in Chile, France, and Portugal. In October 2000, the small arms division of SIG, which employs over 700 people, was sold to two private German investors (Agence France Presse, 4 October 2000). Thus, two of Switzerland's most significant small arms companies are now foreign owned.

Two of Switzerland's most significant small arms companies are now foreign owned.

The United Kingdom: The UK is one of Western Europe's largest defence producers. The major small arms and ammunition producer is Royal Ordnance (RO), which is part of the BAE Systems Group.³⁴ RO has owned Heckler & Koch (Germany) since 1991 and has plants in both the United Kingdom and Germany.³⁵ It employs about 4,000 people and its products are sold in more than 50 countries. Its main small arms production facility in the United Kingdom is in Nottingham and employs 450 people. The facility is slated for closure during 2001, following the awarding of a contract to modify 200,000 faulty SA-80 rifles to Heckler & Koch's plant in Obendorf, Germany (Daily Mail, 5 October 2000). Heckler & Koch had a turnover of US\$ 130 million in 1999 and employs about 700 people. Early in 2000 BAE Systems tried unsuccessfully to sell Heckler & Koch to Colt's Manufacturing (US).

CIS and the Baltic States: During the Cold War, the Soviet Union was one of the largest small arms producers in the world, with production taking place in many republics of the Soviet Union. Since the end of the Cold War, the Soviet Union's defence industry has been affected by the break-up of the Soviet Union, and has been forced into a dramatic process of downsizing and restructuring (BICC, 2000; Gonchar, 2000). A number of the CIS states have maintained, or expanded, their Soviet-era small arms production capabilities.

The Russian Federation: The Russian Federation inherited the bulk of the former Soviet Union's small arms industry. The industry is still largely state-owned, and production takes place in a large number of state-owned factories.³⁶ The two major production centres are in Tula (Tulsky Oruzheiny Zavod), near Moscow, and in Izhevsk (Izhmash Joint Stock Company) in the Republic of Udmurtia. Other facilities include the Kovrov Mechanical Plant (sub-machine guns and machine guns) and the Degtyarev Plant, both located in Kovrov; the Molot Joint Stock Company (pistols, revolvers, and machine guns), located in Vjatskie Poliany, and the Central Scientific Research Institute of Precision Machinery Construction (Tsniitochmash) in Klimovsk, near Moscow.

During the Cold War, the Soviet Union was one of the largest small arms producers in the world.

The cities of Tula and Izhevsk, both 'closed' during the Soviet era, are dominated by the production of small arms. There are numerous production facilities in both, usually with different names, indicating the type of weapon produced and/or developed. Plants in both cities manufacture various types of small arms, including the 9mm Makarov pistol and various commercial and sporting derivatives of the original AK series assault rifle. In the early 1990s, 70-80 per cent of Izhmash's income came from small arms sales, but this has been reduced significantly in recent years. In 1999, exports were worth US\$ 39.1 million. The enterprise is currently experiencing severe financial problems, largely due to five years of payment arrears from the Russian Federation Department of Defence (Gonchar, 2000). Izhmash's small arms have been sold in more than 45 countries, although many of its products, especially handguns, are still restricted from being sold in the US (National Defense, January 2000).³⁷

Map 1.5 Small arms producers: CIS and Baltic States



Other states, including Armenia, Belarus, Estonia, Moldova, Kazakhstan, Lithuania, and Ukraine are known to have limited small arms production capabilities.³⁸ However, there is a lack of information regarding current production activities in many of these countries.

East Central Europe:³⁹ All the countries of East Central Europe⁴⁰ were significant arms producers during the Cold War era (Kiss, 1997a; Anthony, 1994). Poland and the former Czechoslovakia had the largest defence industrial sectors, based on the number of people employed in defence production.⁴¹ The structure and size of arms production in each country was determined by the requirements of the Warsaw Treaty Organisation (WTO). Most products were produced according to Soviet designs, but with some local adaptations and developments.

Since the end of the Cold War, the defence industry in East Central Europe has experienced a dramatic process of downsizing, restructuring, and consolidation (Kiss, 1997a). Between 1990 and 1994, output levels fell to 10-30 per cent from their 1988 peak. During this period, many companies retrenched large numbers of people. The total number of people 'formally' employed in the defence industries of East Central Europe declined by 70 per cent from 510,000 in 1988 to 150,200 in 1998 (BICC, 2000).

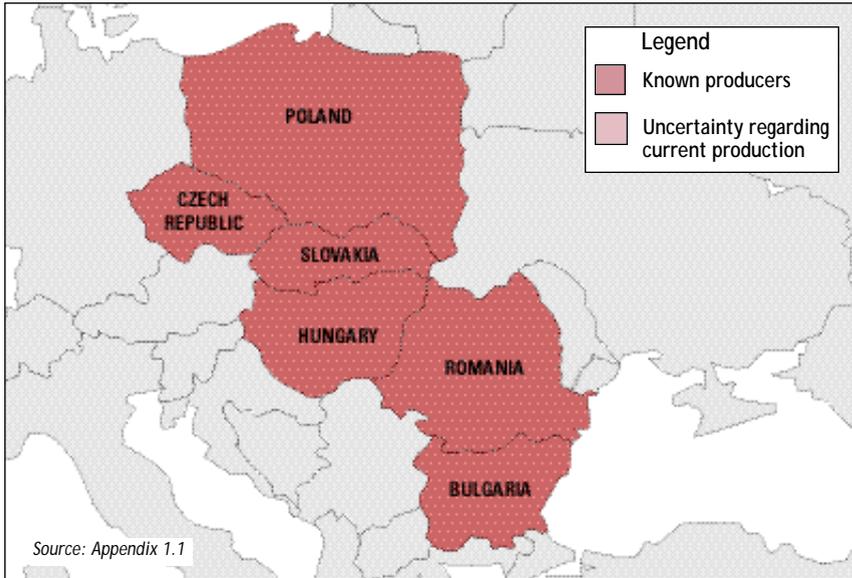
The reasons for this dramatic collapse in East Central Europe included:

- The end of the Cold War and the resulting dissolution of the Warsaw Pact organization, which had provided lucrative, protected markets and cheap inputs for defence production;
- The collapse of the related economic trading system;
- International sanctions and embargoes on traditional markets (e.g. Libya, Iraq, Syria, and Yugoslavia);
- Significant cuts in defence spending as part of more general processes of economic and political transformation; and
- The many economic problems associated with the introduction of market forces.

By the late 1990s, the crisis in the East Central Europe defence industry was largely over, and the

The defence industry in East Central Europe experienced a dramatic down - turn between 1990 and 1994, with output levels falling to 10-30 per cent from their 1988 peak.

Map 1.6 Small arms producers: East Central Europe



sector had embarked upon a process of consolidation, although the eventual outcome still remains uncertain. In the Czech Republic, Hungary, and Slovakia, local defence companies began to show modest increases in output and profitability. However, in other countries, such as Bulgaria, Poland, and Romania, output continued to fall and many defence companies were doomed to failure in the absence of state intervention.⁴² High levels of 'technical unemployment' and huge arrears in wages in the defence industry have prompted violent workers' protests in recent years in Bulgaria, Poland, Romania, and Slovakia.

The stabilization of the defence industry in East Central Europe was helped by a number of factors, such as macroeconomic recovery in most countries (with the exception of Romania), and invitations to join the North Atlantic Treaty Organization (NATO) 'Partnership for Peace' programme and become members of NATO (Czech Republic, Hungary, and Poland). This has prompted increases in defence spending and military modernization programs. It has also renewed government support for defence industry restructuring. Privatization, international co-operation, and new export markets have also played a crucial role.

In response to the crisis situation, the defence industries of East Central Europe implemented two general types of adjustment strategies, albeit with certain variations between countries. In Slovakia, defence industry adjustment was state-led and inward-oriented. Bulgaria and Romania utilized similar strategies, but were more export-oriented. In Hungary, defence industry adjustment was largely industry-led, and export-oriented. The Czech Republic and Poland followed similar strategies, but with more state involvement.

By the late 1990s, a vastly reduced number of small arms producers were operating in East Central Europe as a result of defence industry restructuring, privatization, and consolidation. Ammunition producers had more difficulties than small arms producers. This was largely due to the fact that the conversion and/or maintenance of production capabilities was a more complex challenge for the former. The future prospects for the defence industry, including small arms producers, in East Central Europe will be determined by the following factors:

- The upgrading and modernization of existing arsenals/defence forces to meet NATO standards;
- Creation of hybrid systems that use both NATO and WTO parts, and can be sold in both markets;

Privatization, international co-operation, and new export markets have played a crucial role in stabilizing East Central Europe's defence industry.

- International co-operation through joint ventures and technology transfers; and
- New export markets.

The former Czechoslovakia was one of the largest arms producers in East Central Europe in the 1980s.

Czech Republic: The former Czechoslovakia was one of the largest arms producers in East Central Europe in the 1980s, and the bulk of the country's defence industry was located in what is today Slovakia. The Czech Republic's defence industry experienced a major crisis in the early 1990s. However, in recent years the position of the industry has strengthened considerably. Currently, about 90 per cent of the defence industry is in private hands, although the state retains a share in several key companies. In some cases, former state-owned companies were sold through coupon privatization schemes (e.g. Sellier and Bellot).

The state still plays an important role in supporting the industry by placing orders with local companies and promoting exports.⁴³ Some of the most important small arms producers include: Ceska Zbrojovka⁴⁴, Caliber Praha, Holec, and the LCZ Group. The major ammunition producers include: Zbrojovka Vsetin, Poliske Strojirny, Sellier and Bellot, Prototypa ZM, and the State Arsenals.

Hungary: Hungary's defence industry has shrunk considerably since the end of the Cold War. Total employment in 1998 was estimated at 5,000, down from over 30,000 in the late 1980s (BICC, 2000). During the Warsaw Pact era, the country's small arms producers had a relatively privileged position. According to Hungarian military guidelines, all personal equipment for soldiers, including small arms and ammunition, had to be produced locally. This situation continued during 2000.

The key problems facing Hungarian small arms producers include a lack of state orders, which limits income and undermines the companies' export potential, and tough external market conditions. On the other hand, Hungary's recent admittance into NATO, which will be accompanied by increased defence spending and a modernization programme for the armed forces, will certainly benefit the country's local small arms producers.

During the late 1980s, Poland had the largest defence industry in East Central Europe.

Poland: During the late 1980s, Poland had the largest defence industry in East Central Europe. By the late 1990s the industry was struggling to survive, despite the country's impressive macro-economic growth. In 1998 the industry employed about 70,000 people (BICC, 2000). Privatization of the defence industry only began in 1999, and most companies remain in state hands, under the control of the state industrial development agency. Some of the privatization that has occurred has taken place through debt equity swaps. In recent years the government has provided significant financial assistance and placed orders with domestic companies to help the industry to survive.

The country's major small arms producer is Zaklady Metalowe Lucznik, which employs some 1,600 people. In September 2000, the Polish Government placed an order worth US\$ 1.8 million with the company for 4,000 assault rifles for the country's border guards in an attempt to prevent the company from closing down (NewsEdge Corporation, 7 September 2000).⁴⁵ The major small arms ammunition producers include the government-owned Zaklady Metalowe Mesko and Zaklady Tworzyw Sztucznych Pronit.

The Balkans: Many countries in the Balkans, including Albania, Bosnia and Herzegovina, Croatia, Greece, Macedonia, Slovenia, and Yugoslavia, have well-established domestic small arms industries. However, most countries in the region have experienced long-running civil wars in recent years, largely as a result of the break-up of the former Yugoslavia. This has had a negative effect on domestic production capabilities.

Bosnia and Herzegovina: This country (a province of the former Yugoslavia) was a major producer of small arms prior to the civil war of 1992-95. Many factories were destroyed during that conflict, although some production of small arms (e.g. mortars and ammunition) continued to take place (Jane's World Armies, 2000). Since the end of the war in 1995, production facilities have been re-established and, in recent years, Bosnian companies have exported various types of small

Box 1.7 Hungary's small arms producers

During the 1980s, small arms production in Hungary was concentrated in two companies—the FEG Company (Fegyver es Gazkeszulekgyar) and Danuvia Gepipari Rt. Both employed several thousand people and had a long tradition of producing small arms and other dual-purpose products. Danuvia received its last order from the Hungarian army in 1988. In early 1990, the company liquidated its defence-related activities, and now concentrates solely on its civilian business, which includes hydraulic supply sources, machines, and spare parts.

FEG, which is still the largest and most significant small arms producer in Hungary, is owned by the State Privatisation and Asset Managing Agency (AVRT). The company produces assault rifles and a range of pistols for Hungary's military and police forces, and a number of foreign clients. During the 1990s, an average of 75 per cent of the company's output of self-defence and sports pistols was exported to a number of countries, including the US.⁴⁶ In 1999, however, 60 per cent of the company's output was sold on the domestic market, due to the weakening of its export market and a large order worth US\$ 500,000 from the Hungarian Interior Ministry for 4,000 Parabellum pistols. Inno-Coop, which was established in the early 1990s, has developed a capability to produce high-tech mines, fuses, and river bombs. Batori Epszol, owned by the town of Nyirbator, produces various types of semi-automatic rifles.

During the 1980s Hungary's small arms ammunition producers included Nitrokemia, Eszak Magyarorszagii Vegyimuvek (EMV), Matravideki Femmuvek (MFS), and Mechanikai Muvek. Both EMV and Nitrokemia came close to bankruptcy during the 1990s. EMV was privatized and currently 100 per cent of its sales are civilian. Nitrokemia was kept afloat through various restructuring initiatives and state intervention strategies.

Nike-Fiocchi, which is a joint venture with the Italian company, Fiocchi Munizioni, was established in 1991 as part of the restructuring of Nitrokemia. It is now one of the most successful defence companies in Hungary. In 1999, it had a turnover of US\$ 5 million, with a staff of 75. The company's main product is hunting ammunition, sold in Germany, Finland, Norway, Japan, and the US. Less than 10 per cent of its output is military-related.

MFS's ammunition division, MFS Magyar Loszergyarto was established as an independent company in 1994. The company was initially privatized, but was bought back by the AVRT in 1997. More than 90 per cent of the company's output is military and about 90 per cent of production is exported to countries such as Germany, Italy, Lebanon, and the US. Private Hungarian interests have recently purchased the company, which went insolvent in 1999. Mechanikai Muvek produces a range of artillery and mortar ammunition, technical explosive devices, and hand and gun grenades. During 1999, the company became insolvent and was bought by a consortium of Hungarian and American interests.

Source: Kiss, 2000



arms to Croatia, Turkey, and Azerbaijan (Jane's Defence Weekly, 25 March 1998).⁴⁷ It is estimated that about 6,000 people were employed in the local defence industry in 1998, down from 30,000 in 1992 (BICC, 2000).

Croatia: Croatia has a well-established defence industry, and produces a wide-range of small arms and ammunition. It is estimated that 12,000 people were employed in the industry in 1998, down from 50,000 in 1994 (BICC, 2000). Many of the weapons produced in Croatia are copies of well-established designs, mainly Soviet, while others are of indigenous design (Jane's Sentinel Security Assessment, 23 August 2000).

The major small arms producer is the RH Alan company, which is owned by the Ministry of Defence. The company, which is located in Zagreb, produces a wide range of small arms and ammunition and is currently in discussion with IMI about the licensed production of the 5.56mm Tavor assault rifle. RH Alan has produced unlicensed copies of a number of foreign designs, including the 9mm Mini ERO sub-machine gun, a virtual copy of the 9mm Uzi (Jane's Sentinel Security Assessment, 23 August 2000).

Greece: Greece's small arms industry is dominated by two state-owned companies—Greek Powder and Cartridge Company (Pyrkal), and the Hellenic Arms Industry (EBO)—and a few private companies.⁴⁸ It is estimated that at least 15,000 people were employed in the local defence industry in 1998 (BICC, 2000). Pyrkal produces various types of ammunition and mortar bombs. EBO was established in 1977 and comprises five plants. It employs about 1,700 people, produces pistols, rifles, sub-machine guns, machine guns, and mortars, and is the major supplier to the Greek armed forces. It has a number of co-production programmes with various foreign defence companies, including Bofors (Sweden), Colt's Manufacturing (US), Dynamit Noble (Germany), and Heckler & Koch (Germany/UK) (Jane's Defence Weekly, 30 September 1998). Both Pyrkal and EBO are slated for privatization in the near future.

Map 1.7 Small arms producers: The Balkans



Yugoslavia: During the NATO airstrikes, most of Yugoslavia's defence production facilities were destroyed. Prior to the war, the local defence industry had consisted of 15 plants with about 30,000 employees (Jane's Sentinel Security Assessment, 10 December 1999). Today the major domestic small arms producer is the state-owned company Zastava, which was founded in 1853, and is located in Belgrade, Serbia (International Herald Tribune, 6-7 January 2000). The company produces cars (the Yugo) and a wide range of weapons, including pistols, rifles, sub-machine guns, and machine guns. The company has reportedly begun production of three new variants of the AK series assault rifle (Jane's Sentinel Security Assessment, 10 December 1999).

The Middle East

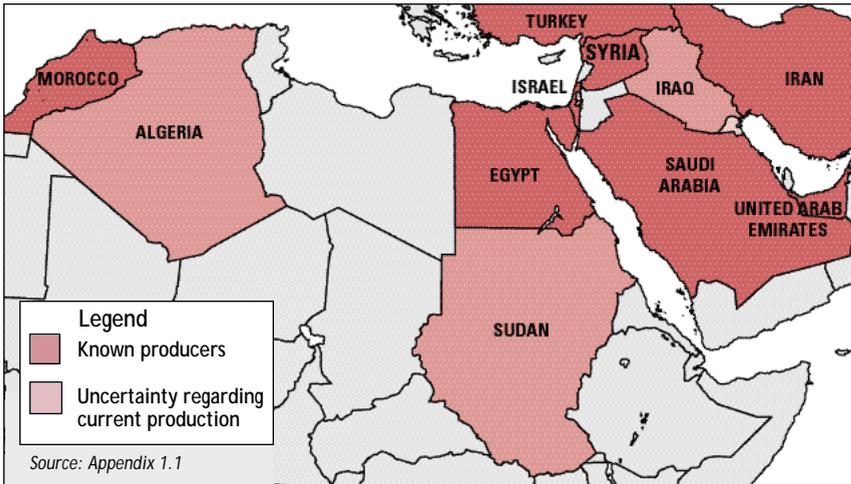
A large, and growing, number of countries in the Middle East have domestic small arms industries. Currently, there are at least eleven countries in the Middle East that produce small arms although there is some uncertainty regarding current production in Algeria, Iraq, and Sudan.⁴⁹ The major producers are Egypt, Israel, and Turkey.

Most small arms production takes place in state-owned companies, and most products are produced under license from European companies, including Beretta (Italy), FN Herstal (Belgium), Rheinmetall (Germany), and Heckler & Koch (Germany/UK). The most significant producers of licensed weapons in the region include Egypt, Iran, Saudi Arabia, and Turkey (Jane's Infantry Weapons, 2000-2001).

Egypt: Egypt has one of the largest and oldest defence industries in the Middle East (Feiler, 1998). The National Organisation for Military Production (NOMP) was founded in 1949. Saudi Arabia, Qatar, and the United Arab Emirates provided US\$ 1 billion in 1975 for the founding of the Arab Organisation for Industrialisation (AOI), whose plants are located in Egypt (Jane's World Defence Industry, 2000, p. 4). The Gulf States withdrew from the AOI in 1979 following the Camp

The major Middle East producers are Egypt, Israel, and Turkey.

Map 1.8 Small arms producers: The Middle East



David Accords. Egypt has maintained the AOI since then, and both it and the NOMP are under the control of the Ministry of Military Production (MMP), which was itself placed under the Ministry of Defence in 1993.

The NOMP controls 16 factories, 14 of which also produce civilian goods.⁵⁰ The AOI controls nine factories. The factories of the NOMP and the AOI produce a wide range of small arms and other defence equipment. The NOMP was estimated to employ 50,000 in the 1980s; the AOI currently employs some 20,000 workers. The MMP controls six small arms and ammunition manufacturing plants; the best-known is Factory 54, the Maadi Company for Engineering Industries. It was founded in 1949 to produce rifles and machine guns under licence. It currently produces the Misr 7.62mm assault rifle (a copy of the Kalashnikov AKM) and a variety of pistols, rifles, sub-machine guns and machine guns (e.g. FN Herstal MAG) (Jane's Infantry Weapons, 2000-2001). Five other factories produce small arms of various calibres, mostly under licence from the former Soviet Union.

Israel: Israel is one of the most important producers of small arms outside the US, Europe, and the Russian Federation (Klieman, 1998). The country's main small arms producer is Israel Military Industries (IMI).⁵¹ It was a subsidiary of the Defence Ministry until 1991, when it became a state-owned company. IMI is located near Tel Aviv and currently employs 4,300 people, down from 11,000 in 1990. It produces pistols, the Uzi family of sub-machine guns (see Box 1.4), the Galil, and Tavor families of assault rifles, light machine guns, anti-armour weapons, grenades, and ammunition. Its products are exported to more than 80 countries (Jane's Infantry Weapons, 2000-2001).

Israel is one of the world's more important producers of small arms.

IMI accumulated massive financial losses between 1985 and 1995, largely as a result of declining export markets and cuts in Israel's defence spending, but returned to profit in 1996. However, in 2000, the company slid back into the red after two years of profits. In 1999, total sales were US\$ 485 million, down from over US\$ 500 million in the previous year (Jane's Defence Weekly, 25 October 2000).

Turkey: As a NATO member state, Turkey receives large amounts of cascaded Western defence equipment, and thus its own arms production capacity remained very limited until the late 1980s. However, in recent years, the local defence industry has expanded considerably. The Under Secretariat for Defence Industry (SSM) was established in 1985 to reduce Turkish dependence upon procurement from abroad. A substantial part of the country's defence production results from licensed production (e.g. Heckler & Koch) and joint ventures. These joint ventures involve manufacturers from NATO

member states, as well as Israel.

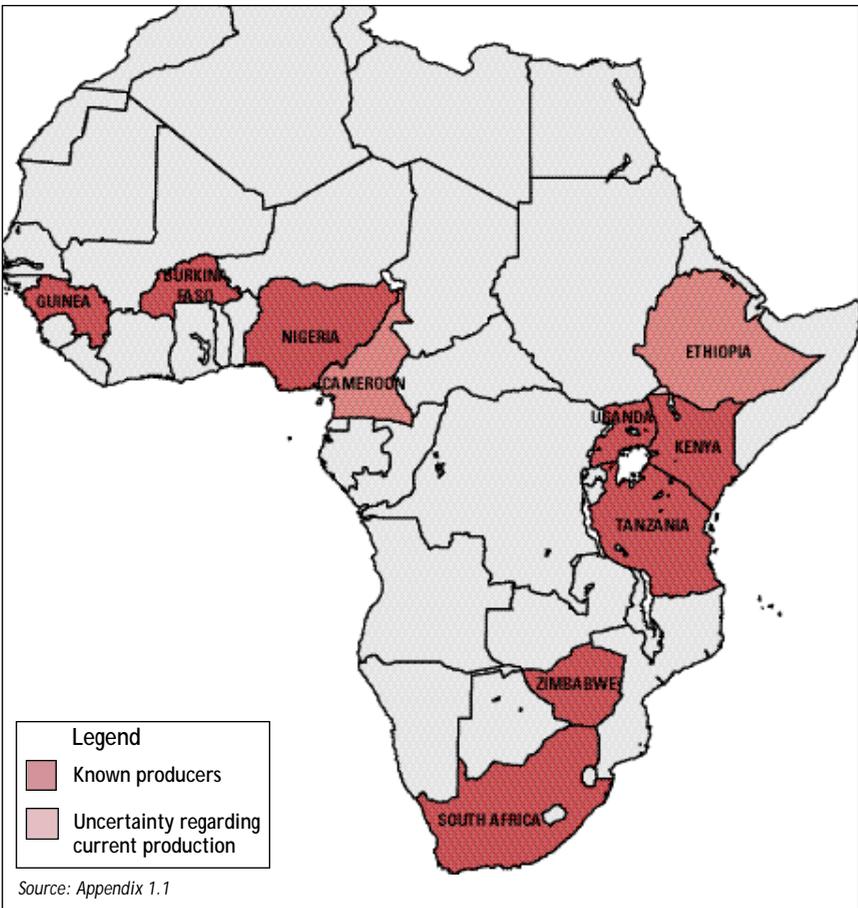
As a NATO member state, Turkey receives large amounts of cascaded Western defence equipment.

The major producer of small arms is the state-owned company MKEK (Makina ve Kimya Endüstri Kurumu—Machinery and Chemical Industry Board). Over 20 factories are under MKEK’s control. They produce a wide range of small arms under license, including the G3 assault rifle and the MP5 sub-machine gun (Heckler & Koch) and the MG3 machine gun (Rheinmetall) (Jane’s World Defence Industry, 2000). MKEK’s total sales in 1998 were US\$ 570 million, of which 77 per cent were arms sales, and the company employs 9,120 people (SIPRI, 2000, p. 331). As part of a 10-year, US\$ 31 billion modernization programme announced in 1997, the Turkish Government decided in early 1998 to award a contract, reputed to be worth US\$ 18 million, to MKEK for the licensed production of 500,000 Heckler & Koch HK33 assault rifles (Jane’s Defence Weekly , 27 January 1999).⁵²

Sub-Saharan Africa

Given the low levels of economic and industrial development on this part of the continent, most countries in sub-Saharan Africa (SSA) do not possess their own domestic small arms industries. South Africa is currently the only country in the region which has a well-developed indigenous small arms industry, although countries such as Nigeria and Zimbabwe are attempting to develop their fledgling industries.

Map 1.9 Small arms producers: Sub-Saharan Africa



There are currently at least ten countries in sub-Saharan Africa that produce small arms.

There are currently at least ten countries in SSA that produce small arms, although there is some uncertainty regarding current production in Cameroon and Ethiopia. With the exception of South Africa, there is very little information, official or unofficial, about the size and scope of small arms production in SSA. Most small arms producers in SSA (e.g. Tanzania, Zimbabwe) only manufacture components for small arms or small arms ammunition, or have basic facilities for filling ammunition. Most production, with the exception of South Africa, takes place in state-owned factories.

Nigeria: Nigeria's defence industry is concentrated in one state-owned arms company, Defence Industry Corporation of Nigeria (DICON). The company was established in 1964 with assistance from Belgium (FN Herstal) and Italy (Beretta), and is located in Kaduna (Africa News, 3 June 2000). In 1987, the company was removed from under the direct control of the Ministry of Defence and transformed into a state-owned company in an attempt to force it to become commercially viable.

DICON produces small arms ammunition for domestic use, although there are unconfirmed reports of exports to other countries in West Africa such as Liberia (Forecast International, 2000). The company also produces the NR-1 military rifle and rifles and pistols under license from Beretta (Italy), and has produced 18,778 rifles to date (BBC Monitoring, 18 October 1999). DICON has suffered in recent years due to budgetary constraints and a lack of orders from the Nigerian military. The late President Sani Abacha spent US\$ 17 million on imported rifles, despite the fact that DICON had large amounts of rifles in its inventory (BBC Monitoring, 18 October 1999). In June 2000, the company was closed, and the staff sent on indefinite leave without pay, due to the company's financial crisis (Africa News, 3 June 2000).

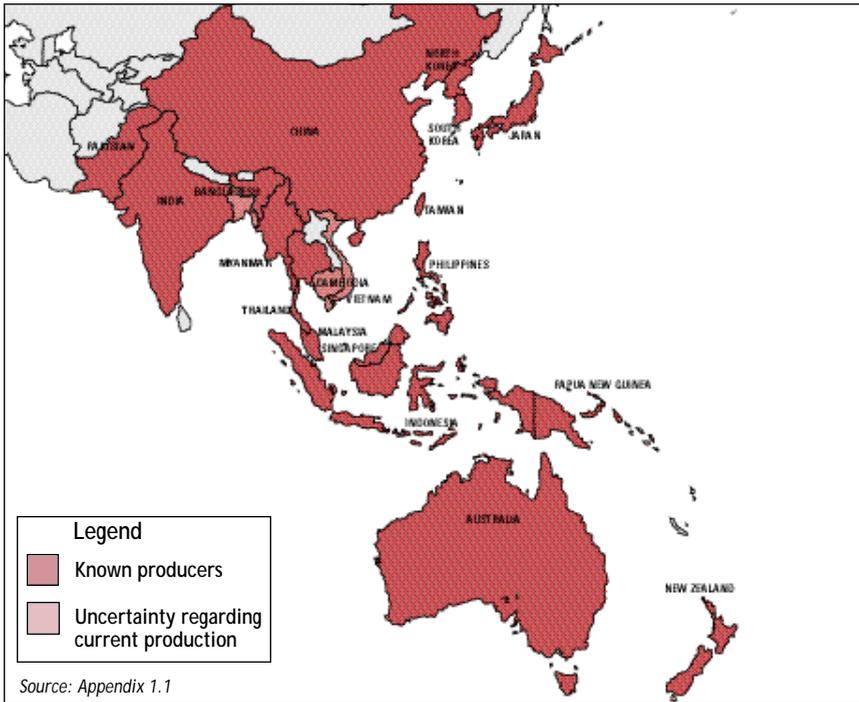
South Africa: South Africa has the largest and most diversified defence industry in sub-Saharan Africa. The industry was established in the period after the World War II and expanded considerably during the 1970s and 1980s when South Africa was subject to a UN arms embargo (Batchelor and Willett, 1998). The country is totally self-sufficient in the production of small arms and associated ammunition. Since 1990, the local industry has been forced into a process of downsizing, rationalization, and consolidation as a result of the significant cuts in the national defence budget, particularly the procurement budget (Batchelor and Dunne, 1998). These broader processes of defence industrial downsizing and restructuring have had an impact on its local small arms producers. However, South Africa remains one of the world's most important developing country small arms producers and exporters.

South Africa remains one of the world's most important developing country small arms producers and exporters.

The most important local small arms producer is Vektor, a division of Denel, the large state-owned defence company. Private sector companies include: Hausler Scientific Instruments (pistols, rifles, mortars), Milkor (grenade launchers), Neostead (shotguns), Republic Arms (riot guns), Reutech Defence Industries (pistols, shotguns), and Truvelo Armoury Division (rifles). In recent years, a number of small arms producers have closed down, including Musgrave (formerly part of Denel and absorbed into Vektor) and the private company Aram.⁵³ Local small arms ammunition producers include: Pretoria Metal Pressings, which is also a division of Denel, and a private company, New Generation Ammunition. Another private company Ammu-Tech, which previously produced small arms ammunition, closed in 1998.⁵⁴

Zimbabwe: Zimbabwe's local defence industry was established in the early 1980s to reduce the country's reliance on external suppliers, and to preserve scarce foreign currency (Mlambo, 1998). The state-owned Zimbabwe Defence Industries (ZDI) manufactures various types of small arms ammunition. At its filling plant outside Harare, it fills mortar shells, and has the capacity to fill artillery shells, rocket launchers (RPG-7), and fragmentation hand grenades. In recent years ZDI has attempted to export some of its products, but with limited success. It has been reported that ZDI has sold ammunition and other military equipment to a small number of countries including the Democratic Republic of Congo and Sri Lanka (Jane's Sentinel Security Assessment, 10 October 1999).

Map 1.10 Small arms producers: Asia Pacific



There are at least 19 small arms producing countries—including China, one of the world's top three producers—in the Asia Pacific region.

Asia Pacific

Currently there are at least 19 countries in the Asia Pacific region that produce small arms. One of the world's major producers—China—and a number of medium-sized producers including India, Pakistan, Singapore, and Taiwan are located in this region. There is some uncertainty regarding current production in Bangladesh, Cambodia, and Vietnam. In most countries production of small arms takes place in both private companies, and/or in state-owned factories.

India is one of the largest developing country arms producers.

South Asia: India and Pakistan are the most important small arms producers in South Asia, and in both countries a wide range of small arms are produced in large, state-controlled Ordnance Factories. There is some uncertainty regarding current production of small arms in Bangladesh (Hussain, 2000). 55 Bhutan, Nepal, and Sri Lanka do not possess their own small arms industries.

India: India is one of the largest developing country arms producers. The Department of Defence Production was established in 1962 and currently includes 39 Ordnance Factories that produce pistols, rifles, machine guns, mortars, grenades, anti-tank systems, and various types of ammunition. The Ordnance Factories, which employed 155,000 people in 1997, had a turnover of US\$ 737 million and total arms sales of US\$ 640 million (SIPRI, 2000, p. 330).

The Ordnance Factories manufacture products under license from Belgium, Sweden, and the United Kingdom, as well as their own designs (Jane's Infantry Weapons, 2000-2001). They have also received technical assistance from the United States (Jane's Defence Weekly, 26 August 1998). There have been reports of production problems, sometimes due to financial and/or technical constraints, and in general it is considered that the Ordnance Factories are 35-40 per cent underutilized. This has prompted the Indian Government to recently invest US\$ 642 million to upgrade the factories to increase production and efficiency (Jane's Defence Weekly, 7 April 1999).

Pakistan: In 1950 Pakistan established its first small arms production facility. Since then the country has strived to become self-sufficient in small arms and ammunition. The domestic small arms industry comprises a number of private companies and the state-owned public enterprise, Pakistan Ordnance Factories (POF), which is under the Ministry of Defence Production. POF comprises 14 plants and eight subsidiary companies, and employs more than 30,000 people (Military Technology, March 2000). The company manufactures a wide range of small arms, most of which are produced under license. It manufactures G3 assault rifles and MP5 sub-machine guns under license from Heckler & Koch (Germany) and MG3 machine guns under license from Rheinmetall (Germany) (Jane's Infantry Weapons, 2000-2001).

ASEAN: Almost all the member states of ASEAN, with the exception of Laos, produce small arms.⁵⁶ Small arms have been domestically produced in South East Asia since the first local production facilities were established in the 1950s and 1960s. Many countries began to manufacture licensed designs of assault rifles and ammunition with assistance from Western producers including Germany, Italy, Sweden, the UK, and the US.

With few exceptions, production has expanded to include a wide range of small arms, light weapons, and ammunition, including indigenous designs. The aim for most countries is to become less reliant on outside sources to meet their domestic defence requirements. The most important small arms producers include Indonesia, Malaysia, Myanmar, the Philippines, Singapore, and Thailand.

Indonesia: Indonesia has only one domestic small arms producer, PT Pindad, which produces small arms, light weapons, and ammunition. Pindad took over the existing production facilities from the Indonesian military in 1983. Production falls into two categories, military and non-military. All military production is controlled by the Ministry of Defence and all non-military production is controlled by the Indonesian police. Most of Pindad's production goes towards supplying Indonesia's Armed Forces, police, and forest patrol, although some production is for domestic civilian use as well as for export. Pindad operates two plants on Java, one that manufactures cartridges for small arms, shells and missiles for light weapons, hand grenades, pyrotechnics, and riot control equipment; and another that manufactures pistols, rifles, carbines, assault rifles, sub-machine guns, mortars, and grenade launchers. Most production is under license from countries such as Belgium, Finland, Israel, and Singapore (Jane's Infantry Weapons, 2000-2001).

Malaysia: Malaysia's first arms production facility was established in 1972. Defence production is largely integrated within the commercial sector as there are few companies solely dedicated to defence production. Currently there are four local small arms producers: Munora Holdings and SME Technologies, which produce assault rifles under license from Steyr (Austria); SME Ordnance, which produces a wide range of ammunition from cartridges for small arms to mortar bombs as well as pyrotechnics; and Kerambit Industries, which produces shotgun cartridges (Forecast International, 2000; Jane's Infantry Weapons, 2000-2001).

Myanmar: Myanmar's domestic defence industry was established in the early 1950s. In 1957, the German company Fritz Werner, in co-operation with Heckler & Koch, built an arms factory in Yangon to produce G-3 automatic rifles (Jane's Intelligence Review, 1 December 1998). Another factory was built near Prome to produce small arms ammunition. These factories are managed by Defence Products Industries (Ka Pa Sa) and are under the direct control of the Ministry of Defence. In February 1998, Myanmar acquired a prefabricated small arms factory designed and built by Chartered Industries of Singapore with the assistance of Israeli consultants (Jane's Intelligence Review, 1 December 1998). Ka Pa Sa factories now produce assault rifles and light machine guns of indigenous design, as well as landmines and various other types of small arms. Recent reports suggest that Norinco of China is planning on building a factory near Yangon to produce various types of small arms and ammunition (Asia Defence Yearbook, 1999-2000; Asian Defence Journal, April 2000).

Almost all ASEAN member states, with the exception of Laos, produce small arms. The most important include Indonesia, Malaysia, Myanmar, the Philippines, Singapore, and Thailand.

Singapore has the most diverse and well developed arms industry in South East Asia.

Philippines: The Philippines has a number of local small arms producers, who produce for both commercial and military markets. Local producers have the capacity to manufacture pistols, shotguns, rifles, carbines, assault rifles, mortars, cartridges for small arms, and shells and missiles for light weapons. From the late 1970s to 1983, the company Elisco Tool produced the M-16 assault rifle under license from Colt's Manufacturing (US). Later production has been undertaken by the government arsenal in Limay, Bataan (Forecast International, 2000). Arms Corporation of the Philippines (Armcor), which produces various types of small arms, recently signed a contract with Denel of South Africa to produce the Vektor SP-1 9mm pistol. Armcor will license-build 10,000 pistols for the Philippines National Police and market the weapon commercially (Jane's Sentinel Security Assessment, 28 September 1999).

Singapore: Singapore has the most diverse and well-developed arms industry in South East Asia. The Ministry of Defence (MINDEF) controls all local arms production through Sheng-Li Holding Company. Singapore Technology Corporation (STC), through its subsidiary Chartered Industries of Singapore (CIS), is the major local producer of small arms. In early 2000, CIS was reorganized and renamed Singapore Technologies Kinetics (STK). STK's products include cartridges for small arms, hand grenades, landmines, mortar bombs, shells, and missiles for light weapons, rifles, carbines, assault rifles, light and heavy machine guns, grenade launchers, mortars, anti-tank guns, surface-to-air missiles and launchers (STK Company Information).

Most products are produced under license from Austria (Steyr), Belgium (FN Herstal), Germany (Heckler & Koch), Italy (Beretta), Sweden (Bofors), UK (Sterling), and the US (Colt's Manufacturing). In addition to supplying Singapore's Armed Forces, STK has become an aggressive competitor in the export market, particularly in certain categories such as mortars and light machine guns (Forecast International, 2000).

Thailand: Domestic production of small arms began in Thailand in 1969. The primary vehicle for this was a private company called Thai Interarms, which received substantial government aid. The company consists of four sub-units and manufactures small arms, ammunition, gunpowder, and other explosives (Asian Defence Journal, April 2000). Other private companies include: Bullet Master Company Ltd., Rungphaisai Industry Company (rifles), Thai Arms Company, and Thai Melon Company. In addition, the Royal Thai Army has a production centre in Lophuri, which manufactures various types of small arms and ammunition. During 1999, the Army's production centre exported about US\$ 2 million worth of military equipment, with most of its sales (including 60mm and 81mm mortars and various types of ammunition) going to Singapore and the Philippines (The Straits Times, 12 December 2000).

China is one of the world's major producers of small arms and employs three million people in its overall national defence industry.

East Asia Pacific: The major small arms producers in East Asia and the Pacific region include China, one of the world's major producers of small arms, Taiwan, Japan, North and South Korea, Australia, and New Zealand.

China: The Chinese defence industry is estimated to employ over three million people (BICC, 2000).⁵⁷ However, there is very little official or unofficial information about domestic small arms production. China started to export weapons in 1950 and between 1964-78 exported weapons to more than 60 countries, including 4.2 million small arms and 4.3 billion rounds of small calibre ammunition (Jane's World Armies, 2000, p. 149).

During the late 1980s and early 1990s, China became one of the major foreign suppliers of small arms to the US domestic market. It accounted for over 40 per cent of all rifles (including assault rifles) imported into the US between 1987 and 1994, and 15 per cent of total firearms imports during the same period (Diaz, 1999, pp. 73-74).⁵⁸

China North Industry Corporation (Norinco) is the most significant local producer of small arms and ammunition, and produces a wide range of products for both domestic and export markets.

The company was established in 1980 and falls under the Ministry of Machinery and Electronics (MME) (Jane's World Defence Industries, 2000). It incorporates 160 enterprises and employs more than 700,000 personnel. It currently controls about 30 research institutes and more than 200 plants.

Between 1980 and 1990 Norinco earned a total of US\$ 12 billion from arms exports, and throughout the 1990s, total sales of military and civilian products have averaged about US\$ 2 billion per year (Jane's World Armies, 2000, p. 150). However, weapons account for only 20-30 per cent of overall production, while civilian products account for the remaining 70 per cent (Jane's Sentinel Security Assessment, 29 September 2000). PolyTechnologies, another state-owned company, together with Norinco, are the dominant suppliers of small arms to the lucrative US firearms market (Diaz, 1999, p.72). Norinco has been known to license its products for production abroad, including Albania, Egypt, and Pakistan. In addition, the company has provided technical assistance to both Pakistan and Myanmar's defence industries.

Australia: Australia Defence Industries (ADI), established in 1989, is the country's most important producer of small arms. Previously government-owned, it was sold to Thomson-CSF and Transfield, in 1999 (Asia-Pacific Defence Reporter, Oct/Nov 2000). ADI has a number of production facilities in different parts of the country, including an explosives site at Mulwala, a munitions site at Benalla, Victoria, and a small arms facility at Lithgow, New South Wales. ADI produces a light machine gun under license from FN Herstal (Belgium) and an assault rifle and grenade launcher under license from Steyr-Mannlicher (Austria).

Illicit production

In addition to legal production in complex manufacturing processes (production lines), small arms are also produced illicitly in small private workshops, or in larger production lines. Illicit production, including craft/homemade production of small arms, takes place in many countries, including in some, like Trinidad and Tobago, that do not possess a legal small arms manufacturing capability. In some countries the state itself may engage in illicit production, by manufacturing another country's or company's products without permission (e.g. China).

According to information supplied by governments to the UN, illicit production of small arms, including craft/homemade production, takes place in at least 25 countries (UN 1999a). These include: Argentina, Brazil, Cambodia, Canada, Chile, China, Colombia, the Czech Republic, Indonesia, India, Japan, Pakistan, Papua New Guinea, Philippines, South Africa, Trinidad and Tobago, the UK, and the US.⁵⁹

Detailed information on the value and volume of illicit global production is not available. Thus, it is not possible to assess whether the incidence and scope (value and volume) of illicit production is on the increase or not. However, the following case studies from South Africa, South East Asia, and South Asia provide some illustrative examples of the different dimensions of illicit small arms production. Illicit production is not confined to developing countries: it also occurs in many developed countries, including Canada, Japan, the UK (including Northern Ireland), and the US.

South Africa⁶⁰

Before 1983, the South African Government prohibited the granting of firearm licences to 'Black' South Africans (those people classified as Blacks, Coloureds, and Asians). Between 1983-94, only a handful of Blacks were granted firearm licences. Only after the country's first democratic elections in 1994 were Blacks able to obtain firearm licences on a non-discriminatory basis. The difficulties in obtaining these licences, together with the history of armed struggle, led to the development of a homemade firearm industry in South Africa, particularly during the later years of the liberation struggle in the 1980s.



Illicit production of small arms, including craft/homemade production, takes place in at least 25 countries.

The types and quality of homemade firearms vary considerably, with some displaying a high level of craftsmanship. The most common type of homemade firearm is the 'pipe gun'. These firearms do not circulate among different users as much as other commercially produced firearms, since they are usually manufactured by the actual users and not mass-produced.

There are no official figures on the numbers of homemade firearms in circulation. The Joint Investigation Team of the SAPS estimated in 1997 that there were between 20-30,000 homemade firearms in circulation in South Africa. Between 1994 and 1999 the Illegal Firearm Investigation Unit of the SAPS retrieved a total of 16,781 homemade firearms (including rifles, pistols, and revolvers). This amounted to 16 per cent of the total number (106,166) of illicit firearms seized by the police. The vast majority of seized homemade firearms were pistols and revolvers (Chetty, 2000, p. 43). While the numbers of seized homemade firearms has remained relatively stable during the period 1994-99 (an average of nearly 2,800 per annum), this does not provide any clear indication of whether the incidence of homemade production is increasing or not.

South East Asia⁶¹

Illicit production of small arms occurs throughout South East Asia. In countries, such as Indonesia, Laos, Malaysia, and Thailand, most illicit production is geared towards simple, low technology and low quality hunting rifles. However, in the Philippines, illicit production has become an important industry, providing arms for local criminal elements, as well as in other countries such as Japan.

Most of the illicit production in the Philippines is centred in the south, in Cebu and Danao, although there have been reports of arms production in Sara as well. There has been some discussion within the government on trying to control illicit production by granting licenses to organizations such as the Worker's League of Danao Corporation, which acts on behalf of a number of individual gunsmiths (Asiaweek, 19 January 1996).

Groups operating in countries such as Myanmar and the Philippines are also known to have the capacity to produce various types of small arms. The Moro Islamic Liberation Front (MILF) alters rifles and produces rocket-propelled grenade launchers and shells, as well as anti-aircraft guns (Business World, 29 June 1999). The Karen National Liberation Army and Karenni Army operating in eastern Myanmar are known to have produced landmines and mortars. The former Mong Thai Army had a foundry and weapons production centre at its base in Shan State until it capitulated to the Myanmar government in 1996 (Jane's Intelligence Review, 1 November 1998).

Illicit production in South Asia⁶²

India and Pakistan have had thriving 'cottage industries' in illicit arms production since the era of the British Raj. The traditional centres of the industry are: Darra Adam Khel in Pakistan's Northwest Frontier Province and Bihar in India. In India, illicit production also occurs in Uttar Pradesh, West Bengal, Andhra Pradesh, Punjab, Coimbatore, and Tamil Nadu (Behera, 2000).

Numerous clandestine factories manufacturing guns, pistols, revolvers, and hand grenades are operating in different parts of India. The largest illicit arms workshop is believed to be in Bihar, where observers have noted that gun making seems to be the only industry that thrives in many villages. An unofficial study conducted in 1987 revealed that there were 1,500 illicit arms manufacturing workshops in the region, and police records for the same year suggested that there were 200 illicit factories in Nalanda district of Bihar alone (Behera, 2000; Chandran, 2000). Uttar Pradesh also has a significant amount of illicit workshops and factories. Bamhaur is well known for the weapons it produces, and products from local workshops can be found all over the country. Gunsmiths take great pride in their work and often inscribe 'Made in Bamhaur' on their products (Behera, 2000).

India and Pakistan have had thriving 'cottage industries' in illicit arms production since the era of the British Raj.

Weapons manufactured illicitly in India primarily arm private armies, criminals, caste groups, and individuals. Bihar arms can sell for US\$ 5-7 each. In Bamhaur, arms can range in price from US\$ 47-116. Factories in Coimbatore and Tamil Nadu are reported to have provided arms to the LTTE in Sri Lanka until they were discovered during state-wide raids in 1991 (Behera, 2000).

India's illicit gunsmiths are poor cousins when compared to those of Darra Adam Khel in Pakistan. Darra is the heart of Pakistan's notorious 'arms bazaar' and it is here that one can acquire practically any small arm desired at low cost—Kalashnikovs, M-16s, Uzis, and even guns hidden in walking sticks and ballpoint pens (The Nation, 2 August 1998). Some are originals left over from the war in Afghanistan; others are copies made in back alley workshops, repaired originals, or copies made from cannibalized parts. Often the only difference between original and local designs is that locally manufactured barrels are made from an inferior quality of metal (Kartha, 2000). Original AK-47s sell for about US\$ 320, but an identical copy starts at US\$ 50 (The Guardian, 15 December 2000).

Darra's gunsmiths are famous for their skills and expertise, which have been passed down from father-to-son for generations. Before the Soviet invasion of Afghanistan in 1979, they produced mainly rifles and shotguns in addition to a wide range of pistols (Malik, 2000). Now, they are adept at producing authentic copies of any light weapon desired in a matter of days. They have been known to make imitation Chinese laser-sight pistols and Japanese pen pistols down to the finest detail (Kartha, 2000). Some of Darra's elder craftsmen have also invented their own designs, for example a shotgun that works like a revolver with a chamber holding six shells (The Nation, 2 August 1998).

Darra's gunsmiths are keenly aware of market trends. At one point, they supplied Afghan mujahideen rebels in their struggle against Soviet occupation. Now they are the main suppliers of guns to Kashmir and to Pakistan's troubled provinces of Punjab and Sind. Darra's shops and factories offer home-delivery anywhere in the country and are known to have also sold arms to guerrillas from Northern Ireland and the Middle East (The Nation, 2 August 1998).

Recent reports suggest that the Pakistani Government is planning on incorporating Darra's illicit gunsmiths into the legal fold (The Guardian, 15 December 2000). In India, the government has also made some attempts to curtail illicit production through sporadic and routine raids, which do little to stem the phenomena. However, it has been difficult to enforce the law when many of these illicit production facilities are funded and run by ministers or ruling party officials (Behera, 2000; Kartha, 2000).

Conclusions

This chapter has provided an initial survey of global small arms production. It has identified the countries and companies that currently produce small arms, and provided global estimates of the value and volume of their production. It has also profiled some of the world's most popular legal and illicit small arms products, ranging from handguns to machine guns.

It is difficult to assess the size and economic significance of the global small arms industry due to the current lack of detailed and reliable information. Greater transparency is urgently needed to gain a better understanding of the scope of global small arms production—and especially its implications for the security, development, and humanitarian problems associated with their widespread proliferation, availability, and misuse.

While the volume of small arms production is currently less than it was during the last years of the Cold War, millions of these types of weapons are still being produced every year. Certainly, there is no global shortage of small arms. The production of new, and ever more sophisticated, small arms is spreading to an increasing number of countries and companies throughout the world. Simultaneously, large numbers of surplus small arms continue to re-circulate from one country to another and from one conflict to the next.

Working in the heart of Pakistan's notorious 'arms bazaar', Darra's gunsmiths are famous for their skills and expertise, which have been passed along for generations.

Worldwide, the number of small arms producing companies has more than tripled in less than two decades, from 196 in the 1980s to about 600 today.

Based on estimates presented in this chapter, the value of global small arms production, including ammunition, for the year 2000 was estimated to be worth at least US\$ 4 billion. In terms of volume, it is estimated that roughly 4.3 million new small arms were produced in 2000, down from an annual average of 6.3 million during the period 1980-98. This represents a decline in production of at least 30 per cent. While it is possible that the current volume of global small arms production is less than a decade ago, this does not necessarily mean that we are witnessing a long-term decline in the size of the international small arms market.

While the demand for new small arms may be declining, based on the estimates of the volume of global production, the supply side of the market seems to be expanding. Every day new, cheaper, and more lethal types of small arms appear on the international market, driven by technological and industrial developments (e.g. new types of materials and production techniques), and by the changing nature of warfare and military doctrine.

In addition to these new types of small arms, there has also been a marked increase in the number of countries and companies that legally produce small arms since the mid-1990s.

The number of companies has more than tripled in less than two decades, from 196 in the 1980s to about 600 today. The number of countries is growing too: add to the 95 countries that are legal small arms producers, those others that produce illicitly, and it becomes clear that well over half the world's countries are small arms producers. An increasing number of these producers are developing countries in parts of Asia, Africa, and Latin America that have recently developed their own local small arms industries for a variety of nationalistic, strategic, and often unconvincing economic reasons.

The combination of shrinking demand, and the increasing number of suppliers has made the international small arms market intensely competitive, with the result that many companies have been forced into selling their products at low, and often unprofitable, prices. This has meant that a number of companies, both state-owned and private, in countries such as Argentina, France, Hungary, Poland, South Africa, Spain, Switzerland, and the US, are experiencing severe financial problems. Some have gone bankrupt or left the small arms business altogether, while others are forced to rely on ad hoc government contracts and subsidies to survive.

The need for government control of small arms production has become an urgent international security issue.

The highly competitive nature of the international arms market and the increasing number of actors, together with other key features of the global small arms industry (e.g. licensed production and the incidence of illicit and craft production), could jeopardize attempts by governments and the international community to tackle the small arms proliferation problem.

Furthermore, the ongoing intra- and inter-state conflicts in many parts of the world, together with attempts by the international community (e.g. UN, NATO) to deal with them, means that the demand for new small arms from governments and non-state actors will continue. Added to this, the presence of new and increasing numbers of companies and countries that produce small arms—and who are willing to sell to anyone, anywhere, at any price—means that it is now easier for authoritarian governments, non-state actors, terrorists, and criminals to obtain weapons that are newer, more sophisticated, and more lethal than ever before. The need for government control of small arms production has become an urgent international security issue.

For further information and current developments on small arms issues please check our website at www.smallarmssurvey.org

1 List of Abbreviations

ADI	Australia Defence Industries
AOI	Arab Organisation for Industrialisation
ATK	Alliant Techsystems (US)
AVRT	State Privatisation and Asset Managing Agency (Hungary)
BATF	Bureau of Alcohol, Tobacco and Firearms (US)
BICC	Bonn International Center for Conversion
CIS	Chartered Industries of Singapore
CIS	Commonwealth of Independent States
DGFM	Dirección General de Fabricaciones Militares (Argentina)
DICON	Defence Industry Corporation of Nigeria
EBO	Hellenic Arms Industry (Greece)
ENSB	Empresa Nacional Santa Barbara (Spain)
FAMAE	Fabricas y Maestranzas del Ejercito (Chile)
HK	Heckler and Koch
IISS	International Institute of Strategic Studies
IMBEL	Industria de Material Belico Brasil
IMI	Israel Military Industries
ISER	Institute for Religious Studies (Brazil)
LTTE	Liberation Tigers of Tamil Eelam
MKEK	Makina ve Kimya Endustri
MMP	Ministry of Military Production (Egypt)
NATO	North Atlantic Treaty Organization
NISAT	Norwegian Initiative on Small Arms Transfers
NOMP	National Organisation for Military Production (Egypt)
POF	Pakistan Ordnance Factories
RO	Royal Ordnance
SAPS	South African Police Service
SIG	Schweizerische Industrie-Gesellschaft (Switzerland)
SIPRI	Stockholm International Peace Research Institute
SM	Swiss Ammunition Enterprise
SMG	Sub-machine Gun
SSA	Sub-Saharan Africa
SSM	Under Secretariat for Defence Industry (Turkey)
STC	Singapore Technology Corporation
STK	Singapore Technologies Kinetics
SW	Swiss Ordnance Enterprise
UK	United Kingdom
UN	United Nations
UNITA	União Nacional Para a Independência Total de Angola
US	United States
WTO	Warsaw Treaty Organization
ZDI	Zimbabwe Defence Industries

1 Endnotes

- 1 Due to a lack of information this chapter does not examine in any detail light weapons products such as mounted grenade launchers, portable anti-aircraft and anti-tank guns, or the companies or countries that produce them.
- 2 Two reports published in the mid-1990s estimated that between 250-300 companies in 50-70 countries produced small arms (Abel, 2000).
- 3 The number of companies is based on the following sources: Jane's Infantry Weapons (2000-2001), Jane's Ammunition Handbook (2000-2001), Jane's World Defence Industry (2000), Abel (2000), Forecast International (2000), US Economic Census (1997), company information, visits to defence exhibitions, and the OMEGA Foundation company database.
- 4 Globalisation has also had a significant impact on the process of defence industry restructuring. See study by Bitzinger (1999).
- 5 See also the recent study by Inbar and Zilberfarb (1998).
- 6 A report in 1995 estimated that licensed production was taking place in at least 21 developing countries, 16 of which were also exporting the small arms they manufactured (Klare, 1995).
- 7 Based on information obtained from Jane's Infantry Weapons (2000), Forecast International (2000) and company material.
- 8 See studies by Sanders (1990), US Office of Technology Assessment (1991), Klare and Andersen (1996), and Keller (1995) on licensed production.
- 9 It is difficult to verify the reliability of the information presented by Forecast International, with the exception of the information presented for the US, which contains details of recent US government procurement contracts, and information from the Bureau of Alcohol, Tobacco and Firearms.
- 10 The term firearms includes handguns (pistols and revolvers) and long guns (rifles and shotguns), but excludes machine guns and other weapons that are often classified as 'small arms' (BATF, 2000a, p. 6).
- 11 This figure is significantly lower than the figure of 550 million that is given in the chapter on stockpiles. This is because the figures from Forecast International do not include many of the weapons produced for private use. The fact that the annual average of 6.3 million for the period 1980-98 is much lower than the annual average during the period 1945-80, given the higher production levels of small arms during the 1960s and 1970s, might also explain the difference.
- 12 The average production costs for small arms in the US may be higher than for developing countries, given higher wage costs in the US relative to costs in countries in Asia, Africa, and Latin America. However, the efficiency of production means that non-labour production costs may actually be lower in the US than in certain developing countries.
- 13 There is almost no official, or unofficial information on the size and scope of domestic arms production in China and the Russian Federation. This makes it impossible to undertake an objective comparison of the size and scope of small arms production in these countries as compared to the US.
- 14 According to The Guardian (15 December 2000) original AKs sell for between US\$ 315-360 in Darra Adam Khel in Pakistan while cheap copies sell for US\$ 45.
- 15 Information obtained from Jane's Infantry Weapons (2000), Jane's World Armies (2000), the Arms Management Programme (AMP) of the Institute for Security Studies (ISS) in South Africa and McKenzie (1999).
- 16 The information in this section is from ISER (2000).
- 17 Since 1997 it has been a crime to display/carry certain types of weapons in public.
- 18 This department—Divisao de Fiscalizacao de Armas e Explosivos—registers legal guns sold to civilians, issues gun permits, and keeps all weapons and explosives apprehended by the police.
- 19 Approximately 3000 records exist for 1989, but these have not been entered into the database.
- 20 Chile for example has a well-known and long tradition of homemade arms (armas hechas) which are manufactured in the poor areas (poblaciones) south of Santiago de Chile (Dreyfus, 2000).
- 21 The top domestic producers of handguns include Sturm, Ruger & Co (pistols) and Smith & Wesson (revolvers) (BATF, 1998b).
- 22 By comparison the tobacco industry in 1997 had shipments (production) worth US\$ 28.3 billion, while the alcohol industry had shipments worth US\$ 27.7 billion during the same year (BATF, 2000a).
- 23 Information from Norwegian Initiative on Small Arms Transfers (NISAT), Jane's Infantry Weapons (2000), Jane's Ammunition Handbook (2000) and Forecast International (2000).
- 24 Information from Jane's Infantry Weapons (2000), Jane's Ammunition Handbook (2000) and Forecast International (2000).
- 25 Information from Jane's Infantry Weapons (2000), Forecast International (2000), and company promotional material.
- 26 See study by Dreyfus (2000).
- 27 See Jane's Infantry Weapons (2000) and Forecast International (2000).
- 28 See Jane's Infantry Weapons (2000) and Forecast International (2000).
- 29 Information from Jane's Infantry Weapons (2000), Forecast International (2000), and company promotional material.
- 30 Other producers include Kufsteiner Waffenstube, Hirtenberger, Dynamit Nobel, and Arges Armaturen (Military Technology, July 2000).
- 31 Other major small arms producers include Titanite (grenades), Manufacture d'Armes Automatiques de Bayonne (MAB) (pistols), PGM Precision (sniper rifles), Lacroix Defense (light support weapons), and SAE Alsetex (tactical shotguns, grenades). Major ammunition producers include Geveded (ammunition), SFM Defense (ammunition), and Athena

- (ammunition) (Jane's Infantry Weapons, 2000-2001).
- 32 Other small arms producers include Bernardelli (shotguns and pistols), Fabarm (shotguns), Fratelli Tanfoglio (pistols), Fiocchi Munizioni (ammunition), Europa Metalli (ammunition) (Jane's Infantry Weapons, 2000). Alenia Difesa, which is 100 per cent owned by Finmeccanica, the partially state-owned defence group, produces mortars. BPD Difesa e Spazio, which is 100 per cent owned by the Fiat Group, produces various types of small arms ammunition.
- 33 Other small arms producers include Dynamit Nobel, Carl Walther Waffenfabrik, and the Diehl Group.
- 34 Other major small arms producers include Armalon (rifles), Accuracy International (rifles), FR Ordnance (rifles), BMS Trading Limited (rifles), Manroy Engineering (machine guns), SF Firearms (pistols), John Slough of Londond (pistols), Victory Arms (pistols), Parker-Hale (rifles), and Haley and Weller (grenades) (Jane's Infantry Weapons, 2000).
- 35 The acquisition of Heckler and Koch in 1991 gave Royal Ordnance access to 74 per cent of the European small arms market, and a significant share of the world market (Forecast International, 2000).
- 36 See studies by Walter (1999) and Cutshaw (1998) for details of Russian small arms and ammunition.
- 37 In 1996 President Clinton imposed voluntary restrictions on the import of certain types of Russian small arms and ammunition, including SKS assault rifles and Makarov pistols (Diaz, 1999).
- 38 Information from Jane's Infantry Weapons (2000), Jane's Ammunition Handbook (2000), and Forecast International (2000).
- 39 The information on East Central Europe is based on Kiss (2000, 1997a, 1997b).
- 40 The countries of East Central Europe include Bulgaria, Czech Republic, Hungary, Poland, Romania, and Slovakia.
- 41 In 1988, there were 220,000 people employed in the defence industry in Poland, and 140,000 in Czechoslovakia (BICC, 2000).
- 42 According to a recent study, only three out of 45 defence-related companies in Poland were in a sound financial condition in 1999 (Kiss, 2000).
- 43 In April 2000, the Czech government placed a US\$ 15.5 million order with Ceska Zbrojovka to provide 46,000 pistols to the Czech police over the next four to five years (The Prague Post, 26 April 2000).
- 44 The company Ceska Zbrojovka has emerged as a highly successful small arms producer in recent years, thanks to its role as traditional supplier to the Czech armed forces and police. The company is also a successful exporter, and a large proportion of its output is exported to the US (Diaz, 1999).
- 45 Other small arms producers include Dezamet, Kombinát Przemyslu Narzędziowego, Wideozewske Zakłady Maszyn Włokienniczych, Zakłady Mechaniczne Tarnów, Osrodek Badawczo, and Zakłady Sprzętu Precyzyjnego.
- 46 Hungary exported more than 200,000 handguns to the US between 1991 and 1996 (Diaz, 1999).
- 47 The major production facilities include Igman (small arms and ammunition), Pretis (mortars), Pobjeda (ammunition), Bratstvo (mortars, rifles), Slavko Rodic (mortars, grenades), and Iron and Steel works (small arms, ammunition) (Jane's Sentinel Security Assessment , 10 December 1999).
- 48 Private companies include Advanced Weapons Technologies (rifles), Elviemek (grenades), and Matren (rifle magazines).
- 49 There is some speculation that Libya also produces small arms, including the Makarov 9mm pistol. However, the Middle East Military Balance 1999-2000 does not provide any information on domestic small arms production in Libya.
- 50 For details of the factories under the control of the NOMP see study by Feiler (1998).
- 51 Private sector producers include KSN Industries (pistols), Soltam (mortars), and the Kalia Israel Cartridge Company (ammunition).
- 52 However, production of the rifles has been held up by German export regulations because of Turkish transgressions against the country's Kurdish minority.
- 53 The closure of Aram in 1999 was linked to financial problems and the results of a police investigation, which revealed that the company was operating outside the conditions of their licence.
- 54 The closure of Ammu-Tech was linked to the results of a police investigation concerning illegal arms exports. There are unconfirmed reports that Ammu-Tech was also involved in an abortive attempt to establish a small arms ammunition reloading facility in Kigali, Rwanda.
- 55 It is reported that Bangladesh has a small arms manufacturing plant that was built by China in the late 1960s. The plant was damaged during the war for independence and was refurbished in the late 1970's to produce semi-automatic 7.62mm SKS rifles and ammunition. The factory was later upgraded with Chinese assistance to produce variations of the AK-47 assault rifle (Jane's Sentinel Security Assessment , 28 May 1999).
- 56 The information on small arms producers in ASEAN countries is based on Kramer (2000a).
- 57 See studies on China's defence industry by Shichor (1998) and Brömmelhörster and Frankenstein (1997).
- 58 China's exports of firearms to the US was stopped in 1994 when President Clinton imposed a ban on Chinese firearms imports (Diaz, 1999, p. 75).
- 59 Some information on craft production is reported in the 1999 UN International Study on Firearm Regulation .
- 60 Information in this section is from the Arms Management Programme of the Institute for Security Studies, South Africa, and Chetty (2000).
- 61 Information in this section from Kramer (2000b).
- 62 Information in this section from Kramer (2000b), Kartha (2000), Malik (2000), and Chandran (2000).

1 Appendix

Appendix 1.1 Small arms producers

No	Country	Small Arms (1)	Ammunition	Sources (2)
1	Albania	x	x	Jane's Sentinel, 10 December 1999
2	Algeria	x		Middle East Military Balance, 1999-2000
3	Argentina	x	x	
4	Armenia	x	x	Jane's Sentinel, 16 July 1999
5	Australia	x	x	
6	Austria	x	x	
7	Bangladesh	x	x	Jane's Sentinel, 28 May 1999
8	Belarus	x	x	
9	Belgium	x	x	
10	Bolivia		x	Jane's Sentinel, 4 February 2000
11	Bosnia and Herzegovina	x	x	
12	Brazil	x	x	
13	Bulgaria	x	x	
14	Burkina Faso	x	x	
15	Cambodia	x	x	Jane's Sentinel, 6 April 2000
16	Cameroon		x	
17	Canada	x	x	
18	Chile	x	x	
19	China	x	x	
20	Colombia	x	x	Jane's Sentinel, 4 February 2000
21	Croatia	x	x	Jane's Sentinel, 23 August 2000
22	Cuba	x	x	Jane's Sentinel, 11 June 1999
23	Cyprus		x	
24	Czech Republic	x	x	
25	Denmark	x	x	
26	Dominican Republic	x	x	
27	Ecuador		x	
28	Egypt	x	x	Middle East Military Balance 1999-2000
29	Estonia	x		Jane's Sentinel, 3 April 2000;
30	Ethiopia	x		Jane's Sentinel, 22 February 2000
31	Finland	x	x	
32	France	x	x	
33	Germany	x	x	
34	Greece	x	x	
35	Guatemala		x	Jane's Sentinel, 11 June 1999
36	Guinea	x	x	
37	Hungary	x	x	
38	India	x	x	
39	Indonesia	x	x	
40	Iran	x	x	Middle East Military Balance 1999-2000
41	Iraq	x	x	Middle East Military Balance 1999-2000
42	Israel	x	x	
43	Italy	x	x	
44	Japan	x	x	
45	Kazakhstan	x		Jane's Sentinel, 31 May 2000
46	Kenya		x	Jane's Intelligence Review, 1 February 1998
47	Korea, North	x	x	
48	Korea, South	x	x	
49	Lithuania	x		Jane's Sentinel, 3 April 2000
50	Luxembourg	x		

No	Country	Small Arms (1)	Ammunition	Sources (2)
51	Macedonia		x	Jane's Sentinel, 12 April 2000
52	Malaysia	x	x	
53	Malta		x	
54	Mexico	x	x	
55	Moldova	x		Jane's Sentinel, 9 November 1999
56	Monaco	x	x	
57	Morocco	x	x	Middle East Military Balance, 1999-2000
58	Myanmar	x	x	Jane's Intelligence Review, 1 March 2000
59	Netherlands		x	
60	New Zealand	x	x	
61	Nigeria	x	x	Africa News, 3 June 2000
62	Norway	x	x	
63	Pakistan	x	x	
64	Papua New Guinea	x		
65	Paraguay		x	Jane's Sentinel, 24 August 2000
66	Peru	x	x	
67	Philippines	x	x	
68	Poland	x	x	
69	Portugal	x	x	
70	Romania	x	x	
71	Russian Federation	x	x	
72	Saudi Arabia	x	x	Middle East Military Balance, 1999-2000
73	Singapore	x	x	
74	Slovakia	x	x	
75	Slovenia	x	x	
76	South Africa	x	x	
77	Spain	x	x	
78	Sudan	x	x	
79	Sweden	x	x	
80	Switzerland	x	x	
81	Syria		x	Middle East Military Balance, 1999-2000
82	Taiwan	x	x	
83	Tanzania		x	Africa News, 15 May 2000
84	Thailand	x	x	
85	Turkey	x	x	Middle East Military Balance, 1999-2000
86	Uganda		x	Africa News, 2 October 2000
87	Ukraine	x	x	
88	United Arab Emirates		x	Jane's Sentinel, 26 April 2000
89	United Kingdom	x	x	
90	United States	x	x	
91	Uruguay		x	Jane's Sentinel, 4 February 2000
92	Venezuela	x	x	
93	Vietnam		x	Jane's Sentinel, 6 April 2000
94	Yugoslavia (Serbia)	x	x	
95	Zimbabwe		x	Jane's Sentinel, 10 October 1999

Notes: (1) Includes firearms (handguns and long guns) and small arms and light weapons.

(2) If no information from other sources listed below, then alternative source listed in this column.

Sources: *United Nations, 1999b; Gander and Cutshaw, 2000; Reed, 2000; Brom and Shapir, 2000; Heyman, 2000; BICC, 2000; Ezell, 1995; Ezell, 1988.*

1 Bibliography

- Abel, Pete. 2000. 'Manufacturing Trends: Globalizing the Source.' In Lora Lumpe, ed. *Running Guns: The Global Black Market in Small Arms*. London: Zed Books.
- Anthony, Ian, ed. 1994. *The Future of Defence Industries in Central and Eastern Europe*. SIPRI Research Report No. 7. Oxford: Oxford University Press.
- Anthony, Ian, ed. 1998. *Russia and the Arms Trade*. Oxford: Oxford University Press.
- Banerjee, Dipankar, ed. 2000. *South Asia at Gun Point: Small Arms and Light Weapons Proliferation*. Colombo: Regional Centre for Strategic Studies.
- Batchelor, Peter and Susan Willett. 1998. *Disarmament and Defence Industrial Adjustment in South Africa*. Oxford: Oxford University Press.
- Batchelor, Peter and Paul Dunne. 1998. 'The Restructuring of South Africa's Defence Industry.' *African Security Review*, Vol. 7, No.6.
- Behera, Ajay Darshan. 2000. 'Domestic sources of diffusion of light weapons in India.' In Dipankar Banerjee, ed. *South Asia at Gun Point: Small Arms and Light Weapons Proliferation*. Colombo: Regional Centre for Strategic Studies.
- Berrigan, Frida and Michelle Ciarrocca. 2000. *Weapons at War: Profiling the Small Arms Industry*. New York: Arms Trade Resource Center.
- Bitzinger, Richard. 1999. 'Globalisation in the Post-Cold War Defence Industry: Challenges and Opportunities.' In Ann Markusen and Sean Costigan, eds. *Arming the Future: A Defence Industry for the 21st Century*. New York: Council on Foreign Relations.
- Bonn International Center for Conversion. 1998. *Conversion Survey 1998: Global Disarmament, Defence Industry Consolidation and Conversion*. Oxford: Oxford University Press.
- Bonn International Center for Conversion. 2000. *Conversion Survey 2000: Global Disarmament, Demilitarization and Demobilization*. Baden-Baden: Nomos Verlagsgesellschaft.
- Boutwell, Jeffrey and Michael Klare. 2000a. 'A Scourge of Small Arms.' *Scientific American*. June, pp. 48-53.
- _____. 2000b. *Light Weapons and Civil Conflict: Controlling the Tools of Violence*. New York: Rowman and Littlefield.
- Brom, Shlomo and Yiftah Shapir, eds. 2000. *The Middle East Military Balance 1999-2000*. London: The MIT Press.
- Brömmelhörster, Jörn and John Frankenstein, eds. 1997. *Mixed Motives, Uncertain Outcomes - Defence Conversion in China*. Boulder, Colorado: Lynne Rienner.
- Brzoska, Michael. 1998. 'Too Small to Vanish: Too Large to Flourish: Dilemmas and Practices of Defence Industry Restructuring in West European Countries.' In Efraim Inbar and Benzion Zilberfarb, eds. *The Politics and Economics of Defence Industries*. London: Frank Cass.
- Brzoska, Michael and Ann Markusen eds. 2000. 'Military Industrial Conversion: Special Issue.' *International Regional Science Review*, Vol.23, No.1.
- Chandran, Suba. 2000. 'Meeting the Demand: Illegal Production in India.' In Dipankar Banerjee, ed. *South Asia at Gun Point: Small Arms and Light Weapons Proliferation*. Colombo: Regional Centre for Strategic Studies.
- Chetty, Robert, ed. 2000. *Firearm Use and Distribution in South Africa*. Pretoria: National Crime Prevention Centre.
- Craft, Cassidy. 1999. *Weapons for Peace, Weapons for War*. London: Routledge.
- Cutshaw, Charlie. 1998. *The New World of Russian Small Arms and Ammo*. Boulder, Colorado: Paladin Press.
- Diaz, Tom. 1999. *Making a Killing: The Business of Guns in America*. New York: The New Press.
- Dreyfus, Pablo. 2000. *Small Arms Producers in the Southern Cone Countries of Latin America*. Background Paper. Geneva: Small Arms Survey.
- Edgar, Alistair and David Haglund. 1995. *The Canadian Defence Industry in the New Global Environment*. Montreal: McGill-Queen's University Press.
- Ezell, Virginia. 1995. *Report on International Small Arms Production and Proliferation*. Alexandria, Virginia: Institute for Research on Small Arms and International Security.
- Ezell, Edward. 1988. *Small Arms Today* Second Edition. London: Arms and Armour Press.

- Feiler, Gil. 1998. 'The Military Industries of the Arab World in the 1990s.' In Efraim Inbar and Benzion Zilberfarb, eds. *The Politics and Economics of Defence Industries*. London: Frank Cass.
- Forecast International, 2000. *Ordnance and Munitions Forecast (October)*. Newtown, Connecticut: Forecast International.
- Gander, Terry and Charles Cutshaw, eds. 2000. *Jane's Ammunition Handbook: 2000-2001*. Coulsdon: Jane's Information Group.
- Gander, Terry and Charles Cutshaw, eds. 2000. *Jane's Infantry Weapons: 2000-2001*. Coulsdon: Jane's Information Group.
- Gonchar, Ksenia. 2000. *Russia's Defence Industry at the Turn of the Century*. Brief No. 17. Bonn: Bonn International Center for Conversion.
- Hussain, Neila. 2000. 'Problems of Proliferation of Small Arms in Bangladesh.' In Dipankar Banerjee, ed. *South Asia at Gun Point: Small Arms and Light Weapons Proliferation*. Colombo: Regional Centre for Strategic Studies.
- Hébert, Jean-Paul, Yves Bélanger and Peter Lock. 2000. *Naissance de l'Europe de l'Armement*. Cahier d'Etudes Stratégiques, Nr. 27. Paris: CIR-PES.
- Heller, Mark. 1998. *The Middle East Military Balance 1996*. New York: Colombia University Press.
- Heyman, Charles, ed. 2000. *Jane's World Armies, Issue Eight*. Coulsdon: Jane's Information Group.
- Hogg, Ian, ed. 1989. *Jane's Infantry Weapons: 1989-90*. Coulsdon: Jane's Information Group.
- Hogg, Ian. 1998. *The World's Sniping Rifles*. London: Greenhill Books.
- Inbar, Efraim and Benzion Zilberfarb, eds. 1998. *The Politics and Economics of Defence Industries*. London: Frank Cass.
- Institute for Religious Studies (ISER). 2000. *Small Arms Apprehended in Rio de Janeiro*. Background Paper. Geneva: Small Arms Survey.
- Institute for Research on Small Arms in International Security. Various years. *Small Arms World Report*. Alexandria, Virginia: Institute for Research on Small Arms and International Security.
- Jauhianinen, Jussi, Luc Mampaey, Joachim Schuster et al. 1999. *Post Cold War Conversion in Europe: Defence Restructuring in the 1990s and the Regional Dimension*. Les Rapports du GRIP. Bruxelles: GRIP.
- Kartha, Tara. 2000. *South Asia: A Rising Spiral of Proliferation*. Background Paper. Geneva: Small Arms Survey.
- Keller, William. 1995. *Arm in Arm: The Political Economy of the Global Arms Trade*. New York: Basic Books.
- Kenkel, Kai. 2000a. *Kalashnikov Assault Rifle*. Background Paper. Geneva: Small Arms Survey.
- _____. 2000b. *Uzi Sub-machine Gun*. Background Paper. Geneva: Small Arms Survey.
- Klare, Michael. 1995. 'Light Weapons Diffusion.' In Jasjit Singh, ed. *Light Weapons and International Security*. Delhi: Pugwash Conferences on Science and World Affairs.
- _____. 1997. 'The New Arms Race: Light Weapons and International Security.' *Current History*. April.
- _____. 1999. 'The Kalashnikov Age.' *The Bulletin of the Atomic Scientists*. Vol. 55, No.1. January/February.
- Klare, Michael and David Andersen. 1996. *A Scourge of Guns: The Diffusion of Small Arms and Light Weapons in Latin America*. Washington, DC: Federation of American Scientists.
- Kiss, Yudit. 1997a. *The Defence Industry in East Central Europe: Restructuring and Conversion*. Oxford: Oxford University Press.
- _____. 1997b. *The Transformation of the Defence Industry in Hungary*. Brief No. 14. Bonn: Bonn International Center for Conversion.
- _____. 2000. *Small Arms Producers in East-Central Europe*. Background Paper. Geneva: Small Arms Survey.
- Klieman, Aharon. 1998. 'Adapting to a Shrinking Market: The Israeli Case.' In Efraim Inbar and Benzion Zilberfarb, eds. 1998. *The Politics and Economics of Defence Industries*. London: Frank Cass.
- Kramer, Katherine. 2000a. *Small Arms Producers in ASEAN*. Background Paper. Geneva: Small Arms Survey.
- _____. 2000b. *Illicit Small Arms Production in South Asia and ASEAN*. Background Paper. Geneva: Small Arms Survey.
- Lock, Peter. 2000. 'Rheinmetall: un paradigme de la restructuration du secteur de la défense en Allemagne.' In Jean-Paul Hébert, Yves Bélanger and Peter Lock. *Naissance de l'Europe de l'Armement*. Cahier d'Etudes Stratégiques, Nr. 27.

- Paris: CIRPES.
- Lumpe, Lora, ed. 2000. *Running Guns: The Global Black Market in Small Arms*. London: Zed Books.
- Malik, Salma. 2000. 'Domestic Production, Illegal Manufacture and Leakage of Small Arms - A Case Study of Pakistan.' In Dipankar Banerjee, ed. *South Asia at Gun Point: Small Arms and Light Weapons Proliferation*. Colombo: Regional Centre for Strategic Studies.
- Mampaey, Luc. 1998. *L'Industrie Belge de Défense - Les Rapports du GRIP, No.1*. Bruxelles: GRIP.
- Mampaey, Luc. 2000. *Groupe Herstal S.A: L'Heure des décisions - Les Rapports du GRIP, No. 6*. Bruxelles: GRIP.
- McKenzie, Katharine. 1999. *Domestic Gun Control Policy in Ten SADC Countries*. Report Commissioned by Gun Free South Africa. Johannesburg: Gun Free South Africa.
- Mlambo, Norman. 1998. 'The Zimbabwe Defence Industry: 1980-1995.' *Southern African Centre for Defence Information Working Paper*, No. 2.
- Norwegian Initiative on Small Arms Transfers. 2000. *Canadian Small Arms Industry and Products*. <<http://www.nisat.org>>
- Oden, Michael. 1998. 'Defence Mega-Mergers and Alternative Strategies.' In Gerald Susman and Sean O'Keefe, eds. *The Defence Industry in the Post Cold-War Era*. New York: Pergamon.
- Oosthuysen, Glenn. 1996. *Small Arms Proliferation and Control in Southern Africa*. Johannesburg: South African Institute of International Affairs.
- Rana, Swadesh. 1995. *Small Arms and Interstate Conflict*. Research Paper No. 34. Geneva: United Nations Institute for Disarmament Research.
- Reed, John, ed. 2000. *Jane's World Defence Industry: Issue Six*. Coulsdon: Jane's Information Group.
- Renner, Michael. 1995. *Small Arms, Big Impact*. Washington, DC: Worldwatch Institute.
- Renner, Michael. 1999. 'Arms Control Orphans.' *The Bulletin of the Atomic Scientists*, Vol.55, No.1. January/February.
- Sanders, Ralph. 1990. *Arms Industries: New Suppliers and Regional Security*. Washington, DC: National Defense University Press.
- Shichor, Yitzhak. 1998. 'Conversion and Diversion: The Politics of China's Military Industry after Mao.' In Efraim Inbar and Benzion Zilberfarb, eds. *The Politics and Economics of Defence Industries*. London: Frank Cass.
- Sköns, Elisabeth and Reinilde Weidacher. 2000. 'Arms Production.' In Stockholm International Peace Research Institute. *SIPRI Yearbook 2000: Armaments, Disarmament and International Security*. Oxford: Oxford University Press.
- Solingen, Etel. 1998. 'The Rise and Fall of Arms Industries in Argentina and Brazil.' In Efraim Inbar and Benzion Zilberfarb, eds. *The Politics and Economics of Defence Industries*. London: Frank Cass.
- Stockholm International Peace Research Institute. 2000. *SIPRI Yearbook 2000: Armaments, Disarmament and International Security*. Oxford: Oxford University Press.
- Susman, Gerald and Sean O'Keefe, eds. 1998. *The Defence Industry in the Post Cold-War Era*. New York: Pergamon.
- Walter, John. 1999. *Kalashnikov - Machine Pistols, Assault Rifles, and Machine Guns: 1945 to the Present*. London: Greenhill Books.
- Wood, Brian and Johan Peleman. 1999. *The Arms Fixers: Controlling the Brokers and Shipping Agents*. Oslo: PRIO.
- United Nations. 1997. *Report of the Panel of Governmental Experts on Small Arms*. A/52/298. 27 August.
- _____. 1999a. *United Nations International Study on Firearm Regulation*. New York: United Nations.
- _____. 1999b. *Report of the Group of Governmental Experts on Small Arms*. A/54/258. 19 August.
- _____. 1999c. *Report on the Feasibility of Restricting the Manufacture and Trade of Small Arms to Manufacturers and Dealers Authorized by States*. A/54/160. 6 July.
- _____. 1999d. *Report of the Group of Experts on Ammunition and Explosives in all their aspects*. A/54/155. 29 June.
- United States Department of State. 1999. *World Military Expenditure and Arms Transfers 1998*. Washington, DC: US Department of State, Bureau of Arms.
- United States Office of Technology Assessment. 1991. *Global Arms Trade: Commerce in Advanced Military Technology and Weapons*. Washington, DC: US General Publications Office.
- US Bureau of Alcohol, Tobacco and Firearms. 1995. *Annual Firearms Manufacturing and Export*

- Report. Washington, DC: Department of the Treasury.
- _____. 1998a. Department of the Treasury Study on the Sporting Suitability of Modified Semi-Automatic Assault Rifles . Washington, DC: Department of the Treasury.
- _____. 1998b. Annual Firearms Manufacturing and Export Report . Washington, DC: Department of the Treasury.
- _____. 2000a. Commerce in Firearms in the United States. Washington, DC: Department of the Treasury.
- _____. 2000b. Crime Gun Trace Reports (1999)
- National Report . Washington, DC: Department of the Treasury
- US Census Bureau. 1997a. Small Arms Manufacturing - 1997 Economic Census . Washington, DC: Department of Commerce.
- _____. 1997b. Small Arms Ammunition Manufacturing - 1997 Economic Census . Washington, DC: Department of Commerce.
- Violence Policy Center. 2000. Firearms Production in America, 1975-1997 . Washington, DC: Violence Policy Center.