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ARMS INDUSTRY TRANSFORMATION AND INTEGRATION

The Choices of East Central Europe

YUDIT KISS

The defence industry was one of the pillars of the command economy system in East Central Europe. After the end of the cold war the sector went through dramatic changes: it was radically downsized, reorganized and restructured according to the needs of the emerging new socio-economic systems. One of the major factors that shaped this adjustment was the enlargement of NATO and the European Union and the prospect of integration into these two organizations. The military establishments and defence industries became principal actors in the integration process, which helped them to acquire political legitimization and new economic resources. At the same time, integration presented unexpected challenges and constraints for the region's restructuring defence industry.

This book presents a comparative analysis of the defence industries of six East Central European countries—Bulgaria, the Czech Republic, Hungary, Poland, Romania and Slovakia—describing how they adjusted to the changed political and economic environment in both the domestic and international contexts. After the cold war, arms makers in East Central Europe found themselves confronting a situation like that faced by many of today's industrial producers: a drastic change of the economic, political and social environment. Their experiences provide valuable lessons for governments and companies in the post-2008 global economy.

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YUDIT KISS

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Preface

At the end of the cold war the countries of East Central Europe had a common inheritance of heavy militarization. Their economies were orientated to support the industrial capacities needed to manufacture large volumes of military equipment for the armed forces of the Warsaw Pact. After the collapse of the Warsaw Pact, these countries had a shared strategic objective of joining the institutions associated with the West—the European Union (EU) and the North Atlantic Treaty Organization (NATO).

The military industrial inheritance, combined with the ambition for integration into Western institutions, posed a series of public policy challenges. All NATO members are expected to contribute to the overall effort of the alliance, and preparations for membership emphasized the need for relevant military capabilities. However, the capabilities needed were of a different kind from those that were in place at the end of the cold war. Transforming the military sector required new policies and implied new kinds of investment.

Preparing to join the EU required moving away from a command economy and establishing policies and structures to operate a mixed market economy. Rebalancing the shares of public and private contributions to the national economy was a key element in reshaping economic and fiscal policies. Reducing the scale of national resources allocated to the military sector from the very high levels witnessed during the cold war was one priority within the overall effort to ensure that public expenditure was rationalized and organized on a different basis from the past.

The transformation needed to join Western institutions created some contradictory cross-pressures on Bulgaria, the Czech Republic, Hungary, Poland, Romania and Slovakia. However, while they faced certain common challenges, these countries were (and are) far from homogeneous. Each has specific political, economic, military and societal features that shaped the national response. The strategies adopted to transform the arms industries were not the same.

Arms Industry Transformation and Integration is the first authoritative account of how the countries of East Central Europe responded to these major economic and social changes. It presents the well-documented results of many years of highly detailed research by an economist native to the region, including close to 100 interviews conducted over two decades with those most closely connected with the topic in companies and government agencies. The author's repeated visits to the companies and countries studied here have provided her with a unique insight into their development over time and an unparalleled understanding of how each country's

newly acquired memberships in the EU and NATO affected individual enterprises.

By showing how six national defence industries adjusted to a new political and economic environment in both the domestic and international contexts, this readable and accessible book will prove invaluable to those studying and dealing with similar changes around the world as well as to scholars of international relations, strategic studies and political economy, historians and the defence industry itself.

I would like to thank Yudit Kiss for her patient and diligent work over many years to map the way in which each country tackled the challenges posed. Her unique knowledge and expertise—gathered through continuous engagement with responsible individuals in government, industry and the expert community—is reflected in the pages of this book.

Tilman Brück
SIPRI Director
Stockholm, February 2014

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To publish a book like this in today's world of reduced research budgets, information dumping, pressure to provide instant information and deliver speedy judgments is a statement. SIPRI deserves immense acknowledgement for making such a statement. As the result of a long process of data gathering and processing, the manuscript had to be updated on several occasions. Each round was time consuming, but did not necessitate a fundamental change of approach. New developments fit into the overall frame of analysis, confirming that a systemic, long-term, comprehensive approach which takes into consideration the economic, historical and social background as well as political developments is indispensable for understanding the complexities of weapon production and distribution.

I thank SIPRI for offering me the opportunity to carry out such research. Special thanks go to SIPRI's former Director, Alyson J. K. Bailes, with whom I first discussed this project and who has been a constant source of encouragement, generously sharing her knowledge and writings ever since. Very big thanks to Ian Anthony for being the patient godfather of this project and to Jetta Gilligan Borg for her conscientious editing work. Thanks are also due to Olle Persson of the SIPRI Library and Documentation Department for his valuable assistance.

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universal knowledge, far beyond economics, have been a reference for me ever since I finished my university studies.

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Last, but not least, I thank my family, both in Geneva and in Budapest, for their unfailing support, empathy and patience.

Yudit Kiss
Geneva, February 2014

Abbreviations

APC	Armoured personnel carrier
AQAP	Allied Quality Assurance Publications
C^4I	Command, control, communications, computers and intelligence
CBR	Chemical, biological and radiological
CBRN	Chemical, biological, radiological and nuclear
CEO	Chief executive officer
CFE	Conventional Armed Forces in Europe (Treaty)
CFSP	Common Foreign and Security Policy
COC	Code of Conduct
Comecon	Council for Mutual Economic Assistance
DOD	Department of Defense
EADS	European Aeronautic Defence and Space Company
ECE	East Central Europe
EDA	European Defence Agency
EPAA	European Phased Adaptive Approach
ESDP	European Security and Defence Policy
EU	European Union
FDI	Foreign direct investment
GDP	Gross domestic product
IFF	Identification friend or foe
IMET	International Military Education and Training
IMF	International Monetary Fund
ISAF	International Security Assistance Force
ISO	International Organization for Standardization
IT	Information technology
ITC	Information technology and communications
KFOR	Kosovo Force
MANPADS	Man-portable air-defence system
MBO	Management buyout
MET	Ministry of Economy and Transport
MFA	Ministry of Foreign Affairs
MND	Ministry of National Defence
MOD	Ministry of Defence
MOE	Ministry of Economy
MRAP	Mine-resistant, ambush-protected

NATO	North Atlantic Treaty Organization
NBC	Nuclear, biological and chemical
NCAGE	NATO Commercial and Government Entity
NGO	Non-governmental organization
NRF	NATO Response Force
NSIP	NATO Security Investment Programme
PRT	Provincial Reconstruction Team
R&D	Research and development
SAC	Strategic Airlift Capability
SALW	Small arms and light weapons
SEZ	Special economic zone
SFOR	Stabilization Force
SME	Small- and medium-sized enterprise
SOE	State-owned enterprises
UAE	United Arab Emirates
UAV	Unmanned aerial vehicle
UN	United Nations

Additional abbreviations are defined in the text.

1. Introduction

I. Post-cold war East Central Europe

The arms industry in the former Eastern bloc has been radically transformed since the political upheavals that accompanied the collapse of Soviet power starting in the late 1980s. This study focuses on changes in the arms industries of East Central Europe (ECE), a region comprising Bulgaria, the Czech Republic, Hungary, Poland, Romania and Slovakia, and the lessons and insights that the topic offers. All six countries were for several decades satellite states of the Soviet Union and members of the Warsaw Treaty Organization (often referred to as the Warsaw Pact), which was committed to mutual defence against a common enemy, the North Atlantic Treaty Organization (NATO).[1] All had one party-dominated political systems and state-controlled command economies, interlinked through the Council for Mutual Economic Assistance (Comecon), the Eastern bloc's economic organization.[2] East Central Europe is a politically and historically neutral way of referring to a region uniting countries that over the past decades have been called 'countries in transition', on their way towards a Western economic and political model; 'aspirant' or 'applicant countries', waiting to join the European Union (EU) and NATO; 'emerging countries' or, more specifically, 'emerging markets', representing new business opportunities; and 'new Europe' or, more neutrally, 'new EU member countries', to distinguish them from the older, more established ones.

The ECE countries have undergone dramatic changes in the past two decades. All rejected their established political and economic systems in 1989 and started on a path towards pluralist parliamentary democracy and free market economy, opening themselves to business with the West and the rest of the world. Liberated from the bonds of the Warsaw Pact and Comecon, they started to search for new international affiliations and forms of cooperation. All of the ECE countries' economies have undergone fundamental restructuring; after numerous ups and downs, they have by

[1] The Treaty of Friendship, Cooperation and Mutual Assistance, which established the Warsaw Pact, was signed in Warsaw on 14 May 1955 between Albania, Bulgaria, Czechoslovakia, the German Democratic Republic (East Germany), Hungary, Poland, Romania and the Soviet Union. East Germany left the Warsaw Pact in 1990, a few months before the organization's dissolution in 1991. German reunification presented East Germany with a radically different set of opportunities and challenges to those of the ECE countries. It is therefore not discussed in this volume. Albania left the Warsaw Pact in 1968. On the Czech Republic, Hungary, Poland and Slovakia see also Kiss, Y., SIPRI, *The Defence Industry in East-Central Europe: Restructuring and Conversion* (Oxford University Press: Oxford, 1997).

[2] Comecon was an economic organization comprising the Warsaw Pact members as well as Cuba, Mongolia and Viet Nam. It disbanded in 1991.

and large become more efficient and better integrated into the international economic system than they were. The political systems of the ECE countries remain extremely fragile but are a far cry from the monolithic and authoritarian regimes of the past. All are now members of NATO—the Czech Republic, Hungary and Poland since 1999, and Bulgaria, Romania and Slovakia since 2004—and of the EU, which the Czech Republic, Hungary, Poland and Slovakia joined in 2004, and Bulgaria and Romania in 2007.

During their complex transformation the ECE countries embarked on markedly different paths. Poland aspired to regain its former place in Europe quickly and introduced a radical programme of economic 'shock therapy' aimed at establishing a functioning capitalist economy in the shortest time possible. Czechoslovakia, the only ECE country to have had democratic traditions worthy of mention and a relatively stable and developed economy, broke into two states in 1993 amid fierce political struggles—but peacefully. Hungary, distinguished from its peers by cautious economic and political reforms since the late 1960s, entered a cycle of recessions and partial recoveries and became bogged down by internal political struggles. Bulgaria and Romania lagged behind in reform for most of the 1990s but embarked on fast-track courses from the early 2000s in order to meet the requirements of EU and NATO membership.

While nominally everything in the ECE countries changed radically, society, economic structures and mechanisms evidently did not transform from one day to the next. In the complicated and demanding adjustment processes that each country went through, the old system's methods, formulas, networks and mechanisms were as much used as the new ones. One notable legacy of the past was a fixation with targets, which were perceived as the aims of transition as well as its engines and criteria of success. Similar to the quotas of the Communist era's five-year plans, they served as a mobilizing force while simultaneously embodying change. In politics, after a short period of hesitation, the targets were EU and NATO accession. In economics, targets were set for privatization, increased exports to Western markets and attracting foreign direct investment (FDI), more or less in that order of priority.

Pressure to make rapid adjustments came from both inside and outside. The fixation with targets was reinforced by the external actors that had a major and often decisive role in shaping the pace, nature and direction of the whole process. The EU and NATO provided structures and stimulated movement in the desired directions, and the candidate countries were eager to follow instructions, copy and adapt the structures, policies and mechanisms of those bodies' members. The International Monetary Fund (IMF) and the World Bank also played crucial roles. Transition reports published on the ECE countries have measured success in the speed of

state asset dismantlement, the increase of exports—particularly the share of exports to the West in total exports—or the amount of FDI received.

The targets set were demanding, particularly because of the limited resources and the general political and social turmoil that characterized the post-1989 period in the ECE countries. Too much had to be accomplished in a relatively short time. It might have appeared easier and simpler to follow models than to invent new ones; the rapidity and the assisted nature of the process diminished the enormous creative potential of the transformation. Little place was left for trial and error.

Transition targets represented fundamental changes and were important drivers of economic and societal transformation. However, they became absolute and exclusive indicators of change, with no qualitative criteria attached. The ways in which the demands of the EU and NATO accession processes were fulfilled, their impact on economy and society, and how this fits into long-term development goals were rarely questioned. Analysis of which segments of the economy attracted foreign capital, under what conditions and with what wider economic and social consequences as well as what companies exported, from where and to where, was rarely undertaken. In the heat of rapid changes fundamental questions about the meaning and impact of these 'absolute' goals were rarely asked (post factum, if ever), making it more difficult to deal with their consequences. Nothing prepared the ECE countries, barely 10 days after becoming NATO members, to find themselves at war on the territory of their former comrade country, Yugoslavia, as part of NATO's military operations. The effects of EU enlargement, such as the crowding out of domestic producers and accelerated brain drain, also created major tensions and backlash in each new member country.

In addition, when the ECE countries joined the EU it was already in search of an attractive and effective new identity. NATO was in an even worse state of uncertainty concerning its future and aims. This further complicated the uneasy task of integration. The challenge of the next decade is to digest the demands and ramifications of the twin EU and NATO enlargement processes, both for the new members and for the EU and NATO themselves. Enlargements offer an unexpected opportunity for the ECE countries to contribute to the renovation of the EU and NATO by making use of their experiences and creativity in order to help turn both organizations into versatile, efficient systems that are able to cope with the challenges of the 21st century.

II. The importance of the topic

The arms industry was one of the pillars of the cold war economic and political system and played a unique role in the dramatic changes that have

reshaped the ECE countries since the late 1980s. When the old system collapsed arms production collapsed with it, along with the rest of the military sector, marginalized due to its close association with the *ancien régime*. However, within a few years arms production had recovered and the military sector had become an acknowledged and occasionally even widely appreciated segment of the new social systems. One key reason for this was that, once the ECE countries had become NATO candidates, it was through the Atlantic alliance that their integration into the new institutional environment and the much-desired Western economic and social model started. NATO became the key mediator in the process and its membership criteria enjoyed high priority, which inevitably left an imprint on the whole transformation process. Among other things, NATO membership requirements included increased military spending and the re-equipment of the armed forces to new standards, leading to the re-legitimatization of the military establishment.

Even after its partial resurrection, the ECE arms industry does not represent a large segment of the world's arms production and remains marginal to the global arms-production networks that have come to dominate the sector. Neither is the arms industry a prominent economic engine in any of the ECE countries. Nevertheless, a study of the transformation and current status of the ECE arms industry is worthwhile not only to understand its place in the evolution of the new domestic political and economic systems, but also because the experiences of the ECE arms industry can yield wider insights and lessons for the ECE countries and the rest of the world, particularly in the recent economic crisis.

The first set of questions that this volume addresses concerns the current nature and status of the ECE arms industry. At present, the arms industry represents only a modest share of gross domestic product (GDP), industrial production and employment in the ECE countries. Arms exports, once so critical to the region's economies, have similarly dropped off and in some countries are almost negligible. However, in this sector raw figures tend to show only the tip of the iceberg and say little about the invisible part, about how military-related considerations affect the economy or what drivers move the sector. In order to obtain a clearer and deeper understanding it is necessary to explore the day-to-day operation of arms firms and the military establishment and, in doing so, to look for qualitative indicators of their position and status in the new economic and political systems of the ECE countries. Another question that is particularly important under the current circumstances is the contribution of the arms industry to the economic transformations of the ECE countries—its role in the inevitable adjustments to the new economic realities.

A second question that this study examines is the place of today's ECE arms producers in the global arms industry. Today, none of the ECE coun-

tries ranks among the major producers or exporters of arms. Even the most successful companies that have managed to secure stable supplier's positions in one of the transatlantic or trans-European production chains typically occupy second- or third-tier positions. Only a handful have succeeded in establishing stable, first-tier supplier status or fulfil a key function in the international development and production processes for new weapons. This relatively small region, nevertheless, has become a scene of worldwide competition among today's arms industry giants. In the early 1990s key international arms industry players set up shop in East Central Europe. They primarily identified the region as an important, if somewhat limited, market and, after a while, as a cheap and convenient contributor to the global arms-producing networks. This study clarifies the position of the ECE arms producers in the global arms industry and, in doing so, casts some light on the form and functioning of that global industry.

The third aspect of the study illuminates the role that ECE arms production now plays in global security—and insecurity. Security-related research and policy must first address the source, weapon production, and ask what kinds of arms are produced, by which companies, under what conditions and for what purpose. In the past weapon production was a key factor in the cold war bloc division; it occupied a central place in the economic and political systems of Eastern bloc countries, leaving its imprint on the entire society and on foreign relations. Arms produced in the ECE countries mainly went to supply the huge Warsaw Pact forces intended to counterbalance NATO and so deter military attack. Some also found their way outside the region, particularly to 'fellow traveller' and non-aligned countries, and, occasionally, also to other markets. From the time that the systemic changes began, the ECE countries treated weapons as simple commodities of which they had plenty to offer. In addition to their considerable production capacities, they had large stocks. A side effect of the massive reductions in conventional forces called for by the Treaty on Conventional Armed Forces in Europe (CFE Treaty), signed by the NATO and Warsaw Pact members in 1990, was the intensification of attempts to export newly produced and second-hand equipment, sometimes with little regard to their impact on security.[3] In the past two decades arms manufactured in the ECE have appeared in conflict areas in Africa, Asia and Latin America, as well as in such European hot spots as Georgia or the territory of the former Yugoslavia. This study identifies and quantifies the

[3] The CFE Treaty was signed in Paris on 19 Nov. 1990 and entered into force on 9 Nov. 1992. It provided for significant cuts in the conventional military arsenals of NATO and former Warsaw Pact states. Since it entered into force, more than 60 000 battle tanks, armoured combat vehicles, artillery, combat aircraft and attack helicopters have been taken out of service. On the CFE Treaty see the website of the Organization for Security and Co-operation in Europe, <http://www.osce.org/>; and Lachowski, Z., *Confidence- and Security-Building Measures in the New Europe*, SIPRI Research Report no. 18 (Oxford University Press: Oxford, 2004).

sources of weapon supply from the ECE countries and explores the new drivers of arms production and trade. It also questions how and how far ECE arms producers and governments have taken into consideration the impact of their arms exports on global security.[4]

Finally, this volume draws broader lessons from the experiences of arms industry transformation in the ECE countries. Twenty years ago arms makers in East Central Europe found themselves in a situation where many of the world's defence industrial (and other industrial) producers are today: a drastic change of their economic, political and social environment. The period since the end of the cold war has witnessed the demise of many arms producers in the ECE countries, including many of the most important and most influential ones. It is therefore important to find out how those that have survived have done so: by what combination of good management, stamina, government policy and sheer luck have they stayed in business? What lessons does this offer for governments and companies in the post-2008 global economy?

III. Methodology

Studying the arms industry in East Central Europe is still a painfully slow and difficult undertaking. Increased transparency was one of the key targets of military reform in all of the ECE countries, but this had only limited impact on the arms industry. Data on arms production is still scarce and contradictory. Compared to the past, there is a welcome abundance of secondary sources such as media reports, official publications and documents, company websites, exhibition catalogues and translated pages of local newspapers, many of them available through the Internet. These sources, however, are not always reliable. Many countries still classify information on the arms industry as secret—or have once again started to do so after a period of greater openness. Media reports and official publications often contain vague and contradictory data. Added to this, information becomes obsolete quickly due to the rapid changes in the sector. Using public statements, interviews and newspaper reports usually requires distinguishing between rhetoric and fact and between emerging new trends and wishful thinking. As a rule, in this volume the source used is that which is closest to the sector; where possible, several sources are cited.

In order to obtain more reliable information about the deep structural changes in the sector between 1992 and 2012 the author carried out 85 in-depth interviews at companies and government agencies and attempted to acquire first-hand information directly from them. This was a time-

[4] The arms trade, despite its critical importance, is not the focus of this study.

consuming and often frustrating activity. In the early 1990s, when the first of these interviews took place, there were still many instances when strict official vetting and ministry authorization were requested before any visits to arms companies. Very soon, however, companies and governments became eager to manifest their transparency: they published data, showed visitors around the premises and were willing to give longer interviews. Companies appeared to welcome meetings with outsiders as opportunities to explore their past and future potential. This change reflected both the increasing political liberalization in the countries and the decreasing importance of the arms industry. Later, particularly after the countries joined NATO and some companies entered into partnerships with major international players, company premises again became difficult to enter—and occasionally difficult to leave because of new security measures.

The meetings were rich, complex sources of information. In-depth personal interviews could, of course, be as misleading as the material found in secondary sources; the stories told in directors' offices sometimes contradicted published information. Questions about output, sales or exports often remained unanswered. However, company managers and government officials were willing to present their development strategies and to talk about their strengths and weaknesses, workforce issues, the difficulties of finding markets and resources, the future of their research and development (R&D) departments, or the shortcomings of their suppliers. They were eager to talk about their development goals and the paths they envisaged taking to achieve them, the relationship between the struggles of individual companies and the country's arms industry policy, and so on. Interviews were not recorded electronically as that tended to disturb the free flow of conversation. Transcripts of the interviews reconstructed from the author's notes were sent to the interviewees for their approval and amendment.

Beyond the actual content of the interviews, the visits provided valuable insight into managerial cultures, value systems, and the wider social and regional contexts in which companies operated. The atmosphere, human interactions, technology, appearance and even the decor in factory floors and offices; how managers dressed and arranged their environments; and the way people related to each other, all reflected both the true situation in the company or ministry and the profound transformation of the sector. In the early 1990s computers were often status symbols, but within a decade they had become indispensable tools of production and communication. Initially, most company directors were former army officers, often with some kind of technical training; by the 1990s the bulk were civil engineers; and by the late 2000s most had business training. In the early 1990s interpreters were needed for the majority of interviews; by the 2000s most company managers (or their deputies) were able to communicate in English. In

the beginning women were only visible in the noisy workshops, performing unskilled labour, or in the offices, employed as secretaries. In the past two decades they have made a place for themselves in the highest echelons of the sector, often becoming members of management.

Company shop floors also gave a visual image of synergies, organization methods and labour relations, sometimes telling more about a company's restructuring than the words spoken two stories above in the director's office. Using public transport, like many of the employees, helped to visualize the wider environment in which the firms functioned and perceive their integration in the local economy. Even failures could be instructive. Spending a day in pouring rain in front of a company gate waiting in vain for the director to turn up for a meeting arranged several weeks earlier told as much about the prevailing management culture as the prompt, although polite, refusals received from the chief executive officers (CEOs) of large transnational firms implanted in East Central Europe. It was necessary to learn to interpret the signs properly and decide whether a failed interview was due to the old times' fear of exposure, simple inefficiency or the new times' business mentality that considered academic research a sheer waste of time.

Returning to the same company several times was a luxury, providing clear insight into its development over time. Manager turnover was extremely high after the political system changes began, so the rare occasions when the same director headed a firm for several years presented a unique opportunity to take stock of company and wider industry developments. By the late 2000s management continuity was not a sign of inertia as it had been in the past. Instead, it illustrated the perseverance and creativity of the directors, which became a crucial factor in their company's survival.

Detailed case studies of the most important companies can be found in the appendix following each country chapter, but most of these experiences are not described directly in this volume. They form an 'invisible background' to the text that has informed many of its statements and conclusions.

2. The post-cold war evolution of the arms industry

The landmark changes that have taken place in security and defence policy and the related institutions worldwide after the end of the cold war have led to reshaping of the international arms industry, including that of East Central Europe. This chapter examines some of the key factors that caused and influenced this process and presents an overview of the international arms industry today, with a focus on Europe and the United States. Finally, it describes specific developments in the ECE countries.

I. Drivers of the transformation of the arms industry

Three interrelated factors have been the principal drivers in the transformation of the arms industry in the past two decades: changes in the global security environment, the revolution in military affairs and globalization.

Changes in the global security environment

The cold war system was built and maintained with the aim of countering the mutual threats posed by NATO and the Warsaw Pact. Both Eastern and Western blocs lavishly financed, protected and promoted their arms industries in order to serve their military communities. Military build-ups principally served the purpose of deterring military conflict between the blocs, and each bloc sought to outmatch the other in conventional and nuclear weapons. To the extent that it prevented a conflict in Europe, the system was successful. When the two political and economic systems did confront each other militarily, it occurred on the periphery of their spheres of influence.

This state of affairs started to change rapidly in the late 1980s when the Warsaw Pact abandoned its 'offensive defence' military doctrine. Negotiations started with NATO that culminated in the 1990 CFE Treaty, effectively committing the European countries on both sides to significant reductions of their conventional forces. As the cold war drew to a close it initially seemed that the world would become more peaceful and stable. Tension between the two superpowers was relieved, and democratization and peaceful transformation began in the former Communist countries in Europe and in a handful of other regions, such as Latin America. A peace agreement was reached in Northern Ireland; apartheid ended in South

Africa; and some rays of hope appeared even in the Middle East with the signing of the Oslo agreements. Seemingly, the enormous material and creative resources that previously had been tied to military activities could now be dedicated to social development and the peaceful resolution of conflicts.

Nevertheless, a new cycle of violent conflicts began, starting with the first Gulf War in 1990. By 1994 more armed conflicts were active worldwide than at any time since 1945.[1] However, while violent armed conflicts took place during the disintegration of the former Soviet Union and Yugoslavia, none directly threatened to upset the international balance of power as the cold war had. The 1990s also saw the reunification of Germany and the peaceful split of Czechoslovakia. The 11 September 2001 terrorist attacks on the USA were a dramatic watershed that created a general feeling of insecurity. They demonstrated that vulnerability was universal: not even the territory of the world's sole military and economic superpower was safe, and the results and means of its own development could easily be turned against it. All over the world people had to confront the reality that, regardless of the social system or the geographic position of their country, their occupation or ideological convictions, they could become victims of a lethal attack. An intense, although brief, moment of international solidarity followed.

Unfortunately, rather than channelling this solidarity into cooperative action in the area of international conflict resolution, another path was taken. The attacks catalysed the emerging foreign policy direction of the USA, which was marked by a strongly unilaterialist, belligerent attitude. The image of a new enemy—terrorists, more specifically Islamist terrorists—and a cause, the 'global war on terrorism', crystallized rapidly and led to radical revision of security and military policies. The USA responded to the September 2001 attacks with the invasion of Afghanistan, in which it engaged its Western allies, although principally after the fact. The 2003 intervention in Iraq led to an open split between the traditional Atlantic allies and their new partners in the ECE countries that made evident the deep differences of approach to addressing new threats. The subsequent terrorist attacks that took place in European capitals—in March 2004 in Madrid and in July 2005 in London—reinforced and were used to justify the US approach, although in the face of strong popular opposition in Western Europe. However, they also made clear that the contemporary security threats had to be tackled in a comprehensive way, not just by military force.

Two decades after the end of the cold war, novel security challenges and enemies have emerged that are difficult to define and address. Insecurity is

[1] Harbom, L. and Wallensteen, P., 'Armed conflicts, 1946–2009', *Journal of Peace Research*, vol. 407, no. 4 (July 2010), pp. 505–509.

seen not just in terms of traditional military threats but as a range of new, diffuse threats and risks, including terrorism, natural disasters, renewed fighting for control of natural resources, pandemics and explosive regional conflicts. New strategies and tools are needed to address them. The solid cold war blocs of alliances with clear goals, hierarchies, institutional structures and arms industries geared to stabilizing the status quo have been replaced by a multiplying number of security actors in constantly shifting constellations of power.[2] In this new, continually changing political and security environment, rapid adjustment and reaction have become crucial.

The role of the traditional security providers has also evolved and in some instances, such as states or NATO, it has weakened. After the cold war the USA gained uncontested and overwhelming economic, political and military strength, a situation that carried evident risks. President George W. Bush's neoconservative revolution had a marked security and military agenda that was based on the assumption that the USA's mission was to secure economic and military dominance and impose its values around the world by all possible means, including military ones. US unilateralism became possible and was reinforced by the rapid technological progress that the country's arms industry has made since the 1980s, and it was bolstered by increasing military budgets.

The balance of power between states and regional and international organizations is also shifting. The United Nations, regional organizations such as the African Union and the EU, and NATO have become more active in managing conflict and building peace, although their roles and significance are not yet fully defined. Important regional players such as Brazil, China and India, three emerging economic powers with considerable military potential, have also started to seek more prominent political roles. Led by an increasingly confident Vladimir Putin (and by his nominee, Dmitry Medvedev), who introduced a new type of authoritarianism, Russia has recovered from the shock caused by the collapse of the Warsaw Pact and the Soviet Union. It is eager to secure its place in the new world order, skilfully using changing political alliances and non-military 'weapons', such as controlling gas supplies to its neighbours.

[2] See e.g. Bailes, A. J. K., 'A world of risk', *SIPRI Yearbook 2007: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2007), pp. 1–20; Bailes, A. J. K., 'Designing a comprehensive security policy for Europe and European states', eds A. Aldis and M. Drent, *Common Norms and Good Practices of Civil–Military Relations in the EU*, Harmonie Paper no. 21 (Centre for European Security Studies: Groningen, July 2008); Krause, K. and Milliken, J., 'The challenge of non-state armed goups', *Contemporary Security Policy*, vol. 30, no. 2 (Aug. 2009); and Bailes, A. J. K., Krause, K. and Winkler, T., *The Shifting Face of Violence*, Geneva Centre for the Democratic Control of Armed Forces (DCAF) Policy Paper no. 18 (DCAF: Geneva, 2007).

The revolution in military affairs

The revolution in military affairs, which grew out of a mutually reinforcing combination of technical advances and new operational concepts, has affected the arms industry fundamentally in three areas: production processes, perceptions of conflict and the means of fighting them, and escalating financial requirements leading to higher military budgets.

The industrial antecedent of the revolution in military affairs was a change in the technological development of heavy industry that began in the Japanese car-making sector. The post-Fordist mode of production was replaced by 'lean manufacturing', characterized by the elimination of waste, flexibility, continuous improvement of the products and working methods, and consumer-focused production. These changes led to better quality products and reduced production time and cost. Coupled with a new mode of industrial organization—virtual partnerships or enterprises (temporary alliances to share skills and resources that are supported by computer networks)—the system was called 'agile manufacturing'. It spread first in the USA and then, simultaneously with accelerating globalization, throughout the world.[3]

Agile manufacturing was gradually adopted in the US military industry as arms companies realized that, thanks to new production methods and the increasing integration of information technology (IT), civil producers had become more efficient and flexible than in the past. The pressure to catch up with civil producers became imperative as demand decreased and tougher financial constraints were created by military budget cutbacks in the immediate aftermath of the cold war. The introduction of agile manufacturing and its requirements led to a true paradigm shift.[4] The new production system used computer-controlled, flexible machine tools and lean manufacturing processes in virtual enterprises that could rapidly be reconfigured and were able to produce increasingly 'knowledge-intensive' high-tech weapons at low volumes.[5] The systems integrated the latest results of civil developments, particularly in IT, into the manufacturing process and into the weapon systems themselves.[6]

These changes contributed to the creation of a new arms industry base by the early 2000s. Instead of monolithic blocs of large-scale, national pro-

[3] Nagel, R. N., Goldman, S. L. and Preiss, K., 'Summary and action agendas', eds S. L. Goldman and K. Preiss, *21st Century Manufacturing Enterprise Strategy*, vol. 1, *An Industry-Led View* (Lehigh University, Iacocca Institute: Bethlehem, PA, 1991); and Bitzinger, R. A., 'The revolution in military affairs and the global defence industry: reactions and interactions', *Security Challenges*, vol. 4, no. 4 (summer 2008).

[4] Latham, A., 'The contemporary restructuring of the US arms industry: toward "agile manufacturing"', *Contemporary Security Policy*, vol. 18, no. 1 (Apr. 1997).

[5] Latham (note 4), p. 109.

[6] Hayward, K., 'The globalization of defense industries', *Survival*, vol. 42, no. 2 (summer 2000), p. 117; and Latham (note 4).

ducers, the sector has become a looser network of companies of different types, sizes and natures that cooperate or compete with each other in rapidly changing constellations.[7] The production system has expanded significantly; more actors participate in it through networks that extend both geographically and in terms of the partnerships and resources used to produce goods and services. Arms support, logistic, maintenance and development services have become organic parts of the revamped arms industry. Agile manufacturing has also changed the nature of primary contractors: system providers have become more important relative to conventional platform manufacturers. The integration of new production or research centres and their products into highly performing systems has become the crucial step. The elements of a production system can now be used to manufacture a wide variety of products that can be used for military purposes, in natural disaster mitigation or in counterterrorism. Major arms contractors no longer have to be military industrial producers. Companies in the financial, IT and communications sectors thus find it easier to enter arms production and the related markets.

The capital-intensive nature of the new military technologies, the facts that weapons can be remotely guided and that computer-controlled equipment can perform tasks that were previously done by humans have changed perceptions of war-fighting, risk, security threats and international relations. The possibility of reducing human losses—for the users of high-tech equipment—has liberated the imagination of military actors and shifted responsibilities for political decision makers. The recent armed conflicts in Kosovo, Iraq and Afghanistan bear the marks of virtual warfare waged at the desks of military strategists. In a mutually reinforcing dynamic, the new perceptions of threats and the new technological possibilities have created radical changes in equipment needs. Instead of the large weapon platforms (tanks, armoured vehicles, aircraft and ships) that addressed cold war military needs, today's armed forces require more, increasingly flexible and mobile systems that can be used in various situations.

The new, complex weapon systems require novel high-performance materials and significant R&D and other resources and are thus extremely expensive, their costs increasing exponentially. To pay for them, military

[7] A study of the defence market was commissioned by the US Department of Defense. See Bialos, J. P., Fisher, C. E. and Koehl, S. L., *Fortresses & Icebergs: The Evolution of the Transatlantic Defense Market and the Implications for U.S. National Security Policy*, vol. 2, *Country Studies* (Johns Hopkins University, Center for Transatlantic Relations and School of Advanced International Studies: Washington, DC, 2009). See also Kapstein, E. B., *Arsenal's End? American Power and the Global Defense Industry* (Center for a New American Security: Washington, DC, Feb. 2010).

budgets must be increased or pooled, and sometimes supplemented by private capital, which brings with it a new set of ramifications.[8]

Globalization

Globalization can be defined as the 'integration of economies around the world, particularly through the movement of goods, services, and capital across borders' and also as the 'movement of people (labor) and knowledge (technology) across international borders'.[9] These centuries-long processes have accelerated and taken new forms in the past two decades because of fundamental technological changes and the fact that, once liberated from the constraints of the political and institutional barriers presented by the Communist bloc, the capitalist system was free to expand. Due to intensifying globalization, to the increased ease of international transactions and to the systemic dismantling of boundaries and frontiers that have restricted the free flow of capital assets, weapon production continually enters new areas, in both geographic and economic terms. Two manifestations of globalization—the emergence of global industrial actors and the liberalization of markets—particularly affected the arms sector. In order to remain competitive, arms firms were obliged to streamline and integrate their assets as they simultaneously widened the scope of their activities. Deregulation not only made possible the free movement of capital, technology, people and know-how around the world, but also enabled arms companies to create global production networks in order to enter new markets and take advantage of economies of scale, making use of cost and tax reductions.

The globalization of arms production proceeded relatively slowly for a long period but accelerated after the end of the cold war. The development and manufacturing of arms today is characterized by 'new industrial linkages, international subcontracting, joint ventures, cross-border mergers and acquisitions instead of traditional, single country patterns'.[10] Integration into the global arms-producing and distribution networks has become a precondition of survival for arms manufacturers. Attempts to isolate domestic arms industries and promote endogenous development seem doomed to fail except in extreme cases like North Korea. While the

[8] Vlachos-Dengler, K., *Off Track? The Future of the European Defense Industry* (RAND: Santa Monica, CA, 2004), p. 71; and 'The cost of weapons: defence spending in a time of austerity', *The Economist*, 26 Aug. 2010.

[9] International Monetary Fund staff, 'Globalization: a brief overview', May 2008, <http://www.imf.org/external/np/exr/ib/2008/053008.htm>.

[10] Bitzinger, R. A. (ed.), *The Modern Defense Industry: Political, Economic, and Technological Issues* (Praeger Security International: Santa Barbara, CA, 2009), p. 6. See also Bitzinger, R. A., 'Globalization in the post-cold war defense industry: challenges and opportunities', eds A. R. Markusen and S. S. Costigan, *Arming the Future: A Defense Industry for the 21st Century* (Council on Foreign Relations Press: New York, 1999).

creation of these modern production networks can help companies to reduce their operating costs, they also represent significant security risks. The increasing movement of military products facilitates the diversion of the weapons that may be used in conflicts—from small arms and light weapons (SALW) to the materials and know-how for the production of nuclear weapons. Globalization of arms production has the worrying collateral effects of contributing to the proliferation of arms, arms-producing capacity and new conflict actors. The global arms industry produces large quantities of various weapons that are easily accessible for use in the most unstable parts of the world. It has also made it more difficult to trace and control arms and dual-use materials. The spreading of arms-producing assets can be more dangerous than the proliferation of weapons themselves since it multiplies the potential number of sources of arms. In the early 1990s, when the process was just about to begin, Richard Bitzinger noted that the internationalization of weapon production is, or can be, a new form of proliferation.[11]

II. The new structure of the arms industry

By the early 2000s the main features of a new international military industrial sector had become apparent. They reflected the changed conditions: new security threats that must be met by new types of weapon produced under different technological, political and economic conditions.

In its new form the military industrial sector is characterized by complexity, diversity and volatility. Hugely influential arms-producing 'giants' and a profusion of smaller players and specialized subcontractors cooperate and compete, often linked by ownership and joint projects. This structure has been compared to a bowl of spaghetti, where moving one strand sets the contents of the whole bowl in motion.[12] Markets and procurement practices have both changed fundamentally since the cold war, as has the relationship between the arms industry and the state. Arms producers must operate in rapidly changing regulatory and policy environments, but increasingly the arms-producing giants seek to shape national and international rules and policy to their advantage, with evident success.

A substantial body of work has been written on the changes in the US and West European arms industry since the 1990s; the rest of this chapter therefore provides only a brief summary of these events and a survey of

[11] See Bitzinger, R. A., 'The globalization of the arms industry: the next proliferation challenge', *International Security*, vol. 19, no. 2 (fall 1994), pp. 170–98.

[12] Vlachos-Dengler (note 8), p. 6.

those trends that are relevant to an understanding of the transformation of the arms industry in East Central Europe.[13]

Arms producers

Consolidation and the emergence of global giants

Reacting to shrinking military budgets, the post-cold war decay of arms markets and increasing costs due to the revolution in military affairs, in 1993 the administration of President Bill Clinton presented US arms producers with a stark choice: consolidate or perish.[14] The industry responded with impressive speed and efficiency. Suzanne Patrick, US Deputy Under Secretary of Defense for Industrial Policy, noted that 'What were 51 separate U.S. defense business units in 1980 became 5 large defense-focused firms by 1997—and those 5 firms became 4 by 2001. . . . The early to mid-1990s saw the merging of industry giants, and soon a repositioning of smaller and mid-size firms.'[15] By the early 2000s consolidations, mergers and acquisitions led to a leaner and more flexible military sector and the emergence of four industrial arms-producing giants in the USA: Boeing, Lockheed Martin, Northrop Grumman and Raytheon. Smaller companies that managed to stabilize their positions at that time included General Dynamics, General Electric (GE), Honeywell, United Defense Industries (which was later acquired by BAE Systems) and United Technologies Cor-

[13] See e.g. eds Markusen and Costigan (note 10); Bitzinger, 'Globalization in the post-cold war defense industry' (note 10); Jones, S. G., 'The rise of Europe's defense industry', US–Europe Analysis Series, Brookings Institution, May 2005, <http://www.brookings.edu/papers/2005/05europe_jones.aspx>; Dunne, J. P. et al., 'Concentration in the international arms industry', University of the West of England, School of Economics, Economics Discussion Paper Series no. 03/01, 2003, <http://carecon.org.uk/DPs/>; Flournoy, M. A. et al., *European Defense Integration: Bridging the Gap between Strategy and Capabilities* (Center for Strategic and International Studies: Washington, DC, Oct. 2005); Vlachos-Dengler (note 8); Masson, H. and Paulin, C., *Perspectives d'évolution de l'industrie de défense en Europe* [Outlook for the defence industry in Europe] (Fondation pour la Recherche Stratégique: Paris, Sep. 2007); Thompson, L. C. and Ronis, S. R. (eds), *U.S. Defense Industrial Base: National Security Implications of a Globalized World* (National Defense University Press: Washington, DC, 2006); James, A. D., 'The defence industry and "transformation": a European perspective,' *Security Challenges*, vol. 4, no. 4 (summer 2008), pp. 39–55; Ben-Ari, G. et al., Defense-Industrial Initiatives Group, *European Defense Trends: Budgets, Regulatory Frameworks, and the Industrial Base*, Annotated Brief (Center for Strategic and International Studies: Washington, DC, May 2010); Guay, T., 'Globalization and the transatlantic defense industrial base', *UNISCI Discussion Papers*, no. 19 (Jan. 2009); Bialos et al. (note 7); and ed. Bitzinger, *The Modern Defense Industry* (note 10).

[14] Oden, M., 'Cashing in, cashing out, and converting: restructuring of the defense industrial base in the 1990s', eds Markusen and Costigan (note 10). See also Dunne, J. P. and Surry, E., 'Arms production', *SIPRI Yearbook 2006: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2006), pp. 387–418.

[15] Patrick, S., Under Secretary of Defense (Industrial Policy), Remarks at an American Institute of Aeronautics and Astronautics Conference, Feb. 2002, quoted in Bialos, Fisher and Koehl (note 7), vol. 2, p. 638.

poration (UTC). Another 5 to 10 mid-sized companies and many smaller niche players survived.[16]

In contrast to the past, when large arms firms specialized in one or two areas of weapon production, today's US 'mega defence companies' are active in several fields from aerospace to land systems and each has expanded into the IT sector, so that they are engaged in electronics and software as well. They have become 'critical lead system integrators' able to manage large, complicated acquisition programmes, amalgamating several disparate systems of military hardware and software into a single functioning arrangement of systems.[17]

The US arms-producing giants dominate the world's arms industry. In 2011, 4 of the 5 top defence companies and 7 of the top 10 such companies were US firms. In the same year, the largest of the US giants, Lockheed Martin, realized $36 billion in defence revenues. This sum is more than twice the combined defence budgets of the six ECE countries ($17.6 billion) that are discussed in this book. The largest Europe-based company, BAE Systems, which has extremely tight connections with the US defence industrial base, realized $29 billion.[18]

West European firms reacted to the changed international environment more slowly and less radically than their US counterparts. They were less competitive and dynamic and functioned in a more permissive environment with more government support. European economic integration efforts had a limited impact on Europe's arms industry.[19] Even though arms trade became more liberalized, with several European countries, principally the United Kingdom, purchasing weapons from non-European sources, the status of the national champions was not challenged. Changes started when European governments and institutions realized that the fundamental transformations that were taking place in the US arms industry base might threaten the survival of their own arms industries and called for revamping of the sector.

[16] Vlachos-Dengler (note 8); and Flournoy et al. (note 13). By 2011 General Dynamics had higher arms sales than Raytheon and Northrop Grumman. Jackson, S. T., 'The SIPRI Top 100 arms-producing companies, 2011', *SIPRI Yearbook 2013: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2013).

[17] ed. Bitzinger, *The Modern Defense Industry* (note 10), pp. 176–77.

[18] Jackson (note 16); and SIPRI Military Expenditure Database, <http://www.sipri.org/databases/milex>.

[19] Article 223 (later 296 and now 346) of the Treaty of Rome excludes the 'production of or trade in arms, munitions and war material' from EU legislation and regulations in deference to the member states' national security concerns. European Commission, Interpretative Communication on the application of Article 296 of the Treaty in the field of defence procurement, COM(2006) 779 final, Brussels, 7 Dec. 2006. The Treaty Establishing the European Economic Community (Treaty of Rome) was signed on 25 Mar. 1957 and entered into force on 1 Jan. 1958. The formal title was changed in 1992 to the Treaty Establishing the European Community and again in 2009 to the Treaty on the Functioning of the European Union. The original and amended texts are available at <http://eur-lex.europa.eu/en/treaties/index.htm>.

As a result of the mergers and acquisitions process that followed, by the mid-2000s five giants—BAE Systems, the European Aeronautic Defence and Space Company (EADS, now known as Airbus Group), Finmeccanica, MBDA (a joint venture co-owned by BAE Systems, EADS and Finmeccanica) and Thales—had emerged in Europe and solidified their positions on the world scene. They remain among the top 10 arms producers measured by sales.[20] Both EADS and MBDA are pan-European rather than national ventures.[21]

Subcontractors

The arms industry giants are only the tip of an iceberg. An extremely diverse, complex, dynamic and often opaque world exists beneath them comprising globally dispersed, multi-level networks of subcontractors providing specialized knowledge, products and capacity far more quickly and cheaply than the primary producers could. Subcontractors and intermediaries far outnumber primary producers. The increasing marketization of the military sector has also prompted an impressive proliferation of military-related trade, consultancy, logistics and service companies. This trend has been boosted by the fact that ministries of defence have recently started to seek the services of system integrators, rather than producers of particular final products or platforms. They increasingly articulate their requests in the form of a need or a target instead of a specific product. Tender winners are expected to provide the best that the industry can produce, whether civil or military, not only what their own company or team can offer.

Subcontractors are diverse and range in size from those that employ a handful of people to those that employ thousands. They can be exclusively defence-oriented or completely civil, or any combination. They can also be traditional or high-tech producers or integrators for other subcontractors. Some are state owned, some private. Companies in subcontractor networks tend to be smaller than prime contractors (a contractor that has a direct contract for an entire project), but they are often more advanced technologically and more efficient. Cutting-edge technologies, innovations, new products and methods are often developed at the lower echelons of the supplier chain. A recent trend is for prime contractors to share R&D and development costs with their suppliers in order to cut expenses, lower risks and reinforce ties with them.[22]

[20] Vlachos-Dengler (note 8), p. 4; and Jackson (note 16).

[21] Vlachos-Dengler (note 8); Schmitt, B. (ed.), *Between Cooperation and Competition: The Transatlantic Defence Market*, Chaillot Paper no. 44 (Western European Union Institute for Security Studies: Paris, Jan. 2001); and Schmitt, B., *The European Union and Armaments: Getting a Bigger Bang for the Euro*, Chaillot Paper no. 63 (Western European Union Institute for Security Studies: Paris, Aug. 2003), p. 10.

[22] Hayward (note 6); and Vlachos-Dengler (note 8).

Usually a subcontractor's goal is to become a first-tier or, ideally, an exclusive supplier. While this status might assure financial and existential security, it can also lead to over-dependence on one major customer or overspecialization. At the bottom of the supplier chain, companies have to weigh the costs and benefits of low-level, restricted participation in major supplier chains against production that is focused on other markets.

Relationships between major prime contractors and their subcontractors are generally obscure. The prime contractors may be awarded major procurement deals and, subsequently, place orders of considerable size with subcontractors. However, smaller and more flexible companies with specialized products or know-how enjoy more freedom and can focus on minor defence-related subcontracts or create alliances with a wide range of firms that often compete with each other. Before a major procurement contract is awarded, the bidders build up parallel supplier chains, often employing the same subcontractors. Subcontractors are sometimes able to serve two masters and benefit from their competition until a contract is signed. This practice makes the sector more flexible but can push prices up and lead to a considerable waste of resources.[23]

Diversity and blurring identities

Despite the period of consolidation in the arms industry, the sector today is more diverse than ever before. In part this is because privatization, internationalization and other transformations have taken place at different paces and to different extents in different parts of the world. Some arms-producing companies have become integrated industry segments of transnational corporations; some traditional arms producers have enjoyed generous government support as national flagships, while others have been left alone to struggle for survival; and still others are dynamic newcomers that are eager to assert their place on the market. Some companies are linked through intergovernmental cooperative projects; some create their own guilds or lobbies; and some try to fend for themselves. Depending on their position in the international markets and the domestic economy, and the nature of the company, they have reacted differently to economic changes and security threats.

One aspect of diversification is that arms industry firms today have multiple identities, whose differences are often barely discernible. For example, it has become increasingly difficult to define the national identity of many companies since production premises, markets and ownership are not necessarily at the same geographical location, and the development of new products can involve input from subcontractors around the globe. The

[23] On the subtle play of competition and cooperation in these projects see Kapstein, E. B., 'Capturing Fortress Europe: international collaboration and the Joint Strike Fighter', *Survival*, vol. 46, no. 3 (autumn 2004), pp. 137–60.

share of external inputs in military development and production is very high in the USA, where market protection is strong, and may be even higher in the European arms industry.[24] One major consequence of the creation of wide and complex subcontractor networks is that borders between national and international entities are becoming ever more blurred.

Privatization has blurred ownership identities in the arms industry. Privatization of the arms industry and of other defence-related activities manifests itself in a variety of forms, including off-the-shelf procurement, the outsourcing of security-related services, the use of private security firms, public–private partnerships (partnerships between government and the private sector) and the privatization of arms industry assets. State ownership in the arms industry, which still exists but at a much lower level than 20 years ago, provides a degree of protection and stability to the industry but is often regarded with suspicion by potential business partners and tends to push down the market value of arms producers.[25] In principle, privatization can open up the sector and push it towards better performance. The breaking up of state monopolies and the softening of the secrecy rules that traditionally characterized the arms industry are welcome signs of increasing transparency. At the same time, privatization inevitably turns the provision of security into a commercial undertaking that has serious risks.[26] Along with globalization, the increasing commercialization complicates the identification of a company's motivations and activities. Manpower issues or export orientation have one meaning for companies that are firmly implanted in a national economic context and another for those that are part of a loose network of producers, integrators and traders or those that function as enclaves in isolation. Furthermore, while public provision of security is expected to serve the common good in a region's or country's security, at least in principle, private undertakings are primarily geared towards maximizing profit. There is thus justified concern about the proliferation of purely private contractors in the military

[24] This is not new phenomenon. Pierre A. Chao's examples, from the creation of the atom bomb by refugees from Central Europe after World War II to the design of the next generation of the F-35 (Joint Strike Fighter) using a wide array of European (mostly British) components, convincingly demonstrate that none of the outstanding components of the US military arsenal has been developed without outside help. Chao, P. A., 'The future of the US defense industrial base: national security implications of a globalized world', eds Thompson and Ronis (note 13), pp. 4–5.

[25] On the varying degrees of privatization in the European arms industry see O'Donnell, C. M., 'How should Europe respond to sovereign investors in its defence sector?', Policy Brief, Center for European Reform, Sep. 2010, <http://www.cer.org.uk/publications/archive/policy-brief/2010/how-should-europe-respond-sovereign-investors-its-defence-sec>.

[26] In his presentation of the stages of the internationalization of defence-related production and trade Bitzinger notes that the present stage of the process is principally driven by economic and not strategic considerations as it was in the past. Bitzinger, 'Globalization in the post-cold war defense industry' (note 10).

field.[27] Commercial confidentiality also provides new obstacles to transparency.

Civil versus military identity has also become difficult to distinguish. The merging of civil and military activities and the increasing use of dual-use products and technology (i.e. those that have both civil and military applications) have made the boundaries of the military sector more difficult to delineate. Even companies with no military background can now win major military contracts. Most arms industry actors have a significant share of civil production in order to take advantage of dual uses of their technologies and to compensate for the fluctuations of the arms or civil markets. However, a critical mass of arms-related output or revenues is generally necessary for companies to be considered arms-related entities. This critical mass depends on the nature of the production, the size of the company and external factors, such as security certificates, the adaptation of military standards and participation in military networks. In deciding how much of their resources to devote to defence-related work, companies seek an optimal or convenient balance between full military sector dependence and being able to generate enough revenue to make it worthwhile to accept the complications and restrictions that are specific to the field. Generally, most companies aim for a mix of civil and military activities. It is an open—and perhaps redundant—question whether this leads to the civilization of military production, the militarization of civil production or a combination of the two.

Uneven development

Arms producers and related companies operate on a playing field that is far from level. Assets, production facilities, resources, know-how and market access are unevenly distributed. The sector is defined by the needs and activities of the large players. The global dominance of US-based arms producers is undisputed. While the UK's BAE Systems had the highest arms sales of any arms producer worldwide in 2008, global arms production was still dominated by US firms. In 2011 the combined arms sales of the top four US players—Boeing, Lockheed Martin, Raytheon and General Dynamics (which had replaced Northrop Grumman in the top four)—was $114 billion, compared to $69.6 billion for the top four European producers, BAE Systems, EADS, Finmeccanica and Thales.[28] In Europe the big countries and their large companies also set the defence and security agenda. Arms industry assets and their financing were and continue to be concentrated in

[27] See e.g. Bailes, A. J. K. and Frommelt, I. (eds), SIPRI, *Business and Security: Public–Private Sector Relationships in a New Security Environment* (Oxford University Press: Oxford, 2004); and Markusen, A., *The Case against Privatizing National Security* (Council on Foreign Relations: New York, 2001).

[28] Jackson (note 16). See more in Neuman, S. G., 'Power, influence, and hierarchy: defense industries in a unipolar world', *Defence and Peace Economics*, vol. 21, no. 1 (2010), pp. 105–34.

France, Germany, Italy, Spain, Sweden and the UK, which in 2001 represented more than 90 per cent of Europe's arms industry capabilities, 85 per cent of EU military spending and 98 per cent of military R&D expenditure.[29] In 2012 four countries—France, Germany, Italy and the UK—provided approximately 73 per cent of EU defence spending. With the addition of Spain, the Netherlands, Poland, Greece, Sweden and Belgium, 10 countries accounted for 91 per cent of EU spending.[30]

These differences are likely to increase since the uneven nature of development in the sector has been accentuated in the past two decades. The gaps between European and US defence and procurement budgets and R&D expenditure are increasing. The dissimilarity between the size, markets, turnover and business opportunities of European and US companies is also growing. On both sides of the Atlantic the gap between the large-scale, dominant arms-producing companies and the rest of the national arms industry is widening as well.

Significant differences are increasing between the major arms-producing branches in terms of technological level, asset value, size, degree of integration, international networks, market share, organizational structure and way of functioning. For example, at the high-end of the industry, the aerospace and IT branches are characterized by cutting-edge technology, high-quality inputs and substantial R&D investment. They are extremely capital-intensive, have long research, application and production cycles, and provide a limited amount of often customized, expensive items to specific, usually government-related markets, in a selected circle of countries. At the same time, at the bottom of the sector, the bulk of the traditional SALW producers are geared towards low-capital-intensive, relatively cheap mass production, with comparatively short production cycles, targeting a wide range of markets all over the world. Firms in other sectors between these polar opposites, such as the conventional heavy armament or naval construction firms, display significant differences and are also configured in a variety of ways.

The increasing differentiation and uneven development is accentuated further by the varying pace of development in the different parts of the world. Arms industry consolidation followed dissimilar rhythms on the opposite sides of the Atlantic. West European governments only began to encourage industrial consolidation in 1997–98, by which time the consolidation process in the USA was already slowing.[31] By the time a handful of

[29] ed. Schmitt (note 21), p. 10.

[30] Keohane, D. and Blommestijn, C., 'Strength in numbers? Comparing EU military capabilities in 2009 with 1999', Policy Brief no. 5, European Union Institute for Security Studies, Dec 2009, <http://www.iss.europa.eu/publications/detail/article/strength-in-numbers-comparing-eu-military-capabilities-in-2009-with-1999/>, p. 3.

[31] Jones (note 13), p. 5; and Jones, S. G., 'The rise of a European defense', *Political Science Quarterly*, vol. 121, no. 2 (summer 2006), pp. 241–67.

European giants emerged and were ready to compete, cooperate or merge with their US counterparts, the USA's policy was focused on promoting and protecting its domestic arms industry. When European military policy began to be institutionalized, with increasing emphasis on the development of a predominantly European arms industry base in the early 2000s, George W. Bush, then serving his second term as US President, sought to make US policy less exclusive.

When West European and US firms were busy merging and acquiring new companies, the arms producers in East Central Europe were experiencing a period of decentralization and disintegration. By the early 2000s, when the West European and US firms had started to look for production partners in the ECE countries, only Poland and Romania had relatively sizeable arms-producing companies because only they had not dismantled their flagship arms producers. None of the Top 100 arms producers for 2011 identified by SIPRI was based in East Central Europe.[32]

The dissimilarities between the segments of the global arms industry are so marked that they can appear to belong to different eras. At one end of the scale 'futuristic' military developers and producers supply sophisticated, high-tech weapons that can be used to wage virtual wars on their design tables and, ultimately, in the field. At the other are local non-state actors taking an entirely different approach and using simpler more traditional and even crude but effective improvised weapons. The meeting of these different realities in asymmetrical conflict can prove catastrophic, as recent experiences in Afghanistan and Iraq have painfully demonstrated. Actors who are able to mediate between these dramatically different worlds can be extremely useful and help to prevent conflict or assist in crisis management. Unfortunately, most of them have instead pursued personal enrichment or destructive projects. The Russian businessman Viktor Bout made his fortune by bridging the development gaps between the advanced and traditional segments of global arms production.[33] The 2001 terrorist attacks on the USA used a combination of traditional guerrilla techniques and sophisticated IT.[34] One of the strengths of organizations like al-Qaeda is their employment of a unique and efficient combination of such elements.

[32] Jackson (note 16).

[33] Farah, D. and Braun, S., 'The merchant of death', *Foreign Policy*, Nov./Dec. 2006; Bidder, B., Follath, E. and Schepp, M., 'Trapping the lord of war, the rise and fall of Viktor Bout', *Der Spiegel*, 10 June 2010; Fuller, T., 'Arms suspect vows to win case in U.S. after extradition order', *New York Times*, 20 Aug. 2010; 'Bout case: new intrigue in Manhattan court', Voice of Russia, 22 July 2011, <http://english.ruvr.ru/2011/07/22/53593875.html>; and US Attorney, Southern District of New York, 'International arms dealer Viktor Bout sentenced in Manhattan federal court to 25 years in prison for terrorism crimes', Press release, 5 Apr. 2012, <http://www.justice.gov/usao/nys/pressreleases/April12/boutviktorsentencingpr.pdf>.

[34] Stepanova, E., *Terrorism in Asymmetrical Conflict: Ideological and Structural Aspects*, SIPRI Research Report no. 23 (Oxford University Press: Oxford, 2008).

A changing market

The end of the cold war had a huge impact on military budgets and the overall size of the international arms market. For the cold war adversaries the emphasis shifted from building up to massively reducing their conventional arsenals. This not only affected their procurement programmes, but also meant that new production had to compete with second-hand equipment in the export markets. European military budgets remained stagnant or increased only modestly, which naturally affected the arms market. Since the 1990s the bulk of European countries have had decreasing, flat or at most slightly increasing military budgets except for the new NATO members, which pledged to raise their military expenditure to match (or at least approach) the alliance average.[35] The ECE countries increased their budgets during that period, and approximately 20 per cent of their defence budgets were spent on equipment, including research and development. The level of spending was on a par with that of France in the same period. Nonetheless, military R&D dropped by 16 per cent from €12.3 billion ($11.0 billion) to €10.3 billion ($15.1 billion) between 2001 and 2008.[36]

In the USA the downward trend reversed and the military budget started to increase in the late 1990s. By 2005 it had reached $503 billion, representing approximately half of the world's total military spending and over three-quarters of global military R&D spending.[37] The 2007 budget also increased, with a significant portion allocated for weapon programmes. The 2008 budget pushed military spending higher than it had been since World War II, exceeding spending at the height of the 1950–53 Korean War and the 1965–73 US military intervention in Viet Nam.[38] In 2009 US military spending rose to $661 billion.[39] The share of procurement has grown steadily in the US military budget, while it has stagnated or increased only modestly in the military budgets of most European countries. Between 1991 and 2004 total defence spending of the six largest EU arms-producing countries (France, Germany, Italy, Spain, Sweden and the UK) fell by 12 per cent. Military-related R&D fell 47 per cent between 1999 and 2003, from $8.1 billion to $3.9 billion and has been basically flat since then. US spending on procurement and R&D more than doubled between 2000 and 2008, increasing from $116 billion to $255 billion. According to European Defence Agency (EDA) figures, in 2007 EU member states spent $60 billion on equipment and R&D; in the same year the USA spent $154.9 billion, more

[35] SIPRI Military Expenditure Database (note 18).
[36] Ben-Ari et al. (note 13), pp. 1–8, 31.
[37] SIPRI Military Expenditure Database (note 18); and Chao (note 24), pp. 4–5.
[38] Matthews, W., 'The GDP argument: should defense spending be tied to U.S. economic growth?', *Armed Forces Journal*, Mar. 2007.
[39] SIPRI Military Expenditure Database (note 18).

than three times more on equipment and almost six times more on R&D. The share of equipment and R&D in the US defence budget is approximately one-third, while the EU members allocate 20.5 per cent for equipment and R&D.[40]

US arms producers have been able to count on a gradually increasing homeland security budget, which has provided them with another valuable alternative market. The military budgets of certain emerging countries, such as China, India, Russia and Saudi Arabia, have also increased.[41] Some new international agencies, such as the EDA, have also entered the market, albeit with a relatively limited budget.

The impact of the financial crisis that began in 2008 did not immediately affect defence budgets since most large-scale procurement projects had already been planned or begun, but experts expected substantial real cuts in defence outlays after 2011 because of mounting inflationary and fiscal pressures.[42] By 2010 most defence budgets had been significantly downsized.

The world arms market has also experienced significant changes. In the mid-1990s, during a temporary military budget slump, the Clinton administration pushed to increase US military exports worldwide. In the 1980s the Soviet Union and the USA each had one-third of the global military export market; by 2000 the USA had more than half of the same market with most of the gains at the expense of the former Warsaw Pact countries.[43] Russia later resumed arms exporting on a large scale, but it continues to lag behind the USA. A handful of powerful competitors, such as the European giants, hope to challenge the USA's dominant position, but US-based arms producers dominate two of the world's most important arms markets—the US domestic market and export markets. The US defence market accounts for almost half of the world's arms purchases, and 90 per cent of it is covered by US firms that regularly also capture 40–50 per cent of export markets. The large US domestic production runs allow US weapon systems to be sold outside the USA at very competitive prices.[44] The annual report of the Congressional Research Service stated that in 2008, during a drop in global arms sales, the USA signed weapon agreements valued at $37.8 billion, or 68.4 per cent of all global arms business.[45]

[40] ed. Bitzinger, *The Modern Defense Industry* (note 10), pp. 177, 181.

[41] Lague, D., 'Beijing increases defense spending', *New York Times*, 4 Mar. 2007; and Perlo-Freeman, S. et al, 'Military exenditure', *SIPRI Yearbook 2011: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2011).

[42] NATO Parliamentary Assembly, 'The global financial crisis and its impact on defence budgets', 2009 Annual Session, 178 ESC 09 E rev 1, information document, <http://www.nato-pa.int/default.asp?SHORTCUT=1928>; and Madslien, J., 'Military spending sets new record', BBC News, 8 June 2009, <http://news.bbc.co.uk/2/hi/8086117.stm>.

[43] Chao (note 24), p. 5.

[44] ed. Bitzinger, *The Modern Defense Industry* (note 10), pp. 177–78.

[45] Shanker, T., 'Despite slump, U.S. role as top arms supplier grows', *New York Times*, 7 Sep. 2009.

Transatlantic arms industry relations alternate between cooperation and competition. Companies on both sides of the Atlantic try to push each other out of the market while simultaneously seeking collaboration and, ultimately, co-ownership. Every move on the economic or political scene requires precise in-depth analysis and prompt reaction to change, a balance that necessitates extreme flexibility. European companies are eager to enter the lucrative and large US market, while also building up a primarily European-based industrial network. US firms jealously guard their unique relationship with the Department of Defense (DOD) and simultaneously look for inputs, partnerships and cooperation opportunities around the world. The US market is difficult to enter as a prime contractor or direct owner but offers advantageous opportunities at the subcontractor level. The cooperation–competition dynamic is also present in the interplay between the large established companies and some mid-sized conglomerates in the emerging economies that are gaining importance in the global defence industry.[46]

The role of the state

Despite increasing privatization, the role of the state remains important. The decisions of national governments are still the basis for an arms industry firm's existence and are of primary importance. Nevertheless, the relationship between states and domestic arms producers has become less exclusive. The new structure of the arms sector in theory means that companies have considerable freedom in the way they execute an order, while military decision makers are not limited to the product range of their countries' key companies. Thus, national governments depend less on their country's arms industry bases to arm their forces than they once did.

This is not always a matter of choice. In the ECE countries and elsewhere, governments are obliged to update their military arsenal with foreign products not only because such products may be cheaper or they need to enter international weapon networks, but also because many domestic facilities have been destroyed since the end of the cold war. The surviving firms are unable to supply products that meet the new requirements. Large-scale procurement decisions have enormous political, economic and diplomatic ramifications and thus are subject to substantial manipulation and direct intervention by states, which are urged to do so by their key companies. This was particularly the case for the ECE countries when they were newcomers to the market and needed to modernize their armed

[46] ECORYS SCS Group, *FWC Sector Competitiveness Studies: Study on the Impact of Emerging Defence Markets and Competitors on the Competitiveness of the European Defence Sector*, Final report for the EU Commission (ECORYS: Rotterdam, 12 Feb. 2010); and 'Defense News top 100 for 2009', *Defense News*, 28 June 2010.

forces. They became the scene of spectacular competition between key arms industry players.

As far as the state's role in the arms industry is concerned, regional and country differences remain important. Countries' traditions and assets differ, as do their arms industry policies. Major differences exist in the share of state participation, market openness or R&D promotion. Some governments still find national flagships or their remnants indispensable and take measures to preserve and protect them. The degree and form of protection vary from practically abandoning domestic industrial bases, as in Slovakia and Sweden, to protecting national 'monuments', as in France and Poland. Differences clearly manifest themselves in procurement decisions. In the USA prime contractors are almost exclusively domestic.[47] In Europe there is a clear difference between the British and the French models. British policy is based on a value-for-money principle that opens up military procurement to foreign companies. In France, where state involvement in the sector is still considerable, procurement decisions are often aimed at benefiting domestic firms, in some cases even without a formal tender.[48]

The balance of power between governments, international institutions and leading arms producers is permanently changing, but politics still often have the upper hand. Even in the most liberal and free market-oriented countries, state agencies continue to intervene directly in the sector. There is a complex interplay between government and defence-related entities. The US arms industry consolidation wave of the 1990s, for example, was initiated by the government but led to a situation in which global arms industry firms became very efficient at convincing the government to choose what they had to offer.[49] The wave of US mergers ended when political actors intervened again; the last planned mega-merger in the USA was blocked by state agencies in the summer of 1998.[50]

Governments still have a wide array of tools with which to influence the sector, including procurement decisions and various forms of subsidy, such as funding for R&D, direct financial aid or export subsidies. Legislation is a powerful but less direct way to exercise power over the military sector. Governments decide what to emphasize, whether to preserve and promote their national arms-production base or push it towards international inte-

[47] ed. Bitzinger, *The Modern Defense Industry* (note 10), p. 177. See also Kluth, M., 'The politics and economics of European defense industry consolidation', Unpublished manuscript, 2006, p. 8; and Spiegel, P., 'Navy deal will test Pentagon priorities', *Financial Times*, 27 May 2004.

[48] John Lovering cites the examples of a French aircraft carrier contract that was awarded to the French company DCNS without prior tender and in Italy the easily won tenders of state-controlled Fincantieri. Lovering, J., 'Which way to turn? The European defense industry after the cold war', eds Markusen and Costigan (note 10). On the strong imprint of domestic suppliers see also Bialos et al. (note 7); and Kluth (note 47).

[49] eds Markusen and Costigan (note 10).

[50] Vlachos-Dengler (note 8), pp. 71–72.

gration or, most commonly, what combination of the two to select. Foreign procurement, or the threat of it, is also often used to discipline the largest national arms producers and to stimulate greater competitiveness among domestic firms.

From the perspective of the arms-producing companies, the changing relationship with the state has created a situation that is more complex, yet provides greater opportunities. They can no longer operate under the comfortable assumption that they have a captive market; procurement has become a more open process where they must bid, compete and prove their competence. At the same time, as their economic weight has increased, the giant arms producers have also accrued political power. Both European and US giants operate in what is practically an oligopoly. Their status and stature make it possible for them to influence their governments' policies, even shaping arms industry guidelines or setting the terms of government contracts that they will undertake. In the USA core arms industry actors have successfully lobbied for the introduction of 'buy American', 'tightening home security', 'post-war reconstruction' and 'global war on terrorism' policies and have benefited from the associated business opportunities.

The largest arms producers also undertake immense and costly restructuring and development projects that governments are often obliged to finance, although with little control over the process or guarantee of its efficiency. Financial markets also regularly overrate the arms-producing giants, which further raises their profile and economic importance. The economic and political clout of the arms-producing giants, the scope of their activities and the influence of their interest groups, which goes far beyond national boundaries, even enable them to act as supranational entities and have considerable impact on international relations and policy-making. As early as the 1990s, when the economic weight and political power of the arms-producing giants was less overwhelming than it is today, several observers warned of a situation in which neither market forces nor government measures could counterbalance the influence of the major arms companies.[51]

European arms industry firms seem to aspire to relationships like those between the DOD and the core arms producers in the USA. They usually pursue a two-track policy. They lobby national governments, using the arguments of sovereign defence and security policy. Simultaneously, they seek ways to enter into the supplier chains of global arms companies. Recently, they have also increasingly used the large room for manoeuvre that has opened as a result of EU-level defence and security initiatives and Europe-level organization of arms industry actors. Arms companies rapidly

[51] Markusen, A. and Costigan, S., 'The military industrial challenge', eds Markusen and Costigan (note 10); and Markusen, A., 'The rise of world weapons', *Foreign Policy*, no. 114 (spring 1999), pp. 40–51.

realized that this new situation would enable them to act above the heads of national governments. By influencing defence-related legislation and policy at the European level, they have occasionally achieved more than they could via individual deals that must constantly be adjusted to the stop-and-go policies of national governments. The imprint of the European arms industry actors is increasingly visible on both national and international arms industry policy guidelines.

Limitations and weaknesses of the new arms industry structure

One of the declared aims of the state-induced mega-mergers was to increase efficiency in the defence sector and provide better economic choices for governments. In principle, the emergence of new types of firms at the centre of the defence scene has the potential to improve economic efficiency and the quality of security provision. Lead system integrators should be able to increase the flexibility of the procurement process, diminish its costs and increase the speed of delivery and the quality of the products provided.

The results, however, have been mixed. Consolidation undoubtedly brought some efficiency gains, particularly in financial and operational terms. A significant upsurge also occurred in military technology development, which was made possible by the pooling of resources. For shareholders the value and profit margins of arms-producing companies are still high and, even after the 2008 financial meltdown, the defence industry has remained an attractive investment option. According to Richard Aboulafia, vice president of the Virginia-based Teal Group, defence stocks still represent 'a refuge for investors, given mounting fears about a double-dip recession. . . . It's a safe haven compared to what else is out there. . . . It's as close as you can get to guaranteed returns.'[52]

However, the profit-generating capacity of the firms does not necessarily coincide with efficiency measured in terms of productivity, favourable input and output, investment and return ratios, and increased internal synergy. Neither does it necessarily provide more security for taxpayers and customers. From the perspective of future technological and economic development, mergers do not seem to have brought the desired beneficial results. The giant actors of the global arms industry are not necessarily outstanding performers. The European Big Four (BAE Systems, EADS, Finmeccanica and Thales) are not even very profitable.[53] A recent study on

[52] Quoted in Shalal-Esa, A., 'U.S. defense industry girding for predicted slump', Reuters, 3 Sep. 2010. See also Ben-Ari et al. (note 13), pp. 9–11; 'Defence', Special report, *Financial Times*, 8 Sep. 2009; and Boessenkool, A., 'Firms seek strategies for riding out downturn', *Defense News*, 20 July 2009.

[53] Vlachos-Dengler (note 8), p. 55.

the European arms industry shows that smaller defence and security companies tend to be more efficient and profitable than their larger competitors. The opposite trend applies in the civil industry.[54]

In 1999 Ann Markusen drew attention to the facts that 'surprisingly few plants' have closed in the wave of arms industry consolidations in the 1990s in the USA and that 'mergers have diminished competition, discouraged reinvestment in civilian product lines, and concentrated political power in the hands of a few firms'.[55] In 2005 Jacques Gansler, former Under Secretary of Defense for Acquisition, Technology, and Logistics in the Clinton administration, also noted that the US mega-mergers had led to the consolidation of firms at the financial level but tended to leave factories untouched, reduced competition and killed 'innovation . . . "the real benefit of competition"'.[56] US arms industry reports tend to confirm this and highlight the fact that the price of weapon systems is continually rising.[57] A 2009 US Government Accountability Office report found that 96 of the largest weapon systems were nearly $300 billion over budget.[58]

One possible explanation for this is that the restructuring process was interrupted by changes in the international security environment and military expenditure increases from the late 1990s. Arms contractors saw with relief new opportunities opening up that made survival possible without them having to undertake demanding internal restructuring. It is revealing that it is now, more than a decade later and when confronted with the present crisis and budgetary restrictions, the world's leading arms firms have started to consider radical measures to improve their efficiency and reduce production costs.[59] Another explanation may lie in the changing nature of arms producers. The trade and logistics companies and financial investors becoming increasingly involved in arms production may have particular networking, organizing and management skills that primary producers lack. They may also be able to deliver products faster and without regard to the limitations of a specific company or sector and be able to spot synergies and hidden reserves where a single company could not. However, there is an implicit danger with this increasing separation from the economic and technical realities of production. Financial investors are rarely aware of or

[54] Ben-Ari et al. (note 13), pp. 34–36.

[55] Markusen (note 51), p. 41.

[56] Quoted in Jacobson, K., 'Jacques Gansler wonders what has happened to the defense industrial base', *Manufacturing & Technology News*, 14 Nov. 2005.

[57] Matthews, W., 'Monopoly money: relying on single suppliers could cost in the long run', *Armed Forces Journal*, Mar. 2006; and Matthews, W., 'Dis-integration: is private management of big defense programs out of control?', *Armed Forces Journal*, Feb. 2006.

[58] Epstein, K., 'Defense budget reflects shifting priorities: budget-cutting meets new geopolitical and fiscal realities in the Defense Secretary's proposed spending plan', *Bloomberg BusinessWeek*, 6 Apr. 2009.

[59] Shalal-Esa (note 52); 'The cost of weapons' (note 8); and Seetharaman, D., 'U.S. arms makers adjust to new realities', Reuters, 8 Sep. 2010.

interested in the realities of the production process. They may neglect important monetary, material or other reserves, synergies and the inherent development potential of the existing assets, while imposing other, primarily financial, profitability considerations. With the gradual alienation from the production process and its practical constraints and potentials, the arms industry is losing its built-in safety valves.

Furthermore, governments have less power over basically commercial companies than over exclusively military prime contractors. Whatever means states use to try to maintain control over the sector, if privately owned arms firms are responsible to institutional investors, the company management must consider financial interests, often at the expense of production. As Gansler noted, they primarily serve 'the near-term objectives that Wall Street is driving them to'.[60] These tendencies have contributed to ballooning prices and serious delays in deliveries of major weapon systems.[61] Markusen noted that the situation is not only inefficient but potentially dangerous: 'mergers and weapons deals, which serve short-term stockholder interests and generate generous commissions, will not necessarily ensure efficient defense outfitting or, for that matter, international security'.[62]

The post-2008 economic crisis has revealed the deep-rooted problems and destructive nature of the sweeping 'financialization' of the economy.[63] Most arms producers of the leading states are tightly connected to the main financial investors. Their future and the future of the large production networks attached to them depend to a great extent on the directions the investment companies and the governments of their home countries follow in the future. Thanks to partnership with institutional investors they could become even more powerful, but they could also be marginalized. At present it is difficult to foresee what will happen. One thing is clear: their fate is much less tied to security considerations than to economic or financial ones, which is in itself a major security threat.

Democratic control, monitoring and risk

Procurement decisions and legal frameworks are the main tools by which national governments and international institutions control the industry and, to a certain extent, guide it towards acting for the common good. Thus, the emerging tendency of arms industries to seek to shape government

[60] Quoted in Jacobson (note 56).
[61] Matthews, 'Dis-integration' (note 57).
[62] Markusen (note 51), p. 48.
[63] Gerald A. Epstein defines financialization as 'the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies'. Epstein, G. A. (ed.), 'Introduction: financialization and the world economy', *Financialization and the World Economy* (Edward Elgar: Northampton, MA, 2006), p. 3.

policy is extremely dangerous. According to Transparency International, the arms industry is the world's second most corrupt economic sector.[64]

It does not help that the sector has become more difficult to observe and control with the multiplication of arms industry actors, forms of production and transfer, and opportunities to interfere in national and international legislation.[65] The internationalization of the production process is far more advanced at the lower levels of the supplier chain than at the prime contractor level, adding to the difficulty of monitoring. Hence, it is often at this level that the undesired proliferation of arms-related know-how and technology takes place. International criminal and terrorist networks are becoming ever more important buyers and producers of a wide range of weapons, which has led to the creation of expanding new markets and has generated new spirals of violence that are difficult to control.

Civil society organizations and even some representatives of the traditional political establishment have called for more transparency and democratic control, demonstrating a growing awareness of this dangerous side effect of the sector's modernization. Stricter international regulation of the arms industry and markets should, in principle, cover a wider range of activities and contain potential problems. Furthermore, international civil society organizations have in recent years become increasingly efficient at representing global interests, sometimes almost taking on or contributing to the functions of state and international organizations, for example by mobilizing political forces to strengthen control over arms production and the arms trade.

A widening array of questions urgently needs global action and the widest possible participation of governments and non-governmental organizations (NGOs). Recent decades have witnessed the increasing mobilization of civil society in arms control and related areas, the successful introduction of binding regulations and the establishment of international agencies to safeguard global security. Even though, for the time being, the implementation of these regulations is less than satisfactory, the impressive campaign to ban landmines and the initiative to control the trade in SALW are major achievements of these movements. Independent research and monitoring agencies, such as Amnesty International, Human Rights Watch, the International Crisis Group, Saferworld, SIPRI and the Small Arms

[64] Transparency International, 'Transparency International UK (TI UK) welcomes the announcement of the creation of a European defence industry anti-corruption working group', Press release, July 2006, <http://archive.transparency.org/news_room/in_focus/2006/defence_sector>.

[65] Bitzinger, 'Globalization in the post-cold war defense industry' (note 10), p. 184; Hayward (note 6); James, A. D., 'The prospects for a transatlantic defence industry', ed. Schmitt (note 21); and Rohde, J. and James, A. D., *The Future of Transatlantic Armaments Co-operation*, German Institute for International and Security Affairs (SWP) Working Paper FG3-WP02 (SWP: Berlin, July 2004).

Survey, are becoming important means to control and contain the arms sector.[66]

III. The arms industries of East Central Europe: crisis and partial recovery

The fundamental changes that reshaped the global arms industry affected the arms industry actors of the ECE countries later than elsewhere because they were completely absorbed with their own complex transformation processes. The kinds of opportunity and risk presented by the changed situation were not immediately apparent to them.

In the process of systemic changes that completely reshaped their economic and political structures since the late 1980s, the countries of East Central Europe rushed to adopt free-market capitalism after decades of planned economy. In the early 1990s the region's economies suffered deep transition crises that were made worse by political instability. GDP levels fell sharply, often by two-digit numbers.[67] The arms industry was one of the worst hit branches, along with the textile and agriculture sectors.[68] Following the end of the cold war, military expenditure and the share of defence budgets devoted to procurement dropped dramatically in East Central Europe.[69] After decades of state protection, arms producers were increasingly exposed to the rigours of a market economy. Despite varying levels of residual state ownership, support and protection, they were forced to respond to market forces by restructuring, producing more marketable products (including civil goods), merging with or acquiring and absorbing their competitors, or simply closing down. Their task was particularly chal-

[66] See e.g. Control Arms, *Arms without Borders: Why a Globalized Trade Needs Global Controls*, (Amnesty International, International Action Network on Small Arms and Oxfam: London, Oct. 2006).

[67] Kornai, J., 'The postsocialist transition and the state: reflections in the light of Hungarian fiscal problems', *American Economic Review*, vol. 82, no. 2 (May 1992), pp. 1–21; and Kornai, J., 'The great transformation of Central Eastern Europe: success and disappointment', *Economics of Transition*, vol. 14. no. 2 (Apr. 2006), pp. 207–44; and Cowen Karp, R. (ed.), SIPRI, *Central and Eastern Europe: The Challenge of Transition* (Oxford University Press: Oxford, 1993). See also the Transition Reports of the European Bank for Reconstruction and Development (EBRD), in particular *Transition Report 2000: Employment, Skills and Transition* (EBRD: London, 2000); and *Transition Report 2009: Transition in Crisis?* (EBRD: London, 2009).

[68] On the post-cold war transformation of the East Central European arms industry see Anthony, I. (ed.), *The Future of the Defence Industries in Central and Eastern Europe*, SIPRI Research Report no. 7 (Oxford University Press: Oxford, 1994); Markusen, A. and Yudken, J., *Dismantling the Cold War Economy* (Basic Books: New York, 1992); and Kiss, Y., SIPRI, *The Defence Industry in East-Central Europe: Restructuring and Conversion* (Oxford University Press: Oxford, 1997).

[69] George, P. et al., 'World military expenditure', *SIPRI Yearbook 1995: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1995), pp. 408–14; and George, P., Courades Allbeck, A. and Loose-Weintraub, E., 'Military expenditure', *SIPRI Yearbook 1997: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1997), p. 180.

Table 2.1. Number of people employed in arms production in 1986 and 2000

Country	Employed in 1986	Employed in 2000
Bulgaria	30 000	5 000
Czech Republic	30 000	18 000
Hungary	30 000	2 000
Poland	250 000	60 000
Romania	90 000	16 000
Slovakia	75 000	50 000

Source: Bonn International Center for Conversion (BICC), *Conversion Survey: Global Disarmament, Demilitarization and Demobilization* (Nomos: Baden-Baden, May 2002), p. 153.

lenging, especially as the end of the cold war had virtually eliminated many of their traditional markets.

Between 1990 and 1994 arms industry output fell to 10 per cent of its late 1980s peak level in the former Czechoslovakia and in Hungary; to 10–30 per cent in both Bulgaria and Romania; and to approximately 50 per cent in Poland.[70]

Between 1986 and 2000 the number of people employed in arms production fell significantly (table 2.1). In 1993–94 a slow recovery started, thanks to overall economic improvements and changed government policies towards the sector. Economic growth resumed first in Poland, then in the Czech Republic, Hungary and Slovakia. Bulgaria began to show promising signs of recovery from 1998, and Romania started to reverse its downward trends in the early 2000s. The slow economic recovery provided the means for active arms industry policies when governments felt inclined to introduce new guidelines, as most did in reaction to the changed international environment and unresolved internal economic difficulties. This made possible partial consolidation of the sector involving a small group of the most dynamic companies, although the bulk of arms manufacturers stagnated or faced bankruptcy.

Arms industry policy in the ECE countries after the end of the cold war has had five stages. In the first stage, following the political turnovers in the late 1980s, radical dismantlement policies dominated. The national armed forces, military institutions and arms industries were directly associated with the former economic and political system and had an unfavourable reputation. Arms production was declared wasteful and inefficient, an unnecessary burden on the transforming economies. In the former Czechoslovakia arms production was condemned as harmful and immoral, both because of its impact on the economy and its ultimate *raison d'être*—war. State authorities in East Central Europe stopped supporting domestic arms

[70] Kiss (note 68).

makers. The way these new policies were introduced varied from country to country, from active state-promoted conversion programmes in the former Czechoslovakia to 'passive abandonment' in Hungary.

In the second stage, from the first half of the 1990s, new arguments emerged in decision-making circles claiming that the arms industry had to be rescued for economic reasons. This was the worst period of the transition crises in East Central Europe. The countries were overwhelmed by the enormous economic and social costs of transition and were desperately short of resources to address even the most urgent issues. In the past, the arms industry had been one of the leading export branches with a higher than average technological level and an excellent workforce. The supporters of the sector claimed that it should be preserved and promoted as a key export sector, a revenue generator, a major employer and a potential engine of growth. The ECE countries launched bold export promotion campaigns, targeting all possible market openings and trying to sell their immense stocks of conventional weapons. This was the period when they were often cited by international watchdogs for illicit arms trading with countries of dubious reputation or subject to United Nations sanctions.[71] It was during this period that President Václav Havel's Czech Republic suddenly changed its position and approved the promotion of foreign arms sales.

National security considerations were another major argument for rescuing the arms industry that was also expressed in economic terms. It was proposed that the newly independent countries needed to create their own security systems, which would only be affordable with domestic weapon production.

In the third stage, from 1994, several countries in East Central Europe were invited to start preparation for NATO membership. Defence-related actors welcomed the invitations with enthusiasm. The long overdue restructuring of the sector was placed in the overall framework of military sector reform geared towards admission. Domestic arms industries had to be prepared to cater to a significantly reduced and revamped national army and to be able to offer products for NATO-led operations. The new situation presented radical new challenges, including implementing NATO standards in arms production and an increased requirement for transparency. This was a turning point in the post-cold war arms industry restructuring process in East Central Europe. The range and depth of the change went far beyond earlier reforms, which had been based on existing, modestly increasing resources that the arms industry actors strove to reallocate and reorganize. Since NATO membership enjoyed significant popular backing, political decision makers were able to increase military

[71] Amnesty International et al. (note 66).

expenditure. In the upwardly revised military budgets, modernization played an important part. The arms producers were able to present optimistic scenarios, mobilize their reserves and seek additional resources in hope of future demand and revenues. State agencies were willing to contribute additional funding for the introduction of new products or the acquisition of quality certificates. Preparation for NATO membership was a major impetus for revamping the arms industry even for those countries that were not invited to join in the first enlargement round: Bulgaria, Romania and Slovakia, which at the time was explicitly nationalistic and anti-NATO.

During this period, from the mid-1990s to the early 2000s, the sector modestly expanded by mobilizing extra domestic resources and with some help from NATO, mostly within the Partnership for Peace (PFP, a programme of bilateral partnerships between NATO and individual states, which all of the ECE countries joined in early 1994). There were also some export deals, which were widely interpreted as harbingers of bright new times and of full-scale international integration with significant cooperation opportunities and abundant markets.

The fourth stage was dominated by preparations for EU accession. The ECE countries started discussions towards accession to the EU in the early 1990s and submitted applications for membership between 1994 and 1996, although they would not be accepted for several years. The prospect of EU membership had a less direct impact on the military sector than that of NATO membership but did accelerate and solidify major changes, particularly those related to organizational structures and regulatory changes. By this time the arms companies in East Central Europe felt more confident and were more actively seeking Western commercial contacts. They feared that once they become EU members some of their comparative advantages would erode; thus, they made efforts to accelerate modernization and to seek new international contacts.

In the fifth stage, the 2001 terrorist attacks on the USA and the Bush administration's subsequent 'global war on terrorism' had an unexpected direct impact on the arms industry in East Central Europe. Globally, military and security considerations gained priority over economic, political and social considerations and reorganized the system of alliances and enemies. Thanks to their geopolitical positions, Bulgaria and Romania were pushed to the forefront of military and diplomatic activity. Together with Slovakia, they had foreseen a long period of preparation for NATO membership and a difficult accession process, but they were now catapulted into the position of outstanding allies and invited to join the alliance formally within a year. This accelerated internal changes and reorganized power and political relationships in all three countries. The new NATO members joined the military interventions in Afghanistan and Iraq, which

confirmed their position within the alliance and opened potential market and cooperation opportunities for their arms firms. They were able to hope for increased demand for their products, both for military interventions and post-war reconstruction efforts.

The elements of the different stages mutually reinforced each other, creating a genuine momentum for change and were present in each of the countries studied in this volume. In some they had a stronger impact, in others less, depending on the way in which each country adjusted to the new circumstances. The heritage, assets and ambitions of each ECE country affected the path that it chose, as the following chapters illustrate.