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CANADIAN DEFENCE POLICY AND SPENDING

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This survey article deals with defence policy, spending and the industrial base in Canada since the Second World War. In particular, the macroeconomic realities underpinning defence expenditure patterns as well as the unique microeconomic conditions affecting the Canadian defence industrial base are highlighted.

Keywords: Canada; Defence industrial base; Defence expenditures; Peacekeeping; Middle power

INTRODUCTION

Canada is the second largest country in the world and stretches from the Atlantic Ocean in the East to the Pacific Ocean in the West, and North to the Arctic Ocean. Between these oceans lie a variety of climates and a rich natural resource base. With a population of 31.4 million people and a landmass in excess of 9 million square kilometres, Canada is not a very densely populated country. Considered an affluent nation with an advanced industrial economy, Canada faces unique challenges because most of its population lives within 100 miles of the United States/Canada border.

As a nation, Canada depends heavily on trade for its economic prosperity and most of that trade is with the United States. Exports of goods and services as a percentage of Gross Domestic Product (GDP) were 43% in 2001 (Canada. Department of Foreign Affairs and International Trade – DFAIT, 2003). More specific to the significance of trade with the United States, 87% of Canada's merchandise exports in 2001 went south to the United States and 65% of Canada's merchandise imports came from the United States (DFAIT, 2002). Canada's trade surplus in 2001 was in excess of $60 billion but its trade surplus with the United States was in excess of $133 billion. No other advanced industrial society has such a high level of trade domination and the end result of this dependency is that Canada's long-term economic fortunes are tied to the booms and busts of the United States economy (Norcliffe, 1996).

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Today, Canada's ten provinces and three territories make a federation that is distinguished by a distribution of powers between the federal Parliament and the provincial legislatures. Although the Constitution provides that the mandate of a Parliament can last no longer than five years, Canada's Members of Parliament are chosen in federal elections that usually take place every three or four years. In 2004 there were four political parties in Canada: the Liberal Party, the Conservative Party, the New Democratic Party and the Bloc Québécois. Constitutional impasse at Meech Lake and later at Charlottetown resulted in the formation of the Bloc Québécois, a Quebec separatist party in 1992.

While the importance of trade with the United States to Canada's economic well being cannot be disputed, it is how that relationship influences other aspects of Canadian activity that often becomes an issue in Canada's domestic political environment. There are very few areas that are not affected by Canada's relationship with the US, both domestic and international. Living beside the world's only superpower creates some unique challenges for Canada as well as some unique opportunities.

This article will deal with one particular aspect of that relationship by examining the issue of national defence, one of the few areas of sole federal jurisdiction in Canada. Although the Department of National Defence (DND) maintains extensive relationships with the provinces and territories, only the federal government has constitutional authority for defence and the protection of Canadian sovereignty (Canada. DND, 2002).

The first section of this paper provides a historical background on the role of defence in Canada followed by a discussion on the macroeconomic environment. The discussion on the macroeconomic environment highlights the international factors, national drivers, and consequent federal government priorities that constrain the discretionary spending available to federal departments, including the Canadian Department of National Defence (DND) and the Canadian Forces (CF). Next, the paper will discuss the existing defence policy, the roles and tasks that are given to the Canadian Forces and the structure of Canada's defence organization to meet those tasks. The paper will then provide a description of the Canadian defence budget experience and a comparison with NATO allies. Finally, the article will conclude with a discussion on the procurement process utilized by the Department of National Defence and the Canadian Forces including the defence industrial base that supports Canada's defence department.

HISTORICAL CONTEXT AND THE BACKGROUND TO DEFENCE POLICY

Whereas 18th-century Americans fought a revolution to free themselves from British rule, their Canadian contemporaries (even those who had once been French) were essentially loyalists. Indeed, in the aftermath of America's War of Independence, Canada was the obvious sanctuary for those Americans in the Thirteen Colonies who had kept faith with Britain. Following the American Revolution, the *Constitutional Act* of 1791, was passed by the Parliament in London, UK, for the administration of its North American colonies (Morton, 1997). However, conflicts with the United States in 1812, the impact of the American Civil War and the unsuccessful but repeated Fenian raids of 1866 were clear reminders that Great Britain, despite her imperial power, could not defend her North American colonies from a determined American invasion (Morton, 1999). For this, as well as many other reasons, Upper Canada, Lower Canada, New Brunswick and Nova Scotia agreed to the Canadian confederation in 1867.

Canada became a dominion of the British Empire in 1867 but London continued to have the final say on over most of Canada's foreign and defence policy until the passage of the Westminster Act in 1931. This meant that the British government declared war on behalf of

Canada in 1914 and the Empire's war was Canada's war. However, the extent of the Canadian contribution and manner in which it supported the war effort was Canada's prerogative (Middlemiss and Sokolsky, 1989). Canada sent 500,000 (6% of the population) troops to fight in the First World War and lost 60,000, an effort and a price out of proportion to its size. Some felt it was a misguided sentimentality towards the Empire while others claim that it was a strategic decision to protect Canada's security (Morton, 1999; Middlemiss and Sokolsky, 1989).[1]

While the significant loss of life and the political cost of draft and conscription led the government quickly to reduce the armed forces and assume an isolationist defence posture immediately following the First World War, the Second World War brought a new dimension to Canada's defence policy. Specifically, the growing anxiety that an attack on North America may be feasible brought Canada to the American orbit of influence. The unique bilateral defence cooperation that exists today between the two nations began in 1940 when President Roosevelt and Prime Minister King agreed to establish the Permanent Joint Board on Defence (PJBD) for the coordination of weapons production.

Although an attack on Canadian soil never materialized, it was thought necessary to maintain considerable forces for home defence, particularly after Japan entered the conflict in December 1941. Once again Canada made a significant contribution to the war effort, and since it was not attacked, the industrial development to support the war effort boosted its economic and political might. Canada actively pursued internationalist policies after the Second World War, especially promoting Canadian security within multilateral arrangements that promoted world peace. In 1949, Canada was one of the founding members of the North Atlantic Treaty Organization (NATO) and committed nearly all its navy to the Supreme Allied Commander, Atlantic (SACLANT).

During the early years of the Cold War, the air forces of both the US and Canada expanded their cooperative air defence arrangement, culminating in the establishment of the North American Air Defence Command (NORAD) in 1958. Today, in the post 9/11 security environment, the two nations are working together in planning for continental defence. The defence relationship between the two nations continues to be positive and supportive of each other.

THE MACROECONOMY

Since World War II, the growth of Canadian manufacturing, mining, and service sectors has transformed the nation from a largely rural economy into one that is primarily industrial and urban. Real rates of growth have averaged above 3% per annum since the middle of the 1990s. Table 1 presents selected macroeconomic indicators and growth rates. Note that exports as a proportion of total Gross Domestic Product (GDP) have steadily increased from about 16% in 1961 to above 40% since 1998 (Canada. Dept of Finance, 2003). The large growth in exports during the 1990s largely coincided with the Free Trade Agreement with the United States in 1987 and the North American Free Trade Agreement (including Mexico) in 1994. In addition, the depreciation of the Canadian dollar from a high of $US0.90 in 1990 to around $US0.67 in 1999 was also a factor in the increased exports share in the Canadian economy. The Bank of Canada's policy of keeping inflation low, stable, and predictable led to aggressive interest rate

[1] A unique aspect of Canadian defence policy or posture prior to the First World War (WWI) was that it fought for the empire outside Canadian and North American territories. In addition, Canada did not raise its own military forces for the task, instead it sent volunteers to fight on behalf of the Empire and paid some of the costs (Morton, 1999). WWI brought a new dimension to Canadian defence posture.

TABLE I Selected Macroeconomic Indicators (Constant 1997 Dollars)

	GDP ($M)	*GDP/PoP*	*PoP*	*G/GDP*	*IN/GDP*	*X/GDP*	*(X-M)/ GDP*	*UR*	*Inflation*
1961	245,230	13,456	18,224,500	22.5%	13.8%	15.9%	0.2%	6.9%	1.1%
1965	312,930	15,939	19,633,500	21.0%	15.1%	16.9%	0.5%	3.9%	2.0%
1970	389,809	18,312	21,287,500	24.2%	14.5%	22.5%	3.3%	5.7%	3.4%
1975	483,316	20,920	23,102,980	24.6%	16.6%	19.9%	–3.2%	6.9%	10.9%
1980	579,907	23,698	24,471,129	23.3%	17.3%	21.8%	0.1%	7.5%	10.1%
1985	664,059	25,725	25,813,854	22.6%	15.6%	25.1%	2.3%	10.7%	4.0%
1990	765,311	27,690	27,638,583	22.5%	17.4%	26.9%	–0.5%	8.1%	4.8%
1995	833,456	28,482	29,262,649	21.1%	14.8%	36.6%	3.5%	9.4%	2.2%
1996	846,952	28,642	29,570,577	20.5%	15.5%	38.0%	3.8%	9.6%	1.6%
1997	882,733	29,554	29,868,726	19.5%	17.5%	39.5%	2.0%	9.1%	1.6%
1998	918,910	30,503	30,125,715	19.3%	17.3%	41.4%	3.5%	8.3%	0.9%
1999	969,750	31,932	30,369,575	18.7%	17.4%	43.4%	4.7%	7.6%	1.7%
2000	1,020,488	33,294	30,650,631	18.3%	17.4%	44.9%	5.2%	6.8%	2.7%
2001	1,038,845	33,540	30,973,522	18.6%	17.6%	42.9%	5.8%	7.2%	2.6%
2002	1,074,621	34,322	31,310,175	18.5%	17.3%	41.9%	5.5%	7.7%	2.2%
2003	1,096,359	34,705	31,590,917	18.8%	17.7%	40.1%	3.1%	7.6%	2.8%

Annual Average Growth	*1961–1969*	*1970–1979*	*1980–1989*	*1990–1999*	*1999*	*2000*	*2001*	*2002*	*2003*
GDP	5.6%	4.6%	3.4%	2.7%	5.5%	5.2%	1.8%	3.4%	2.0%
Inflation	2.9%	8.2%	7.2%	2.4%	1.7%	2.7%	2.6%	2.2%	2.8%
GDP/PoP	3.7%	3.0%	2.0%	1.5%	4.7%	4.3%	0.7%	2.3%	1.1%

Source: Statistics Canada: GDP (Gross Domestic Product); G (Government Expenditures); In (Business Sector investment); PoP (population); X (Exports); X-M (net exports); Inflation is consumer inflation; UR (Unemployment Rate).

increases in the early 1990s to combat price pressures. Inflation rates since the middle of the 1990s have remained within the Bank of Canada's target range of 1–3% (Table I). In conjunction with the interest rate increases of the early 1990s, the unemployment rate remained fairly high during the early 1990s as structural reforms and tight monetary and fiscal policies constrained economic growth.

Although the data in Table I reflect a generally positive economic environment during the latter part of the 1990s and the early 2000s, these positive trends at the end of the 20th century are the result of the significant reductions in government spending that were implemented by all levels of government in the early to mid 1990s. These reductions, combined with other cost reduction measures, were designed to reduce what had become a significant annual deficit and the need to achieve a balanced budget. In the case of the federal government, the most significant period was immediately following the election of Prime Minister Chretien's Liberal government in 1993.

Like many western nations, Canadian governments had been running deficits for a number of years and the country's total debt load was becoming untenable. For example, in 1990 the interest charges on public debt for all levels of government was $64.3 billion or 20% of total expenditures, while interest charges on debt for the federal government was $41.9 billion or 27.6% of federal government expenditures (Canada. Department of Finance, 2003).

Despite the improved outlook in the late 1990s, when compared with the United States, the average Canadian living within 300 km of the United States is acutely aware of the slippage in the relative standard of living against their American counterpart. Despite the growing

TABLE II Canada as a Proportion of US (%)

Year	*GDP per capita*	*Personal Income per Capita*	*Disposable Income per Capita*	*GDP per Worker*	*GDP per Hours Worked*
1961	83.93	67.14	68.06	89.89	83.63
1965	84.35	68.71	68.36	88.01	84.45
1970	86.52	73.11	68.54	90.84	87.48
1975	91.07	87.59	80.88	90.33	87.12
1980	90.85	92.16	87.54	91.73	90.13
1985	88.07	87.40	80.48	90.34	89.61
1990	84.64	89.11	79.10	86.96	85.67
1995	82.84	83.60	73.52	87.94	87.70
1996	82.02	81.71	71.93	87.74	86.71
1997	81.60	80.37	70.84	87.26	86.46
1998	82.46	78.55	69.29	87.74	86.97
1999	82.87	78.46	69.62	87.10	86.11
2000	84.88	78.08	69.63	88.59	87.45
2001	85.92	78.61	69.98	88.81	87.00
2002	86.90	78.35	68.55	86.95	85.82
2003	86.05	77.77	67.26	84.38	83.49

Source: Centre for the Study of Living Standards (2003).

economic linkages, Canada's productivity and real income performance lagged far behind the US in the 1990s and the Canada–US productivity and real income level gaps widened significantly.

Table II shows productivity and income trends of Canada as a percentage of US variables. Canada's standard of living (GDP per capita) peaked at 91% of the US's per capita GDP in 1981 and has since declined to about 86% by 2003. Disposable income per capita fared even worse as tax rates in Canada remain substantially higher than in the US. Canadian per capita disposable income was only 67% of the US's per capita disposable income.

Labour productivity comparisons are equally striking. GDP per worker and GDP per hours worked have declined against the US since the mid-1970s. In 1980, GDP per hours worked was 90% of the US rate and GDP per worker was 92%. By 2003, the rates had declined to 83% and 84%, respectively (Table II).

Growth in Canada's standard of living has only averaged 1.1% per year since 1980 and labour productivity grew at half the US rate in the 1990s. Given these facts, it is conceivable that the growth in exports during the last decade has a lot to do with the depreciating dollar improving the country's cost competitiveness and the strong US economy generating significant demand for Canadian goods and services. This appears to be an issue in 2003 as the value of the Canadian dollar is increasing in relation to the US dollar and industries are beginning to voice concern about losing competitiveness.

In the context of this article, the more important concern for the longer term is whether or not increased defence expenditures could be sustained within Canada's domestic political environment. Based on the long-term economic outlook and past practice, the military should continue planning on increases to compensate for inflation but not anything more. In its long-term outlook for the Canadian economy, the Institute for Policy Analysis at the University of Toronto expects the growth trend to slow down together with potential growth largely due to a lower population growth (Dungan *et al.*, 2002). Real GDP growth is expected to fall from 3.4% in 2002 to less than 2.0% by 2020. There are two issues that are important in the Institute's outlook. First, in the medium to longer term, there is an expectation that federal

government transfers to lower levels of government will increase to relieve the continued funding pressures at lower levels for issues such as rising health care costs, education and infrastructure replacement. Based on past experience, increases in these types of expenditures will happen before an increase in the defence budget.

Second, relative to the lower levels of government, the federal government will be in good fiscal health in the longer-term. The budget balance is expected to remain positive over the entire period. This, combined with the decreases in tax revenues, as a result of announced tax policy changes, and the expected spending pressures at the lower levels, will provide surpluses that are quite modest. For example, the Institute expects the federal debt-to-GDP ratio to continue falling and the level of surplus to level out at about $5 billion a year (Dungan *et al.*, 2002). This is substantially less than the $18 billion attained in 2000.

This is not say that the defence budget cannot be increased. Clearly, the flexibility is there for the government to increase the budget should it choose to do so. However, based on past practice and the expected pressures at lower levels, it is highly unlikely that any government will make a significant increase in defence expenditure levels above and beyond inflation. Contextually, this is an important issue because during the reduced spending climate of the early 1990s, defence funding had been reduced by 30% in real terms falling from $12 billion in 1993/94 to $9 38 billion in 1998/99 and the military strength had been reduced by 20%, falling to under 60,000 from over 80,000 (DND, 2002). In contrast, the number of peace support operations to which the Government has committed the Canadian Forces has not reflected a proportional reduction. Since the end of the Cold War in 1989, the Canadian Forces have been tasked to provide forces of varying sizes on over 70 occasions (DND, 2002). In 2002, the Canadian Forces had nearly 10,000 personnel deployed on 14 different operations of varying size in North America, Europe, the Middle East, the Arabian Gulf and South Asia and Africa (DND, 2003).

Anyone familiar with the history of defence funding in Canada would not be surprised at these circumstances. Canadian governments have historically been unprepared to spend significant amounts of money on defence. There are a variety of reasons for this, but the most significant reason is that the Canadian public does not see a need for increased defence expenditures, particularly when that expenditure is placed within the context of choosing between defence and health care, education or other social programmes. Regardless of the correctness of this choice, defence funding in Canada is always based on what the government believes it can afford and not what a government defence policy might imply. As Defence Minister Macdonald noted in the 1971 defence policy statement '[T]here is no obvious level for defence expenditures in Canada a judgement must be made on proposed defence activities in relation to other Government programs' (DND, 1997, 171).

In many ways, it is this lack of any direct security strategy which demands a specific level of defence funding, that has historically been the biggest challenge for the Canadian military Finan and Flemming (1995), in looking at whether Canadians have a good basic knowledge of defence and security issues, note that the evidence indicates that most Canadian are not very well informed about defence issues. Finan and Flemming are not alone in this assessment of Canadians. Middlemiss and Sokolsky (1989) also note 'By and large, Canadians have not been greatly interested in defence policy issues …'. More importantly, this lack of interest and understanding by the public is also reflected in Parliament and the Government. Doug Bland's survey of Senators and Members of Parliament in 1998–99 revealed that only a few members take an active interest in defence issues and only a few are well versed in defence issues (Bland, 1999).

Adding to this lack of knowledge about defence is the belief by most Canadians that there is no real external threat to Canada. As James Fergusson (1996: 109) notes 'there is no clear military threat and most Canadians believe that the United States will defend Canada against

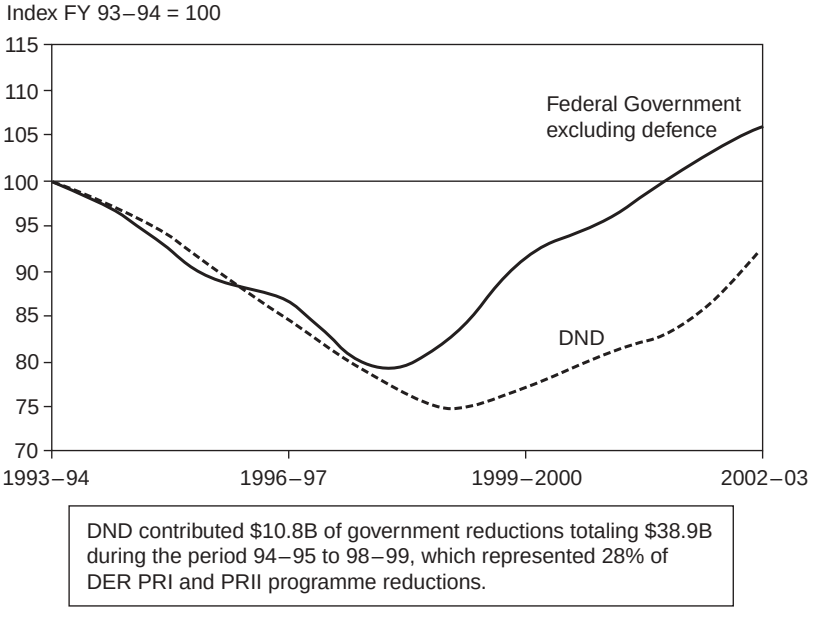

FIGURE 1 Defence compared with other federal programmes 1993–2003.

any foreign adversary'. Canada's military is dwarfed by the size of the US military and this only reinforces the belief of Canadians that any Canadian effort, regardless of effort, would be merely symbolic.

In monetary terms, this lack of interest in defence compared with other areas of policy can be clearly seen in Figure 1, which shows that by fiscal year 2002–2003 defence was about 8% below its 1993 level, in real terms, while other federal departments are approximately 7% above their respective 1993 levels. It should be pointed out the growth in other Federal departments excludes transfer payments to other levels of government to finance education and health spending. As indicated earlier, it was Canada's level of debt that created the need for expenditure reductions in the early 1990s and it was in this environment that the newly-elected Liberal Government released the *1994 Defence White Paper*, Canada's current defence policy statement.

CANADA'S DEFENCE POLICY

In Canada, governments generally publish defence policy statements to provide an assessment of where the government believes they are at a particular point in time. They are not intended to be road maps for the future. However, a historical examination of Canada's experience with defence policies will show that our defence policy has been remarkably consistent over time and, with rare exception, the policy statements are very general in nature. For example, Brooke Claxton's statement to the House of Commons in 1947 indicated Canada's defence forces may be required: to defend Canada against aggression, to assist the civil power in maintaining law and order within the country, to carry out any undertakings which by our own voluntary act we may assume in cooperation with friendly nations or under any effective plan of collective action under the United Nations (Claxton, 1997). Not much has changed since that time, nor has it been commonplace for governments in Canada to issue new policy statements on a

regular basis. Since the Canadian Forces were unified under the *1964 White Paper on Defence*, there have only been three defence white papers: 1971, 1987 and 1994. Each of these white papers was issued after a change in government, as was the 1964 White Paper.

A review of these white papers reveals a number of important aspects regarding the determinants of Canada's defence expenditures. First, Canada defines its national interest and security concerns within the context of bilateral or multilateral arrangements. Canada's commitment to the security of Europe as shown by the sacrifices and sizeable contributions in both World Wars is a good indicator of this view. This may be rooted in the nation's history as a British colony but it is a realistic approach given the size of the country, its location next to the United States and its population base.

Second, the seat at the Imperial War Cabinet in the First World War and the relative prominence of Canada after the Second World War were positive externalities that arose from its military contributions during the wars. Whether asserting independence (sovereignty) was the primary motivation or security is difficult to distinguish, as both are not mutually exclusive. However, from an economic modelling point of view, Canada observed threats indirectly through the spending of allies. Therefore, at least from the historical perspective, Canada's reaction to allied expenditure should be positive.

Third, of the four white papers between 1964 and 1994 (1964, 1971, 1987 and 1994), the most influential determinant of the demand for Canadian defence expenditure was the 1971 White Paper. The 1971 White Paper and the initial actions of the Trudeau government were a departure from Canada's European strategic parameter. In the first four years of the Trudeau government, real defence expenditures declined by 7.5% and the capital portion of the budget declined to about 8%. Personnel levels declined from approximately 98,500 to 77,900 by 1976.

Even though the Trudeau government attempted to reverse its reductions within four years of the white paper's release, budget limitations did not allow for the necessary re-equipping of the Canadian Forces. In addition, the successor defence policy of 1987 did not fully execute its stated goals since the end of the Cold War and political and economic issues overshadowed defence considerations. Similarly, a number of concurrent events, such as the calls for a peace dividend, fiscal crisis and the consequent programme reductions overshadowed the 1994 White Paper.

Heading the call for a peace dividend in light of the reduction in commitments in Europe, a new Liberal government, saddled with an inherited $40 billion deficit, attempted to reformulate a new defence policy to reflect the post-Cold War realities. The 1994 White Paper articulated three basic missions for the Canadian Forces: Defend Canada; Defend North America in partnership with the United States; and Contribute to global stability, essentially the same as those articulated by Brooke Claxton in 1947. In the government's opinion, these post-Cold War realities required 'A Multi-purpose, Combat-capable Maritime, Land and Air Forces Able to Defend Canada and Canadian Interests While Providing the Government With the Flexibility to Contribute to International Peace and Security Initiatives' (DND, 1994).

One of the constraining factors in the development and publication of the 1994 defence policy was that the government had to confront the rising level of public debt, which was 70% of GDP by 1995 (combined public sector debt was close to 100%), and set out to cut government spending and increase taxes. By the end of 1997–98, defence absorbed about 28% of the cuts and by 2001–2002 was still 13% below its levels in 1993–94.

One of the more unique aspects of the 1994 policy statement, however, is that unlike previous defence policy statements that provided broad roles for the Canadian Forces, the *1994 Defence White Paper* does demand that the Canadian Forces provide specific capabilities for specific circumstances. It was intended to provide the Government's plan for the Canadian Forces after a series of significant budget cuts and provided the government's assessment of

what it wanted the Canadian Forces to be able to provide with a strength of 60,000 and a budget of approximately $9 billion. Naturally, some of the assumptions that were made to accompany this assessment are important.

The *1994 Defence White Paper* assumed that there would be ample warning and reaction time (from one to two years) before global instability would require a return to large standing forces, such as that required during the Cold War. This assumption allowed the government to adopt a 'lean' view of what capabilities it wanted provided. The government also assumed that the Canadian Forces would deploy internationally only as part of multinational coalitions (except for humanitarian relief operations). Both of these assumptions provided justification for the planned reductions in defence spending and force size. The *1994 Defence White Paper* established that the strength of the Canadian Forces would be approximately 60,000 full-time professionals and approximately 23,000 part-time reservists. In addition, the Department and the Canadian Forces would have approximately 20,000 civilians. These targets represented substantial reductions for both the Regular Force and the federal Public Service from pre-White Paper levels. Table III provides information about the reductions in personnel numbers since 1989.

Returning to the issue of the specific tasks required of the Canadian Forces, the *1994 Defence White Paper* established specific commitments for the international deployment of land, sea and air forces. For example, in discussing the White Paper, the *Defence Portfolio* indicates that the Canadian Forces are to be 'capable of deploying a Vanguard Force (Canada's rapid reaction force of up to 4000 personnel) within three weeks and to sustain it indefinitely in a low threat environment. Should conditions demand additional capacity, the Forces are to be capable of deploying up to 10,000 personnel in a Main Contingency Force [sic, which includes the Vanguard Force] within three months, capable of taking part in medium-intensity combat operations' (DND, 2002, 7). The Vanguard and Main Contingency Forces are to include units from the Army, Navy and Air Force.

Although the current Liberal government is undertaking an international security review, which includes both a defence policy and foreign policy review, much of the policy expressed in 1994 remains valid. In addition, there is no real likelihood that the broad roles of defending Canada, defending North America and participating in international operations will change. Many of the assumptions about the world upon which the policy was predicated also remain valid. For example, the absence of any current or foreseeable traditional military threat to Canada, the unlikely prospect of a return to a Cold War type international climate, and a continued international environment with instability remain valid assumptions. Those

TABLE III Defence Personnel since 1989

	Regular Force	*Primary Reserve*	*Civilian*	*Total*
Strength 1989	88,800	26,100	36,600	151,500
Strength 1994	74,900	29,400	32,500	136,800
1999 target in the 1994 White Paper	60,000	23,000	20,000	103,000
Total Reductions				
1994–1999	14,900	6400	12,500	33,800
% change	20	22	38	25
1989–1999	28,800	3100	16,600	48,500
% change	32	12	45	32

Source: *1994 Defence White Paper*, 46.

international and domestic operations that Canada has participated in over the past several years have validated the three roles of the Canadian Forces. This includes the requirement to be able to meet the full spectrum of defence and security challenges – from surveillance and control of Canadian territory and approaches to collective defence and general war (DND, 2002).

However, during the late 1990s and the early 2000s, the policies expressed in the *1994 Defence White Paper* have come under increased criticism for being out of date and no longer relevant. Contrary to what many of the critics argue, the policy aspects of the document do remain relevant. As indicated, the basics of Canada's defence policy have not changed since the end of World War II – two strategic imperatives and one strategic choice. In today's context these imperatives remain valid despite the lack of any stated priorities or defence objectives in the *1994 Defence White Paper*. The real challenge for the Canadian Forces is not a policy problem but rather a funding problem. As Doug Bland has argued, 'Canada, however, does have a defence funding problem – a general incompatibility between policy ends and real means and a persistent failure of government to fund declared policy' (Bland, 2003, 1). As one might expect, the level of defence funding desired by the military has seldom been what the government actually provides.

CANADIAN DEFENCE FUNDING

The evolution of the Canadian defence budget since the 1960s is summarized in Table 4. For the purposes of international comparisons, the NATO definition of defence spending (ME1) is used. The NATO definition normally includes the activities of the coast guard (under the Department of Fisheries and Oceans) and selected activities of the Transport Canada and the Canadian Customs and Revenue Agency (CCRA). For illustrative purposes, the official Canadian government narrower definition (ME2) is also provided. In real terms, the defence budget declined by 26% from its peak in 1990–91 (using the ME2 definition) to 1997–98, and the government's decision to combat rising federal budgetary deficits explains the steep decline (as shown in Figure 1). Real per capita defence expenditures steadily declined since the 1960s as population growth (71%) outstripped real defence expenditures growth (26%). Similarly,

TABLE IV Defence Expenditures Trend

	ME1 $Bill.	*ME2 $Bill.*	*ME2/GB*	*ME2/GDP*	*ME2/PoP*	*Force Size*
1960–61	9.9	9.1	25.5	3.7	499.61	120,848
1970–71	8.9	7.9	13.8	2.0	369.68	92,500
1980–81	10.7	9.4	8.1	1.6	382.79	79,692
1985–86	14.1	12.5	8.9	1.9	485.18	83,037
1990–91	15.2	13.8	8.9	1.8	499.55	86,787
1995–96	12.8	11.7	7.6	1.4	399.88	66,461
1996–97	11.7	10.7	7.5	1.3	361.90	63,457
1997–98	10.8	10.2	7.4	1.2	341.07	60,942
1998–99	11.8	10.3	7.1	1.1	341.83	60,726
1999–00	12.2	11.4	7.7	1.2	374.51	59,360
2000–01	11.7	10.9	7.2	1.1	354.71	58,852
2001–02	12.4	11.5	7.8	1.1	370.47	59,251
2002–03	12.4	11.5	7.9	1.1	367.84	61,432

Source: DND, Statistics Canada, NATO. ME1 (Constant 1997 dollars Military Expenditures NATO Definition); ME2 (Constant 1997 dollars Military Expenditure Canadian Government Definition); PoP (Population); GB (Government Budget).

TABLE V Selected Defence Indicators for Canada and NATO

	Defence Expenditures per Capita in 1995 Prices US$					
	1980	*1990*	*1995*	*2000*	*2001*	*2002*
NATO – Europe	549	574	448	397	393	395
Canada	310	388	309	271	284	281
United States	1144	1420	1060	979	952	1063
Defence Employment (Military and Civilian) as % of Labour Force						
NATO – Europe	2.8	2.6	2	1.7	1.6	1.6
Canada	1	0.9	0.7	0.5	0.5	0.5
United States	2.8	2.6	1.9	1.6	1.5	1.5
Defence Expenditures as % of GDP						
NATO – Europe	3.5	2.6	2.1	2.0	1.9	1.9
Canada	2.0	1.8	1.3	1.2	1.2	1.2
United States	5.9	4.7	3.3	3.0	3.0	3.3
Average Defence Expenditures Growth %	**Average 1980–84**	**Average 1985–89**	**Average 1990–94**	**Average 1995–99**	**2001**	**2002**
Average Europe	2.2	1.7	–1.5	1.0	1.8	2.4
Average USA	6	2.0	–5.3	–2.6	0.6	12.8
Average Canada	6.1	1.9	–3.2	–3.9	5.9	0.3

Source: NATO (M-DPC-2(2001, 2002)107.

real Canadian GDP increased 273% since 1960, bringing the defence to GDP ratio from 3.7% in 1961 to 1.1% in 2003 (see Tables I and IV). The number of military personnel has declined steadily since Trudeau's defence reductions in 1968 and the 1994 defence White paper, which authorized approximately 60,000 regular forces as the ceiling.

Since Canada is a member of an alliance, the relevant question is how the Canadian defence budget evolution compares to the NATO average. Table V presents selected defence indicators for Canada and NATO countries. The most often quoted measure of defence burden – defence expenditures as a proportion of GDP, indicates that Canada's 2001 ratio of 1.1%–1.2% of GDP is lower than NATO Europe's average of about 1.9% and the US of 3.0%. Looking at the measure in isolation and naively, both Canada and NATO–Europe may be perceived as free-riding on the defence efforts of the United States. However, the ratio (Defence/GDP) is an ability to pay measure; as such, one can really point to the fact that it is a fairness assessment. Similarly, the proportion of the labour force dedicated to defence activities is fairly low across NATO aggregates.

A measure that also includes industrial support and other indirect defence employment would be a better indicator of the pervasiveness of defence in the economy. Per capita defence expenditure figures are susceptible to exchange rate fluctuations and it is difficult to assess whether increases or decreases in per capita defence expenditures is a result of currency appreciation (depreciation) or changes in defence effort. The percentage increases (decreases) in defence expenditures over the years for NATO members (in constant dollars and local currencies) shown in the last three rows of Table V is a better indicator as it corrects for inflation and currency impacts. Note that Canadian and US defence budgets tend to follow the same pattern for most of the 1980s and 1990s. While one cannot make a lot of inferences from simple trends, the evidence seems to suggest that US defence expenditures are perceived as complementary as opposed to a substitute to Canada's defence efforts.

ALLOCATING THE DEFENCE BUDGET

How the defence budget is allocated can be viewed as a series of lower level resource allocation problems. At the Departmental and Canadian Forces level the annual budget allocated by the federal government to defence is the constraint that DND and CF planners must deal with. At the next level down, the budget must be allocated amongst various military capabilities provided by the Canadian Forces. How much for combat capability versus intelligence and information capabilities versus sustainment capabilities. These higher level capabilities must then be allocated amongst the more specific roles assigned to the Canadian Forces. How much for homeland defence versus how much for international and coalition operations abroad. The question of how these capabilities are going to be produced must also be addressed. Will the capability be provided by the Air Force or the Land Force, with military personnel or weapon systems. As John Treddenick notes 'Within each capability component, then, decisions have to made on how limited budgets are to be used to obtain the mix of manpower, equipment and support services most appropriate to producing those capabilities' (Treddenick, 1995, 419). It is these decisions on how limited budgets are allocated that allow defence policy to become more tangible.

Achieving the correct balance between expenditures on capability today and investment in capability for tomorrow is an important part of the resource allocation problem. Figure 2 provides a historical picture of defence budget allocations over the past 40 years. It is clear from the information in Figure 2 that DND and the CF have not been consistent in distributing the budget between the three areas. The amount allocated to capital investment has declined while the amount allocated to O&M has increased and the amount allocated to personnel appears to have stabilized.

Achieving the correct balance in the allocation of resources is arguably the most important challenge facing the Canadian Forces as it moves into the new millennium. During the past decade, operational deployments have increased and there is no indication this will change in the immediate future. Operations today require capability today.

This must be balanced with the need to make capital investment for capability in the future, particularly to purchase the equipment needed to equip and support the force capabilities in a future security environment. For example, John Treddenick argues that the financial challenges associated with the RMA are basically budgetary choices. RMA technology – information technology, advanced sensors and instantaneous communications – is

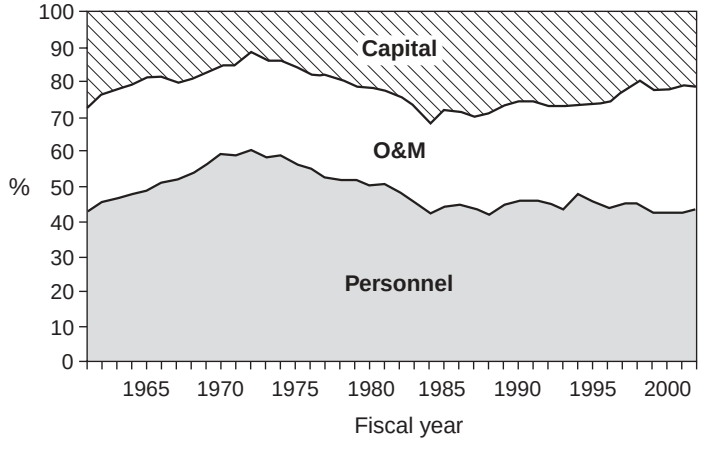

FIGURE 2 Trend in DND expenditure allocations 1961–2002 (percentage).

technology 'which demands continuous and significant funding of research and development expenditures … A decision to opt for the RMA is therefore a decision to embark on a major recapitalization of the stock of equipment assets … to opt for an increasing share of defence expenditures for equipment … for a decreasing share to personnel' (Treddenick, 2001: 101/2).

Unfortunately, this requirement to dedicate an increasing share of the budget to capital will be difficult for Canada's military. Historically, the Canadian Forces have been unable to devote desired levels of funding to capital. A review of the data in Figure 3 demonstrates that only when there have been real increases in the defence budget has there been any success in increasing the actual capital investment.

In addition, annual budget statements and other DND documents during the 1990s have advocated spending between 20% and 30% of the budget on capital, with the most recent target of 23% established in 1999 in the Strategy 2020 document (DND, 1999). Although there is no justification for why 23% is required as opposed to 25% on 30%, the reality is that, since 1999, the allocation to capital has not gone above 19%. This is not likely to change in the near future because capital expenditures continue to be a residual expenditure for the Canadian Forces after people and operating requirements are funded. With the 2003 deployment to Afghanistan, in addition to commitments in the Balkans, the Persian Gulf, and other areas of the world, there will be a continued requirement to fund operations and capability today at the expense of capital investment for future capability.

Organization for Defence

Defence in Canada is organized around an integrated headquarters, whereby some civilians work for the military and some military personnel work for civilians. In addition to the 60,000 military personnel, approximately 19,500 civilian employees work for the Department of National Defence and the Canadian Forces across Canada and internationally. These civilians have scientific, analytical, technical and administrative skills vital to achieving the Defence mission.

The Canadian Forces are an entity separate and distinct from DND and are also established by the *National Defence Act*. This enables the Governor-in-Council and the Minister of National Defence to make regulations for the organization, training, discipline, efficiency,

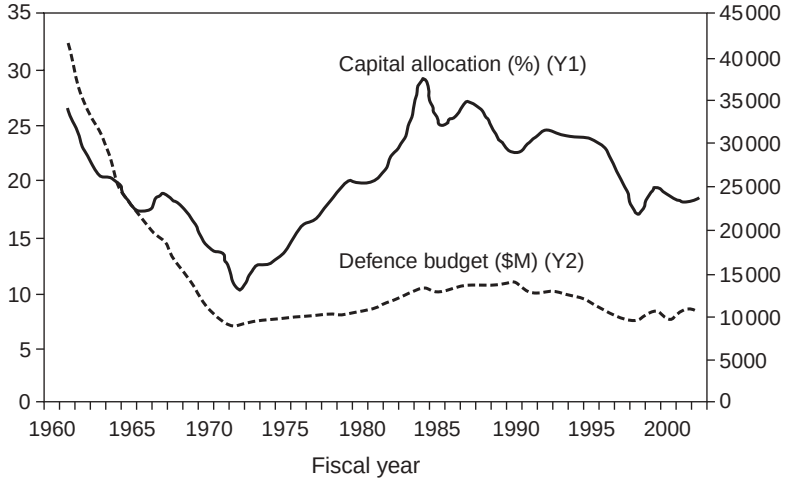

FIGURE 3 Defence budget and capital allocation 1961–2002 ($2000).

administration and good governance of the Canadian Forces (DND, 2002). The Canadian Forces consist of a Regular Force (who are enrolled for continuing, full-time military service) and a Reserve Force (including the Primary Reserve, Supplementary Reserve, Cadet Instructor Cadre, and Canadian Rangers) enrolled for part-time service.

The mission of the Canadian Forces is to 'defend Canada and Canadian interests and values, while contributing to international peace and security' (DND, 2003: 2). It is the Chief of the Defence Staff (CDS), the most senior military advisor to the Minister of National Defence and the Government of Canada as a whole that has primary responsibility for command, control and administration of the Canadian Forces. All orders and instructions to the Canadian Forces must be issued through the CDS. The CDS is assisted in this by eight senior military leaders who report to the CDS and are responsible for managing the major branches of the Canadian Forces.

The operational component or the actual organizations of battalions, ships and aircraft are for the most part, contained within three services – Land, Air and Maritime Forces. Three Environmental Chiefs of Staff (ECS) who are also the advisors to the CDS for their specific service command these services.

The Chief of the Maritime Staff (CMS) 'commands Canada's naval forces, consisting of Maritime Forces Atlantic (Halifax), Maritime Forces Pacific (Esquimalt) and the naval reserve (headquartered in Québec City and including 24 units across the country)' (DND, 2002: 20). The Navy's strength is divided amongst approximately 9500 Regular Force sailors, 4000 Reservists, and 3700 civilian employees. The CMS is operationally responsible for monitoring and controlling activity within Canada's maritime area of jurisdiction, supporting Canadian interests abroad and contributing to the national search and rescue capability (DND, 2002).

Similar to CMS, the Chief of the Land Staff (CLS) commands Canada's Regular and Reserve Army, which comprises up of four land force areas: West, Central, Québec and Atlantic. In addition to a limited number of separate regular forces units, the majority of Canada's land forces are contained in three Regular Force Brigade Groups, officially named 1 Canadian Mechanized Brigade Group, based in Edmonton; 2 Canadian Mechanized Brigade Group, in Petawawa; and 5^{ième} Groupe-brigade mécanisé du Canada, in Valcartier. There are also ten Reserve Brigades and more than 100 Reserve units across the country. In total, the Army consists of approximately 19,000 Regular Force personnel, more than 14,000 Reserve Force personnel and 4400 civilian employees CLS is operationally responsible for defending Canadian territory, contributing to the collective defence of North America, and supporting Canadian interests abroad (DND, 2002).

The Chief of the Air Staff (CAS) 'commands Canada's air forces, consisting of 1 Canadian Air Division (Winnipeg), Canadian NORAD Regional Headquarters (Winnipeg), 13 Wings across Canada and 14 Air Force Reserve units. In total, the Air Force consists of approximately 13,000 Regular Force personnel, 2,000 Reserve Force personnel and 2,000 civilian employees. The CAS is operationally responsible for protecting Canadian sovereignty and airspace, contributing to Canada's search and rescue efforts, and supporting Canadian interests abroad' (DND, 2002: 20).

Resource Challenges

As a large, national institution with a presence in every province and territory, Defence is responsible for infrastructure valued at approximately $17 billion. Approximately 58% (by value) of Defence's buildings are now more than 40 years old and defence has been unable to devote sufficient funds to adequately maintain this infrastructure for the long term. Consequently, a growing portion is deteriorating beyond its useful economic life and the expected cost to address this maintenance and re-capitalization backlog exceeds $1 billion (DND, 2002: 37).

Maintaining modern infrastructure is one of a number of funding challenges faced by the Canadian Forces. Maintaining an effective, combat-capable military force in a changing world – particularly in light of the Revolution in Military Affairs – is also a significant challenge with the limited resources available. Many of the Canadian Force's major weapon systems are in need of replacement or modernization in order to maintain interoperability with our Allies. Interoperability with Allies really means interoperability with the United States first and others after DND's long-term strategic planning document, *Shaping the Future of Canadian Defence: A Strategy for 2020* specifically indicates under the interoperability attribute 'Strengthen our military relationship with the US military to ensure Canadian and US forces are inter-operable and capable of combined operations in key selected areas' (DND, 1999: 6).

Maintaining interoperability with the US implies an intent to modernize with high technology systems that provide high levels of situational and battlefield awareness. Like most other nations, keeping up with the US is a significant challenge for Canada. As *Defence Portfolio 2002* notes 'as a result of resource constraints, a high operational tempo, the need to support institutional reform and continuous re-investment in human resources, Defence has been unable to maintain desirable levels of capital investment over the past few years. This can mean higher costs in the future as equipment ages, technology becomes obsolete and maintenance costs rise' (DND, 2002: 33). A summary of the major weapons systems and equipment holdings for Canada's Maritime, Land and Air Forces is provided in Tables VI and VII.

The Department of National Defence has a priority list for replacing capital equipment but the list has no basis of support from a government policy perspective. The *1994 Defence White Paper* has very specific and limited equipment priorities that, for the most part, have been addressed. The exception is the replacement for the Sea King shipborne helicopter, which is expected to be awarded for contract in the Summer of 2004. Remembering that the *1994 Defence White Paper* was written when the Government was making significant cuts in defence spending, the *1994 White Paper* only indicates '[N]ew equipment will be acquired only for purposes considered essential to maintaining core capabilities of the Canadian Forces … Planned acquisitions will be cut by at least 15 billion dollars over the next 15 years' (DND, 1994, 41). In the section on implementing defence policy, the *1994 White Paper* makes specific reference to replacing the Sea King shipborne helicopters, acquiring modern diesel-electric submarines, replacing the support ships, acquiring new armoured personnel carriers, replacing the Labrador search and rescue helicopter and upgrading the CF-18 fighter aircraft. All of these projects are underway.

Note also that industry now owns Canada's military training aircraft, trains the pilots, supports the equipment, and provides service support in foreign theatres of operation. Of importance for the immediate future is that there is no general policy guidance from the government, which the military could draw guidance from when establishing equipment replacement priorities. In an effort to help address this issue, the Department has published *Shaping the Future of Canadian Defence: A Strategy for 2020*. This document provides guidance to all members of the Canadian Forces and the Department of National Defence on the way ahead. It remains, however, an internal document not approved by the Government.

DEFENCE PROCUREMENT

Earlier discussion on how the budget was allocated highlighted the difficulty that exists in maintaining a consistent capital budget. Nevertheless, there are other determinants, both

TABLE VI Summary of Major Weapons System and Equipment (Navy and Army)

Type of Equipment	*Number/Use*	*Purchased*
Navy		
Destroyer 280 (Iroquois Class)	4 ships used for command and control, area air defence	Acquired from 1971 to 1973 with major conversion and update between 1988 and 1995
Frigate (Halifax Class)	12 general purpose ships, optimized for anti-surface and anti-submarine warfare	Acquired from 1992 to 1996 with an upgrade to sensor and combat information centre under study
Upholder Submarine (Victoria Class)	4 submarines for anti-submarine training and covert operations	Acquired from the United Kingdom in 2001 to 2003. Two have been delivered.
Maritime Coastal Defence Vessel (Kingston Class)	12 ships for coastal defence, limited mine sweeping/clearing capability	Acquired from 1995 to 1999
Auxiliary Oiler Replenishment (AOR)	2 ships for at sea replenishment/support to forces ashore/limited sealift	Acquired from 1969 to 1970
Army		
Leopard Tank	114 medium battle tanks	Acquired in the 1970s. Upgrade underway, life extended to 2010.
Armoured Combat Vehicle (Cougar)	193 vehicles for training and direct fire	Acquired in late 1970s
Armoured Vehicle General Purpose (Grizzly)	266 infantry carriers	Acquired in early 1980s
Armoured Personnel Carrier (wheeled) (Bison)	199 vehicles for ambulance and mortar carriers	Acquired in the mid 1980s
Armoured Personnel Carrier (tracked) (M113)	1171 carriers for troop transport	Acquired from 1960 to 1980
Light Armoured Vehicle III (LAV)	651 vehicles for troop transport, command post, anti-tank and forward observation and engineering.	Acquired beginning in 1999 with over 400 delivered and 175 currently in service
Reconnaissance Vehicle (Coyote)	203 vehicles for reconnaissance and surveillance.	Acquired in mid 1990s (51 command posts and 152 reconnaissance vehicles)
Self-Propelled Artillery (M109)	76 tracked howitzers	Acquired from 1960 to 1980
Towed Artillery (LG1)	28 towed light gun	Acquired in the early 1990s

Source: DND (2002).

external and domestic that impact on the acquisition of equipment and supplies for the military in Canada. Externally, Canada has generally postured its forces to support its alliances and the strategies that are related to these relationships (Middlemiss and Sokolsky, 1989). In the past, the selection of major equipment had been designed both to meet the operational requirement to counter Soviet threats, and simultaneously to meet domestic economic concerns. Our focus on collective security, and NATO in particular, has led to specific equipment decisions. The Navy became specialized in anti-submarine warfare, the Air Force in air defence and air interdiction and the Army on mechanized armoured and infantry forces (Middlemiss, 1995). Although some argued that these decisions had been at the expense of meeting other commitments such as the defence of Canada or the aims of unification, the reality is that Canada's equipment did both. It meets specific NATO roles and was designed to counter specific Soviet military capabilities, which was the reasoning behind the original purchase, and it met domestic security requirements.

Nevertheless, Canada's strategic and alliance choices have not been the only determinant of defence procurement choices. In addition to procuring equipment for Cold War and domestic

TABLE VII Summary of Major Weapons System and Equipment (Air Force)

Type of Equipment	*Number/Use*	*Purchased*
Air Force		
CF-18	122 fighter/bomber aircraft	Acquired from 1980 to 1986. A $1.2 billion upgrade is planned to extend life of 80 aircraft out to 2017.
CC130 (Hercules)	32 aircraft for tactical transport	Acquired from 1964 to 1997 with avionics upgrades completed
C144 (Challenger)	6 support aircraft (VIP travel)	Acquired in the mid 1980s
CC150 (Polaris/Airbus)	5 strategic (and VIP) transport aircraft	Acquired in 1997
Aurora (includes 3 Arcturus)	21 maritime patrol aircraft	Acquired from 1979 to 1980. An upgrade is underway.
Sea King	29 shipborne helicopters	Acquired in 1963. The procurement process has been underway since 1976.
Griffon	99 reconnaissance helicopters	Acquired from 1995 to 1997
Labrador	12 search and rescue helicopters	Acquired in 1965.15 Cormorant helicopters have been ordered and delivery commenced in the fall of 2001.

Source: DND (2002).

use, Canadian politicians have also exercised their freedom of choice in overall levels of funding and equipment purchases in order to meet what Middlemiss (and others) refer to as the 'domestic influences'. Fergusson notes that 'for the political elite in Canada, capital spending in defence is perceived as a major vehicle for promoting a variety of non-defence interests' (Fergusson, 1996: 110). This situation exists because defence is the largest single area of discretionary spending for the government. Consequently, capital spending will normally be used to promote a wide variety of political and social economic interests in regional and industrial development. Although beyond the scope of this article, some would argue that the issue of economic offsets and regional development from major capital equipment purchases has become an important part of the federal government's industrial strategy (Fergusson, 1996).

Procurement Today – The Defence Management System

The Defence Management System (DMS) 'is the departmental framework that ensures the effective and efficient delivery of the DSP [Defence Services Plan]. The DMS features clear strategic direction, defined resource levels and business planning as key tenets. The system provides managers with greater financial stability, increased control over expenditures and the flexibility to transfer funds from one resource planning element to another (principally through the business planning process)' (DND, 1998: 1–14). Importantly, the basis of the DMS is the Planning, Reporting and Accountability Structure (PRAS), which outlines the departmental business lines and overall performance measurement strategy, and is linked to changes being implemented in all government departments as part of the Government's expenditure management system (DND, 1998).

The integration with business planning and the Government's EMS is supposed to make the process faster, less bureaucratic and more responsive to the needs of the senior management and leaders. For example, the beginning of the DMS manual notes 'The process outlined in this document describes an effective way of getting quality staff work done 99% of the time

… there may be exceptions. The DND/CF must never become a slave to the process' (DND, 1998: 7–2). This appears to be possible, particularly if one considers the Light Armoured Vehicle project as a reasonable example of the new process. The recommendation of going with a directed purchase early in the acquisition process supports the notion that there is flexibility in the system both at the departmental and government levels.[2]

Nevertheless, despite the improvements in the overall process, procurement of major new equipment will likely remain a lengthy activity. It is not likely that the overall political context for defence procurement will change regardless of how efficient the actual internal process becomes. The Maritime Helicopter Replacement Project is a good example of this. The Liberal Government cancelled the Conservative Government's planned purchase of the EH101 helicopter in 1993. A replacement has not yet been selected despite the passage of 10 years and there has been considerable political input to the project. For example, the project had been split into two parts, one part for the basic air vehicle and a second part for the integrated mission systems. This was done against the advice of the Department of National Defence and was expected to add an additional $400 million to the cost of the project (Blanchfield, 2001). The amount of this cost was further supported in January 2002 by the Aerospace Industries Association of Canada, which also argued that splitting the project would add an additional $400 million (McIntosh, 2002). Although this decision was reversed in November 2002, the project was further complicated by the intention to require a 20 year warranty against major breakdowns. This is expected to require the winning competitor to set up engineering and maintenance facilities on both coasts and will add to the cost of the project (Rubec, 2000).

Although the Maritime Helicopter Project may be more difficult than others because of the political baggage associated with the EH101 cancellation, the process for acquisition still requires a lengthy period of time for major projects. The importance of politics and domestic concerns cannot be underestimated. It will always be part of the process and it will generally add additional time to the approval and development process. However, it would be inappropriate to say that the government will always add time to the process because there are examples when the government circumvents the process and makes it shorter. For example, the March 2002 decision to have the Canadian Forces purchase two Challenger jets from Bombardier before the end of the month was done at the Government's direction and not at the military's request. These types of acquisition decisions add little to the rationality of the capital acquisition process and reduce funding for either higher priority equipment or more militarily appropriate equipment.

In addition, the expenditure of taxpayers' money on major capital equipment will always involve the issues of economic offsets, regional development and supporting Canadian industries. Regardless of the economic cost this is the reality of Canadian procurement and the need to sustain a least a minimum level of defence industrial capability.

CANADIAN DEFENCE INDUSTRIAL BASE

The evolution of the Canadian defence industrial base (DIB) over the past half century is an examination of how a nation goes from having the technical and productive capability of supporting and sustaining its military to a nation with a defence industrial base that provides subsystems and components. Alistair Edgar and David Haglund note that the two main trends in Canada's DIB since the end of World War II have been a closer cooperation with the United

[2] For a more detailed discussion of the Light Armoured Vehicle project see Major J. C. Stone (2001), An Examination of the Armoured Personnel Carrier Replacement Project, *Canadian Military Journal* **2**(2) (Summer) 59–66.

States and a move from domestic production of major platforms to the production of subsystems and components (Edgar and Haglund, 1995).

The relationship that began with the Ogdensburg Declaration was further enhanced by the Hyde Park Agreement in April 1941. The Hyde Park Agreement committed the US and Canada to a coordinated programme for defence requirements, production and procurement. The Hyde Park Declaration was also an important step in the establishment of a North American defence market. The relationship has evolved over time to meet the needs of the two countries. For example, trade in defence related products increased in the 1950s to meet the demands of the Korean War and Canada's defence industry expanded to meet the demand of both nations' armed forces. After the Korean War, the US demand for defence material declined and both nations returned to a preference for domestic production. Consequently, by the late 1950s Canada's DIB had structural problems that demanded attention and resolution. The limited domestic demand combined with the increased cost for advanced technology weapons platforms created the crisis for Canada that culminated in the cancellation of the Arrow fighter aircraft programme.

The cancellation of the Arrow is significant for two reasons. First, it implied that Canada was getting out of the business of producing major weapons platforms for its armed forces and second, it solidified the establishment of the Defence Production Sharing Agreement (DPSA). The DPSA, formally agreed to in 1959, allowed Canadian companies access to US defence contracts on an equal basis with their US competitors and not as a foreign company. The agreement was further enhanced in the 1960s when both nations agreed that there should be a general balance in procurement levels on both sides and both nations agreed to the Defence Development Sharing Arrangement (DDSA). The DDSA added research and development to the cooperative arrangement of DPSA.

Through the DD/DPSA, Canada could enter US military acquisition in two ways First, contracts issued to Canadian industries by the US Department of Defense (DoD) could be facilitated by the Canadian Commercial Corporation (CCC), which ensures quality control, price and delivery. The CCC also assumed contract liability. Some US firms believe Canadian government involvement imposes an unfair advantage. This issue remains one of the obstacles in this otherwise stable relationship. Second, commercial sub-contracts could be negotiated between US and Canadian firms. These sub-contracts account for up to 65% of all US–Canada defence trade.

With DPSA and DDSA in place, the Canadian defence industry has evolved to its present state of providing sub-systems and components to the US DOD and US prime contractors, as well as other world markets. This evolution has had some bumps along the way, primarily due to the Canadian desire to reduce dependence on US trade, but also from an American desire to address their trade deficit problems.

The Canadian defence industrial base today remains strong in small niche areas of the defence market. Although concentrated primarily in Ontario and Quebec, there is now a significant presence in Nova Scotia, Alberta and British Columbia. However, it should be pointed out that the domestic procurement by the Canadian Forces is not large enough to sustain a wide range of defence unique firms (Solomon, 2000).

Table VIII provides defence revenues by market segment for the 1996 to 2000 period and demonstrates that defence revenues fell from 1996 to 1998 and then rose significantly from 1998 to 2000. The Canadian Defence Industries Association notes that there are three negative factors influencing the defence industry in Canada.

First, there have been very few major capital equipment contracts awarded to meet Canadian Forces' requirements. Second, the United States State Department's revocation of Canada's exemption in the International Traffic in Arms Regulations has made it very difficult for Canadian firms to compete in the US market. Third, the changes in the US acquisition practice

TABLE VIII Defence Revenues by Market Segment 1996–2000

	Defence Revenues ($M)				
Market Segment	*1996*	*1998*	*% Change 96–98*	*2000*	*% Change 98–00*
Domestic Defence Market	3758.2	3210.5	–14.6	4081.6	22.6
US Defence Market	996.3	1067.1	7.1	1253.6	17.5
Rest of World Defence Market	797.8	850.8	6.6	1494.5	75.6
Total Defence Revenues	5552.4	5128.5	–7.6	6968.8	35.9

Source: Grover (1999) and CDIA (2002).

has given prime contractors of major weapon systems more responsibility for sub-contracting and support that used to rest with the sponsoring department or project office. This had reduced the number of market opportunities in the government contracting environment and placed it in the commercial environment, removing the acquisition from the public screen (CDIA, 2002).

On the positive side, there have been improvements in the domestic market as a result of the increased contracting-out of support services such as flying training or in-theatre logistic support, by the Canadian Forces with industry. The establishment of industry-run flying training has also had positive results in the foreign market as a number of nations now receive flying training in Canada. This has provided a steady revenue stream to industry (CDIA, 2002).

As indicated earlier, Canadian defence firms have traditionally produced very small numbers of major equipments for domestic use by the Canadian Forces and exported components, subsystems and systems externally. Industry will, however, face the same challenges faced by other producers of defence equipment in this post Cold War environment. Reduced expenditures on a global level have led to large-scale restructuring of defence industries throughout the world. There are fewer companies but they are larger and more competitive.

More importantly for Canada, the defence industrial base has become a very important part of the nation's national security capability. The transfer of a number of support functions from the military to civilian industry has integrated industry into the overall defence framework to 'a greater degree than at any time in our history' (CDIA, 2002). For example, 'Industry now owns Canada's military training aircraft, trains our pilots, supports our equipment, and provides service support in foreign theatres of operation' (CDIA, 2002). This degree of reliance on industry will likely increase in the future as the Department of National Defence and the Canadian Forces adds a long-term support context to new capital projects.

Characteristics of the Canadian Defence Industrial Base

The Canadian Defence Industrial Base (CDIB), particularly the aerospace and defence electronics sector, is characterized by significant foreign ownership, with many companies being subsidiaries of the large US and European aerospace and defence corporations. The shipbuilding sector is now owned by The Irving group of companies, a Canadian privately-owned business. The Irving holdings range from forest operations including pulp, tissue and newsprint mills to Canada's largest oil refinery and Irving Mainway stores. General Dynamics Land Systems, formally General Motors Defence, a subsidiary of the American automotive company, dominates the military vehicle-manufacturing sector. However, there

are a number of small and medium enterprises that support the automotive and military vehicles sector.

The Canadian defence electronics industry includes companies that develop, manufacture and repair radio communications equipment and associated products, acoustic and infrared sensors, and computers for navigation and fire control systems. The sector is also involved in signal processors and display units, special-purpose electronic components, and systems engineering and associated software – all for defence related applications. The traditional end-users of these products have been limited to the military, government agencies and commercial airlines.

The strengths of Canada's defence industry lie in small, dual-use systems that serve both civil and military niche markets. For example, Canada is competitive in markets for flight simulation, space robotics, satellite communication sub-systems and components, and various surveillance and detection products (Grover, 1997). Over half of Canada's defence electronics and aerospace industry sales are to civil and export markets. Defence sales are focused on simulation, surveillance, detection, and communications systems and products. Canadian companies do not manufacture large defence and space systems except to meet domestic requirements, and often serve as sub-contractors for large foreign defence and space programmes. Thus, inter-and intra-firm investment and trade are important for Canadian companies.

International Comparison and R&D Spending

Canadian firms are not among the top defence firms in the world. Since the Stockholm International Peace Research Institute (SIPRI) began compiling and ranking the top 100 defence firms in the 1990s, four Canadian companies made the list and none was ranked in the top 50 during the period 1990–2000. Bombardier, with regional jets and transportation equipment, such as rail cars etc as its main revenue source, is often listed in the top 100. GM's Diesel Division (now General Dynamics Land Systems), which operates from Canada, has increased its international profile by selling its armoured vehicles to NATO allies and the US and was placed as high as 57th in the SIPRI ranking (SIPRI, 2001). Aircraft and computer simulator designer CAE and communication and computing devices manufacturer CDC are the other major Canadian firms on the list. While individual defence firms are not as dominant in the world market as some of the US and UK firms, total exports of military hardware places Canada in the top 20 nations. With capital-intensive production and the specialized nature of its products, the CDIB is an R&D-intensive sector, especially the aerospace industry. Companies such as Pratt & Whitney Canada, CAE Inc, Allied Signal, and Bombardier are always in the top R&D performers in Canada (Table 9). The aerospace industry's investment in R&D totalled $1.7 billion in 1999. Non-government expenditures on R&D accounted for 1.0% of GDP in 1998.

Compared with other OECD countries, the level of R&D expenditures puts Canada in the middle rank. Most industrial R&D in Canada is performed by a small number of firms. Out of 6628 companies that reported R&D activities, 25 (0.4%) accounted for more than half the R&D performed. In addition, 51% of all industrial R&D personnel were concentrated in six major industries (about 2000 firms) – telecommunication equipment, aircraft and parts, engineering and scientific services, computer and related services, pharmaceutical and medicine, and finance, insurance and real estate (Statistics Canada, 1998).

According to Statistics Canada, 447 out of 6628 firms that carried out R&D in 1995 were under foreign control. Foreign firms, which are generally larger than Canadian-owned companies, accounted for $2.5 billion of total intramural R&D expenditures in 1998 (Statistics Canada, 1998).

TABLE IX Top CDIB R&D Spenders in Canada

1998 Rank	*Company Name*	*Revenue $Mil. 1998*	*R&D as % of Revenue*
2	Pratt & Whitney Canada Inc (fc)	1990	21
10	Bombardier Inc	8508.9	1.4
13	CAE Inc	922.4	10.5
14	AlliedSignal Canada Inc (fc)	685.4	12.4
40	Bell Helicopter Textron Canada (fc)	691.9	4.8
43	Canadian Marconi Company (fc)	291.5	10.9
44	Rolls-Royce Industries Canada (fc)	561.9	5.5
71	General Electric Canada (fc)	2681.8	0.7
100	Computing Devices Canada (fc)	411.4	2.7
	Total	**844.6**	**10**

Source: Evert Communications Limited (1999).
fc: Foreign Parent Company.

CDIB and Exports

While there are a number of studies on the economic significance of the CDIB, as discussed in Solomon (2000), none has estimated both the domestic and export sales Since the sector is heavily export-dependent, as discussed in previous sections, any assessment of the CDIB without the export sales is inadequate. While the omission of the export sector in previous studies was due to lack of reliable data on exports, in this paper a combination of data sources from Statistics Canada (SC), Canadian Commercial Corporation (CCC – an export development agency of the government) and Industry Canada and trade association data are used to overcome the problem.

Sixty-five percent of CCC's business volume was conducted under the Canada/US DPSA, the Defence Development Sharing Agreement (DDSA) and agreements held with the National Aeronautics and Space Administration (NASA). The total value of sales under these agreements was $663 million in 1998 (current dollars). The light armoured vehicles (LAVs) contract with General Motor's Diesel Division (now General Dynamics Land Systems) accounted for the largest portion of CCC contract. The CCC report indicates that the LAV and military vehicles sector has grown at an average of 10% annually.

The other source for defence exports data is Statistics Canada, in particular exports collected using the balance of payment basis.[3] However, this information does not distinguish between defence and civilian destinations. The Grover (1997) and the 1999 update study use survey information on all firms with defence market revenue of at least $100,000. The firm information, while comprehensive, may be susceptible to double-counting as defence production of one firm may be an intermediate good for another firm (Solomon, 2000).

For the purpose of this study, the Statistics Canada export data are filtered using the CCC and Foreign Affairs data on defence exports to the US and the rest of the world. The composition of the goods and services exported was modelled using the I-O pattern. Based on the database mentioned above, a figure of $1.7 billion is derived for total defence exports for fiscal

[3] Trade data are collected as either customs basis or BOP basis. The principal difference between the two concepts is that customs-based merchandise trade statistics cover the physical movement of goods as reflected in customs documents while BOP adjusted data cover all economic transactions between residents and non-residents which involve merchandise trade.

1997–98 (constant dollars). This figure is also closely related to both the Industry Canada (IC) and CDIA data on defence exports.

The I-O model is based on the 1997 inter-industry tables and includes the non-business sector such as the government and non-profit institutions. Past models treated government consumption as leakage. This is an important refinement as some defence services are provided within the government sector (coast guards, etc).

The total economic production from defence exports amounted to $2.1 billion ($998 million estimated GDP) and 13,000 person years of employment (Table X). The $1.7 billion defence exports estimated indirectly from Statistics Canada, CCC and I-O tables was fairly close to both the IC export figure $2.0 billion and CDIA's $1.9 billion. In terms of direct jobs related to exports, the I-O simulation estimated 7500 jobs while the IC figure was 8700 and the equivalent CDIA figure was 9200. The CDIA estimated direct and indirect exports-related jobs amounted to 16,000 using a multiplier of 1.75 (Grover, 1997). Note that the multiplier in Grover's study was not estimated but taken arbitrarily. The I-O simulation, on the other hand, estimated 12,900 direct and indirect export-related jobs.

While each data source and estimates have their limitations, as discussed earlier, the I-O simulation provides a reasonable estimate that can be used in the absence of a comprehensive and consistent database. This is especially true if the simulation results are used for the basis of policy formulation, as the differences at a macro or national scale are fairly small. The I-O simulations are also useful in identifying the inter-industry relationships that exist in the CDIB. In general, the increased specialization in niche technologies should sustain the CDIB and increases in defence exports could be maintained or increased as the defence and security relations between Canada and the US moves to more integration in the post-9/11 environment.

CONCLUSIONS

This paper has discussed the historical and economic context for Canadian defence policy and the associated implications for defence resource allocation. The structure and organization of Canadian defence were presented along with a review of the Canadian defence industrial base (CDIB) that supports that structure. The brief review of the Canadian defence policy and background reveals important aspects of the determinants of defence expenditures.

First, Canada defines its national interest and security concerns within the context of bilateral or multilateral arrangements. Canada's commitment to the security of Europe, as shown by the sacrifices and sizeable contributions in both World Wars, is a good indicator of this view. The Canadian approach is a realistic approach given the size of the country, location and population base. Second, making a military contribution to a multilateral or bilateral cause

TABLE X Defence Export Estimates Summary

Defence Exports	*Industry Canada*	*CDIA*	*I-O Simulation*
1997 Defence Exports	$2.0B	$1.9B	$1.7B
Direct Employment	8,700	9,200	7,500
Direct and Indirect Employment	N/A	16,000	12,900

Source: Grover-CDIA (1997); Industry Canada-IC (1997) and Authors' I-O simulation.

resulted in positive externalities, such as the affirmation of a nationhood and relative prominence. Third, whether asserting independence (sovereignty) was the primary motivation, or security, is difficult to distinguish, as both are not mutually exclusive. From an economic modelling point of view for Canada, threat is indirectly observed through the spending of allies. At least from the historical perspective, Canada's reaction to allied expenditure should be positive.

The stylized facts regarding Canadian defence expenditures in relation to its NATO allies tend to show under-contribution. However, measures such as defence expenditures as a proportion of GDP only reveal a nation's ability to pay as opposed to defence efforts. The allocation of scarce resources among alternative and competing demands is the central tenant of economics and it is also the case for both the Federal government and the Department of National Defence. The examination of the country's macroeconomic condition revealed that fiscal prospects have improved substantially since the mid-1990s The tight fiscal restraints that brought the balanced budget, however, have hindered the efficient delivery of many public services, including health and defence. In addition, the declining standard of living and the gap in productivity between Canada and its largest trade partner, the United States, are now important policy topics crowding the ever-increasing list of demands for funding. Like most of its allies in NATO, Canada's defence budget was cut throughout most of the 1990s in response to the end of the Cold War. However, Canada's continued involvement in peace support operations and other deployments with the reduced force size and a constrained budget has created a commitment–capability gap. In response, the Department has relied heavily on contracting-out in-house services to redirect the reduced force size to more operational tasks.

Given constrained defence budgets and competing defence services needs in the post-Cold War era, a highly specialized and export dependent defence industrial sector is economically desirable. In the survey of the CDIB conducted in this paper it was shown that the narrowly-defined CDIB is more export-oriented and less dependent on the domestic market while a large portion of DND's annual defence expenditures is satisfied by civilian firms and industries. The CDIB has comparative advantage in niche areas such as sub-components of weapons platforms, remote sensing, and satellites.

References

Blanchfield, M. (2001) 'Liberals ignore copter experts'. *The Ottawa Citizen Online* Thursday 19 July 2001. Available from http://www.OttawaCitizen.com/national/010719/5020050.html, accessed 19 July.

Bland, D. L. (1999) Parliament, Defence Policy and the Canadian Armed Forces, Claxton Paper No 1, Kingston: School of Policy Studies Queen's University.

Bland, D. (2003) Funding Canada's Defence Policy. CCS Research Paper. Available at http://www.ccs21.org/ccspapers/papers/bland-funding_defence.htm; Internet; accessed 15 May.

Canada. Department of Finance (2003) *Fiscal Reference Tables 2003*, Ottawa: PWGSC.

Canada. Department of Foreign Affairs and International Trade (2002) *Third Annual Report on Canada's State of Trade. Trade Update May 2002*, Ottawa: Public Works and Government Services Canada.

Canada. Department of Foreign Affairs and International Trade (2003) Pocket facts: Canada – economic indicators Number 64, Ottawa: Public Works and Government Services Canada.

Canada. Department of National Defence (1994) *1994 Defence White Paper*, Ottawa: Canada Communications Group.

Canada. Department of National Defence (1997) Defence in the 70s: White Paper on Defence Ottawa: Information Canada, 1971. In *Canada's National Defence Volume 1 – Defence Policy*, edited by Douglas L. Bland Kingston: Queen's University School of Policy Studies, 121–182.

Canada. Department of National Defence (1998) *Defence Management Systems Manual*, A-AD-125-000/FP-001, Ottawa: DND.

Canada. Department of National Defence (1999) *Shaping the Future of Canadian Defence: A Strategy for 2020*, Ottawa: Department of National Defence.

Canada. Department of National Defence (2002) *The Defence Portfolio 2002*, Ottawa: DND.

Canada. Department of National Defence (2003) *A Time for Transformation. Annual Report of the Chief of the Defence Staff 2002–2003*, Ottawa: DND.

Canadian Defence Industries Association (2002) *Statistical Overview of the Canadian Defence Industry for the Year 2000*, Ottawa: Unpublished paper CDIA.

Centre for Studies in Living Standards (2003) *'Aggregate Income and Productivity Trends: Canada vs United States'*, Ottawa: CSLS.

Claxton, Brooke (1997) Canada's Defence: information on Canada's defence achievements and organization. In *Canada's National Defence Volume 1 Defence Policy*, edited by D. L. Bland Kingston: School of Policy Studies, Queen's University, 9–56.

Edgar, A. D. and Haglund, D. G. (1995) *The Canadian Defence Industry in the New Global Environment*, Montreal & Kingston: McGill-Queen's University Press.

Dungan, P. Murphy, S. and Wilson, T. (2002) *Long Term Outlook for the Canadian Economy: National Projection Through 2025* Policy and Economic Analysis Program (PEAP) Policy Study 2002–2, Toronto: Institute for Policy Analysis, University of Toronto.

Fergusson, J. (1996) In search of a strategy: the evolution of Canadian defence industrial and regional benefits policy. In *The Economics of Offsets Defence Procurement and Countertrade*, edited by S. Martin, York: The Centre for Defence Economics, University of York, UK: Harwood Academic Publishers. 107–137.

Finan, J.S. and Flemming, S.B. (1995) Public attitudes towards defence and security in Canada. In *Canada's International Security Policy*, edited by D. B Dewitt and D. Leyton-Brown, Scarborough: Prentice Hall Canada Inc, 291–312.

Grover, B. (1997) *Canadian Defence Industry: A Statistical Overview of the Canadian Defence Industry*, Ottawa: CDIA

Grover, B. (1999) *Canadian Defence Industry: A Statistical Overview of the Canadian Defence Industry*, Ottawa: CDIA

McIntosh, A. (2002) Sea King Plan Cost $13M; No End in Sight. National Post Online, January 31, available from http://www nationalpost com/home/story html?f=/stories/20020131/1294550 html. Accessed on 31 January.

Middlemiss, D. (1995) Defence procurement in Canada. In *Canada's International Security Policy.* edited by D. B. Dewitt and D. Leyton-Brown. Scarborough: Prentice Hall Canada Inc, 391–412.

Middlemiss, D.W. and Sokolsky, J.J. (1989) *Canadian Defence Decisions and Determinants.* Toronto: Harcourt Brace Jovanovich Canada Inc.

Morton, D. (1997) *A Short History of Canada.* 3rd revised edn, Toronto: McClelland & Stewart Inc.

Morton, D. (1999) *A Military History of Canada From Champlain to Kosovo*, 4th ed, Toronto: McClelland & Stewart Inc.

Norcliffe, G. (1996) Foreign trade in goods and services. In *Canada and the Global Economy. The Geography of Structural and Technological Change*, edited by J. N.H. Briton, Montreal and Kingston: McGill-Queen's University Press, 25–47.

Rubec, S. (2000) Warranty for helicopters: Feds insist on 20-year protection, *The Toronto Sunday Sun*, 19 May 2000, news, 19.

Solomon, B. (2000) The Canadian defence industrial base. Paper presented at ASSA/ECAAR, January 2000 (http://www.ecaar.org/Articles/Articles.htm).

Statistics Canada (1998) *Industrial Research and Development – 1997 Intentions, Catalogue Number 88–202*, Ottawa: Statistics Canada.

Stockholm International Peace Research Institute (SIPRI) (2001) *SIPRI Yearbook 2001 Armaments, Disarmament and International Security*, Solna: Oxford University Press.

Treddenick, J. M. (1995) The defence budget. In *Canada's International Security Policy* edited by D. B. Dewitt and D. Leyton-Brown, Scarborough: Prentice Hall Canada Inc, 413–454.

Ireddenick, J. M. (2001) Financing the RM. In *Managing the Revolution in Military Affairs*, edited by R. Matthews and J. Treddenick, New York: Palgrave, 97–115.