

# **Filling A Shrinking Gap**

## **EDC's Changing Role in the Market for Export-Credit Insurance**

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April 15, 2008

This paper was written under contract for Export Development Canada. I thank Ronald Doyle and Mark Attley at Millenium Credit-Risk Management Ltd., Glen Hodgson at the Conference Board of Canada, and Stephen Poloz, Tom Raina and Robert Fosco at EDC for very useful conversations. All errors and omissions are mine. [Christopher.ragan@mcgill.ca](mailto:Christopher.ragan@mcgill.ca).

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## **Executive Summary**

This paper addresses three central questions regarding the role of Export Development Canada (EDC) in the Canadian market for short-term export-credit insurance. These questions are:

1. Does a “market gap” exist?
2. If yes, can EDC successfully fill the gap?
3. Is any market gap likely to persist over time?

Services provided by EDC in other markets are ignored, as are any “non-economic” aspects of EDC activity. The focus is purely on whether EDC’s presence is able to enhance the economic efficiency of the market.

Section 2 of the paper discusses the evolution of EDC and the market for export-credit insurance in Canada. EDC was initially created (under another name) in the closing months of the Second World War as an attempt by the Canadian government to facilitate Canadian exports to a world in which foreign economic and political risks hampered the flow of international trade. The Crown Corporation provided insurance to Canadian exporters, covering their sales to foreign buyers, and was a virtual monopoly provider until the late 1980s when the private-sector insurers began to enter the market. The private insurers have steadily increased their share of the market, in Canada and in other developed nations, and now provide just over half of the short-term credit insurance sold to Canadian firms.

The ongoing process of globalization produces two opposing forces on this market. As firms become increasingly integrated in global supply chains, the nature of international trade changes—being less about trade between sectors and more about the intra-industry trade essential to these integrated supply chains. Trade is therefore becoming more important to the production process, generating a potentially increasing role for organizations like EDC. On the other hand, the process of globalization also leads the large multinational insurance companies to more easily spread their large fixed costs and diversify their portfolios. The growing willingness of the private insurers to provide export-credit insurance to small exporters selling to risky markets suggests a diminishing role for EDC. The existence of these two opposing forces suggests a genuine need for a careful examination of EDC’s changing role in the market.

Section 3 examines the meaning and existence of a “market gap”. A genuine market gap for export-credit insurance, if it exists, represents a market failure—economic inefficiency. This is a much stronger condition than the mere existence of un-served Canadian exporters, which would exist even in a perfectly efficient market for export-credit insurance. This paper takes as a guiding principle the concept of market efficiency; from this perspective, a policy designed to increase the volume of exports is beneficial to Canada only if it redresses a market failure which itself tends to reduce exports.

An initial review of some evidence from the Canadian financial markets suggests that Canadian firms exporting their products to foreign markets appear to be different in meaningful

ways from otherwise similar Canadian firms selling their products in the domestic market. One theoretical approach to understanding these differences, which also applies to the market for export-credit insurance, is the theory of “credit rationing”. Based on the logic of adverse selection, this theory suggests that private-sector insurance providers will not fully price the various risks into their insurance premiums, instead implementing non-price rationing schemes. This pricing behaviour results in a genuine market gap. When this simple theory is expanded by considering the various risks and costs faced by private-sector insurers, it is predicted that private-sector insurers will impose risk and volume thresholds, beyond which insurers will not provide coverage to exporters.

These central predictions appear to be supported by observations from the Canadian market for export-credit insurance. Information provided by Canadian insurance brokers confirms that both risk and volume thresholds exist in the Canadian market for export-credit insurance. Private insurers appear to be unwilling to take on some risks, and also appear to reduce insurance coverage during less certain economic environments. The export-credit insurance market is therefore “incomplete” in the sense that insurance is unavailable for some risks.

In Section 4 we examine whether EDC is well-suited for filling the resulting market gap in a way commensurate with generating net benefits to Canada. Three reasons are examined. First, imperfect competition among the private insurers suggests that EDC has a lower target rate of return and thus can profitably serve some of the exporters left un-served by the private sector. Second, EDC’s longer-term planning horizon gives it a greater ability to bear risks and to “stay on risk” than the private insurers. Third, the possibility of significant “learning by doing” in the provision of export-credit insurance means that EDC’s up-front investment in knowledge about the foreign buyers can lead to important cost reductions over time.

These three justifications for an EDC presence in the market have specific implications for how EDC’s services are likely to differ from those provided by the private sector. Evidence from Canada’s insurance brokers confirms that EDC’s behaviour in the market for export-credit insurance is notably different from that of the private-sector insurers, and is consistent with enhancing market efficiency.

An important point of contention is also addressed. We argue that EDC’s provision of insurance to exporters left un-served by the private sector does not necessarily imply the presence of implicit or explicit subsidies. In principle, EDC’s actions can improve market efficiency because of the existing inefficiencies caused by imperfect competition and incomplete insurance markets.

One important unanswered question is whether EDC’s provision of short-term insurance is actually financially self-sustaining. This is difficult to know because EDC does not provide separate financial results for its separate lines of business. Yet this is an important issue because the existence of losses in the provision of short-term insurance would indicate either that EDC’s costs are excessive or that it is “over-filling” the market gap, providing services to firms in a way that does not generate net benefits to Canada.

Section 5 of the paper addresses two important complications. Filling the market gap left by the private sector while simultaneously covering all costs may require direct competition with the private insurers, since the large fixed costs associated with the provision of export-credit insurance may require a volume of business larger than the size of the market gap. If this is the

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case, there is no obvious way to restrict EDC's activities to minimize such competition without introducing undesirable economic incentives which would result from the requirement to exactly cover its costs. This is EDC's "profitability dilemma". Yet such a market overlap between EDC and the private insurers may not be inevitable, even if EDC is required to cover its full costs. It is an empirical, not a logical, question. A careful examination of EDC's financial flows should therefore be undertaken in order to determine the need for any market overlap.

The second complication relates to the dynamics of the market gap, and whether the private-sector insurers would immediately move in to fill the gap if EDC were to withdraw from the market. We argue that the existing market gap results from the lower risk tolerance of the private insurers, and thus it is reasonable to expect that if EDC were to withdraw from the market today, there would be no immediate change in the size of the market gap. The smallest and riskiest exporters would be left un-served, at least until the private insurers increased their willingness to serve high-risk exporters.

Experience from other countries does not weaken this general argument. It is too early to conclude that privatization of the short-term export-credit insurance markets in Europe and Australia has been a success. The coming economic cycle will likely provide a useful test of the private insurers' willingness to adequately "stay on risk".

The paper's epilogue argues that, despite the compelling efficiency-based case in support of EDC's current market role, the dynamics of the market are changing. The private-sector insurers' increasing willingness to serve high-risk Canadian exporters creates a need for the Canadian government and EDC to think carefully about a possible "exit strategy". EDC's exit from the market is likely to be desirable at some point in the future, but it should only be pursued when market conditions are appropriate.

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## Section 1

### Setting the Stage

Government should do what only government can do.

Within the spirit of this guiding principle, this paper explores the changing role of Export Development Canada (EDC) in Canadian financial markets. The principle implicitly recognizes that many things cannot successfully be done by the private sector, and must therefore be left to governments. These include both explicit “market failures”, situations in which the free market fails to produce an efficient outcome, and those more nebulous and controversial situations in which the market is deemed to produce undesirable, though perhaps still efficient, outcomes worthy of government attention. Examples include policies aimed at altering the distribution of income and preventing individuals from specific actions which may harm themselves.

The principle equally recognizes, however, that many and perhaps most activities in the economic sphere are best left to the private sector, and thus clear limits should be placed on the government’s role in the economy. It is therefore consistent with what has been called the “informal defence” of free markets (Lipsey 1984). This defence argues that free markets, in contrast to those characterized by significant government intervention, more quickly adapt to changing circumstances, provide greater incentives for innovation and thus for rising living standards, and lead to a greater decentralization of decision-making power with implications for an increase in personal freedom.

In recognizing both the importance of government in a market economy as well as the benefits derived from free markets, the principle suggests a balanced and pragmatic approach to the analysis of government intervention. It is crucial to recognize that markets very often allocate resources in ways far better for society than can governments; but it is equally important to note those circumstances where governments can play a useful role in improving resource allocation. The costs and benefits of any specific government intervention should therefore be examined

within the context of the specific market setting. Analysis should play a larger role than ideology.

#### *A. Focus on Export-Credit Insurance*

This paper takes such an analytical approach, and focuses on the role played by EDC in the Canadian market for short-term export-credit insurance. The terms of reference for the 2008 legislative review of EDC pose many broad questions regarding the role and behaviour of the Crown Corporation, and many of them will be touched upon here. This paper nonetheless has a considerably narrower focus. The emphasis on the Canadian market for short-term export-credit insurance has two central motivations.

First, the insurance of short-term export credits represents a large share of EDC's business, at least as measured by the number of customers. For example, in 2006 EDC served a total of 6805 corporate customers, 73 percent of which (4998) received EDC insurance for their short-term export credits. Interestingly, however, the income earned from this insurance is much smaller as a share of EDC's total income. In 2006, EDC's revenue from these customers was \$97.5 million, only eight percent of EDC's net income that year.<sup>1</sup>

The second reason for the focus on short-term export-credit insurance may be the more relevant given the current legislative review. In Canada, as in much of the developed world, this particular market in recent years has displayed a growing tension between private-sector insurers and the export credit agencies (ECAs) which are owned by or affiliated in some way with their home governments (Stephens 1999). Twenty-five years ago, private-sector insurers played virtually no role in the provision of short-term export-credit insurance. As we will see in this paper, however, changes in technology and market conditions have led to a significant rise in the activities of private insurers, and this rise has created inevitable tensions regarding the appropriate role played by state-sponsored ECAs. In several countries, governments have responded to these tensions by privatizing their ECAs or, in other ways, by reducing the extent to which they compete with the private sector. In Canada, however, EDC not only continues to exist but there is no policy yet announced regarding its planned departure. Despite EDC's

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<sup>1</sup> These data come from internal EDC sources, plus the 2006 EDC Annual Report.

declining market share over the past two decades, the mounting tensions with the private sector provide an obvious motivation for a careful examination of EDC's role in the market for short-term export-credit insurance.

### *B. Three Questions Regarding Market Gaps*

This paper addresses three questions regarding EDC and its role in the Canadian market for short-term export-credit insurance.

First, does a “gap” exist in this market? In answering this question, it is crucial to define a market gap carefully. This paper emphasizes the concept of a market failure, a situation in which the free market fails to allocate resources in the most efficient manner possible. More specifically, if the free-market outcome has an inefficiently low level of insurance transactions there is, at least in principle, a role for government to intervene in this market in an attempt to fill the existing gap by increasing the provision of insurance. In this case, the gap is only reflective of market inefficiency if society as a whole can be made better off through the increased provision of insurance. Note that a much weaker definition of a market gap is any free-market outcome in which some customers choose not to purchase the insurance at the current market price. Such a gap will always exist in well-functioning markets, even perfectly efficient ones. In an efficient insurance market, government intervention could still lead to an increase in the amount of insurance, even though by doing so it would generate a net reduction of the nation's welfare. It is therefore important to use the more stringent definition of a market gap associated with the concept of market failure.

If the answer to the first question is in the affirmative, the second question is whether the existing market gap can reasonably be filled by an institution like EDC. Before we can know whether EDC can successfully fill the gap, however, we must understand not only why the gap exists, but also why EDC could potentially fill the gap in a way which generates net benefits to Canada. We note that a Crown Corporation such as EDC is only one of many possible tools that the Canadian government could use in an attempt to improve the efficiency of the market. We do not address alternative tools of government intervention in this paper; instead, we implicitly accept that if there is a role for government intervention in this market, a Crown Corporation like EDC will be the most appropriate policy instrument.

The third question, based on an affirmative to the first two, is whether any market gap is likely to persist over time. The alternative is that the dynamics of the market are changing in such a way as to make EDC's gap-filling role merely temporary. Answering this question also requires an understanding of why the gap exists in the first place, for only then will we hope to understand the relevant market dynamics. If the evolution of the market is such that the gap is expected to disappear over time, thus reducing EDC's public-policy role, then it is necessary to consider the possible withdrawal of EDC from the market.

To recap, the three main questions posed and answered here regarding the Canadian market for short-term export-credit insurance are:

- Question 1: Does a market gap exist?
- Question 2: If yes, can EDC successfully fill the gap?
- Question 3: Is any market gap likely to persist over time?

Whereas reasonably compelling answers to the first two questions can be obtained through a careful analysis of market data and an understanding of how EDC differs from the private-sector insurers, the third question is necessarily more speculative. As a result, this paper's conclusions regarding EDC's future role are quite tentative.

### *C. Issues That Are Ignored in This Paper*

The focus here on the market for short-term export-credit insurance obviously leads us to ignore many issues related to EDC. Three such issues are worth mentioning. First, we ignore the many other products and services provided by EDC, including export-credit insurance for the medium and longer terms, political risk insurance for foreign direct investment (FDI), and the provision of credit to foreign buyers of Canadian exports. In each of these cases, there appears to be a general recognition both within the private sector and within government circles that there are gaps within the relevant financial markets and that EDC can play a useful role in improving economic efficiency (Stephens 1999, Gowling et al. 1999). We take no position in this paper whatsoever on the economic desirability of EDC's presence in these markets.

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We also ignore the existence of Canada's other Crown financial institutions, and notably any linkages which may exist between them and EDC. For example, the 1996 report of the Standing Senate Committee on Banking, Trade and Commerce (Senate of Canada 1996), after reviewing the operations of and linkages between the various government-owned financial institutions, recommended considerable consolidation between EDC, the Canadian Commercial Corporation, the Business Development Bank of Canada, and Farm Credit Canada. This consolidation has not occurred.

Finally, and perhaps most important for the scope of this paper, we emphasize the pure economic aspects of the market for short-term export-credit insurance, and thus the role EDC can potentially play in enhancing economic efficiency in this market. We therefore ignore whatever "non-economic" or perhaps "political" issues might sometimes be associated with EDC's provision of credit insurance to Canadian exporters. The Canadian government naturally has more than just market efficiency as an objective, and EDC as an instrument of government may therefore assist Canadian exporters in ways which do not enhance market efficiency. Situations of this sort are naturally controversial and cannot be examined adequately here, being best left to other venues of debate. In this paper, we focus on the extent to which EDC can improve the *economic* efficiency of the specific market in question.

#### *D. Layout of the Paper*

This paper is organized as follows. Section 2 briefly discusses the historical evolution of EDC and also the Canadian market for short-term export-credit insurance. We review some recent market trends, including the growing market share of the private-sector insurers. We note that the ongoing process of globalization produces opposing forces in this market, making it all the more important that EDC's changing role in the market be carefully examined.

Section 3 is devoted to examining whether a genuine gap exists in the market for export-credit insurance. After dealing with some initial analytical issues, we review some basic facts about the Canadian credit market, especially as they pertain to exporting firms. We then turn to some theoretical considerations. The canonical theory of "credit rationing" is found to be useful but incomplete for understanding the situation faced by Canadian exporters, and thus we expand the theory to examine the costs and risks faced by the providers of insurance. We find that the

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predictions from this expanded theory are broadly consistent with observations from the Canadian market.

In Section 4 we use the insights derived from this theory to examine whether EDC could usefully fill the observed market gap while providing net benefits to Canada. Three specific aspects of the market suggest a valuable role for EDC: imperfect competition related to the existence of large fixed costs, the presence of “unfamiliar” risks faced by exporters, and “learning by doing” in the provision of insurance. In each case, there is a clear prediction regarding EDC’s specific behaviour in the market, predictions which are supported by a more detailed look at market data.

Two important complications are discussed in Section 5, both relevant to EDC’s future role in the market. We begin by addressing the market overlap between EDC and the private insurers and to what extent this overlap is essential if EDC is to be able to both fill the market gap and simultaneously cover its full costs. Despite the claims by some (Stephens 1999) that such an overlap is inevitable, we conclude that more detailed empirical research is necessary before such a determination is made. We then examine the dynamics of the market gap, and address the argument that any existing gap is merely due to EDC’s presence. We also review the experiences in Europe and Australia where some export credit agencies (ECAs) have exited the market, and ask whether these experiences help us to predict what would happen in Canada in the event of an EDC withdrawal.

Finally, in the paper’s epilogue, we discuss some issues related to a possible EDC “exit strategy” and argue that any future withdrawal of EDC from the export-credit insurance market must be planned carefully and implemented only when the market conditions are appropriate.

## **Section 2**

# **The Evolution of EDC and the Canadian Market for Export-Credit Insurance**

In this section we review the birth of EDC and subsequent changes in its mandate, some relevant economic facts regarding the changing role of exports in the Canadian and world economies, and discuss how the ongoing process of globalization has been influencing the market for export-credit insurance. We begin with a brief introduction to export-credit insurance, and the specific variety that is the focus of this paper.

### *A. What Is Export-Credit Insurance?*

When a Canadian firm contracts to sell its products to a foreign buyer, it is customary that the products get shipped before the payment is made; the exporter thus extends credit to the foreign buyer. As a result, the Canadian exporter bears some risk of non-payment, and in general is prepared to incur some cost of insurance in exchange for certain payment. Export-credit insurance, if available, can provide such a guarantee, at least for a large fraction of the contracted payment (typically 90 percent). The specific risks covered by export-credit insurance vary with each case, but it typically protects exporters against non-payment by foreign buyers due to insolvency, default, repudiation of the contract, or to other risks such as the cancellation of export or import permits and war-related risks (EDC 1999, Stephens 1999). These risks are naturally related to the general macroeconomic conditions in the foreign country, specific sectoral or firm-level economic risks, and also to various types of foreign political events.

Export-credit insurance is available in three general varieties, corresponding to the time horizon of the contracted payment. Short-term insurance generally applies to payments contracted to occur within 12 months of the shipment of the product. Payments expected up to five years in the future are usually labelled medium-term insurance, and long-term insurance applies to insurance coverage for anything longer than five years. Though traditionally only state-sponsored ECAs were prepared to provide medium- and longer-term export-credit insurance, the private sector has gradually been making inroads into these markets (Wang et. al

2005), though they are still dominated by the ECAs. In contrast, the private sector's role in the market for short-term export-credit insurance has increased substantially over the past two decades, and in many national markets the private insurers now represent over half of the market. Along with this growing presence has come ever-louder demands for the complete withdrawal of the ECAs from the short-term market (Ascari 2007, Kotowski 2007). The tensions created by such demands are one motivation for this paper's focus on the market for short-term insurance.

This paper addresses only the market for short-term export-credit insurance, and EDC's potential role in that market.

### *B. The Evolution of Export Development Canada*

In the closing months of the Second World War, the Canadian federal government, concerned about the post-war prospects for Canadian exports, created the Export Credit Insurance Corporation (ECIC). Three concerns were paramount at the time. First, there was a perceived need to diversify Canadian trade toward manufactured products and away from the more traditional resource-based exports in which Canada appeared to have a clear comparative advantage. Second, there were perceived benefits associated with diversifying the geographic pattern of Canada's trade, away from the United States and toward the developing markets of the day. In both cases, there was a clear perception that the level and nature of the risks involved in financing such trade prevented the participation of private firms. As the federal minister of Trade and Commerce at the time, the legendary C.D. Howe claimed "My experts assure me that there is no private company in any part of the world doing that kind of business" (Economic Council of Canada 1982, p.44). The role for a government-owned operation thus seemed clear. Finally, while perhaps no private companies were doing "that kind of business" anywhere in the world, there were certainly other governments beginning to do so. The growing presence of government-sponsored ECAs—there were 18 in existence when ECIC was created in 1944—led to the concern that Canadian exports would be at a competitive disadvantage relative to those from other countries unless the Canadian government was prepared to play a similar role.

The activities of the ECIC were initially focused on the provision of export-credit insurance because it was in this market that the existence of "uninsurable" risks was most acute

and precluded a significant presence of private-sector insurers. Over time, however, it became clear that Canadian exporters also had a difficult time accessing credit for working capital. The Canadian bankers were hesitant to extend loans to exporting firms when the collateral for such loans often represented nothing more than the firms' export orders from remote and unknown purchasers. By the time ECIC was transformed into the Export Development Corporation in 1969, EDC's activities had broadened to include direct lending to Canadian exporters' foreign buyers.

In 1993 the Export Development Act was amended to broaden the scope of EDC's allowable activities, in line with a growing set of needs from Canadian exporters (EDC 1999). One such need was for exporting firms to be able to have "one-stop shopping"—that is, a single insurer for both domestic and foreign sales (Gowling et al. 1999). Given EDC's active role in providing export-credit insurance, it was not surprising that its mandate was then expanded to include the provision of domestic credit insurance. This was a market already reasonably well-served by the private-sector insurers, however, and the entrance of EDC created considerable consternation. By the late 1990s, EDC had withdrawn from this market and had created a partnership with a private insurer; today this EDC partnership is with the large French private insurance company, COFACE. This arrangement allows any Canadian exporting firm seeking credit insurance to deal with a single insurer; the export sales are insured by EDC whereas the domestic sales are insured by COFACE.

It is worth noting that there was nothing specific in the mandate of EDC (or the ECIC) regarding the support of *small* Canadian exporters (Economic Council of Canada 1982, Gowling et al. 1999). Yet it has typically been the case that a large part of EDC's business has been from small and medium sized enterprises (SMEs). For every year between 1998 and 2007, for example, over 80 percent of EDC's customers for short-term export-credit insurance have been small or medium sized enterprises—exporters with annual sales of less than \$25 million.<sup>2</sup> This apparent focus on SME exporters may lead many observers to conclude that EDC has a mandate directed specifically at the support of small Canadian exporters. The truth may instead be that EDC deals overwhelmingly with small exporters precisely because most Canadian exporters are

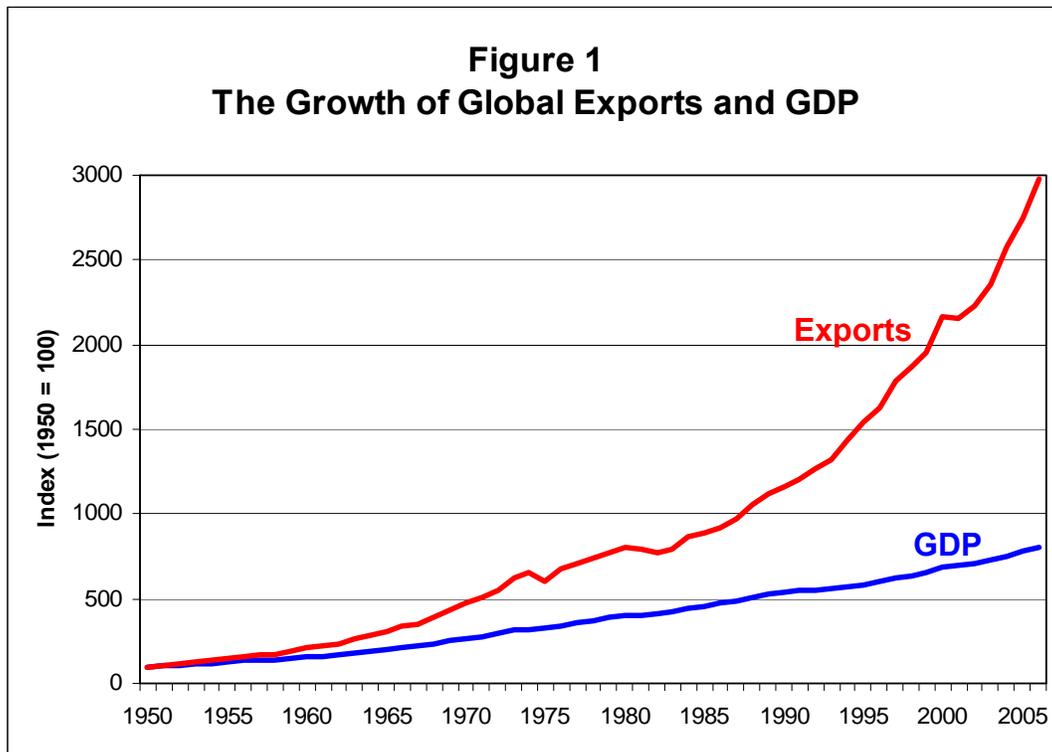
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<sup>2</sup> Data taken from EDC internal documents. There is nothing special about export-credit insurance in this regard; the same rough proportions apply to the entire range of products provided by EDC.

small; in 2001, for example, 70 percent of Canadian exporters each had less than \$1 million in exports (Statistics Canada 2003). Another possibility is that EDC deals mostly with small exporters because it is these firms who are under-served by the private-sector insurers.

### *C. Some Relevant Market Facts*

The past 50 years have witnessed an explosion of world trade, both in absolute and relative terms. Figure 1 shows that the volume of world merchandise exports has grown by roughly 30 times since 1950, in comparison with world GDP which has increased by “only” eight times. Note that these data do not include the world trade in services, which has increased substantially as a share of world GDP in the past few decades. It is hard to escape the conclusion that world trade is becoming more and more important over time.

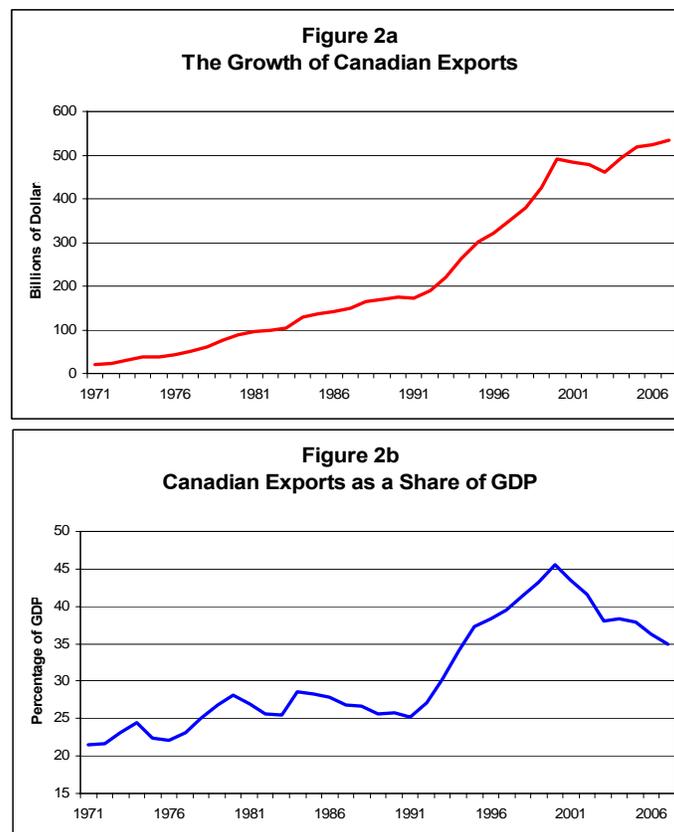


(Source: Data are for volume (not dollar value) and are from [www.wto.org](http://www.wto.org), Appendix Table A1.)

Given Canada’s historic reliance on selling its products to foreign markets, from fish and lumber to auto parts and engineering services, it is not surprising that Canada has also experienced this growing importance of international trade. This export orientation explains why

issues of international trade typically play a larger role in discussions of Canadian economic policy than is the case in larger, more self-sufficient countries. While trade is by definition a two-way process, with equal conceptual importance given to exports and to imports, our review of the Canadian data here is limited to Canada's exports.

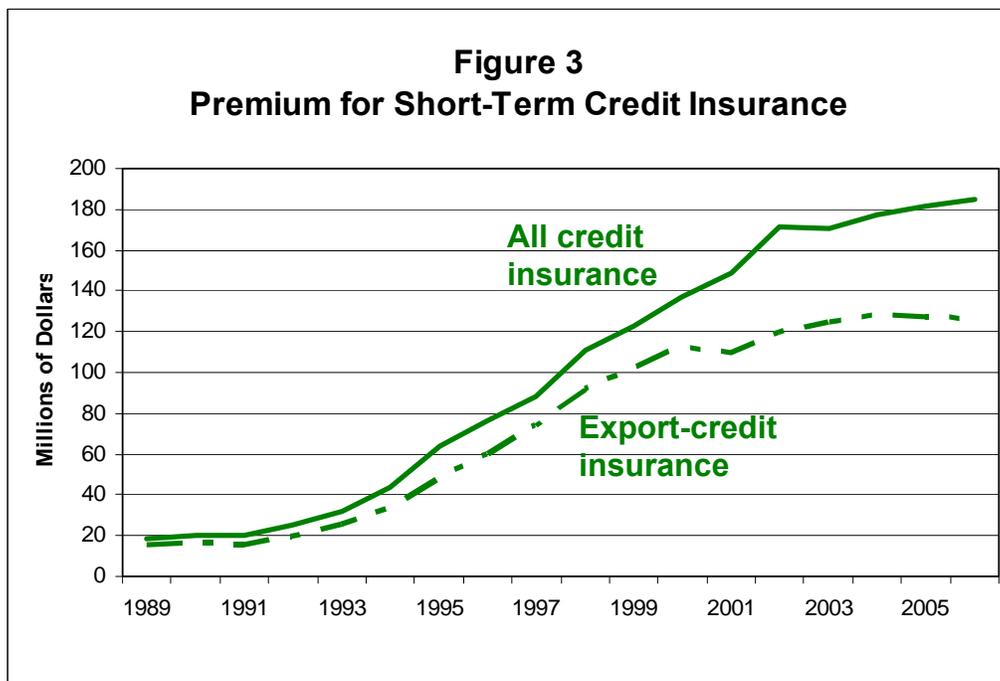
Figure 2a shows the path of the dollar value of Canadian exports of goods and services since 1971, while Figure 2b shows the path of Canadian exports as a fraction of GDP over the same period. Note the significant increase in the growth rate of exports occurring in the early 1990s, likely caused by the implementation of the Canada-U.S. Free Trade Agreement in 1989 and its subsequent expansion to include Mexico in 1994 (Wright and Holt 2007). This increase in export growth, with no clear change in the rate of GDP growth, corresponds to the increase in the export-to-GDP ratio evident in Figure 2b.



(Source: Statistics Canada, CANSIM data; GDP is #V646937 and Exports is #V499540.)

The growing volume of Canadian exports has naturally driven an increase in the size of the market for short-term export-credit insurance. Precise data on the volume of insurance

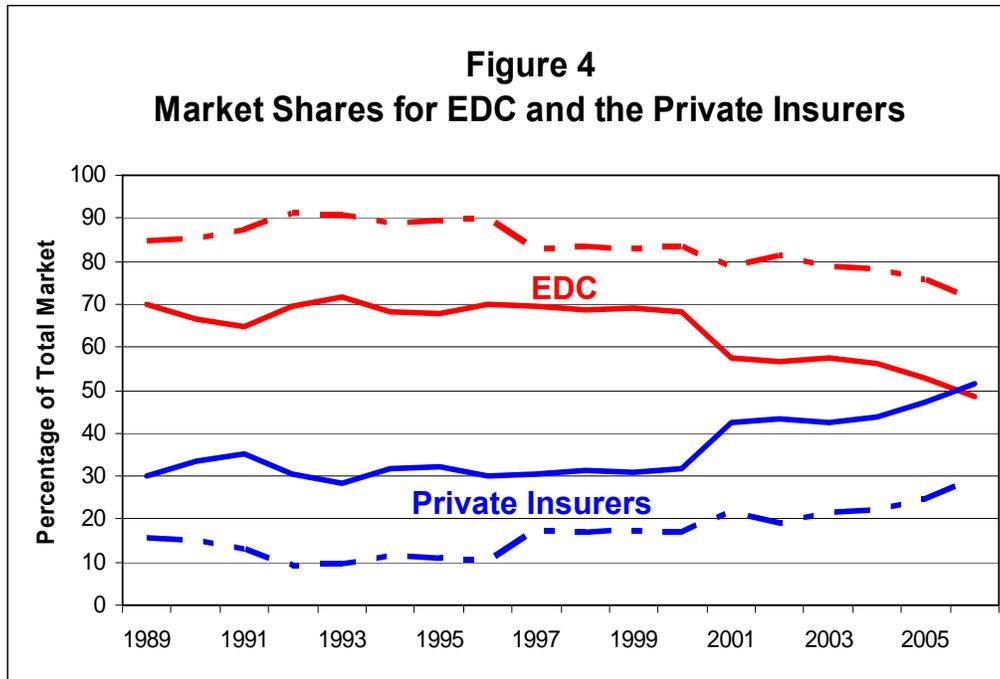
coverage and the premiums paid are difficult to obtain, mostly because it is difficult with the available data to separate revenue earned from the provision of export-credit insurance from revenue earned from other product lines, especially domestic credit insurance. Using its own internal data in conjunction with data available from the Office of the Superintendent of Financial Institutions, EDC has compiled estimates of the size of the market since 1989, and these estimates are broadly consistent with those used by non-EDC sources (e.g., Kotowski 2007). The solid line in Figure 3 shows that the amount of premium dollars collected for short-term credit insurance has increased from \$18.6 million in 1989 to \$184.6 million in 2006 (EDC 2007a). This growth represents an annual percentage increase in the market of 14.5 percent.



(Source: Solid line from data compiled by EDC (2007a) using data from the Office of the Superintendent of Financial Institutions. Dashed line is author's estimate.)

The solid line in Figure 3, however, includes revenues from domestic credit insurance for the private-sector insurers (and also for EDC between the years 1994 and 2000). Thus it overestimates the size of the separate market for export-credit insurance. The dashed line in Figure 3 is a rough estimate of the size of the market for export-credit insurance, and it also shows considerable growth since 1989. It must be emphasized that the assumptions underlying

this estimate are very rough, so while it is clear that the solid line overestimates the size of the market, the dashed line should be viewed with some scepticism.<sup>3</sup>



(Source: Solid lines from data compiled by EDC (2007a) using data from the Office of the Superintendent of Financial Institutions. Dashed lines are author's estimates.)

While the premium revenue earned in Canada from short-term export-credit insurance has grown by several times over the past twenty years, EDC's share of this market has been on a clear downward trend. In Canada and elsewhere, this market was a near-monopoly for the state-sponsored ECAs until the 1980s, when the emergence of the private-sector insurers began in earnest (Stephens 1999). The market shares in Figure 4 correspond to the two measures of market size from Figure 3. For the size of the market which includes domestic credit insurance (the solid lines), EDC's market share fell from 70 percent in 1989 to 48 percent by 2006. By this measure of the market, the private-sector insurers now have over half of the market.

If we use the market-size estimates exclusively for export-credit insurance (the dashed lines), EDC's estimated market share is still shown to have fallen, though less dramatically. By this measure of the market, EDC's market share has fallen from 90 percent in the early 1990s to

<sup>3</sup> The dashed line is an estimate based on the assumptions that only 50 percent of revenue for Euler, Atradius and AIG is from export-credit insurance, while for COFACE the share is 25 percent. It is also assumed that no other private insurers provide export-credit insurance. These assumptions are based on conversations with EDC personnel and independent insurance brokers.

just over 71 percent now. In this case, the private insurers have only 29 percent of the current market for export-credit insurance. Note that whichever measure of market size is used, EDC's market share has declined by approximately 20 percentage points over the past two decades.

The trend toward greater participation by private-sector insurers has been present both inside and outside of Canada. Indeed, the largest of the private-sector insurers serving the Canadian market are the same multinational firms serving most of the developed world. In 2005, the three dominant private insurers (with associated global market shares) were Euler (36%), Atradius (22%) and COFACE (19%). In 2006, the same three firms took the top three private spots in the Canadian market, with a collective market share of between 25 and 39 percent.

Over the past two decades, EDC's share of the market for export-credit insurance has declined by roughly 20 percentage points.

#### *D. Globalization Generates Two Opposing Forces*

Much has been said in recent years about the ongoing process of globalization and how it affects workers, firms, markets, and the power of national governments. We take globalization to be a short-hand term for the massive reductions in the costs of transportation and communication that have occurred over the past century, and dramatically so over the past three decades (Masson 2001). This process has led to two opposing forces in the market for export-credit insurance, in Canada and elsewhere.

A central aspect of the decline in transportation and communication costs is that firms, ever driven to reduce costs and enhance their competitive positions, are led to separate their production process into several stages, locating each stage in the region or country in which costs can be minimized. An automobile transmission that was once produced in Windsor might now be merely *assembled* in Windsor from various parts produced in a dozen places around the globe. This process of geographic specialization for each link in the supply chain clearly leads to an increase in the amount of international trade required to support any given amount of production. But it also changes the nature of that trade. Once overwhelmingly occurring between different industries in different countries, trade has now shifted to be more characterized as occurring

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between firms in the same industry in different countries. Traditional inter-industry trade has diminished and intra-industry trade has come of age (Dymond and Hart 2008). This contemporary phenomenon has been referred to as “integrative trade”, a name indicating that much of international trade is now in support of the transactions of firms that are fully integrated into global supply chains (Conference Board of Canada 2007, Poloz 2007).

An immediate implication of the rise of integrative trade is that international trade has become more important in the process of production, evidence for which is the notable increase in exports as a share of GDP, as seen in Figure 1 for the world and Figure 2b for Canada. And as international trade has become more important as an “input” in the production process, then *facilitating* international trade is becoming more important as a means of promoting growth in output and material living standards.

In addition to the rise of integrative trade, there is a growing body of evidence that “international new ventures” (INVs) are increasing in importance. A traditional view held that firms were created as small entities, established themselves over time, and began the process of selling to foreign markets only after they had attained a certain size and maturity. An emerging view is that a growing share of firms is created small but with an immediate focus on the international market (Oviatt and McDougall 1994). To the extent that such INVs are becoming more relevant in today’s economic landscape, it is a second reason for a rising share of exports to GDP.

Both the integrative nature of international trade and the growing importance of international new ventures have an immediate implication for the potential role of state-sponsored export credit agencies, such as EDC. If gaps indeed exist in the market for export-credit insurance, and exports are becoming more important as a driver of our material living standards, then the role for some kind of government presence in this market is also likely to be growing over time.

The ongoing process of globalization, however, also produces forces acting in the opposite direction. The massive reduction in the costs of information technology (IT) has allowed multinational insurers to more easily diversify their risk-laden portfolios. This is especially true for the largest of such firms, who are able to spread their high fixed IT costs across a large volume of customers, spread across many countries and industries. And as we saw

earlier, the large international insurers have indeed been increasing their global market share, and with it their level of international and sectoral diversification (Wang et al. 2005). Their increase in the share of the Canadian market for export-credit insurance over the past twenty years has been a natural consequence of this global drive for greater international diversification.

This growing presence of the private insurers suggests that we must take a dynamic view of market gaps for export-credit insurance. Whatever market gap might have existed a few decades ago is clearly smaller today, and may well disappear altogether at some point in the near future (Stephens 1999). To the extent that any market gap eventually does disappear, a clear implication is that the role for EDC to improve market efficiency may also disappear.

The process of globalization produces two opposing forces:

2. The growing importance of trade in GDP suggests an expanding role for EDC.
3. The growing willingness of the private sector to service the market suggests a diminishing role for EDC.

The existence of these two opposing forces underlines the need to carefully examine the role of EDC in the market for export-credit insurance. Unless one is prepared to begin from a purely ideological position, it is not immediately obvious without careful examination whether a genuine market gap exists and thus whether EDC can play a legitimate role in enhancing market efficiency. In addition, even if EDC has such a legitimate role to play, nothing guarantees that such a role will not diminish or even disappear over time.

## **Section 3**

# **Identifying Market Gaps for Canadian Export-Credit Insurance**

This section reviews some basic empirical facts about the access to credit by Canadian exporting firms. We review some possible theoretical explanations and then examine how the central theoretical predictions are supported by a more detailed look at the Canadian export-credit insurance market. We begin by discussing two conceptual issues, one on the precise meaning of a market gap and the other a cautionary note on the value of “encouraging” exports.

### *A. Two Analytical Preliminaries*

In well-functioning markets with flexible prices, the rationing of scarce commodities occurs through price adjustments. Increases in demand or reductions in supply will generally lead to price increases, whereas reductions in demand or increases in supply will cause the price to fall. For any given set of market conditions, such price adjustments will occur until the quantity of the product demanded by customers is brought into balance with the quantity of the product supplied by sellers. Many customers will end up purchasing the product at this market price, while many other potential customers will be unwilling to pay this price and will thus be “priced out” of the market.

There is nothing inefficient about a market outcome where many potential customers choose not to purchase the product, even when they view the price as being “too high”. Markets achieve efficiency by encouraging the lowest-cost sellers to engage in production and then allocating those scarce resources toward the buyers who most highly value the product. The result is that the customers who end up purchasing the product are those who value the product more than its price, a price which reflects the resource costs associated with production. In contrast, those customers who are “priced out” of the market value the product less than its price and therefore less than the associated resource costs. The fact that there are customers “priced out” of the market is generally a sign of market *efficiency*, not the contrary.

When we examine the market for export-credit insurance, therefore, we must be careful not to conclude that the mere existence of many Canadian exporters lacking insurance coverage for their foreign sales represents an inefficient market outcome. Even if this market were operating perfectly efficiently, there would be many such exporters choosing not to purchase export-credit insurance at the going market price.

A genuine “market gap” in this paper is taken to be a situation in which the free-market outcome generates an inefficiently low level of output of the product in question. Such an outcome in the market for export-credit insurance would be one in which the *net benefits* to Canada as a whole—not just to exporters—could be increased by providing more insurance to Canadian exporters. In order for this outcome to be possible, the benefits to society from increasing the provision of insurance would need to be greater than the associated costs.

A genuine “market gap” for export-credit insurance, if it exists, represents a failure in the market to generate economic efficiency. This is a much stronger condition than the mere existence of unserved Canadian exporters.

The second analytical point relates to the definition of a market gap, and is a cautionary note about the value of “encouraging” as opposed to “facilitating” Canadian exports. This paper takes the concept of market efficiency as a central guiding principle and thus adopts the view that there is nothing special about exporting products as compared to selling those same products in domestic markets. Once a tonne of Canadian steel is produced and sold, it matters little to Canadian aggregate income or average material living standards whether the steel is sold within Canada or to a buyer in some other country.

From the standpoint of market efficiency, the appropriate policy objective is to achieve the level of exports that would naturally occur if markets were competitive and there were no market failures. “Encouraging” exports, therefore, is not inherently a sensible policy objective. It is, of course, very easy to provide such encouragement, and for many years governments around the world designed myriad policies to do exactly that. But it is now widely recognized, despite the success of such policies at increasing exports (and in raising the incomes of the specific firms and workers involved), that these policies are rarely beneficial for the country as a whole. This

widespread recognition was of course the motivation for the creation of the GATT and its successor, the World Trade Organization (Lipsey 1999).

In contrast, “facilitating” an efficient level of Canadian exports is a sensible policy objective. If some production taking place in Canada is naturally destined for foreign markets, and if there are some market inefficiencies which make that production either infeasible or highly costly, then it is sensible to direct public policy to reducing the impact of these market inefficiencies. In a small open economy like Canada’s, it is natural that much production will be destined for foreign markets, not least because many firms will be unable to achieve their full scale economies if they are limited to selling only in the small Canadian market. Access to large foreign markets can lead to greater productivity and higher living standards at home (Harris and Cox 1984)

In order to actively and sensibly facilitate Canadian exports—mindful of the objective of market efficiency—it is necessary to first understand why the free market may lead to an inefficiently low level of exports. In this paper, this requirement amounts to understanding why the market for export-credit insurance may leave some exporters inefficiently un-served. Only then can we determine whether EDC can usefully redress the market inefficiencies and thus facilitate an efficient level of Canadian exports.

From the perspective of market efficiency, a policy designed to increase the volume of exports is beneficial only if it redresses a market failure which itself tends to reduce exports.

With this distinction between “encouraging” and “facilitating” exports in mind, the empirical results in a recent research paper released by the C.D. Howe Institute should be interpreted very carefully (Kotowski 2007). The paper estimates an empirical relationship for 2006 between the volume of Canadian exports to various countries and, among other things, the level of EDC’s short-term export-credit insurance liabilities with buyers in those same countries. After controlling for several economic variables predicted to affect these trade flows (distance, GDP, population, etc.), the results suggest a clear positive relationship between EDC’s provision of export-credit insurance and the volume of exports.

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One possible conclusion from these results is that EDC's provision of export-credit insurance *caused* an increase in Canadian exports. Though it is not the only possible conclusion, consider the implications that follow from it.<sup>4</sup> Does the increase in exports indicate that EDC's actions have generated benefits to Canada? The answer depends crucially on whether EDC's activities were, to use the earlier terminology, "encouraging" exports or merely "facilitating" an efficient level of exports. If EDC's activities were encouraging exports when no market gaps existed, then the observed increase in exports would represent an inefficient market outcome. Scarce resources which have higher value elsewhere would be redirected by EDC's activities to the export sector where their value is less. Canada as a whole would be worse off, even though specific Canadian exporters and their workers would be better off. If, on the other hand, there were clear gaps in the market for export-credit insurance, then it is much more likely that EDC's presence in that market was filling these gaps and thus facilitating an efficient level of exports. In this case, the expansion of exports would benefit Canada as a whole because lower-value resources from other sectors would be redirected by EDC's activities into the higher-value export sector.

These two central analytical points—the meaning of market gaps and the efficiency case for "facilitating" exports—indicate that understanding the economics of the market for export-credit insurance is necessary in order to understand the role played by EDC. To this analysis we now turn.

### *B. Some Suggestive Financial-Market Facts*

Two interesting sets of facts about Canadian financial markets provide a useful point of departure for our theoretical discussion. The first comes from the 2004 Statistics Canada *Survey of Financing of Small and Medium Sized Enterprises*. The survey was conducted in the fall of 2004 and responses were recorded for over 13,000 firms, each with fewer than 500 employees and less than \$50 million in annual revenue. The questions covered many topics related to these firms' access to credit of many types (Statistics Canada 2006).

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<sup>4</sup> The issue of causality (as always in economics) is important, but it is not addressed in the original paper.

The survey results reveal that while 20 percent of all firms in the survey claimed that “obtaining financing” was an obstacle to their business growth, there were some interesting differences regarding the types of firms. For example, in the manufacturing sector, where Canadian firms have the highest propensity to export, 27 percent of firms claimed to face this financing obstacle. More revealing is that exporting firms were 50 percent more likely than non-exporters to claim financing obstacles to their business growth.

As suggestive as these results may be, one problem with such raw survey data is that there is no way to know whether the correlations in the data are genuine or instead driven by some unobservable variables. For example, perhaps the apparent difference between exporters and non-exporters in terms of their access to financing is only illusory, and that once other firm attributes are taken into consideration (such as size or industry or age) the difference disappears.

The second set of facts come from a study which uses the same Statistics Canada survey data but attempts to control for many of these other economic variables (Riding and Belanger 2007). Two empirical results stand out. First, after controlling for industry and many characteristics of the individual firms, start-up exporting firms appear to be twice as likely to have credit applications denied than start-up firms who are non-exporters. Second, while exporters clearly appear to have less access to credit, there is no evidence that the *terms* of credit differ between exporters and non-exporters.

Canadian firms exporting their products to foreign markets appear to be different in meaningful ways, or at least are perceived to be different, from otherwise similar Canadian firms selling their products in the domestic market.

This difference is not surprising when it is recognized that the provision of various types of credit to firms involves risk, and exporting firms are likely exposed to more risks than are non-exporters. The result regarding the terms of credit being similar between exporters and non-exporters suggests that financial firms may be more likely to simply deny credit to some exporting firms rather than create a more tailored contract which accurately prices in the greater perceived risks. Such “non-price rationing” will be a recurring theme in our theoretical discussion, to which we now turn.

### *C. Theoretical Interpretations I: Credit Rationing*

The late George Stigler, Nobel Laureate and long-time University of Chicago economics professor, noted that policy-minded economists too often justify some form of government intervention with the breezy allegation of “capital market imperfections” (Stigler 1961). In lamenting the propensity to make this instinctive claim, he says:

[the] condemnation of the easy use of imperfections-in-the-capital-market is a plea for the study of markets, not a claim that capital markets are “perfect”. ....The attribution of imperfections to markets has been an easy game because markets seldom have defenders. In fact, it is worse than that: the only markets with well-endowed defenders are those which are monopolistically organized and can afford the expense of a defender. I do not propose that economists appoint themselves defenders of markets, however; it is enough if they resign from the prosecution. (p.291)

Since Stigler wrote these words, much has been written about various types of capital-market imperfections, and how they justify some role for government intervention. But almost as much has been written about how existing imperfections may be less undesirable than the government tools designed to redress them. In short, there is little consensus in this academic literature, as illustrated recently by a symposium on the subject in the *Economic Journal* in 2002. The introduction to the symposium reveals the breadth of professional disagreement, not only regarding how financial markets operate but the extent to which government policy is required and can be effective (Cressy 2002).

Despite the lack of consensus in the academic literature, there are some ideas that have proven to be very popular. One such idea is “credit rationing” as developed by Stiglitz and Weiss (1981). Their theory is used to describe the operation of credit markets, as opposed to markets for export-credit insurance, but the basic logic—relying on asymmetric information—applies more generally.

The basic story is as follows. There are many borrowers who seek loans with which to finance risky projects, and each one has some private information regarding the project’s riskiness. Lenders know that all projects are risky, but cannot observe which have the most risk. Lenders can compute a profit-maximizing interest rate to apply to their loans, and they face an

interesting trade-off. For any given set of loans, a high interest rate clearly enhances the lenders' profits. But because of adverse selection caused by the borrowers' private information, a higher interest rate also brings forth the riskiest of the borrowers, thus increasing the prospects of non-repayment. Lenders compute their profit-maximizing interest rate to balance these effects at the margin; call it  $r^*$ . But there is nothing in the market guaranteeing that all demand for credit at  $r^*$  will be satisfied by the lenders.

In an ordinary well-functioning market, any excess demand would lead to price increases until the market clears. But in this market, because of the asymmetric information and the adverse selection, the lenders have no incentive to raise  $r^*$ ; they would rather leave  $r^*$  unchanged and instead simply deny credit to some willing borrowers. Hence there is "credit rationing" in equilibrium, but no market clearing. A central prediction from the Stiglitz-Weiss model is that the borrowers who are unable to access credit at  $r^*$  are identical in all observable respects to those borrowers who successfully receive credit. There is a clear "gap" in the market.<sup>5</sup>

Though the model was originally created to describe the operation of credit markets, its basic intuition can be applied to the market for export-credit insurance. If domestic exporters seeking insurance have some private information regarding the riskiness of their foreign buyers, then the same process of adverse selection may take place. Insurers will not raise the premiums to clear the market for fear that the exporters with the riskiest buyers will disproportionately come forward to purchase the insurance, thus reducing the insurers' expected profits. The result will be insurers who implement non-price rationing schemes and exporters who cannot access insurance at the existing market premiums.

For the purposes of this paper, the basic Stiglitz-Weiss intuition is valuable but incomplete. While the model does predict the existence of a market gap, it makes no clear prediction regarding *how* export-credit insurance will then be rationed. By thinking more carefully about the costs and risks involved in providing export-credit insurance, we can derive clear predictions regarding the nature of this rationing, and then compare these predictions with evidence drawn from the market.

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<sup>5</sup> As popular as the Stiglitz-Weiss model has become, it should be emphasized that credit rationing in such a model is a possible outcome, not a guaranteed one. De Meza (2002) and De Meza and Webb (1987) discuss the outcome of "over-lending" in very similar models.

The basic logic of adverse selection suggests that insurance providers may implement non-price rationing schemes, resulting in a market gap.

#### *D. Theoretical Interpretations II: The Costs of Providing Export-Credit Insurance*

We consider the export-credit insurance market in the absence of any government intervention, and focus on how premiums are likely to be determined in this setting. After examining the reasons for any non-price rationing, we describe the nature of the market gap that is predicted to occur. Our model contains three types of firms: the private-sector *insurers*, the *exporters* who are potential clients of the insurers, and the foreign *buyers* of the products sold by the exporters. We examine in turn the three key elements of the model: the fixed costs of administering insurance, the insurers' level of risk aversion, and imperfect competition in the insurance market.

**1. Two Types of Fixed Costs.** There are considerable fixed costs associated with the administration of an export-credit insurance policy, but it is useful to split these fixed costs into two different types. Let  $F_G$  represent the “general” fixed costs for the insurer. This includes the overhead costs associated with typical head-office functions. More important, it includes the costs of operating the firm's considerable information technology (IT) system for the purposes of assessing foreign political and economic risks. On the political side, these risks include the threat of political instability for a large collection of countries; on the economic side, they include foreign business-cycle and sectoral risk for the same collection of countries but also the various sectors within each country. For each insurer, these are genuine fixed costs because they do not rise when the firm provides insurance to an additional domestic exporter. These country-specific and sector-specific risks are continually being assessed by the insurer as a matter of course, as a requirement for participating in this market.

Let  $F_i$  be the fixed costs to the insurer from collecting information and analyzing the risks associated specifically with the foreign sales of exporter  $i$ . The fundamental risks are those identified with the individual foreign buyers of this exporter—the risk of the foreign buyer either defaulting on or repudiating the contract. This cost is independent of the volume of the exporter's foreign sales, depending only on the number and identity of the foreign buyers. We call  $F_i$  the

insurer's "exporter-specific" fixed cost. As the insurer expands coverage to an additional domestic exporter, a new  $F_i$  is added to its collection of fixed costs.

Such fixed costs are emphasized in the 1982 report by the Economic Council of Canada:

The cost of analysing credit worthiness can be very high. The greater the distance between the purchaser and the shipper, the harder it is to obtain reliable information about the purchaser's financial health and the characteristics of his firm. This is especially true in the case of trade with countries that have no traditional links with Canada, as is often the case with developing countries. (p. 47)

During the 1970s, these costs were estimated by the Economic Council to represent more than 50 percent of premium revenue. Though improvements in IT technology have undoubtedly reduced this fraction, it is still an industry with very high fixed costs; some recent informal evidence suggests that fixed costs now account for between 30 and 35 percent of premium revenue.<sup>6</sup> The role of fixed costs in providing export-credit insurance is also emphasized by Stephens (1999), although he does not make the distinction between  $F_G$  and  $F_i$ . We will see in what follows that the two fixed costs play different roles in the determination of insurance premiums.

**2. Risk Aversion and Variable Costs.** Now consider the specific risks faced by an individual exporter. Each domestic exporter is owed payments from a set of foreign buyers. Let  $v_{ij}$  be the payments owed by buyer  $j$  to exporter  $i$ . The exporter seeks insurance coverage for the total volume of export receivables,  $V_i$ , where

$$V_i = \sum v_{ij}$$

Each foreign buyer  $j$  makes the full payment to exporter  $i$  with some probability  $p_{ij}$ , where  $0 < p_{ij} < 1$ . Without any export-credit insurance, the exporter's *expected* revenue from its collection of foreign buyers is  $E(V_i)$ , where

$$E(V_i) = \sum p_{ij} v_{ij} < V_i$$

Now consider the insurer's variable cost *per dollar* of insurance coverage for any exporter  $i$ . These variable costs are denoted  $c_i$ :

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<sup>6</sup> This estimate is based on conversations with principals at Millenium Credit-Risk Management Ltd., a leading Canadian broker for export-credit insurance.

$$c_i = q_i + \alpha\sigma_i^2$$

where  $q_i < 1$  is the probability of paying a \$1 claim to the exporter,  $\alpha > 0$  is a measure of the insurer's level of risk aversion, and  $\sigma_i^2$  is the riskiness of exporter  $i$ 's payment stream from the collection of foreign buyers, which itself is a complex combination of the political and economic risks already mentioned above, averaged over all of the exporter's foreign buyers.

Note the important difference between the probability of making a \$1 payment to the exporter ( $q_i$ ) and the riskiness of the exporter's range of credits ( $\sigma_i^2$ ). The first embodies the concept of an average or mean; the value of  $q_i$  is given by

$$q_i = 1 - E(V_i)/V_i < 1$$

and is equal to the expected loss per dollar over the exporter's entire range of credit risks. In contrast, the riskiness of the credit risks ( $\sigma_i^2$ ) describes the spread or variance of those risks; an increase in  $\sigma_i^2$  is possible even when  $q_i$  is unchanged.

Several comments are required to explain these variable costs. First, if the insurer is entirely risk neutral, then  $\alpha = 0$  and so the only relevant variable cost is the expected payout to the exporter,  $q_i$ . Such risk neutrality is a likely outcome if the insurer is able to assemble a sufficiently large and diversified pool of risks so that the law of large numbers can be applied.

Second, any risk aversion on the part of the insurer ( $\alpha > 0$ ) can be viewed as generating a greater variable cost of providing insurance; risk aversion means that the insurer must be compensated in order to take on more risk (higher  $\sigma_i^2$ ) even if  $q_i$  is unchanged (Pratt 1964). The greater is the level of risk aversion, the higher is  $\alpha$  and thus the more the variable costs rise for a given increase in  $\sigma_i^2$ . Such risk aversion will generally occur if the insurer is unable to assemble a sufficiently large and diversified pool of risks.

A third point relates to the nature of the risks involved. For what might be called "familiar" risks, such as those associated with known buyers in economically and politically stable countries, the insurer will be approximately risk neutral because it can easily assemble a large pool of well-diversified risks. With "unfamiliar" risks, however, it is more difficult to assemble such a diversified risk pool, and thus the insurer becomes more averse to risk, as reflected in higher variable costs. Furthermore, to the extent that these higher costs are ultimately

reflected in higher premiums, this risk aversion may lead to a reduction in either the size or the quality of the risk pool, thus exacerbating the insurer's level of risk aversion.

Finally, note that there is likely a negative correlation between the exporter's volume of foreign sales ( $V_i$ ) and the riskiness of the associated payments,  $\sigma_i^2$ . In other words, smaller domestic exporters tend to be larger risks for the provider of insurance. Smaller exporting firms tend to be less sophisticated financially and also tend to deal with smaller (and more risky) foreign buyers, not yet having broken into the large-buyer market. As Kotowski (2007, p.14) states, "larger companies present safer risks than their smaller counterparts, which may lack both a diversified clientele and a sophisticated understanding of their customer's creditworthiness." This correlation has a stark implication: in a market in which it is much easier to observe a firm's size than the inherent riskiness of its customers, small domestic exporters may simply be viewed as highly risky bets, and treated accordingly.

**3. Entry Barriers and Imperfect Competition.** The presence of large fixed costs can act as an effective entry barrier in any industry and result in profit levels well above those that would be observed in a competitive market. In the market for export-credit insurance, the requirement to operate huge IT systems in order to continuously update political and economic risks for each country, as well as sectoral and firm-specific risks within each country, probably helps to explain why there are so few private-sector insurers in the global market (Stephens 1999). These fixed costs have also likely played a significant role in the private insurers' aggressive global diversification strategy over the past decade, a strategy designed not only to better pool their global risks but also to spread their large fixed costs over a greater volume of coverage.

We note that the modern theory of industrial organization certainly admits the possibility that even a small number of firms, each with large fixed costs which successfully deter entry, may nonetheless interact in such a way as to produce a competitive level of profits (Tirole 1988, Chapters 5 and 6). Yet this possibility is by no means the default view among economists, and in recent years a great deal of intellectual effort has been spent on understanding how firms in such highly concentrated markets can avoid the perils of competitive behaviour and maintain high levels of profitability.

We proceed under the assumption that the export-credit insurance market, at least in its current configuration, is imperfectly competitive and that profits are above their “normal” level. Note that above-normal economic profit does not readily correspond to any particular level of the accountant’s measures of profitability, the financial figures published in corporate annual reports. By “normal” economic profit we mean the level of profits that would be available to the firms’ shareholders if they were instead to allocate their capital and expertise to the next best alternative industry with similar levels of corporate risk.

The export-credit insurance industry’s above-normal profitability can be viewed in terms of the insurers’ target rate of return relative to the return available in the next best alternative. We postulate that the insurers’ target rate of return,  $R^T$ , satisfies:

$$R^T > R + \zeta$$

where  $R$  is the long-term rate of return on government debt and  $\zeta$  is the average corporate risk premium. Note that while providers of export-credit insurance bear many risks at the level of individual exporters, their ability to assemble large risk pools implies that their overall operations may not be especially risky.

**4. Insurance Premiums with Full-Cost Pricing.** Putting these three market elements together yields a theory of what insurance premiums would be under the assumption that insurers set each exporter’s premium to fully reflect the associated risks and also to achieve their target rate of return. In this case, the insurer would charge an exporter-specific premium,  $z_i$ , per dollar of volume coverage. The total premium revenue for the insurer would therefore be  $z_i V_i$ . The insurer’s total costs of providing insurance to exporter  $i$  would be

$$(q_i + \alpha \sigma_i^2) V_i + F_i + \theta_i F_G$$

where  $\theta_i$  is the fraction of the insurer’s general fixed costs that are allocated to exporter  $i$ . There is no obvious way to allocate fixed costs across the insurer’s many clients, but clearly these fixed costs need to be included in some way if the premiums are to cover the insurer’s full costs. One simple allocation is to assume that  $\theta_i$  is equal to exporter  $i$ ’s share of the insurer’s total insurance coverage:  $\theta_i = V_i / \sum V_i$ . Using this allocation of the insurer’s general fixed costs, and assuming

that the premium is set at a level that delivers the target rate of return, we get the final value of  $z_i$  as a function of all the relevant costs and risks:

$$z_i = (1+R^T)(q_i + \alpha\sigma_i^2 + F_i/V_i + F_G/\sum V_i)$$

Four broad sets of predictions come from this model of insurance premiums in which all relevant costs and risks are priced into the premium. First, other things being equal, an increase in the non-payment risk leads to an increase in the premium rate. Note that higher risk in this sense may mean either a higher  $q_i$  or a higher  $\sigma_i^2$  in a situation where the insurer is risk averse. It is also true that for any given underlying risks ( $q_i$  or  $\sigma_i^2$ ), an increase in the insurer's level of risk aversion leads to a higher premium.

Second, other things being equal, increases in either one of the fixed costs lead to an increase in the required premium. Note, however, that what really matters is the fixed cost relative to the exporter's sales volume,  $V_i$ , and this is a more insightful way to think about the relationship. For given fixed costs, a smaller sales volume by the exporter means that the fixed costs can now be spread only over a smaller volume, thus pushing up the necessary premium. While this is true for both  $F_G$  and  $F_i$ , it is much more relevant for the exporter-specific fixed costs. To see this, imagine a 30-percent reduction in the size of the exporter, as measured by  $V_i$ . This reduction in  $V_i$  will have a negligible effect on  $\sum V_i$  because the exporter is one of hundreds or perhaps thousands of insurance customers, and hence it will have only a negligible effect on  $F_G/\sum V_i$ . But the same 30-percent reduction in  $V_i$  will lead to a 43-percent increase in  $F_i/V_i$ . Naturally, the larger is  $F_i$ , the larger will be the resulting percentage increase in the premium.

Third, holding all other things constant, a higher target rate of return for the insurer will lead to an increase in the required insurance premium. Any changes in the competitive environment are likely to have their main effect on market premiums through this channel.

The final prediction is perhaps the most relevant of all. If insurance premiums reflected such "full-cost pricing", there would never be a reason for an insurer to decline insurance coverage to any domestic exporter. Whatever the volume of the exporter's sales, or the riskiness of its foreign buyers, the insurer could adjust the premium so as to fully reflect these costs and risks, while still earning its target rate of return. If such adjustment resulted in considerably higher premiums, the exporter could choose not to purchase insurance coverage, but the insurer would stand willing to provide it at the "full-cost" premium.

**5. Risk Categories and Insurance Thresholds.** Such “full-cost pricing” would be complicated and expensive because it would involve very detailed risk assessment for each of the exporter’s foreign buyers. For example, to insure export credits for a Canadian exporter with fifty foreign buyers, the insurer would need to carefully examine the financial situation of each of the foreign buyers, including the risks faced by each buyer in its separate line of business. Only then could the insurer compute a fully accurate value for both  $q_i$  and  $\sigma_i^2$ .

Instead, insurers choose simple rules of thumb with which to categorize exporters into one of several risk categories. As Stephens (1999) says,

Most short-term insurers will look to adopt a premium system that is easy and cheap to administer and so will not be keen to have a system where individual cases are rated separately. (p.46)

According to discussions with insurance brokers specializing in export-credit insurance, Canadian premiums tend to be set at some “baseline” level, roughly 1 percent per dollar of coverage. The premiums are then adjusted upward or downward depending on some clearly and easily observable risk categories. For example, the country of each foreign buyer is generally rated on a risk scale from 1 to 5, and the foreign buyers themselves are often rated on a risk scale from 1 to 10.

If insurers are unwilling or unable to fully price the risks into the premiums, and choose instead to use simple rules of thumb, including broad risk categories, they will face the inevitable problems of adverse selection. For example, if the insurers increase the premium by 0.1 percent from the baseline whenever export credits are concentrated in a category-3 country, then the insurers will tend to make more profits when the specific country in question is in the “safer” part of that risk category than when it is in the “riskier” part of that same category. This is a problem for all types of insurance whenever broad risk categories are used to set premiums. One predicted response to this situation is for the insurer to use clear “thresholds”, beyond which the insurer will choose not to provide insurance, thus resulting in an “incomplete” insurance market.

In the context of the market for export-credit insurance, two such thresholds immediately come to mind—the first for the riskiness of the exporter’s credits and the second for the exporter’s sales volume. Earlier, we mentioned the important difference between “familiar” and

“unfamiliar” risks for the insurer.<sup>7</sup> With the former, it is relatively easy to assemble a large and diversified risk pool and hence the variable cost of providing \$1 of insurance coverage tends to be simply the probability of making a \$1 claim. But with some unfamiliar risks, for which it is more difficult and costly to assemble an adequate risk pool, the insurer’s level of risk aversion becomes relevant and necessitates an increase in the premium. But for sufficiently unfamiliar risks, for which the assembly of an adequate risk pool is infeasible, the insurer will simply choose not to provide coverage. Within the context of our model, we can think of this risk threshold as follows:

$$\sigma_i^2 > \sigma_T^2 : \text{do not provide insurance}$$

There is also likely to be a volume threshold, especially if there is a negative correlation between exporters’ size and the riskiness of their export credits. The exporter’s volume is relevant for two reasons. First, for a small volume of insurance coverage, the export-specific fixed costs necessitate a higher premium. Yet this feature by itself does not create a volume threshold, as the insurer could simply raise the premium to reflect these higher costs. Central to the existence of a volume threshold is the perception (whether true or not) that smaller exporters have riskier export credits. In the case of small exporters, many of the foreign buyers will also be small, and hence they may also have short or poorly established track records. In addition, the small domestic exporter is likely to have only a small number of foreign buyers, thus making diversification more difficult. For both reasons, small exporters will often be considered to be “unfamiliar” risks, and insurers may simply choose not to serve them. Within the context of our model, we can think of this volume threshold as follows:

$$V_i < V_T : \text{do not provide insurance}$$

Such a volume threshold could be implemented in two ways. The most direct would simply be to deny insurance coverage to any exporter with  $V_i$  below the threshold. A less-direct way would be to set a minimum dollar-value of premium to any exporter, where the minimum premium would be computed based on the volume *threshold* rather than the exporter’s actual

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<sup>7</sup> In the insurance business and literature, the terms “insurable” and “uninsurable” are used to describe those risks that the private sector will, and will not, insure against. Our different terminology here reflects a desire to emphasize the declining clarity of this traditional distinction, as private-sector insurers now take on risks that were at one time thought to be uninsurable. See, for example, Stephens (1999) and Wang et al. (2005).

sales volume. For an exporter with volume equal to half of the threshold, the result would be a premium rate twice that for an exporter whose volume just equals the threshold.

Our simple model of the costs and risks of insurance provision thus predicts that while insurers will build the clearly observable and familiar risks into their insurance premiums, they are likely to deal with the most extreme unfamiliar risks by using risk and volume thresholds, thus denying insurance coverage to some exporters and creating market gaps. Note that such market gaps caused by incomplete insurance would indeed reflect inefficiency in the market, in the same sense that the gap in the Stiglitz-Weiss model of credit rationing is inefficient. Indeed, the intuition in that model can be used here to explain why insurers may choose not to raise the insurance premium in order to fully reflect the highest risks. If exporters have some *private* information regarding the credit worthiness of their foreign buyers, then any attempt to raise premiums may, through the process of adverse selection, disproportionately lead the exporters with the riskiest credits to purchase insurance. Just as with the lenders in the Stiglitz and Weiss model, the private-sector insurers may maximize their expected profits by leaving the premium unchanged and instead using non-price rationing mechanisms to allocate their scarce insurance resources. Risk and volume thresholds are two examples of such non-price rationing schemes.

The simple model here predicts that for reasons of ease and adverse selection, private insurers will use risk categories rather than fully pricing all risks into the premium. It also predicts the existence of risk and volume thresholds, beyond which insurers will not provide coverage to exporters.

#### *E. Fit Between Theory and Data*

We have sketched a simple model of the costs and risks associated with the provision of export-credit insurance. By complementing this simple model with existing theoretical intuition about adverse selection and credit rationing, we have arrived at a set of straightforward predictions regarding the provision of export-credit insurance by the private-sector insurers. Are these predictions consistent with observations from the Canadian market?

For two reasons, getting objective data on how insurance premiums are set is very difficult. First, this is proprietary information for the insurance companies. While it may be possible to get data on total coverage and total premiums collected, thus permitting a straightforward calculation of any company's *average* insurance premium, this does not help us gain insight about premiums at the level of the individual exporter. Second, especially pertinent to the issue of risk and volume thresholds, it is crucial to note that the private insurers have an interest in denying that any such thresholds might exist. While they are likely to openly admit that higher-risk exporters are charged higher premiums, they are less likely to admit that they are unwilling to serve some very small or particularly risky exporters. On the other hand, EDC would appear to have an incentive to claim the existence of such thresholds for the simple reason that such thresholds would help to justify EDC's existence in this market.

We are therefore left to seek whatever objective data are available from the brokers in the insurance market, as they have considerable experience in dealing as an intermediary between the exporters and the insurers. Their function is to serve the interests of the exporter by gathering quotes from various insurers and then advising the exporters on which insurance contract best suits their needs. They are paid by the insurers based on a percentage (common across all insurers) of the premiums paid by their client. The brokers have first-hand knowledge of the nature of the insurance coverage that is provided by the various insurance companies, and how such coverage might differ between the private-sector insurers and EDC. Much of what follows in this brief discussion is based on an interview with the two owners of Millenium Credit-Risk Management Ltd. in Ottawa, a leading Canadian broker specializing in export-credit insurance.

Our simple model predicts that insurers will generally set the insurance premiums to reflect the underlying risks involved, at least with the use of broad risk categories. This does indeed seem to be the case. The foreign buyers' countries are rated in terms of risk, as are the foreign buyers themselves. The insurers also note the "spread" of the risks faced by the exporter, and adjust the premium in accordance with this spread.

More interestingly, the simple model predicts the existence of risk and volume thresholds. The brokers confirm that such thresholds exist, although perhaps more subtly than suggested in the preceding discussion. With respect to risk levels, the brokers note that the private-sector insurers are unwilling to provide insurance in some cases, especially when the

exporter's credits represent small firms operating in high-risk countries. Sometimes the private insurers simply offer zero coverage to such an exporter; on other occasions the insurers offer considerably less coverage than what is being sought by the exporter. For example, if the Canadian exporter is seeking coverage for sales of \$1,000,000 with a buyer in Turkey and sales of \$500,000 with a buyer in Egypt, the private insurer may offer zero coverage for the Turkish buyer and only \$250,000 of coverage for the Egyptian buyer. In such cases, which are quite common when the foreign buyers are located in developing countries, we might not claim the existence of an absolute risk threshold, but it is nonetheless true that the insurer is using a non-price scheme to ration insurance coverage.

Another interesting aspect of the risk threshold is how the insurer's risk tolerance apparently changes over time, along with the ebb and flow of the business and credit cycles. This changing risk tolerance is described as the insurer's willingness to "stay on risk" through volatile market conditions. The brokers confirm that the private insurers are often unwilling to fully stay on risk, often reducing or eliminating their insurance coverage during economic slowdowns, even when the specific domestic exporters and foreign buyers appear to be on a solid economic footing. One very recent example involves a Canadian exporter of hard-wood flooring with confirmed sales to developers in the U.S. housing market. While this market is currently undergoing a great deal of adjustment, there are nonetheless geographic pockets of the market which are still very secure, and it was to these secure market segments that the Canadian exporter was selling. Yet in this situation the private insurer made a decision to dramatically reduce its exposure to the U.S. housing market, thus reducing or eliminating all coverage to the Canadian exporter. Here is an example where the use of a simple rule of thumb, though perhaps cost effective, may nonetheless leave gaps in the market.

The insurance brokers also confirm the existence of volume thresholds, although these thresholds take the form of a minimum premium payment rather than an absolute volume threshold. The current minimum premium for an individual exporter appears to be \$5,000—that is, the private insurers will generally not provide any export-credit insurance to a Canadian exporter unless the paid premium is at least \$5,000. For small exporters, a typical premium would be 0.75-1.0 percent of the covered volume, and thus this \$5,000 minimum translates into annual export sales of between \$500,000 and \$650,000. Any exporter with foreign sales less than

this amount could still purchase insurance coverage, but the high minimum would imply a very high premium rate.

Note that while such a volume threshold appears to be a standard feature of the Canadian market for export-credit insurance, the private insurers are gradually improving their service to smaller exporters. First, the \$5,000 minimum premium that is now widespread among the private insurers used to be much higher, indicating a growing desire on the part of the insurers to serve this market segment. Second, one of the private insurers has recently introduced a new program, directed at small exporters, with a single \$250 administrative fee but no minimum premium. This new program currently applies only to export credits located in North America, and so cannot help those exporters selling to riskier markets in Europe, Asia, or the developing world.

Information provided by insurance brokers confirms that both risk and volume thresholds exist in the Canadian market for export-credit insurance. Private insurers appear to be unwilling to take on some risks, and also appear to reduce insurance coverage during less certain economic environments.

We conclude that our simple theory of the costs and risks of insuring export credits can provide useful insights about the market. In addition, the theory's central predictions regarding the setting of premium and the existence of risk and volume thresholds appear to be confirmed by observations from the market itself.

## Section 4

### A Sensible Economic Justification for EDC

Can EDC fill the resulting market gaps while generating net benefits to Canada? For three reasons the answer is in the affirmative. The first relies on imperfect competition and EDC's target rate of return below that of the private insurers. The second emphasizes EDC's greater risk tolerance and longer-term horizon, while the third is based on the prospects for "learning by doing" in the provision of export-credit insurance. We address each in turn.

#### *A. EDC's Lower Target Rate of Return*

Since there are only a small number of private insurers in the Canadian market—the same few insurers who dominate the global market—and there are large fixed costs which act as an effective entry barrier, it is reasonable to expect that profits in this industry are above the competitive level. If economic profits are indeed above "normal" levels, then we get the familiar result in oligopolistic markets that the price of the product being sold, and thus the benefits to society from consuming one more unit of the product, exceeds the marginal cost of producing one more unit of the product. In the context of the market for export-credit insurance, the implication is that net benefits to Canada would be generated from an expansion of insurance coverage, either by increasing the level of coverage for exporters who are currently under-insured or by expanding coverage to include currently uninsured exporters.

Note that significant market inefficiencies associated with oligopoly are usually the domain of competition (anti-trust) policy. Policies designed to prevent mergers or explicit collusive agreements, either of which may unduly lessen competition between firms, are typical examples. While some mergers have occurred among the private insurers, it is important to note that these insurers are very large multinational firms, each with only a tiny fraction of their global business located in the Canadian market.<sup>8</sup> Canadian competition policy would therefore be ineffective in addressing the high degree of concentration in the Canadian market for export-

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<sup>8</sup> Kotowski (2007) estimates, for example, that Euler and COFACE each had less than 2 percent of their 2006 global portfolios located in Canada.

credit insurance. In addition, the need for large IT systems to analyse country, sectoral and firm-level risks means that large fixed costs are an inherent characteristic of the industry (Stephens 1999), and such costs will naturally create effective entry barriers. No competition policy, in Canada or elsewhere, can change this essential market fact.

If competition policy cannot be used to reduce any market inefficiencies created by oligopoly, especially those in which large fixed costs play an important role, what policies remain? In Canada, the regulation of similar industries has a long history, notable examples being the Canadian Radio-Television and Telecommunications Commission (CRTC) and the Patented Medicines Prices Review Board (PMPRB). An alternative to regulation is the direct participation of government-owned firms, an approach that also has a long history in Canada. Obvious examples include the electric utilities owned by the various provincial governments, as well as the (previously) federally owned Air Canada, Canadian National, and Petro-Canada.

As a Crown Corporation participating in the provision of export-credit insurance, EDC can potentially fill the market gap that exists in part because of the imperfectly competitive nature of the market. We argued above that the private insurers are likely to have a target rate of return  $R^T$  that exceeds the rate of return available in similarly risky competitive industries, which we approximated with the rate earned on government debt plus the average corporate risk premium,  $R + \zeta$ . If EDC is indeed directed toward improving market efficiency, its target rate of return should be this lower rate.

If EDC's rate of return earned from the provision of short-term export-credit insurance remains no less than  $R + \zeta$ , we can be confident that the benefits generated from EDC's activities exceed the value of the resources used. But one concern is that EDC may go "too far" in serving the market, as would be the case if EDC filled the existing market gap while also making economic losses. In this case the value of the resources used to provide EDC insurance would be greater than the benefits derived from the insurance. We return below to the important issue of the limits that should exist on EDC's provision of insurance.

Imperfect competition among the private insurers can lead them to have a target rate of return greater than that for EDC. In this case, EDC can fill the market gap and generate net benefits to Canada by doing so.

One final comment should be made regarding the use of a Crown Corporation to fill the existing market gap. In many markets once containing government-owned corporations, in Canada and elsewhere, the last three decades have witnessed dramatic changes in technology and market conditions. Widespread privatization has been the policy response to such market developments, and in most cases has been viewed as a success (McFetridge 1997). This experience underlines the need to recognize that market conditions do evolve, sometimes significantly, and that Crown Corporations once deemed to be necessary can quickly become anachronistic. We return to this issue in the paper's next section.

### *B. EDC's Greater Risk Tolerance and Longer-Term Perspective*

We saw above that the private-sector insurers are less inclined to provide export-credit insurance to exporters with "unfamiliar" risks, including exporters selling into very risky markets or with very small sales volumes. Such market gaps create a justification for an EDC presence in the market if and only if EDC is well-suited for taking on these risks while at the same time earning a rate of return commensurate with generating net benefits to Canada.

There are two related reasons why EDC is well-suited to taking on these risks. First, as a Crown Corporation, EDC is able to take a longer-term view of its profitability; for example, in its determination to cover its full risk-adjusted costs (thus earning a rate of return equal to  $R + \zeta$ ), it can strive to cover these costs *over the duration of a typical business cycle*. While it recognizes that short-term fluctuations in its earnings will naturally occur, EDC can choose to ignore these fluctuations and instead focus on longer-run results. This focus, in turn, can have a dramatic effect on its behaviour by allowing it to "stay on risk", thus providing more stability in coverage for Canadian exporters. In contrast, the private-sector insurers must answer to their shareholders who may have a shorter-term perspective regarding the firm's profitability (Ascari 2007). Such a perspective may lead the private insurers to reduce or withdraw their coverage during economic downturns, as discussed in the previous section.

In addition to allowing it to better "stay on risk" during economic downturns, EDC's longer-term perspective allows it to take on new risks that the private sector would reject. As we have already discussed, the ability to assemble a large and diversified risk pool is central to any firm's ability to provide profitable insurance. The risk pool can naturally be diversified across

countries, across sectors, and across firms. But with EDC's longer-term perspective, the risk pool can in addition be better diversified over *time*. As a result, EDC may have a greater ability to assemble an appropriate risk pool; in the terminology of our model in Section 3, EDC would therefore have a lower value of  $\alpha$  than the private-sector insurers.

There is likely a desirable feedback effect operating between the quality of EDC's risk pool, its willingness to take on new risks, and its lower target rate of return relative to the private insurers. Both the lower target rate of return and the longer-term perspective will lead EDC to expand insurance coverage beyond the margin set by the private insurers. In expanding its coverage, EDC can assemble a larger and more diversified risk pool. But having a better overall risk pool then allows it to take on more risks, which further increase the size and quality of its risk pool. Naturally, there are limits to this process, both due to the nature of the underlying risks and the need to fully cover costs. This feedback effect could potentially explain EDC's ability to fill the market gap while at the same time covering its costs.

This second justification for an EDC market presence, based as it is on its longer-term perspective and greater risk tolerance, is very similar in spirit to the justification for Farm Credit Canada's (FCC) provision of crop insurance to farmers (Economic Council 1982, Senate of Canada 1996). The fundamental risks associated with any individual farmer's crops are such that private insurers are generally unwilling to extend insurance. The reason is simple: if one farmer's crop fails, it is likely that many other farmers' crops will also fail, making it very difficult for private insurers—especially those with a short-term perspective—to assemble an adequate risk pool. In contrast, a Crown Corporation like FCC can take a longer-term perspective and thus be prepared to take on specific risks that the private insurers would reject.

EDC's ability to take a long-term perspective on profits gives it a greater tolerance for risk than the private insurers. By providing insurance to riskier exporters and by "staying on risk" during difficult economic times, EDC can fill the market gap.

### *C. The Scope for “Learning By Doing”*

Recall from Section 3 that  $F_G$  and  $F_i$  represent the fixed costs associated with the provision of export-credit insurance.  $F_G$  represents the insurer’s “general” fixed costs which include the cost of operating the large IT systems to continually assess economic and political risks across countries and sectors. Reductions in  $F_G$  will tend to occur with general improvements in information technology, but significant fixed costs will exist as long as the insurer continues to provide export-credit insurance.

$F_i$  is the insurer’s “exporter-specific” fixed costs which include the costs of learning the details of the exporter’s business and assessing the riskiness of the exporter’s individual foreign buyers. While there is an ongoing need to assess the riskiness of each foreign buyer, a large part of  $F_i$  comes from the initial costs associated with getting to know the details of the buyer’s business and credit situation. There is good reason, therefore, to expect  $F_i$  to decline significantly over time; with each passing year that insurance is provided to the exporter, fewer details regarding the foreign buyer need to be learned. This is a classic example of “learning by doing”, as first discussed by Arrow (1962) but since adopted very widely by economists examining theories of economic growth and international trade.

One implication of technologies characterized by significant opportunities for learning by doing is that private-sector firms, especially those with short-term perspectives, may either not recognize the scope for cost reductions through learning or, more likely, may recognize the possibility but be unwilling to incur the significant up-front costs when there is no guarantee that costs will fall in the future (Arrow 1962). Alternatively, the firms may be unable to access credit based on their current high costs, even though there is some likelihood that future costs will be lower. In these cases, the high initial costs of providing export-credit insurance to a new exporter act as a barrier to serving currently un-served customers.

In contrast, EDC’s longer-term perspective can lead it to treat the up-front costs in  $F_i$  as an investment, anticipating that the future returns from this investment will take the form of lower fixed costs. This possibility may be especially relevant in the case of small exporters. Exporters with small sales volumes may be caught behind the volume threshold set by the private insurers. If the exporter is not insured, its growth prospects may be retarded. But if EDC is prepared to provide insurance to the small exporter, anticipating that high current values of  $F_i$

will be followed by lower values in the future, the exporter can expand and the volume of trade can thereby be enhanced. The presence of such learning by doing in the market for export-credit insurance thus provides a sensible justification for an EDC presence.

This same argument is very popular in the field of international trade policy, whereby individual “infant industries” or firms are provided some form of protection from foreign competition while they establish themselves (Krugman and Obstfeld 2005). The only reasonable economic justification for such protection is that the firm will fundamentally change as a result of being protected, so that when the protection is eventually removed the firm will be economically viable. The obvious change that can occur within the firm is that its costs will decline; but if its costs are to decline *as a result of its protected period of production*, there must be some scope for learning by doing. Thus learning by doing (and perhaps some capital market imperfections as well) lie at the heart of the sensible infant-industry argument for protection.

It is well known, however, that infant industries rarely “grow up” and graduate to the point where protection is removed, and this fact is often used to argue against providing such protection in the first place. Yet the fact that there may be real implementation problems, some of which are surely more political than economic, does not imply that learning by doing is absent in the provision of export-credit insurance; nor does it imply that EDC does not have an efficiency-enhancing role in providing such insurance. It does, however, suggest a need to think carefully about EDC’s behaviour in the market. We return to some of these issues in Section 5.

The possibility of significant “learning by doing” can act as an obstacle to providing insurance, especially to small exporters. With a longer-term profit horizon, EDC can view the higher early costs as an investment in knowledge, fill the existing market gap, and realize the future cost reductions.

#### *D. Is This the Role Actually Being Played By EDC?*

We have identified three reasons that EDC is well-suited to filling the market gaps left behind by the private-sector insurers, while still generating a rate of return commensurate with producing net benefits for Canada. If these three reasons are the *actual* justification for EDC’s current

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market presence, we should expect to see some key differences between the insurance services offered by EDC and those offered by the private-sector insurers. In particular, we ought to observe the following three differences:

1. If EDC has a higher risk tolerance than the private insurers, it should be serving the riskiest set of exporters and thus charging higher insurance premiums. It should also have a differentiated product line to reflect the needs of these high-risk exporters.
2. If EDC is more prepared to provide insurance to small exporters, it should have a lower volume threshold than the private insurers.
3. If EDC has a longer-term perspective, it should be prepared to “stay on risk” more than the private insurers during economic downturns.

Are such differences observed in the market? To answer this question, we rely on two sets of information. The first is a survey of 36 insurance brokers undertaken by EDC in July of 2007. Of the 36 brokers contacted, 21 responded to the survey, most of which claimed to be specialists in export-credit insurance. The second set of information comes from an interview with the principals of Millenium Credit-Risk Management Ltd, a leading Canadian broker for export-credit insurance.

It is clear from both data sources that EDC is prepared to accept more risks and also charge higher insurance premiums. In the broker survey, 95 percent of the brokers claimed that EDC was prepared to take on risks “about the same” or “better” than the private insurers, and 45 percent thought that EDC was clearly “better”. At the same time, 70 percent of the brokers claimed that EDC service was “worse” when it came to price, indicating a higher price (EDC 2007b). The interview with Millenium brokers confirms this information, as they routinely see cases in which the quoted EDC premium rate is 25-30 percent higher than the rate quoted by the private-sector insurers.

Moreover, the brokers confirm that in many cases the exporters are willing to pay these higher premium rates because the contract terms and conditions offered by EDC are so much better. This observation is consistent with the prediction above that if EDC really is focusing its attention on high-risk exporters, their services should be suitably differentiated from the private insurers. In Millenium (2008), it is clear that there are a great many differences between EDC’s

standard terms and conditions and those offered by the private sector. Indeed, the Millenium brokers refer to the standard EDC contract as the “gold standard”, to which all other contracts must be compared. Two specific examples are useful for this discussion.

First, after EDC approves a limit for its coverage for any given exporter’s sales to a specific foreign buyer, the exporter only pays the insurance premium on the volume of sales that it *actually* ships to that foreign buyer. Suppose, for example, that EDC is prepared to cover \$800,000 of sales at a rate of 0.3 percent, and the exporter accepts these terms. If the exporter ends up shipping only \$600,000 worth of its product, it will pay premiums of only \$1,800 to EDC ( $=0.3 \text{ percent} \times \$600,000$ ). In contrast, the private insurers require payment on the full pre-approved volume, even if the exporter ships less than originally planned. In addition, if the private insurer subsequently reduces its coverage or withdraws it altogether, the exporter must still pay the original full amount. It is clear that for exporters facing considerable uncertainty in their sales, the EDC contract is far more flexible, a feature they are prepared to pay considerably higher premiums to receive.

A second example relates to the timing of the insurance coverage. In the standard EDC contract, the insurance coverage begins the moment the shipment leaves the exporter’s warehouse, and continues in force until the payment is received. For the private insurers, the coverage begins only once “delivery” is made to the foreign buyer. Some time will naturally lapse between the product leaving the warehouse and delivery, and during this interval the exporter is exposed to the risks of cancellation by the buyer. For exporters selling to risky buyers, the EDC contract once again offers more security, albeit at a substantially higher price.

One final piece of evidence confirms EDC’s willingness to focus its attention on riskier exporters. Though it is surely true that countries rated as “risky” contain many safe buyers, and that “safer” countries contain many risky buyers, there is likely to be a significant correlation between country risk and the average risk faced by exporters selling to those countries. If EDC is focusing its attention on risky exporters, we should then observe that EDC’s export-credit insurance portfolio is tilted away from the safest countries and toward the riskiest countries. This is indeed the case. Whereas 79.2 percent of Canada’s exports in 2006 were shipped to markets in the United States, only 46.5 percent of EDC’s short-term insurance liabilities were for cover on U.S. sales. In contrast, EDC’s combined insurance coverage to Russia, China, Brazil and India

represented 13.7 percent of its 2006 portfolio whereas these countries saw less than 4 percent of Canada's total exports in that year.<sup>9</sup>

Now consider the second general prediction, that EDC should have a lower volume threshold than the private-sector insurers. There is no relevant evidence regarding this point from the EDC broker survey, but the interview with Millenium brokers (and as well the EDC public documentation) confirms that EDC does not impose a minimum premium amount for individual exporters. In contrast, as we saw above, the private insurers generally impose a minimum premium amount of \$5,000. For a small exporter who would normally pay a premium of 0.75-1.0 percent of covered sales, this minimum premium translates into an annual sales volume of between \$500,000 and \$650,000. Thus, we should observe that EDC's customer base is heavily oriented toward the small exporters who are left un-served by the private-sector insurers. This is indeed what we observe. In 2006, EDC served 4998 customers for short-term export-credit insurance, with 2960 of these (59 percent) considered "small" and 1477 (29 percent) considered "medium-sized". More concretely, 3127 of EDC's customers (62 percent) paid annual premiums less than \$5,000, and thus would have fallen below the threshold established by the private-sector insurers.

The third prediction relates to the stability of insurance coverage over the business cycle. The 2007 broker survey confirms that EDC appears to be more willing to "stay on risk" during tough economic times. Thirty-five percent of the survey responses claimed that EDC coverage was "about the same" as the private insurers, whereas fully 65 percent of the brokers claimed that EDC offered "better" coverage during difficult times (EDC 2007b). The interview with the principals at Millenium Credit-Risk Management Ltd. added some detail to the survey data. Whereas private insurers may often reduce or eliminate their insurance coverage when growth in the overall industry or economy begins to slow, the brokers argue that EDC is much more likely to work collaboratively with the exporter, devoting the time and resources necessary to learn whether their specific economic situations are under threat. As a result of detailed investigations, the level of EDC coverage might be adjusted downward, but generally their longer time horizon allows them to "see through" the economic cycle, thus providing more stable cover to the Canadian exporters.

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<sup>9</sup> The EDC data are from the 2006 EDC Annual Report (EDC 2007c, p.62.); the Canadian trade data are from Statistics Canada: [www.statcan.ca](http://www.statcan.ca).

Evidence from Canada's insurance brokers confirms that EDC's behaviour in the market for export-credit insurance is notably different from that of the private-sector insurers, and is consistent with enhancing market efficiency.

Two other aspects of EDC's behaviour, not listed above, deserve mention. First, if EDC is indeed filling the existing market gaps, and doing so in a way which delivers net benefits to Canada, it should be the case that EDC's activities *on short-term export-credit insurance alone* are able to cover their full costs. In contrast, financial losses would indicate that the EDC-generated benefits accruing to Canada's exporters are less than the cost of the resources used to deliver those benefits, with the overall result being net losses for Canada as a whole.

Financial losses for EDC could occur for two general reasons. First, EDC may "over-fill" the market gap by providing export-credit insurance to those exporters who would not receive insurance even in a perfectly competitive and efficient market. Second, even if EDC restricted its provision to those exporters in the genuine market gap, it may at the same time have higher costs than the private insurers, perhaps due to excessive bureaucracy or an inefficient use of capital. Neither possibility would indicate that a genuine market gap does not exist; nor would it indicate that EDC does not have a useful role to play in the market. But financial losses would reveal that some aspect of EDC's behaviour should be modified if its activities in this market are to generate net benefits to Canada.

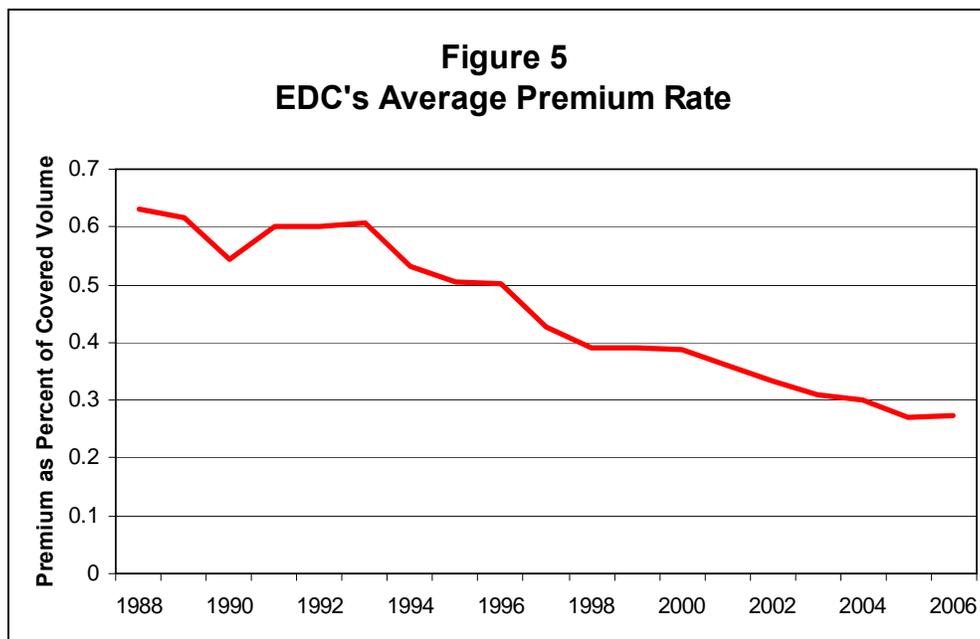
Unfortunately, EDC's annual reports and financial statements do not show comprehensive financial results for each separate line of business and so it is not clear whether EDC's provision of short-term insurance is genuinely self-sustaining.<sup>10</sup> One reason that such financial results may not be provided is that it is very difficult to allocate EDC's fixed costs (including its financial capital) across its different lines of business. For example, if knowledge of individual exporter risk is needed both for short-term export-credit insurance and EDC's direct lending activities, how can EDC allocate the fixed costs associated with this risk assessment between the two services? For now, we simply note that EDC's ability to cover its

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<sup>10</sup> It is not sufficient, of course, that EDC's overall activities are financially self-sustaining. If losses in the provision of short-term insurance exist and are offset by profits in other lines of business, EDC as a whole will be self-sustaining—but the provision of short-term insurance would nonetheless be generating net losses for Canada.

full costs of providing short-term insurance is an important but answered question. We return to this issue in Section 5.

An important unanswered question is whether EDC's activities in this market are financially self-sustaining.



(Source: Drawn from Kotowski (2007))

The final aspect relates to the role of “learning by doing” in the provision of export-credit insurance. If such learning exists to any appreciable extent in this market, the associated decline in (fixed) costs over time should lead to a decline in the average premium rate. Figure 5 shows that EDC’s average premium rate has declined significantly over the past twenty years, from over 0.6 percent of covered volume in 1988 to below 0.3 percent in 2006. Of course, one could sensibly argue that growing competition in the Canadian market, which has been significant since 1990, is also a reasonable explanation for this downward trend in premium rates. However, we have observed that EDC tends to have *higher* premium rates than do the private insurers because it tends to service the riskier exporters. And thus to the extent that the growth in the private-sector market share has been through the removal of the less-risky exporters from the EDC portfolio, the result would actually be to *increase* EDC’s average premium rate. This

argument suggests that learning by doing and the associated reduction in fixed costs may indeed have a substantial role to play in explaining the declining premium rates evident in Figure 5.

Based on this body of evidence, much of which is admittedly informal, we conclude that EDC's current behaviour in the market for short-term export-credit insurance appears to be broadly consistent with the idea that EDC is using its lower target rate of return and its greater risk tolerance to enhance market efficiency by filling the market gap left behind by the private-sector insurers.

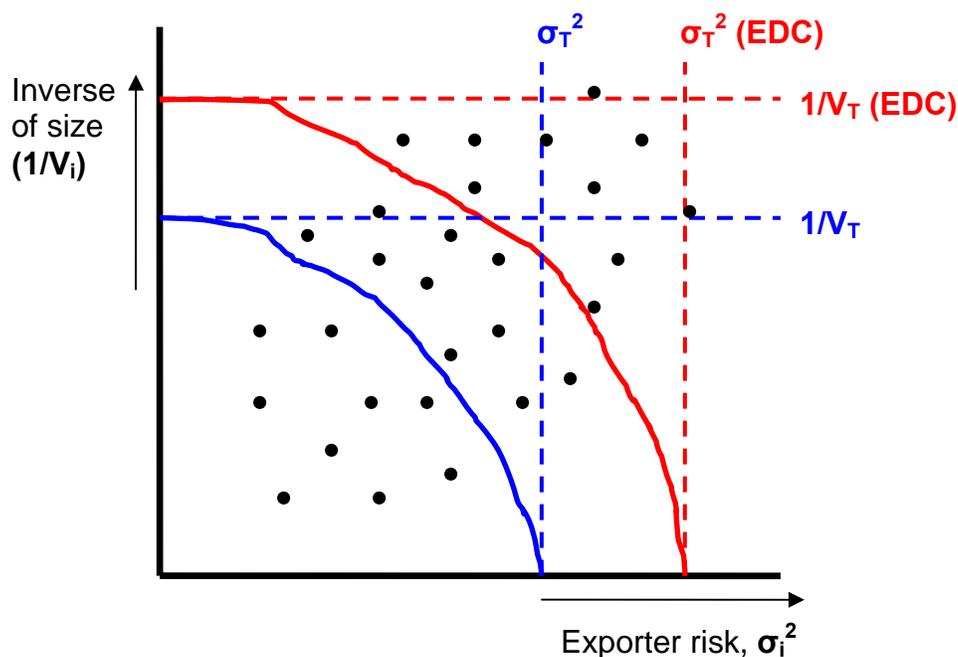
EDC's current market role can be summarized with the use of two theoretical diagrams, both of which illustrate the market gap filled by EDC. In Figure 6, each potential exporter represents one dot, corresponding to that firm's "smallness" (measured by the inverse of its sales volume,  $1/V_i$ ) and its riskiness ( $\sigma_i^2$ ). Recall that we have discussed three types of risk—political, economic, and firm-level risks—and all three have been combined to represent the firm's riskiness in the figure. Note there is also a tendency for smaller firms to be riskier firms, and thus the set of dots tends to lie along a southwest-to-northeast axis. As we have seen, the private-sector insurers tend to provide less insurance to the smallest and riskiest firms; they only serve those firms with size and risk levels below the two dashed thresholds (firms with  $1/V_i < 1/V_T$  and  $\sigma_i^2 < \sigma_T^2$ ). In addition, private insurers only serve those exporters on which they can earn their target rate of return. The blue curved line represents what we call the "risk-size frontier" for the private insurers; it represents the limit of the private insurers' insurance provision and shows that, in general, many exporters will be un-served by the private sector.

If EDC has less stringent thresholds for both risk and firm size, and also has a lower target rate of return, then its risk-size frontier will lie outside of the private sector's frontier, as shown by the red curved line. The result is that EDC serves some exporters that the private-sector insurers would leave un-served. In other words, EDC fills the market gap—the area between the two frontiers.

Three important points should be noted about Figure 6. First, the diagram shows a limit to EDC's activities. As we argued earlier, if EDC's activities in this market are to generate net benefits to Canada, its provision of insurance should earn a rate of return no less than  $R + \zeta$ . This requirement implies that EDC should not "over-fill" the market gap by serving all the exporters left un-served by the private sector; to do so would lead to net losses for Canada as the marginal

benefits from extra insurance would be less than the associated marginal costs. The requirement to earn a rate of return no less than  $R + \zeta$  influences the position of EDC's risk-size frontier; it is entirely appropriate that some exporters receive no insurance whatsoever.

**Figure 6**  
**The Risk-Size Frontier for EDC and for Private Insurers**

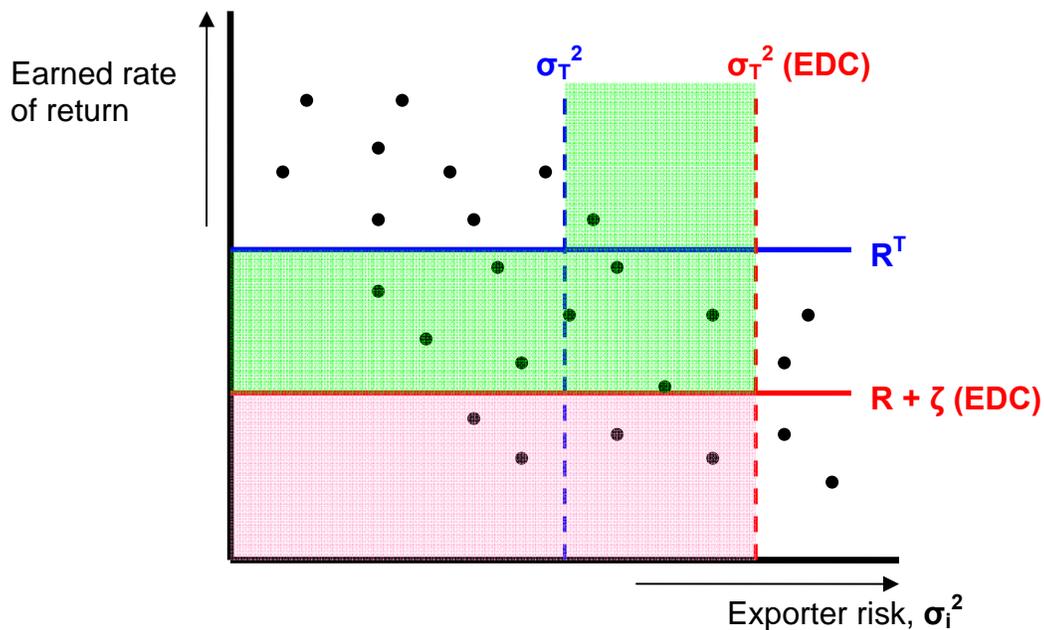


The second point is that there is clearly an overlap between the exporters that EDC is willing to serve and those that the private insurers are willing to serve. Indeed, since EDC operates on general commercial principles, it will be willing to serve *any exporter* currently being served by the private-sector insurers—that is, any exporter lying inside the blue risk-size frontier. A “market overlap” therefore exists, and naturally creates some tension as the private-sector insurers see that they may lose some business to EDC. We will explore this issue in detail in the next section of the paper.

The third point is that the market has an important dynamic element. In particular, as we discussed in Section 2, the private sector's market share has grown substantially over the past twenty years, suggesting a declining role for EDC. In terms of Figure 6, this growth in private-

sector market share is shown by an outward shift in the private insurers' risk-size frontier, thus reducing the market gap left to be filled by EDC. Another possible dynamic aspect to this market is that reductions in costs will tend to push both the private and the EDC risk-size frontiers outward, although the effect on the size of the market gap will depend on the relative magnitude of the cost reductions.

**Figure 7**  
**Risk Thresholds and Rate of Return for Private Insurers and for EDC**



A second diagram shown in Figure 7 provides a slightly different perspective on EDC's role in this market. Again, each firm is represented by a dot, showing the firm's riskiness and the rate of return the insurer could earn by providing insurance to that exporter. There is a negative correlation between the earned rate of return and the exporter's riskiness; riskier exporters present bigger risks and thus lower expected returns to the insurer because, as we have seen, insurers are generally unable to fully price all risks into the insurance premium. The private insurers have two thresholds, one for the target rate of return and the second for risk levels.<sup>11</sup> As

<sup>11</sup> We can think of the horizontal axis as showing both the riskiness of the exporter and its "smallness", which is correlated with riskiness. Thus the risk threshold in Figure 7 has any existing volume threshold embedded within it.

a result, the private insurers service only those exporters located above  $R^T$  and to the left of  $\sigma_T^2$ . EDC, in contrast, has a lower target rate of return and also a higher risk tolerance, so it serves all exporters located above  $R + \zeta$  and to the left of  $\sigma_T^2$  (EDC). Once again, EDC fills the market gap left by the private insurers; in this figure, the market gap is shown by the green shaded area.

The same three points can be made with Figure 7 as with the previous figure. First, if EDC is to limit itself to earning a rate of return commensurate with generating net benefits to society, it will not provide insurance to firms located below the red line, inside the red shaded area. To serve these firms would imply that EDC is “over-filling” the market gap. If EDC restricts itself to serving only those exporters located above the red line, there will be some un-served exporters, as is appropriate in any well-functioning market.

Second, there is a market overlap in Figure 7 because an EDC operating on commercial principles will be prepared to serve all the exporters served by the private sector, not just those left un-served (in the green shaded area). Finally, the important dynamic element of Figure 7 is the steady movement to the right of the private risk threshold (blue dashed line) as the private-sector insurers increase their willingness to provide insurance to the riskiest exporters, thus reducing the market gap left to be filled by EDC.

Figure 7 also reveals an important point regarding the *sufficient* conditions for EDC to have an efficiency-enhancing role in this market. Note that *either one* of two things is necessary in order for EDC to have a useful role in this market. If EDC has a lower target rate of return than the private insurers, even if its risk threshold is the same, there will be a gap left by the private insurers and thus a role for EDC. Conversely, even if the private insurers had a target rate of return as low as EDC’s—as they would if they operated in a fully competitive market—there is an efficiency-enhancing role for EDC as long as it has a higher risk tolerance than the private insurers. This point underlines the strength of the case in favour of an EDC market presence, especially in the face of the potential argument that the private insurers operate in a competitive environment. While the degree of competition in the market may be open for debate, there seems to be little doubt that EDC has a higher risk tolerance than the private insurers. And in a world of incomplete insurance, this higher risk tolerance is sufficient to justify a role for EDC.

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### *E. Two Remaining Issues*

Two issues are yet to be addressed in this discussion of EDC's appropriate market role. The first is that two benefits not yet mentioned are likely to be generated by EDC's market presence. The second issue is that some analysts do not accept that EDC can serve the market without inappropriately subsidizing domestic exporters. We address each issue in turn.

EDC's filling of gaps likely generates benefits in addition to those observable directly in the market for export-credit insurance. First, we have already noted that many of the exporters un-served by the private sector are those selling to the riskiest world markets, most of which are in developing countries. These markets are risky for several reasons, including political and macroeconomic instability, neither of which can be influenced in any appreciable way by the presence of EDC. Another reason these markets are perceived to be risky is that less is known about the buyers located in these markets, and less is known precisely because few or no trading relationships have yet been established between them and the Canadian exporters. By extending insurance coverage to Canadian exporters selling into these risky markets, EDC can play an important role in building Canada's trade linkages, thus helping to open up new markets for Canadian firms. Subsequent growth in the volume of Canadian trade generates net benefits, to Canada and to the foreign countries involved.

A second benefit from EDC's provision of export-credit insurance relates to imperfections in other parts of the Canadian capital market. As we saw in Section 3, many Canadian exporters are unable to access bank loans for their working capital. It is likely that the intuition from the Stiglitz and Weiss (1981) model of credit rationing, based on the problem of adverse selection, can partially explain this phenomenon. But there is also a link between the loan market and the riskiness of a firm's export credits. Many exporters seeking loans for working capital list their export credits as collateral for the loan, yet many Canadian banks are unwilling to accept such credits as collateral unless the exporter also purchases export-credit insurance (EDC 1999). Indeed, the interview with Millenium brokers confirmed that roughly 80 percent of the insurance volume brokered by them is required by the exporters' domestic banks as a condition for the banks to extend credit.<sup>12</sup> By filling the market gap for export-credit

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<sup>12</sup> In many cases, the terms of the insurance contract dictate that any insurance claims are made directly to the exporter's bank, an arrangement which increases the bank's initial willingness to lend.

insurance, therefore, EDC is also able to assist in filling the “linked” gap in the market for bank loans.

The second remaining issue relates to EDC’s ability to provide insurance without providing implicit or explicit subsidies. A recent paper released by the C.D. Howe Institute (Kotowski 2007) appears to argue that such subsidies must be involved in EDC’s services:

To the degree that a company [exporter] presents a profitable risk to insure, competition among insurers should deliver coverage to that risk. Certainly, export credit agencies may extend insurance coverage to a wider range of companies on strict public policy grounds, but reaching a larger group of companies would involve providing some sort of subsidized coverage. (p.14)

The logic of this argument is compelling if the insurance market is both perfectly competitive and efficient due to the absence of any market failures. In such an extreme setting, the price of insurance would be driven to equality with the social marginal costs of its provision, with the result that no market gap would exist. Any insurance provision beyond that point would only be “profitable” if costs were reduced through some sort of subsidy.

Yet the export-credit insurance market in Canada is quite unlikely to be perfectly competitive, especially given the small number of private insurers and their large fixed costs which can act as an effective entry barrier. This aspect of the market—taken alone—would ordinarily lead to a market gap and the possibility that EDC could usefully serve the market without any kind of subsidy. In addition, as is often the case in insurance markets, the private insurers operating in Canada are unwilling to take some risks which EDC is willing and able to bear, especially given its longer-term profit perspective. This lower risk tolerance—also taken alone—would present EDC with an efficiency-enhancing role without any need for subsidies. Thus in the *actual Canadian market*, rather than in some ideal theoretical setting, there is a leading role for EDC to enhance market efficiency; subsidies need not play a supporting role.

Opponents of this argument might counter that EDC’s presence is nonetheless “distorting” the market. But once again the point of departure for such a view would be a perfectly competitive and efficient market, one that does not exist in Canada today. It is surely the case that EDC’s presence “distorts” the Canadian market—yet that is exactly its sensible role! The starting point is a market which leaves exporters un-served for reasons of market

failure due to imperfect competition and incomplete insurance markets. By providing insurance to those exporters left un-served by the private sector, EDC will unquestionably “distort” the market—away from its current inefficient outcome and toward a more efficient one.

EDC’s provision of insurance to exporters left un-served by the private sector does not imply the presence of implicit or explicit subsidies. EDC’s actions can improve market efficiency because of the existing inefficiencies caused by imperfect competition and incomplete insurance markets.

Still other opponents might argue that EDC’s presence is “unfair” to the existing private insurers because EDC is taking away some of their business. This criticism comes closer to the mark and thus deserves closer examination. The private insurers would presumably not claim to be treated unfairly if EDC restricted itself solely to serving those exporters which the private insurers choose to leave un-served. In other words, if there were no “market overlap” between EDC and the private insurers, and thus EDC behaved only as an “insurer of last resort”, presumably the accusation of unfairness would disappear. Any concern that EDC’s presence is unfair to the private insurers must therefore be based on the argument that the market overlap is considerable and that EDC is using its unique and privileged position to take business away from the private sector. This issue is addressed in the next section.

## **Section 5**

### **Two Important Complications**

Given the evidence regarding the operation of the Canadian market for short-term export-credit insurance, together with some interpretation aided by a simple theoretical model, we have concluded for various reasons that the private-sector insurers operate so as to leave many Canadian exporters un-served. We have also concluded that such un-served exporters represent a genuine “market gap”, indicating a market inefficiency. Finally, we have argued that EDC is well-suited for filling this market gap and thereby enhancing market efficiency.

A few complicating issues nonetheless still require some attention. First, the issue of “market overlap” with the private sector needs to be examined, and whether such overlap is an inevitable aspect of EDC’s efficiency-enhancing market presence. Second, the dynamics of the market and the resulting gap must be explored, as well as the implications for EDC’s future role. Here we take note of recent experience in other countries in which the export-credit insurance programs of some official export credit agencies (ECAs) have been privatized. Finally, driven by the realization that continued growth in the private sector may eventually render EDC’s market participation redundant, we conclude the paper by discussing a possible “exit strategy” for the Crown Corporation.

#### *A. Market Overlap and EDC’s “Profitability Dilemma”*

In the literature discussing the changing role of official export credit agencies (ECAs), considerable attention is paid to ensuring that ECAs are filling any existing market gaps but are not at the same time competing directly with the private sector (Stephens 1999, Wang et al. 2005). In other words, there is a view that ECAs should behave as “insurers of last resort”, providing export-credit insurance to exporters only if they are unable to secure coverage from private insurers. Not surprisingly, this view is quite common among the private insurers. In terms of Figures 6 and 7, such behaviour would be reflected by having no “market overlap” between the ECA and the private-sector insurers.

The desire to avoid market overlap is entirely consistent with the view that justifies the ECA's existence with the need to reduce or eliminate market inefficiencies. If the private insurers have left some exporters un-served, and this market gap is inefficient, then presumably the only real task for the ECA is to fill the gap and thereby restore market efficiency; competition with the private firms is unnecessary and probably even undesirable. We note that this view is also consistent with the principle stated at the beginning of this paper, that governments should only play those roles in the economy that the private sector cannot adequately play itself.

On the other hand, as emphasized by Ascari (2007), the Canadian Senate (1996), Stephens (1999) and Wang et al. (2005), domestic and international political pressures have led to changes in the ECAs' mandates. Especially relevant in recent years, driven in large part by the desire to have government-owned corporations no longer placing a drain on the public purse, has been the growing requirement for ECA activities to be self-financing, at least over the medium or longer run. This requirement appears to be both sensible and consistent with much other policy. First, from the perspective of prudent fiscal policy, it is sensible to ensure that state-owned enterprises display a certain level of financial responsibility. Second, from the perspective of trade policy, it is sensible to make sure that countries refrain from having their ECAs actively engaged in subsidizing their national exporters. Requiring the ECAs to cover their full costs makes it much more difficult for such subsidies to take place. Finally, the requirement that ECAs cover their full costs is also consistent with ensuring that they deliver net benefits to their home economies; losses would signify that the ECAs were generating benefits less than the cost of the resources used to deliver their services.

For several reasons, therefore, the requirement that ECAs cover their full costs over the medium to longer term is sensible.<sup>13</sup> The problem, as emphasized by Stephens (1999), is that restricting the ECA to be an "insurer of last resort" may be incompatible with also covering its full costs over the long run. Eliminating the market overlap may force the ECA to incur losses; alternatively, requiring the ECA to cover its full costs may force some market overlap with the private sector.

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<sup>13</sup> This requirement still permits the ECA to make short-term losses, as would be the case if it provides insurance to the riskiest exporters. But such short-term losses should be offset over the course of the business cycle.

It is natural to expect that EDC, like other ECAs, suffers from such a dilemma. Filling the existing market gap means that EDC extends insurance coverage to the smallest and riskiest exporters. Even though some of these risks may be built into the higher premiums that EDC charges, it is still likely that insurance coverage on such high-risk exporters is less profitable than coverage on larger and less risky exporters. In addition, the need to cover EDC's large fixed costs requires it to spread these costs over a very large volume of business. Thus, if EDC is restricted to merely filling the existing market gap, while still incurring the large fixed costs required to adequately provide *any* export-credit insurance, it may simply be the case that EDC is unable to cover its full costs, even over the longer run. As Stephens (1999) says:

ECAs need the business of large exporters to generate income to pay for the substantial infrastructure—credit information, specialized expertise, and the like—they need if they are to give comprehensive and efficient service to all their exporting customers, large and small. (p. 52)

The “profitability dilemma” is that in order to cover its full costs, EDC may be forced into direct competition with the private-sector insurers—hence creating the “market overlap” we discussed in Figures 6 and 7. To make matters worse, as the private insurers have shown a greater willingness to extend cover to smaller and riskier firms over the past twenty years, the size of this market overlap has increased.

If such a market overlap is indeed necessary in order for EDC to cover its full costs, then some observations are in order. First, such direct competition with the private insurers—though generally undesirable when coming from a Crown Corporation—should be viewed as the price to be paid for filling the inefficient market gap. Governments generally stand ready to incur real resource costs in order to provide beneficial public goods and services; there are never free lunches, for governments or for private firms. Thus there is nothing necessarily inappropriate about EDC's market overlap with the private sector—provided that genuine benefits are generated by EDC's filling of the market gap.

It is one thing to say that *some* market overlap is necessary, yet quite another to accept *any* market overlap as necessary. What would prevent an EDC that is permitted to have some direct competition with the private sector from deciding, especially given its commercial

approach to business, to take on more competition with the private sector than the amount necessary to cover its full costs? If we adopt the view that government should do what only government can do, then it would seem natural to place limits on the size of the market overlap between EDC and the private sector, ensuring that the market overlap is only as large as is necessary to allow EDC to cover its full costs. One could even imagine imposing a requirement that EDC not earn positive economic profits but instead be required to exactly cover its full costs (over the long run). In this view, any positive profits would be seen as an indication that EDC was overlapping too much with the private sector, and that it should therefore scale back from covering its least risky customers, leaving them to be served by the private sector.

Any such zero-profit requirement for EDC, however, would introduce its own problems. First, as is well known in the theory of economic regulation, an important problem with rate-of-return regulation is that it provides no incentive for the regulated firm to reduce costs. For example, if EDC were required to make zero economic profits, it could continue to have a larger-than-necessary overlap with the private sector but dissipate its profits through excess costs in the form of higher salaries, more generous benefits, plush offices, etc. The academic literature also emphasizes the effect such regulation has on the regulated firm's capital intensity, being greater than what is economically efficient (Averch and Johnson 1962).

Filling the existing market gap, while also covering all costs, may require direct competition with the private insurers. Yet if this is true, there is no obvious way to restrict EDC's activities to minimize such competition without introducing undesirable economic incentives. This is the "profitability dilemma".

There is no guarantee, however, that EDC actually faces this profitability dilemma. In other words, it may be the case that EDC could successfully fill the existing market gaps and simultaneously cover its full costs over the longer run. While the logic of the dilemma is certainly compelling, based as it is on the need to spread large fixed costs over a large business volume, it should be emphasized that whether such a dilemma actually exists for EDC is an empirical question, not merely a logical one.

We can only be sure that a market overlap between EDC and the private insurers is necessary by closely examining EDC's financial flows and then determining how these flows would change if EDC were to give up its largest and safest customers—presumably the customers that the private insurers would willingly serve. Though this is a conceptually straightforward exercise, it is complicated in practise. First, it may be difficult to identify those exporters who could be adequately served by the private sector. Second, what does “adequate” service mean in a market in which we know that EDC's contract terms and conditions are generally better but also more expensive than those offered by the private insurers? Third, if EDC is providing several services to a given exporter, only one of which is short-term export-credit insurance, how do such linkages influence our determination regarding whether that exporter could be adequately served by the private sector?

These are all complex issues, and they make the suggested empirical exercise a difficult one. Yet as difficult as this exercise would be to conduct properly, it is important that it be done, either inside or outside of the EDC. Only then will it be clear to what extent EDC truly suffers from the profitability dilemma and thus to what extent a market overlap with the private insurers is an inevitable outcome of EDC's carrying out its useful and efficiency-enhancing role of filling the existing market gap.

A market overlap between EDC and the private insurers may not be inevitable, even if EDC is required to cover its full costs. It is an empirical, not a logical, question. A careful examination of EDC's financial flows should therefore be undertaken in order to determine the need for any market overlap.

This discussion suggests that EDC's mandate could sensibly be modified to contain three central principles, the new addition being the third:

1. EDC should fill the existing gap in the market for export-credit insurance.
2. EDC should cover its full costs over the medium to longer run.
3. EDC should minimize the market overlap with the private sector.

The first point would ensure that EDC plays its important role in enhancing the efficiency of the market for short-term export-credit insurance. Of course, if no such gap existed, EDC's role in

this market would also cease to exist (we get to this important point below). The second point would ensure that EDC, while using its longer-term perspective to accept risks, nonetheless covers its full costs. This would prevent EDC from “over-filling” the market gap—serving those exporters for which the benefits gained from their coverage would be less than the costs necessary to provide it. In other words, as long as the second condition is satisfied, EDC’s provision of insurance will generate net benefits to Canada. The third condition would ensure that EDC’s activities are broadly consistent with this paper’s opening statement by eliminating those services that the private sector could adequately provide. It ought to go without saying that a minimized market overlap may be a zero market overlap.<sup>14</sup>

There is one final point regarding EDC’s profitability dilemma. Stephens (1999) argues that it is dangerous to believe that any ECA should be able to fill the existing market gaps while still covering its full costs. Indeed, he claims:

“it implies a rather poor view of the private insurance and reinsurance markets to suggest that official [export credit] schemes can handle on a commercial or break-even basis that business that the private market will not do on its own”. (p. 26)

Except in extreme circumstances, Stephens’ general argument is wrong. It would be correct if the export-credit insurance market were perfectly competitive and had no market failures coming either from imperfect competition among the insurers or the incomplete provision of insurance to high-risk exporters. But in the presence of such market imperfections, the existence of a role for a state-owned ECA does not rely on having a “poor view” of market participants. It is not inappropriate for the private insurers to have high target rates of return; nor is it inappropriate to deny coverage to high-risk exporters. These are simply the facts of the market, and understandable ones at that. Yet these facts lead to an inefficient market outcome that could, at least in principle, be improved through a state-owned ECA. Market failures can be identified without making any value judgements on private firms.

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<sup>14</sup> Note that point 3 does not imply that EDC would necessarily become an “insurer of last resort”. Instead, EDC would be allowed to compete with the private sector, but only to the extent necessary to allow it to cover its costs.

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### *B. The Dynamics of the Canadian Market Gap*

It is one thing to explain how EDC's past and current role in the market for export-credit insurance are consistent with the enhancement of market efficiency. It is quite another to claim that EDC should continue to play the same role in the future. How will the market develop over the near future, and what gap would remain if EDC were to withdraw from the market immediately? These are central issues when considering EDC's *future* role.

We begin with an important claim that deserves to be addressed. Some market observers argue that whatever gap allegedly exists in the market for export-credit insurance is simply a function of EDC's presence. Such a view implicitly holds that there is no "market gap" in the sense that we have defined it here, and that all of EDC's customers are ones that would willingly be served by the private-sector insurers. The recent paper by Kotowski (2007) is one example of this view. In light of the evidence that we have presented regarding the existence of risk and volume thresholds set by the private insurers, however, it is difficult to see how this argument can be supported.

A more subtle argument is that if the EDC were to fully withdraw from this market the private insurers would quickly rush in to fill the void left by EDC's departure, thus leading to a fully efficient market. At the base of this argument is the belief that the current risk and volume thresholds used by the private insurers exist *because of EDC's market presence*. In other words, in the knowledge that EDC stands ready to provide cover to Canada's riskiest exporters, the private insurers are free to ignore this segment of the market, which they do through the use of their risk and volume thresholds. However, as soon as EDC leaves the market, these same insurers will willingly step forward and serve these risky exporters that formerly constituted the bulk of EDC's customer base.

This argument strains credulity for two reasons. First, if EDC were to withdraw from the market immediately, the level of corporate concentration in the market would rise, not fall. Thus, to the extent that imperfect competition plays a role in creating the existing market gap, it is difficult to see why this aspect of the market will suddenly disappear. Second, and much more important, it is unlikely that EDC's market presence would ever have led the private insurers to create the existing thresholds. The incentive to increase private profits ought to have exactly the opposite effect, leading the private insurers to offer insurance coverage that competes with EDC.

We have already seen that EDC has considerably *higher* premiums than do the private insurers, and so the private insurers already have “competitive” contracts in this dimension. If the private insurers really wanted to win the business of Canada’s riskiest exporters, they could offer insurance contracts with more coverage for sales in risky countries and more stable coverage over the business cycle. Yet we observe precisely the opposite.

It is reasonable to expect that if EDC were to withdraw from the market today, there would be no immediate change in the size of the existing market gap. The smallest and riskiest exporters would be left un-served.

This counterfactual question, of course, can only be definitively answered through an experiment: remove EDC from the market and observe what happens to the level of insurance provided by the private-sector insurers. Such an experiment is naturally very costly, and it would be irresponsible to conduct it unless there were very good reasons to expect that the results of the experiment would be positive. In other words, EDC should not be suddenly withdrawn from the market unless there is good reason to think that the private sector would quickly take over its current role.

An alternative to experimenting with the withdrawal of EDC is to examine what has occurred in those countries where official ECAs doing similar business have withdrawn from the market. In the United Kingdom, the short-term credit-insurance business of the Export Credits Guarantee Department (ECGD) was privatized in 1991. The next year, the U.S. Foreign Credit Insurance Agency (FCIA) was set free from the U.S. government, and it subsequently absorbed much of the short-term business formerly held by the U.S. Export-Import Bank. In Australia, the short-term business of the Export Finance and Insurance Corporation (EFIC) was sold off in 2003; in France, COFACE was privatized in 1994.

What is to be made of the growing body of informal evidence from these countries that the withdrawal of the official ECAs has been largely successful (Stephens 1999, Wang et al. 2005)? Three points come to mind. First, it is difficult to know precisely how “success” should be measured. An informal observation such as “all appears to be well and the private insurers are content” is surely not a sensible sign of success in this context. Instead, a sensible indication of

success would be compelling evidence that, after the departure of the state-owned ECAs, no significant gaps existed in the market. The problem is that market gaps do not readily present themselves to the observer, being much like Holmes' dogs that didn't bark. In order to determine that no market gaps exist when only private-sector insurers are present, it is necessary to carefully examine the various insurance services on offer, as well as the potential but currently un-served exporters. In Europe, there is some indication that market gaps continue to be present after the withdrawal of the ECAs. A recent report by IMC Consultants Ltd. (2005, p. 7) states that "private insurers [in Europe] readily admit that the smallest enterprises are not very profitable for them to service. Accordingly, insurers do tend to set minimum premia and turnover levels to provide insurance cover".

The second point is that the European and Australian experiences with a fully private insurance market may yet be too young to produce accurate conclusions regarding the success of privatization. These ECAs withdrew from the market only in the mid 1990s, and the subsequent period may not have seen enough of the full credit cycle to truly test the private insurers' willingness to "stay on risk". Unfortunately, times may be quickly changing, and the next few years may indeed present a very challenging environment, both for exporters and their insurance companies. If the next few years does witness a significant economic slowdown and a tightening of credit conditions, and the private insurers in Europe and Australia are seen to "stay on risk" for a large part of their portfolios, then one might reasonably conclude that the private-sector insurers have indeed evolved in their ability and willingness to serve the riskiest part of the markets. In this case, the foreign experience with privatization would be an important part of a compelling argument for EDC withdrawal. But if, instead, a significant economic slowdown occurs and the private insurers in Europe and Australia reduce their coverage to any significant extent, then the market gaps which had on the surface appeared to have been filled will quickly re-emerge, and so too will the role of the official ECAs. In this case, more serious thought will need to be given to whether EDC should withdraw, and when.

The third point is that unique market details in Canada may generate a need for EDC even when no such need might exist in other developed countries. Stephens (1999) makes this point when he argues the need to examine each country's case individually, rather than simply assuming that whatever works in one country should be expected to work in others.

It is too early to conclude that privatization of the export-credit insurance markets in Europe and Australia has been a success. The coming economic cycle will likely provide a useful test of the private insurers' willingness to adequately "stay on risk".

The final point regarding the dynamics of the Canadian short-term export-credit insurance market is perhaps the most fundamental. Despite any foregoing arguments suggesting a continued need for EDC, it is essential to keep in mind that EDC's market share has fallen significantly over the past twenty years (Figure 4). This decline in market share reflects a growing level of competition in the market, driven by an increasing willingness on the part of private-sector insurers to take on risks that only a few years ago they were unwilling to bear. This decline in EDC's market share should unquestionably be viewed as a *positive* development in the market—it reveals an increasing ability for private firms to provide valuable services to Canadian exporters. Put another way, if the justification for EDC's existence is a market failure, then presumably a decline in its market share signifies a shrinking of this market failure.

Yet the future path of EDC's market share is clearly unknown. Some will argue that the private sector has already absorbed most of the risks that they will ever be prepared to take on, and thus there will still be a significant future role for EDC. Others will argue that the private sector will continue to improve at serving the smallest and riskiest exporters, and that it is only a matter of time before EDC presence will be unnecessary in this market. In addition, they would argue that when EDC no longer has a useful efficiency-enhancing role to play, it should have the good sense as well as the good graces to smoothly exit the market.

## **Epilogue**

### **An “Exit Strategy” for EDC?**

Nobody can be sure which of these two possible futures will come to pass, but prudence necessitates that some weight be placed on the second. This is not a statement that an EDC exit is inevitable or necessarily desirable; only that the market might evolve to the point where such an exit might be sensible. Both EDC and the government of Canada therefore need to think seriously about the conditions under which an exit might be pursued. To this final issue we now turn.

The directors of EDC may watch its market share continue to fall over the coming years, and they may even take some pleasure in the fact that the private sector continues to become more willing to bear risks once thought to be excessive. But such passing observations and thoughts do not constitute an exit strategy. What is required is a plan outlining the market conditions that would need to be in place, over the course of the economic cycle, in order for EDC to successfully withdraw from the market. We begin this discussion with three considerations important to the creation of such a plan, and then conclude by sketching the outlines of a specific exit strategy.

#### *A. Three Exit-Related Considerations*

First, as was discussed in Section 4, there is considerable evidence that the private-sector insurers in Canada are not prepared to fully “stay on risk” during difficult economic times. Thus the evidence from recent years that the private insurers have become more willing to insure the smaller and riskier exporters may not necessarily hold true in the future. It is therefore important that any EDC exit does not take place until a compelling case can be made that some future economic downturn will not present a case for its return (Stephens 1999). Neither the creation nor withdrawal of EDC should be a decision that is made lightly, based only on current economic conditions. EDC should not exit until it is clear that it will no longer be valuable—under any reasonable forecast of future economic conditions.

We also mentioned in Section 4 that the terms and conditions of a typical EDC contract are considered the “gold standard” against which other insurers’ contracts are inevitably compared. In addition, some Canadian brokers, in their negotiations on behalf of their exporting clients, are able to push the private insurers to amend their contracts to include some of the most important EDC terms and conditions. The fact that EDC, the insurer most prepared to serve the smallest and riskiest of the Canadian exporters, can end up influencing the private insurers in this way reveals a type of “learning” by the private sector. And it is to be expected in this market. If EDC, with its greater risk tolerance and longer-term perspective, can be seen by the private insurers to be successfully serving the smaller and riskier Canadian exporters, it should not be surprising that the private insurers will eventually be led to wonder whether they could not also profitably provide such cover. As a result, the adoption of EDC-like terms and conditions by the private insurers is also a positive sign of market development. At some point, however, it is likely that the growing competitive forces in the market will result in a situation where less learning of this type, by the private sector from EDC, is occurring—or at least is equally evident in both directions. To the extent that EDC has greater expertise in dealing with the riskiest segments of the market, and such expertise is gradually being transferred to the private-sector insurers as they absorb a larger share of these market segments, then any EDC exit should not occur until the rate of such knowledge transfer has declined.

The third consideration relates to the presence of ECAs in other countries. Though they have been privatized in several OECD countries, they appear to be on the rise in the major developing countries such as China and India (Wang et al. 2005), and continue to exist as state-owned firms (much like EDC) in other countries, such as Italy and Belgium. The gaps in the Canadian market for export-credit insurance may well disappear in the near future, and the obvious justification for EDC may then disappear as well. Yet if other countries continue to have ECAs which operate in a similar fashion to EDC, there may be an argument for EDC’s continued existence.

This is a contentious argument, and is probably more political than economic. If the markets gaps disappear in Canada, it may well be the case that they disappear in similarly developed economies. In this case, there would be a strong argument, not for the retention of ECAs, but rather for a coordinated withdrawal of all ECAs. In this sense, the logic is similar to

the case for more general trade liberalization, which is rarely done unilaterally but instead is typically achieved through complex multilateral negotiations.

The ECAs in the developing countries would then remain. Even if the market gaps in Canada and the other developed countries were to soon disappear, it is reasonable to expect that market gaps would persist in the developing world for many years. After all, today's developing countries typically have financial markets significantly less sophisticated than those in the developed world, and it is precisely this lack of sophistication which lies at the heart of the market gaps identified in this paper. Yet, so long as these developing-world ECAs are dedicated to the filling of market gaps in those countries, and are not used as tools for inappropriate export promotion, their existence ought to have little bearing on EDC. Similarly, if EDC's genuine role is limited to the filling of existing market gaps, and is not directed to simply encouraging any and all Canadian exports, the developing-world ECAs should pose no obstacle to EDC's market exit.

### *B. The Outline of a Possible Exit Strategy*

This brings us to the sketch of a strategy for EDC's exit from the market for short-term export-credit insurance. First, as we argued above, it is important to know whether EDC's activities in providing short-term insurance are fully self-sustaining, or whether this line of business is being cross-subsidized by profits generated from EDC's other business lines. With no obvious way of allocating EDC's fixed costs, one possibility is to create a wholly owned subsidiary of EDC that focuses exclusively on the provision of short-term export-credit insurance.<sup>15</sup> This subsidiary would operate its own risk-assessment system but it could choose to purchase necessary information and services from EDC. In order for the subsidiary to bear the full costs, however, it would be necessary for EDC to charge appropriate prices for these services. Once this subsidiary is created, it would operate in the market for export-credit insurance much the same way that EDC currently does. It would still have the advantages that come from having the higher risk tolerance and longer-term perspective, and thus would be able to direct most of its attention to serving Canada's smaller and riskier exporters.

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<sup>15</sup> Such subsidiaries have already been created in Italy and Belgium (Wang et al. 2005).

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The new subsidiary could be given the three-part mandate discussed in Section 5: to fill the market gaps, to cover its full costs over the long run, and to minimize market overlap with the private sector. The question of the inevitability of market overlap would soon be answered, as the profitability of the subsidiary would soon become clear. The level of profitability and the size of the market overlap would then influence the next steps in the exit strategy.

If the new subsidiary proved to be profitable over the course of the business cycle, and *there was zero market overlap*, then its portfolio would presumably be attractive to private shareholders. In this case, the new subsidiary could be sold in its entirety to the private sector. There might be concerns at this point regarding the purchaser, and whether a purchase by one of the existing large private insurance firms would lead to an undesirable increase in market concentration. In this case, an option would be for the government to sell the subsidiary but to impose some restrictions on ownership, as was done in the case of the Air Canada and CN privatizations.

Another option in the case that the subsidiary proves to be profitable with no market overlap is to privatize—or to off-load through some form of private partnership—separate pieces of its insurance portfolio. It is likely that the most profits would be earned from the subsidiary's safest customers, and these are likely to be exporters with the most “familiar” risks. Thus the subsidiary could begin by selling off its U.S. portfolio, followed by its European and Oceanic portfolios, followed eventually by Japan and other Asia, and so on. One advantage of a staged privatization of this kind is that each separate stage could be delayed until it was deemed that the private sector was ready to take on the associated risks.

What if the new subsidiary is only able to cover its full costs by having a market overlap with the private sector? This may be the expected outcome (Stephens 1999) but it is not a guaranteed one. Outright privatization is presumably not an option in this case since the private purchaser would take the profitable part of the portfolio and very likely dispose of the unprofitable part (by simply withdrawing insurance coverage from the riskiest exporters).

At this point, there are two options. The first is to maintain the subsidiary and continue operating while following the three-part mandate. In this case, it would simply be recognized that the associated level of direct competition with the private sector is the necessary price to be paid in return for the benefits of filling the existing market gap. Some might say that this option

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describes the status quo with EDC, but this is not correct. The important difference is that in the strategy sketched here, the subsidiary is wholly separate from the EDC and thus it would not be possible to have cross-subsidization between short-term insurance and other EDC services.

The second option is to avoid the market overlap with the private sector and accept the fact that the subsidiary will not be financially self-sustaining. In this case, the subsidiary would become an “insurer of last resort” and would require regular infusions of money, presumably determined by Parliament as part of the government’s budget process. In terms of institutional detail, it would therefore become like the U.S. Export-Import Bank, at least in the sense that it requires annual appropriations from the U.S. Congress. There is a large and growing debate about the desirability of this model for the provision of export insurance, and it will not be reviewed here (Hufbauer and Rodriguez 2001). Suffice it to make one passing observation.

A significant problem associated with using the self-sustaining Crown Corporation model is that a great deal of operational transparency is lost. The market gap may indeed be filled, but it is not clear to anyone how much private business is displaced in the process. In other words, it is difficult to enforce the three-part mandate discussed above, especially the third part requiring the Crown Corporation to minimize the extent of market overlap. In contrast, the model of an “insurer of last resort” with regular financial appropriations from government has the significant political benefit of transparency. The need for annual appropriations from Parliament forces the issues to be discussed in the public forum. If the filling of market gaps is a genuine benefit for society, and the voters can be so convinced, the legislators will vote for the required appropriations. But if the benefits appear to be unconvincing to a large set of voters, and alternative uses for the necessary funds appear to be more promising, appropriations will not be forthcoming. Such transparency naturally requires that the benefits of “gap filling” be carefully and convincingly explained. Though this is not an easy task, it is nonetheless a very worthwhile one, not least because such transparency and public discourse lie at the heart of a truly democratic society.

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