



Derivatives and Public Debt Management

By Gustavo Piga

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DERIVATIVES AND PUBLIC DEBT MANAGEMENT

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“This is what happens when you write books. There’s not just something that drives you to find out everything – something begins putting everything in your path. There is suddenly no such thing as a back road that doesn’t lead headlong into your obsession.”

Philip Roth, *The Human Stain*

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All reasonable efforts have been made to ensure that the figures provided in this study accurately reflect the source material from which they derive. However, readers seeking to rely on and use these figures in preparing papers, reports etc. of their own are advised to check and obtain the original figures (and permission to use them) from the source.

Web site addresses given in this report were active at the time of writing. However, as readers familiar with the internet will be aware, web addresses are open to change.

EDITOR'S INTRODUCTION AND SUMMARY OF FINDINGS

As derivative products have proliferated and the markets have expanded, government calls for greater 'transparency' and diligence in their use have grown commensurately. Even market events which have little to do with derivatives *per se*, such as the collapse of Long Term Capital Management, evoke pious concerns from official circles over the lack of appropriate self-regulation and accountability in the private sector.

But what about the public sector? As Gustavo Piga documents in this monumental report, derivative use by sovereign borrowers is substantial and growing. What sort of standard are they setting for the private sector?

The evidence is decidedly mixed. Some sovereign borrowers, such as the United States, make no use of derivatives whatsoever. Some large scale derivative users, such as Sweden, appear to be sensible, responsible and transparent in their conduct. Yet there are others that appear to be engaging deliberately and systematically in transactions which have no economic justification, and which they themselves would condemn - and perhaps even prosecute - were they to be uncovered in the private sector. An actual market transaction documented by Piga indicates clearly that at least one euro zone country actively exploited ambiguity in accounting rules for swap transactions in order to mislead EU institutions, other EU national governments, and its own public as to the true size of its budget deficit. As derivative use expands around the globe, it would seem inevitable that, in the absence of

much clearer international regulation and market standards, governments in less developed countries will eventually enter the market for the purpose of misleading foreign lenders and donors about the state of their finances. The International Monetary Fund and the World Bank should therefore pay particular attention to Piga's analysis.

* * *

Piga begins by documenting the growing use of derivatives, primarily swaps, by sovereign borrowers. What is driving this growth? As public debt expands, governments are naturally focusing more attention on the cost of raising funds in the market. Many governments have created quasi-independent debt management agencies for precisely this purpose. Staffed increasingly by individuals with expertise in the marketplace, these agencies frequently become aggressive users of swaps with a variety of aims.

Piga finds that some use swaps as a speculative tool, hoping to reduce the effective cost of their debt by anticipating movements in interest rates or exchange rates. Swaps can be a cheaper means of taking speculative positions than buying, selling, or issuing bonds of different duration or currency denomination. However, cheaper speculation does not make for proper debt management, and Piga is critical of governments that play the markets with taxpayers' funds.

A sounder economic logic underlies the management of the average effective duration of outstanding bonds through the use of swaps. Piga explains that governments have conflicting objectives to address in deciding whether to issue short, medium, or long-term bonds. On the one hand, governments have a strong incentive to concentrate issuance on long-maturity bonds, because investors

attracted to such bonds are particularly concerned to ensure that they are liquid. This is because long-term bond buyers are less likely than short-term bond buyers to hold the bonds to maturity: they will probably wish to sell them at some point. On the other hand, many debt managers believe that the risk-adjusted interest cost of long-term debt is higher than that of short-term debt, even though theory suggests that it should be the same. There is some empirical evidence in some countries, over a range of periods, supporting their view.

In order to support the liquidity of long-term government debt without raising interest costs to the government, debt managers issue a large supply of long-term bonds, and then they engage in swap transactions with private banks to adjust the government's payments to what they would be if the government had actually chosen to issue shorter-term debt. The government thereby effectively converts long-term debt into shorter-term debt without damaging the liquidity of the long-term debt. The debt managers may or may not be correct in believing that the swap transactions reduce the cost of the government's debt, but there is at least no reason to believe that the swaps themselves do any harm. Piga provides new data indicating that this strategy is widespread among sovereign borrowers. He further explains how the advent of the euro has facilitated it, by creating a much larger and deeper market in euro-denominated products.

Despite their potential benefits for risk reduction, swap programs do add new risks to the debt management process, and these risks must be actively managed. Foremost among them is counterparty risk. Piga finds that sophistication in the management of such risk varies widely between countries. It is, however, exceptionally difficult for those outside most national debt management agencies to gauge

their exposure to counterparty risk, as public disclosure of credit exposures is generally minimal or non-existent. Standardized reporting requirements are clearly necessary if outside monitoring is to be effective and debt managers are to be held properly accountable for their practices.

Swap use also turns out to have significant implications for disclosure in national accounts. Piga traces and documents an intensive debate which took place among national, EU and other supranational institutions over the mechanism to be used for specifying the impact of derivative transactions in national accounts. He reveals that national institutions responsible for public debt management in a number of EU countries were strong opponents of any reform that would allow national accounts to isolate the impact of swap transactions on the officially published national budget deficit. What concern lay behind their opposition?

Depending on precisely how they are treated in the national accounts, swap transactions can have a significant impact on the recorded size of a budget deficit or surplus. Potentially, therefore, swaps can be used to lower a deficit figure artificially in any given year by deferring interest payments to future years. Why would a government wish to do this? Piga explains that the upper limit of a 3% deficit-to-GDP ratio specified in the EU Maastricht Treaty might be one reason: an EU country looking to qualify for entry into the single currency in 1997 might wish to exploit an accounting loophole to disguise its true deficit figure.

Could swaps have actually been used for such financial chicanery? Piga certainly makes a persuasive case that governments concerned about the public reaction to published budget figures have a strong motivation to abuse swaps. No one could imagine, though, that

finding evidence of such behavior would be easy. The incentives for both governments and private bank counterparties to hide the evidence of such transactions are clearly enormous. Yet Piga has unearthed some rather striking documentary evidence: an actual swap contract, indicating that one EMU entrant (who, owing to an agreement with the source of the documentation, will remain anonymous) used swaps to mislead other EU governments and institutions as to the size of its budget deficit, so as to falsely suggest compliance with the Maastricht Treaty.

What exactly is Piga able to show? The tale is complicated, but here is the basic outline. In 1995, the government in question issued 3¼ year bonds denominated in yen. By 1997, the yen had depreciated substantially against the domestic currency, giving the government a foreign exchange gain, but only 'on paper'. No gains could actually be realized until the bond matured in 1998. In 1997, the government entered into a highly unusual currency swap contract with a private bank, requiring the bank to make large immediate cash payments to the government in return for large expected cash payments from the government after 1998. The government used these cash inflows from the bank to offset the interest payments they were making on their debt in 1997, thereby reducing their official public budget deficit for that year. Accounting for the swap transaction in this way would clearly have been illegal had it not been for the fortuitous existence of the yen bond. By tying the exchange rate used in the swap in 1997 to the exchange rate prevailing at the time the bond was issued in 1995, the government could legally claim to be 'hedging' the foreign exchange risk on the bond. Piga shows that such a claim is not logically credible, but is nonetheless capable of withstanding legal scrutiny. Thus the government succeeded in

using this swap, and probably others structured in a similar way, in order to take its 1997 budget deficit artificially below the Maastricht barrier, thereby allowing the country to qualify for entry into the single currency.

Beyond the clear risks that such distortion of national accounts pose to both private and supranational lenders (such as the IMF), it also implicates the private sector counterparts to such derivative transactions in activities which could clearly damage the reputations of both the government and the counterparts were the activities to be made public. One must ask whether 'hush money' might need to be exchanged in the future, perhaps in the form of a counterparty bank receiving favoritism in privatization mandates, or undue leniency in a market violation investigation. As the consequences of such illegitimate government swap transactions may indeed be serious, Piga's recommendations for reforming the disclosure rules that encourage such transactions must be taken seriously.

In this report, Piga has turned the traditional focus of critical scrutiny of derivatives on its head. Governments, as the guardians of the stability and integrity of our financial markets, have long warned of the need for transparency, prudence and honest practice in private sector derivative use. Using derivatives to 'window-dress' corporate accounts in Japan, for example, has been rightly condemned and punished by Japanese regulators. But Piga's research suggests that the problem of derivatives misuse and abuse may be much more serious in the public sector, which truly brings the age old question of "*quid custodit ipsos custodes?*" (who shall guard the guardians?) to the fore.

* * *

In closing, a word on documentation and sources is in order. No one before Piga has produced as authoritative an account of the abuse of swaps. In large part this is because governments are not required to open their books to public scrutiny. The report's contribution to the understanding of public debt management is built on the author's Herculean research effort that combined traditional scholarship with ambitious investigative work. Piga's sources, as explained in his preface, are primarily a combination of official documents, unpublished data provided to him by debt managers, and interviews with market makers, debt managers and other public officials. In many cases, the author provides direct quotations. But because of the sensitivity of the information being discussed, the author agreed with his sources not to reveal their names. These anonymous quotations offer a rare insight into the thinking of the officials and financial market players whom the author interviewed. But while the report's conclusions are reinforced by them, they in no sense rely on them.

In Chapter 4, the author provides clear evidence that a sovereign borrower and its private counterpart engineered a swap transaction to mislead the EU and the public about the true scale of the borrower's budget deficit. In the chapter, Piga relies on a document that came into his possession during an interview. By agreement with the author's source, the document could only be quoted if the country's identity, and that of the private counterpart, were kept confidential. A translation of extensive portions of the document is provided in the Appendix.

* * *

This report is a unique blend of

scholarship and investigative journalism. On behalf of the Council on Foreign Relations, I would like to congratulate Professor Piga for his invaluable contribution to public policy development in this murky and largely uncharted area. I would also like to thank ISMA, and John Langton in particular, for supporting the research project. It is tremendously gratifying to see the results of our collaboration made public.

Dr. Benn Steil

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PREFACE

In the year 2000, two of the five largest sovereign borrowers in the world, France and Germany, announced a major shift in their institutional arrangements for the conduct of economic policy. Only a year after their national central banks had effectively surrendered monetary sovereignty to the European Central Bank, the French and German economic ministries each announced a decision to create a debt management agency that would be responsible for the decisions on how to fund their nation's borrowing requirements. Reforms in both countries were, to different degrees, intended to provide for greater independence, flexibility and, especially, professionalism in handling the challenges of managing public debt in an increasingly sophisticated financial environment.

Therefore, it is no coincidence that these announcements were accompanied by communications that both agencies would be in charge of launching interest rate swap (IRS) activities to manage the cost and risk of debt more efficiently. At the same time, albeit less noticed, the Netherlands and Sweden committed to a similar program of domestic IRS. These followed closely on the heels of other such launches in Finland (1999), Denmark (1998) and Portugal (1997). Austria and Ireland had initiated programs in the early 1990s.

This report examines the use of financial derivatives by sovereign debt borrowers in a large subset of developed economies. The report has benefited from a series of meetings the author conducted with debt management

officials, regulators and market makers in Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. Its aim is to respond to the following questions:

- How extensive is the use of derivatives by these sovereign borrowers?
- Why are derivatives used and why is their use growing?
- What new challenges do derivatives present for debt offices around the world, especially in terms of risk-management?
- What challenges do regulatory authorities face owing to the greater use of derivatives by sovereign debt managers?
- What challenges does sovereign derivatives trading present for auditors and national accountants?

Little is known about the use of derivatives by governments. A useful introduction is provided by Ladekarl and Svennesen (1999), based on a chapter in the publication *Danish Government Borrowing and Debt*, a debt management annual report issued by the Danish central bank that often includes significant information on the role played by derivatives in Danish public debt management. As far as I know, only Garber (1998) has underlined - in passing - the implications of derivatives use in public debt management¹. He also stresses the ambiguity of the information provided by national accounts regarding the consequences of derivative use by sovereign borrowers, an issue that we will take up extensively in this study.

The greatest hurdle this report faced at

¹ See Garber (1998), pp. 29-30.

its inception was the unavailability of data, as governments are rather reticent to provide information on their derivative activities. This is an issue itself worthy of investigation. Given that Canada, Denmark and Sweden are the countries that have provided the largest amount of information and proposals to the public through their debt management offices, the reader will find many references to those countries. As I will illustrate in this study, transparency in reporting is fundamental to achieving an optimal debt management strategy. Transparency enhances the accountability of public debt managers. In turn, greater accountability increases the likelihood that debt managers will adopt policies that are in line with the goals sanctioned by the national law on public debt management or by the internal statutes of the debt office. At the same time, greater accountability of debt managers decreases the likelihood that they will pursue sub-optimal policies. Sub-optimal policies are often pressed on debt managers by governments eager to achieve short-term results for their own political agenda. This is why I wish to commend the debt offices of Canada, Denmark and Sweden for the attention given in their activities to the issue of transparency.

The data I managed to compile, while by no means complete, provide an original and satisfying first impression of the situation at the beginning of 2000. The success of the project also suggests that there is a significant opportunity for the collection of additional data, especially time series data and information with respect to instruments other than swaps. Indeed, the study often uses the words “swaps” and “derivatives” interchangeably, as swaps are the only financial derivative used by debt managers for which information is available. This is due to two inter-related

factors:

First, swaps are the derivative contract most used by sovereign borrowers. A swap, particularly the domestic interest rate swap, is a standardized contract, easily negotiable in the market, which has some key features that help the public debt manager to pursue his goals more efficiently. Indeed, the swap helps sovereign borrowers to separate the issue of funding from the issue of risk-management. As we will see in Chapter 1, governments usually finance a substantial share of their borrowing needs by issuing long-term bonds so as to guarantee the liquidity of their secondary market. In such a way, they reap a liquidity premium that decreases their average cost of borrowing. However, this strategy has the drawback of lengthening the duration of governments’ public debt excessively compared to its desired level. As Chapter 1 will show, interest rate swaps eliminate this trade-off.

Second, derivatives other than swaps are sometimes forbidden by national law or by the internal rules of the debt office (see Chapter 2). This is because the risk structure of those derivatives is not always fully mastered by the risk-management systems available in debt offices, or because these instruments are deemed by debt managers too speculative in nature to be used by the debt office. In some debt offices, derivatives such as futures, forwards and options are used. However, in such countries these instruments are used within a trading perspective that requires the debt manager to take views on the future direction of a currency or of an interest rate. As such, derivative operations of this kind are not divulged by debt managers, as their structure could have signaling content that might disrupt the smooth functioning of financial markets (see Chapter 1). For this reason, for this group of countries only data on their derivatives

activities in swaps will be presented.

The report has other necessary limitations. First, it does not consider repos. The use of repos, rapidly increasing among debt managers, is mostly for cash management or to facilitate the trading of government bonds in the secondary market, and only seldom for managing public debt. Second, it focuses on the use of derivatives by governments, and not on the problems that their private sector counterparties face in transacting with governments². Third, it does not try to anticipate what might happen in swap markets in the event that government participation becomes much larger than it is today - an important issue in its own right. It also does not try to express a view on how governments could be hit in terms of their average cost of debt by market turmoil of the kind experienced in late 1998 following the Russian crisis and the collapse of Long Term Capital Management.

The report assumes a basic knowledge of derivatives, and swaps in particular. An excellent reference an interested reader could consult is Schinasi, Craig, Drees and Kramer (2000). This work examines the role and the consequences of over-the-counter derivatives in modern banking. On the specific subject of derivatives pricing, Hull (2000) is an excellent text.

Several different information sources are used in this report.

First, I have reproduced official statistics and information on the use of derivatives culled from various publications of sovereign borrowers. Second, I refer to unpublished data and information provided to me by debt managers. Together, these sources allow me to draw a reasonably complete picture of sovereign borrowers' public debt and credit risk

management practices in recent years.

Chapter 3 describes a lengthy debate among public officials on the proper national accounting for derivative use by sovereign borrowers. This debate involved European Union debt managers and statisticians from supra-national institutions. Some of the material cited in this chapter is publicly available. Some documents are not publicly available, and were given to me during the course of my interviews. These documents are either letters between civil servants in order to prepare for official meetings or written official positions of specific countries or institutions during these meetings. Publicly available official documents often only summarize the final decisions that were taken in the course of this debate. These decisions were taken, most times by majority voting, by a group of supranational and national economic institutions. Therefore, these publicly available official documents fail to convey to the reader the full array of diverse positions that were argued during this debate. Such diverse positions can be illustrated by quoting passages from the documents I received during my interviews. This material has been critical for my understanding of the issues involved in the debate and needs therefore to be shared with the reader. None of the persons who provided me with these documents objected to the way they are presented in the report.

Finally, I make reference to, or quote directly, debt management officials, other public institution representatives, and market makers whom I interviewed. According to the ground rules agreed for my discussions with them, I do not identify them personally, and frequently do not identify their institutions. Whereas I believe that such references and quotations are very useful to illustrate logical arguments or to support conclusions based on documented evidence, I do not use such

² However, some of the legal implications for a private firm of entering into a derivative contract with a sovereign borrower are mentioned and examined in the text.

references or quotations as substitutes for documented evidence. Chapter 4 deals with information that, if publicly disclosed, might unsettle some governments, debt management offices, or private sector counterparts. The details surrounding one particular swap transaction between a sovereign borrower and a private counterpart were given to me under the condition that the counterparts involved would not be named. In order to provide evidence of the existence of this transaction, the Appendix reproduces a substantial part of the text of the contract, translated into English and presented in such a way that the counterparts cannot be identified.

* * *

While no one is responsible for the opinions expressed in this report except for the author himself, this report has benefited from the advice and assistance of a number of people, all of whom need to be recognized.

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LY. G.

CHAPTER 1: DERIVATIVES AND PUBLIC DEBT MANAGEMENT

1.1 Introduction

Derivative markets are growing at a fast pace (see Table 1.1). The last update by the Bank for International Settlements (BIS) on the growth of the global, over-the-counter derivatives market indicates that the notional amount of those contracts (equal to USD 94 trillion at the end of June 2000) has increased by 30% over the past two years and exactly doubled in size since 1995. Particularly impressive is the relative importance that standardized products such as interest rate swaps (IRSs) have acquired¹. IRSs increased from 39% of the total notional outstanding at the beginning of 1995 to more than half of the whole market. These contracts, initially distributed equally between the US dollar and European currencies, have recently tended to be held in the new currency of the European

economic and monetary union (EMU), the euro, at an increasing rate. This accounts for more than a third of the currency of denomination of IRSs.

Statistics on government use of derivatives cannot be separated from those of corporate investors within the non-financial customers category. The share of IRS by non-financial customers has declined slightly while having increased in dollar value by more than 10% over the last year. The total notional amount outstanding for non-financial customers has reached USD 4.315 trillion. However, this modest increase (still large in absolute terms) hides a surprising qualitative change that could be largely responsible for a new way in which sovereign borrowers in developed economies manage their debt.

Indeed, France and Germany (the two largest sovereign borrowers in absolute terms after the US, Japan and Italy) have announced the creation of a debt management agency to handle their liabilities. Together with this announcement, both governments have pledged to start a domestic IRS program, and the Netherlands and Sweden have committed

Date	Notional amount all derivatives outstanding (USD billions)	Gross market value ¹ all derivatives outstanding (USD billions)	Share of IRS swaps in terms of notional	Share of IRS swaps in euro (USD)	Share of IRS swaps with non-financial customers ²
March 31, 1995	47,530	2,205	38.8%	Not available	Not available
June 30, 1998	72,143	2,580	45.6%	25% ³ (25.5%)	12.4%
June 30, 1999	81,458	2,628	47.1%	33.8% (26.6%)	10%
June 30, 2000	94,037	2,581	51%	36.4% (24.6%)	9%

Table 1.1 - Global over-the-counter derivatives markets

Source: Calculations of the author from data taken from BIS, press releases; *The Global OTC Derivatives Market*, various releases; and *Central Bank Survey of Foreign Exchange and Derivatives Market Activity 1999*, BIS, May 1999.

¹ Gross market value is the cost that would have been incurred if the contracts had been replaced at the market prices prevailing on the date, without allowing reporting entities to net positive and negative replacement values with the same counterparty.

² Non-financial customers are mainly corporate firms and governments.

³ Deutsche mark and French franc only.

¹ According to the BIS definition, an interest rate swap is an agreement to exchange periodic payments related to interest rates on a single currency, which can be fixed-for-floating or floating-for-floating based on different indices.

to launch a domestic IRS program starting in 2001. They follow by just a few years Austria,

Denmark, Finland and Portugal². In the past years Belgium, Canada, Italy, Spain, Sweden and the United Kingdom have made ample use of cross-currency swaps. Table 1.2 (opposite), which contains original data obtained from interviews with debt managers, illustrates the year-end 1999 notional amounts of swap contracts outstanding both in euro and as a share of the public debt of the country. The countries considered in this report had at that date a notional amount of swaps outstanding of EUR 180 billion, a tiny fraction of all derivatives outstanding shown in Table 1.1 and of domestic and currency swaps by non-financial customers (not shown in Table 1.1)³.

Notional outstanding amounts are a first proxy for the level of swap activity within the debt office, given that contracts usually have a standard size across debt offices of EUR 100-200 million and that turnover data are not available⁴. Notional amounts, as we will see, are only a very indirect indicator of credit risk for the government and certainly its absolute value is by no means an indicator of it. Indeed, market value is a better, albeit incomplete, indicator for credit risk⁵. The second column in Table 1.2 normalizes the absolute value of the

notional outstanding to provide a first comparison of activity between countries by dividing the value of the notional by the outstanding nominal value of the public debt at the end of 1999.

Using this rough criterion, Sweden appears to be the largest user of derivatives, followed by Ireland, Denmark, Austria, Finland, Portugal and Belgium. France, Germany and the Netherlands do not currently use swaps but, as mentioned above, have announced the launch of a domestic interest rate swap program in 2001. Other countries that are currently relying little on swaps, like Italy, have been more aggressive in their derivative policies than in the past. Finally, Canada and the United Kingdom, while small users compared to other countries, have made systematic use of swaps within the realm of asset and liability management in coordination with their respective central banks. Japan and the United States do not use and do not plan to use derivatives in the near future. Australia and New Zealand (not covered in this report) have pioneered the use of derivatives in public debt management.

In this chapter we will try to understand why this development is occurring and why it is occurring now. In the past, sovereign borrowers did not use derivatives in a systematic way. Current derivative programs are announced by press releases, which are meant to reassure market makers of the long-term commitment of the sovereign borrower to these programs. These press releases often describe the purpose of the program, its size, its time frame and the types of derivatives that will be used⁶. For this purpose we will first review the goals that debt managers try to achieve and how derivatives can help in achieving these goals. Then we will

² Many of the aforementioned countries were using foreign currency swaps and other derivatives before systematically adopting domestic interest rate swaps. Australia and New Zealand are not considered in this report.

³ These refer only to over-the-counter (OTC) markets. Governments also use futures and other contracts traded on organized exchanges, albeit in limited amounts compared to overall activity.

⁴ Whether notional outstanding amounts can be a first proxy for the level of swap activity within the debt office really depends on the extent to which there is turnover in swap positions. This, in turn, depends on the style of debt management, i.e. whether swaps are used occasionally or are used actively to manage the portfolio in order to rebalance positions daily. This is a case in which one would expect a higher turnover. If the former dominates, the notional outstanding amount can be a good proxy; if the latter dominates, then market value may be a better proxy for swap activity.

⁵ See Chapter 2, section 2.2.a. Table 1.1 indicates that market value as a share of notional for all OTC derivatives outstanding varies between 3% and 5%, a ratio that could be applied to the notional amounts in Table 1.2 to get an initial sense of the potential market value and credit risk involved in these operations by sovereign borrowers. Table 2.13 provides an idea of the market value of the IRS portfolio for several sovereign borrowers.

⁶ In France it was the Ministry of the Economy that, on July 11, 2000, announced this development at the Paris Europlace Symposium: www.francetresor.gouv.fr/oat/us/bmt/us1a.html.

proceed to review the history of the use of derivatives by debt managers in developed

However, a sovereign borrower has to choose from a vast number of concepts

Country	Notional outstanding (EUR billions) December 31, 1999	% notional over public debt	Notes
Austria	18.16	15.4	
Belgium	22.95	9.4	
Canada	10.6	3.8	March 1999
Denmark	16.22	21.54	
Finland	8.66	12.75	
France	0	0	
Germany	0.71	0.23	
Netherlands	0	0	
Ireland	11.92	29.9	
Italy	10	0.91	
Portugal	7.04	11.25	
Spain	3.65	1.02	
Sweden	75.72	50.72	June 2000
United Kingdom	3.5	0.54	March 2000

Table 1.2 - Derivatives by governments - Notionals outstanding

economies and how this use has been affected by several developments in various economies and financial markets over the last twenty years.

1.2 The optimal use of derivatives in public debt management

1.2.a Public debt management: theory and practice

"The main objective of public debt management is to ensure that the government's financing needs and its payment obligations are met at the *lowest possible cost* over the medium to long run, consistent with a *prudent degree of risk*." [emphasis added]

This definition, offered recently in the *Draft Guidelines for Public Debt Management*, an important document prepared by the International Monetary Fund (IMF) and the World Bank⁷, has the advantage of being general enough to provide a common denominator for all sovereign borrowers (from both developed and developing economies)⁸.

⁷ *Draft Guidelines for Public Debt Management*, IMF and World Bank (2001) p.6.

⁸ Prior to publication of the guidelines, debt management policies had never been inserted by a supranational institution in a framework with prescriptive content.

embracing cost and risk. Do cost and risk refer to nominal or real variables? Do cost and risk refer to cash-flows or accrued interest expenses? Should one include changes in the market value of debt in the appropriate definition of cost and risk? What exact time horizon should be chosen to measure cost and risk?

More fundamental questions also arise. There are those who question the capacity of government to reduce costs however defined⁹: Why would governments know the direction of interest rates and exchange rates any better than markets? And why should governments care about the variability of interest expenditures? Should debt managers not be more concerned with the effect of their choices on tax rates or budget deficits?

Debt managers constantly face all of these questions¹⁰. Debt managers generally

⁹ A similar question motivates the article by Giovannini (1997).

¹⁰ The paragraph that follows draws in part from the important work done by the Swedish National Debt Office (SNDO), whose proposed guidelines for public debt management are published each fiscal year. The SNDO has acquired the role of a laboratory where theory and practice in debt management try to meet. See Piga (1999) for an introduction to the 1999 proposal and for the proposal itself. For the proposal only, visit the SNDO web site at www.rgk.se.

tend to measure cost and risk in nominal terms, even if some initial efforts are being implemented to simulate scenarios according to real variables. Debt managers tend to measure the cost of debt by looking at the yield to maturity and not only to cash-flows. This implies that the discount or premium in issued bonds is accrued as a cost over the life of the bonds. Debt managers also tend not to mark-to-market debt since a large share of the public debt is held until maturity, thereby making it irrelevant to include unrealized gains or losses in the definition of cost¹¹.

Governments, by and large, believe that they can systematically reduce the average cost of debt by reducing the duration of debt¹². But they also believe that if they do so they will encounter the larger risk of interest cost variations. Governments also focus on achieving the lowest possible expected cost for a given level of risk. Such an efficiency-driven perspective has pushed governments, on the one hand, to pursue liquidity-enhancing policies, especially on the long-end of the curve, as governments believe in the existence of a liquidity premium for large issue sizes. On the other hand, some debt managers take advantage of arbitrage opportunities for a given maturity target by issuing certain instruments rather than others on that segment of the curve¹³.

As for the appropriate concept of risk, most debt managers currently look at the variance of interest payments. It is, however,

hard to find a deeper division between debt managers and academia, between practice and theory, than that which exists over the appropriate concept of risk to be used in debt management. Economists have generally regarded interest payments variability as being a sub-optimal indicator of the relevant risks that society should hedge against through debt management. They have suggested that debt managers aim at tax smoothing, minimizing the variability of tax rates across states of nature and over time so as to minimize the negative effects of distortional taxation¹⁴.

Debt managers do not attempt to smooth taxes¹⁵. Most of them are only concerned with the variability of interest expenditure, independently of whether this variability generates tax fluctuations. By now it is standard to read in debt managers' annual reports an argument based on the existence of a decreasing 'portfolio efficient frontier' (over the Cartesian space "expected interest costs-variance of interest costs"). Expected cost minimization requires short duration of public debt¹⁶. However short duration implies higher variance of interest payments (because, on average, larger elements of the government debt are adjusted to the current levels of interest rates) and higher refinancing risk (because more debt falls due at any given point in time, which might make refinancing more difficult). The optimal point on the 'portfolio efficient frontier' depends on how the debt manager resolves this trade-off.

This divergence between theory and practice can be explained by political or public

¹¹ However, when evaluating day-to-day management and the possibility of buying back outstanding debt or exchanging new debt for old debt, market value considerations become necessary again for decision-making purposes, as the gain or loss will be realized. For long horizons (and many governments have them), the cost arising from marking-to-market or looking at the yield to maturity tend to coincide.

¹² See Campbell (1995) for a perspective on the potential for US debt managers to 'beat the market' systematically by shortening the maturity of debt.

¹³ As we will see, especially for derivatives, this perspective is adopted without necessarily keeping in consideration the fact that risks do not remain constant.

¹⁴ See Alessandro Missale (2000) for his excellent analysis of public debt management theory.

¹⁵ Those few debt managers who have considered tax smoothing say that the relevant covariances are neither stable over time nor significant enough to make it a satisfying policy goal.

¹⁶ This is because the expectations hypothesis does not hold true according to debt managers. This is not necessarily backed by persuasive empirical evidence.

choice considerations. Public debt managers try to avoid personal blame and are sensitive to pressures from political appointees to whom they must report. It is, therefore, natural to see interest expenditure (not tax rates) as the only relevant variable for debt managers. If something were to go wrong with tax revenue changes, they would not be blamed, but they would be strongly criticized if interest payments were to result in the failure to achieve politically sensitive targets. It is possible that the institutional arrangement of economic policy is also responsible for this state of affairs. If there were to be only one entity responsible for fiscal policy, perhaps tax volatility would matter more in debt management. The recent move towards public debt management agencies in many developed countries certainly does not help to shift matters in this direction.

Recently, Missale (2001) offered a contribution which might resolve the division between debt managers and theorists. Missale's paper is indeed likely to be as important in public debt management as Tobin's seminal 1966 paper. Tobin's portfolio approach to public debt management was successful in the sense that it was widely adopted in economic policy. The portfolio approach was accepted because it gave public debt managers, the central bankers at that time, a reasonable theory on how to achieve their goal of price stability within output stabilisation. The success of Tobin's theory resided in its careful understanding of the operational framework in which public debt management at the time operated¹⁷. Missale suggests that governments operating with a constraint on their maximum allowed budget deficit (for example, in the euro zone countries) and who bear a cost of implementing fiscal stabilization programs

should find it optimal to smooth the budget instead of taxes.

Missale's 2001 paper (just as Tobin's paper did in its time) gives debt managers (no longer central bankers but, today, treasuries and debt management agencies) a reasonable theory to achieve their goal. Few, indeed, would disagree that many current politicians (especially in the euro zone), to whose opinion debt managers are very sensitive, care about not losing face by passing a given budget threshold (3% in the euro zone) and that they are unwilling to embark on major fiscal stabilization programs. Missale's paper, therefore, suggests that politicians should, and will, push for budget-deficit smoothing across states of nature. Debt managers who care about not displeasing politicians will find this criterion extremely relevant.

Switching from an interest payment to a budget concept of risk has a strong impact on the strategic choices made by debt managers. In some cases, policy recommendations according to those different criteria tend to coincide, as is the case for a country that faces increased variability of interest rates. In this case, budget smoothing requires the same declining level of short-term debt just as interest-payments smoothing would. In some other cases, policy recommendations differ. For example, Missale's theory suggests - contrary to the traditional view adopted by debt managers - that price-indexed bonds should be issued even when they imply a high variability of interest payments (as is the case when the economy is likely to experience shocks owing to unexpected inflation). Indeed, a high price variability implies not only high variability of interest payments but also a high variability of the budget primary surplus. When inflation is high, revenues increase (owing to the imperfectly indexed structure of tax brackets)

¹⁷ See also Agell, Friedman and Persson (1992) for an important empirical verification of Tobin's approach.

more than public expenditure (owing to the imperfect indexation of outlays), and the opposite effect is true with deflation. In this case, it would be optimal to issue price-indexed bonds because they stabilize the budget balance unlike fixed-income bonds, which would have been preferred based on a theory that was only concerned with interest-payments volatility.

Missale's paper also suggests (confirming earlier findings¹⁸) that there is very little justification for the use of foreign currency debt, either in a confidence crisis or in a stable environment. In a currency crisis, when the exchange rate is devalued and interest payments on foreign currency debt are high, output is usually low following harsh stabilization programs. Therefore, interest payments rise in a recession when budget deficits are already high (i.e., just when this is least needed). In a stable environment such as the US experienced in 2000, a restrictive monetary policy, coupled with an expansionary economy and an appreciating currency, would result in low interest payments owing to foreign currency debt. If the US were to issue foreign currency bonds in a recession (when interest rates are low and the exchange rate depreciates) high interest costs would add to the burden of an expanding and unstable budget deficit.

Still, there might be reasons for governments to issue foreign currency that are not included in Missale's framework. First, issuing in low-yield currencies might be helpful in reducing the current interest expenditure effect on the budget compared to issuing in higher-interest-rate currencies owing to accounting rules in the system of national accounts. Any appreciation of those currencies

would largely affect the maturing capital of the expiring bond, thereby raising debt and long-term refinancing needs while sparing the budget deficit where only low interest expenditure would be registered¹⁹. Second, foreign currency debt might be considered an appropriate way to tap investors abroad and attract them to the domestic national market. Third, a country might still have large chunks of foreign currency debt that cannot be cancelled outright and that need to be at least partially refinanced. Fourth, issuing in foreign currency might be part of an optimal asset-liability management framework, especially in those countries where central banks and debt management offices share views and even coordinate their policies.

The budget-smoothing methodology is starting to take hold in some debt management offices. Indeed, debt managers in France and Sweden are starting to develop methodologies that account for risk in terms of the budget balance variability and that incorporate issuance of those instruments that minimize such variability.

Besides budget or market risk (depending on the choices by the debt manager), other important risks for sovereign borrowers worth mentioning are:

- a) credit risk: the risk of default by borrowers or other counterparties, this is particularly relevant when public debt managers manage assets or derivatives;
- b) settlement risk: The potential loss the government could suffer owing to failure to settle by the counterparty;
- c) operational risk: The potential loss

¹⁹ The budget deficit is a key economic indicator for many politicians. Indeed, where political pressures might be less relevant (such as within agencies), debt managers are starting to reconsider the use of foreign currency liabilities. For example, Portugal has selected a 100% euro target portfolio, and Sweden, in its recent guidelines, has suggested that the optimal share of foreign currency debt could be near zero.

¹⁸ See Missale (1997 and 2000).

owing to legal changes, transaction errors in the execution of transactions, inadequacies or failures in internal controls or incompetent or dishonest personnel; and

d) accounting risk: The potential loss owing to inappropriate accounting that leads investors to question either the creditworthiness or the credibility of the issuer (an important element of what the IMF and World Bank guidelines call “reputation risk”).

It is now time to examine how derivatives fit into this general scheme, how they can be used to affect cost and risk, and what additional costs or risks they entail compared to alternatives.

1.2.b The use of derivatives in public debt management

One might think that derivatives are fundamentally redundant instruments in public debt management. After all, by entering into a swap, a government acquires an exposure that it could usually achieve via direct funding. If its aim is to take a market view, it could also do that through direct funding. As we will see, however, using derivatives is not a perfect substitute for acquiring a given market risk or taking a certain market view through funding. First of all, a sovereign borrower acquires new types of risk through derivatives for a given level of market risk. Second, expected *ex ante* costs of using direct funding or using derivatives often differ for a given level of market risk. Third, transaction costs might differ when using direct funding rather than derivatives to achieve a given level of market risk. Fourth, liquidity of fixed-income markets might differ by achieving a given market risk with derivatives rather than via direct funding. This section and section 1.3 will expand on this.

Having said this, the reader will understand by the end of this chapter that many of the meta-criticisms that can be applied to a debt management strategy via funding can be easily extended to the use of derivatives. Here are two of the most relevant examples. First, consider a government that takes a view, through its debt management strategy, on the future trend in interest and exchange rates. If the consequences of this decision were proved to be irrelevant or damaging, this will be true independent of the way this positioning has been achieved (whether through direct funding or through the use of derivatives). Second, consider a government that believes that acquiring foreign currency exposure is sub-optimal. This will be so independent of whether a government issues directly in the capital market or issues domestically and then acquires exposure through a cross-currency swap. Section 1.4 will expand on this issue.

1) The use of swaps to reduce the cost of borrowing: opportunistic behavior

Many countries have in the past launched derivatives programs to reduce their cost of borrowing given a certain level of interest rate risk. Canada, as we will describe in the next section, was the first to exploit systematically certain opportunities in an attempt to reduce the cost of debt via swaps. Moreover, many countries in the 1980s often used the cross-currency swap market to reduce the cost of borrowing in a certain currency.

Before describing these savings, it is important to identify the opportunity cost borne by sovereign borrowers when they engage in these transactions. If a sovereign borrower issues instruments in the 10-year segment of the curve through auctions, and then enters into a swap to exchange the payment of a 3-

month floating rate for the fixed rate (the typical domestic IRS that governments adopt), one assumes that the government is looking for the best debt instrument to finance itself on the 3-month part of the yield curve. In this case, the benefits of the swap have to be measured against the alternative liability that the borrower could have used to finance itself over a 3-month horizon, possibly the Treasury bill. Similarly, if a non-euro zone country borrows in dollars to swap the proceeds into euro, the cost must be compared with the best alternative available to the debt manager, possibly an issuance via the capital markets of a euro-bond.

Suppose that euro zone government X has issued a 10-year fixed-income bond (the benchmark) and were to enter into a 10-year domestic interest rate swap with counterpart Y, agreeing to pay a Euribor 6-month rate in exchange for a fixed payment based on the swap-market rate. The government pays a 10-year rate equal to 6% on its benchmark while the 10-year swap rate is equal to 6.5%. Thus, the swap spread - the difference between the swap rate and the government bond rate - is equal to 50 basis points. The government could finance itself on the 6-month end of the curve by issuing T-bills at a 5.5% rate. The Euribor rate is equal to 5.7%. The flows in the transaction are described in Figure 1.1 (below).

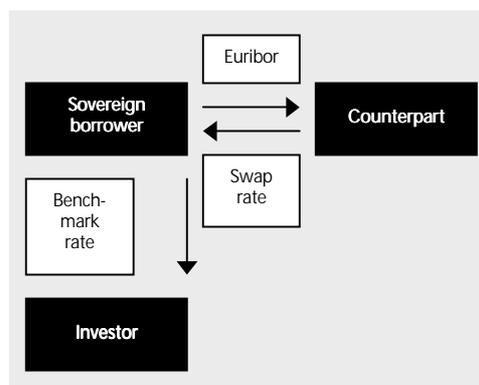


Figure 1.1 - A typical sovereign borrower swap transaction

In every period the sovereign borrower will pay for this synthetic liability (Euribor-(swap rate-benchmark rate)) or (Euribor-swap spread). However, the cost of this transaction has to be compared with its opportunity cost, the T-bill rate. The (T-bill-(Euribor-swap spread)) is an indicator of the savings of this operation. In our example, those savings can be quantified $(5.5 - 5.7 + (6.5 - 6))$ basis points, i.e., 30 basis points²⁰.

Therefore, a positive swap spread is not a perfect indicator of whether or not a deal is financially advantageous; it has to be 'sufficiently positive'. This is why Austria, for example, claims that it will not undertake operations that do not guarantee a swap spread of at least 12.5 basis points or why Canada ceases to do domestic IRS when the swap spread has reached 30 basis points, a level deemed "not attractive"²¹. There is a reason why such operations need a positive spread to be undertaken. They do not actually carry the same risks as a conventional funding operation (therefore, it is not a pure arbitrage opportunity). First of all, the gains materialize if the spread between the T-bill and the private Libor rate remains constant (or increases) over the life of the swap. This is what is called the 'basis risk'. Furthermore, by entering into a swap, the sovereign borrower is exposed to the risk that the counterparty will fail. Suppose we compare issuing a zero-coupon swap and a T-bill (i.e., instruments with an identical financial structure). With the former, one might be

²⁰ The reason for the existence of such a comparative advantage in swap markets is not clear. Bicksler and Chen (1986) argue that it was due to the existence of market imperfections generally related to transaction costs. Turnbull (1987) replies that in swap markets these situations amounted to arbitrage opportunities that would be washed away. Other contributions have pointed to explanations that depart from the existence of comparative advantages to account for the development of swap markets (Wall (1989), Titman (1992), Smith, Smithson and Wakeman (1986 and 1988), among others). In general, the existence of a comparative advantage is still believed to hold owing to the differences in the fixed and floating-rate market structures.

²¹ See *Debt Operations Report*, November 1996, Department of Finance, Canada. p.27.

exposed to the risk of the counterpart failing during the life of the contract and of renewing one's debt (to regain the desired exposure to interest rate risk) at higher rates. This risk would not be an issue with T-bills²². Finally, one should not forget that, compared to T-bills, swaps offer the added advantage of lower refinancing risk (the same as a floating-rate note), since they require less periodic refinancing to get the same short-term exposure. Denmark and Finland actually use IRSs also for the management of refinancing risk.

country that has used the domestic swap market as the first leg of a swap-package meant to achieve exposure to foreign currencies.

If domestic IRSs are chosen because they represent convenient alternatives to T-bills, they might be used little by authorities who do not view them as 'perfect substitutes' for T-bills and prefer the latter either as an instrument of monetary policy or cash-management. Canada might have been the only experimental IRS domestic program launched on the basis of pure opportunistic considerations. The program

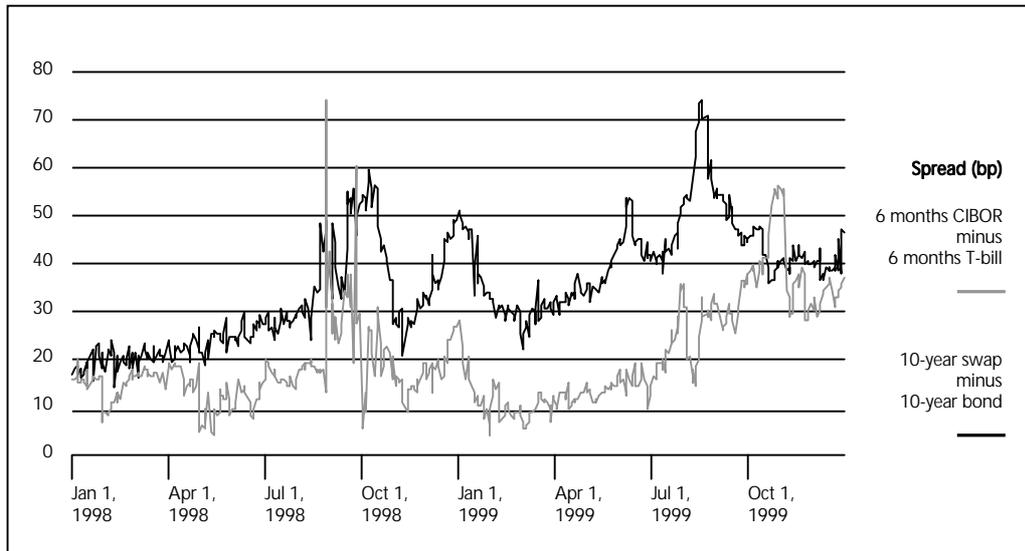


Figure 1.2 - *Ex ante* comparative advantage for Denmark in the use of domestic IRSs
Source: Danish central bank

In some rare instances the expected savings might be negative, as Figure 1.2 (above) shows for Denmark, a country that recently started using domestic IRSs. Figure 1.3 (overleaf) shows the same graph for Sweden, a

was halted because of a narrowing of spreads and a desire to lengthen duration.

The same argument applies to cross-currency swaps that are based on issuing in a given currency and then swapping the liability into a different currency, including the national currency, in which the government might want to obtain exposure for different reasons. Here again, the reason is the expected cost advantage, with the only drawback being added counterparty risk. For example, Denmark has on two occasions issued in South African rand and then swapped into euro to get

²² Note in passing that both types of risk refer to a definition related to 'interest-payments risk'. Since it is hard to imagine that 'basis risk' is related to 'primary-balance risk', any change in interest payments due to changes in 'basis risk' might also affect 'budget risk' via the interest expenditure. This is not so for counterparty risk. It is likely that counterparty risk is higher in recessions, which is exactly when primary balances tend to worsen. This should push debt managers to give even greater attention to counterparty risk than if it were unrelated to the business cycle.

cheaper funding in euro. Other governments have done the same. Canada in fiscal year 1998-99 issued in Norwegian, New Zealand and Hong Kong currencies to swap them back into more heavily-traded currencies.

much interest payments but the amount of domestic-denominated currency of public debt to be rolled over. This would not affect the budget deficits during the life of the bonds but, rather, the deficits after the bonds have

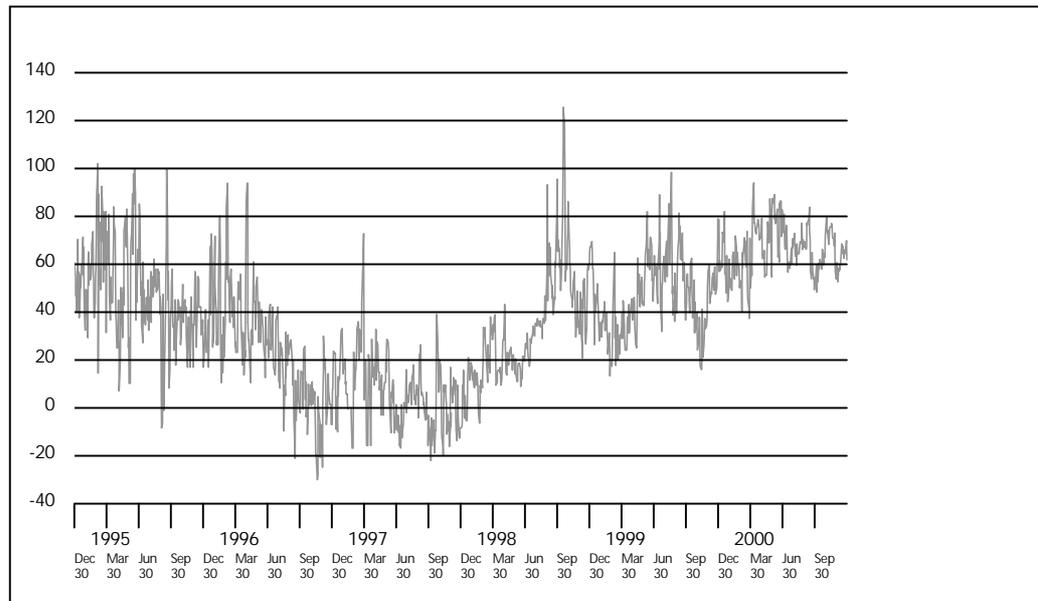


Figure 1.3 - Sweden - Expected saving from IRS swaps vs T-bills
Source: Datastream

To establish the extent to which governments use this strategy, and to understand its rationale, it is useful to look at the variation of currency composition of sovereign foreign currency debt before and after swap (shown in Table 1.3). It appears that many governments, through swaps, acquire exposure to currencies with low interest rates (i.e. the Japanese yen or Swiss franc). Why does this occur? One cannot rule out that, besides pure opportunistic plays, some countries might engage in 'accounting arbitrage' by swapping into foreign currencies that pay low interest. Indeed, currencies with currently low interest rates are expected to show an appreciation with respect to currencies with higher rates. This appreciation would, however, affect not so

matured. This is the 'deficit bias' held by debt managers, which has been well synthesized by a statistician who said: "The debt manager is not a debt manager for all his life, so he gives more weight to the deficit than to the debt." In a way this confirms the relevance of the 'budget-smoothing' theory. It should be pointed out that the rationale behind these transactions is detached from any possible benefit for the taxpayer²³.

Where countries manage official reserves in conjunction with liabilities, foreign currency swaps are often used to hedge one country's reserve composition. This is especially true in countries where debt management (or net asset management) is in the hands of the central

²³ This is the case unless one wishes to maintain that such transactions help to keep a country's deficit below some pre-specified target level, as in 1997 when euro zone countries were obliged to remain within the 3% deficit-to-GDP ratio, and that there is a clear cost to society in not keeping below the target.

bank. Canada, which recently entered into many cross-currency swaps that switched Canadian dollar liabilities into euro liabilities, has at the same time raised its level of euro reserves.

A corollary of the 'comparative advantage' argument is that one should rarely see governments enter into a swap on the pay-fixed leg by large amounts²⁴. When this happens, it creates surprise and strong swings in the market. In the summer of 1998, Germany announced the launch of a large IRS program. The planned level of derivative contracts in IRSs for that year was DEM 70 billion (approximately EUR 35 billion). This amounts to almost half of the notional amount of swaps that Sweden (the largest user of swaps) has accumulated over several years. On August 12, 1998 *International Financing Review* reported that:

"The German Ministry of Finance was rumoured to have been paying fixed rate in the long end of the Deutschemark swap market this morning ...[Market makers] are attributing the sharp increase in swap spreads to bund yields...mainly to the flight to quality credit widening that is being seen in all swap markets as well as to continuing asset swap flow. Over the last week the 10-year swap spread to the benchmark 4.75% coupon 2008 bund yield has moved out from 34 basis points to 41 basis points, and the spread of the 10-year swap to the futures yield risen from 18 basis points to 24 basis points...The Ministry of Finance appears to have largely confined itself to paying [the] fixed rate in the 10-year maturity of the Deutschemark swap market, according to

dealers, and to have only been trading for sizes of a few DM100m at a time. Dealers are divided over what the motives are for the Ministry of Finance choosing to confine its trading to 10-year paying."

While we will come back to the issue of why Germany chose such a non-traditional way to enter into the swap program, examination of the swap spreads in 1998 (corrected for the swap spread of the French government so as to account for the possibility of 'flight to quality effects') shows that the action of the German government might have had sizeable effects on the market (see Figure 1.4, overleaf). The spread was 12 basis points on August 12, 1998 (values which it had approached in previous months), and only in November-December did it stabilize again around those values, going as high as 30 basis points in the interim period. Furthermore, one cannot exclude that, as Germany launched the program with a public announcement, market makers coordinated their efforts to raise the cost of those deals for the Ministry of Finance²⁵.

²⁴ Based on information now available, one can confirm that most of these deals were, indeed, on the 'pay-fixed' side. Overall, in 1998, there were 14 derivatives issued for a total of DEM 1.687 billion of notional, only 2% of the pre-announced quantity. Ten of these swaps were 'pay-fixed and receive-floating'. Four of these swaps were 'pay-floating and receive-fixed'. Furthermore, out of these four, three were terminated in the first quarter of 1999, for a total level of the notional equal to DEM 300 million. One two-year swap expired in early 2000.

The other swaps all had longer maturities, between seven and ten years. After 1998 the program stopped, notwithstanding the repeated approval by the Parliament of a lower swap ceiling for the years 1999 and 2000 of DEM 20 billion notional. At the end of 2000 (assuming that no swaps will be terminated in the last period of the year), Germany thus had an outstanding volume of swaps equal to DEM 1.287 billion - less than EUR 1 billion. The three deals that were closed in 1998 were all closed at negative market value with a loss of DEM 11.649 million appearing in the 1998 budget (cfr. *Zinsderivative Bundeshaushaltsplan 2000*) owing to derivative transactions. These are quite big losses for such a small notional amount.

²⁴ Many debt managers enter into 'pay-fixed' swaps when they want to adjust their duration upward by small amounts, given the flexibility that swaps provide compared to launching an auction. Rarely, however, would one see large programs of this type, as debt managers could achieve the goal of lengthening duration through the primary market.

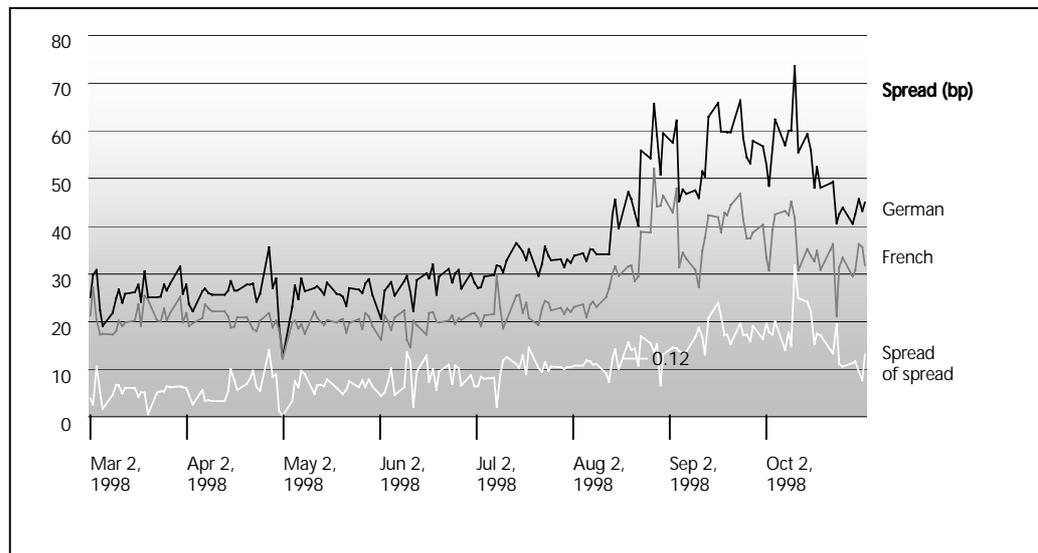


Figure 1.4 - German swap spread / French swap spread

2) The use of swaps to reduce the costs of borrowing: risk-taking and liquidity-building strategies

There is another way of thinking about the advantages of a swap. Instead of comparing it to an instrument that guarantees the same market risk exposure and then measuring its advantage in terms of pure cost, one could think of the decision whether to issue a swap in terms of the desired level of risk exposure²⁶. In this case, the debt manager is led to ponder and compare whether it is better to issue a 10-year fixed-income bond without swapping it, swap the 10-year fixed-income bond and acquire market exposure to short-term rates, or refrain from issuing a 10-year bond and issue a floating-rate note instead. The last two options both help to achieve short-term exposure.

In this case, by using swaps governments

²⁶ One could claim that once a given duration has been chosen, swaps are selected for their lower costs, and we would fall back on the previous category of opportunistically-driven derivative operations. As we will see, the emphasis here is on liquidity-building strategies rather than direct cost reduction. The opportunistic expected cost reduction argument is obviously present here too.

are not 'hedging' but actually 'taking risks'²⁷. As we have indicated, these risks must be seen from the perspective of the debt manager as risks resulting from the greater interest-payment uncertainty that is usually linked to short-term exposures²⁸. These exposures are often taken to achieve expected savings. Fixed-income liabilities ensure less interest-payment risk but higher average cost. Debt managers have often shortened duration via issuance of T-bills or long-term floating-rate notes linked to a short-term rate. The latter strategy also helps to reduce refinancing risk.

Floating-rate notes, however, have the drawback that they need to be issued as part of the overall financing and, therefore, force governments to scale back their issuance of fixed-income securities given the supply of all other instruments. This, in turn, reduces the

²⁷ Derivative accounting regulation also considers these operations speculation-driven rather than hedging-driven. According to International Accounting Standard 39, a firm paying the fixed leg to hedge a floating rate liability would indeed be 'hedging', but such is not the case where the firm is paying the floating leg in the swap (unless it is intending to hedge the fair value of an underlying fixed-income liability). Governments, however, do not mark-to-market their debt and, therefore, do not use pay-floating IRSs to hedge themselves, but rather to get exposure to risk.

²⁸ In the future they might be seen in the greater context of budget deficit variability.

liquidity of the secondary market for fixed-income bonds and raises the liquidity risk for investors, who will require a discount to purchase the fixed-income government bonds. Swaps, while having the disadvantage for sovereign borrowers of creating counterparty risk that needs to be managed effectively, have the advantage of helping to build and maintain the liquidity of the benchmark long-term bonds, as they do not interfere with the funding policy of the government.

Swaps, therefore, help debt managers to separate the funding decision from the portfolio decision, an important outcome which has its own drawbacks (in particular, counterparty risk). Furthermore, as governments enter into swaps, monitoring their market value might also help demonstrate whether the 'risk-taking' was worthwhile. Indeed, a positive market value of the swap portfolio might be an indicator that it was worth shortening duration compared to issuing a 10-year benchmark while not swapping it.

To measure the extent of the practice of engaging in domestic interest rate swaps to modify duration, one can look at duration pre and post-swap for the domestic issuance program. Table 1.3 (overleaf) shows that, after swaps, duration is largely reduced, confirming the view that most governments enter into these swaps on the pay-floating leg.

A large group of countries has decided to reach the desired level of domestic duration via a domestic IRS program. This was true of Ireland (up to 1999)²⁹, Austria, Finland, Portugal

and, finally, Denmark, whose IRS program is gradually picking up. In other countries things are moving in the same direction. France, the Netherlands and Sweden will launch their domestic interest rate swaps programs in 2001. Germany and Spain should follow soon after. All these governments have shown interest in derivatives, as they ensure the liquidity of their fixed-income bonds while allowing debt managers to achieve the desired level of duration. All these countries monitor the opportunity cost of using derivatives versus an instrument with the same duration.

Finally, some countries with large debt, such as Belgium and Italy, have not made use of domestic swaps programs. It is likely that the combination of high public debt and a relatively short domestic duration imposes greater caution. First of all, as debt is high for these two countries, they do not yet worry about preserving liquidity. Second, with a high public debt, interest rate risk is greater than in other countries, and this requires higher duration levels. This reduces incentives to shift to short-rate exposure via IRSs or, for that matter, any short-term exposure instrument.

Similarly, some governments have decided to use domestic markets for funding and liquidity-preserving policies, and then use cross-currency swaps to acquire foreign currency exposure. As Table 1.3 shows, this practice implies an increase in the size of foreign currency exposure after swaps compared to foreign currency exposure before swaps for countries not belonging to the euro zone³⁰. To the contrary, the size of foreign currency exposure in euro zone countries pre-

²⁹ In Ireland in 1998, there were almost IEP 6 billion of notional outstanding in domestic IRSs which, in 1999, had shrunk by half to IEP 3 billion. Why was this occurring? The rapid decline in public debt that led the authorities to cancel the benchmark for the year 2000 ensured a parallel decline in duration, which might be desirable when debt shrinks, as risks of interest rate changes are lower. Swaps, therefore, are not needed to reconcile duration changes with liquidity, as the latter is now a less important goal for the Irish authorities. In the future, buy-backs might also make IRSs less important. Also, as we will see later, IRSs were used in

Ireland more for active 'beat-the-market' debt management rather than in handling risk. This posture might have lost its appeal, as Ireland has stabilized its public finances since then.

³⁰ Recently, non-euro zone countries have had quite an advantage in raising funds in the domestic debt market and swapping them into euro. Table 1.4 shows the swap spread in Sweden over the past five years.

swap is larger than the size of this exposure post-swap. This is because swaps are used to ensure a low cost in the domestic currency. In this case, liquidity and risk-taking considerations give way to pure cost considerations. When our interviews took place in the fall of 2000, many euro zone debt managers were refraining from adopting such practices given the market conditions at that time.

portfolios, have done so by almost completely abandoning their issuance program in the global capital markets. They have instead heavily gained exposure to these foreign currencies through the swap market. Canada, Denmark and the United Kingdom also manage their official reserves within what many see as an 'asset-liability' management policy where reserves are funded at the lowest possible cost.

Country	Type of swap program		Domestic duration effects		Currency effects 1		Currency effects 2	
	Domestic IRSs %	Foreign currency %	Pre-swap years	Post-swap years	FX share pre-swap %	FX share post-swap %	Shares pre-swap %	Shares post-swap %
Austria ¹	40	60	n/a	4	12.3	13.7	JPY 39.1 USD 33.1	JPY 55.5 CHF 44.5
Belgium	Almost 0	Very high	3.79	3.8	4.3	4.2	USD 52.3 JPY 37.4	CHF 56.6 JPY 30
Canada ²	4.5	95.5	4.33	n/a	7	11	USD 77 EUR 14	USD 67 EUR 29.5
Denmark	6.6	93.4	4.04	3.95	16	16	EUR 43	EUR 92
Finland ³	46.2	53.8	3.83	3.69	17.5	15.11	JPY 40 USD 30	GBP 33 USD 30
France	To be launched							
Germany	To be launched							
Ireland ⁴	32.6	67.4	4.45	3.87	14	6	USD 39.7 JPY 37.6	GBP 100
Italy	0	100	n/r	n/r	3.72	3.35	USD 55.8 JPY 34.8	USD 48.7 JPY 42.2
Netherlands	To be launched							
Portugal ⁵	n/a	n/a	2.97	2.87	7.36	2.7	USD 64 JPY 23	USD 59.2 JPY 14.2
Spain	n/a							
Sweden ⁶	0	100	3.36	3.21	21.18	29.26	EUR 42 JPY 23	EUR 67 USD 15
United Kingdom ⁷	0	100	n/r	n/r	3.3	5.1	USD 41 EUR 30 JPY 8	USD 32 EUR 35 JPY 26

Table 1.3 - Effects of swap programs as of December 31, 1999

¹ Source: *Finanzschuldenbericht 99*, section 2.3, table 9.

² Data for IRSs and currency swaps refer to fiscal year ended March 1999, *Summary of Government of Canada Direct Securities and Loans*.

³ Total Macaulay's duration as of August 31, 2000. Currency shares as of June 1999.

⁴ Source: National Treasury Management Agency, report for the year ended December 31, 1999, p.66.

⁵ Total modified duration.

⁶ Data for Sweden as of October 30, 2000 except for currency effects. Domestic duration in Sweden calculated by subtracting fixed leg of domestic IRS to enter euro exposure. An IRS program will be launched. For Sweden, IRSs are calculated zero by considering the double transaction as a synthetic one that allows a 'pay-floating in foreign currency' leg and a 'receive-fixed in krona' leg.

⁷ As of end 2000.

n/a - not available n/r - not relevant

Indeed, a clear division has emerged between countries belonging to the euro zone and countries outside of the euro zone. Canada, Denmark, Sweden and the United Kingdom, having decided to achieve exposure to the euro and other foreign currencies in their

While the relevant role the central bank plays in the management of public debt in those countries might explain the choice of the euro exposure, the choice of swaps as the instrument of funding can only be due to the perceived cost effectiveness of the derivative contract.

Canada, Sweden and the United Kingdom - unlike Denmark - have achieved this exposure by funding on the long-end of the domestic debt curve, thereby preserving the liquidity of the benchmark bonds³¹.

The dimensions of these programs have grown considerably over the past few years. Canada raised its domestic cross-currency program from CAD 400 million in 1994-95 to more than CAD 17 billion outstanding in the 1999-00 fiscal year. Recently it has started swapping its domestic liabilities into euro rather than US dollars. In the United Kingdom,

"[GBP] 4.5 billion of the Treasury's foreign currency debt matures during 2000-01...Redeeming this debt will be a drain on the foreign currency reserves. To offset this drain and so maintain the spot reserves broadly at their current level, this debt will be refinanced during 2000-2001 by issuing an extra [GBP] 2.7 billion of gilts and swapping the proceeds into foreign currency assets."³²

program based on a two-step swap. The first swap amounts to a 'pay-floating and receive-fixed' domestic interest rate swap that modifies the fixed-income Swedish krona liability in a synthetic floating rate exposure that is always in Swedish krona. Through a basis swap the Swedish debt manager then creates a floating euro liability.

As Table 1.4 (below) shows, this strategy has in just three years crowded-out the Swedish borrowing program via capital markets. The expected cost advantage of this strategy is measured by the Libor spreads required to borrow in both markets, which achieved a maximum level of almost 60 basis points in 1999 in favor of the SEK/foreign currency swap. The expected advantage of such a funding scheme is so clear that Sweden has announced its intention to suspend any form of foreign currency financing different from swaps³³. Counterparty risk is an obvious drawback to this strategy. The dimensions of the Swedish program have alerted the Swedish authorities to

	1995	1996	1997	1998	1999
Capital markets and other foreign exchange transactions	119.3	68	49.5	38	22.3
SEK/foreign exchange swaps	0	20.8	20.6	30.7	40
Basis points under US Libor, SEK/foreign exchange swap	n/a	30.8	31.8	52.3	60
Basis points under US Libor, public loans	7.8	14.7	21.3	6.7	3

Table 1.4 - Sweden - Gross borrowing (SEK millions)

Source: Swedish National Debt Office, *Market Information* and *Monthly Bulletin* (various issues) and 1999 annual report

However, in no other country has this strategy been pursued more aggressively than in Sweden. In 1995, Sweden was the first sovereign borrower to launch a cross-currency

this issue and, as we will see in the next chapter, the Swedish National Debt Office has become the world leader in terms of attention to counterparty risk management.

³¹ Denmark and Sweden (two countries with fairly similar markets) have adopted a different view for achieving euro exposure. This might have to do with a greater distaste for further foreign currency borrowing by the Swedish government and not so much a different weight given to the liquidity of their domestic markets.

³² *Debt Management Report 2000-2001*, March 2000, Her Majesty's Treasury.

³³ A paradox of abandoning capital markets funding is that debt managers will not be able to gauge the effective savings that will be achieved by the use of currency swaps. Indeed, a Swedish debt manager has expressed concern that she will not be able "to monitor the spread anymore for lack of the opportunity cost"!

To summarize this sub-section, swap strategies are undertaken by sovereign borrowers to reduce expected costs. An initial benefit of derivatives might arise from the possible existence of a reduction in expected costs compared to instruments that provide equal market risk exposure. A second benefit arises because derivatives allow a change in exposure to interest rate risk, while preserving a liquidity premium on long-term bonds. These expected gains will fail in the event credit risk or basis risk materialize with sufficient intensity. These gains are reinforced if refinancing risk is a relevant concern.

In an *ex post* sense, the gains related to swaps will not materialize if interest changes turn against the expectations of debt managers. This would occur if, for example, a 10-year bond is issued and swapped into a 6-month Libor exposure, and if this strategy turns out to be more expensive than a strategy of issuing a 10-year bond without swapping it. This outcome would also occur by choosing to issue a floating-rate note instead of a 10-year bond.

It is now time to ask how swap activity will survive in a new environment where public debt might be shrinking. To examine this, one will have to understand how swap programs have changed in the past owing to an evolution in the macroeconomic environment and financial markets. The way in which the use of swap markets by sovereign borrowers has developed over the years might tell us something about where we are headed. Thus, we turn to the analysis of the history of swaps in public debt management.

1.3 The history of swaps in public debt management

1.3.a The wild '80s

Tables 1.1, 1.2 and 1.3 seem to indicate

that the history of the use of derivatives by debt managers is rather diverse across developed economies. However, there is a somewhat common path, though certainly not a regular one, influenced as it is by national idiosyncrasies, which one might identify by talking at length with debt managers. In many instances the debt managers who were using swaps in the early 1980s have left office, but memory of these 'first generation operations' has been kept alive like a torch passed from one generation of debt managers to another. This short account of one debt manager epitomizes many beginnings of derivative programs across developed economies:

"In the late '70s and early '80s our financing needs exploded. The government had no experience in borrowing, and we borrowed wherever we could - in FX markets, for example - *without thinking about risk*. In 198[X], we did our first swap, and, until 199[X], all swaps were on the foreign currency side. Our strategy in the '80s in the foreign currency market was an opportunistic one based on structured loans that would make us hedge, for example, an embedded option with swaps. It was gradually considered as a too-risky strategy, as these instruments lacked liquidity: If something went wrong (but nothing ever did), they would have generated a high level of embarrassment for the government (as there would have been a difficult time in offsetting them). At the beginning of the '90s, the emphasis shifted to greater attention to risk." [emphasis added]

At other times the 'opportunistic' phase was replaced by a more 'speculative' phase based on radical views of market developments. Debt managers with strong beliefs as to the future direction of interest rates would bet against the market-implicit predictions as

embedded in the yield curve³⁴. A market maker told the author: "The '80s were years of positioning more than hedging for all countries 'full of sins' like [A, B and C]. It was very profitable for us. They would come and ask: Can you do this, can you do that? We realized a windfall with not very ethical business." These trades subsided, as governments cashed-in large losses, as this example by the same market maker shows: "[Country X] in 1992 was playing convergence trades that resulted in big losses: It would receive 101, pay 100 in the budget and invest 1 in Italian liras. As the lira devalued the hit was hard."³⁵ In 1999, the investment bank Merrill Lynch settled a decade-long dispute with the Belgian government by paying roughly USD 100 million. The dispute related to a set of structured currency options the two counterparts had entered into together³⁶.

Other times, however, these deals would bring in large gains in terms of lower interest expenditure. A debt manager recounted: "In 19[XX-XY], there was a currency crisis, and we faced a very steeply inverted curve. Our lenders panicked and wanted short-term exposure, which we gave them by entering swaps on the receiving-fixed leg. As the curve came back, we made handsome profits. We were betting against the market, as we were confident in our currency." When some governments that had traditionally refrained from using swaps did

finally use them, it confirmed that the use of derivatives was profoundly opportunistic at the time. A good example is the French Treasury, whose only use of derivatives up to 2001 was in 1990: "A single one-off transaction was completed under totally transparent conditions on the swaps market in September 1990, when tensions owing to the Gulf war generated excessively volatile long-term interest rates."³⁷ This 'wild' period where credit risk was less than perfectly managed (often not even considered) has left two legacies in many debt management offices.

As for the first legacy, many governments that came after those that had structured sophisticated transactions had to deal with the 'scars' of the period: "When I arrived at the debt management office," says another chief debt manager, "the Ministry had left us with foreign currency deals that had embedded options. I asked my colleagues to dismantle all these transactions into many components so that we knew what risks we were exposed to." Another debt manager told the author that "between 1992 and 1996 we did basically nothing...but close all these structured deals or write counter-swaps. In that period, we hedged those structured transactions, and many times in hedging them our notional doubled to make room for a counter-swap." As these operations finally expire, they are taking less and less space in the swap books. What the all-in cost of these operations was, and if they turned out to be as profitable as they seemed when they were presented to the treasuries by the banks, probably no one will ever know. It is sufficient to quote what one debt manager (who doubted the profitability of such deals) told the author regarding tailored transactions,

³⁴ Some countries had the opportunistic phase of "tailored transactions" preceded by a learning process where swaps would be transacted simultaneously with the issuance of a foreign currency bond that would be held until the bond reached maturity. By doing this, the debt manager would convert the foreign currency liability into the national currency or another currency, while taking advantage of the expected reduced cost given by the swap. At other times these operations would be undertaken to achieve funding that would have been hard to obtain at home without suffering foreign currency exposure. For small countries, most of the time the swap would convert a foreign currency bond liability into a different foreign currency liability, as the domestic swap market was basically non-existent.

³⁵ Country X is not Italy.

³⁶ *International Financing Review*, June 2, 1999.

³⁷ *Annual Report*, 1999-2000, p.47. It is not clear what is meant by "totally transparent conditions".

described by the debt managers of the time as “good deals”: “Good deals are hard to sell once purchased.”

The second legacy has to do with the fact that debt management units now avoid structured transactions that their risk-management systems do not know how to evaluate. Furthermore, as we will see in the next chapter, almost all governments in developed economies have put serious credit- and market risk-management systems in place. The lesson has been learned the hard way. It is true that in the late 1990s, some governments started playing again with ‘convergence trades’ while markets remained skeptical over the potential for a future monetary union in Europe. Governments would bet on the appreciation of the national currency or the decline of national interest rates by more than what the markets thought was realistic. The difference between these second generation trades and the first ones was a more ‘politically correct’ approach, whereby complicated structured transactions were avoided and governments were mostly betting on the prospects of their currency or their interest rates. So Portugal made bets on the appreciation of the escudo, and Ireland made bets on the prospect of a decline in Irish pound short-term interest rates.

The only exception to the rule in the 1980s was Canada, which in the fiscal year 1987-88 launched what can now be considered the ‘father’ of the systematic swaps issuance programs. This program is likely to be emulated by developed economies over the next decade. The decision to adopt a domestic interest rate swap program at the time was novel. What drove that decision? Luckily enough (and rather uncommonly), documentation exists to identify the rationale for the move. As is the case with most of the recent swap programs, the Canadian government wanted to increase its

exposure to short-term rates in 1988. Contrary, however, to many current rationales for a swap program, the Canadian debt managers were not worried about preserving the liquidity of their secondary market, which was already largely liquid owing to the high level of public debt. Why then use swaps instead of T-bills or floating-rate notes? Because using swaps would help to “reduce the cost of debt by allowing the government to obtain 3-month financing indirectly at more attractive rates than what was possible with 3-month Treasury bills. The saving results from the fact that the government enjoys a comparative advantage on the market for longer-term fixed-rate securities.”³⁸ As we saw above, these were *ex ante* costs that had to take into account both a basis risk and a counterparty risk component over the life of the swap. Basis risk was dealt with by requiring a “minimum swap spread below which the Bank of Canada will not engage in the transaction,” and counterparty risk was dealt with by establishing that counterparts meet “strict solvency criteria.”³⁹

The Canadian program rapidly picked up in the ensuing years, and the notional amount of contracts outstanding reached a maximum share of 4.35% of marketable debt in 1992-93, when the negotiated spread (the swap spread gross of the banking rate minus the T-bill spread) reached 66 basis points. After that year, the program gradually declined, and 1995 was the last year in which a domestic interest rate swap was negotiated. Why did the authorities decide to eliminate the program? The swap spread was declining (22-23 basis points for March of 1995, when the last swaps were entered into)⁴⁰. Furthermore, the government was worried about the short duration of its

³⁸ Thibault (1993) p.20.

³⁹ *Ibid* p.28.

⁴⁰ *Rapport sur les Opérations d’Emprunt*, Reference Table VIII, December 1995, Department of Finance, Canada.

debt, and, in choosing between IRSs and T-bills, it decided to sacrifice the former⁴¹. The Canadian experience is a clear reminder that swap programs might not be here for the long haul if new developments emerge in financial markets or in the macroeconomic environment.

Aside from Canada, however, swaps were not used systematically in the 1980s, and they were largely disconnected from domestic public debt management. Sometimes they were the result of a strategy to assist the central bank (which, in many countries, was much more vocal and powerful in public debt management than it is today) in financing the acquisition of reserves without taking on excessive or undesired foreign currency exposure. At other times, they were simply the result of a frantic attempt to reduce interest expenditures in a period of high macroeconomic instability and large budget deficits by taking advantage of expected cost reduction opportunities. As the downside of the risks of these operations became more apparent, the reaction for the most part was to reduce the dimension of these programs.

Three inter-related events triggered the rebirth of derivative use. First, especially in small countries, there was the emergence of agencies and benchmark portfolios that, in some instances, pushed debt managers to become more active in the use of derivatives. Second, there was the push arising from the introduction of the euro and the declining public debt to separate the goals of optimal risk-management and liquidity-building policies. Third, there was the enlarged playing field for European borrowers that came with the euro, which simultaneously enlarged the absorption capacity of markets for a given sovereign

borrower's derivative program. This reduced the signaling content of debt managers' policies.

1.3.b The grown up '90s

1) The role of the euro

Many euro zone debt managers believe that the euro has greatly helped them to expand their derivative programs. Before the advent of the euro, derivative programs faced two hurdles. The first was the possibility that a sovereign borrower entering a national OTC market would disrupt its functioning by causing large swings in the price (government borrowers being such large actors relative to the size of the market). The second hurdle was the aversion of debt managers to being perceived as playing against the market or signaling to the market when they actually were not. This second aspect was heightened before the arrival of the euro by the fact that debt management offices were 'informed' players as to the developments of key economic variables that affect the national currency markets. Furthermore, they were 'informing' players owing to their ability to influence the perception of future market trends.

With the arrival of the euro, markets became larger and provided the opportunity for a large player like a national government to enter OTC markets without excessively affecting volatility and without being perceived as either signaling or taking a position, as the private information available to them declined substantially⁴². This also made the use of swaps for positioning purposes less relevant. As one debt manager in a euro zone country, who had

⁴¹ All data and statements are retrievable from the various annual debt management reports of the Canadian Department of Finance.

⁴² This is a valid argument for certain maturities only. In the 30-year swap market, thin even in the euro zone, governments might still have to move very cautiously. Furthermore, the argument bypasses altogether the question of what would happen if 'many' governments entered the euro swap market. Such congestion might make the issue of 'absorption capacity' relevant again.

used swaps aggressively before the euro, said: "I am not master of my universe anymore, and I have reduced my habit of taking views."

The euro also pushed euro zone countries to focus more than ever on liquidity-building policies. As the monopolistic niche provided by national currencies faded away, many governments (especially those of small countries) were forced to compete with one another by attracting investors through the only available channel - freeing investors from liquidity risk by guaranteeing liquid secondary markets for their bonds. This strategy had an obvious drawback in that sovereign borrowers would need to issue long-term liquid bonds. By doing so, they extended the duration of the debt beyond the level that was desirable for optimal risk-management purposes. The consequences of this strategy would become more and more apparent, as public debt and borrowing requirements start shrinking in accordance with the European Union Stability and Growth Pact. Indeed, to obtain a benchmark bond⁴³ of a given size, a sovereign borrower would then have to dedicate an increasing share of its issuance program to long duration instruments. This would then extend the average duration further. Swaps would, therefore, become progressively more useful for combining the desired duration with the desired liquidity of the secondary market for long-term bonds. This is especially true since lower debt often reduces the risks of a given duration and pushes governments to shorten it further.

However, before the euro, the substantial and systematic use of derivatives had already been adopted by some countries with debt management agencies (where debt management was not handled directly by the

Ministry of Finance). In France and Germany, the launch of a swap program has been announced in the context of a move to an agency by the end of 2001. Even more relevant than having an agency is having a benchmark portfolio⁴⁴ established within the agency (the internal benchmark) that seems to explain the adoption of derivative programs of sufficient size. Table 1.2 shows that swap programs are large compared to the level of liabilities in those countries (Austria, Belgium, Ireland, Portugal and Sweden) where a benchmark is adopted⁴⁵. France will not launch an IRS program unless the benchmark has been set up, even if the agency is already in place. Therefore, it might be useful to have a better understanding of the relationship between an agency and a benchmark and how they enable a government that operates under both to become a leader in the use of derivatives.

2) The role of agencies and benchmarks

The Swedish National Debt Office (SNDO) is the oldest debt management agency. SNDO's web site provides a brief history of the institution, which is useful to quote for our purposes:

"The establishment of the current Swedish National Debt Office is regarded as dating from 1789 when the Estates of the Realm appointed an Office to administrate the Central Government Debt. The Debt Office's main role then, as it is today, was to handle the Kingdom of Sweden's funding and its debts. It was mainly King Gustavus III's military adventures in the late 1700s that had eroded so

⁴³ By benchmark bond, we mean the most traded and liquid government bond taken as a reference by market makers to evaluate performance over a given duration.

⁴⁴ By benchmark portfolio, we mean a theoretical portfolio taken as a reference by the debt manager to evaluate the performance of his own portfolio.

⁴⁵ There are exceptions: Finland has not adopted a benchmark, Denmark has a target duration, the Netherlands has a strategic domestic benchmark but has just announced the launch of an IRS program.

much of the state's finances that the King was eventually forced to request the estates of the realm (the parliament) to help him restore the kingdom's finances to balance. The Office was managed by the Commissioners of the National Debt, whose members represented each of the estates."

It is likely that, where parliament delegates powers, there may also be a request for greater accountability and transparency. So one should not be surprised to learn that Sweden was one of the first countries to establish a benchmark for its foreign currency portfolio. The benchmark represents an 'ideal' portfolio structure from which the debt manager is supposed to deviate only if gains relative to the benchmark are expected and the positions taken are not perceived as too risky. The *existence* of a benchmark is, therefore, more the result of an institutional structure than an optimal portfolio management consideration. Otherwise, one would not understand why countries like France, Germany, Italy and Spain (which have kept the management of their debt within a ministry up to now) have not adopted a benchmark⁴⁶. However, once a benchmark has been put in place for institutional reasons, optimal strategic portfolio considerations drive its construction.

A benchmark is established by the debt management office but has to be approved by the government. Therefore, it first fulfills the role of 'tying' the debt manager's hand to a well-motivated strategy that is to be followed *passively* from that point on. Debt managers can only abandon the benchmark for trades within the office that are reasonable and justified by *active* debt management decisions.

While one can agree with the debt manager who argued that benchmarks "push debt managers to actively manage their debt," one should not forget that a benchmark requires an initial positioning in terms of strategy. This initial positioning might, therefore, impose a constraint on the debt manager's actions.

Active debt management around the benchmark, or the adjustment of the debt to a new strategic benchmark, requires constant changes in the duration of debt. Such activity requires using derivatives, buying back bonds, exchanging bonds or issuing new bonds. To minimize transaction costs, the debt manager would much prefer to use derivatives to obtain the same change in duration. Swaps do not require anything more than two or three telephone calls to market makers. Furthermore, auctions, exchanges and buy-backs often disrupt markets whereas swaps do not. For all these reasons, a debt management unit that would like to manage its domestic debt actively, or that passively adapts its composition to the one required by a new benchmark (if the dimensions of the required changes in duration are not too large), would prefer the use of derivatives to achieve the target duration. As we will see, the euro has also indirectly resulted in greater use of derivatives in some euro zone countries by stimulating the adoption of a domestic benchmark.

Passive versus active public debt management is not the only way to describe a debt manager's alternatives. As mentioned before, governments perceive a relevant trade-off between the risk of a given duration of the debt and its expected cost. They usually choose to select a composition of debt that puts the duration of the sovereign borrower on the preferred point of the 'cost-volatility' efficient frontier. This is especially true for domestic debt considerations. While the debt manager has a

⁴⁶ Even here there is an exception: Belgium adopted a benchmark in 1996 before it established an institutional framework somewhat similar to an agency.

similar trade-off in mind for the foreign currency portfolio, the setting is different. Because governments are not market makers in foreign currency markets, and because the information available on foreign currency developments is vastly different from that available for domestic currency, public debt management in foreign currency and domestic currency differs widely in the way it is perceived by debt managers. Often debt managers discuss the management of foreign currency debt and domestic debt in separate chapters of their annual report⁴⁷.

Debt management can, therefore, be separated into four categories:

- an active (or 'trading') management of foreign currency debt,
- an active management of domestic currency debt,
- a passive ('strategic') management of foreign currency debt and
- a passive management of domestic currency debt.

These four categories are apparent in Sweden, a small and open economy that is in both absolute and relative size the largest sovereign user of derivatives. Its program reaches the equivalent of almost EUR 80 billion. Since Sweden's independent agency uses derivatives for both strategic and trading purposes, it is useful to examine how derivatives are handled within each of the four categories in that country. This will help us to think about ways in which derivatives will be used in the immediate future in other countries, and what inconsistencies can be identified in their use compared to an optimal debt management framework.

⁴⁷ Canada and Denmark are two examples. France, the Netherlands and Germany do not even consider the use of foreign currency debt. This confirms the suspicion that borrowing strategies in domestic and in foreign currency are seen as vastly different by most debt managers.

1.4 The future of swaps in public debt management

1.4.a Strategic use of derivatives in domestic public debt management

Sweden has two benchmarks: the first in domestic and the second in foreign currency. Its debt managers face two problems within the domestic benchmark: The first is what point of the expected cost-volatility frontier to reach through an appropriate choice of duration. This represents the 'strategic' decision. The second is to determine the appropriate degree of positioning compared to the benchmark to try to achieve further savings for the taxpayer. This represents the 'trading' decision.

Let us focus on the strategic decision and the role that derivatives might and do play in it. How do derivatives (especially swaps) help to achieve the right point over the cost/risk frontier? Based on Sweden's minimal use of derivatives in the past for domestic public management purposes, there seems to have been hardly any support for this kind of derivative use. But things are changing. Sweden has announced that in 2001 it will launch a sizeable program of domestic IRSs that will constitute an effective strategy in both qualitative and quantitative terms. Why now, and what are these derivative operations meant to achieve?

It is useful to answer these questions in a general sense. In the past, governments would achieve reduction of desired duration by issuing more T-bills or floating-rate notes indexed to short-term rates. This would obviously imply a reduction in the amount of long-term bonds that could be issued given a certain level of borrowing requirement (assuming that foreign currency programs could not be quickly dismantled). However, as inflation subsided in the 1990s and as capital markets developed,

the appetite of investors for long-term debt with high credit standing grew substantially, and sovereign borrowers gave more and more weight to the issuance of long-term fixed-income instruments. Treasuries and central banks spent a great deal of their resources to set up the infrastructure for secondary markets where these bonds could be traded, as investors gave weight to the liquidity of these instruments and were willing to pay a premium for this additional feature.

In the early 1990s, growing borrowing needs owing to high deficits and public debt made the issuance of liquid long-duration bonds compatible with the issuance of short-duration instruments. Duration could then be kept short enough to meet the target level. However, as countries have become less fiscally profligate, it has become harder to achieve a liquid market in the long end and simultaneously maintain a short duration. Funding policy put constraints on the desired liquidity of secondary markets or, seen the other way around, liquidity considerations were starting to imply a greater expected cost for the issuer by raising average duration. This is where domestic interest rate swaps found their relevant new niche. Swaps would have the exclusive ability to separate the issue of funding from the issue of guaranteeing the liquidity of the government bond market. This would make swaps attractive even if they were to cost in expectation as much as T-bills and floating-rate notes, or if they were to entail the same risks or even higher risks⁴⁸. Sovereign borrowers could issue all their bonds in the long maturity spectrum and then achieve the desired duration through swaps. This fits in with the

communiqué of the Swedish debt managers that announced the launch of a domestic IRS program:

“In present market conditions this [derivative strategy] entails a considerable cost saving compared to short-term borrowing via Treasury bills. The cost saving can be estimated...to 60 basis points. The cost advantage is also the manifestation of the credit exposure which is entailed by the swap transactions...This use of IRSs would imply that the stock of Treasury bills declines at the same time as the stock of bonds increases...As far as the bond market is concerned, an increase in issue volumes should be favorable from a liquidity point of view...[Some of these bonds] will be linked with a compensating IRS, implying that the interest rate risk in the market as a whole does not increase.”⁴⁹

There is no doubt that any government that has started or will soon start a program of domestic interest rate swaps on the pay-floating leg intends to eliminate the traditional trade-off between liquidity and market risk management. Denmark, France, Germany, the Netherlands, Portugal and Sweden fit this picture.

Aside from the size of public debt, another reason could explain the delay with which the Swedish authorities have decided to adjust their duration via domestic interest rate swaps. The SNDO had thought about starting the program in the early 1990s but gave up after testing the limited liquidity of their national currency (SEK) swap market. Once the absorption capacity of the market rose, the derivative strategy was directed at achieving cheap funding in foreign currencies while

⁴⁸ This is the case when we compare swaps with floating-rate notes, as they do not embed counterparty risk. However, one must keep in mind that collateral agreements described in the next chapters could substantially reduce this extra risk.

⁴⁹ *Borrowing Strategy Following the Guidelines for Debt Management Policy in 2001*, Erik Thedéen, Head of Debt Management, October 3, 2000. Available at www.rgk.se/pressenglish.htm.

maintaining the liquidity of the fixed-income domestic market via a two-step swap (a domestic IRS that switched exposure from fixed to floating, and then a basis swap that switched exposure from SEK to euro). This left no room for a pure domestic IRS program. The current choice to reduce foreign currency exposure frees up resources in the domestic IRS market for a purely domestic IRS program. This is in order to manage the duration of domestic debt while keeping the domestic bond market liquid. The issue of the absorption capacity of the domestic swap market is still in the back of the SNDO's officials' minds. In their communiqué, the Swedish authorities mention that "in case there would be signs that the market finds it difficult to absorb larger bond issues...the strategy is easily adjusted... The strategy will be shaped with the liquidity, supply and demand conditions in the market in mind."

In Denmark, where a domestic IRS program started in 1998, the author was told that "the authorities do not feel too constrained by the size of the program of the domestic IRS program. Spreads have not increased because the authorities have always stopped when they felt that their activity would start having an impact." In France, the author was told that the French authorities had in the past refrained from starting an IRS program owing to the large size of their borrowing needs compared to the limited dimensions of the French franc market.

It is not surprising, therefore, that recent developments in public debt (especially in terms of the birth and expansion of the euro swap market) have stimulated the rethinking of derivative policy. France, Germany and the Netherlands have announced that they will launch an IRS program in 2001. There is no doubt that being a smaller player in the euro markets has influenced the decision of France and Germany, while the Netherlands'

motivation is largely linked to maintaining a liquid secondary market for its benchmark bonds. The example provided by the Dutch Minister of Finance to the Parliament to describe the forthcoming program is worth citing for its clarity:

"Interest rate swaps will be used when financing needs drop below EUR 20 billion. The required amount of swaps depends on the total borrowing requirement and issuance. Below, an example is given to demonstrate the consequences of using swaps. The borrowing requirement is assumed to be EUR 15 billion, which is assumed to be covered by issuing a 10-year, ten billion DSL and re-opening a 3-year DSL for five billion. In order to reach the desired risk profile, approximately two billion of the 10-year DSL will be swapped from ten years to six months."⁵⁰

It should be kept in mind, however, that even in a large bond market like the one in the euro zone, absorption capacities are not unlimited. Consider a sovereign borrower that would like to tap the 30-year segment of the yield curve in the belief that the demand by pension funds for highly-rated sovereign long-term paper might blossom in the next few years. The borrower will then have to use derivatives to reduce duration significantly. To do so, the sovereign borrower might also enter into 30-year IRS contracts. The depth of such a market is still little known. If more than one sovereign player were to join such a segment, the result might lead to greater market volatility. Overall, however, the prospects for the use of derivatives as strategic instruments of

⁵⁰ Calculations are based on rates at the end of August 2000. The 10-year DSL rate is 5.46%, the 3-year DSL rate is 5.35%, the 6-month rate is 4.89% and the 10-year swap rate is 5.90%. Source: Translation of a letter from the Dutch Minister of Finance to the Dutch Parliament regarding the use of swaps in debt management, November 3, 2000.

domestic debt management have never looked as good as they do today.

Swaps offer a sovereign borrower an additional advantage compared to alternative strategies: savings on transaction costs. If a government were to have a 5-year average duration and decided it wanted to shorten it, it might buy back some 10-year bonds and exchange them for a 3-year bond, or simply buy back 10-year bonds and issue 3-year bonds. Aside from liquidity considerations, exchanges and buy-backs have transaction costs deriving from the setting up of auctions, announcing the operations to the market, etc. Swapping the 10-year liability through a domestic interest rate swap might be done more quickly and more economically⁵¹.

It is important, however, to keep in mind that these derivatives are to be managed coherently with the goals of debt management. If budget-deficit smoothing becomes the future goal in public debt management, then swaps will have to be used in the context of budget-deficit smoothing and not interest-expenditure smoothing. For example, Missale (2001) shows that, in the presence of monetary shocks, indexed bonds should be issued more, and fixed-income bonds and lengthening duration should be less of a priority if the government cares about budget smoothing (see section 1.2.a, above) rather than interest-expenditure smoothing. This also implies that lengthening duration through swaps should decline in an environment dominated by pure monetary shocks when switching from an interest-payment smoothing goal to a budget-deficit

smoothing goal.

1.4.b Trading use of derivatives in domestic public debt management

The SNDO has announced that it will not authorize its traders to attempt to outperform the domestic benchmark portfolio with swaps or other instruments, as it currently does with its foreign currency exposures. Indeed, Sweden has recently rethought its policy of positioning relative to the domestic benchmark. It is worth quoting the argument put forward in the 2001 *Proposals for Guidelines*:

“For a long time the Debt Office has engaged in active position-taking in the management of the foreign currency debt. For this purpose, its Board has established a benchmark portfolio...Formally, the Debt Office has - also for a long time - had, in principle, the same control and evaluation system for [domestic] debt management. However targeted position-taking has never occurred in practice here. The reason is that it has been regarded as inconsistent with the role of the Debt Office as a dominant market participant to take positions in the SEK bond market. The Debt Office might be suspected of taking positions for rising or falling interests based on a knowledge of, for example, its own issue, exchange or repurchase plans. This might lead to short-term gains, but investors that believe they are dealing with a counterparty that possesses better information would withdraw from the market and/or demand a higher return as compensation for greater risk-taking.”⁵²

Furthermore, continues the report:

“The Debt Office and the Government

⁵¹ As for speed, one should be cautious. We are talking here about speed to obtain exposure to limited amounts of notional. For larger amounts, operations through the swap market have to be done in several instances, possibly over several days, while auctions, buy-back and exchanges allow a one-shot transaction of a large amount. A debt manager in the euro zone confirmed this: “We split the size of the deal so as to avoid timing risk - the average size being EUR 100-200 million and the number of transactions depending on the total volume desired to achieve the target duration.”

⁵² *Proposals for Guidelines* (2001) p.11. Available at www.rgk.se.

have also both stated that deviations from the benchmark portfolio for [domestic] debt should be evaluated in terms of market values...In this respect...the assumption is that deviations from the [domestic] benchmark should be viewed as expressions of deliberate position-taking. However there is no position-taking in the management of [domestic] debt. To this extent the current method for evaluating [domestic] debt management is not meaningful... The surpluses that [position-taking] activity [in domestic debt management] may conceivably generate do not outweigh the disadvantages.”⁵³

There is no doubt that this type of ‘dominant player’ argument is a powerful limiting factor for the use of derivatives for trading in domestic debt management. A French debt manager told the author: “Why have we not used derivatives up to now? We believed that we were, before the euro, too important an actor in the French franc bond market not to affect the swap market or having our choices interpreted as a signal.” A European debt manager told the author that this could explain the resistance of the US to enter into the derivative business.

The ‘dominant player’ argument goes in two directions. The first is that a government that positions itself via derivatives in its own currency might be regarded as sending policy signals that disrupt financial markets. This is what happened in 1998 when Germany launched an IRS program and became a payer on the fixed-leg of the swap, an unusual strategy for a debt office. The Bundesbank was at the time the *de facto* public debt management institution in Germany and had, until then, blocked any issue of short-term

paper, fearing that it would be interpreted as a loosening of monetary policy and as an inflationary signal. When the Ministry of Finance expressed the intention of launching a swap program, a compromise between the Ministry and the Bundesbank was probably struck where the government agreed not be on the pay-floating leg of the swap. This was done to prevent market makers from being led to believe that a loosening of monetary policy was on the way. The press at the time reported that “dealers are divided over what the motives are for the Ministry of Finance choosing to confine its trading to 10-year paying. It could well be simply taking the view that the European Central Bank (ECB) will raise rates in the early stages of the euro zone (or the Bundesbank will make a move later this year).”⁵⁵ “An alternative explanation might be that the Bundesbank did not want market makers to think the opposite. As this example makes clear, a large player (especially when the institutional framework fosters suspicions in the market about the motives of the authority) might easily do more harm than good by using derivatives.

While it might seem that an agency would not run into these problems, the Swedish statements clearly remind us that the ‘dominant player’ argument has a second drawback: When an agency has a benchmark, the performance with respect to the domestic benchmark can be influenced by the sovereign borrower simply because of its large borrowing needs. It is not clear whether this strategy might backfire. Ireland, for example, has been very aggressive in its use of derivatives, obtaining large gains in the process, and it is not certain whether it is now paying a price for it, as the

⁵⁵ *International Financing Review*, August 12, 1998. The article was dated four months ahead of the ECB taking full charge of monetary policy.

⁵³ *Ibid* (2001) p.11.

Swedish guidelines seem to suggest.

One thing, however, is certain: The euro will influence many attitudes with respect to the use of derivatives for trading purposes. The Swedish report says that:

“One key factor is the Economic and Monetary Union. If Sweden joined EMU, one outcome would be to link the Swedish government bond market with the bond markets of other EMU countries. More active debt management would thus be possible without excessive transaction costs, since the transactions the Debt Office needed to carry out would be small in relation to the overall market volumes in the EMU area. The Debt office’s ability to influence general euro interest rates would be small.”⁵⁶

A French debt manager confirmed this view: “The euro has changed everything. We are still important, but we are not the only issuer anymore.” Germany also has announced its intention to resume its swap activity together with the launch of a new debt management agency. It remains to be seen if France and Germany will use swaps in euro to position themselves in terms of duration (strategic use) or to take views (trading use) given that they do not risk being misunderstood by market makers anymore. However, a French debt manager confirmed that the start of the derivative program was strongly related to the construction of a benchmark. A benchmark might require the use of derivatives to adjust the debt office’s strategic position quickly with lower transaction costs and to take positions against the benchmark. Whether the strategic or the trading position will be the one that will more intensely require the use of derivatives

remains to be seen.

While there are reservations on the use of derivatives for trading considerations, we shall postpone our considerations on the use of derivatives for ‘active debt management’ (trading) until we discuss them again in dealing within foreign currency debt management in section 1.4.d.

1.4.c Strategic use of derivatives in public foreign debt management

Sweden publishes its foreign currency benchmark monthly. As of July 31, 2000, the denomination of the foreign debt was 40% in euro and 25% in yen. However, the published benchmark (see Table 1.5, overleaf) requires a much larger euro exposure (equal to 64%) and a reduction in exposure to the Japanese currency of more than 20%. The Swedish benchmark also requires a specific duration for each single currency and a maximum share of exposure in a given maturity segment (larger for shorter maturities as they entail less market risk). Swedish traders are required to reconstruct these artificial shares daily. This task implies a considerable amount of trading, especially when markets move rapidly and affect the exposures and duration of any given currency. Such activity is called ‘passive debt management’ and implies a large use of different types of financial derivatives including IRs, cross-currency swaps, swap-options, foreign currency forwards, futures and options.

Why such large differences between the foreign public debt structure and the foreign currency exposure required by the benchmark? The obvious explanation is that Sweden has used an opportunistic borrowing strategy in foreign currencies and has tried to find cheap funding with no regard for the currency composition. The risk exposure was then

⁵⁶ *Proposals for Guidelines* (2001) p.14.

adjusted with derivatives from the start to fit a portfolio that was perceived to carry minimum risk in terms of its variability in krona. More generally, as liquidity-building policies are irrelevant for foreign currency programs, the focus on derivatives has to do with reaching the desired exposure at the lowest possible cost, taking advantage of opportunities as they emerge. A complementary explanation is that current debt managers in Sweden have inherited a large amount of foreign currency debt that is only slowly maturing and is very hard or impossible to exchange or buy back. In the meantime, however, Swedish debt management might have changed its outlook on what is the optimal exposure in foreign currency. Therefore, derivatives help traders at the SNDO to re-adjust the portfolio to the benchmark quickly - an operation that would be much harder through direct issuance in the market.

currency issues were really big to defend the krona and also for funding reasons. In 1993 we resumed our portfolio management. We were probably never as active as in 1993. We did something like 250 new swaps and unwound 240 swaps - almost 500 swaps to get the parameters where we wanted," (i.e., to bring currency exposure to the levels desired by the benchmark, as defending the currency had required departing from it)⁵⁸.

What drives the choice of the foreign currency benchmark composition in Sweden varies over time and depends on the institutional set-up of debt management. In the 1980s, it might have been related to helping the central bank achieve its desired reserve composition. In this case, the borrowing program might have differed from the benchmark, and the shares required to fulfill the policy goals were reached after issuance through the use of derivatives. The benchmark

	EUR	GBP	USD	JPY	CHF	Other
Before swaps	40%	6%	20%	25%	3%	6%
After swaps according to benchmark	64%	8%	15%	4%	9%	0%

Table 1.5 - Sweden - Foreign exchange composition, July 31, 2000

The operational aspects of reaching the desired strategic exposure through derivatives are worth mentioning. Sometimes, changes in strategy on one currency require a high level of activity to adapt 'passive debt management' to the new benchmark. If the latter requires strongly increased exposure to a currency whose swap market is very thin, it might take some time to reach the desired exposure without affecting the level of the spreads⁵⁷. Contingent situations might push this type of activity to quite extreme levels. In 1992, a Swedish trader at SNDO told the author that during the exchange rate crisis "foreign

exposure was, therefore, achieved through derivatives for considerations of cost-efficiency related to the existence of expected cost-reducing opportunities. Similar cost-efficiency considerations coupled with liquidity-building issues might explain why Sweden launched its cross-currency program in 1996. Sweden achieved its funding needs by systematically issuing in the domestic market and then switching into foreign currency through a domestic IRS and a cross-currency basis swap.

⁵⁸ It should be pointed out, however, that other countries (e.g. Ireland) are not compelled to 'recreate' the benchmark exposure and have unlimited possibilities to detach themselves from it. In this case, derivatives in foreign exchange currencies are used to adopt a trading perspective that will be analyzed in the next sub-section.

⁵⁷ This is not the case for the euro market.

This program, while reaping large benefits as described above in terms of spreads, also had the additional benefit of not requiring reduction in the liquidity of the domestic bond market. Such a reduction would have occurred by issuing bonds in foreign currency in the capital markets. Further derivative activity would then bring the exposure in line with the strategic foreign currency benchmark.

However, the question remains as to why a government would want to achieve foreign currency exposure at all, with or without derivatives. This issue is especially relevant for countries where debt managers do not simultaneously manage foreign currency assets like central bank reserves. In such a case, the issues raised by the lack of a good theory for why governments should hold foreign debt are equally valid when considering the use of derivatives for getting exposure to foreign currency.

Economic theory does not provide a clear reason for why one should issue in foreign currency or why one should gain exposure to it. The relevant correlations hint at an optimal 'negative' share of foreign currency exposure both in terms of interest and budget volatility⁵⁹. When and if governments decide that their optimal exposure in foreign currency should be zero, it will have an impact on the size and type of derivatives chosen. Finland, for example, decided not to acquire new exposure to foreign currency debt. This implies that while its treasury will be able to shift the remaining foreign currency debt through currency swaps in euro, it will not be able to do the reverse. It might, however, issue in foreign currency to swap to euros if opportunities arise in line with expected cost minimization.

In some countries, debt managers are

sometimes required by their board or by their minister to reduce the duration of their portfolio. As it is hard to move the duration of their domestic debt quickly and substantially given its size, debt managers prefer to reduce the duration of their more easily tradable foreign currency debt. However, while interest rate risk has increased, it has not increased in the same way it would have with a reduction of domestic duration. It is, therefore, questionable whether such a reduction justifies keeping the foreign currency program in place for this reason alone. Other possibilities to justify a foreign currency program include issuing in foreign currency to attract foreign investors who are reluctant to get exposure to the national currency. It is argued that by getting exposure to the country's risk, this would then lead investors to enter the domestic market with fewer worries about the volatility of foreign currency. In this case, derivatives could then be used to restore the exposure in domestic currency according to the domestic benchmark goal. However, it is hard to see such 'foreign investor' motivation playing more than a marginal role in public debt management.

The Swedish National Debt Office argues in the proposed 2001 guidelines that there is little opportunity for a strategic use of foreign currency debt; however, foreign currency debt has to be amortized slowly over time. Therefore, the debt needs to be managed with expected cost-reducing derivatives operations, but if that is the case, it is an activity that should be short-lived. Only in cases like Canada and the United Kingdom, where there is an asset/liability management of some type, should we expect derivative activities linked to foreign currency debt to continue. Also, in less developed countries, where raising foreign currency debt might be relevant in the face of currency crises or stabilization plans, foreign

⁵⁹ See Missale (1997 and 2000).

currency debt and its management via foreign currency derivatives might be of decisive importance.

1.4.d Trading use of derivatives in public foreign debt management

Debt managers in Sweden do not simply limit themselves to replicating the foreign currency benchmark, which amounts to ‘passive debt management’ where traders are required to reconstruct the foreign currency benchmark exposure. They are allowed to take limited positions with respect to the benchmark through active trading. Contrary to the case with domestic debt, Swedish debt managers actually do take such positions like many other debt managers. The reason why these positions are taken is because Sweden (as with many other countries) does not regard itself as a ‘large player’ in the global market. Therefore, it does not suffer from problems related to ‘signaling’ or to its status as a ‘large player’ that prevent trading in the domestic market.

Traders at the Swedish National Debt Office can conduct transactions only in a subset of specific currencies (some of which are not mentioned in the benchmark). They can only deviate from the benchmark shares for each currency within a limited range. As the benchmark also requires a given duration for each single currency, the positions taken are not allowed to affect the total duration by more than a certain range of months. In addition, each currency cannot entail a position that affects the portfolio duration by more than a given number of months⁶⁰.

The questions that beg answers are: Should debt managers be involved in such trades at all? And does the fact that positioning

in foreign currency does not cause signaling, and does not usually have large effects in global markets, support sovereign borrowers’ involvement in such trades? If the answer to all these questions is no, debt managers should also avoid engaging in trading activity with derivatives within domestic debt management operations when being a small player in a relatively large market. In this case we would then be led to conclude (after having discarded a role for the strategic use of derivatives in foreign exchange currency) that the use of derivatives should be limited to a strategic, domestic use described in 1.4.a, above⁶¹.

Once again, it is useful to comment on the reasoning of the Swedish authorities to justify such practices in foreign currency public debt management:

“The Debt Office takes positions by deviating within stipulated limits from the debt structure...indicated by the benchmark portfolio. By measuring the results [in market value terms] of these deviations, the benchmark portfolio can also be used as a basis for evaluating this position-taking...Excessive resources may be invested in position-taking...This does not rule out the possibility that successful position-taking may lead to sizeable gains measured in absolute figures. If these savings can be achieved with little investment of resources, this activity may be financially profitable for the government... Foreign currency debt management...is based on the Debt Office’s ability to assess and interpret information about future developments in financial markets.”⁶² [emphasis added]

⁶⁰ A similar arrangement is in place in Portugal where refinancing risk is also taken into consideration. Ireland, on the other hand, has no limits on its possible deviations from the benchmark.

⁶¹ One could also claim that debt managers could use derivatives within domestic debt management for trading purposes if one is willing to face the criticism that governments should not position themselves in the market (as argued in section 1.4.b).

⁶² *Proposals for Guidelines* (2001) p.13.

How does one measure such ability? Sweden is the only country that not only specifically measures the trading performance of its traders but also allows for the measurement of relative performance. It does so by comparing the debt manager's performance with those of, at most, six external managers who have a mandate to manage a small proportion of the foreign currency debt under the same principles and guidelines as applied to the SNDO's own active debt management⁶³. Swedish debt managers have outperformed the benchmark in absolute value for five out of eight years since 1992. In the last eight years, their average performance has largely surpassed the average performance of external managers. In three years they have performed better than the best performing external manager, even after risk is taken into account.

While Sweden is the only country with a system in place that guarantees incentives for debt managers along with a high degree of accountability and transparency, it is not certain that this activity should be implemented by sovereign debt managers when handling taxpayers' money. Given that the debt management office's activity is valued in terms of "achieving a lower cost of debt than the cost of the benchmark," it is not certain that debt managers have a better capability to "assess and interpret information about future developments in financial markets" than the market itself. If they do not, the only rationale for using derivatives in foreign currency debt management would be to switch to those currencies with low interest rates to guarantee an 'accounting arbitrage' for short-term political prospects. However, it is hard to see why taxpayers should subscribe to these

transactions. As we said, the logic of this argument also holds true for a country that is small relative to the size of its domestic currency bond market and that would like to use derivatives to achieve gains in the domestic market (for example, France or Germany in the euro zone).

Unless a government establishes a good theory of why and how debt management for foreign currency is important, then one is left to wonder if the traditional resistance to issuing in foreign currency in France, Germany, the Netherlands and the United States might not be considered wise. It is true enough that most of these countries are large players with a large capacity to draw on greater amounts of funds. One might find support for borrowing in foreign currency only for small countries. However, this might be a weak reason, especially for small countries that have entered the euro zone and have access to a very large market. At any rate, it is a reason that still does not provide support for why governments should trade (mostly through derivatives) so that they can 'beat the benchmark'. The same argument applies to any government whose outstanding debt is small relative to the size of its domestic currency bond market.

The only logical explanation that remains for using derivatives for trading purposes was found in the SNDO's literature: "There is no doubt that SNDO has certainly won a lot of experience and knowledge from the [active foreign currency debt management] arrangement, which has benefited SNDO's own management."

The experience that debt managers could acquire from trading OTC could truly represent a benefit. If debt managers learn to master financial derivatives and, in the process, risk, the benefit for taxpayers would be significant. Taxpayers can only be displeased by the inability

⁶³ The amount managed by all external managers cannot exceed USD 5 billion.

of a debt management office to manage debt with a prudent degree of risk as suggested by the IMF and World Bank guidelines.

Indeed, risk management is one of the most important issues concerning the new approach that sovereign debt managers are developing with respect to financial derivatives. While market risk might not be that significant for governments with a long-term horizon, management of counterparty and operational risk - especially what we will call "accounting risk" - deserves our full attention. The next three chapters are dedicated to these issues.

CHAPTER 2: COUNTERPART RISK MANAGEMENT

2.1 Credit risk

In the previous chapter we examined how derivative transactions are often entered into by governments to reduce costs. In this chapter we will highlight how derivative transactions modify the level and the type of risks incurred by sovereign borrowers. Derivatives can both eliminate and add risks in public debt management. Refinancing risk, for example, is often reduced through derivative use¹. New risks emerge, however. These risks, like basis risk and counterpart risk, do not generally materialize with ordinary funding strategies by sovereign borrowers.

Another source of risk, market value risk, is already present in the use of instruments other than derivatives, owing to the fact that the market value of public debt might change unexpectedly. As we said in Chapter 1, market value risk is often not relevant for debt managers when instruments are held until maturity. In the context of derivatives, market value risk will be considered in this report only insofar as it affects credit risk².

This report will, by and large, neglect both the higher basis risk and the lower refinancing risk that is introduced with

derivatives³. Neither basis risk nor refinancing risk has ever been mentioned by debt managers as a driving force with respect to financing via swaps⁴. Neither of these risks is actively managed by sovereign borrowers when they are making use of derivatives, owing to their limited impact on the overall level of risk.

What does receive a lot of attention by debt managers is the issue of counterpart risk management. Evidence of this is that most debt managers have (or are in the process of setting up) costly legal and technical structures to deal with counterpart risk. Counterpart or credit risk exists because of the possibility that the counterpart who enters into a transaction could default on his obligations. If the counterpart fails, the sovereign borrower will lose compared to a situation where the same exposure could have been achieved via direct funding in the primary market.

To see this, suppose that country A wants to use an instrument with exposure to movements in short-term rates. It could do so in two ways. It could fund itself by swapping a 2-year government bond issued at, say, a 6% annual rate through a 2-year domestic interest rate swap with bank B. The government would pay a floating rate (e.g., a 6-month Euribor rate) and receive from B a fixed 2-year rate. We will assume for the sake of simplicity that, if the government enters the swap contract, it receives a 6% annual swap rate (i.e., the swap spread is zero). Alternatively, the government could directly issue a 2-year floating-rate note linked to the 6-month Euribor rate. Assume that, by looking at the forward rates, the government is expected to pay each period a

¹ A swap allows exposure to short-term rates without the sovereign borrower having to incur the refinancing risk embedded in the issuance and roll-over of T-bills.

² Market value risk is very relevant for credit-risk management. As market value changes so does credit exposure. See IMF, Occasional Paper n. 203 for more on the various sources of risk involved in derivative transactions.

Market value risk should be differentiated from market risk. Market risk is the risk owing to changes in interest or exchange rates that affect the level of interest expenditure or the budget level. Market risk is handled by debt managers mainly through 'value-at-risk' software, especially with respect to foreign currency trading.

³ Basis risk refers to the possible changes in the differential between the market short-term rate of the floating-rate leg of the swap and the opportunity cost for the sovereign borrower on the same short-term duration, e.g. the T-bill rate.

⁴ The only exceptions are Denmark and Finland, who have mentioned refinancing-risk reduction as a possible benefit of swap operations.

Euribor rate equal to 6% on annual basis.

After exchanging flows for two 6-month periods, suppose that the Euribor 6-month rate drops from 6% to 4%, and that the yearly fixed rates on 1-year obligations drop to 4%. At that moment, a government that had decided to enter into the swap (instead of issuing a floating-rate note), by receiving a 1-year fixed rate of 6% instead of 4%, has in hand a swap with positive market value. Now suppose counterpart B fails. For a given government's target duration, the sovereign borrower will have to re-establish its duration by entering into a one-year swap with a new counterpart where it pays the floating 6-month rate and receives a fixed rate. However, the government will now receive a 4% rate instead of the 6% rate it would have received had the counterpart not failed. This would not have happened had the sovereign borrower issued a floating-rate note directly.

It should be pointed out that, in a domestic IRS, as there is no initial exchange of notional, counterpart risk derives from the possibility that the counterpart will not fulfill its commitment to its leg of the swap. While the sound counterpart would also stop fulfilling its obligations, the sound counterpart is still left exposed because the market value of the swap was in his favor (or had 'positive value'). In this case, the positive value could be seen as either a liability of the defaulting party or a loan made by the sound counterpart to the defaulting party. In a currency swap, there is often an exchange of principal at the start of the contract. A default by one counterpart could have larger consequences and, therefore, the counterpart risk increases.

One should distinguish the market value risk embedded in a derivative contract from counterpart risk. Market value risk refers to the fact that the value of the derivative is affected

by market conditions such as changes in currency values, yield curve slopes or interest rate values. Market value risk is also assumed when issuing regular bonds in the primary market. Its consequences are felt both with the swap and the regular bond insofar as the government decides to realize the gain or loss by repurchasing or exchanging the bond or by terminating or assigning the swap⁵. Similarly, market risk related to interest payment risk or budget risk is present in both strategies. Counterpart risk, the risk that a counterpart of the sovereign borrower defaults, is instead not present when issuing in the primary market. If a risk of default exists in regular bond issuance, it is the one that investors and not the government must bear.

After several decades when public debt managers worried about their default risk as perceived by the markets, derivative activity has awakened debt managers to the importance of actively managing default risk for the first time. Counterpart risk management would not be an issue (or would certainly be less important) if derivative activity were conducted in organized exchange markets rather than OTC markets. In the former, a clearing house typically manages credit risk and is the legal counterpart to every transaction. Loss-sharing rules for members of the exchange, prudential requirements and transparency significantly reduce credit risk⁶. Why large market makers in OTC derivatives

⁵ See also footnote 24. In reality, terminating or assigning a swap might have additional costs. The swap contract is a bilateral deal that might have to be negotiated for termination. Besides transaction costs, the lack of liquidity of certain swaps sometimes pushes counterparts to accept reductions in the market value to exit the deal if the counterpart agrees. Furthermore, terminating a deal by entering into a swap with symmetric features still leaves the government exposed to counterpart risk that is related to the two counterparts.

⁶ Edwards (1999) suggests that off-exchange derivative markets could be regulated by either requiring a clearing association for off-exchange derivatives, which increases reporting requirements for derivative counterparts (whether in their lending or trading activity) or by increasing the incentives of market participants to discipline financial institutions for taking imprudent risks.

markets are skeptical about switching their derivative activities to an organized exchange is not the subject of this study⁷. Sovereign borrowers themselves do not rely excessively on derivatives traded on organized exchanges, even though some debt managers do see advantages in exchange-traded derivatives in terms of anonymity, liquidity and low credit risk⁸. Were swaps to be shifted to an organized exchange, governments probably would rely less on OTC derivative transactions, especially with standardized deals like domestic interest rate swaps. The issue of credit risk would decline in importance for debt offices, since most of the activity of sovereign debt managers has to do with standardized, plain-vanilla swaps.

Given that counterparty risk exists, it is receiving significant attention from sovereign borrowers. It is, for example, explicitly recognized by Ireland's National Treasury Management Agency (NTMA) which stipulates that:

"The Agency's responsibility for both the issuance of new debt and the repayment of maturing debt, together with the management of the interest rate and currency profile of the total debt portfolio, makes the management of risk a central and critical element of the Agency's business. The principal categories of risk arising from the Agency's activities are liquidity risk, market risk, *counterparty credit*

risk and operational risk. In all of these areas the Agency has comprehensive policies and procedures to measure and control the risk involved,"⁹ [emphasis added].

Other countries try to handle counterparty risk while being less formal. In handling counterparty risk, most debt managers take very similar precautions, although with different emphases. There are at least six types of precautions that are taken:

- i) Entering into an International Swaps and Derivatives Association (ISDA) Master Agreement;
- ii) requiring minimum ratings to transact with sovereign borrowers in the first place, and to transact certain types of swaps;
- iii) establishing credit lines that cannot be exceeded;
- iv) measuring exposure with prudent criteria;
- v) setting up collateral agreements; and
- vi) netting exposure only in particularly safe cases.

We shall review these precautions in the next section by presenting the information gathered in several interviews with debt management offices.

Before we delve into describing counterparty risk management practices, one caveat is in order. This report is about the use of derivatives by sovereign borrowers. Therefore, it devotes a large share of discussion to credit-risk management rather than to the management of other sources of risk described in Chapter 1. The author does not take a stance on the appropriate amount of activity that a debt office should dedicate to credit-risk management compared to the management of other sources of risk. These sources are likely to be more

⁷ See Schinasi, Craig, Drees and Kramer (2000) for some interesting possible explanations. One debt manager, commenting on the increasing role that collateral agreements are playing in OTC markets, argued: "Why has the swap market not become a clearing market? One answer is that it would become less flexible and that it would be harder to tailor transactions. The other reason is that, with an exchange, banks would lose a profitable business they do not want to lose." Given that plain-vanilla swaps have a standard form, the latter speculation might carry some truth.

⁸ Debt offices usually would not be members of the exchange given their limited level of activity. It would be too costly, yet they would have access through a member of a clearing house.

⁹ *National Treasury Management Agency Annual Report* (1999), p.65.

relevant. Therefore, an office that dedicates an excessive proportion of its personnel to credit-risk management (compared to budget-risk management, for example) is not likely to be allocating its human and technical resources efficiently. The sections that follow take for granted that an optimal allocation of resources has been achieved, and examine how to ensure efficiency in the use of the resources dedicated to credit-risk management.

2.2 Managing credit risk

As of fall 2000, all sovereign borrowers that the author visited, except Spain, manage counterpart risk. Spain is planning to set up a structure in the near future. Most of the time the instruments and methods chosen to handle credit risk are similar, yet some differences remain. It is, therefore, useful to describe those instruments and methods.

2.2.a Notional amount of a contract and risk

One way to measure the exposure to counterpart risk is to measure the notional amounts of all outstanding derivative transactions (see Chapter 1, Table 1.2). However, as the BIS suggests, “notional amounts outstanding provide a measure of the market risk exposures that participants choose to face at the time they engage in derivative transactions. Since there is no payment of principal for many of the contracts, notional amounts in these cases are poor indicators of exposures to counterpart risk.”¹⁰ Notional amounts disregard the fact that expected loss, and even maximum loss, is a just a fraction of the notional amount. In this case, market exposure (current and prospective) is a better indicator for counterpart risk.

However, the notional amount of outstanding contracts is, in part, a first proxy for counterpart risk. All else being equal, entering into an additional derivative contract would, at inception, increase a government’s credit exposure under several current methods of calculating exposure. We will describe these methods in section 2.2.e. When a sovereign borrower terminates a contract by entering into an opposite position with a second counterpart, the level of notional doubles while the market exposure becomes zero. However, the sovereign borrower is still exposed to the risk that the original counterpart could default. In this case the sovereign could be left in an exposed position with the second counterpart. Therefore, a large notional is a first proxy not only for the weight given by a sovereign borrower to derivative activities within public debt management but also of the possible risks to which the counterpart must respond with appropriate counterpart risk management. In this sense, one can understand why credit-risk management is more sophisticated in Sweden than in Spain. In Sweden, the notional outstanding represents 50% of the public debt, while in Spain the notional outstanding represents just 1%.

Therefore, it is not surprising that some countries decree limits to the amount of notional outstanding of their derivatives portfolio. When Germany launched its program in 1998, it was authorized by the yearly Budget Law (Haushaltsgesetz 1998§ 2 Abs. 6) to enter into an IRS program of no more than DEM 70 billion, a substantial amount. As we saw in the previous chapter, only a total of DEM 1.687 billion was finally transacted. In 1999 (Haushaltsgesetz 1999§ 2 Abs. 6) and 2000 (Haushaltsgesetz 2000 § 2 Abs. 6) a much more limited ceiling of DEM 20 billion was approved, but Germany made no new swaps. Another

¹⁰ BIS (1998), p.20.

country, among the ones described in this report, has a limit on the amount that notional outstanding can increase in any given year. This limit is 20% of the public debt, and it is definitely a non-binding limit for that country. In five years, the country could have a swap book in terms of notional equal to its public debt¹¹. Some governments limit the maximum amount of notional contracts that can be signed with a given counterpart. Denmark does not allow any counterpart to have more than 15% of the notional amount of the portfolio. Belgium has a similar rule with a 10% limit.

2.2.b *An ISDA Master Agreement*

“ISDA issued in 1987 its first Master Agreement. It was a splendid agreement.”

“We do require an ISDA agreement. It was not mandatory before 19[XX], when we inherited a swap portfolio, and our priority was to renegotiate with ISDA standards. We unwound by reassigning most of these contracts by attributing them to safer counterparts. For most of them we had success; we had to terminate a few that we did not manage to re-contract. There is only one left now without an ISDA agreement because of its legal complications, but it is almost expiring.”

These are only two of the many statements about the usefulness of the ISDA Master Agreement the author encountered during his trips to various debt management offices. All these offices favored the ISDA Master Agreement that covers all swaps negotiated with a counterpart. Currently, most sovereign borrowers do not enter into a swap

agreement without having signed an ISDA Master Agreement with the counterpart. The agreement embodies the general framework for swap transactions between the government and the counterpart, including the country of jurisdiction for settlement of disputes. For settling possible disputes between counterparts, an important innovation of the first ISDA Master Agreement was that the value of the swap was to be determined by a limited number of market experts when termination occurred¹². Another innovation in the Master Agreement was that if a party were to do a given number of swaps with the same counterpart, the exposure should be netted out to calculate indemnity.

Some clauses in the ISDA Master Agreement are typically not accepted by sovereign borrowers. This is why there is a Schedule attached to the Master Agreement that highlights the ‘tailored’ part of the agreement between the two counterparts. In it, one will usually find ‘credit trigger clauses’ whereby the sovereign borrower has the right to terminate the swap in the event that the counterpart is downgraded. Also, one can find “Additional Termination Events” such as the possibility that the counterpart has merged in a way that is not in the national interest of the sovereign borrower (for example, mergers with certain South African firms during apartheid).

Nevertheless, legal uncertainties remain and are sometimes quite relevant¹³. One country fears that even with an ISDA Master Agreement, it could be challenged in court by the counterpart if the government were to

¹¹ The debt managers of this country did not want the name of the sovereign issuer disclosed, as “politicians might take advantage of such a knowledge” to increase derivative activity excessively. This is a topic we will deal with in the next two chapters.

¹² However, even with sophisticated pricing platforms, doubts might arise as to the accuracy of the price of the swap. Many discrepancies have to do with timing issues and the appropriate time zone. The more volatile the market, the more relevant these issues are. This is an issue that the next generation ISDA Master Agreement might want to tackle in order to reduce the uncertainty surrounding a contract.

¹³ Schinasi et al. (2000), pp.28-30.

claim it was entitled to the net market value of all outstanding obligations between the treasury and the counterpart. If a counterpart asked to be paid on a single transaction ('cherry picking') where the government is a debtor, some governments are concerned that they would have to handle risk in a different way. At any rate, the ISDA Master Agreement has reduced the risk of operating in the swap market by reducing the cost of litigation and increasing the standardization of swap contracts¹⁴.

2.2.c Rating requirements

Most debt management units interviewed allow transactions only with counterparts with a given minimum rating. Table 2.1 shows such minimum requirements¹⁵.

Country	Minimum rating	Notes
Austria	A	Austria also accepts a counterpart with a BBB rating provided that the counterpart posts collateral.
Belgium	A-	If Belgium should adopt a 'primary dealer only' policy, no primary dealer would be excluded by this minimum rating.
Canada	A	
Denmark	A- or AA-	The first rating is for IRSs in Danish Krone; the second rating is for all remaining derivatives.
Finland	AA-	When a counterpart is about to be downgraded from AA-, this triggers a halt to new deals with that counterpart.
France	No rating requirement	If France were to apply its repo policies - which limit transactions to <i>Spécialistes en Valeurs du Trésor</i> (SVT) primary dealers - to swaps, then there would be an implicit minimum rating, as the lowest rating for an SVT is currently A-.
Germany	Not available	
Ireland	AA	A minimum rating is for transactions with maturity greater than one year. If some companies fall below AA, NTMA might agree not to terminate or to enter a new deal if the counterpart has a parent company that writes a letter of comfort.
Italy	AA	The rating must be equal or higher than the one for Italy.
Netherlands	AA-	
Portugal	A and AA-	The rating depends on the length of the transaction - A for short-term exposure and AA- for long term exposure.
Spain	Counterpart risk is not managed	
Sweden	AAA to A-	The rating depends on the maturity structure. The longer the maturity, the higher the rating requirement.
United Kingdom	Internal rating	The rating is based on an internal rating system.

Table 2.1 - Counterparts and minimum accepted rating
Source: Interviews with debt managers

Most debt managers use at least Moody's and Standard & Poor's and often Fitch IBCA ratings. When those ratings are in disagreement, governments have rules to establish a synthetic evaluation. Finland, for example, considers the lowest of the ratings provided by Moody's and Standard & Poor's as the minimum rating. Sweden will use the second best of the ratings of the three agencies while, if there is only one rating for the counterpart, it will reduce the rating by one notch¹⁶. The United Kingdom is the only sovereign borrower that does not rely exclusively on rating agencies. It uses an internal rating system that allows more flexibility and recognizes differences among counterparts with similar external ratings. The Bank of England (BOE) has a team working full time on assessing

¹⁴ France is the only country that does not use the ISDA Agreement. France will use the French Association of Bankers Agreement when it launches its swap program. This agreement was described to the author as similar in its economic and financial content to an ISDA Master Agreement.

¹⁵ Rating requirements are not the only criterion to limit default risk. Some countries (e.g., Ireland, Austria and the United Kingdom) also monitor the counterpart's level of equity.

the creditworthiness of current and prospective counterparts. A credit risk advisory committee

¹⁶ Denmark has a similar rule: If there are fewer than three ratings, it reduces the rating of the counterpart by one or two notches, depending on whether it has received ratings by two agencies or only one agency, respectively.

meets frequently to assess the prospects of one or more counterpart after an analyst has prepared a profile of the counterpart. Besides looking at the agencies' ratings, the BOE office scrutinizes the balance sheet indicators of the counterpart. It is possible that the BOE decided to set up such a structure to react more quickly to new prospects and to new information arising for counterparts.

about the accounts of these companies.

As a rule, no debt manager deals with BBB or lower graded counterparts. In some countries (e.g., Austria) debt managers conduct transactions with BBB counterparts with the requirement that collateral be posted. However, if a downgrading occurs, some countries might find themselves with exposure to a counterpart with a rating lower than what

Country	Rating required according to the maturity or type of swap	Notes
Austria	Yes	For transactions up to five years there is a requirement of a rating higher than A. For transactions between five and nine years, a rating of AA is required. For more than ten years, only AAA ratings are acceptable. If both rating agencies agree, the Austrian agency allows the transaction to be at the high end of the maturity bracket (i.e., eight to nine years). If only one rating agency provides the rating, then the deal can be struck at the short end of the maturity bracket (i.e., five to six years within the five- to nine-year bracket).
Belgium	Yes	Ratings depend also on the type of product.
Canada	Yes	For deals with a maturity longer than three years, ratings must be at least AA.
Denmark	Yes	A- is required for domestic IRSs, and AA- is required for other transactions.
Finland	No	
France	Not available	
Germany	Not available	
Ireland	Yes	A minimum rating is required for transactions with a maturity greater than one year.
Italy	No	
Netherlands	No	The Netherlands will only make use of ten-year domestic IRSs.
Portugal	Yes	Before July 2000, there were no maturity limits. Now counterparts are divided into four groups according to ratings, and each group has access to different maximum maturities. The fourth group with the lowest ratings could only deal with short-term (less than one year) transactions.
Spain	Counterpart risk is not managed	
Sweden	Yes	Only counterparts with an AAA rating can access very long maturity swaps, and every counterpart with an A- rating can access financial derivatives with a maturity lower than one year.
United Kingdom	Yes	IRSs and currency swaps are only entered into with the counterparts having the highest internal rating.

Table 2.2 - Counterparts and maturity limits of the derivatives

Source: Interviews with debt managers

Many governments transact with 'special-purpose vehicles', which are special subsidiaries of major financial institutions. These are usually rated AAA or, in any case, higher than the parent company, as they have demonstrated to the rating agencies that they are constructs isolated from their parent company¹⁷. However, one debt manager among the ones interviewed still does not use them, fearing that not too much is known

is required. Under these circumstances, most debt managers argue that they act to terminate the contract or re-assign it to another, better-graded counterpart. Credit rating trigger clauses facilitate this option.

The rating requirement not only affects the eligibility of a counterpart to enter into a swap with a sovereign borrower. In some cases, it also determines the extent to which transactions can be undertaken over a certain maturity range as well as the maximum credit line offered. Table 2.2 (above) shows that many

¹⁷ Schinasi et al. (2000), box 3.1.

debt managers are inclined to limit transactions of longer maturity to counterparts with higher ratings, given the greater volatility of longer term contracts.

What is the distribution of counterparts within the different classes of allowed ratings? Very few governments publish such information. Canada and Denmark do. As Tables 2.3 and 2.4 help to illustrate, it is useful to check how risk is spread over counterparts' ratings for these two countries and to build an indicator of the average counterpart rating¹⁸.

Counterpart type	1997 %	1998 %
AAA = 6	1.11	7.01
AA+ = 5	60.52	37.22
AA = 4	26.86	24.08
AA- = 3	9.23	30.74
A+ = 2	0.96	0.96
A = 1	0.44	0
A- = 0	0.89	0
Indicator	4.5	4.2

Table 2.3 - Denmark - Share of notional by counterpart type

Source: Danish Government Borrowing and Debt, 1998, Danmarks Nationalbank

Counterpart type	1996 %	1997 %	1998 %	1999 %
AAA = 6	17.86	0	0	2.65
AA+ = 5	0.65	31.18	36.78	30.45
AA = 4	16.82	15.36	12.62	5.66
AA- = 3	58.21	47.78	49.23	39.78
A+ = 2	4.53	3.98	0	21.45
A = 1	0	1.71	1.37	0
A- = 0	1.94	0	0	0
Indicator	3.6	3.7	3.8	3.5

Table 2.4 - Canada - Share of notional by counterpart type

Source: Source: *Public Accounts of Canada*, various issues

While Denmark deals with counterparts with a slightly better average rating (greater than AA) than Canada (less than AA), it is interesting to see that neither sovereign government relies on counterparts with ratings

on the lower scale of the A category¹⁹. Sometimes, however, the expansion of the derivative program causes a deterioration of the average rating of counterparts as well as greater credit risk for a given level and type of desired exposure. This is simply because the pool of counterparts with high quality is limited along with the desired exposure. In other cases, the large needs of sovereign borrowers together with the existence of rating requirements forces the use of special AAA vehicles set up by the parent bank²⁰.

Denmark has a lower rating requirement for swaps in Danish krone compared to its foreign currency swaps. The reason for this is that of the number of active participants in the interest rate swap market in Danish krone is rather limited. Also, since a transaction in interest rate swaps does not involve exchange of principal, the absolute scale of risk on an interest rate swap compared to a currency swap is lower.

Minimum ratings are neither a necessary nor sufficient condition to deal with a counterpart. They are not necessary because, when a rating is downgraded below the accepted minimum, this does not always lead to termination of the contract. They are not sufficient because many debt managers feel that, besides minimum ratings, they have to have a 'feeling' for the counterpart. Many debt managers suggested that, after the Asian financial crisis and some of the major banking crises in Japan, they would be extremely cautious about entering into a transaction with

¹⁸ The average rating is calculated by weighing the number assigned to the rating with the share of counterparts having that rating. One must bear in mind that countries that publish the ratings of their counterparts (e.g., Canada and Denmark) might be confident of the quality of their group. The results of the tables might, therefore, overestimate the average rating in other countries that do not publish statistics.

¹⁹ While both countries in the last year for which we have data saw the quality of their counterparts decline, this might not be due to factors under the control of debt managers, as counterparts might experience a decline in their ratings within the bounds accepted by authorities.

²⁰ For example, while Merrill Lynch International Bank Ltd. is graded AA-, Merrill Lynch Derivative Products, an active counterpart in the derivative market, is graded AAA. Both can be counterparts of the same sovereign issuer.

any counterpart from that region²¹.

The developments in the management of counterpart risk might make the 'minimum rating' precaution less binding. These requirements will be increasingly relaxed as collateral agreements are introduced, as we will show in sub-section 2.2.g.

2.2.d Maximum exposure

established maximum ceilings for exposure to a given counterpart (so-called 'credit lines'), which constitute a limit that debt managers will rarely exceed. When the limit is exceeded, sovereign borrowers take steps to bring exposure back within the credit line.

Credit lines are generally a function of the counterpart's capital and its ratings. The better the outlook on equity and ratings (see

Country	Credit line existence	Notes
Austria	Yes	In the past, the credit line was a function of the notional outstanding for the counterpart. The limit in terms of exposure for cross-currency swaps was 10% of the notional for A ratings, 15% for AA ratings and 20% for AAA ratings. For IRSs, the limit would rise to 15%, 20% and 25% respectively. With the reform of the credit line system, credit lines will be larger the higher the rating of the counterpart.
Belgium	Yes	The credit line is based on rating and equity (i.e., capital base) considerations. The credit line is determined as a share of capital with the share declining with a lower rating. No counterpart can exceed the 10% level of all notional outstanding.
Canada	Yes	There are credit lines on all lines of business in the management of the Exchange Fund Account (EFA), the main repository of the government's foreign exchange reserves. The credit lines are dependent on ratings. There are limits for market values that are different from limits for potential exposure.
Denmark	Yes	Credit lines depend on ratings and counterpart equity (see Table 2.6). No counterpart can be allocated more than 15% of the notional outstanding.
Finland	Yes	Credit lines depend only on ratings.
France	Yes	Credit lines are likely to be based on ratings.
Germany	Not available	
Ireland	Yes	Credit lines are based on ratings and discretion.
Italy	Yes	Credit lines are based on ratings.
Netherlands	Yes	Credit lines will be implemented even if Credit Support Annex agreements are ratified.
Portugal	Yes	Credit lines vary with ratings where the ratings chosen are the two lowest of the three rating agencies.
Spain	Counterpart risk is not managed	
Sweden	Yes	The maximum limit of expected loss is SEK 30 million and the maximum limit on credit lines depends on ratings (SEK 10 billion if the rating is not below AA- and SEK 5 billion if the rating is not less than A- but lower than AA-).
United Kingdom	Yes	The credit lines are of approximately equal value for the counterparts that satisfy the internal rating requirements.

Table 2.5 - Counterparts and credit lines

In addition to rating requirements, the most common procedure to monitor credit risk is to estimate its extent and limit it according to the debt manager's taste for risk. A simple credit rating requirement with limits on maturity could lead to huge exposures with high-quality counterparts, and this would generate too high a level of credit risk with any given counterpart. This is why many debt managers have

Table 2.5), the higher the credit line awarded. Sometimes debt managers keep an updated database of annual reports of the firms from which information on ratings, ratios and ownership changes can be extracted.

Denmark is the only country to state publicly its credit line allocation and criteria for credit lines. This is, therefore, worth reporting, as illustrated in Table 2.6 (overleaf).

²¹ Indeed, the author accessed the list of counterparts for a large sovereign user of derivatives, and it had no Asian counterpart in a list of 45 counterparts!

Rating of counterpart according to Moody's, Standard & Poor's, Fitch IBCA	Maximum exposure (credit line) (DKK billion)	% of counterpart's equity
Aaa; AAA; AAA	2	8
Aa1; AA+; AA+	1.5	7
Aa2; AA; AA	1	6
Aa3; AA-; AA-	0.7	5
A1; A+; A+	0.6	5
A2; A; A	0.4	4.5
A3; A-; A-	0.2	4

Table 2.6 - Denmark - Allocation criteria for credit lines

Table 2.6 shows that for a counterpart of Denmark with an AAA rating, there is a DKK 2 billion maximum allowed exposure (to be calculated as shown in sub-section 2.2.e). This is ten times more than that allowed for an A3 or A- counterpart. However, the exposure cannot exceed 8% of the counterpart's equity if the latter value is less than DKK 2 billion. The equity criterion was established to avoid Denmark having to grant relatively large credit lines to small counterparts, as Danish debt managers believe that the debt-servicing capacity of counterparts is related to their capital.

If a debt manager already has an outstanding market exposure to a certain counterpart that borders on the maximum allowed credit level, a new transaction will not be undertaken with that counterpart. To allow the transaction, traders will need clearance from a higher authority most of the time. Sometimes, credit lines are crossed because of sudden variations in market prices that lead to excess exposure. In this case, most debt managers do not proceed to make new deals with the over-exposed counterpart, and they either try to close some transactions or closely monitor the evolution of the counterpart's position. Most of the time, the decision is left to the discretion of the debt manager. Denmark has a public 'early warning system' that provides for clear rules depending on where exposure stands with respect to the set limit. It divides exposure into

three zones. The 'green light' zone is where credit exposure is under 75% of the credit line, and new swaps can be transacted with that counterpart. The 'yellow light' zone is where credit exposure is between 75% and 100% of the limit exposure, in which case the counterpart cannot be used for new transactions. Finally, the 'red light' zone is where exposure is higher than the allocated credit line, and "the excess credit exposure requires a decision on whether steps must be taken to reduce the credit exposure on the counterparty."²² The United Kingdom cannot conduct transactions if the counterpart's potential exposure brings the total exposure above 80% of the credit line. In this case, the UK debt manager would have to ask for clearance to increase exposure or deal with a different counterpart until exposure with the original counterpart is brought back under the 80% level. Belgium has posted a warning at 90% of the credit line. It then has a maximum share of the credit line above which further transactions are blocked. This currently coincides with the counterpart's credit line, as Figure 2.1 (opposite) shows.

It is not clear that, in the absence of such an explicit system, debt managers act resolutely to reduce the level of exposure. Doing so might be difficult because of resistance from the counterpart and a lack of incentives. This is illustrated by the Danish experience. In its annual report, after stating that some counterparts had exceeded their credit lines owing to strong market fluctuations, it reports that "the central government has only in few cases actively attempted to reduce the credit exposure on counterparties whose lines were exceeded. After concrete assessment most cases of excess credit exposure are not found to

²² See Danmarks Nationalbank (1998), p.116.

present an unacceptable credit risk.”²³ The text does not specify what is meant by “concrete assessment” or by “unacceptable”. However, it is clear that if credit lines are exceeded in a country with an explicit and published early warning system like Denmark, one can only suspect that in countries where such a warning system is not in place, steps to bring exposure within bounds are even more discouraged. Indeed, one debt manager, when asked what he does when credit lines are exceeded, said

Most countries generally allow themselves an unlimited number of counterparts, restricted only by the rating requirements established by the country. Possible exceptions to this rule may be Belgium, the Netherlands and France, where counterparts might be limited to the category of primary dealers. This implies that, even with individual counterpart exposure being monitored, a limit on aggregate credit exposure might also not exist. Some countries (e.g.,

Val	Engaged	Status	Warning max	Limit max	Blocking max
C...	184 856 201.80	1-Ok	2 133 000 000.00	2 370 000 000.00	2 370 000 000.00
F...	530 621.26	1-Ok	63 000 000.00	70 000 000.00	70 000 000.00
F...	80 839 836.92	1-Ok	90 000 000.00	100 000 000.00	100 000 000.00
C...	342 536 369.50	2-Warning	315 000 000.00	350 000 000.00	350 000 000.00
A...	14 183 955.22	1-Ok	2 700 000 000.00	3 000 000 000.00	3 000 000 000.00
A...	13 143 180.38	1-Ok	4 050 000 000.00	4 500 000 000.00	4 500 000 000.00
B...	129 899 055.67	1-Ok	2 700 000 000.00	3 000 000 000.00	3 000 000 000.00
B...	5 496 256.00	1-Ok	972 000 000.00	1 080 000 000.00	1 080 000 000.00
B...	350 000 000.00	1-Ok	621 000 000.00	690 000 000.00	690 000 000.00
B...	200 000 000.00	1-Ok	333 000 000.00	370 000 000.00	370 000 000.00
B...	600 000 000.00	2-Warning	558 000 000.00	620 000 000.00	620 000 000.00
B...	500 000 000.00	3-Limit	450 000 000.00	500 000 000.00	500 000 000.00
B...	170 000 000.00	3-Limit	153 000 000.00	170 000 000.00	170 000 000.00
B...	2 034 536.37	1-Ok	1 080 000 000.00	1 200 000 000.00	1 200 000 000.00
B...	250 000 000.00	1-Ok	3 240 000 000.00	3 600 000 000.00	3 600 000 000.00
C...	65 217 698.43	1-Ok	270 000 000.00	300 000 000.00	300 000 000.00
C...	2 562 871.57	1-Ok	2 700 000 000.00	3 000 000 000.00	3 000 000 000.00
C...	500 000 000.00	1-Ok	522 000 000.00	580 000 000.00	580 000 000.00
C...	314 087 041.07	1-Ok	590 000 000.00	1 100 000 000.00	1 100 000 000.00
D...	132 992 771.77	1-Ok	2 700 000 000.00	3 000 000 000.00	3 000 000 000.00
D...	410 424.98	1-Ok	2 700 000 000.00	3 000 000 000.00	3 000 000 000.00
FL...	305 733 532.56	1-Ok	792 000 000.00	880 000 000.00	880 000 000.00
G...	62 749 488.43	1-Ok	2 628 000 000.00	2 920 000 000.00	2 920 000 000.00
G...	100 000 000.00	1-Ok	261 000 000.00	290 000 000.00	290 000 000.00

Figure 2.1 - Kingdom of Belgium - Warning and blocking limits

“we’re very passive. We discuss possible ways of assigning those swaps of a counterpart that has passed its limits, but, because assignment has a cost, we don’t do anything.”²⁴

²³ Ibid, p.116.

²⁴ To reduce credit exposure to a counterpart, a government can either assign, terminate or recoupon a swap. With assignment, the government assigns the swap to a new counterpart that assumes all the obligations with respect to the government. With termination, the swap is cancelled. In both situations, a one-off amount equal to the market value of the swap is exchanged. Assignment maintains the duration of the debt while termination modifies it. These agreements are costly owing to the possible illiquidity of the

Sweden) do have aggregate exposure limits that are more stringent than the sum of individual exposure limits. Canada has limits on market value, potential exposure and portfolio value. Finland also has limits on aggregate exposure. Other countries have aggregate limits set on the basis of either notional amounts outstanding or

market, which then generates a discount if the debt manager wants to reduce exposure to that counterpart. An alternative that maintains the relationship between the original counterparts is to make a provision in the contract for recouping; i.e., to adapt the coupon so that the market value of the swap is once again zero.

total exposure as a share of certain macroeconomic indicators. However, it is not clear to what extent these criteria are binding. Austria, in its new system, will have aggregate exposure limits within rating categories, which amounts to an aggregate exposure limit.

How an aggregate maximum exposure or an individual maximum exposure is chosen is not clear and is usually kept as a sacred secret by most debt managers. Unfortunately, this is exactly where things might matter the most, as one would prefer to quantify and manage risk through a given aggregate maximum exposure rather than with an individual maximum exposure. Sector and country limits on counterparts might also matter.

2.2.e Exposure

1) Traditional exposure calculations

Exposure is not measured in terms of notional amounts outstanding, because treasuries are not exposed to the risk of losing all of the notional amount (the notional amount is not exchanged in a domestic IRS, while it is exchanged at a given market value in some cross-currency swaps). For example, to argue that Sweden, because it is holding SEK 630 billion of notional amount outstanding in its swap book (basically equal to half its public debt), is risking the loss of that amount would be totally inappropriate. Indeed, when most of these contracts were initiated, their market value was zero, with the expectation that the present value of the commitments on the liability side would equal the present value of the asset side of the transaction.

However, this does not imply that such transactions, even at inception, when they are stipulated at zero market value, do not generate credit risk for debt offices. The conditions prevailing in the markets when the

swaps were initiated might, over the life of the contract, change and give rise to positive or negative exposure for debt managers. In the first case, treasuries would hold a claim on the private counterpart. In the second case, the opposite would be true. Such claims, if present at the termination of the contract, would generate a reduction or an increase in the borrowing costs of the treasury. Suppose a counterpart of the sovereign borrower were to default when the value of the derivative had positive value for the debt management office. This would amount to an increase in costs for taxpayers owing to the replacement cost required to obtain the exposure prevailing before the default. Debt managers, therefore, need to calculate the value of outstanding exposure or of the expected loss from each counterpart. They then need to compare such values with the maximum tolerable exposure or expected loss they are willing to tolerate to enjoy the benefits of the swap contracts described in Chapter 1.

Exposure in any given transaction includes the market value of the derivative when the market value is positive for the debt manager. 'Current exposure' is an indicator of the present value owed by the counterpart to the sovereign borrower. If current exposure were to be wiped out owing to default of the counterpart, it would amount to a hike in the present value of debt costs for the government. However, while a swap transaction is usually priced at zero at inception, it should not be the case that all transactions at inception look the same in terms of counterpart exposure. The 'potential exposure' in a swap contract is an estimate of where future exposure to the counterpart could be during the contract's life. Future potential exposure typically depends on maturity. The longer the life to maturity, the greater the potential changes in the price of the

contract and the number of future payments 'at risk'. In addition, with regards to the currency of the swap, exposure might not only be higher, but might actually increase with the passage of time²⁵. This is why countries usually tend to give different values for potential exposure (depending on the maturity and currency of the derivative) to two derivative contracts with the same notional amount.

If positive, the market value of a swap is, therefore, a lower boundary of total exposure to a counterpart. To this, one should add potential exposure. Therefore, debt managers often calculate total exposure as:

$$\begin{array}{r}
 \text{market value} \\
 + \\
 (\text{interest weight} + \text{currency weight}) \\
 \times \\
 \text{liability leg} \\
 + \\
 (\text{interest weight} + \text{currency weight}) \\
 \times \\
 \text{asset leg}
 \end{array}$$

where the weights are larger for longer maturity and for foreign currency swaps. The standard approach adopted by many debt managers until recently uses the BIS add-ons criteria, which establish (as Table 2.7 shows) the

Residual maturity	Interest rate %	Exchange rate %
1 year or less	0	1
Over 1 year to 5 years	0.5	5
Over 5 years	1.5	7.5

Table 2.7 - BIS add-ons applied to the notional amount
Source: Bank for International Settlements

weights to be assigned so as to calculate total exposure. BIS add-ons increase with maturity and are higher for transactions that involve foreign currencies. Finland, Portugal and Sweden all use BIS add-ons criteria.

2) Alternative calculations for exposure

Potential exposure can be calculated in other ways. Denmark uses BIS add-ons with a greater number of maturity bands (nine compared with the three recommended by BIS) and has substantially higher currency and/or risk weights. Italy also uses the BIS method with higher add-ons for maturities longer than ten years. Table 2.8 (overleaf) shows an example of an 'entity's exposure report' provided to the author by the Belgium debt office and Table 2.9 shows the weights adopted by Belgium.

²⁵ Schinasi et al. (2000), box 3.5.

Entity name	Credit limit	Mark-to-market swaps	Add-on swaps	Nominal deposits	Credit exposure	% credit exposure/total credit exposure
A	3,000,000,000	203,562,419	80,322,866	0	283,885,285	7.83%
B	4,500,000,000	-17,484,984	11,625,629	0	0	0%
C	350,000,000	0	0	330,000,000	330,000,000	9.10%
D	1,500,000,000	150,105,365	100,206,181	0	250,311,545	6.91%
E	170,000,000	0	0	270,000,000	270,000,000	7.45%
F	370,000,000	0	0	350,000,000	350,000,000	9.66%
G	250,000,000	0	0	200,000,000	200,000,000	5.52%
H	1,080,000,000	102,678,817	102,945,182	0	205,623,999	5.67%
J	880,000,000	185,741,632	99,971,273	50,000,000	335,712,905	9.26%
K	960,000,000	211,707,804	99,957,691	0	311,665,495	8.60%
L	1,100,000,000	-5,246,891	42,536,608	250,000,000	287,289,717	7.93%
M	3,000,000,000	0	0	300,000,000	300,000,000	8.28%
N	800,000,000	0	0	300,000,000	300,000,000	8.28%
O	500,000,000	0	0	200,000,000	200,000,000	5.52%
Total credit exposure					3,624,488,947	
Total credit exposure deposits					2,250,000,000	
Total credit exposure swaps					1,374,488,947	

Table 2.8 - Kingdom of Belgium - Assessment of exposure

Remaining maturity	IRS %	Currency swap (low volatility) ¹ %	Currency swap (high volatility) ² %
<= 3M	0.5	2.5	5
<= 6M	0.5	5	8
<= 1Y	1	5	10
<= 2Y	2	6	12
<= 3Y	3	7	14
<= 4Y	4	8	16
<= 5Y	5	9	18
<= 6Y	6	10	20
<= 7Y	7	11	22
<= 8Y	8	12	24
<= 9Y	9	13	26
<= 10Y	10	14	28
<= 11Y	11	15	30
<= 12Y	12	16	32
etc. +1Y	+1	+1	+2

Table 2.9 - Kingdom of Belgium - Add-ons

Table shows % applicable for the calculation of the add-on.

¹ EUR, CHF

² CAD, DKK, GBP, JPY, SEK, USD

The issue of how to calculate exposure is particularly relevant for credit risk considerations. While the presence of an aggregate exposure maximum might reduce overall risk, the final measure of the risks undertaken by a debt manager depends on the way exposure is quantified. A given credit line can be strict or lax depending on whether potential exposure is calculated with more or less stringent requirements. Indeed, there is not

a commonly accepted way of measuring exposure, as Table 2.10 (opposite) shows.

Sometimes countries do not use add-ons, but instead use rules that replicate such add-on requirements. An example is Ireland (and Austria before its recent reform), which calculates potential exposure as a share of the notional amount of contracts outstanding. While this method can be criticized because it takes no account of the market risk of the specific kind of swap, Ireland adjusts the share of notional to the type and maturity of swap. An interest rate swap will have, for any given maturity, an exposure equal to lower shares of notional than a currency swap with the same notional, as the latter contract is seen as more volatile in terms of the flows it might generate. In a similar vein, for a given type of swap, the longer the maturity of the swap, the higher the share of notional that will be used to calculate exposure²⁶. This system, however, is just like the BIS one. In addition to the possible arbitrariness of the choice of the shares, it does not take into account the specific nature of

²⁶ It should be remembered that for a given ceiling on exposure, the higher the actual exposure, the higher the chances are of hitting the ceiling.

Country	Credit line existence	Notes
Austria	Yes	With the reform of the credit line system there will be measurements of 'peak exposure'. Exposure is calculated by looking at maximum potential exposure according to internal models of credit risk management (with the value of collateral received that reduces exposure).
Belgium	Yes	Exposure equals market value plus add-ons based on maturity and currency, but these are more than what the BIS recommends. The add-ons also depend on the volatility of the currency under consideration.
Canada	Yes	Exposure is calculated with BIS add-ons.
Denmark	Yes	Exposure is equal to the market value plus add-ons for currency and interest rate swaps depending on maturity and currency type.
Finland	Yes	Exposure equals market value plus BIS add-ons.
France	Yes	Exposure is likely to be based on market values and add-ons.
Germany	Not available	
Ireland	Yes	Exposure equals the share of notional amount, dependent on the type of swap and on the maturity of the derivative. The present value is surveyed regularly.
Italy	Yes	Add-ons are chosen that are higher than the BIS ones. They are chosen so as to try to replicate the method of 'average exposure'.
Netherlands	Yes	Details to be determined.
Portugal	Yes	Exposure equals market value plus potential exposure based on add-ons by BIS. This method might change.
Spain	Counterparty risk is not managed	
Sweden	Yes	Potential exposure is calculated with the BIS weighting system. Expected loss is calculated as the risk of default using a smoothed series of Moody's probabilities of default multiplied by market plus potential exposure.
United Kingdom	Yes	Exposure is based on peak exposure methods.

Table 2.10 - Counterparts and exposure calculations

Source: Interviews with debt managers

currency risk and interest rate risk undertaken by debt managers. Indeed, some debt managers are unhappy with the BIS add-ons scheme. One of them asked the author:

"Where did these numbers come from anyway? They are not transparent and totally useful measures. We would like add-ons that come from our own measures and simulations, while at the same time not being too sophisticated. Add-ons by BIS require no difference in currency swaps depending on the type of currency. But this might be wrong, as different currencies have different currency risks. It is the market risks that BIS add-ons do not capture well."

The 1999 Danish annual debt management report gives an idea of the sensitivity of the Danish government derivative portfolio to market changes. This sensitivity has an impact on counterparty risk management, as it affects how much total exposure to a

counterparty will vary relative to the exposure ceiling and, ultimately, the timing and size of action on the part of the debt manager.

Currency	Change in market value of portfolio on currency appreciation of 1% vis-à-vis DKK	Change in market value on a decrease in interest rates of 1%
DKK		0.65
EUR	-0.38	-0.62
USD	0.29	0.86
GBP	0.1	0.14
Other (net)	0.03	0.27
All (net)	0.04	1.29

Table 2.11 - Exchange rate and interest rate sensitivity of the Danish swap portfolio

Source: Danmarks Nationalbank, table 6.4.3 p.77

Note: the stated measures exclude structured swaps.

The calculations in Table 2.11 remind us that potential exposure calculations with mechanical add-ons might also overestimate risk. Exchange rate and interest rate risks across various transactions are correlated. If these correlations are not taken into consideration when calculating potential exposure, the latter overestimates effective exposure. No country

adopts correlation methods to reduce its add-ons.

Austria, Portugal and the United Kingdom are moving, or have moved away, from BIS add-ons. Austria and the United Kingdom use a 'peak exposure' method to calculate exposure with a counterpart. 'Peak exposure' identifies, at any given point in time over the life of the portfolio with a counterpart, the highest possible exposure the portfolio might take over its remaining life. This method assumes a process for interest rate movements that implies that these interest rates increasingly deviate from the values that ensure a zero market value of the swap. However, the peak exposure is not necessarily reached toward the end of the life of the swap, as fewer and fewer interest payments are at risk. The higher the peak exposure of the swap portfolio to a counterpart, the more the counterpart risks reaching the credit limit set by the debt manager. Although a debt manager could use an 'average exposure' method, which equalizes potential exposure with the average value of the portfolio over its remaining life, the 'peak exposure' method reflects greater caution in evaluating exposure²⁷.

Sweden has partly moved away from the BIS add-on method by selecting another, more intuitive, requirement: the expected loss. Besides setting limits on total exposure calculated with BIS add-ons, the SNDO multiplies the sum of actual and potential exposure by the default probabilities obtained from Moody's. This gives the Swedish debt managers a figure of expected loss for each counterpart depending on the counterpart's rating. As each counterpart has an SEK 30 million maximum expected loss, and the total

portfolio maximum allowed expected loss is SEK 200 million, one has an estimate of how much the SNDO expects to lose at most for its derivative activities. This figure is not excessive, as SEK 200 million represents approximately 0.2% of total interest expenditures in 1999. If these losses were to occur, the average cost of debt would rise by one basis point. Obviously, with no other precaution being taken, the maximum amount that the SNDO could stand to lose on any given day is the market value of its derivatives. The medium-term amount could be measured by market value plus potential exposure²⁸. As of June 2000, market value (see Table 2.13) was equal to SEK -5 billion, so credit exposure at that time was equal to zero. However, the data by the SNDO on potential exposure are not available.

What we know from Swedish debt managers is that the expected loss criterion in Sweden turns out to be more stringent than the criterion for potential exposure. This is not, however, an indicator of the superiority of one index over the other. Indeed, stringency is ultimately determined by the established ceiling. In Sweden, the latter is set exogenously by the Credit Committee instituted by the SNDO within the guidelines established by its board, whose members are appointed by the government.

The stringency of a given requirement in managing counterpart risk is provided by the calculation of exposure combined with the choice of a credit line. Very little information (as we will see in the next section) is available on this, rendering taxpayers virtually incapable of monitoring the level of credit risk acquired by a given debt management office.

²⁷ Simulations a country has undertaken to compare its BIS add-ons with peak exposure methods show that the add-ons were less binding than peak exposure requirements.

²⁸ As we will see, the SNDO takes several additional precautions.

3) Establishing the significance of a given exposure and maximum exposure

What would really help to understand the risks taken by debt offices through derivative activity would be to measure the potential loss to taxpayers (owing to counterpart risk), and then to put this loss in perspective by seeing how much it would affect the average cost of debt. More generally, it would be useful to know the criteria that have led debt management authorities to choose a specific maximum aggregate exposure.

of counterparts and the maximum credit lines to each counterpart per rating indicate a maximum accepted potential exposure by Danish authorities of DKK 36 billion³¹. As total interest expenditure in 1999 was equal to DKK 37.8 billion, we see that the maximum exposure leaves considerable room for losses. However, it is not very informative as to the maximum risk the authorities are willing to bear. Indeed, by looking at credit exposures, one sees that the Danish authorities do not use up credit lines, but operate well within them. Using credit

Rating	Number of counterparts in 1999	Credit line (DKK billions)	Maximum accepted exposure (DKK billions)	Maximum expected loss (DKK billions)	Credit exposure (DKK billions)	Expected loss (DKK billions)	10-year default probability %
AAA	3	2	6	0.0492	0.1	0.00082	0.82
AA+	8	1.5	12	0.1128	3	0.0282	0.94
AA	6	1	6	0.0642	3.6	0.03852	1.07
AA-	13	0.7	9.1	0.1092	4.5	0.054	1.2
A+	4	0.6	2.4	0.0342	0.4	0.0057	1.425
A	1	0.4	0.4	0.0066	0	0	1.65
A-	1	0.2	0.2	0.00375	0	0	1.875
			36.1	0.37995	11.6	0.12724	

Table 2.12 - Denmark - Derivative program 1999

Source: Moody's Investors Service, February 1998

Because of their transparency, the Danish authorities provide some useful data to highlight the expected losses at stake within a well-established and reputable institution that manages national public debt, such as the Danish Central Bank²⁹. We have taken a conservative estimate of default probabilities by looking exclusively at the relatively higher default probabilities associated with the longest transactions - those over ten years (Denmark's average maturity of its derivative business is likely to be less than ten years)³⁰.

In this case, the 1999 year-end number

exposure (as measured in the 1999 annual report) as a measure of potential losses would indicate that those potential losses could have reached DKK 11.6 billion at the end of 1999 in the event that all counterparts had defaulted. Applying the Swedish criterion of expected loss, we see that the maximum expected loss with the year-end structure of counterparts (the expected loss if all counterparts were using all of the credit line allotted to them) would have been much lower: DKK 380 million, or approximately 1% of interest expenditure. Finally, expected losses given the market value of those exposures is equal to DKK 127 million, or 0.3% of interest expenditure for one year (a number not too different from the Swedish calculation of 0.2%). This is a number that

²⁹ The Danish case is rather unique among developed economies, as proposals for debt management to the government are handled exclusively by the Central Bank. In Canada, the Central Bank and Ministry of Finance cooperate to achieve appropriate asset and liability management.

³⁰ 'Frequency of default by issuers 1970-97': Table 9.4.1 in the 1998 Danish annual report. This table is based on Moody's Investors Service *Historical Default Rates of Corporate Bond Issuers*, February 1998.

³¹ This presumes that equity lines limits are not binding.

would increase the average cost of debt in one year by two basis points. Table 2.12 (on the previous page) shows the calculations.

derivatives³³. However, one should point out that such values are not very significant, as they tend to be highly volatile. Ireland, for example,

Country	Market value	Market value/ Interest expenditure	Market value/GDP	Source /notes
Austria	EUR 0.6 bn	7.7	0.31	Source: IMF Data Template as of October 2000. Data is for currency swaps only.
Belgium	EUR 1 bn	6.6	0.47	Source: IMF Data Template as of September 2000. Data is for currency swaps only.
Canada	CAD 0.289 bn	-8.38%	-0.03 %	Source: Public Accounts of Canada. IRSs and cross-currency swaps only, March 31, 1999.
Denmark	DKK 4.4 bn	12.46%	0.38%	Source: annual report, 1999.
Finland	Not available			
France	No swaps outstanding yet			
Germany	Not available			
Ireland	IEP 468 mn	+21.22%	+0.7%	Source: annual report, 1999.
Italy	Not available			
Netherlands	No swaps outstanding yet			
Portugal	EUR 0.362 mn	+12.27%	+0.35%	Source: annual report, 1999.
Spain	EUR 146.87bn	+6.84%	+0.2%	Source: IMF Data Template as of September 2000 (converted at end of September exchange rates)Data is for currency swaps only. GDP and interest expenditure relate to 1999.
Sweden	SEK -5 bn	-5.57%	-0.25%	Source: SNDO Interest expenditure and exposure is as of June 2000 and GDP.
United Kingdom	GBP -544 mn	-1.35%	-0.04%	Source: Bank of England, March 2000. (of the GBP -544 mn, USD -516 mn are cross-currency interest rate swaps).

Table 2.13 - Market value of swaps

It is hard to find data for the credit exposure of sovereign borrowers. What is available for many countries (thanks to the important IMF Data Template on International Currency Reserves and Liquidity available on the IMF web site) is the net marked-to-market value of foreign currency-denominated financial derivatives for monetary authorities and central governments. Most countries have started to update such statistics regularly since the summer of 2000³². These market value figures, while not indicative of counterparty risk (they show aggregate amounts only), indicate that many countries have positive market values outstanding, highlighting the possible savings that are expected to be achieved for the taxpayer owing to risk-taking activities through

at the end of 1998 had an outstanding market value of derivatives of IEP 93 million. This total quadrupled at the end of 1999, reaching IEP 468 million. Table 2.13 indicates the net market value of the portfolio at a given date, where available.

These calculations provide *prima facie* evidence that prudent management of counterparty risk can help to reduce significantly the negative effects of exposure to private counterparties, while a lack of counterparty risk management could easily lead to excessive risk-taking. Indeed, the potential gains that could be wiped out by default are often a relevant percentage both of interest expenditure and GDP.

³² It is not always tracked very well. The Italian treasury, for example, continues to report consistently a zero market value for its currency swaps, which is impossible. For some countries, the central banks' financial derivative positions are reported separately from the government while, in other cases, they are kept together.

³³ This is not necessarily the benefit of derivative activities exclusively, as many of these positions could have been achieved with other instruments; e.g., floating-rate notes or capital markets issuances of foreign currency bonds.

2.2.f Netting

Other precautions are generally considered standard in debt management offices. When managing counterpart risk, exposures with a counterpart are generally never set at a level lower than zero. If a debt office has entered into many swaps with a counterpart, and all these transactions have negative market value for the debt office, and the total negative market value is greater than potential exposure, then total exposure with that counterpart is set equal to zero.

Exposures for each counterpart might or might not take into account the fact that, while some contracts might have positive value for the debt office, other contracts might have positive value for the counterpart. Suppose exposure is calculated by netting the positive exposure of contracts with the negative exposures. In this case, counterpart risk is calculated by assuming that, in the case of default, the counterpart will be incapable of claiming the amounts related to its positive value exposure without being liable to pay the amounts related to the contracts with negative value (positive value for debt offices). This practice is called 'close-out netting'.

Recall that total exposure for one counterpart's swap is calculated as:

$$\begin{array}{r} \text{market value} \\ + \\ (\text{interest weight} + \text{currency weight}) \\ \times \\ \text{liability leg} \\ + \\ (\text{interest weight} + \text{currency weight}) \\ \times \\ \text{asset leg} \end{array}$$

Total exposure for that counterpart is calculated differently depending on whether netting is allowed or not. If netting is allowed, then aggregate exposure is equal to the sum of

all credit exposures on all swaps, and, if the aggregate credit exposure is negative, the value is equal to zero. If netting is not allowed, then aggregate exposure is equal to the sum of the values for all those swaps that have a positive value for the debt office.

ISDA Master Agreements provide for netting. However some debt managers also ask that the transaction only be conducted with a counterpart that has its head office in countries where legislation clearly 'protects' netting procedures. When such conditions do not exist, countries often calculate exposure by avoiding netting and considering only the gross value of transactions. The uncertainty embedded in 'close-out netting' of an OTC contract is potentially among the most important sources of 'legal risk' that permeate the use of derivatives in general³⁴.

For governments, there could, in some instances, be even more uncertainty, given their special nature as a sovereign counterpart. During 1987-89, the local authority of the London Borough of Hammersmith and Fulham entered into some 600 swap transactions. After many of these swaps went out of the money (into negative value), the authority's auditor asked to have the transactions voided, claiming the borough did not have the authority to enter into them. The court agreed to void the transactions. Often, however, the uncertainty might work against governments. One government has expressed concern that the rules for 'close-out netting', as included in standard ISDA Master Agreements, are not applicable when it comes to agreements with sovereign borrowers. The legal opinions this government received assumed that ISDA contracts are concluded between financial institutions, and, as governments are non-

³⁴ See Schinasi et al. (2000), box 3.6.

financial institutions, a counterpart might question the relevance of the government's claims in court. The debt manager of that country said: "We need re-assurance that in other nations these agreements are held to value and that a judge does not allow close-out netting just because we are a government." As we will see, this uncertainty has an impact on other arrangements, like collateral agreements.

Of all the debt managers interviewed, only the ones of Austria and Finland systematically avoid netting, thereby raising the total exposure of each counterpart. This indicates a higher degree of 'risk aversion' compared to other countries. However, this approach might not be a significant indicator of the relative risk-aversion of a sovereign borrower, as the credit ceilings might be very high. It is the combination of credit lines and the method of calculating potential exposure that indicates the risk aversion of a country. Such information is publicly available for Denmark only.

2.2.g Collateral agreements

There is no doubt that a correlation exists between the increase in derivative activity and the decision to manage counterpart risk more efficiently. Countries that are more active (as measured in terms of notional amounts) also have more sophisticated systems of counterpart risk management. Nowhere is this clearer than in Sweden, the country with the largest outstanding notional amount of derivative transactions (50% of the public debt), but not necessarily the highest level of counterpart risk. This is, in part, due to the fact that Sweden has adopted several precautionary procedures for its derivative activity: credit lines based on a double criterion of maximum exposure and maximum expected losses; a stricter expected aggregate

loss than what is implicit in the sum of individual maximum expected losses for single counterparts; the allowance of netting only when an ISDA agreement is in place; the requirement that counterpart head offices be based in legally 'reliable' environments; minimum ratings for counterparts; and different minimum ratings per counterpart depending on the maturity of the swap.

Most importantly, however, Sweden has entered into Credit Support Annex (CSA) agreements with its most significant counterparts. CSA agreements are bilateral, standardized agreements either to transfer or pledge collateral in the event that market valuations of derivative contracts give rise to an exposure.

CSA agreements are on the verge of becoming the most important instrument in the management of counterpart risk, and debt managers argue that they will substantially increase the potential for derivative activity by reducing counterpart risk to a level that no other criterion has succeeded in doing. Denmark and Sweden are the only countries to have made CSA agreements, but Austria, Belgium, Canada, Finland, France, the Netherlands, Portugal, Spain and the United Kingdom are in the process of starting or developing them (see Table 2.14)³⁵. Debt managers were reluctant to provide details on the structure of these agreements, as most of them were involved in the delicate process of bargaining with counterparts at the time interviews took place. France and the Netherlands, which are developing CSA agreements that will apply to all counterparts, considered for a time disregarding potential

³⁵ At the end of 2000, more than 60% of the outstanding notional in swaps for Denmark was covered by CSA agreements. At the end of 2001, the ratio is expected to be 80%. New swaps are only done with counterparts that have signed a CSA agreement.

exposure calculations and credit lines altogether. CSA agreements might, however, still expose governments to risk in many ways (albeit in reduced amounts).

First, CSA agreements usually stipulate a threshold amount for market value, below which no collateral is due. For example, in Denmark such an amount depends on the counterpart rating, and ranges between DKK 500 million for an AAA counterpart to DKK 50 million for an A- counterpart. This means that the counterpart will not have to post collateral until its exposure has reached a specified amount. The likelihood of this occurring is usually greater if the counterpart has a higher rating.

Second, many governments do not require cash as collateral, but rather bonds, usually issued only by highly-rated governments. In this case, the collateral value is exposed to liquidity, market and issuer risk. Governments usually discount the value of the collateral by a 'haircut', a fixed amount depending on the rating of the bond, its maturity and its possible degree of liquidity. However, some risk is still present if cash is not given. Table 2.14 shows what is to be transferred in countries using a CSA agreement. Sweden is the only country that entered into a CSA agreement where only cash can be posted as collateral. All other countries using CSA agreements have agreed to receive highly rated bonds. The lower the rating of the bond offered by the counterpart as collateral, the higher the haircut on the value of the bond will be³⁶.

Perhaps because Sweden requires cash as collateral, and because a CSA agreement requires extensive bargaining, Sweden has also

decided to include the possibility of bilateral transfers of collateral³⁷. In the event that Sweden has a negative exposure with a given counterpart, it will transfer cash to its counterpart. The symmetry of the collateral agreement in Sweden is a feature that is shared by no other debt management office in the countries examined. Some governments reacted strongly when they were asked why they do not adopt symmetric CSA agreements. They claimed that "they are the State," after all. Another debt manager, when asked about whether he would consider giving collateral in the event of negative exposure, smiled and said: "Of course not"! In reality, other governments are ready to admit that their back office and front office are not yet ready to handle cash outflows due to collateral posting. This is because of administrative problems that could arise if these cash flows were to be given back to the debt office in the event the negative exposure vanishes. France, which has quite sophisticated and flexible cash management systems through its overnight and repo facilities, has a symmetric agreement for repo contracts that it might extend to its 2001 IRS program. In the United Kingdom, market makers may have the choice to post cash or bonds. However,

³⁷ It took, for example, six months in Denmark from the moment the first negotiations started to the time that the first CSA was signed with a counterpart. Swedish authorities are ready to admit that not all counterparts agreed to enter into a new CSA but that most big players did. National commercial banks in all countries seem to have a harder time with entering into a new CSA than large international investment banks.

A discussion between the author and a market maker highlighted the bargaining issue inherent in CSAs: "Governments will have to understand that as collateral they will have to give a larger array of instruments. I strongly dispute the posturing of governments. Even if no public or legal fight will emerge (it would be a disaster for us), if they want to know the right flows in derivative markets, they need us. In the US, 85% of the IRSs in dollars are concluded by five counterparts. In the euro zone 80% of the swaps are concluded by ten counterparts, and these are guys that are merging [these data were not confirmed to the author after the interview]. Any CSA cost they charge we will pass on to the governments." How much of this is posturing on the part of market makers is hard to tell.

Swedish authorities also claim that a symmetric agreement speeds up the development of these CSAs.

³⁶ Denmark has a 5% haircut for a bond's collateral posted with a life to maturity of less than three years, a 6% haircut between three and seven years to maturity and an 8% haircut for bonds longer than seven years. A premium haircut is taken if the bond posted is illiquid.

market makers might find it easier to post bonds, as they require bonds as collateral from other counterpart.

Even with a CSA agreement, there is a third source of risk. Governments enter into CSA agreements by establishing a periodic check for comparing collateral versus market exposure with the counterpart, at which time the exchange of collateral will be binding for the counterpart (or for both if the agreement is symmetric). Usually, governments agree to check such values every month or every week, even if they keep an eye on daily market exposure. This implies that there will be a week- or month-long period of potential exposure that needs to be monitored. In this sense, another feature of the sophistication of the Swedish CSA agreement is that it requires daily valuations, while most countries check the market exposure only once a week or once a month. By requiring daily cash margins, the swap-market risk is drastically altered, changing a ten-year exposure into a two-day risk (a debt manager argued that dealing with swaps with a CSA covering him in such ways is like being exposed to settlement risk only). The only additional risk in this case would be one of agreeing on the market price at which to value the swap, as it is usually the counterpart that communicates at what price to calculate exposure. This is why the CSA agreement should include the exact time, data source and exchange rate at which to calculate such value³⁸.

The last source of uncertainty with collateral agreements is legal risk. The government mentioned in sub-section 2.2.f has put its CSA program on hold because it fears

that the rules for 'close-out netting', which indicate the relevant value of exposure when terminating the relationship with a counterpart, are not applicable when it comes to agreements with sovereign borrowers. The logic for why this government did not want to start a collateral agreement is sensible: "If we do not know what the exposure is (is it the gross one or the net one?) how can we start with a collateral agreement?" In case close-out netting agreements are not upheld by the law, a government will want to calculate exposure on every single swap with positive market value even if it requires collateral. Furthermore, it will not net this amount with other negative amounts with that counterpart, as a court could claim that the government has to pay its obligations and might deny the right of the government to recover its positive values. Schinasi et al. (2000) further underline how "there are important questions about the enforceability of collateral arrangements in some jurisdictions. The legal environment is particularly murky in cross-border deals. The geographic diversity of counterparties, collateral instruments and custodial entities gives rise to significant uncertainty about which country's law governs collateral arrangements."³⁹

Having given due consideration to the above issues, one may say that CSA agreements allow vastly expanded derivative programs by reducing the value of the exposure of those counterparties that have entered into them. CSA agreements were started in some countries when credit exposure was nearing the credit line, and debt managers were prevented from expanding their derivative activity. It is no coincidence that governments have a tendency to push for CSA agreements with the largest counterparties whose credit exposure before the

³⁸ The author was told of a case where the five-hour time difference between London and New York caused bitterness between a debt manager and a counterpart when evaluating exposure. However, such things cannot happen frequently if the counterpart wants to keep doing business with the public debt management office.

³⁹ Schinasi et al. (2000), p.29.

CSA agreement is close to the credit ceiling. This attenuation of concern about exposure is reflected by the statements of two debt managers. The first admitted that minimum rating requirements would probably be lowered if a CSA agreement were to be put in place; the second stated that his office would accept dealing with a BBB counterpart if it agreed to a CSA agreement. In any event, most countries will adopt CSA agreements for new transactions and will not impose them on outstanding exposure for contracts that were in place before the CSA.

2.2.h Prudent restrictions

“Exotic options raise a number of challenges for the financial institution that trades them. They can be exceedingly challenging to price; options for which the pay-off depends on the price-history may not have a closed form solution for the price. In addition they can be challenging to hedge.”⁴⁰

Operational risk, in addition to legal risk, includes the inability to evaluate potential exposure correctly because the model is

Country	CSA existence	Symmetric posting of collateral	Type of collateral	Threshold	Haircut	Lowest rating
Austria	About to be launched	No	Euro bonds	n/a	n/a	BBB+
Belgium	About to be launched	n/a	Cash or bonds that will be different depending on the counterpart's nationality	Yes	Yes	A-
Canada	u/d	n/a	n/a	Yes, dependent on the counterpart's credit rating	n/a	n/a
Denmark	Yes	No	Minimum AA- or Aa3 bonds or on valuation by the debt office	Yes, DKK 500 million for AAA and DKK 0 for BBB+ or lower	Yes	BBB+ or lower
Finland	u/d	No	Bonds	Yes	n/a	n/a
France	u/d	Available for repos. To be decided for IRSs	French government bonds or cash	n/a	n/a	n/a
Germany	n/a	n/a	n/a	n/a	n/a	n/a
Ireland	No	n/app	n/app	n/app	n/app	n/app
Italy	No	n/app	n/app	n/app	n/app	n/app
Netherlands	u/d	To be determined	To be determined. If the collateral is bonds, they will be highly rated euro government bonds	Yes, dependent on ratings	Yes, dependent on the liquidity and maturity of the bonds	Yes
Portugal	u/d	No	Bonds	n/a	n/a	n/a
Spain	u/d	No	Under negotiation	Yes, dependent on ratings (EUR 250 mn for AAA and EUR 0 for A1-A+)	Yes	n/a
Sweden	Yes	Yes	Cash	n/a	n/a	n/a
United Kingdom	Yes	No	Cash or highly-rated government bonds	Yes, dependent on external ratings	Yes, based on the bond maturity	Only AAA

Table 2.14 - Credit Support Annexes as of fall 2000

n/a - not available
n/app - not applicable
u/d - under development

⁴⁰ Ibid, box 3.3.

misspecified. Even sophisticated financial institutions with vast resources dedicated to evaluating risk may fail to handle operational risk related to modeling the stochastic properties of the derivative price correctly. As governments have fewer resources dedicated to risk management and face tight budget constraints, one should expect that internal or external guidelines should limit the type of derivatives that can be used by the debt office to those that are more standardized, where risks are relatively easy to anticipate.

But this is not always so, as Table 2.15 (opposite) illustrates. Spain does limit itself to swaps. However, most countries are not bound by external constraints to avoid any particular instrument. Portugal is not allowed to enter into swaps with a maturity of longer than ten years, or into options on indexes and commodities. Some debt offices, where debt management is not centralized in the ministry, require permission from the ministry itself to undertake particular derivative transactions (e.g., the Danish Central Bank, the Finnish State Treasury and, possibly, the future German debt management agency). Often, debt management offices use internal guidelines that recommend avoiding specific structures for derivatives. Those that do not meet the test require an approval by the internal board (e.g., Austria, Denmark, Ireland and Sweden). In other cases, the program itself has been approved by the minister for a specific kind of derivative, and (pending further approvals) no other type of derivative activity can be implemented (e.g., France and the Netherlands). Most of the time, the limitation on 'non-standardized' instruments is claimed to be self-imposed, owing either to the inability of the existing risk management system to handle such transactions or for 'ethical' considerations related to transparency (e.g., Austria, Belgium,

Denmark, Ireland, Portugal and Sweden). Other countries leave the issuer with unlimited possibilities, at least in principle (e.g., Italy, Spain, and France and Germany before the launch of an agency). This confirms the role that agencies or decentralized institutional arrangements play in fostering greater accountability and a more structured decision-making process compared to centralized debt office units within treasuries or ministries of finance.

2.2.i *Managing counterpart risk: a comment*

Every country's debt management office is choosing its own desired framework for the management of counterpart risk. Within the euro zone, this uncoordinated approach can be contrasted with the unified front of national central banks on the same issue. Indeed, at the same time in which governments are starting to deal with managing counterpart risk, most central banks are facing the same issues. A central bank official told the author that most central banks are setting up mechanisms for managing counterpart risk that will allow them "a less timid use of derivatives."

The framework for credit-risk management is set up in an ECB document: *The Single Monetary Policy in Stage Three: General Documentation on ESCB Monetary Policy Instruments and Procedures* (1998). In it, the ECB outlines the general rules for handling counterpart risk for open market operations, fine-tuning operations, outright transactions and foreign currency swaps. Chapter 2 of the document indicates 'eligible counterparties' and criteria for their selection, while Chapter 6 deals with the issue of 'eligible assets' for collateral purposes. It divides assets between 'Tier 1' and 'Tier 2'. Tier 1 assets are marketable debt instruments with high credit standards that

Country	Notes on the type of limit
Austria	There are self-imposed limits on the transactions undertaken. Futures and forwards are used, but mostly cross-currency swaps and interest rate swaps are undertaken. Structured transactions are avoided mainly because the risk management models are not designed to evaluate them in terms of risk. Furthermore, all three members of the agency board must agree on a structured transaction.
Belgium	There are no limitations on instruments, but there are self-imposed limitations based on prudent management of risk.
Canada	"The Governor in Council may authorize the Minister, subject to any terms and conditions that the Governor in Council may specify, to enter into any contract or agreement of a financial nature, including options, derivatives, swaps and forwards, on such terms and conditions as the Minister considers necessary." Source: Financial Administration Act, Chapter F-11, updated April 30, 2000.
Denmark	In 1993 the Act on Central Borrowing allowed the central bank to use any kind of debt management instrument. However, to use options, bank officials would have to go to the Ministry of Finance and explain their rationale. For example in 1998, the domestic IRS program was presented to the Ministry. The internal guidelines are not precise, but they specify that the "loan types should be known by the market and used by reputed borrowers" so as to prevent the creation of complex instruments and, especially, structured transactions.
Finland	There is a set of derivatives transactions authorized in the guidelines. Currently these are domestic IRSs, cross-currency swaps and foreign currency forwards. The state treasury must obtain approval from the ministry of finance for the following products: caps, floors, foreign currency options, bond futures and options on futures.
France	Under the Law of Finance, the French ministry can only issue in euro. But it could do any swap, option, etc. even in foreign currency. So far this potential has not been realized. The new program will initially be in IRSs, but there is no limit on what will be done in the future.
Germany	Each year the Budget Law specifies (Haushaltsgesetz 1998-99-2000§ 2 Abs. 6) the ceiling for the swap program. There is no explicit limit on the kind of swap to be done. In the future, the Agency will specify a range for each instrument. Special authorization will be required from the steering committee of the Ministry of Finance (to be established) to deviate from the range. In theory, all instruments could be used.
Ireland	The debt agency can engage in financial transactions of a "normal banking nature". The understanding within the agency is that there is no use for options.
Italy	"The Ministry of the Treasury, considering market conditions, can restructure the domestic and foreign public debt through changes of maturity operations, exchange or substitution with bonds of different types, or other operational instruments used in practice by financial markets". Source: unofficial translation of Law n. 662, art. 2, point 165, December 13, 1996.
Netherlands	The IRS program was presented to the Parliament with no intention to do currency swaps. The Ministry of Finance authorized IRSs only, and a note was included in the budget memorandum. As it is intended for portfolio management and not for trading, there is an implicit quantitative restriction of EUR 2.5 billion for 2001, given the projected EUR 20 billion borrowing requirement. If the borrowing requirement were to increase, the state agency would have to renew authorization from the Ministry of Finance. In future years, the intended use of IRSs will be part of the annual financing plan approved by the Ministry every December.
Portugal	The Portuguese debt management agency (IGCP) is allowed to do swaps with maturity longer than ten years, but only with counterparts in group 1 (top tier). IGCP can deal in forwards, swaps and over-the-counter options where the underlying contract can be foreign currency or interest rates. The technical guidelines, however, ask the debt office not to deal in derivatives that have as underlying equity or commodity indexes. The principle is that the agency must have an understanding of the risks involved.
Spain	General Budgetary Law, art. 104.5 empowers the Spanish ministry to do swaps with no restrictions. The authority is delegated to the General Director of the Treasury each year. For foreign currency exposure, there are no concrete regulations. There is a broad legal framework that says basically that all operations with internationally-accepted clauses are permissible. No other instruments are allowed.
Sweden	There are no external constraints on derivatives transactions that can be undertaken. Tailored transactions are discouraged because appropriate risk-control instruments (monitoring and accounting) are not available. As transactions are usually swaps in foreign currency, the only 'externally imposed' limits are the ones related to the benchmark in terms of the foreign gross borrowing requirement. The SNDO's board guidelines require only that certain kinds of exotic options be avoided. Currency options are undertaken, but not more sophisticated transactions due to the system's technological limitations.
United Kingdom	None.

Table 2.15 - External limits on derivative transactions

fulfill uniform euro zone-wide eligibility criteria specified by the ECB. Tier 2 assets are additional assets, marketable and non-marketable, for which eligibility criteria are established by the national central banks and are subject to minimum eligibility criteria established by the ECB. Tier 1 assets are being used by the ECB.

Tier 2 assets are used by national central banks together with the group of Tier 1 assets, as they are of "particular relevance for their national financial markets and banking systems."⁴¹

⁴¹ An Italian national central banker told the author that one of the most positive aspects of this derivative activity (with rating requirements for counterparts) would be to stimulate the ratings business in Italy, as the Bank of Italy will require corporate assets as collateral. Italy is a country where the adoption of ratings still lags behind.

Section 6.4 deals with 'risk control measures' such as specifying margins, haircuts and the period of valuation of exposure.

Such coordination by a central authority has the benefit of setting clear and transparent (albeit not too stringent) rules for risk management in all national central banks. It is worth considering whether the European Commission ("the Commission") should promote this type of coordination in public debt management, and whether similar minimum common standards for counterparty risk management should be required in the euro zone⁴².

Debt offices' management of counterparty risk is not necessarily innovative. It follows, by and large, credit-risk management practices in the private sector. Techniques such as peak exposure (see sub-section 2.2.c)⁴³ are starting to be implemented only now in some countries. Collateral agreements do not yet require daily margin requirements and, sometimes, not even daily mark-to-market requirements. However, it is certain that most governments are following market trends with great care and eagerness to adopt high standards. The private sector itself faces tough

hurdles in terms of proper credit-risk management and has to deal with the weaknesses of its assumptions or its procedures on occasion⁴⁴.

If these derivative programs are to be expanded substantially in the future, as it would appear they are from the analysis in Chapter 1, a possible limit that governments face in the management of counterparty risk is the lack of skilled personnel currently dedicated to the task. As the IMF reports, "major dealers employ teams of highly-skilled quantitative analysts to study and manage" the relationship of the price of the derivative to the price of the underlying security and to related hedging instruments⁴⁵. By and large, it is true that most governments use highly standardized products like interest rate swaps, whose risks are largely well understood, but it is not clear whether the limited amount of resources that governments make available to debt managers is always sufficient to cover their operating needs. Market makers that the author has met seem to confirm this view: "Debt managers do not do anything in terms of operational risk and risk management with respect to a bank, and this is because of bureaucracy and of the costs of these systems, which are quite expensive," said one. "Governments might have financing programs that are much larger than banks, but they are not equipped like banks. They do not have the human resources to do it and to handle risk," said another in a separate meeting. The capacity to hire well-paid financial market professionals, which would be impossible in an institution that has limited

⁴² Coordination of public debt management policies constitute a much better approach rather than the unrealistic and possibly unsound desire to move toward a single debt management agency in the euro zone. See Favero, Missale and Piga (2000).

A debt manager reading this paragraph strongly disagreed. He argued: "Debt policy, being part of fiscal policy, is subject to subsidiarity...The Commission, thus, has no legal basis for setting standards for counterparty risk management, just as it has no legal basis for determining the appropriate amount of portfolio risk; e.g., in terms of foreign currency exposure of an EU member state. And if they had such a say, it is far from obvious that standardizing counterparty risk management should be given priority over portfolio risk considerations. I know of no major losses due to counterparty risks among sovereign borrowers, but big swings in costs and debt levels have resulted from changes in foreign exchange rates. Apart from being incompatible with the Treaty, this conclusion seems to give excessive importance to counterparty risks and to derivatives." Whilst he might have a point, we do not suggest 'standardization' of counterparty risk but a minimum level of requirements - that the next section and the next chapters show are very much needed.

⁴³ These are possibly the most advanced techniques in the debt management offices the author visited.

⁴⁴ Schinasi et al. (2000) suggest that, in financial markets, "market risks in OTC derivatives are managed...given a host of simplifying assumptions...Credit risk - particularly the risk of 'tail events' - requires a more refined approach, and a portfolio approach to counterparty risk remains elusive... Models of derivatives prices may be misspecified, may be miscoded in management information systems, or may break down unexpectedly; this is model risk." pp.24-25.

⁴⁵ Ibid, p.25.

diversity in its salary structure, is an important reason to create a debt management agency and to abandon the institutional structure that keeps debt managers within treasuries or ministries of finance.

Having said this, given the economic constraints that governments generally put on hiring processes (in an agency or in a ministry), the issue of appropriate transparency and accurate reporting of derivative operations becomes critical. The next section analyzes how sovereign borrowers attempt to accomplish this, and whether enough is being done to assure sound management of the public debt in this field.

2.3 Managing counterpart risk: disclosure

2.3.a The role of disclosure

When governments first decided to enter OTC markets, they might not have been aware of what they were getting into. By now, they certainly know. Here is how Schinasi et al. (2000) describes OTC markets⁴⁶:

“Compared with exchange-traded derivative markets, OTC derivative markets have the following features: Management of counterparty (credit) risk is decentralized and located within individual institutions; there are no formal centralized limits on individual positions, leverage, or margining; there are no formal rules for risk-and burden-sharing; and there are no formal rules or mechanisms for ensuring market stability and integrity or for safeguarding the collective interests of market participants...Transparency is generally limited as well. Except for semi-annual central bank surveys, market participants do not report outstanding positions or prices for aggregation

or dissemination...This lack of transparency enabled LTCM to build up outsized positions during 1997 and 1998.”

Mechanisms in the private sector might exist alongside the light regulation to facilitate the smooth functioning of OTC markets. To reinforce this point, it is important that we quote again from Schinasi et al. (2000):

“Market discipline, provided by *shareholders* and creditors, promotes market stability by rewarding financial institutions based on their performance and creditworthiness ... Market discipline may operate through share price movements, by constraining the supply of credit, or through the willingness to do business through counterparty relationships. Market discipline in financial markets rests on two key elements: Investors’ ability to accurately assess a firm’s financial condition (‘monitoring’) and the responsiveness of the firm’s management to investor feedback (‘influence’). Institutions mark their trading books to market *daily* so that unprofitable decisions and poor risk management can be reflected immediately in measured performance (profits and losses). This informs senior management *and, through disclosure, financial stakeholders* ... In OTC derivative markets, special obstacles for effective market discipline (both ‘monitoring’ and ‘influence’) tend to be related to *information disclosure - one of the fundamental preconditions for effective market discipline*,”⁴⁷ [emphasis added].

While this description might be too optimistic about market discipline, it does sound a clear warning on what is needed as a necessary precondition to discourage unsound

⁴⁶ Ibid, pp.18-19.

⁴⁷ Ibid, pp.19-20.

risk management practices. It should resound in debt offices for sovereign borrowers with even greater urgency because:

- The link between shareholders (taxpayers) and debt managers is very tenuous. This reduces 'influence' and, therefore, the effectiveness of discipline for a given level of monitoring.
- The link between counterparts and debt managers is very strong. Large market makers undertake many activities with governments and often have knowledge of the sometimes inappropriate accounting some debt offices perform with derivative activities (see Chapter 4). This situation might actually reduce the level of influence for a given level of monitoring if other interests are at stake besides derivative activities. It could also lead to an overextension of credit to the sovereign borrower or to its counterpart beyond what would normally be considered a 'sound' level of credit.
- Monitoring by senior management in debt offices could be made weaker because debt managers often do not mark-to-market their portfolio on a daily basis.
- Monitoring might be even more relevant for a debt office than for a large financial institution since the technical skills available to the former are limited by bureaucracy and budget constraints.

A caveat, however, is in order. It is important to avoid measures that would make

it impossible for governments to conduct derivative activity when implementing reforms to foster efficient credit-risk management within public debt management. Certainly, a positive step would be to move toward debt agencies that can put appropriate resources in place, both technical and human. Aside from this, market discipline requires disclosure as a necessary condition. With weak taxpayer-monitoring, weak incentives to monitor by counterparts and (possibly) weak awareness by senior management in debt offices, disclosure might be even more important than for the private sector.

2.3.b Why is there so little disclosure on derivatives by public debt managers?

Most of the information gathered in sections 2.1 and 2.2 comes from the author's interviews with debt managers. However, the countries from which the author has gathered the most information (Canada and Denmark) are also the countries that publish most of the information on their use of derivatives, indicating that the lack of disclosure by other countries is not a random occurrence⁴⁸. A civil servant from a debt management office that prides itself on its transparency told the author that "transparency does not have such a large virtue in the swap market as it has for funding in the primary market."

It is hard to pinpoint a reason for the lack of public disclosure on derivative activity. On the one hand, some countries might avoid it, fearing that supervision by accounting

⁴⁸ There is a difference between how information is presented in Canada and Denmark. Denmark's information is very thorough and is meant to illustrate the principles of the use of swaps. It is, however, mostly gathered from the 1998 annual report and some from the 1999 annual report. Not all information seems to be of a regular nature, as the Danish report has a monographic style that dedicates space to one or more new topics each year. Canada, while being more parsimonious in its rationale for the use of swaps, publishes the same statistics regularly, thus allowing comparisons to be made more easily over a period of years.

authorities will be more thoroughly enforced (probably so!) and might disrupt derivative activities undertaken for ‘window-dressing’ purposes (see Chapters 3 and 4). However, this is certainly not a definitive explanation for all countries, and even countries that do swaps for window-dressing might genuinely oppose disclosure for other reasons. For example, there is significant resistance to releasing the names of the counterparts involved in a transaction. Some debt managers argue that this would be equivalent to releasing the names of bidders in an auction, although the issues involved are not similar because, in the case of an auction, the government does not face counterpart risk (except for the limited period until settlement).

There is certainly a rationale for why it might be desirable for governments to *delay* the release of information. If information were not to be delayed, market makers would take advantage of that information either against the government or against specific counterparts known to conduct transactions with governments. In Germany, the announcement of a very large swap program, and the possible lack of coordination between the various entities that have a say in Germany’s debt management, led to an increase in spreads. One debt manager told the author that “we are scared of front-running. We prefer to keep people guessing.” And, after all, this is not a unique situation. Monetary authorities keep their trading very secret by not announcing their operations and, while market makers can sense central bank activity, it is not made obvious to them. More than one debt manager cited the failure of the German swap program (described in the previous chapter) as proof of the misgivings one should have over being too forthcoming on current operations. Similar reservations were shared by people working in a large market-making institution. Commenting

on the upcoming French launch of a derivative program, a trader told the author:

“If the French were to start a big program in euro, then the French authorities could be hurt by transparency. We could reconstruct their positions, and if they are exposed to floating-rate note exposure, we will know when they want to unwind, and we will turn against them. We would advise the French not to do it...The derivative market is an incestuous market: Three different houses dominate, and their dealers talk to each other every day and have a drink at night together.”

⁴⁹

Not all countries share this fear. Denmark publishes the names of its counterparts in foreign currency derivative transactions, and Danish officials suggested that were they to have entered into the euro zone, they would have published the names of their counterparts even in domestic (euro) IRSs⁵⁰. However, an important market maker told the author that “Danes are satisfying their ‘ego of transparency’, but in the market no one cares about the Danes while everybody cares about what the French do.”

As we will soon see, the kind of disclosure that supranational bodies and regulators require from private firms regarding their derivative activity is, for the most part, not

⁴⁹ This extreme concentration of the swap markets is true and rather astonishing. The Schinasi et al. report claims that “in the second quarter of 2000, seven US banks held over 95% of the US banking system’s notional derivatives exposure,” Schinasi et al. (2000, p.12). This is reflected in sovereign borrowers’ activity with derivatives. In one country that gave the author access to the data, the government’s level of exposure at a certain date in 2000 saw 60% of the market value exposure with four counterparts and 50% of potential exposure with four counterparts (not necessarily the same ones). Similarly, at a certain point in 1997, the exposure of a large country with the four largest counterparts was 60% of the overall exposure.

⁵⁰ The author met with Danish central bank officials the day before the referendum. This was useful, as we could still speculate on the different scenarios of their derivative activity depending on whether or not they would enter into the euro zone. The author thanks the Danish authorities for finding time to meet on such a busy day.

focused on mandating counterparts to release the program of activity during a given year, or disclosing information without delay⁵¹. Rather, this disclosure is focused on providing *ex post* information on operations undertaken in a given year and disclosing general principles of credit-risk management.

Other debt managers have mentioned counterparts' opposition and annoyance in having their names released in public statistics as a reason to refrain from disclosure. All market makers would agree on the necessity of providing confidentiality on swap transactions at the time the deal is negotiated and struck. But besides the fact that disclosure recommendations by regulators explicitly rule out counterpart identity from necessary disclosure (see sub-section 2.3.d), it is not clear that all market makers would resent seeing their name in synthetic, *ex post* indicators of a sovereign borrower's performance with respect to financial derivatives. A person working for a large market-making institution told the author that the leading market makers might oppose the publication of statistics on counterpart risk management for very good reasons. "Because they fear that once the public is made aware of their large share in the business with governments, there would be political pressure on sovereign borrowers to increase the diversification of their counterparts." The same market maker stated that he would not at all mind seeing the name of his company in global year-end statistics by governments so that "people would realize that we are much more competitive in the swap business than what is generally believed. Indeed, there are quite a number of corporates that mention the name of their counterparts in their financial

statements." Why is Denmark the only country to release information on the identities of its counterparts for foreign currency transactions? An interesting answer was given to the author by a debt manager in a country where counterparts are all primary dealers: "There is a reason why debt managers do not show their counterpart exposure; it has to do with the fact we do not want to make some primary dealer jealous when he sees that we give more business to others. Since Danes have no primary dealer system, they have no problem in publishing them."

Another point raised by debt managers is that market makers like 'opacity,' as they derive an advantage from being the only ones to see the values of the sovereign cash flows⁵². Large financial institutions are often organized in a derivative group and a product group. The derivative group only talks to clients such as governments and is separated by a Chinese wall from the product group that deals with market makers with big swap books. By doing so, the firm avoids a situation in which the trader takes positions in the market knowing that a big player like a government is entering the market. In this case, the benefits of 'opacity' would be reduced.

There might be one additional reason for the debt manager's resistance to publishing information on exposure and deals: Fear that their stance might be taken as signaling. This was one of the reasons why a central bank in the 1980s prohibited a debt manager from entering into a currency swap to create a synthetic domestic liability from an original foreign currency issue. The central bank had been bullish on the prospects of the national currency and wanted to avoid subscribing to a

⁵¹ These announcements are, instead, more useful in funding strategies to establish credibility in commitments to build large-sized benchmarks. See Piga (1998).

⁵² Actually, this is one of the key characteristics of OTC markets. Schinasi et al. (2000) p.48, in describing one of the ten key features of such markets, argues that "OTC derivative activities are relatively opaque."

'pessimistic' stance. On the other hand, the pessimistic stance of the debt manager might simply have been one of cautious hedging of exchange rate volatility. There might also have been political reasons. If statistics show that a country is taking a 'pessimistic' stance on its own currency with its derivative activity, it might not go down well with politicians. However, these are issues present even in funding policies, and it is hard to see why debt managers should be less transparent and more secretive with derivatives than with ordinary funding policies⁵³.

Secrecy is not only related to the counterparts' names. Most governments do not even disclose year-end statistics. The exception is foreign currency derivatives whose net market value is now required to be posted in the IMF Data Dissemination Project in the 'International Currency Reserves and Liquidity' section on the IMF web site⁵⁴.

2.3.c The European Commission and the Bank for International Settlements Recommendations

Does it matter that disclosure of derivative activity by governments is so poor? The answer seems to be yes. A key part of counterpart risk management has to do with how derivative activity is disclosed. This is confirmed by both the BIS and the European Commission. The former recently published the *Recommendations for Public Disclosure of Trading and Derivative Activities of Banks and Securities Firms*⁵⁵ (the "BIS Recommendations") while the latter published the *Commission Recommendation of 23 June 2000 concerning disclosure of information on financial*

instruments and other items complementing the disclosure required according to Council Directive 86/635/EEC on the annual accounts and consolidated accounts of banks and other financial institutions (the "Commission Recommendations")⁵⁶.

The two recommendations concern banks and other financial institutions. Would it be fair to apply them to governments as well? A central bank official told the author that "it would be an unfair double standard if governments were to impose on financial institutions rules of disclosure that would not apply to governments over the same issues." A caveat is in order. Before agreeing fully with this official, one would have to make sure that such regulation is indeed appropriate if applied to debt management offices, as these offices are institutions of a different nature from private sector financial institutions.

The BIS Recommendations are based on the premise that:

"Meaningful and accurate information reported in a timely manner provides an important foundation for the decisions of market participants. Well informed investors, depositors, customers and creditors can impose strong market discipline on an institution to manage its activities and risk exposures in a manner that is both prudent and consistent with its stated business objectives." (BIS, Executive Summary)

If it were not for the word "business", which one could replace with the word "policy", no one would object to the relevance of such a statement for a public debt manager.

⁵³ The issue of signaling, however, reminds us of the usefulness for governments to state clearly in their guidelines the purposes of their operations. In this way, the public, the auditors or the parliament (and even accountants) can clearly distinguish a speculative (beat-the-market) position from a strategic one.

⁵⁴ Available at <http://dsbb.imf.org/ediscird.htm>.

⁵⁵ Basel Committee Publications. No. 60, October 1999.

⁵⁶ European Union *Official Journal*, L 154, June 27, 2000, pp.0036-0041. Other documents, e.g. the International Accounting Standard Directive n. 32, deal with the issue of disclosure of derivative activity, but they relate more to accounting disclosure and, as such, will be dealt with in the next chapters.

The belief that governments should behave 'prudently' is even more valid than for private sector entities, as taxpayers have more limited power to monitor risk management by debt managers than shareholders have for monitoring risk management in the private sector. Mechanisms to ensure the accountability of public debt officers are also less successful than the ones in place in the private sector. Similarly, the BIS Recommendations stress that "enhanced transparency...[reduces] the likelihood that [banks and securities firms] become susceptible to market rumors and misunderstandings during periods of financial stress." This reminds us of incidents of government mismanagement where such transparency did not exist⁵⁷.

The Commission Recommendations also adds several arguments that apply to governments, possibly even more strongly than for private counterparts:

"Due to banks' and other financial institutions' pivotal role in financial markets and in the overall monetary and economic system, enhanced disclosure of information on activities relating to financial instruments and other similar instruments appears to be particularly desirable for these institutions...Due to the enormous increase in these institutions' activities relating to such instruments, regarding notably derivative instruments...disclosure of additional information complementing the limited disclosure required under the Directive is considered necessary," (EC text, point (3)).

Since governments share at least an equally pivotal role in financial markets and in the overall monetary and economic system, and

since governments are certainly large participants in the derivatives market, these disclosure rules should apply to public debt managers as well.

All of the above suggests that one should look more closely into the recommendations by the BIS and the Commission in order to determine whether they can be applied to sovereign debt managers in a reasonable manner.

2.3.d Disclosing quantitative information

The BIS recommends that institutions:

"...disclose meaningful summary information, both qualitative and quantitative, on the scope and nature of their trading and derivatives activities and illustrate how these activities contribute to their earning profile...[financial institutions] should also disclose information on the major risks associated with their trading and derivatives activities and their performance in managing these risks... Institutions should disclose information produced by their internal risk measurement and management systems on their risk exposures and their actual performance in managing these exposures." (BIS, Executive Summary)

Summary information recommended by BIS is "related to the composition of trading portfolios...and the use of derivatives for non-trading activities. Such information could include the end-of-period notional amounts and end-of-period and average market values of major categories of...derivative instruments... Information on market activity should be provided by broad risk category [interest rate, exchange rate] by broad instruments [futures, forwards, swaps and options] and by repricing

⁵⁷ See, for example, several reports in the press during the fall and winter of 1999 of the Credit Suisse First Boston and Ukrainian Central Bank interaction in 1997 and 1998.

date (e.g., maturity bands of one year or less, over one year to five years and over five years),” (BIS, 41).

As we said in sub-section 2.2.e, the IMF now requires all countries to provide information on their foreign currency net marked-to-market derivatives. The requirement seems not to be aimed at learning about the general derivative activity of public debt managers who make large use of domestic instruments but more to monitor the status of international liquidity, especially that of central banks. End-of-period notional amounts are furnished in Austria in the annual document, *Finanzschuldenbericht*, together with the currency shares of public debt before and after swaps. Ireland reports the total value of the notional amount for interest rate and currency swaps and foreign currency contracts without mentioning the maturity of those contracts. Market values broken down by foreign and domestic currency are also reported. In its annual report, Portugal mentions the amount of the notional transacted during the year divided by currency and domestic swaps, but it does not mention the level of the stock of the outstanding swaps. In Canada and Denmark, all outstanding notional amounts are included in tables at the end of the annual report together with the type of swap and its maturity.

The experience of Canada and Denmark demonstrates that disclosure comes at little additional cost. The author was told by a debt manager who frequently traded derivatives that there is a reason for publishing all of the swap transactions in the annual report. The rationale for this would be to “avoid the issue of investors thinking we hide it because we have something to hide.” This seems very similar to the statement by the BIS that “enhanced transparency...[reduces] the likelihood that

[banks and securities firms] become susceptible to market rumors.”

Additional summary statistics for public debt managers would also be needed. There are three disclosures that would clarify the relevance of the swap program undertaken by debt managers:

i) The share of public debt in foreign currency, before and after swaps, so as to gather a first proxy of the derivative activity aiming at changing currency exposure to the domestic currency. As of now, only in Austria, Denmark and Sweden can such information be gathered from public documents.

ii) The composition of the public debt in currencies, before and after swaps, so as to gather a first proxy of the derivative activity aimed at achieving the optimal portfolio allocation across currencies. As of now, only Austria and Denmark publish such statistics⁵⁸.

iii) The duration of the public debt in foreign and domestic currency before and after swaps so as to gather a first proxy of the derivative activity aimed at achieving the optimal interest rate exposure. No country publishes this statistic.

The BIS document does not require disclosure of “information that is confidential” (e.g., information identifying individual counterparts). Furthermore, it does not suggest disclosure of detailed information of a proprietary nature (e.g., model techniques and correlation assumptions) if such information could have a materially adverse effect on the institution’s business activities. It is, indeed, not essential for governments to provide public statistics regarding counterpart names (as Denmark does) even with a delay of a year.

The amount of information should also

⁵⁸ Sweden publishes the foreign currency composition of debt before swaps and the benchmark composition, which is slightly different from the actual composition of foreign currency debt after swaps.

be proportional to the importance of the activity in relation to the institution's overall business, risk profile and earnings. The Commission Recommendations stress that financial statements should not be overburdened with information, and the costs of providing information should be limited. The statistics we recommend are synthetic indicators or tables that can be summarized in one page (see Canada and Denmark's annual reports). This type of information could be produced with limited cost for debt managers and would not overcomplicate the reports of the sovereign borrower.

First recommendation for disclosure

Sovereign debt managers should list in a table of their annual report the notional amount of their year-end outstanding financial derivative transactions, divided by type of operation and maturity⁵⁹. They should also provide duration and debt currency composition pre- and post-swap. No mention of counterparts is necessary.

2.3.e Disclosing qualitative information

As for qualitative information, the Commission Recommendations suggest disclosure "in the annual report of the institutions' risk management objectives and strategies reflecting its use of instruments within the context of its overall business objectives," (Annex, 3.2). BIS Recommendations stress that "management should...describe the principal internal control procedures that are in place for managing trading and derivative activities...Institutions should provide an overview of key aspects of the organizational structure central to the institution's risk

management," (BIS, 22, 26).

While debt managers are by now generally forthcoming as to their goals and strategies (see Chapter 1), the specific methods for control and organization of risk management procedures (even if in place) are not shared with the public⁶⁰. Consequently, what they do report might be unclear regarding the intensity and quality of control and risk management structures. Take the example of Ireland's agency, which claims that, for derivatives, the "management of risk [is] a central and critical element of the Agency's business. The principal categories of risk arising from the Agency's activities are liquidity risk, market risk, counterpart credit risk and operational risk. In all of these areas the Agency has comprehensive policies and procedures to measure and control the risk involved."⁶¹ While this is perhaps reassuring, this statement falls short of providing relevant information to the public⁶². Even Denmark's 1998 annual report says little about control procedures and organizational structure.

The disclosure of control procedures and organizational structure is an important matter that is frequently overlooked, particularly in light of the limitations on human capital and technical expertise available in debt management offices. The inadequacy of this type of information raises concern and makes the BIS and the Commission Recommendations all the more relevant for sovereign borrowers. On the one hand, this suggests another reason to switch to a debt management agency, as agencies are usually more capable of hiring sophisticated market makers and IT experts,

⁶⁰ Sometimes, however, they are shared with the counterparts, as these often offer advice on systems and methods!

⁶¹ NTMA *Annual Report* (1999), p.65.

⁶² It is, however, more than what can be found in most other annual reports of sovereign debt managers regarding the operational management of risk.

⁵⁹ This could be a problem for Germany and Italy which do not yet have an annual report. However, they could use their monthly bulletin or their web site.

thanks to a more flexible compensation schedule. Agencies can also bypass red tape typical (albeit not ubiquitous) in ministries. Agencies can handle operational risk in a more sophisticated way than debt managers working in ministries. Ireland has, for example, Chinese walls “segregating the duties between dealing, processing, payments and reporting.”⁶³

On the other hand, all debt managers (even those belonging to agencies) are well aware of the economic and personnel limitations that they face. Often they refrain from handling derivative operations for which the embedded risk is difficult to manage. A debt manager told the author that “we also do currency options but not too sophisticated ones. The system can only take the first generation ones. The ‘fade-in; fade-out’ or ‘knock-in; knock-out’ are too sophisticated. Risk management believes that transaction costs to put them in the system are too high.” Once again, the sort of wise, prudential attitude that requires the debt manager to act within acceptable constraints is more likely to exist in an agency. There, the agency’s supervisory board, usually comprised of people with good judgement and substantial experience, moderates possible excessive risk-taking activity by debt managers. Where there is no board in place (as it often occurs in ministries), risk management must rely on internal, self-imposed restraint, and excessive risk taking might occur.

Second recommendation for disclosure

Sovereign debt managers should specify the objectives they intend to achieve through their derivative activities separately from their general debt management objectives, and they should specify how they intend to be coherent

with the latter. In their annual report, debt managers should detail the organizational structure and the type of systems available within the public debt management risk management unit.

2.3.f Credit-risk management

The BIS recommends that “an institution should address its limit policies for exposures to market and credit risks and explain how value-at-risk measures are used to manage risk and, where relevant, credit risk,” (BIS, 26). Only Denmark specifies its limit policies (maximum loss) for exposure, and, even then, no explanation is given as to why such maximum ceilings are chosen. The Commission recommends that “information on the maximum credit risk exposure should be complemented by information on the potential credit risk exposure taking into account collateral and other netting agreements,” (Annex, 5.1). Many governments, like those of Denmark, Ireland and Portugal, provide information on the market value of the swap book but, as in Ireland and Portugal, no maximum exposure information is given. Therefore, the statistics are of limited usefulness for investors. Furthermore, exposure according to the rating of the counterpart is only provided in Canada and Denmark.

The remaining requirements for financial institutions set by the BIS and the Commission, while easily justifiable for debt managers, are largely ignored by most of them. “Information should be disclosed on significant concentration of credit risk,” (Commission Annex, 5.2). We are not aware of any disclosure regarding specific concentrations of risk with any given counterpart by any debt manager. “Information on credit exposure should be given by maturity band,” (BIS, 47). No such information is

⁶³ NTMA *Annual Report* (1999), p. 65.

provided by any sovereign borrower. "Institutions should disclose information on the effect of credit enhancements on their counterpart risk exposure...if these enhancements materially reduce the level of credit risk...If the institution uses collateral or guarantees to reduce counterpart credit exposure, the impact on credit exposures should be disclosed," (BIS, 48). Canada, Denmark and Portugal make an effort to establish some relevant information. For example, Portugal in its 1999 annual report states that "the credit risk of the derivative portfolio increased during the year, mainly on account of the rise in its market value [current exposure]. Nevertheless, the total credit risk figure by year-end accounts for only 40% of the allowed limit and all the individual counterpart's credit risk limits were respected."⁶⁴

The BIS recommends that "an institution should disclose aggregate information on counterparty credit quality by internal/external credit rating," (BIS, 49). Tables of exposure according to rating - offered only by Canada and Denmark - are a first indication of concentration of risk. The BIS further states that "institutions are encouraged to disclose information on how trading activities affect earnings," (BIS, 55). Sweden is one of the few countries to state clearly the benefits of derivative activity: "Kronor foreign currency swaps are estimated to have yielded savings in 1999 of SEK 1.2 billion compared with costs for similar borrowing in the capital market." By this definition, an opportunity cost measure is adopted to measure savings. At times, using this definition of savings, the calculation might not be possible if no benchmark exists. This was the case in 2000 when Sweden stopped issuing

in euro through the international capital markets, and was left without a comparable benchmark for its swap transactions. Other countries might measure savings as the net difference of interest flows arising from a swap. One gets this government savings figure by calculating derivative interest flows (usually reported in a special chapter of the budget) and netting it from interest expenditure. This measure, however, does not take into account the fact that governments have attempted through swaps to reach a certain duration or goal that would have been achieved in a different way without swaps. For example, if a government wants to issue at the short end of the curve, it could do so by issuing a floating-rate bond that would have a cost of EUR 10 or by swapping a fixed-income bond that would have a cost of EUR 15 into a floating-rate liability that would have a cost of EUR 9.5. In terms of opportunity costs, the saving would be EUR 0.5. In terms of the second definition of savings they amount to EUR 5.5⁶⁵.

Generally, it is not easy to define savings from derivative activities. If a debt manager through an interest rate swap switches from a fixed-rate exposure (arising from the issuance of a fixed-income bond) to a floating-rate one, and floating rates decline faster than expected, the government obtains an unexpected gain. However, this gain could have been obtained by simply issuing a floating-rate note instead of a domestic fixed-income bond. In reality, the true net gain of the swap is reflected in the *ex post* differential between the cost of the synthetic liability and a benchmark liability that provides similar exposure for the period under consideration. Arguing that the swap has allowed savings equal to the reduced interest expenditure (compared to the fixed-income

⁶⁴ IGCP *Annual Report* (1999), p.50.

⁶⁵ This is true in the absence of a swap spread.

liability) neglects to state that, in all likelihood, the sovereign debt manager did not intend to be exposed to a long-term rate in the first place. After all, the government is not required to state the savings it obtains when it issues a floating-rate note instead of a fixed-rate note.

This logic is still valid for a cross-currency swap. If a euro zone government issues in yen and then swaps back its liability to pay Euribor, what are the savings obtained from this transaction? Are they the difference between the payments in yen and the floating payments in euro, or the difference between the Euribor payments in the swap deal and the payments the sovereign borrower could have had by directly issuing a floating-rate note? It seems clear that the relevant concept of savings is the latter one. However, it is not a concept used in national accounting and, therefore, it will almost certainly not find a place in any chapter of the public budget⁶⁶.

Other reports contain additional relevant recommendations for disclosure by debt managers. The US Securities and Exchange Commission (SEC) *'Market Risk' disclosure rule* requires "a sensitivity analysis of a hypothetical loss in earnings, fair values or cash flows due to a reasonable possible near term change from current interest rates, foreign exchange rates, commodity prices, and other market rate or price changes."⁶⁷ This sensitivity analysis was provided (see Table 2.11) by the Danish annual report for currencies and parallel yield curve movements. It would represent a correct step for any government that handles risk to look at

interest rate risk in any one of its interest rate definitions⁶⁸. It should be noted that derivatives should also be included in sensitivity analyses that deal with the whole portfolio. However, it is still worth isolating derivatives for sensitivity analyses to monitor potential exposure for credit-risk management.

So far we have only been talking about the management of positive exposures for credit risk considerations and its disclosure. However, negative (current and potential) exposures, while not representing a large credit risk for the sovereign borrower, are still an indicator of the *ex post* rise in debt costs owing to the strategy of the debt manager. Such extra costs might have been incurred in any event by issuing funding instruments that would have given similar exposure to the government. They might have been incurred after taking an *ex ante* optimal position in terms of risk and expected cost. Nonetheless, governments should identify the major causes for the negative exposures that have arisen in a given budget year (e.g., an unexpected change in domestic interest rates, an unexpected change in the euro/dollar rate, etc.) so as to ensure the transparency of operations and the accountability of debt managers.

Third recommendation for disclosure

Sovereign debt managers should publish comprehensive statistics on their handling of credit and market risk of derivatives. These should include:

a) A ceiling established for each credit rating category, with an explanation as to the grounds for choosing this ceiling and its implications for the expected cost of debt;

⁶⁶ Things get even more complicated when one realizes that, in some countries where derivative activity is rather aggressive for portfolio considerations, the notion of savings has to be compared with a different benchmark. Sweden, as illustrated in Chapter 1, manages to achieve these comparisons by the simultaneous presence of a benchmark and of alternative, private debt managers that handle the same risk and portfolio constraints as the active debt manager.

⁶⁷ What follows is extracted from the BIS Recommendations themselves, which mention other disclosure initiatives in point 16.

⁶⁸ Governments in the future might turn more toward models of budget smoothing. If this is the case, then those sensitivity analyses should be capable of handling the effects of these variables, not only over interest expenditure but over all the components of the budget.

b) the limitation for each maturity and currency of counterparts according to their rating;

c) the market value of exposure for each class of rating;

d) potential exposure for each class of rating together with a clear explanation of how potential exposure is calculated;

e) concentration of notional amounts for each counterpart;

f) the savings that have been obtained by resorting to derivatives based on the debt manager's goals and strategies. Comments on the reason why negative exposures have arisen in derivative management would also be useful; and

g) the sensitivity of the market value of the derivative book to changes in key interest and exchange rates.

As stated previously, the BIS and the Commission stress that the cost of disclosure should be low in order to prevent financial institutions from becoming overburdened. Disclosure by sovereign borrowers should also be proportionate to the level of derivative activities. It should be pointed out that, in their annual reports, the Danish authorities have been following these recommendations by the book, even if they were not aimed at sovereign borrowers. Doing so took up little more than 10% of their annual report in 1998 (18 pages out of 151), and 3% in 1999, after having established the principles in the previous edition. In addition, the Danish government published 13 pages of tables for all transactions still outstanding. This is an amount that could be easily reduced with synthetic and transparent tables.

The role that a standardized framework for disclosure could play must be vigorously stressed. Once again, at least for the euro zone,

the European Commission could play an active role in setting up a common set of disclosure rules for the European Union member countries. As a minimum step, the IMF Data Template initiative could be extended to other sensitive indicators for the use of derivatives in public debt management. Disclosure could result in a virtuous circle if it is backed appropriately by legislation that clearly mandates what debt managers should publish. The debt manager will enjoy protection from criticism, as a regulatory framework approved at the highest legislative level will exist for appropriate counterpart risk management. At the same time, the taxpayer will be protected from an incompetent or excessively risk-prone debt manager, as an appropriate system of checks and balances will have been established.

A higher level of disclosure by governments might also have a positive impact on disclosure by private counterparts. Schinasi et al. (2001) argue that "the public sector has a strong role to play in providing incentives for greater disclosure to the markets."⁶⁹ It would greatly benefit the public sector if it were to lead the way by providing the right example. After all, would not the credibility of disclosure-enhancing recommendations by supranational entities be strongly increased by a public sector that was adopting such recommendations?

In the absence of a non-intrusive set of requirements by the Commission or the IMF, governments should reconsider the 'small' effort by the Danish central bank: "Danes are satisfying their 'ego of transparency,' but in the market no one cares about the Danes," said an important market maker. This might be so. However, Danish citizens, taxpayers and authorities might be proud of their 'ego of transparency.' This is especially true since other

⁶⁹ Schinasi et al. (2000), p.57.

risks, such as those related to accounting, lurk on the horizon, and transparency might be the best way to reduce these risks.

CHAPTER 3: THE REFORM OF THE NATIONAL ACCOUNTING OF FINANCIAL DERIVATIVES AND THE ROLE PLAYED BY SOVEREIGN BORROWERS

3.1 Regulating the accounting of financial derivatives: An introduction to the controversy

3.1.a Ensuring stability in Europe

Fall 1996. There was great ferment in the European Union (EU). Fall is the season when most member countries debate the budget for the coming year in open sessions of parliament. The budget discussion usually represents the highest point of the annual legislative process. The level of public revenue and the level of public expenditure for the coming year are set, and lobbies in each country (trade unions, entrepreneurs, taxpayers, bondholders, etc.) frantically try to influence the process by introducing key words into the budget laws that facilitate favorable treatment by executive and legislative powers.

But in the fall of 1996, emotions ran higher than usual in the halls of the parliaments of most European Union countries. At this time, the budget law had acquired an additional and special meaning, as it was the budget law that set the desired budget balances for 1997 and the public debt level at the end of 1997. These represented the year-end numbers that would seal the fate of any country that would aspire to become a member of European economic and monetary union. Indeed, it was these numbers that determined whether a country would be part of, or excluded from, the adoption of the European single currency starting on January 1, 1999. By the end of 1997, any country that wished to be part of EMU would have to show that it met several criteria set by the 1991

Maastricht Treaty - the economic constitution of the new European single currency area. While the criteria included the convergence of inflation and long-term interest rates to the level of the three best performers, it was public finances that would attract the most attention of the judges based in Brussels.

The Maastricht Treaty required that a country not have a budget deficit in excess of 3% of GDP and a public debt-to-GDP ratio over 60% in order for it to be accepted into the euro zone. However, since in 1996 many countries still significantly exceeded the 60% threshold, this criterion had been somewhat relaxed. Countries that showed a declining trend for the ratio of public debt-to-GDP were considered to be passing the requirement. However, no exemption was given for the budget deficit-to-GDP ratio; no country exceeding the 3% threshold was to be allowed in. The rationale for this attitude was that countries with high fiscal profligacy represented a threat to the stability of the planned currency. Sooner or later, it was argued, they would pressure the European Central Bank (ECB) to adopt expansionary monetary policies in order to monetise their debt. Such a policy would finance the budget deficits of the 'bad members', thereby avoiding a dangerous default that could threaten the stability of the banking system. However, it would also export inflation to all of the 'good countries'.

At this time, it was no mystery that tension concerning budgetary outcomes in national parliaments was higher in certain countries than others. In Britain and Greece, for example, tension was absent, but for different reasons. In the former, the momentum was building to postpone entrance while, in the latter, the budget deficit and inflation were so high that there was no way any major fiscal consolidation could be implemented with

sufficient speed without creating serious social upheaval. In Italy and Spain tension ran high, as the two countries ended the 1996 fiscal year with budget figures that were far from meeting the requirements. In Italy, budget deficit-to-GDP in 1995 equaled 7.6%, while at the end of 1996 it would go down (almost unnoticeably) to 7.1%. In Spain, things were slightly better, as deficit-to-GDP went from 6.9% in 1995 to 5% in 1996. This figure still required a strong contractionary fiscal package for 1997 to reach the desired 3% goal. Therefore, the 1997 budget law would prove to be decisive. The outcome in Rome and Madrid was viewed with great interest in other capitals and, sometimes, not just in a benign way. It is the opinion of many that German authorities were hoping that Italy would not be able to reach the 3% deficit-to-GDP threshold, so as to ease German opposition to joining the euro zone. Helmut Kohl, Germany's Chancellor at the time, was facing mounting opposition towards surrendering monetary sovereignty and the stability of the Deutsche mark to nations perceived as not fully reliable allies.

A few months before the approval of the budget law in Italy, Romano Prodi, the Italian Prime Minister, met with José Maria Aznar, the Spanish Prime Minister, in Madrid. The goal of the Italian Prime Minister was clear: to create an alliance among some member countries so as to postpone entry into EMU until after 1999. Prodi believed that Italy would not be able to pass a budget law that would achieve the 3% criterion, and he tried to defuse the political problem of failing to enter the euro zone by sharing this failure with other member countries. The meeting ended abruptly when Aznar told Prodi that Spain had no intention of being a late-comer to the euro zone, and that it planned to achieve its budget target for 1997 right on schedule. As it turned out, he was

right, and Spain was accepted into the euro zone in May of 1998. When Prodi returned home, he summoned his political team and announced a special additional budget package that would be able to reach the 3% threshold¹.

3.1.b The role of accounting in ensuring stability in Europe

The political stakes of the 1997 budget package were enormous. Therefore, it was no surprise that many countries were accused of 'creative window-dressing' in their budget through the use of accounting tricks to reach the desired goal². One contentious item was interest expenditure, which is the interest expense that governments sustain to finance their deficit and roll over their debt. Interest expenditure represents a high percentage of public spending and GDP in the European Union (see Table 3.1 opposite). It is highly variable over time, especially when compared to other components of the budget. Because of its relevance and because it is subject only to minimal scrutiny during budget law discussions (and many times even after its realization during the fiscal year), interest expenditure is an ideal target for reaching fiscal stabilization goals without incurring excessive political protest or opposition.

¹ Aznar gave an interview to the *Financial Times* on September 30, 1996 detailing the interaction described in the text. The web site of the Prodi coalition, 'The Olive Tree', describes how, "in September 1996, Prodi met Aznar in Valencia, and the head of the Spanish government said clearly that Spain would not help Italy in a euro-postponing policy." For further details see www.perulivo.it/radici/governo/europa/aggancio.html.

² Many of these 'tricks' were not considered as such and were approved. See, for example, the choice of the French government to include the sums in the budget from France Telecom's pension funds in exchange for a commitment to pay the relevant pension liabilities when they were due. A majority of the European statisticians agreed that the French treatment was in accordance with the second edition of the European System of National Accounts.

More importantly for our purpose, it has been claimed that 'fiscal rules' might generate the use of dubious accounting practices and reduce the degree of transparency in the government's budget. See Milesi-Ferretti (1998). This would point to a structural rather than a temporary creative accounting bias in the euro zone.

Indeed, interest payments by the government in any given year are not an exogenous variable. The level and the variability of the interest bill depend also on the choices made by sovereign issuers. The choice of what instruments to issue in order to finance the deficit or roll over the debt has traditionally affected interest expenditure both in an *ex post* and *ex ante* manner. An example of *ex post* influence can be given by examining the choice of a debt manager who has to finance a USD 1 deficit in a given year and whose performance will be judged over an n -year period. The debt manager can issue either a 1-year Treasury bill n times, rolling it over at the end of each year, or issue an n -year fixed-income bond once. It is likely that the choice of the debt manager will affect the final interest bill of the government over the n -year period. However, barring superior knowledge regarding financial market conditions by the issuer, the debt manager should have no *a priori* knowledge of which strategy will yield a lower cost. This is why we call achieving savings in this way “*ex post* effectiveness”³.

However, there is the possibility for the debt manager of being effective *ex ante*. To continue with the above example, if the debt manager cares only about performance over one period, he could choose to issue the instrument which is cheapest in that particular year. If the yield curve is upward sloping, this would amount to issuing a 1-year T-bill instead of a 10-year bond, regardless of the fact that over a 10-year period the *ex ante* cost might be identical. This could be especially relevant for those countries where government officials focus on short-term prospects because they may not be re-elected. These officials may also

count on voter myopia and a lack of information so that they can show a good budget performance in a pre-election year.

Country	1993 %	1997 %	2000 % [*]
Austria	4.2	3.9	3.5
Belgium	10.7	8.7	6.9
Denmark	7.3	5.7	4.4
Finland	4.5	4.3	3.3
France	3.3	3.7	3.1
Germany	3.2	3.7	3.5
Greece	12.6	8.3	7.2
Ireland	6.3	4.3	2.2
Italy	12	9.4	6.4
Luxembourg	0.3	0.3	0.3
Netherlands	6	5.1	4
Portugal	6.1	4.3	3.3
Spain	5	4.8	3.5
Sweden	6	6.9	4.7
United Kingdom	2.8	3.7	3
Euro zone	5.5	5.1	4.1
EU 15	5.3	5	3.9

Table 3.1 - Interest payments as a share of GDP in the EU
Forecast

Through loopholes in national accounting, governments have an additional way of affecting *ex ante* the cost of debt and the interest bill. The treatment on the return of zero-coupon bonds constitutes a good example. Zero-coupon bonds are bonds whose return for the holder is linked solely to the difference between the purchase price and the sale price, and whose cost for the issuer is linked solely to the difference between the price at issuance and the face value. Up to a few years ago, many governments accounted for the cost of zero-coupon bonds by taking the charge at maturity. They did not consider the accrual of interest expenses during the life of a bond. A one-year, zero-coupon bond issued on January 2, year X and maturing on January 1, year X+1 that cost USD 1 in yearly interest payments would be accounted for in year X+1 for the whole amount rather than in year X when most of the interest of the bond was accrued. This accounting loophole has recently been closed by having statisticians require governments to calculate interest expenditure using the accrual method.

³ Campbell (1995) argues otherwise by showing that the US Treasury would have had gains that could be predicted by shortening the duration of the US public debt.

However, during the difficult 1997 fiscal year mentioned earlier, it is very possible that other accounting loopholes were being used to help EMU countries achieve their deficit target. In particular, it is worth noting that in the years considered, governments were starting to use derivative contracts with greater frequency, reflecting the growth of derivative markets. Governments' use of derivative contracts, as we have seen in Chapter 1, is usually unrelated to accounting gimmickry. However, the development of derivative markets might have afforded to some governments in political trouble the possibility of using these instruments to affect the interest bill *ex ante*. Governments would have done so by taking advantage of the slow reaction on the part of national accountants and statisticians, generally ascribable to a lack of knowledge about these instruments.

It is difficult to see how this could happen if one realizes that swap contracts at inception usually have a market value of zero. The expected present value of the paying leg of the swap corresponds to the expected present value of the receiving leg of the swap. However, swaps can be structured with their initial present value different from zero. Suppose, for example, that the zero-value fixed rate in a 'pay-fixed and receive-floating' swap is 7%. If the government that pays fixed agrees in the contract to pay 8% during the life of the contract, it will do so in exchange for a lump-sum cash amount at the start of the contract that compensates it for entering into a swap with negative value. The cash amount received at inception, under current accounting practices *could* be used by some governments to reduce interest payments and to help them reduce the

budget deficit⁴.

To take a more extreme example, suppose a government enters into a zero-coupon swap. This contract would allow government Z to engage with counterpart X under the following terms and conditions: "Bank X provides government Z with USD 1 today. In exchange, government Z will give bank X USD $(1+r)^n$ n years from now, where r is the current yield to maturity for an n -year riskless loan plus a fee for X's services." How should such a contract be accounted for? Under intuitive and rigorous rules, this deal amounts to a simple financing operation of government Z's deficit. Therefore, government Z's *public debt* should increase by USD $(1+r)^n$ immediately, and USD r dollars (accrued interest) should be posted each year over the n years as interest expenses that would increase the budget deficit. As we will see, the lack of transparency in reporting swap operations under current rules (and possibly under future accounting rules) implies that national governments might define such a financing operation as a swap. This 'swap' would require an exchange of notional amounts of USD 0 at inception plus the cash inflow of USD 1 of interest payments from bank X, which would be classified as an *immediate* decrease in interest payments for government Z. In n years' time, possibly under a new government, the unlucky incumbent would be faced with an interest bill that has increased by USD $(1+r)^n$ for reasons that it will find difficult to accept. This operation would amount to a deferment of public expenditure that would help a current government faced with tight budget deficit constraints to avoid

⁴ As opposed to "should". We will further clarify this issue in this and the next chapter by stating that, even under current rules, appropriate transparency in reporting of this kind of swap would not allow the debt manager to claim the amount received at inception of a swap as reduced interest expenditure that affects the budget deficit. Instead, only the accrued portion could be claimed.

exceeding such constraints. In the euro zone, it would also avoid possible penalties established by the EU's so-called Stability and Growth Pact. But it would actually put a future government in possible financial jeopardy for actions that it bears no responsibility for or may not even have been aware of when it took office.

As swaps were largely unregulated by national accounting, owing to their innovative structure, these actions by debt managers would have passed largely unchecked. As we will see, however, the debate on national accounting of derivative operations has quickly evolved, and has perhaps moved the issue of transparency in reporting derivative transactions to the forefront of the policy debate. Therefore, it is critical that we understand where the debate now stands.

Ironically, in the fall of 1996 (the same period in which governments were preparing to fight the last budget battle that would decide their fate in or out of the euro zone), a group of little-known statisticians and accountants were at work to set rules that would, if adopted, almost certainly prevent such an opportunistic use of derivatives by debt managers. In the process, however, the same rules would prevent efficient debt management through derivatives by sovereign borrowers not necessarily pursuing window-dressing strategies. As a good example of the frequent lack of coordination within governments, it would take until the spring of 1999 (more than two years later) before both constituencies - the statisticians and the debt managers - would come to know about each other's stance. Inevitably, a rather fierce but largely unnoticed battle erupted between the two classes of civil servants. To date this battle has produced the following two results:

i) The revision of the rules of conversion to national currency for debt denominated in

foreign currencies⁵; and

ii) the inclusion of an Annex in the new European System of Accounts (ESA 95) to allow governments to disregard, for policy purposes, the national accounting system for derivatives' use by governments.

While these new tensions would be recognized by some as signs of positive reform, what they really amounted to was a reform of national accounting that did not tackle the intrinsic problems that the current use of derivative contracts by governments generate. Indeed, they might have even distracted attention from the issues that should be faced: the transparency and accountability of government action. The reform implemented might have also delayed tackling these issues. The author was told by an expert of the ESA 95 reform process that "after this reform, it won't be possible to start immediately a new one. It would need to wait a couple of years." This subtly implies that the process of reforming the system of national accounts is time-dependent and cannot be subject to excessive changes in a given period of time, even if changes are needed. But before we analyze the content of this debate, we will detour to analyze the other side of the accounting debate: the national accountants who are the suppliers of regulation.

3.2 The supply of regulation: The update of the 1993 System of National Accounts

3.2.a The setting

The *1993 System of National Accounts* (SNA 1993) is a 700-page book published by the European Commission, the IMF, the Organization for Economic Cooperation and

⁵ On the occasion of the first amendment to *EC regulation 3605/93 on the application of the Protocol on the Excessive Deficit Procedure (EDP) annexed to the Treaty establishing the European Community* specifying the variables to be used in the calculation of the Maastricht criteria.

Development (OECD), the United Nations (UN) and the World Bank. SNA 1993 sets the recommended standards for UN member countries in national accounting. This volume followed the first SNA in 1953 and the second in 1968, each one of which was modified in the interim period with new editions. The goal of the SNA, already established at the first conference within the League of Nations in 1928, was above all to promote the comparability of economic statistics among countries. The Final 1928 Act of the International Conference Relating to Economic Statistics stated that “international comparability should be a goal, *especially among countries with sophisticated statistical systems* [emphasis added],” a point that we should keep in mind for future reference⁶.

One should also keep in mind that the SNA only provides *recommendations* of standards of national accounting. However, the SNA recommendations are clearly influential in developed economies. The first page of the SNA 1993 that reformed the SNA 1968, signed by the then Secretary General of the United Nations, Boutros Boutros-Ghali; the IMF Managing Director, Michel Camdessus; the European Commission President, Jacques Delors; the OECD Secretary General, Jean-Claude Paye; and the World Bank President, Lewis Preston, unequivocally lays out the following admonition: “The SNA is intended for use by both national and international statistical agencies, and countries are advised to start to compile accounts utilizing the revised System as soon as possible.” Clearly, any deviation from its recommendations, especially by developed economies, would amount to a serious precedent for future deviations. This precedent would create substantial problems for the

credibility of the institutions involved in compiling the manual.

New editions of an SNA appear in print, as accountants consider the development of new business practices and new markets requiring special interpretations and regulations. As the IMF admitted in one of its documents, when the new SNA was approved in 1993 few statisticians were knowledgeable about the rapidly growing industry of derivative contracts⁷. It took just a few years for statisticians to realize that the financial account chapter in SNA 1993 needed revisions for a better description of the impact of financial derivatives in national accounts.

In April 1996, the IMF Balance of Payments Committee convened experts from the various statistical disciplines in an Informal Group meeting in Washington that was followed by an Expert Group meeting in November 1996. In October 1997, the Inter-Secretariat Working Group on National Accounts (ISWGNA), which comprises Eurostat (the statistical office of the European Union), the IMF and the IMF Committee on Balance of Payments Statistics, the OECD, the UN Statistical Division (UNSTAT), the regional commissions of the UN Secretariat, and the World Bank, approved changes to SNA 1993. These changes dealt with the treatment of financial derivatives and were included in an official document from the Statistics Department of the IMF, *The Statistical Measurement of Financial Derivatives* (SMFD). While the approval was subject to several additional checks by UN member states, the document seemed to have enough of an official aura to pass through the approval process smoothly. Moreover, it constituted an important amendment to the SNA 1993. Little was it known at the time that this document

⁶ SNA 1993, p.xxxvii.

⁷ *The Statistical Measurement of Financial Derivatives*, IMF, November 1997, p.1.

would be at the heart of heated and secretive debate⁸. This debate might have led for the first time to SNA recommendations that would not be recognized by Eurostat as an amendment to the European System of Accounts (ESA 1995).

To see why and how we arrived at this point, we must first examine the technicalities of the proposed reform. This is covered in the next sub-section.

3.2.b *The treatment of financial derivatives in national accounts*

1) *SNA 1993*

To understand the substance of the issue, it is necessary that we spend some time clarifying the terminology embedded in the debate. The System of National Accounts records the value of assets and liabilities at a given point in time in the account called "balance sheet". The accounts that measure the changes in these stocks between two points in time (the so-called "accounting period") are called "accumulation accounts". The capital account is the accumulation account where non-financial asset changes are recorded. The financial account records changes in financial assets⁹.

Economic assets, whose total value is recorded in the balance sheet, are entities over which ownership rights are enforced by institutional units, and from which economic benefits may be derived by their owners by holding or using them over a period of time. For future reference, it is important to note that benefits from economic assets can be derived either by using such assets (e.g., building, machinery, etc.), by providing funds for another

institutional unit (so-called property income; e.g., interest, dividends, etc.) or by disposing of them or terminating them. This is the so-called store-of-value function that can also be expressed by precious metal or stones that could simply be held without other benefits being derived from them.

Economic assets are divided into non-financial and financial assets. Non-financial assets are produced assets that have come into existence as outputs from processes of production or non-produced assets that are needed for production but have not themselves been produced (land, mineral deposits, etc.). Financial assets, which include *both* financial assets *and* liabilities of institutional units, can be divided into financial claims, monetary gold and special drawing rights as well as shares in corporations. What about financial derivatives? Where do they fit in? To answer this question, it is now time to distinguish between the original 1993 SNA and the reform that was proposed and implemented in 2000.

In the original 1993 SNA, financial claims were defined as "an asset that entitles its owner, the creditor, to receive a payment, or series of payments, from the other unit, the debtor, in certain circumstances specified in the contract between them," (art 10.4 - 1993). Financial claims arise "out of contractual relationships entered into when one institutional unit provides funds to the other," (art. 10.4 - 1993). Financial derivatives do not, according to SNA 1993, represent financial claims (art. 10.5 - 1993), as SNA 1993 states that they do not imply the provision of funds from one unit to another¹⁰. However, a financial derivative is a financial asset (art. 10.5 - 1993) if it has "value because it is *tradable*. When transactions in such arrangements occur, the

⁸ The only publication that we are aware of regarding this debate between debt managers and statisticians was published by Graham Bishop in the SalomonSmithBarney newsletter, May 14, 1999.

⁹ Accumulation accounts also include "other changes in assets accounts" and the "revaluation account."

¹⁰ But this, as we shall see, will be considered a controversial issue.

transactions should be recorded in the financial account [emphasis added],” (art. 11.28 - 1993). Therefore, SNA 1993 implicitly defines a financial derivative as a financial asset only if it is tradable. While this implies that exchange-traded futures and options and OTC options qualify as financial assets, it also implies that financial derivatives such as swaps and forwards are considered financial derivatives but not financial assets, owing to their lack of tradability. Indeed, SNA 1993 calls swaps and forwards “contractual arrangements”. The issue is not insignificant. Once a financial derivative is considered a financial asset, SNA 1993 recommends that “transactions in them should...be treated as separate...transactions, rather than as integral parts of the value of underlying transactions to which they may be linked as hedges,” (art. 11.35 - 1993).

Again, it might be important for future reference to understand the reasons why accountants suggest such a procedure:

“This is because a different institutional unit will be the party to the derivative transaction than is the case for the underlying transaction that is being hedged. Moreover, the two parties to the derivatives may have different motives for entering into the transaction. One may be hedging, while the other may be dealing in derivative instruments or acquiring the derivative as an investment. Even if both parties are hedging, they may be hedging transactions or risks that involve different financial assets or even transactions in different accounts of the SNA. Therefore if derivative transactions were treated as integral parts of other transactions, such treatment would lead to asymmetries of measurement in different parts of the accounts or to asymmetries of measurement between institutional sectors, (art. 11.25 – 1993).”

Since they are a separate financial transaction, then national income accounts (and GDP too) are unaffected under these rules by the level or the change in value of financial derivatives classified as financial assets.

Under SNA 1993, things are very different for swaps and forwards. SNA 1993 established that “streams of interest payments resulting from swap arrangements are to be recorded as property income and repayments of principals are to be recorded in the financial account,” (art. 11.37 - 1993)¹¹. For forward rate agreements (FRAs), the payments due are “recorded as property income in the SNA, as there is no underlying actual asset but only a notional...there are no entries with respect to FRA in the financial account,” (art. 11.43 - 1993). Notice that property income is defined as “the income receivable by the owner of a financial asset... for providing funds to... another institutional unit,” (art. 7.88 - 1993) and, as such, it also affects the magnitude of national income. One might wonder how an instrument that is not a financial asset could generate a “stream of interest payments...to be recorded as property income.” Indeed, one statistician told the author that several national accountants had raised the same issue before the reform of SNA 1993 was ever considered. Furthermore, recognizing the ambiguity in the SNA 1993, ESA 1995 defined swaps and FRAs as financial derivatives and, therefore, as financial assets. However, swaps and FRAs were left to affect property income in national accounts¹².

In passing, one should note two things. First, if a government were to have undertaken

¹¹ The repayment of principals refers to currency swaps. As for interest rate swaps, the principal payment is the notional amount that is not exchanged.

¹² To be fair, a person who is knowledgeable of the negotiations that led to the 1993 SNA told the author that statisticians at the time were aware of the inconsistency, but that a large non-European member country opposed the change.

a swap contract with a counterpart, the original 1993 SNA would have implied that any net periodical settlement arising from the swap would have affected interest payments by the government and, therefore, the budget deficit as well. Second, zero-coupon swaps of the kind illustrated earlier, *even under the original 1993 SNA*, would likely have not affected the budget deficit in the first period of their cash inflow. Rather, they would have affected the debt level for the nominal value of the principal. This is because SNA now clearly states in SNA 1993 updated (from now on referred to as “1993 bis”) and SNA 1993 that “interest is recorded on an accrual basis” (art. 7.94 – 1993 and ‘1993 bis’) and that for zero-coupon bonds in the System, “the interest accruing in each accounting period must be recorded whether or not it is actually paid or added to the principal outstanding,” (art. 7.95 – 1993 and 1993 bis). However, a national accountant told the author that simply being called a “swap” would have made the instrument eligible to become a “financial derivative” (according to ESA 95) or a “contractual arrangement” (according to SNA 1993). In this case the notional amount of the swap (equivalent to the face value of a T-bill if it were to have been described in this way) would not be recognized as debt because, derivatives in national accounts are not valued at their notional amount but at their market value (its net market value being zero at inception). This is a surprising and less-than-ideal outcome. As we will see, the solution to this conundrum would be to recognize that a zero-coupon swap is not a derivative contract. But all this was not written into the 1993 SNA or into ESA 95. Furthermore, it was ESA 79 that was to be considered the binding system for evaluating the budget deficits of member countries applying to enter the euro zone. The system of 1979 was similar to ESA 95 in not recognizing

as debt the notional amount of swaps. This left the door open for multiple interpretations of the accounting effects of a given derivative transaction by a sovereign borrower.

2) SNA 1993 bis: The update

As indicated, the focus of the SNA 1993 was on the ‘tradability’ characteristic of financial derivatives. It was originally believed that without such a characteristic, statistical compilers could not prove the value of a financial derivative¹³. It soon became evident to compilers that value could be determined independently of the existence of a liquid secondary market. True, financial derivatives are not strictly bearer instruments. Therefore, counterparts cannot generally transfer and liquidate their position to a third party freely. Furthermore, financial derivatives usually do not contain clauses that allow for liquidation of the position before maturity. However, holders of derivative contracts can cancel or liquidate positions through ‘offsetting’ practices, which require the purchase of a short position that offsets the long original position or vice-versa. Such a strategy can be undertaken both in an exchange-traded market and in an OTC market. The only difference is that in an exchange market where clearing members interact with investors, the latter can close their positions out completely thanks to the existence of a clearing house that cancels matching positions. In the OTC market, the two offsetting positions will cancel out the market risk but not the counterpart risk (see Chapter 2), as the holder of the two positions still faces the risk that his two counterparts might default on their leg of the contract.

Realizing this, the position of statisticians,

¹³ See art. 11.28 - 1993, which has been eliminated from the reformed version of SNA (1993 bis).

synthesized in the IMF report (SMFD), shifted towards considering all financial derivatives - not only those that were traded in secondary markets - as financial assets with market value. Market value could be inferred from the value of offsetting positions: "The marked-to-market value of a derivative contract shows the expected liquidation value or replacement cost if the contract were to be closed out."¹⁴ Tradeability and offsetability, the document states, "are each considered to provide a sufficient test of value."¹⁵ The proposal that was brought to the attention of all national statisticians by ISWGNA and the IMF Committee on Balance of Payments Statistics in October 1997 was to attract a strong and negative reaction from treasuries and debt management agencies in Europe:

"Financial derivatives should be included in the national accounts as financial assets, regardless of whether 'trading' occurs on or off exchange...Interest rate swaps, and forward rate agreements should be classified as financial assets; and net cash settlements payments in these financial derivatives should be classified as financial account transactions rather than as interest. *This change will affect recorded interest in the national accounts, and hence have implications for national income.* Net cash settlement payments on the interest element of cross-currency interest rate swaps should be classified as financial account transactions,"¹⁶ [emphasis added].

To give an example provided by the document itself, suppose an entity enters into a swap. Its net asset value position is USD 100 at

the beginning of the accounting period. During that accounting period, the entity makes payments of USD 60 and receives payments of USD 20. At the end of the accounting period, the swap has a value of USD 30. How will national accounts be affected? The balance sheet would change because of this transaction since the accumulation accounts would record:

- a reduction in an Asset, Financial Derivatives by USD 20, as part of the value of the asset had been paid out and an increase in the Asset Currency and Deposits by USD 20; and
- a decrease in a Liability (an increase in net assets), Financial Derivatives, by USD 60, as part of the value of the liability implicit in the swap contract vanished and a decrease in an Asset, Currency and Deposits, by USD 60.

As the financial derivatives were priced initially at USD 100 and increased in value by USD 40, the closing value of USD 30 would then require a 'revaluation'. This is a recording of the holding loss, which is the full change in value owing to changes in the specific price. In this case the revaluation would be USD -110 (30-100-60+20).

Under the new rules, this transaction should have no effect on income accounts. With the previous rules, property income would have declined by USD 40 (60-20) if the counterpart was foreign. The budget deficit would have increased by USD 40 owing to increased interest expenditure if the counterpart was a sovereign borrower.

Therefore, the reform might have had major implications, especially regarding the value of budget deficits for countries that belong to the euro zone, as these deficits are required to stay under 3% of GDP to avoid the

¹⁴ *The Statistical Measurement of Financial Derivatives*, IMF, November 1997. Appendix II by Christopher Wright, p.45, point 15.

¹⁵ *Ibid*, point 12.

¹⁶ *Ibid*, p.3.

finances sanctioned by the Stability Pact. Several items remain to be understood:

- How did the debate evolve after the publication of the SMFD?
- What kind of criticisms were raised to the ISWGNA recommendations?
- What were the reasons for these criticisms?

3.3 A tale of a controversial reform

3.3.a The rift

In 1997, following the work of the Task Force on Finance Statistics¹⁷, an Informal Group convened in April 1996 and the Expert Group of statisticians convened in November 1996, the Statistical Commission of the UN (composed of 24 rotating members) mandated ISWGNA to review and eventually revise¹⁸ the 1993 System of National Accounts. Any change to the SNA is likely to affect ESA 95, which is mandatory for its members and may or may not incorporate all suggestions of the SNA. However, as it turned out, SNA 1993 and ESA 95 mostly coincided¹⁹.

The proposal for changes and clarification to the SNA 1993 was approved by ISWGNA and by the IMF Committee on Balance of Payments in October 1997, and it was described in the SFMD²⁰. What drove this process of reform? One cannot deny that the

IMF accelerated the need to put forward this change in 1998 as a consequence of the world wide financial crisis of that year. In addition, the IMF was partly influenced by those who blamed the lack of strong regulation of derivatives transactions for the instability of financial systems. However, it cannot be said that the issue of financial derivatives had caught accountants completely off guard. The documentation the author had access to shows clearly that the discussions for reform gathered momentum in 1996 and 1997. Certainly, the discussion on financial derivatives in the years that led to the original 1993 SNA must not have been particularly intense, as a debate on reform measures started only a few years later²¹.

This work of experts up to 1997 highlighted an inconsistency between the treatment of different types of derivative contracts, and it suggested the need to revise SNA 1993 to widen the 'asset boundary' concept of financial derivatives to include contractual arrangements like swaps and forwards. The financial derivative proposal constitutes an important development because it represented the first update of the 1993 SNA²². Being the first, it even forced ISWGNA to implement a 'procedure' to bring about SNA updates.

Had everything gone smoothly, the standard procedure for updating the 1993 SNA

¹⁷ Membership of the Task Force included the Bank for International Settlements, the European Central Bank, the Statistical Office of the European Communities, the International Monetary Fund, the Organization for Economic Cooperation and Development, the World Bank and the United Nations Statistics Division. A document was endorsed by the UN Statistical Commission with several terms of reference including an assessment of the weaknesses, imbalances and priority gaps in finance statistics.

¹⁸ The SNA 93 in its introduction implied that it was a work in progress susceptible to modifications.

¹⁹ Derivatives were already creating headaches for statisticians, as ESA 95 and SNA 1993 subtly differed in their interpretation of the nature of swaps and FRAs. Indeed, as we said above, ESA 95 already considered swaps and FRAs financial derivatives, but it did not take the final step of considering their flow as not affecting property income.

²⁰ See also the newsletter *Balance of Payments Statistics*, IMF, volume V, number 2, December 1997.

²¹ The November 1997 document of the IMF states that, since the 1993 original manual, "derivative markets have evolved." However, it goes on to state that "when the financial account chapter of SNA 1993 was written [early 1992] only a limited number of statisticians were knowledgeable about financial derivatives, and few if any had experience in collecting data." Mention should be made (and will be made in the next pages) that the statement hints at a decision-making process where statisticians and national accountants set rules without great concern for listening to the final 'users' of this regulation. Even for the update of the 1993 SNA, the 1997 IMF document claims that comments were received from experts in various statistical disciplines and from the accounting profession. No mention is made of market makers and practitioners.

²² A statistician told the author: "Call them updates. Don't call them changes - otherwise people get scared."

would have been the following:

a) the update proposals sent to the UN Statistical Commission would be forwarded to every UN member for global discussion before any formalization of the update is ever undertaken;

b) the revised text would be approved by the Commission once a consensus has been achieved; and

c) having been approved by the Commission, the text would be sent formally to every country for approval by an entity responsible for the national accounts (a statistical office or the central bank in some countries).

However, it appears that in the case of the financial derivatives update (the first update of SNA 1993), step 'a' was skipped. The document was circulated in December 1998, but not to all national statistical offices, implying that the responsible entities in some countries were forced to comment at the formal stage of the procedure only, step 'c'. In March 1999, the Statistical Commission approved the non-formalized, suggested update - step 'b' - which implies that, *de facto*, the document was only seen by officials in the 24 countries belonging to the Statistical Commission and not by all national statistical offices throughout the world²³.

The Commission approved the suggested changes *in principle* with some comments that were not crucial. The Commission never questioned the basic principles of the update but required that:

i) the comments of the Commission should be incorporated; and

ii) the new version would then be

circulated to responsible entities in *all* countries.

In early June of 1999, the UN circulated the proposed update to all countries, setting a deadline of August 15 for comments, with the intention that the comments would be incorporated once more and would then be sent to the Commission again.

It is at this point, and only at this point, that something went truly wrong. This date should be kept in mind: July 15, 1999. This was more than three years after the first Informal Group Meeting had been held in Washington under the auspices of the IMF, which officially started the debate. Rafael Alvarez was at the time the Chairman of the Monetary, Financial and Balance of Payment Statistics Committee (CMFB) within Eurostat. The CMFB is comprised of senior statisticians from the statistical offices and the central banks of European Union countries and a high level official in the Research Office of the Bank of Spain. Alvarez sent a letter to the UN Statistical Commission asking for suspension of the procedure to update the SNA "for a little while." The letter was backed up by similar requests from national statistical offices of the EU.

This action followed CMFB meetings on July 1-2, organized to discuss, "among other things, proposals from Eurostat for anticipating the new treatment in the ESA 95 of interest rate and currency swaps and FRAs, as agreed in principle by the UN Statistical Commission at its 30th session in March 1999." Indeed, since 1998 efforts for changing ESA 95 had been carried out by Eurostat in parallel with the procedure for changing the SNA. Documents the author has seen have given us reason to believe that the request for postponement lay not with the CFMB itself, which continued to back the proposal, but with what is called a "user group" of the national accounts, namely the public debt managers' sub-committee of

²³ See the Minutes of the Meeting of the Inter-Secretariat Working Group on National Accounts, Washington, April 15-16, 1999 background document E/CN.3/2000/3, February 23, 2000 on the UN Statistical Commission web site.

the EU Economic and Financial Committee. It is worth noting that as of that date, the ECB was already applying the proposed new treatment to the monthly compilation of the key items in the euro zone balance of payments. Some EU countries had also adopted this new treatment in their implementation of the ESA 95. This shows that there were at least some countries in the European Union fully behind the proposed reform.

A person knowledgeable about the process told the author that in May 1999, statisticians of member countries of the EU met with debt managers of the European Union (the so-called Brouhns Group) and described the meeting in this way: "Relationships [between statisticians and debt managers] were not that good...There were no tensions, the word is too big, but we had a frank discussion. Debt managers said to statisticians, 'through derivatives we can reduce the cost of debt. With your stance, you are stopping us from doing something good for public accounts.'"

The "little while" requested by the Chairman of CMFB was instrumental in deferring a decision until mid September 1999, given that a meeting would then be held in Luxembourg under the auspices of Eurostat where all parties of ISWGNA were asked to participate together with all debt managers from the European Union. At the meeting a debate ensued where papers illustrating different views were presented. A person who attended the meeting described what took place as a conflict of opinions between the ISWGNA and debt managers. At that meeting, we know that one of the ISWGNA members used harsh words to refer to the proposal by EU debt managers. In the document that was circulated it was stated that the debt managers' proposal was:

- inconsistent with national

accounting principles;

- inappropriate from an analytical point of view;
- inconsistent with the policy of encouraging greater transparency of public and private sector activity; and
- inconsistent with the approach being adopted internationally by the accounting profession and financial sector supervisors.

What was the issue being debated? Debt managers argued that government net-financing requirements should be computed after including the effects of swap-related transactions²⁴. Importantly, many debt managers who opposed the SNA 1993 update said that they would agree to meet a requirement of transparency of public accounts by detailing swap operations separately from the underlying debt instrument as long as the net-settlement payments were still considered property income affecting the government budget. ISWGNA, on the other hand, backed the proposed reform. The substance of the debate is illustrated in the next sub-section. What matters here is that at the end of the meeting, only one country, country A, was opposed to the reclassification, and countries B and C declared that they were in favor of the reclassification in principle but had to consult with their governments before reaching a final opinion. All other countries immediately backed the proposal.

Indeed, a few days later the ISWGNA members met in Paris at the OECD and, with a majority agreeing to the reform (SNA changes do not require unanimity), the proposal was

²⁴ As we will see in the next paragraph, this was not the only request. Some euro zone countries asked for foreign currency debt swapped into another currency in order to be accounted on an after-swap basis and not on the basis of the current exchange rate applied to the original foreign currency issue.

revised to take into consideration all comments received (not only those from Eurostat)²⁵. In October 1999, the proposal was circulated to the 24 members of the UN Commission with a deadline of December 31 for final comments.

But the surprises were not over yet. Just when everything seemed to come to a close on December 29, 1999 (not a typical date for intense work in supranational organizations), the UN received a letter from the UN ambassador of country B (a euro zone member). It began somberly: "I have received instructions from my capital in order to raise specific objections on the proposed amendment concerning the way in which interest rate, currency swaps and forward rate arrangements are accounted for in the General Government Borrowing Requirement." It went on to say:

"In particular my country cannot agree with the proposal to treat 'financial derivatives' as financial assets, and to classify the net cash settlements payments in these contracts as financial transactions rather than as interest, as recommended in the present 1993 SNA. Swap operations, which constitute a useful tool for efficient debt management, consist basically in an exchange of cash flows to cover for exchange or interest rate risk. The new statistical procedure would take into account only one part of such an exchange in the calculation of the General Government Borrowing Requirement. The new procedure is contrary to market practice. Furthermore, it introduces a significant distortion to the public accounts and creates perverse incentives for debt management practices."

²⁵ The minutes of that meeting, indeed, stated that "because the Eurostat meeting ended in favor of the amendment, and because of the positive replies from member countries, the ISWGNA agreed to proceed according to the rules for updating the 1993 SNA." Background document E/CN.3/2000/3, February 23, 2000, on the UN Statistical Commission web site.

As country B was not one of the 24 members of the Statistical Commission, the formalities of the process required that this last-minute position had to be brought to the Commission by only one of the 24 member countries. After feverish last minute lobbying, country B could not find backing for its position by any of the 24 member countries.

Finally, on February 8, the UN Statistics Division sent a letter to all members of the Statistical Commission saying that "according to the update mechanism approved by the Commission, the update of the 1993 SNA regarding financial derivatives is approved." On February 29, 2000, the Commission held its thirty-first meeting. Contrary to the wishes of all other member countries, country B raised the issue of its opposition to the reform one more time with a new letter. The tone of the letter was by no means conciliatory. It stated, among other things that "the proposed treatment of interest rate swaps has the potential impact of distorting the cost of capital raised by government institutions and deserves a greater scrutiny that has been accorded to it." It also hinted at a serious blow to the harmonious coordinating process of national accounts reform between Europe and the rest of the world when it stated that "the European Commission has already approved the principle that the swaps and FRAs have to be considered in the definition of the deficit. Eurostat and the national statistical office have to comply with this principle in proposing changes to the ESA 95. This commitment of Eurostat has been expressed in a letter of general director, Yves Franchet, to the European Union presidency."

Maybe for the first time, the recommendations of the System of National Accounts looked as if they were to be disregarded by one of the most important group of users, the European Union. And, as

we will see in the next section, this threat proved to be dramatically credible. As one statistics compiler said to the author before knowing the final outcome, “the difficult point of all this is that we will lose the comparability between national statistics.” Therefore, it is time to understand what criticisms were brought against the SNA reform and to pinpoint, if possible, the positions of different parties in this apparently methodological but, in actuality, highly politicized battle between institutions.

3.3.b Understanding the issues

1) The perspective of national accountants

Two points were raised by public debt managers in the September 1999 meeting held in Luxembourg. The first was that public debt should include the effects of currency swaps, interest rate swaps and FRAs. This matter acquired a sense of urgency for some European debt managers, especially with regards to foreign currency swaps. If country X were to issue foreign currency bonds and later swap them into national currency so as to be hedged against exchange rate variations, the SNA (currently and previously) would disregard this swap in the sense that public debt would be measured by taking into account only the original foreign exchange issue. The value of country X's debt would then be subject to exchange rate volatility. In Europe, this is especially relevant for those small countries that frequently tap the global markets with large issues of foreign currency bonds and whose foreign currency share of the debt is rather large. Debt managers would, therefore, want the SNA to allow them to ‘consolidate’ the principal of debt issues in foreign currency, taking into account the exchanges of capital that are made at the inception of the cross-

currency swap operation.

Statisticians argued that such changes would lead to disastrous consequences. Their arguments can be divided into two categories. The first deals with national accounting distortions; the second deals with transparency.

As for national accounting distortions, the proposed reform for consolidating debt issues with swap operations would do the following:

a) It would lead to asymmetric recording in national accounts, because counterparts may have different motives to enter into the transaction. If these counterparts happen to report the transaction as a derivative transaction, and the government were to consolidate it under a different type of transaction (securities, for example), then the accounts would not balance. If, on the other hand (to ensure consistency across actors), all cross-currency swaps were to be treated as incorporated in the underlying borrowing, then the statistical measurement of a relevant derivative contract would disappear completely from the information available in national accounts.

b) The proposal would also lead to asymmetric recordings between different but related statistical handbooks. This would be especially true if a government were to borrow from a non-resident and then hedge the transaction with a resident institution. National accounts would show “net interest payments” on the part of the government, and the balance of payments would show “gross interest payments”.

c) Finally, the proposal would lead to asymmetric recording for basically homogeneous products. As the effects of currency swaps can be replicated by using and combining other non-cross-currency swaps (e.g., IRSs and foreign currency forward

contracts), the content of national accounts would be weakened, as similar instruments with great substitutability would be classified with different impacts. This argument would turn out to be the weakest for statisticians, as we will see.

In terms of transparency, the statisticians went on, the suggested proposal by debt managers would:

d) cancel important information from the national accounts concerning the additional risk that is taken by sovereign issuers with a derivative contract, specifically counterparty risk, which is absent from a non-swapped issue of bonds. Therefore, the debt managers' proposal would eliminate any data on 'gross exposure' by showing only consolidated amounts. To show that this is a relevant issue, it is sufficient to cite the G-22 report on Transparency and Accountability: "Data on gross exposures are of primary importance...Changes in policy or regulations or financial problems of counterparties may change what was a hedged position into an un-hedged one, leading to large exposure to gross positions."

Notwithstanding these criticisms, the European Commission recently backed the debt managers' request in the first amendment to *Regulation (EC) n. 3605/93 on the application of the Protocol on the Excessive Deficit Procedure annexed to the Treaty establishing the European Community*, which defines the criteria for calculation and presentation of the relevant deficit and debt figures to the European Commission. The amendment stated that "government liabilities denominated in a foreign currency and exchanged through contractual agreements to the national currency shall be converted into the national currency at

the rate agreed on in those countries."²⁶

The second point raised by debt managers was a direct attack on the proposed SNA update. It called for accountants to reconsider classifying swaps and FRAs as financial derivatives, and to reconsider the passage of the impact of these instruments from the current account to the financial account.

ISWGNA argued that, as swaps and FRAs do not require the provision of funds from one unit to another, the net payments under these contracts cannot constitute property income. It argued that swaps and FRAs do not alter the cost of capital but that they manage cashflows by changing risk exposure. To support its thesis, ISWGNA produced an example that is worth mentioning because it was dismissed in an interesting way by debt managers.

Suppose an entity has an exposure to a floating rate (perhaps because it has issued a floating-rate note (FRN)). As it does not want to face the underlying cash flow risk, it hedges through a 'pay-fixed and receive-variable' interest rate swap. The SNA dictates that income would accrue on the initial liability at the variable rate. The interest rate swap, on the other hand, would generate holding gains and losses that are realized on the settlement date so as to hedge (let us suppose effectively) the variable rate exposure. Classifying these gains or losses as income would mean bringing holding gains and losses into the income account. Financial analysts in charge of accounting for private firms would not disagree with this analysis. But, contrary to commercial practice, holding gains and losses on financial instruments are not classified as income in national accounting. Therefore, accountants will not consider them as property income that

²⁶ Council Regulation (EC) n. 475/2000 of February 28, 2000, Official Journal L 058, March 3, 2000, pp.1-2.

should be netted-out with the accrued and paid interest on the underlying FRN, unless a major restructuring of national accounting is undertaken²⁷.

2) *The perspective of debt managers*

The response of the group of public debt managers at the September 1999 meeting on these issues was two-fold. First, they attacked the issue of consistency in national accounts required by ISWGNA by pointing out examples of inconsistencies in other sections of the SNA. Second, they subtly implied that the accounting of financial derivatives should reflect the reason for which financial derivatives are used. For example, they argued that foreign currency swaps that switch a foreign currency liability into a domestic currency liability are implemented to hedge the financial risks embedded in foreign currency liabilities by sovereign borrowers. To deny such a purpose in national accounts amounts to preventing debt managers from undertaking this operational practice and thus prevents optimal debt management.

It is hard not to see the logic in this position, and it even carries some strength on the basis of SNA definitions. Indeed, it must be remembered that property income is defined as "income receivable by the owner of a financial asset...in return for providing funds...to another institutional unit," (art. 7.88). In a foreign currency swap, when and if an exchange of

principal is carried out at inception between counterparts (for example, I give you USD 1 million in exchange for EUR 1 million when the market exchange rate is 1:1), one could easily argue that both counterparties are providing funds to each other. As such, the net cash payments during the swap period could be considered exchanges of property income according to article 7.88.

In the case of IRSs and FRAs, the issue is less straightforward. ISWGNA originally argued that "neither interest rate swaps nor FRAs involve the provision of capital from one counterparty to another... As such, interest rate swaps and FRAs do not alter the cost of capital, but rather manage cash flows by changing risk exposure."²⁸ In formal terms, however, it could be argued that an IRS has no existence without the contract specifying the duty of each unit to provide a given amount of capital to the other counterparty initially, even if this amount is the same and leads to no amount being exchanged at inception. Furthermore, for some swaps that are not valued at zero at inception but require an initial payment by one of the counterparts, the payment is theoretically equivalent to a provision of funds. This logic was applied in SNA 1993 when it argued that "swaps are contractual arrangements between two parties who agree to exchange, according to predetermined rules, streams of payments on *the same amount of indebtedness* over time," (art. 11.37 SNA 1993, now canceled [emphasis added]). Furthermore, it is hard not to see the logic of the position of country B that argued as follows in its February 29, 1999 consideration at the XXXI Session of the UN Statistical Commission:

"The SNA 93 defines property income

²⁷ Graham Bishop (1999) seems to back this commercial accounting practice when he concludes that "it appears anomalous that the private sector should move emphatically in a particular direction and the public sector in the opposite - while both sets of analysts proclaim their wish to have clear and transparent accounting. Perhaps the EU should adopt, in the public sector, the private sector technique of 'hedge accounting.'" An ISWGNA member wrote that "applying these criteria to national accounts would be impractical and likely to undermine the quality, reliability, and international comparability of economic data."

Also for IRSs and FRAs, as for foreign currency swaps, ISWGNA raised issues of consistency in national accounts and of transparency.

²⁸ *The Statistical Measurement of Financial Derivatives*, p.25, paragraph 62.

other than rent as being 'receivable by the owner of a financial asset...in return for providing funds...to another institutional unit' (art. 7.88) According to this definition, if a government issues a floating-rate debt, the floating coupon payments would qualify as interest. However, suppose that the government issues a fixed-rate debt and enters into a fixed-for-floating swap for the entire debt issue. The net cash outflow from the national treasury in this case is virtually identical to that on a floating-rate debt. However, under the new proposals about the accounting treatment of swaps and FRAs, the net cash flows on a swapped debt issue would not qualify as interest. *Thus the new proposals have the effect of treating two economically identical transactions differently,* [emphasis added].

On April 4, 2000, Eurostat wrote to the members of two working parties: the Financial Account Working Party (FAWP) and the National Account Working Party (NAWP). It proposed several options (four to be exact, with one of the four options subdivided into three sub-options) to reach a possible compromise. All the options shared the common provision that ESA 95 should incorporate a balancing item for the General Government Sector labeled "net borrowing/net lending" that would take into account flows under IRSs and FRAs as interest²⁹. This balancing item would be considered for the Excessive Deficit Procedure as a consequence of the "firm" and "strong opposition" of debt managers to any move away from this criterion.

Option one suggested making ESA inconsistent with the new SNA by adding a balancing item to the original ESA *for all sectors* called "international standard net

borrowing/net lending." Only this balancing item would not consider swaps and FRAs flows as interest. Option one would, however, have kept all net borrowing/net lending definitions in ESA 95 (including the one for the General Government balancing item), as they were before the SNA update. This option was the one that statisticians would have opposed the most, as ESA would have deviated from SNA for a great number of items. Eurostat, in the April 4 letter, commented on this option by stating that "it would be obvious that there exist in ESA 95 two definitions of net borrowing/net lending (and so, for General Government, two views of deficit/surplus). Inevitably people would wonder about the better one." As it turned out, no EU member state institution voted in favor of this option.

Option two suggested making ESA inconsistent with SNA, but only for those transactions that involved the use of derivatives by governments. All other flows resulting from IRSs and FRAs would be considered financial transactions. With this solution, consistency in the system of national accounts is achieved, since the counterpart to the government is also affected. However, such a counterpart - unless it remains with an open position - would probably undertake an opposite operation so that there would be no effect on "net borrowing/net lending," leading to an "artificial imbalance both in property income and in financial account for the bank."³⁰ Only the National Institute for Statistics in Italy and the Economic ministries in the Netherlands and Italy backed this option. The Bank of Italy and the Central Bureau for Statistics in the Netherlands did not consider it their preferred option.

Consider a country that had satisfied the Maastricht requirements in 1997 with the old

²⁹ The Maastricht Treaty requires the relevant magnitudes (like the deficit or the public debt) to be defined in ESA 95.

³⁰ Letter from Eurostat, dated April 2000.

rules of ESA 79 (second edition) and, therefore, entered the euro zone³¹. What would happen to this country if, in 1999 (the starting date to measure new national accounting figures with the new rules on derivatives), or any year thereafter, it did not satisfy the 3% rule under the new SNA system of accounting for derivatives? What if this country also satisfied the 3% rule when swaps were to be included in the interest expenditure of governments? The answer is nothing in terms of the Excessive Deficit Procedure, because whether or not option two had been adopted, the budget that includes the effects of swaps is the only one that matters for Maastricht purposes (although this was not safe to assume while the discussion between debt managers and statisticians was taking place). However, had this option been approved, there would have been no trace in the time series of national accounts of how much the deficit-to-GDP ratio would have been if the SNA methodology had been adopted in ESA 95, i.e. pre-swap. If an option different from option two had been adopted, it would have been an option that would have required national accounts to show both budget deficit figures (one post-swaps, valid for Maastricht, and one pre-swaps to maintain some coherence with the reformed SNA). With all options but option two, therefore, even if nothing were to happen formally, this would still constitute a source of embarrassment at the political level for having met the budget deficit target with the critical help of swaps. This is because all other options but number two would have disclosed two figures for the budget deficit, one pre- and one post-swap. High savings through swaps might induce doubts by observers as to

whether these savings were achieved through window-dressing strategies (see Chapter 4). Were statisticians to check carefully, this might constitute an additional source of embarrassment at the political level. So if a country knew in 1999 that it would not fulfill the Maastricht requirements without the effects of swap operations embedded in the budget, it might not have liked seeing its government balance pre-swap published, even if it risked nothing in terms of penalties.

The Eurostat April 4 letter commented on this option two by saying:

“From a conceptual point of view, isolating general government swaps for separated treatment might be queried. In ESA 95, it could be just said that this separate treatment is arrived at ‘by convention,’ a formulation used in many other cases. If a justification was necessary for the text, we can imagine incorporating footnote references to characteristics of General Government use of these instruments offering a sufficient justification. *While we can note that the purpose of a financial transaction is not central to classifying it, there are already some precedents in this respect. However, Government debt managers could also be seen as in a similar position to other users of these derivative instruments.* Currently, they use swaps more frequently for the purpose of ‘full hedging’ of risks... The same kinds of transactions are observed for other economic agents, notably non-financial corporations... In this context, consideration should be given about restricting the separate treatment of swaps for General Government only where these derivative instruments are used for ‘hedging’ purposes. There would be a need for a precise definition of this wording, as the simple ‘pure hedging’ does not cover all cases...

³¹ The second edition of ESA 79 was the one that mattered for convergence in 1997. While ESA 79 said nothing about the effects of swaps on the budget deficit, the understanding was that ESA 95 could be used as a reference. This means that swap interest-flows affected the deficit.

Of course, it is not certain whether Debt Managers would accept any restriction to hedging in ESA for these settlements as they affect net borrowing/net lending. So even the introduction of a footnote to cite justification of a separate treatment for General Government because of the view that they ‘always act in a hedging fashion’ might meet opposition,” [emphasis added].

This comment shows a misunderstanding between statisticians and debt managers on the nature of their respective activities. As we have seen, governments almost never use derivatives for hedging³². They use derivatives to ‘take risk’ even when they enter into a domestic interest-rate swap by paying the floating leg. As we will see, these swaps are not considered by the International Accounting Standard (IAS) 39 as “hedging”. What is considered hedging in commercial practice would be a transaction in which the party would ‘pay-fixed and receive-floating’ to hedge a floating-rate liability or a transaction where a party would ‘receive-fixed and pay-floating’ to hedge changes in fair value. The latter is not relevant for governments, as they are not required to mark-to-market their debt, and the former is rarely done by governments. When it is done, it is not to hedge cash flow uncertainty, but to adjust duration (in this case, to lengthen it).

Option three would make ESA 95 consistent with the reformed SNA by treating swaps and FRAs as financial assets not affecting property income. It would then introduce a specific balancing item, ‘net lending/net borrowing’ for all sectors, which would take into account the result of swap and FRA flows

³² A statistician told the author that the word “hedging” referred more to cross-currency swaps, which transformed debt in foreign currency into debt in national currency, and he believed that other types of swaps were basically not in use by governments.

as interest. This would include an item for the general government that would be accounted for in the deficit figure considered in the Excessive Deficit Procedure. Here again, Eurostat’s April 4 letter to justify such a choice was interesting, as it hinted at the relevance of commercial accounting practices:

“It should be easy to justify from a conceptual point of view why there is a need for a double definition of net borrowing. For example, it can be said that under an accounting framework where the notion of income is more widely drawn or taking into account commercial ‘hedge accounting’ practices³³, some flows under swaps are to be considered as interest. Thus, in order to assume some comparability with data other than national accounts, it may be interesting to articulate a different view of this balance item.”³⁴

Option four would still mean to ensure full consistency between ESA 95 and SNA, and would provide supplementary information only to “permit calculation of the aggregates the debt managers seek.” Eurostat itself seemed to back this option when it argued in the same letter that the option:

“Can be achieved by an explicit reference to the Excessive Deficit Procedure (EDP) in the ESA text. It will show that national accounts is without question the basis for EDP framework, *apart from this one exception* for specific financial derivative operations...As in options 1 and 3, ESA95 would clearly have two definitions of General Government deficit/surplus. However, in this case, the divergence is

³³ *References to norms from International Accounting Standards Committee (IFAC (sic)) could be made* [emphasis added]. This is Eurostat’s footnote.

³⁴ Option number three was favored only by Greece.

clearly justified by needs other than national accounting requirements. This solution is seen not to affect system coherence. It would be seen as something parallel to the national accounts system and in fact external to its own conceptual framework. *Nevertheless there is a risk of precedent. Some Member States could argue for demanding a similar approach for other transactions. But even this objection should not be overstated,* [emphasis added].

However, there is an important point worth noting here that was made by a statistician who told the author that "there is a risk of a precedent. The risk is that national accounts balancing items and the ones used for the EDP will diverge infinitely. Statisticians do not accept that. To us, autonomy is a primary good. There are pressures that we cannot resist, but our bureau and statistical information in general will lose credibility. Statistics are a public good, not a government good."³⁵

Option four was presented in three sub-options. The first, desired by Austria and Portugal, required a footnote in ESA 95 stating that "in some specific context, net borrowing/net lending for General Government would be equal to net borrowing/net lending calculated in the system plus payments under swaps considered as interest." The second, favored by no country, would require the differentiated treatment of swaps and FRAs to affect the definition of interest. The third, favored by the majority of national institutions, would require an Annex in ESA 95 describing the purpose of national accounts data for EDP

purposes with respect to swaps and FRAs³⁶.

The Working Group of the Council unanimously approved the Annex formulation on November 8, 2000. Annex V includes the following phrase: "the stream of interest payments resulting from swap arrangements." These words were chosen to motivate the inclusion of the effects of swap arrangements in the budget deficit figure for the Excessive Deficit Procedure. This change to ESA 95 is scheduled to be passed by the European Parliament (final approval is likely to occur in late 2001). A statistician told the author: "Now we cannot say anymore that the definition of public deficit corresponds with the definition of net borrowing and lending in the European System of National Accounts."

3) *Unfinished business*

Paradoxically, both statisticians and debt managers seem to be striving for consistency in reporting. Statisticians have their concern for treating similar products in the same way and for ensuring coherence in reporting every transaction. Debt managers have their concern for treating products with similar functions in the same way and for having public accounts incorporate the effects of the use of derivatives coherently. So who is right?

Probably both. One should not forget that the System of National Accounts does not focus on the 'purpose' of a transaction. Rather, it must represent a transaction based on its intrinsic, economic content. The focus of the System of National Accounts is on ensuring the coherence of the effects on the economic system of a transaction entered into independently of the motives that led to that transaction. A statistician told the author:

³⁵ This reminds us that in some countries, the Maastricht Treaty might have an additional, endogenous effect besides that of putting a ceiling on the government deficit: It might reduce the transparency of national statistics. How costly this might be is hard to quantify, but one should be aware that the Maastricht criteria might be causing distortions that could be substantial in the long run.

³⁶ Belgium, Denmark, Ireland, Spain, France, the Bank of Italy, Luxembourg, the Dutch Central Bureau of Statistics, Finland, Sweden and the United Kingdom.

“National accounting? That’s pretty cute, but nobody cares. The only exception? Governments, as we [the statisticians] become a norm for them.” Indeed, EU countries have chosen to elect the national accounting system as the ultimate arbiter of their performance. It is ESA 95 that contains the relevant values that form the basis on which to judge the fiscal performance of a given country. As officials in charge of economic policy give a relevant weight to the purpose of any transaction (contrary to what national accountants do), there might be times when it appears that economic policy is being unduly restricted by the national accounts. Yet, at the same time, the objectivity of national accounts is being threatened by economic policy.

The solution may be to separate national accounts from public accounts. The government of Canada already does that. It is not affected, for example, by the SNA reform, as it already has a Public Account deficit and a National Account deficit that differ vastly. This might be an issue worth more than a cursory examination. The political process in the euro zone might lead to too many costly annexes of the type described above to allow the budget deficit to reflect the effects of economic policy more accurately. Furthermore, governments that pursue all sorts of window-dressing opportunities would be tempted to ask for an Annex for the sole purpose of hiding the nature of their actions, as the debate on option one clearly illustrated. If the process has succeeded in Canada, however, there should be no reason why the European Commission and, especially, the European Parliament could not be serious and *super partes* providers of such a reform.

Overall, however, things have ended up quite reasonably. ESA 95 is still consistent with the reformed SNA, and debt managers and

politicians are happy³⁷. As a result, the long story seems to have had a happy ending. All is well then? Not quite.

One should not forget that, during the bargaining process, debt managers had promised to give accountants information on all swaps. Such transparency was required to ensure data on gross exposures, as was suggested by the G-22 report on transparency and accountability. Transparency is a key issue in the reporting of derivative activity. In the US, Financial Accounting Standard (FAS) 133, *Accounting for Derivative Instruments and Hedging Activities*, has recently been approved by the Financial Accounting Standards Board (FASB) and is being applied no later than the first day of an entity’s fiscal year that begins after June 15, 1999³⁸. FAS 133 addresses the issue of transparency in reporting. As such, it requires firms to report derivatives separately from the underlying financial instrument, a step which national accountants insisted on.

When we deal with the issue of transparency in accounting in the next chapter, we will understand better why some national debt managers were so vocal during the lengthy process described above. However, we will then be led to wonder if it was not worth pursuing a more careful reform of the System of National Accounts, or at least of the rules of reporting derivative transactions undertaken by governments. Consequently, it may only be at that stage where we will be able to draw the line between an optimal or sub-optimal reform of the SNA, and between an optimal or sub-optimal debt management policy.

³⁷ As this study was going to press, the re-classification of settlements under swaps arrangements and under forward rate agreements was proposed by the European Commission to the European Parliament and the European Council. See Document 599PC0749 in the Directory Chapter 10.30.30 of the Legislation under preparation on the European Union web site. The current status of the amendment can be checked at: http://europa.eu.int/prelex/detail_dossier_real.cfm?CL=en&DossierId=154183.

³⁸ See Johnson (1998).

CHAPTER 4: ACCOUNTING RISK IN GOVERNMENT DERIVATIVE USE

4.1 Strategies to achieve window-dressing through derivatives

The issue of transparency in reporting of derivative transactions by governments in the EU was skipped over completely during the long negotiations between debt managers and statisticians. This issue should not have been avoided.

It is true that during the September 1999 meeting at Eurostat debt managers stated that they would be prepared to report separately the swap-related payment transactions, as a memorandum item in the public accounts, to ensure the transparency of its impact. Debt managers also stated that the information was already available in their offices and that it could be easily identified. While this can only be good news, as documentation is the only way of discriminating between the appropriate and the window-dressing use of derivatives by governments, this also reminds us that no detailed information has found a place in the budgets of most national governments. Consequently, the information has been concealed from the public. However, it is worth noting why such detailed information is critical. It will be useful to cite another example taken from the February 29, 2000 letter of country B to the XXXI Session of the UN Statistical Commission. It argued against the proposed reform on EMU government budget deficits in the following way¹:

“Since the proposal of reclassifying swap cash flows treats transactions with the same economic structure differently, it may distort the incentives and objectives governing the process of debt management. For example, since only the coupons on the original debt issue are to be accounted for as interest, issuers may be driven to issue debt in currencies with low nominal interest rates, such as the yen or the Swiss franc. Simultaneously, the issuer may swap the debt issue into a currency of their choice (say euro). The low market interest rates in yen or Swiss franc would *artificially* lower the interest expenditure accounted for. However *from an economic point of view*, a swapped debt issue is *virtually identical* to a debt issue originally made in euro. The following numerical example illustrates this point. Suppose that a *European* government issues a floating-rate note denominated in Japanese yen and swaps this bond into a floating position in euro at the same cost of the debt issued in the domestic currency. On the base of the current accounting system, different financing strategies, *with the same economic structure*, do not impact the deficit. On the contrary the proposed changeover to the accounting treatment of swap contracts may end up in big distortions on the deficit figures. In particular, considering the previous example, the impact is around 3.5% of the nominal debt amount issued. Taking into account that for example the B Treasury issues each year an amount of X billion euro of Treasury bills, *with the introduction of the new system*, if half of this borrowing requirement is financed in yen and swapped in Euribor the deficit figure, in percentage of the GDP, *would be 0.2% lower*. Similarly, in a steep yield curve environment, we can end up at the same result if we consider the alternatives of issuing a fixed-

¹ Chapter 3 showed that this reform did not have an impact in the end. However, on February 20, 2000, when country B

wrote its letter to the XXXI session of the UN statistical commission, the outcome of the reform was uncertain.

rate bond in euro or floating-rate note switched throughout an interest rate swap, into a fixed-rate position. While only the low floating coupon could be considered as interest according to the new proposals, the economic cost of debt to the issuer is in fact the cost of the swap cash flows that is the fixed-rate locked into the swap contract. This will give rise to discrepancies very similar to those described above," [emphasis added].

This example is good food for thought because:

a) It illustrates a case in which the deficit-to-GDP ratio would be lower rather than higher had the newly proposed system of accounting by SNA been approved for the Excessive Deficit Procedure. In reality, some debt managers might have been worried about exactly the opposite event. Debt managers might have been worried that, with the new system for financial derivative operations, they would have had to give up operations that artificially lead to a lower deficit-to-GDP ratio. Following the example above, it is also possible that debt managers would issue in euro and then swap the bond to a currency with low nominal interest payments. In this case, under the original SNA 1993, countries would have low interest expenditure recorded, while under the reformed SNA, they would have higher interest expenditure².

b) It neglects the fact that the two proposed operations have different implications for the debt manager. Indeed, by using a derivative contract, the government exposes itself to counterparty risk, which it did not have to do with direct bond issuance. To argue that such operations are economically similar denies, in part, the certainty that some debt managers

are aware of the need for transparent reporting of these operations.

c) It hints at the important dimensions of these operations by providing a 'theoretical example'. 0.2% of GDP in a European country is often equal to the total value of the fiscal package in a given budget year, and is sufficient to have helped some countries in meeting the Maastricht criteria in 1997. It, therefore, indirectly suggests the possibility that financial derivatives might be used successfully for window-dressing purposes if no transparency is required. It is interesting to note that the Application of the Protocol on the Excessive Deficit Procedure in the euro zone has an added transparency requirement for interest expenditure. This is an "important indicator for monitoring the budgetary situation in the Member States...The way in which the figures on interest expenditure are to be provided to the Commission by the Member States should be clarified." However, no mention is ever made of improving the quality of reporting derivative transactions.

Debt managers and statisticians silently avoided the issue of 'accounting risk' during their more than year-long confrontation. It might, therefore, seem not to be a relevant issue, or that, as a statistician told the author, only "small amounts are involved with window-dressing." Nevertheless, other institutions have started paying attention to the issue. The European Central Bank in one of its bulletins provides a new presentation of the general government fiscal position in the euro zone. One finds in it "for the first time, a reconciliation between the change in debt and the deficit, i.e. the *debt-deficit adjustment*." The ECB continues by saying that "reporting on the reconciliation between the deficit and the change in debt, using a detailed and harmonized presentation, is important from a

² Note that this operation would not amount to window-dressing, as argued in sub-section 1.4.d.

fiscal and monetary policy perspective. It helps to clarify the reasons behind the substantially and systematically positive *deficit-debt adjustment* observed for much of the past twenty years...In addition the deficit-debt adjustment table helps to monitor the financial side of government. It could be relevant for the analysis of the fiscal stance if cash expenses were to be booked under financial transactions. This might be the case...*with skillfully packaged derivatives transactions (in particular those using off-market swaps),*³ [emphasis added].

What are off-market swaps? The simplest type is swaps that are structured with a fixed-leg rate different from the swap-market rate. For example, suppose that a sovereign borrower wanted to enter into a domestic IRS receiving-fixed and paying-floating rates. For some reason, the sovereign borrower would like to have the fixed rate of the swap equal to the coupon rate of a previous benchmark bond issued in the market. However, as market conditions have changed since the initial issuance of the benchmark, the swap-market rate is currently lower than the reference coupon rate. The debt manager's counterpart would enter into the transaction paying the fixed leg equal to the higher coupon rate if, and only if, the debt manager recognized that such a swap has a negative market value for the counterpart at inception. At this point, the counterpart will have two options:

i) The counterpart might ask for a cash disbursement equal to the present value of the higher fixed-rate payments, higher compared to those that would occur in a normal transaction at market rates; or

ii) The counterpart could also adjust the spread upward on the floating Libor rate of the swap, which would make the present value of the floating payments over the life of the swap equal in expectation to the higher fixed payments asked for by the sovereign borrower.

How should debt offices record these situations for accounting purposes? In some cases, it would seem pretty obvious, since most governments recognize the accrual concept. For example, issuing a bond below par because the coupon rate is lower than the market rate forces most governments to amortize the discount over the life of the bond as a higher interest expense. Similarly, with a zero-coupon or high-discount bond, the large discount is amortized over the life of the bond, and interest accrues over the life of the bond.

Unfortunately, national accounting methods are not so clear when it comes to derivatives. Owing to the non-negotiable nature and tailored structure of derivatives, public auditors who sometimes lack financial expertise might have difficulties understanding derivatives. To take the most extreme example, a zero-coupon swap, even though technically similar to a Treasury bill, might escape routine checks because of its name and its tailored nature. Suppose government A enters into a zero-coupon swap with bank B, agreeing to a deal where government A receives USD 20 today and will give back USD 100 in ten years' time. Normally, such a transaction would result in public debt increasing by USD 100 today and a recognition of regular accrued interest payments of USD $(100-20)/10$, or USD 8 per year. However, governments might use the USD 20 arising from the swap to reduce the deficit today by claiming lower interest expenditure. In ten years' time, when counterpart B is owed the USD 100, an amount of USD 100 will have to be claimed as higher interest expenditure. This

³ European Central Bank, *Monthly Bulletin*, September 2000, pp.47-48, Table 7. An EU official asked the author, "Why did the ECB have to write that? They should not have." Even if not published by Eurostat, the data are submitted by member states to the Commission and both Eurostat and the ECB use them for assessing fiscal figures, notably during country visits.

will negatively affect the balances of a future government in a way that would not have occurred had the transaction been accounted for.

Such an extreme example is hard to find (although a market maker told the author that a government had conducted a zero-coupon transaction for the purpose of window-dressing its accounts). A more common situation would be an 'off-market rate transaction' of the kind mentioned by the ECB. In these transactions, a debt office enters into a domestic IRS by receiving-fixed and paying-floating rates, but asks that the fixed payment be lower than the swap-market rate. This implies that the swap is not valued at zero, but has a negative value for the sovereign borrower. To complete the deal, the debt office will either need a lower (in algebraic value) spread on its Libor-linked payments, or will ask to be compensated immediately with an up-front payment. The two alternatives are very different. In the first case, the remaining value of the swap is amortized over the life of the swap as a greater gain for the treasury, which compensates more or less equally over the life of the transaction for the lower, fixed rate received with respect to the market rate. Canada had to link its swaps to specific issues in its old domestic IRS program that would adjust the spread in such a fashion so as to avoid up-front payments. In the second case, up-front payments, if not amortized, might constitute operations meant to avoid the accrual principle for the purpose of window-dressing⁴.

A lack of clarity and of minimum requirements for precise accounting in the European Union have left ample room for member states to use derivatives to window-

dress their public accounts. This lack of clarity is nowhere more obvious than when the topic is discussed with officials across the EU. One official told the author that, before ESA 95, accounting methods for derivatives were unclear. But, he added, with Maastricht and ESA 95, there was a break with the past: "Even though the rules are pretty general, they are precise enough to forbid excessive cases of window-dressing with derivatives. The accrual principle is a cogent principle of ESA 95." Nonetheless, in several meetings with other debt managers and market makers, the author received confirmation that in 1997, when countries were required for the first time to stay within the 3% deficit-to-GDP limit, some countries were using swaps to alter the profile of their interest expenditure⁵.

It might be that the accrual principle is not to be applied to derivative transactions under current rules of accounting. This is what a prominent official in a statistical office told the author when asked about zero-coupon swaps:

"Right now we cannot do anything. The governments have the right not to consider these swaps as affecting debt and, actually, even the difference between the value to maturity and the price obtained today does not need to be amortized over time. The debt managers could say: 'You have not recognized in the Maastricht debt the notion of derivatives. What do you want now?' Indeed, if a zero-coupon swap is considered a financial derivative, then its notional amount [the amount due by one counterpart at maturity] cannot be strictly compared to the nominal value of, say, a Treasury bill."

⁴ To complicate things even further, up-front payments might, in some cases, perform an efficient function for public debt management, as we will see later in this chapter.

⁵ The author was told by a private accountant that, in some cases, this has also been a practice in the private sector by private players and in publicly owned firms to window-dress their accounts. He also added: "To recognize derivatives in the debt one would also have to include assets - and Maastricht only refers to gross debt, not net debt."

This is because notional amounts of derivatives do not affect the value of debt, as they are not considered an indicator of a government liability⁶. This notion applies in the same way for an up-front payment.

This is one occasion where commercial standards might prove very useful. The International Accounting Standards Committee in its Standard n. 39, *Financial Instruments: Recognition and Measurement* (IAS 39), defines a derivative as a financial instrument:

a) whose value changes in response to the change in a specified interest rate, security price, commodity price, foreign exchange rate, index of prices or rates, a credit rating or credit index, or similar variable (sometimes called the “underlying”);

b) that requires no initial net investment or little initial net investment relative to other types of contracts that have a similar response to changes in market conditions [emphasis added]; and

c) that is settled at a future date.

In its IAS 39 implementation guidance, the IASC provides a question and answer session that has been approved for issuance in final form. Questions 10-4-a and b and the answers provided are particularly helpful for us. They relate to ‘prepaid swaps’. Question 10-4-a asks: “If a party prepays its obligation under a pay-variable and receive-fixed interest rate swap at inception or subsequently, is the swap a derivative financial instrument?” The IASC answers no, and it is worth quoting its explanation:

“[It] is not a derivative if it is prepaid at inception and it is no longer a derivative if it is prepaid subsequent to inception because it

provides a return on the prepaid [invested] amount comparable to the return on a debt instrument with fixed cash flows. The prepaid amount fails the ‘no or little initial net investment’ criterion of a derivative instrument. To illustrate: company S enters into a 100 million notional amount five-year pay-variable [and] receive-fixed interest rate swap with counterparty C. The variable leg of the swap resets on a quarterly basis to three-month Libor. The fixed-interest payments under the swap are calculated as 10% times the swap’s notional amount, that is, 10 million per year. Company S prepays its obligation under the variable leg of the swap at inception at current market rates, while retaining the right to receive-fixed interest payments of 10% on 100 million per year. *The cash inflows under the contract are equivalent to those of a financial instrument with a fixed annuity stream since company S knows it will receive 10 million per year over the life of the swap.* Therefore, all else being equal, the initial investment in the contract should equal that of other financial instruments that consist of fixed annuities. Thus, the initial net investment in the pay-variable [and] receive-fixed interest rate swap is equal to the investment required in a non-derivative contract that has similar response to changes in market conditions. For this reason, the instrument fails the no or little net investment criterion of IAS 39. Therefore, the contract is not accounted for as a derivative under IAS 39. By discharging the obligation to pay variable interest rate payments, company S *effectively extends an annuity loan to company C. In this situation, the instrument is accounted for as a loan originated by the enterprise,*”⁷ [emphasis added].

⁷ Interestingly, question 10-4-a refers to a prepaid swap where the party is in a pay-fixed and receive-variable interest rate swap. In this case the IASC states that the prepaid swap is a financial derivative. See the IASC web site at www.iasc.org.uk/frame/cen2_139.htm.

⁶ One statistician told the author: “The key issue is how to define a notional amount.”

Would a zero-coupon swap constitute a financial derivative? On the basis of the statement above for a prepaid swap, 'pay-variable and receive-fixed', one would be surprised if this were the case. Instead, what is important is when an off-market rate swap becomes a financial derivative and ceases to be a loan according to the criterion above. Nevertheless, the solution to this problem is simple: A zero-coupon swap where a government pays a fixed amount at maturity is not a derivative. Rather, it is a loan and should be treated as such within the well-known rules of accrual. Similarly, an up-front payment should be considered a loan to a sovereign borrower and should be accrued over the life of the swap. This is a step that the System of National Accounts should implement. *This step should also constitute a binding requirement in evaluating the budget deficit in the euro zone for the Excessive Deficit Procedure.*

Sometimes, derivative transactions can be tailored to fit the needs of sovereign borrowers in ways that are difficult to classify up front. However, a common thread exists: A loan is 'sold' as a cash inflow that reduces interest expenditure. This is the smoking gun that accountants and regulators should look for.

A question might arise as to whether one government can achieve enough reduction in the cost of debt through the use of derivatives to make a significant difference in a given fiscal year. To answer this question, one should remember that, in 1997, window-dressing needed only relatively small fiscal effects compared to GDP to become significant for a prospective euro zone candidate. A country with a deficit close to 3.2% of GDP would have needed just a 0.2% share of GDP to reach the 3% limit.

However, bear in mind that achieving

0.2% of GDP of budget savings through swaps is no small hurdle for a government. To give an idea of the sizes required, let us take Sweden (a country not concerned by the issue of entry in the euro zone in 1997), the largest user of swaps among the countries considered in our sample. Its average cost of debt in 1999 was 6.53%, and its primary surplus over GDP was 4.17%. To raise the surplus to 4.37% of GDP would have required a decline in the average cost of debt to 6.25%, almost 30 basis points. This is a decline in the absolute value of interest expenditure to SEK 85.9 billion from the SEK 89.8 billion level registered in 1999. That amounts to a SEK 4 billion decrease that should be compared with the figures for the 1999 swap activity of the Swedish National Debt Office. These figures estimated savings of SEK 1.2 billion in present value terms (i.e., over the life of these operations!) from borrowing through the swap market rather than through international capital markets.

A large user like Sweden would, thus, not be able to achieve a reduction of 0.2% in deficit-to-GDP ratio solely through swaps. This does not imply that reaching this goal would be impossible for another sovereign borrower. It all depends on whether swaps are used for the right purpose (as was the case in Sweden), or are constructed for window-dressing purposes. A market maker told the author: "As for whether you can, through swaps, achieve deals that make you qualify and fulfill the Maastricht criteria, you need committed, cynical people to make a difference. But you could do it."

Italy was one of those countries that was very close to the 3% target in 1997. While it is impossible to reconstruct the impact of each single derivative transaction in Italy, one can examine Chapter n. 3244 of the Italian budget, which recorded (up to 1998) the gains from derivative activities separately from interest

expenditure⁸. In 1997, this chapter incorporated a forecast of ITL 1 trillion (approximately 0.05% of GDP) both in the accrual and cash basis section. This is a high figure for derivative activities. At the end of 1997, the treasury had earned, both in cash and accrual terms, ITL 4.747 trillion. This is almost five times as much as had been forecast and, more importantly, an amount equal to 0.25% of GDP. In 1998, there was an estimate of ITL 4.156 trillion in the same chapter. The actual figure by the end of the year turned out to be ITL 5.83 trillion, almost 0.3% of GDP.

How were results achieved? One might argue that in 1997 many governments were playing convergence trades, betting against the markets that they would enter into the euro zone by fulfilling the required criteria. If they had done so through derivatives, then large gains would have followed that would remain even in the following years. In another instance (as discussed in Chapter 1), Ireland achieved a savings of approximately 0.25% of GDP in 1998 by betting against the market. Nonetheless, off-market rate transactions leave the possibility that some governments might have used the lack of a clear accounting framework to reduce their budget deficit in 1997 at the expense of budget balances in the future. Thus, it seems worthwhile to conduct a more thorough investigation of the topic.

4.2 A true episode

4.2.a *Setting the stage*

This sub-section provides a real-world example of how sovereign borrowers can use

derivatives to window-dress public accounts as a means of achieving short-term political goals. It is by no means a theoretical example, but a real swap transaction undertaken by one of the sovereign borrowers cited in this book, which now belongs to the European monetary union. In what follows we will call this sovereign borrower "M".

The author was given a copy of the swap contract by a public officer of M. This officer works in a public institution in charge of approving the accounting of derivative transactions entered into and recorded by sovereign borrower M. The public officer had no understanding of the nature of this contract and honestly believed he was giving the author a copy of a derivative contract that did not present accounting problems. This also indicates how officers in charge of verifying that sovereign borrowers implement proper accounting procedures sometimes lack the technical expertise to fulfill their duties optimally.

The swap transaction, translated into English and reproduced in the Appendix, was undertaken in 1996 by M solely to reduce the level of interest expenditure in years 1997 and 1998 - two critical years for the EMU process - so as to keep the budget deficit-to-GDP ratio within the 3% level required by the Stability and Growth Pact. As this transaction only helped postpone interest expenditure, one of its consequences was to raise unduly the level of interest expenditure in the years after 1998. Had proper national accounting procedures been in place, this transaction would have been recorded without allowing window-dressing of public accounts in 1997 and 1998 at the expense of public account balances after 1998.

We will demonstrate that M undertook such a swap transaction only to window-dress its accounts. To do so, we will first show in sub-

⁸ "Differenziale sugli interessi derivanti da operazioni effettuate ai sensi dell'articolo 8 della legge 22 dicembre 1984, n. 887, come sostituito dall'articolo 2, comma 165, della legge 23 dicembre 1996, n. 662." Law n. 662 allowed the treasury to operate with instruments used in the financial markets. As in most other countries, it is a brief five lines that allows the treasury to do whatever it sees fit in terms of public debt management.

section 4.2.b that standard derivative contracts to achieve proper debt management goals were disregarded because they would not help in substantially decreasing interest expenditure in the years 1997 and 1998. Sub-section 4.2.c describes the swap transaction entered into by sovereign borrower M, reveals its window-dressing nature, and documents its impact on the public accounts of sovereign borrower M.

4.2.b Standard active debt management with derivatives

In 1995, M issued an international 3-year and 3-month yen-denominated bond maturing in 1998 with a face value of JPY 200 billion and a yearly coupon of 2.3%. This bond was sold at par. The net proceeds for sovereign borrower M were y unis, where the uni is the fictitious name we will give to the currency in M. The exchange rate on the day the bond was issued was 193.44 unis for JPY 1.

That same day, domestic (uni) interest rates for a similar maturity were higher than yen interest rates. By issuing the yen-denominated bond instead of a domestic bond in unis, the debt office would have paid less interest on its yen-denominated liability. However, any appreciation of the yen over the life of the bond, if realized, would have made yen-denominated payments more expensive once converted into unis. At issuance (barring superior knowledge on the part of sovereign borrower M as to future movements in the yen/uni exchange rate), issuing in yen or in unis would have looked equally costly to sovereign borrower M. Nevertheless sovereign borrower M decided to issue this yen-denominated bond rather than a domestic uni-denominated bond over the 3-year and 3-month maturity. It is likely that sovereign borrower M issued the yen-denominated bond primarily to achieve greater

diversification of its bond portfolio.

In 1996, almost one year and six months after the issuance of the yen-denominated bond, the yen had instead substantially depreciated against the uni. The yen traded at 134.1 unis per yen. The yen-denominated bond had at that date a remaining life to maturity of approximately one year and nine months. Had the yen continued to trade at such low levels compared to those of 1995, the debt office in M would definitely have gained from having issued in 1995 in yen rather than in unis. However, at the date when the yen was trading at 134.1 unis per yen, the debt office in M was still exposed to exchange rate changes in the remaining one-year-and-nine-month's life of the yen-denominated bond. Had the yen substantially appreciated in that remaining period, M's debt office would have lost some or all of the earlier gains obtained through the initial depreciation of the yen.

It is at this point that active debt management through derivatives could have been used effectively to achieve a specific goal. Imagine that in 1996 when the yen-denominated bond had a one-year and nine-month residual life to maturity, the sovereign borrower M had entered into a standard one-year and nine-month JPY 200 billion notional amount cross-currency swap. Such a theoretical standard cross-currency swap would have matured in 1998, on the same date the yen-denominated bond matured.

At maturity, the theoretical currency swap would have required M to pay an amount of unis equal to JPY 200 billion multiplied by the market exchange rate on the day the swap was transacted, 134.1 unis for one yen. In exchange, always at maturity, M would have received JPY 200 billion from its counterpart.

During the life of this theoretical cross-currency swap, sovereign borrower M would have paid a short-term floating rate in unis to its counterpart while receiving a yen-denominated fixed swap rate. In 1996 the one-year and nine-month yen swap-market rate was approximately 0.75%. To be perfectly hedged against exchange rate risk, sovereign borrower M would have received a 2.3% yen fixed rate, or a fixed payment 155 basis points higher, rather than the swap-market rate equal to 0.75%. In exchange for these extra fixed payments, M's counterpart would clearly have asked to receive from M larger amounts on the floating-rate leg of the swap. M would have thus paid to its counterpart the uni's Libor rate

eliminating currency risk and turning a yen-denominated liability at a low value of the yen into a uni-denominated liability, sovereign borrower M would have locked-in a capital gain by having issued, in 1995, in yen rather than in unis¹⁰. What matters for our purposes is to show that this gain would have, by and large, not affected interest expenditure in 1997 and 1998, but only affected it from 1999 onwards. In this case, the theoretical transaction we are describing would have proved useless in reducing the budget deficit in 1997 and 1998.

Where would the savings arising from this theoretical swap have appeared in the budget of M? Recall that after the theoretical cross-currency swap illustrated in Figure 4.1,

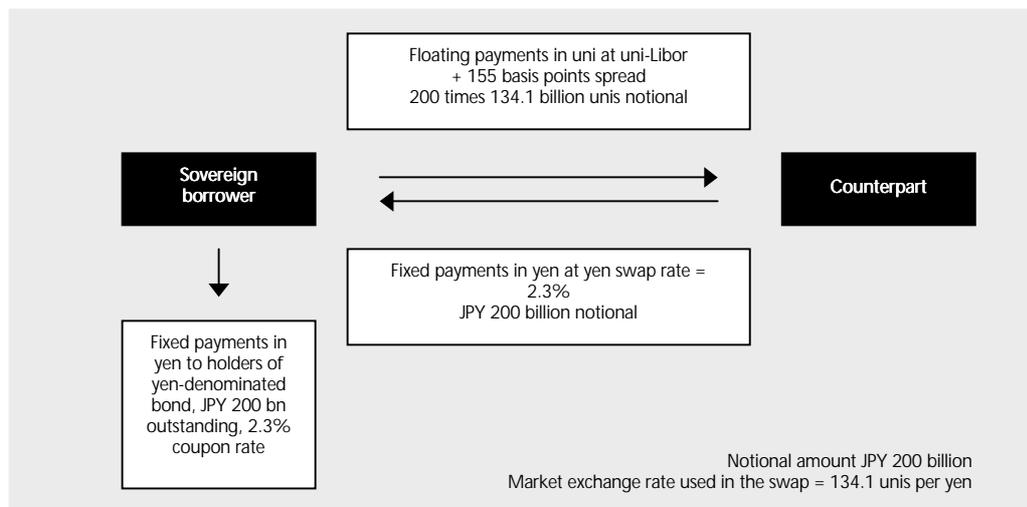


Figure 4.1 - A standard cross-currency swap by a sovereign borrower

plus 155 basis points on a uni-notional amount of JPY 200 billion multiplied by the market exchange rate between the yen and the uni (134.1 unis per yen)⁹. Figure 4.1 illustrates this theoretical transaction.

After this theoretical transaction, by

M's liability would have become a synthetic uni-Libor liability on a notional amount in unis (JPY 200 billion converted at the market exchange rate of 134.1 unis for JPY 1). The lower the yen exchange rate established in the swap contract,

⁹ In this section 4.2, we will assume that M can borrow in financial markets at Libor 'flat' (i.e., with no spread added). This assumption regarding sovereign borrower M is realistic during the considered period.

¹⁰ This gain could obviously have materialized even without entering into the currency swap had the yen remained depreciated until maturity. The theoretical cross-currency swap we have examined would simply have made this gain certain, avoiding the risk of the yen appreciating in the final period of the life of the bond, between 1996 and 1998. Any appreciation of the yen in the absence of the cross-currency swap would have reduced the cost savings for the debt office in country M.

the lower this liability would have been. M would therefore have had, through this theoretical currency swap, a lower net cash-outflow at maturity than the one it would have had by issuing a domestic uni-denominated bond in 1995¹¹.

Such lower cash outflow due to a lower reimbursement of principal would not have affected the interest expenditure of sovereign borrower M in the years when the cross-currency swap would have been outstanding (i.e., 1996 to 1998). Instead, it would have decreased the public sector borrowing requirement of M in 1998, when the bond and the swap would have expired. Such a lower public sector borrowing requirement in 1998 would have implied a lower public debt in M in 1998, compared to the level of public debt that M would have had to roll over had it instead issued in unis in 1995. In turn, this lower public debt would have implied lower interest expenditure and lower deficits only from 1999 onwards.

4.2.c Using derivatives to window-dress public accounts

Had sovereign borrower M wanted to eliminate currency risk due to the issuance of a yen-denominated bond it could have made use of the standard cross-currency swap illustrated in Figure 4.1. By doing so, it would have also locked-in a substantial capital gain due to the yen depreciation that had occurred since the issuance of the yen-denominated bond. However, such a transaction would have had an impact on M's interest expenditure only after 1998. We showed in the previous sub-section that such a standard cross-currency swap would

have allowed the sovereign borrower to decrease the value of public debt in 1998 and, therefore, to accrue savings in interest expenditure only after 1998.

However, countries like M aiming at entering into the euro area during the period considered were not concerned with the reduction of debt. Rather, they were pressed to limit interest expenditure, especially for 1997, so as to contain the value of the budget deficit. Perhaps political pressure was formidable on debt managers in M, which would have been hard to resist. Whatever the reason, M's debt office did not enter into a standard cross-currency swap as described in the previous section. Instead, it implemented, through a complicated cross-currency swap, a scheme that transferred the gains described in the previous sub-section to the fiscal years 1997 and 1998. By so doing, M's debt office lowered interest expenditure in those two years and raised interest expenditure in the years after 1998. It did so by taking advantage of a lack of expertise on the part of officials in charge of monitoring the accounting of such operations.

The cross-currency swap which sovereign borrower M transacted with counterpart "N" (a large market maker in the derivative market) was entered into in 1996 for one year and nine months and matured in 1998. This swap matured on the same day when the yen-denominated bond issued in 1995 expired. In this real swap transaction, counterpart N paid in 1997 and in 1998 a 2.3% yearly fixed interest on a JPY 200 billion notional to M, the sovereign borrower. Also in 1998, when the swap matured, N paid an amount of JPY 200 billion to its counterpart M. Notice that in this way, starting from the day the swap was negotiated, the debt manager in M was perfectly hedged on its original yen-denominated bond liability, just as the debt

¹¹ The JPY 200 billion transferred to the holders of the government yen-denominated bond issued in 1995 would not have represented a net cash-outflow for sovereign borrower M, since this amount would also have been received by M from the counterpart, as agreed in the swap.

manager would have been with a standard cross-currency swap transaction (see Figure 4.1).

However the similarities with the previously described standard cross-currency swap contract end here. Indeed, the exchange rate used in the contract (on which the notional amount in units of M's paying leg of the swap was set) was not the exchange rate prevailing in the market the day the swap was transacted, 134.1 units per yen. Rather, the exchange rate used was 193.44 units per yen, a much higher level than the market level¹². This implied that at maturity sovereign borrower M paid to counterpart N a much larger amount, 38.668 trillion units (200 times 193.44 billion), than what it would have paid in a regular cross-currency swap entered into at the market exchange rate.

minus 1,677 basis points (16.77%). The transaction is synthesized in Figure 4.2 (below).

Sovereign borrowers like M could borrow, at the time when the transaction took place, at levels around Libor with no spread added. It is, therefore, very puzzling that in this case it borrowed at Libor minus 1,677 basis points, which implies a negative interest rate. Sovereign borrower M was therefore going to receive interest payments on both legs of the swap until maturity. Why did it enter into such a strange transaction?

By entering into a cross-currency swap at a higher yen exchange rate (193.44 units per yen) than the one it could have fixed on the same day (the market exchange rate of 134.1 units per yen) sovereign borrower M did in fact promise to pay to counterpart N at maturity a

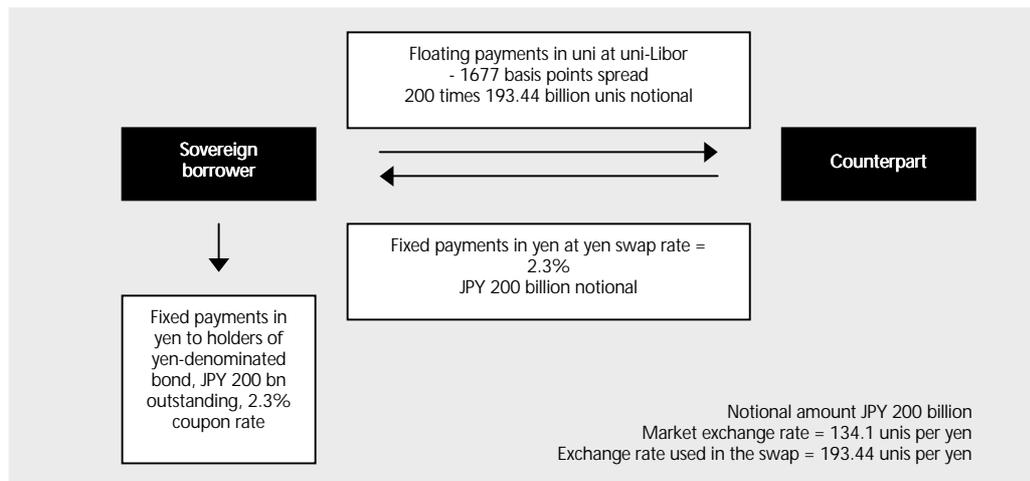


Figure 4.2 - A non-typical cross-currency swap by a sovereign borrower

Finally, the currency swap contract required sovereign borrower M to pay, semi-annually starting in 1997, on a uni-notional amount of JPY 200 billion times the 193.44 agreed exchange rate, the uni's Libor rate

much larger amount of units than it would have done had the swap been transacted at the market exchange rate¹³. Actually, sovereign

¹² In passing, the reader might have noticed that this exchange rate level is the same that prevailed when, one year and nine months before, the yen-denominated bond was issued by sovereign borrower M in 1995. More on this choice of the level of the exchange rate will be said in the next footnote.

¹³ It is interesting that the exchange rate chosen, which could have been any one higher than 134.1, was exactly equal to the one at which the M borrower had issued the underlying bond in yen one year and six months earlier. It should be remembered that the exchange rate at which the original bond transaction in yen had been executed at the time did not matter any more for hedging purposes. However, it might be that regulators not knowledgeable about the standard purpose for using derivatives were led to approve the deal because of this choice.

borrower M paid at maturity approximately 200 multiplied by (193.44-134.1) unis more that it would have paid under a standard cross-currency swap.

Sovereign borrower M, in exchange for these extra cash outflows, received from N a series of extra cash inflows during the life of the swap. These cash inflows would not have been part of a standard cross-currency swap transaction. Indeed, counterpart N, instead of receiving uni-Libor rate plus 155 basis points from sovereign borrower M on the floating leg of the swap (as it would have in a standard transaction, see Figure 4.1), received a uni-Libor rate minus 1,688 basis points. This implies that counterpart N paid to sovereign borrower M, in four regular installments every six months starting from 1997 and until the maturity of the swap in 1998, approximately 1,843 basis points per annum more than what it would have had in a standard cross-currency swap transaction.

De facto, the sovereign borrower received four loans from counterpart N, every six months from 1997 to 1998. These loans were paid back at maturity in 1998 by disbursing a greater amount than would have been disbursed had the currency swap been constructed in a standard way.

These four loans from counterpart N should have simply been considered as an increase in the public debt of country M, as standard international accounting practice requires for all loans a sovereign borrower receives. The cost for M of these loans from N could have been calculated with actuarial formulas and the value in unis of such cost should have been amortized over the life of the swap. Was it? We strongly doubt it. Otherwise, why enter into such a complicated transaction in the first place? It is more likely that these four payments by counterpart N were used (against accepted accrual principles) to reduce interest

expenditure in 1997 and 1998.

The author's calculations, based on the value of M's budget deficit and GDP in fiscal year 1997, hint that ten operations like the one just described could have explained a 0.2% savings - in terms of M's budget-to-GDP ratio in 1997. At the time the swap transaction took place in 1996, M had a forecast for its budget deficit-to-GDP ratio for 1997 close to 3%. A saving of 0.2% of GDP could have made the difference in ensuring the compliance with the Maastricht Treaty's requirements for EMU entry.

It is a clever transaction that is initially difficult to comprehend and which hides a simple principle: advancing future cash flows to the present. The transaction in Figure 4.2 had nothing to do with hedging the currency risk in the cash flows related to the underlying yen-denominated liability. Nor did it have anything to do with locking-in with certainty the capital gain that derived from the yen depreciation. These goals could have easily been achieved with a standard cross-currency swap, such as the one shown in Figure 4.1. Rather, the type of transaction that sovereign borrower M entered into allowed the debt management office to receive in advance cash flows that were supposed to be received only in the distant future. The accounting for these cash flows was then implemented as if these represented reductions in interest payments. This accounting choice hid the true nature of the cash inflows, the one of a liability that should impact on the public debt rather than on the budget deficit.

When the author asked the debt manager of M about this transaction, the debt manager confirmed that the transaction advanced interest gains to 1997. He also added that "we could have done it in another way, by requiring an up-front payment from the counterpart that we would have accounted for as an immediate reduction in interest

expenditure in 1997.” In this case counterpart N, instead of paying semi-annually the Libor rate minus 1,677 basis points to sovereign borrower M, would simply have transferred a lump-sum amount to sovereign borrower M at the start of the swap contract in 1996. Also this transaction, a typical off-market rate swap, would have amounted (even more evidently than the real transaction that was undertaken, shown in Figure 4.2) to a loan by counterpart N to sovereign borrower M. As such, it should not have affected the interest expenditure of M in 1997 or 1998. This transaction should have affected M’s public debt by raising it.

The debt manager of M also agreed that the swap under consideration could have been structured in a standard way (i.e., a structure similar to the one we described in the previous sub-section and synthesized in Figure 4.1). However, he denied that ESA 95 rules forbid transactions similar to the one that his debt management office had implemented, shown in Figure 4.2. The fact of the matter is that he is right. All that ESA 95 says is that the flows of derivatives *should* affect the budget. It does not specify *how* they should affect it.

When the author, during a meeting, pointed out the transaction shown in Figure 4.2 to a European official who is supposed to monitor such transactions, the reaction the author received was indicative of the absence of firm national accounting principles over the use of derivatives by governments. The first thing this official said about this transaction was that “it is all right...We would not oppose it.” When the author explained his concern to the official, the latter recognized the problem but dismissed the need for action by saying that “for the time being we would not challenge such a transaction.” Shortly afterwards in this meeting he admitted that the problem was more serious than he first thought. He acknowledged that

“we don’t have anything in ESA 95 to oppose it,” underlining the absence of a firm national accounting framework to deal with these window-dressing transactions. He concluded by opening the door to corrections in the system of national accounts by stating: “Today, it’s true. The door is open to such deals. It is worth examining whether ESA 95 should have a sentence to forbid this.”

4.3 The need for a clear accounting framework

The lack of clear accounting rules is, indeed, part of the problem. An official of the government of M but not from the debt management office told the author: “Our perception at the time was that the rules of the game were not very clear and stable over time...There was a lack of appropriate legal and technical frameworks that would provide a sturdy, fixed, certain anchor to the rule. There was space for non-transparent changes, especially for the 1997 deficit.” The same official, however, mentioned that by 1997 ESA 95 rules were considered “cogent”, especially regarding the accrual treatment of interest cash flows.

Several governments are aware of this ‘accounting vacuum’, and they refrain from using this type of derivative contract. However, some of these countries either had no concern for entering the euro zone, or they had budget deficits sufficiently below the Maastricht limits that would fulfill the criteria with no problem. Consequently, they probably never considered the issue at great length¹⁴. Three debt managers from different countries who asked not to be identified suggested that up-front

¹⁴ They might, however, be bothered by other debt managers making use of these border line practices. One debt manager told the author that this represented “unfair competition” by these debt managers. He then backtracked and said: “Never mind, I shouldn’t have told you this.”

payments constituted a nightmare for them in terms of the political pressure that may be applied. They asked the author not to mention the possibility that such operations could be done. In country A, the author was told: "Maastricht has no exact rule on this, and we would like a rule on it. In A, politicians do not know about these rules, but for us it is scary; if they knew about it they would press for these deals." In country B, the author was told: "I would love the guidelines to prohibit up-front payments so as to remove any temptation." In country C, the author was told: "We have a self-imposed, ethical unwritten rule not to use up-front payments. However, we would not like to bring it to the attention of politicians by asking to insert it into the guidelines: That would give them an incentive to put political pressures on us." When the author asked a debt manager in country C whether politicians would notice such a change in the rules, she said: "Oh yes, they are very careful about these things." Asked why the politicians would not exert pressure now, if they are so careful, the debt manager did not give an answer. It should be pointed out that not all of these debt managers were in state treasuries. 'Independent' agencies are also under pressure from politicians, albeit to a lesser extent. It is worth noting that these political pressures might be particularly intense also on the issue of when to terminate a contract, as positive value transactions would help the budget in a given year in almost all countries.

In any case, it is clear that debt managers usually resent doing off-market-rate transactions, or more generally, doing business for window-dressing purposes. What they probably fear even more is disobeying orders from politicians. In the case of entrance into the euro zone, not satisfying the Maastricht criteria would have meant huge political costs. In this

case, the pressure might be irresistible on a debt manager unless he or she can be supported by a clear framework within which to operate. Such a structure might possibly be more likely in an agency rather than in a ministry.

That the issue of window-dressing to circumvent tough political hurdles might not constitute a very costly practice in terms of reputation was confirmed by a talk the author had with a rating agency official. While rating agencies appear to be aware of the window-dressing practice through derivatives, they do not seem concerned. Rating agencies meet regularly with debt managers, but they rarely have access to swap books, especially in developed economies. Agencies argue that there is an issue with the order of magnitude of these derivative operations. They view the 3% rule as a political target and not an economic one. One rating agency official said: "To be at 2.9 or 3.1 does not affect our view of the creditworthiness of the country. For Italy, for example, we look at the sustainability of its public finances. The balance of evidence supports the view that it has been achieved." However, to the extent that this type of behavior reduces fiscal transparency, "over time, that would concern us. When we talk about active debt management one has to be careful. One is relying on the good judgment of technicians. The normal checks and balances might break down. We've seen this from time to time and on a scale to impair their credit worthiness."

While credit worthiness might not be the issue, there are several reasons to worry about this kind of window-dressing activity. First, as the ECB's bulletin points out, the fiscal stance of governments that use window-dressing practices becomes harder to measure. An IMF official told the author that, until the accrual rule was enforced, the IMF itself used to adjust

figures for interest expenditure in the *World Economic Outlook* to improve their reliability of the published figures. Second, as most of these operations are carried out to postpone expenditure, their cash cost might fall on subsequent governments that were not in power at the time these operations were conducted. In turn, these subsequent governments might ask national accountants and supranational monitoring institutions to revise past national accounting figures to cancel the effects of these window-dressing operations. These window-dressing operations through derivatives therefore introduce political tensions. Third, the issue of transparency in government operations is now a key part of the policies recommended by supranational institutions to governments. While these policies have arisen in conjunction with crises in less-developed or newly-industrialized economies, they do not apply only to those countries. If they were perceived as such, they would immediately lose credibility in such countries.

The recent *Draft Guidelines for Public Debt Management* issued by the IMF and the World Bank give significant weight to:

- i) openness in formulating and reporting debt management policies;
- ii) public availability of information on debt management policies; and
- iii) accountability and assurances of integrity by agencies responsible for debt management.

According to the guidelines, the case for transparency in debt management operations is based on two main premises: "First, their effectiveness can be strengthened if the goals and instruments of policy are known to the public (financial markets) and if authorities can make a credible commitment to meeting them; second, transparency can enhance good governance through greater accountability of

... institutions involved in debt management."¹⁵

Transparency has never been a high priority in swaps. The author was told by a debt manager that "we are secretive about swaps. They are thorny transactions!" Another debt manager of a large sovereign issuer said that "we do not do swaps to do dishonest things." Both statements leave us with a potential negative impression of derivatives.

There is a fourth argument to support elimination of such practices. It has to do with the nature of the relationship between governments and their (private) counterparts. Indeed, since window-dressing operations exist, governments must have a counterpart. So the author asked a few large counterparts if they could comment on how the decision process works for such non-standard transactions within a large bank. Do banks initiate these transactions, as they know governments need them ("obviously not" was the standard answer), or do they wait for governments to approach them before taking any action? And, if they are indeed approached, what procedures do they have to react to such a request? Would they be damaged if it were announced publicly that such an operation had been structured?

The author did not expect to be told the whole truth, but hoped to acquire some understanding of the decision-making process in these cases. Two things were learned. First, market makers consult with their legal office, since ignorance of the reason for the sovereign's request is not legally excusable. Second, while explaining the transaction to the sovereign, the market maker makes sure that all possible risks are presented to the government before signing the deal, so that the government cannot blame the market maker. Interestingly, a market maker told the author that the strategy

¹⁵ IMF and World Bank (2001), p.14.

outlined here is something the industry learned after Merrill Lynch and the Belgian government were engulfed in a conflict that turned out unfavorably for Merrill Lynch.

Governments are large and powerful actors, and every precaution has to be taken by market makers to avoid a legal challenge: “My advice to a firm,” one market maker told the author, “is never present a positioning strategy as a hedged strategy. Define which asset you want to hedge against and, if it is a positioning strategy, always show the downside.” The same market maker said: “As for the ethics within our firm, we do look at it very seriously. We do try to see the client’s intention as well. If we do see a window-dressing intention, we discuss it at the highest level, with the chairman. I remember one case when we said no.”

Why does this window-dressing *per se* constitute a reason to halt derivative operations? Governments and market makers (especially the large ones that dominate the derivative market) have a special kind of relationship that is ongoing and often wide-ranging, including privatizations, syndicated loans, securitizations, asset and liability management, risk management advice and software provision. If a market maker has provided a government with window-dressing advice, window-dressing operations or other inappropriate transactions, it links itself in a tight embrace with the sovereign. Both know something about the counterpart that might hurt them if this activity were to be made public. While it is obvious that it is in their mutual interest not to go on record about such activities, there is also the possibility that one of the two parties might be able to exert undue pressure on the other in future transactions. A market maker might obtain a privatization mandate that it would otherwise not have deserved, possibly damaging the taxpayer or

the consumer. A government official might obtain additional advantages, either personal or for the office itself. Keep in mind that such a possibility was not deemed as being so far-fetched as to prevent its consideration in the IMF and World Bank guidelines: “Staff involved in debt management should be subject to code-of-conduct and conflict-of-interest guidelines regarding the management of their personal financial affairs. This will help to allay concerns that staff’s personal financial interests may undermine sound debt management practices.”¹⁶

More generally, concern might arise in counterpart risk management with those counterparts that have a ‘special relationship’ with debt managers for the wrong reasons. We have seen that credit-line ceilings often do not automatically lead to the reduction of exposure to the required level even under normal conditions. How easy would it be to reduce the exposure of a counterpart that has knowledge of a possible improper handling of contracts for accounting purposes by the sovereign borrower? Demonstrating their extreme candor, Danish authorities have underlined the risks of one-to-one relationships in their comprehensive 1998 annual report¹⁷ in a passage on credit-risk management that is worth quoting: “Since the [Danish] central government began to use swaps in debt management in 1983 it has not suffered any loss owing to counterparty default. Certain counterparties used by the central government have faced very serious economic problems, however. A few have ceased to exist *or could only continue with the support of public funds* or after being acquired by a competitor,” [emphasis added]. In other circumstances it might be tempting to establish a connection between public support for a

¹⁶ IMF and World Bank (2001), p.19.

¹⁷ See p.112.

failing counterpart and its special relationship with the government. Given that the Danish credibly established a stance on transparency, one might be pretty certain that this is not the case. But what about other less transparent situations? In the example provided above, how are we to know if the government of country M did not pay counterpart N an excessive rate compared to its opportunity cost in order to shift funds from one period to the other? That is, how are we to know if the debt manager in M did not reduce the gains it had obtained by locking in its yen loan at a favorable exchange rate by entering into a window-dressing operation? This is what we would call accounting risk: the losses for taxpayers arising from window-dressing opportunities.

4.4 Solutions for eliminating 'accounting risk'

4.4.a A common framework

What can be done to fill the current vacuum in accounting rules that leads to window-dressing activities? The first measure to adopt is to reduce the current variety of ways of dealing with derivative accounting within national accounts. From the meetings the author has had with debt managers, he learned about a number of possible accounting strategies for the same operation, depending on the country one might be examining. In the Netherlands, termination values of derivative operations would be carried in the current budget, just like the difference between par and the price of repurchased bonds. Up-front payments would be amortized over the life of the bond. In Belgium, swap-option premiums are amortized over the remaining maturity of the underlying swap. In Austria, given that no off-market rate transactions are done, revenue would theoretically be included in the current year's budget, while the termination value of a

swap would be in the current year's budget in a revenue section of the interest expenditure chapter. In Portugal, up-front payments, which are avoided in new transactions as a matter of the unwritten policy of the authorities, can exist (for example, in the case of swap unwinds). In this case, they are treated as interest expenditure in terms of public accounting just as they would be in Germany and Italy. In Finland, up-front payments (even though up-front payments have never occurred) and any capital gain from termination would affect revenues in the same period¹⁸.

It is worth mentioning that in Finland, banking legislation on termination of swaps in a hedged transaction always requires private banks to accrue the gain over the shorter number of years between the hedged instrument's years to maturity or the hedging instrument's years to maturity. This rule obviously helps in reducing the temptation for politicians to promote early termination of swaps with positive value for the government. In France, debt managers have adopted the same financial accounting method to handle repo terminations within their *Fond de Soutien des Rentes* (FSR)¹⁹.

The discussion with debt managers in country X proved interesting. When the author asked how up-front payments were treated, he received puzzled looks, but with the response that up-front payments would "obviously" be amortized even if they were not planning to do off-market rate transactions. When asked why this was obvious, they said "because ESA 95 recommends this." Pressed further, they recognized that while the principle was there, there was no specific mention in ESA 95 of how

¹⁸ From 2001, up-front payments and capital gains from termination will be found in the interest expenditure account with a minus sign.

¹⁹ It might, however, be abandoned with the launch of the new swap program in 2001, which will be handled outside of the FSR.

to handle swap accounting and that, in theory, this vacuum could lead to possible misinterpretations. As they were in the process of providing their minister with guidelines on the accounting for their program, they did not rule out the possibility of mentioning in the guidelines that up-front payments should be amortized for gains in transparency and credibility.

4.4.b A simple framework

There is the need for a rule on how accounting for swaps should be handled. However, such a rule should not be overly precise or binding, as it may unintentionally discourage perfectly appropriate derivative transactions. The rule should also not be framed in a way that would require frequent changes to recognize the rapidly changing character of the financial engineering industry.

A reform is overdue, as it is clear that the SNA reform debate did not provide the framework to deal with the issues suggested in this chapter. It is surprising that during more than two years of meetings around the world on the subject of derivatives, no institution has dared to mention that there was anything wrong with derivative accounting, other than the issue of reconciling the perspective of statisticians with that of debt managers. One can only conclude that pushing for reform was politically impossible when some countries were using swaps for window-dressing; but now that EMU has started, it is time for statisticians and debt managers to face the issue.

One possibility would be to establish a non-rigid, highly flexible framework by creating a set of standards based on rulings by statistical bodies. A market maker experienced in national accounting asked the author: "Is there a problem of transparency in accounting? Ask

countries to approach Eurostat and ask for a ruling. One has to build a set of precedents for what is acceptable and what is not acceptable." This proposal has the advantage of limiting burdensome requirements, as it is based on the sound idea that what is needed is a set of principles as a guiding framework. The proposal is also based on a market-oriented approach.

Belgium has taken an important step in this direction. Belgium, like other countries, had a significant amount of high-coupon bonds outstanding issued before EMU started. Suppose the Belgian treasury wanted to exchange these high-coupon bonds with low-coupon bonds to make them fungible with the ones currently issued, thereby improving the liquidity of its secondary markets. Belgium would have to repurchase them at a price higher than par by providing investors new debt with a higher nominal value than the retired debt. As domestic public debt is measured in nominal terms for the purpose of the Maastricht criteria, this exchange operation would have had the negative effect for Belgium of raising its public debt-to-GDP ratio, a value that must be kept on a "downward trend" according to Maastricht rules. Belgium saw this possible outcome of increased debt as highly unfair. In fact, all it was doing was paying today, in present value, the sum of the future higher coupon payments it was asking the investors to give up by agreeing to the exchange. Why couldn't they be allowed, they reasoned, to smooth the increase in debt over the years as greater interest expense? After all, they argued, this is a financial transaction that would acquire undue importance if it affected the deficit.

This problem has plagued many countries, especially in the euro zone where there is a stringent debt criterion. There is also a need in the euro zone to ensure the liquidity of

secondary markets. National politicians would never allow exchanges that increase debt today only to “improve liquidity”. So this is what Belgium did: It went to the Eurostat authorities and asked for the following swap package to be approved. Belgium enters into a fixed-fixed domestic swap where it pays the old, higher coupon and receives the lower market rate²⁰. As such a swap has positive value at inception for Belgium, the counterpart will agree to pay a fixed amount (an up-front payment) to enter this swap. If this swap were allowed, then Belgium would repurchase the high-coupon bonds. What would the up-front payment be equal to if not the increase in debt that Belgium would experience by doing the exchange between the old and new bonds? At this point, the Belgian treasury asked the statistical authorities to allow them to use the up-front payment to decrease the level of public debt. If allowed, the level of public debt would remain the same after the exchange, as would the interest expenditure. The treasury would then pay the new low coupons to investors. However, it would also receive these low coupons from the counterpart in the swap to whom it would pay the high coupon rate. However, market liquidity would significantly increase without any complaint from politicians. Eurostat, suspicious of up-front payments, understood the ‘virtuous’ logic of such a scheme and approved the deal, thereby preventing a financial transaction from affecting the deficit while being neutral with respect to the fiscal stance of the government. By this ruling, Eurostat has fundamentally helped to support the smooth functioning of secondary markets, and it has put national accounting in a position to benefit society. Now, any country

will be able to enter into these swaps with the knowledge that this type of transaction has first been approved by Eurostat, provided that the sovereign borrower will use the up-front payment to repurchase debt.

So up-front payments might be virtuous and respond to the logic of optimal public debt management. But would a country approach Eurostat to do off-market rate transactions that are done for window-dressing purposes? Obviously not. Therefore, whereas it is worthwhile to establish this procedure, only countries without window-dressing temptations would ultimately approach Eurostat using it. This procedure lacks the appropriate incentives to discourage ‘unsound’ activities and must, therefore, be complemented with other initiatives.

Another institutional possibility is to have each country establish an independent national agency. This is a development that is taking place in most countries. A debt manager argued that where you have an agency, you should expect less accounting tricks to be used. Whether right or wrong, this opinion is based on the common view that there is a greater capacity to ensure transparency and accountability in creating an agency. This transparency and accountability is based on checks and balances that are usually absent from a debt management unit within a treasury or ministry of finance. However, the existence of an agency might not be a sufficient condition to eradicate ‘accounting risk’. For who would guarantee that politicians, having a strong influence in choosing the head of the debt management agency, would not reward a lenient debt manager, or move to have a rigorous debt manager removed?

While the IMF and World Bank guidelines do not emphasize the need for proper accounting structures and never mention how

²⁰ This fixed-fixed swap in reality was the outcome of a package consisting of two fixed-floating off-market rate IRSs.

to handle derivatives appropriately, they clearly state that “debt management activities should be audited annually by external auditors...Audits of government financial statements should be conducted regularly and publicly disclosed on a pre-announced schedule, including information on the operating expenses and revenues.”²¹ Statistical offices that collect data for ESA 95 statistics do not check the appropriateness of what they are recording. In Italy, for example, ISTAT, the statistical body in charge of applying ESA 95, does not receive the list containing each derivative operation entered into by the Italian treasury. The author was told by an ISTAT official that there would be “too many.” Instead, ISTAT asks the treasury for all relevant information to build ESA 95 accounts, and the treasury has no duty to explain what it provides. The same situation applies in most other countries. External auditors are present in Ireland, and state-controlled auditors are present almost everywhere. In some of these countries, like Ireland, auditors command respect from debt managers, but most of the time the impression one gets is that the auditors are not financial experts, and that they tend to accept the treasury or agency opinion on how to account for these operations. Furthermore, in some countries, the auditors are only concerned that treasuries abide by the law when entering into derivative contracts. As we mentioned, since laws on derivatives are often very vague and do not cover accounting standards, auditing bodies are not required to check the compatibility between treasury accounting and accounting principles. Ireland is an exception to the rule since both the State Auditor and the Commercial Auditor check the accounting, as the NTMA internal guidelines require limited

use of discount bonds²². However, private, external auditors are usually very limited in their powers to sanction the largest actor in the economy, the State, without fear of reprisals.

A rating agency official said to the author:

“Since there is risk, you have got to implement transparency. You need an outside body auditing these operations, as you don’t want losses to be hidden. Bank regulators have it on their agenda for banks. If they are worried about it, there is also reason to be worried about it for public debt managers. There is a need of outside scrutiny so that standards are followed in a prudential way, more than in the private sector, as you are risking the taxpayers’ money.”²³

Debt managers might strongly resist outside scrutiny, and this is not necessarily unjustifiable. One debt manager told the author: “First, we do not want to hear from anywhere, ‘you have to do this or that transaction.’ We must be free to do any transaction we want. Second, as you can invent any transaction, it will be impossible to cover in a rule all possibilities. Third, sometimes accounting might be tricky.” She has a point. Take the above examples of how to account for termination values. If one were to adopt the rule used by Finnish banks or the French FSR of accruing the gain or loss over the potential years to maturity of the terminated transaction,

²² As for the Irish Audit Court, it could take three courses of action in case improprieties are found: i) insist that a note be put in the government accounts; ii) qualify its approval; or iii) report to Parliament for that year of Audit. At that point the chairman would be called by the Parliamentary Committee.

²³ The IMF and World Bank guidelines do not include “accounting risk” explicitly as a possible risk to be managed within public debt operations. They refer (IMF and World Bank (2001), p.11) to “operational risk” also as “errors in...recording transactions; inadequacies or failures in internal controls...reputation risk.” Given its dimension however, accounting risk probably needs a category of its own.

²¹ IMF and World Bank (2001), pp.16-17.

it could be easy to criticize such a rule on the grounds that a gain or loss should be accounted for in the year of the transaction. Since there is no underlying contract in the years after termination, what is generating the gain or loss in the years after termination? However, the same debt manager agreed that there was a need for a set of clear, simple rules and a set of principles that would treat similar instruments equivalently.

Once such rules have been approved, however, the problem of verification remains. An obvious solution is for the IMF or the World Bank to have access to the swap book of the sovereign borrower during the yearly visits to the country. However, it might be difficult, even for a supranational institution, to be granted access to the swap book, as it lacks sufficient political power. The IMF has greater political power in countries where funds are disbursed under conditionalities. An IMF official told the author that, in developing countries with IMF programs in place, the debt manager will be obliged to disclose its books if required. The same does not hold true for a developed country with no IMF programs in place²⁴.

Therefore, one must rely on politically strong auditors. Keep in mind that even debt management offices which are well aware of the need to tackle the problem might find the existence of an additional auditor costly in terms

of time lost to satisfy the auditor's needs. One option might be possible at least for the euro zone, if not for the European Union, where the problem seems to be especially relevant. The European Commission, together with Eurostat, could create a very small unit comprised of well-paid financial experts that would have the exclusive power to check all swap books and the accounting treatment of derivative transactions on a confidential basis. This unit would report directly to the Commission and Eurostat, and their suggestions would be subject to appeal by a panel of expert judges. The ruling process would then become standard practice. Such a unit would make random visits to different debt management offices (say, twelve countries a year) and would not exclude the possibility of visiting the same country twice. The advantage of a supranational auditing team would be that no single government would be able to exert undue influence on the auditors.

Currently, Eurostat and the ECB visit the debt offices of the EU and have access to detailed tables of deficit-debt adjustment (the ones mentioned at the beginning of this chapter). The author's impression, however, is that even these visits achieve little, as swap books are simply not shown.

The strategy of a unit might, however, be hindered by legal obstacles within European institutions. An alternative solution would be to add a review of debt policy by the individual EU member states to the annual monitoring exercises. In addition to budget forecasts, ministers could review each other's debt policies, applying peer pressure to countries that misbehave.

What principles should be applied to the accounting of derivative operations? Even those not highly trained in accounting understand the accrual principle and the reason why it is used.

²⁴ One has to be careful about being too confident about the bargaining power of the IMF, even with countries that fall into the 'developing economy' category. Ukraine had an IMF agreement in place when the central bank became involved in peculiar window-dressing operations with a private investment bank requiring financial instruments and official reserves management. The IMF was apparently misled by Ukrainian officials on the content of some financial contracts that evaded IMF restrictions applicable to that country. Those restrictions limited the amount of credit the central bank could grant to the ministry of finance. Interestingly, the *Financial Times* (February 14, 2000) reported that "part of the cause of the IMF's ignorance of the contracts appears to have been the choice of *accounting standards* used to assess the central bank's reserves [which] appear to have allowed the central bank to avoid reporting the transaction in question," [emphasis added].

It is used to guarantee that budgets are clear instruments for market participants and for taxpayers to determine the performance of the government whose budget is published. Disclosure helps to engender market and political discipline, but only if disclosure is appropriate. Therefore, off-market transactions should be discouraged or, if undertaken, accounting rules should mandate that the government accrues the effects of the transaction over future years. Possible exceptions may occur, as the Belgian case illustrates earlier in this section. The trick would be to disregard that part of the derivative contract consisting of an up-front payment, which would instead be considered as a loan even in its most sophisticated contractual form (like the one produced by country M and counterpart N examined in section 4.2). Directive IAS 39 and its definition of a financial derivative could be particularly helpful.

As for termination values, things do get more complicated. One would like a rule that prevents governments from putting undue pressure on debt managers so as not to push them to dispose of derivatives in order to achieve short-term gains in terms of interest expenditure. Indeed, swaps at positive market value are often not 'offset', because they were also established to achieve an optimal risk/return allocation. In such a case, political pressures might distort debt management from its optimal policy. One could recommend that after the swap has been sold, the capital gain or loss should be accrued over its potential remaining life. This would reduce these perverse incentives. However, debt managers might argue that the sale of a swap at positive value shows their capacity (and not the capacity of future debt managers) to decrease interest expenditure. Current debt managers should be rewarded for their management in the current

year by having termination values affect current interest expenditure. To this argument by debt managers, one could reply that swaps were not entered into for positioning purposes but were entered into in order to achieve an optimal duration, in which case the gains should be smoothed over the years of the swap.

Therefore, an optimal rule would be the one adopted by Ireland, which distinguishes between 'strategic derivatives' and 'trading derivatives'. In a strategic swap, Ireland might, for example, have issued a bond paying Greek drachmas, and then switched exposure with a swap to the euro currency. Since this operation is equivalent to raising money in euro, trading gains and losses go below the line. If, however, the same swap is undertaken for trading, then its trading gains and losses go above the line in the expenditure chapter.

We can now understand why the reform of the SNA 1993 was incomplete and how swaps can lead to sub-optimal debt management. However, a simple institutional reform could largely remedy this problem if the will exists. For the euro zone especially, this goal suggests putting transparency in public debt management at the forefront of the economic policy debate, something which some member countries have been reluctant to do. Centralized institutions like the European Commission and the European Parliament could do a lot by fostering a greater respect for European citizens and, in the process, they may obtain greater support for a larger political agenda.

Recommendations

Governments should have in place simple and clear rules of accounting for derivatives that establish the principle of accrual where possible. This also implies that off-market rate transactions are to be discouraged unless there are sound debt management reasons to

undertake them - in which case the gains or losses owing to the off-market nature of the transaction must be amortized over the life of the bonds. Other rules, for example, on the treatment of termination value, might be discussed and implemented. A special supranational unit of financial experts on derivative transactions should be established whose mandate would be to check the appropriateness of the accounting by governments according to clear and established principles (as set out above). Debt and derivative policies should be given greater weight in the Growth and Stability Pact when discussing national policies.

SUMMARY AND CONCLUSIONS

This report has examined the use of derivatives by national governments in the management of public debt. We began by documenting the extent of derivative instrument use by sovereign borrowers in developed economies. By 2001, all debt offices visited over the course of the research project - with the exception of Belgium, Italy and Spain - had announced that they would make systematic use of derivatives to support their public debt management activity.

This common trend disguises a wide variation in the extent of derivative use among sovereign borrowers. In 2000, Sweden was the largest user of derivatives. Its notional amount of derivative contracts outstanding was equal to more than 50% of its public debt. In 2000, Denmark and Ireland had a notional amount outstanding larger than 20% of their public debt. All other countries examined had a ratio lower than 20%.

Most debt offices that have launched or that are in the process of launching derivative programs have also rapidly improved their management of counterparty risk through a series of steps as illustrated in Chapter 2. The most important of these steps is the development of a collateral agreement (Credit Support Annex) between the sovereign borrower and its most significant counterpart. CSAs will prove critical in fostering the expansion of derivative programs. All else being equal, CSAs allow a reduction in a government's exposure to counterparty risk. This implies that sovereign borrowers will be able to

enter into more derivative contracts at the same level of credit risk they bear without CSAs.

The use of derivatives (especially swaps) by sovereign borrowers has grown in recent years, and this growth was evident before CSAs were in place. As argued in Chapter 1, the arrival of the euro was the most critical factor for this growth in the use of derivatives in the European Union.

Before the euro, derivative programs faced two hurdles. First, there was the possibility that a sovereign borrower entering into a national OTC market would disrupt its functioning by causing large swings in the price of derivative contracts. This is because government borrowers are such large actors relative to the size of the market. With the arrival of the euro, markets became larger and provided the opportunity for a large player like a national government to enter OTC markets without making markets excessively volatile.

Second, there was the aversion of debt managers to being perceived as playing against the market or signalling to the market through derivatives or other instruments. Indeed, before the arrival of the euro, debt managers were 'informed' players: They were aware of the developments of key economic variables that affect the national currency markets. The debt office might be suspected of taking positions on rising or falling interest rates based on a knowledge of, for example, its own issues. This might lead to short-term gains, but investors who believe they are dealing with a counterpart who possesses better information would withdraw from the market and/or demand a higher return as compensation for greater risk-taking¹. Furthermore, before the euro, debt managers could be seen as 'informing' players, owing to their ability to influence the

¹ *Proposals for Guidelines* (2001), p.11, available at www.rgk.se.

perception of future market trends. These policy signals, if misunderstood, might disrupt financial markets². With the euro, private information available to sovereign borrowers has declined substantially. Therefore, sovereign borrowers are no longer perceived as either signaling or taking positions. As a consequence, many sovereign borrowers now feel free to use derivatives with a speculative perspective. They may try to 'beat the market' and cash-in a gain for the taxpayer. Using derivatives rather than standard funding instruments to speculate is justified by the ample savings in transaction costs that derivatives allow.

This report is, however, strongly critical of the usefulness of derivatives for speculation. This is because we can see no compelling reason why a sovereign borrower should take a speculative stance in the first place. There is no reason to believe that debt managers are more capable of assessing and interpreting information about developments in financial markets than market makers. This position does not, however, imply that there is no room for derivatives in helping to achieve optimal public debt management.

This report has shown that interest rate swaps play a critical role in ensuring the liquidity of long-term government bonds (and thereby allowing governments to reap liquidity premiums that reduce interest costs) without sacrificing the desired level of duration of the domestic public debt. This result cannot be achieved with regular funding instruments. The euro has indirectly been the cause for the growing use of derivatives for liquidity-enhancing purposes. As the monopolistic niche provided by national currencies faded away, many EU governments started to compete with one another over investors through the only

available channel: freeing investors from liquidity risk by guaranteeing liquid secondary markets for their bonds. However, by freeing investors from liquidity risk, these countries extended the duration of the debt beyond the level that was desirable for optimal risk-management purposes. In the early 1990s, growing borrowing needs owing to high public debt and deficits made the simultaneous issuance of liquid fixed-income bonds with short-term instruments possible without compromising the goal of reaching a target duration level. Duration of the public debt could then be kept short enough to meet the target level. However, as countries became more fiscally responsible, it became more difficult to achieve a liquid market at the long-end of the maturity spectrum and simultaneously maintain a short average duration of the public debt. Funding policy put constraints on the desired liquidity of secondary markets or, seen the other way around, liquidity considerations were starting to imply a greater expected cost for the issuer by raising average duration of public debt.

This is where domestic interest rate swaps found their new niche. Swaps have the exclusive ability to separate the issue of funding from the issue of guaranteeing the liquidity of the government bond market. Sovereign borrowers could issue all their bonds in the long-end of the maturity spectrum and then achieve the desired duration of their public debt through swaps. We have provided data in this report that show how most domestic IRS programs tend to shorten the duration of the domestic public debt.

Therefore, it is not surprising that two countries with a large public debt, Belgium and Italy, have yet to announce the launch of swap programs. This is because the large size of their financing requirements allows these sovereign

² Chapter 1 documents one such event in the case of Germany.

borrowers to achieve the liquidity of the benchmark bond without sacrificing the need for a short duration of public debt. At the other extreme, countries with rapidly shrinking debt (e.g., Ireland) - that were in the past large users of derivatives - might abandon derivatives altogether. This may happen as liquidity-building policies become less relevant owing to their lower financing requirements. Countries with neither too large nor too small a debt seem, therefore, to be ideal candidates for starting or increasing a swap program in the near future. If the European economic and monetary union framework turns out to be successful in fostering the reduction in public debt in member countries, we could predict a simultaneous reduction in the use of derivative programs in the 'in' countries.

The success and the future of EMU is, however, threatened not only by the persistence of high budgetary imbalances, but also by the lack of transparency with which the process of reduction in these imbalances is carried out. More generally, transparency is recommended by several supranational organizations as a key requirement for fiscal policies across the world.

By closely examining derivative transactions by sovereign borrowers, this report has suggested that sufficient transparency in public accounts has not been achieved. In particular, we have shown with a true example in Chapter 4 how derivatives have been used by one large sovereign borrower to window-dress its public accounts. It is likely that this case is not an isolated episode and that some other sovereign borrowers have made use of derivatives to implement window-dressing strategies.

This report has documented that using derivatives for window-dressing public accounts has been made possible by two deficiencies in

reporting by sovereign borrowers. The first deficiency has to do with the fact that disclosure regarding derivative activity by sovereign borrowers is extremely scarce, as explained in Chapter 2. In the absence of disclosure by debt offices, monitoring by 'government shareholders' (i.e., the taxpayers) can only be weak at best, and this lack of disclosure makes debt offices less accountable. This report contends that sovereign borrowers' arguments for withholding information on derivative activity are often either irrelevant or specious. This report suggests a series of disclosure-enhancing measures that should be applied by sovereign borrowers. In the absence of action on the part of sovereign borrowers, supranational institutions like the International Monetary Fund, Eurostat or the European Central Bank should require this information to be disclosed publicly.

The second deficiency in reporting that has made window-dressing possible has to do with the lack of a proper framework to record derivative transactions in national accounting. Chapter 3 has shown how EU debt managers and statisticians spent several years debating the proper system of accounting for derivative transactions by sovereign borrowers. What we documented was a serious, yet subtle, rift between supranational accountants and EU debt managers that could have threatened both the credibility of national accounts and optimal debt management policies. This led us to suggest that the Maastricht Treaty might have an additional endogenous effect in the euro zone besides that of putting a ceiling on the government deficit: It might reduce the transparency of national statistics. To avoid this outcome, a possible solution is to separate national accounting from public accounting. This solution has been already implemented in other developed economies; e.g. Canada.

Chapter 3 also highlights how, during this period in which debt managers and statisticians debated reforming the national accounting of derivatives, no initiative was taken to tackle the issue of accounting for off-market rate swaps. Off-market rate swaps are, more often than not, the instrument that implements the window-dressing of public accounts. This report suggests an accounting solution for eliminating the possibility of window-dressing through derivative activities.

As argued in Chapter 4, there are several reasons to worry about this window-dressing activity through derivatives. First, the fiscal stance of governments that use window-dressing practices becomes harder to measure. Second, as most of these operations are carried out to postpone expenditure, the cash cost of these operations might fall on subsequent governments that were not in power at the time these operations were conducted. In turn, these subsequent governments might ask national accountants and supranational monitoring institutions to revise past national accounting figures to cancel the effects of these window-dressing operations. Therefore, these window-dressing operations through derivatives introduce political tensions. Third, the issue of transparency in government operations is now a key part of the policies recommended by supranational institutions to governments. While these policies have arisen in conjunction with crises in less-developed and newly-industrialized economies, they do not apply only to those countries. If these policies were perceived as such, they would immediately lose credibility in such countries. Fourth, these operations have a negative impact on the nature of the relationship between governments and their (private) counterparts. Governments and financial institutions (especially the large ones that dominate the

derivative market) have a special kind of relationship that is ongoing and often wide ranging, including privatizations, syndicated loans, securitizations, asset and liability management, risk management advice and software provision. If a market maker has provided a government with advice on window-dressing, assistance with window-dressing operations or other inappropriate transactions, it implicates itself with the sovereign borrower. Both know something about the counterpart that might hurt them if this activity were to be made public. While it is obvious that it is in their mutual interest not to reveal such activities, there is also the possibility that one of the two parties might be able to exert undue pressure on the other in future transactions. A market maker might obtain a privatization mandate that it would otherwise have not deserved, possibly damaging the taxpayer or the consumer. A government official might obtain additional advantages, either in a personal capacity or for the debt management office itself. Finally, window-dressing operations themselves will obviously come at a higher cost to the debt office and the taxpayer than a regular transaction. This is because the sovereign borrower will have to compensate the counterpart for exposing it to reputation risk.

The issue of window-dressing through derivatives is particularly important today in the European Union and especially within the euro zone. Uncovering the truth about the distorted use of swaps in the 'in' countries is tantamount to bringing the issue of transparency of government action to the forefront of the debate about the future of Europe. As long as accounting and deficit rules are to be disregarded (in substance if not in form), and as long as governments continue to ask important private financial institutions to keep private their knowledge of improper financial engineering,

Europe's politicians will find it difficult to convince their electorates of the importance of greater European integration.

Window-dressing through derivatives might also be important in less-developed countries that have to implement ambitious fiscal stabilization programs. These programs are often monitored and assisted by supranational institutions like the IMF, the World Bank or the European Bank for Reconstruction and Development. A government might find it more convenient to delay the stabilization program for political purposes while retaining the economic assistance of supranational institutions. A government could attempt to do so by window-dressing public accounts and presenting these accounts as genuine. If successful, a government would obtain essential resources from those supranational institutions and would benefit from the private capital inflows that usually accompany the economic assistance programs of supranational institutions. In turn, this would further postpone any real program of economic stabilization, providing undeserved support to an inefficient (and disingenuous) government. This aforementioned process would reduce the possibility of greater growth and prosperity for less developed countries, and, in the medium term, also the credibility of supranational institutions.

It is, therefore, critical that transparency in derivative transactions is credibly ensured. Supranational institutions could solve the problem by appropriate regulatory action. Having credibly established an appropriate regulatory framework, debt managers who have always used derivatives in a legitimate manner will benefit from a greater acceptance of derivatives owing to the increased transparency and accountability of the debt managers who use them. In turn,

society will benefit from the appropriate use of derivatives, as this report has made clear.

APPENDIX

This is the text of an actual swap transaction used to window-dress public accounts. The text has been translated into English, and contract details in bold have been changed to preserve the anonymity of the transacting parties.

* * *

IN CONSIDERATION of the need to manage the liabilities of **M** in line with currency fluctuations, as well as with the evolution of market rates, and therefore to reduce the costs of such management;

ORDERS AS FOLLOWS

Article 1

The authorization is granted for the execution, by and between **M** and **N** of a 'swap' agreement with respect to the portion of the loan referred to in the foreword, for an amount of 200 billion yen, for a three-year term, at an fixed annual rate of 2.3%, at the conditions described in Article 2 below.

Article 2

By virtue of such swap operation, **N** shall effect payments to **M**, with respect to the aforementioned yen amount, from **Month, Day, 1997** to **Month, Day, 1998**, at a fixed annual rate of 2.30%.

The first payment, counting from **Month, Day, 1996** and due on **Month, Day, 1997**, shall be effected on a pro-rata basis according to the

actual number of days (279), for an amount of 3,565,000,000 yen.

At the same time, **M** shall effect six-monthly payments in **unis** to **N** with respect to the aforementioned amount in **unis**, from **Month, Day, 1997** to **Month, Day, 1998**, at the Libor rate at six months in **unis**, reduced by 16.77%.

The first payment, due on **Month, Day, 1997** shall be effected on a pro-rata basis according to the actual number of days, to be counted from **Month, Day, 1996**.

On **Month, Day 1998** **M** shall receive from **N** an amount of 200 billion yen, and shall pay at the same time an amount of **38,668,000,000,000 unis**.

Article 3

The amounts due by **M** to the counterpart, as a result of the operation described in the articles above, shall be regulated by the **Central Bank** or the credit institution(s), if any, appointed by **M**.

The relations between **M** and the **Central Bank**, or the appointed credit institution(s), with respect to the operations resulting from the execution of this decree, shall be regulated by the provisions of decree No. **XXXX of Month, Day, Year** and subsequent amendments or, if necessary, by a decree issued for this purpose.

Article 4

The interests resulting from the operation referred to herein shall be entered into Section **XXX** of the State Budget revenues, and possibly reassigned to Section **XXX** of the expenditure for the 1998 financial year, if any costs, to **M**'s charge, result from the termination of the operation referred to in this decree.

BIBLIOGRAPHY

- Agell, J., Persson, M. and Friedman, B.M. (1992) *Does Debt Management Matter?* Oxford: Oxford University Press.
- Bank for International Settlements, Monetary and Economic Department (1998) *Central Bank Survey of Foreign Exchange and Derivatives Market Activity*, 20.
- Bishop, Graham (1999) SalomonSmithBarney Newsletters, May 14, 1999.
- Campbell, J. (1995) 'Some Lessons from the Yield Curve', *Journal of Economic Perspectives*, 9 (3) 129-152.
- Danmarks Nationalbank (1998) *Danish Government Borrowing and Debt*, 116.
- Edwards, Franklin (1999) 'Hedge Funds and the Collapse of Long-Term Capital Management', *Journal of Economic Perspectives* (spring), 189-210.
- Favero, C., Missale, A. and Piga, G. (2000) *EMU and Public Debt Management: One Money, One Debt*, CEPR Policy Report, n.3.
- Garber, P. (1998) 'Derivatives in International Capital Flows', NBER Working Paper, n. 6623, June.
- Giovannini, A. (1997) 'Government Debt Management', *Oxford Review of Economic Policy*, 13 (4).
- Hull, J. (2000) *Options, Futures, & Other Derivatives*. Upper Saddle River, NJ: Prentice-Hall, 4th ed.
- International Monetary Fund (1997) *The Statistical Measurement of Financial Derivatives*, Statistics Department, November.
- International Monetary Fund and World Bank (2001) *Draft Guidelines for Public Debt Management*, March 21. Available at www.imf.org/external/np/mae/pdebt/2000/eng.
- Johnson, James (1998) 'Understanding FASB's New Rules for Derivatives and Hedging', *Derivatives* (November/December), 60-77.
- Ladekarl, J. and Svenesen, A. (1999) 'Interest Rate Swaps and Domestic Government Debt Management in Denmark', *OECD Financial Market Trends* (June), 155-174.
- Milesi-Ferretti, G. M. (1998) 'Good, Bad or Ugly? On the Effects of Fiscal Rules with Creative Accounting', mimeo.
- Missale, A. (1997) 'Tax Smoothing with Price Indexed Bonds: A Case Study of Italy and the United Kingdom', in de Cecco, M., Pecchi, L., and Piga, G. (eds.), *Managing Public Debt: Index-Linked Bonds in Theory and Practice*. Cheltenham: Edward Elgar, 50-92.
- Missale, A. (2000) *Public Debt Management*. Oxford: Oxford University Press.
- Missale, A. (2001). 'Optimal Debt Management with a Stability and Growth Pact', *Public Finance and Management*, forthcoming.

Piga, G. (1998) 'In Search of an Independent Province for the Treasuries: How Should Public Debt be Managed', *Journal of Economics and Business*, 50, 257-275.

Piga, G. (1999) 'Government Debt Policy in Sweden: Foreword', *Rivista Italiana degli Economisti*, 1.

Schinasi, G. J., Craig, R.S., Drees, B. and Kramer, C. (2000) *Modern Banking and OTC Derivatives Markets: The Transformation of Global Finance and its Implications for Systemic Risk*. Washington DC: International Monetary Fund. Occasional Paper n. 203, December.

Smith, C. W., Smithson, C.W. and Wakeman, L.M. (1986) 'The Evolving Market for Swap', *Midland Corporate Finance Journal*, 3.

Smith, C. W., Smithson, C.W. and Wakeman, L.M. (1988) 'The Market for Interest Rate Swaps', *Financial Management*, 17.

Swedish National Debt Office (2001) *Proposals for Guidelines*. Available at www.rgk.se.

Thibault, François (1993). 'The Role of Interest Rate Swaps in Managing Canada's Debt', *Bank of Canada Review* (fall), 20.

Titman, S. (1992) 'Interest Rate Swap and Corporate Financing Choices', *Journal of Finance*, 47.

Tobin, James (1963) 'An Essay on Principles of Debt Management', in *Fiscal and Debt Management Policies*, Prentice-Hall, 143-218.

Turnbull, S. M. (1987) 'Swap: A Zero

Sum Game', *Financial Management*, 15.

Wall, L. D. (1989) 'Interest Rate Swap in an Agency Theoretic Model with Uncertain Interest Rates', *Journal of Banking and Finance*, 13.