Currency Swaps

A Borrowing Technique in a Public Policy Context

David Bock
Christine I. Wallich

SWP640

WORLD BANK STAFF WORKING PAPERS
Number 640
Currency Swaps
A Borrowing Technique in a Public Policy Context

David Bock
Christine I. Wallich

The World Bank
Washington, D.C., U.S.A.
ABSTRACT

Since the inception of the World Bank's currency swap program in August 1981 and until the end of June 1983, the World Bank has raised approximately $2.5 billion equivalent in Swiss francs, Deutsche marks, Dutch guilders, Sterling and Austrian schillings. The importance of currency swaps to the Bank can be seen from the fact that this represents one-seventh of its total medium- and long-term borrowings over this period, and one-fifth of its borrowings in non-dollar currencies. In fiscal 1983 currency swaps lowered the Bank's average cost of borrowing from about 10% to about 8.9%.

The analysis suggests that the liquidity provided by currency swaps is an important element in the development of long-term forward markets in foreign exchange, reducing the risks associated with trade finance and asset/liability management in international business more effectively than more traditional alternatives. For the importer or exporter with foreign currency payables or receivables, swaps offer advantages in increased certainty and lower cost over the alternatives of offshore funding, leads or lags in payments, or short-term hedges in the FOREX (foreign exchange) market. For the enterprise funding offshore investments in its domestic currency, or seeking offshore financing for its domestic operations, swaps alleviate the exposure inherent in such a currency mismatch without potentially expensive and uncertain foreign borrowing or investment. Swaps, moreover, accomplish these purposes without the destabilizing effects on the foreign exchange market or the added capital market access requirements associated with the comparatively awkward techniques currently available.

The rapid growth of swap activity to date is largely a reflection of the perceived advantages of this technique, and there is very substantial potential for expansion of this market as awareness broadens among financial managers of the availability of swaps as a risk management tool. The principal constraint at present is not the market; rather it is the concerns of various governmental authorities as to the purposes of currency swaps and their likely longer-term effects on financial markets and national currencies.

This paper first describes the mechanics of a currency swap transaction, and outlines the purpose swaps serve in the Bank's overall funding strategy. The paper then discusses the role of swaps in the broader perspective of world financial and capital markets and addresses some of the public policy issues associated with currency swaps.
Desde la iniciación del programa de intercambio de monedas del Banco Mundial en agosto de 1981 y hasta fines de junio de 1983, el Banco Mundial ha obtenido aproximadamente el equivalente de US$2.500 millones en francos suizos, marcos alemanes, florines holandeses, libras esterlinas y chelines austriacos. La importancia de los intercambios de monedas para el Banco Mundial se pone de relieve cuando se considera que esto representa una séptima parte de sus empréstitos a plazos mediano y largo durante ese periodo y una quinta parte de sus empréstitos en monedas distintas del dólar. En el ejercicio de 1983 los intercambios de monedas rebajaron el costo medio de los empréstitos del Banco Mundial de aproximadamente 10% a alrededor de 8,9%.

Del presente análisis se desprende que la liquidez proporcionada por los intercambios de monedas es un elemento importante en el fomento de mercados de divisas a largo plazo, al reducir más eficazmente que otras opciones de uso más arraigado los riesgos asociados con el financiamiento comercial y la administración de activos y pasivos en el comercio internacional. Para el importador o el exportador con cuentas por pagar o por cobrar en moneda extranjera, los intercambios de monedas ofrecen la ventaja de una mayor certidumbre y un costo más bajo con respecto a las otras opciones, como financiamiento extraterritorial, adelantos o atrasos en los pagos u operaciones de protección cambiaria a corto plazo en el mercado de divisas. Para la empresa que financia inversiones extraterritoriales en su moneda nacional o que busca financiamiento extraterritorial para sus operaciones internas, los intercambios de monedas mitigan el riesgo inherente a tal situación de desfase de monedas sin empréstitos o inversiones extranjeras posiblemente costosos e inciertos. Además, los intercambios de monedas logran estos objetivos sin los efectos desestabilizadores del mercado de divisas o los requisitos adicionales de acceso a los mercados de capital vinculados con las técnicas comparativamente engorrosas de que se dispone actualmente.

El rápido incremento de las actividades de intercambio de monedas hasta la fecha es en gran medida reflejo de las ventajas que se reconocen en esta técnica, y son muy considerables las posibilidades de ampliación de este mercado, a medida que haya cada vez mayor conciencia entre los administradores financieros de la disponibilidad de los intercambios de monedas como un mecanismo de control de los riesgos. La limitación principal en la actualidad no es el mercado, sino más bien la inquietud de diversas autoridades gubernamentales con respecto a los fines de los intercambios de monedas y sus efectos probables a plazo más largo sobre los mercados financieros y las monedas nacionales.

En este trabajo se describe primeramente el mecanismo de una transacción de intercambio de monedas y se esboza el objetivo que cumplen estas operaciones en la estrategia global de financiamiento del Banco. Luego se analiza la función de los intercambios de monedas en la perspectiva más amplia de los mercados financieros y de capital mundiales y se abordan algunas de las cuestiones de políticas públicas asociadas con tales operaciones.
Depuis août 1981, date à laquelle a démarré son programme de swap de monnaies et jusqu'à la fin de juin 1983, la Banque mondiale a mobilisé un montant équivalent à environ 2,5 milliards de dollars en francs suisses, deutsche mark, florins, livres sterling et schillings. Ce programme représente un septième du montant total des emprunts à moyen et long termes que la Banque a contractés durant cette période et un cinquième de ses emprunts en monnaies autres que le dollar, ce qui montre toute l'importance qu'il revêt pour elle. Durant l'exercice 83, les opérations de swap ont ramené d'environ 10 % à quelque 8,9 % le coût moyen des emprunts de la Banque.

L'analyse qui suit laisse penser que la liquidité assurée par les swaps de monnaies constitue un important élément du développement des marchés des devises à long terme, réduisant les risques liés au financement des échanges et à la gestion de la trésorerie dans un contexte international plus efficacement que des formules plus traditionnelles. Pour un importateur ou un exportateur ayant des dettes ou des créances commerciales en devises, les swaps constituent une formule plus facile et économique que celles consistant à recourir à une source étrangère, à des avances ou des retards dans les paiements ou à des couvertures à court terme sur le marché des devises. Pour l'entreprise financant des investissements à l'étranger dans sa monnaie nationale ou sollicitant un financement étranger pour ses opérations intérieures, les swaps réduisent les risques inhérents au fait que les entrées et sorties de fonds s'effectuent dans des monnaies différentes sans emprunt ou investissement étranger susceptible d'être coûteux et difficile à obtenir. En outre, les swaps remplissent ces conditions sans avoir les effets déstabilisateurs sur le marché des devises ou les conditions supplémentaires d'accès au marché des capitaux qu'impliquent les techniques relativement peu pratiques auxquelles on peut actuellement recourir.

L'essor rapide des opérations de swap à ce jour est lié dans une large mesure au fait que les avantages de cette technique sont connus et que le marché a de très fortes chances de prendre de l'extension dans la mesure où les responsables financiers sont de plus en plus nombreux à se rendre compte qu'ils peuvent y recourir pour se protéger contre les risques. La principale contrainte à l'heure actuelle n'est pas constituée par le marché mais plutôt par les questions que les diverses autorités gouvernementales se posent quant aux fins auxquelles sont effectués les swaps de monnaies et à leurs effets probables, à long terme, sur les marchés financiers et les monnaies nationales.

Ce document décrit tout d'abord le mécanisme d'une opération de swap de monnaies et les fins poursuivies par les swaps dans le cadre de la stratégie globale de financement de la Banque. Il examine ensuite le rôle de ces transactions dans la perspective plus large des marchés financiers et des marchés des capitaux mondiaux, ainsi que quelques-unes des questions de politique générale liées aux swaps de monnaies.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 1</td>
<td>Introduction and Summary</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(i) A Swap Scenario</td>
<td>5</td>
</tr>
<tr>
<td>Section 2</td>
<td>World Bank Currency Swaps</td>
<td>10</td>
</tr>
<tr>
<td>Section 3</td>
<td>Currency Swaps in Context</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Motivations for Swaps</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>(i) Commercial Hedging Motivations</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>(ii) Hedging Assets and Liabilities</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>(iii) The Role of Arbitrage</td>
<td>23</td>
</tr>
<tr>
<td>Section 4</td>
<td>Public Policy Considerations</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>(i) Capital Market Pressures</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>(ii) Swaps as a Policy Tool</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>(iii) Reserve Currency Concerns</td>
<td>35</td>
</tr>
<tr>
<td>Annex:</td>
<td>Effects of Currency Swaps on the Capital Markets and the Balance of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Payments</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>A. RESIDENT COUNTERPARTIES</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I. Asset Hedging</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>(i) Effects of unhedged position</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>(ii) Hedging through swaps of new liabilities</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>(iii) Hedging through swaps of existing liabilities</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>II. Hedging Trade Flows</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>(i) Hedging short term flows</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>(ii) Hedging long term contracts</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>(iii) Effects of unhedged positions</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>B. NON-RESIDENT COUNTERPARTIES</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>I. Hedging Assets</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>(i) Effects of unhedged positions</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>(ii) Hedging through swaps off new liabilities</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>(iii) Hedging through swaps off old liabilities</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>II. Non-residents Hedging Trade Flows</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>(i) Hedging short-term flows</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>(ii) Hedging long-term contracts</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>(iii) Effects of unhedged positions</td>
<td>49</td>
</tr>
</tbody>
</table>
Annex B

List of Text Figures and Charts

I. Swaps—A Schematic Representation.......................... 8
II. Overview of Long Term Hedging Needs and Alternatives... 18

List of Annex Figures

A-I Summary of Currency Swap Effects—Resident Counterparties.......................... 39
A-II Summary of Currency Swap Effects—Non-resident Counterparties......................... 46
A-III Summary of Net Incremental Effects of Currency Swaps—Resident Counterparties................................................. 51
A-IV Summary of Net Incremental Effects of Currency Swaps—Non-resident Counterparties................................................ 52

Bibliography................................................................. 54
CURRENCY SWAPS:
A BORROWING TECHNIQUE IN A PUBLIC POLICY CONTEXT

Section 1: Introduction and Summary

1.01 Since the World Bank's currency swap program started in August 1981 and until the end of the fiscal year (FY) 1983, the Bank has raised approximately $2.5 billion equivalent in Swiss francs, Deutsche marks, Dutch guilders, Pounds sterling and Austrian schillings. The importance of currency swaps to the Bank can be seen from the fact that this represents one-seventh of its total medium and long-term borrowings over this period, and one-fifth of its borrowings in non-dollar currencies. In FY83 currency swaps lowered the Bank's average cost of borrowing from about 10% to about 8.9%. The majority -- about two-thirds -- of swaps have been into Swiss francs.

1.02 Apart from the obvious advantages to the Bank in cost and market access, our analysis suggests that currency swaps, by adding liquidity and contributing to the development of the long-term forward market in major trading currencies, serve to reduce the risk associated with trade finance and asset/liability management in international business more effectively than more traditional alternatives. For the importer or exporter with unhedged foreign currency payables or receivables, swaps offer advantages in increased certainty and lower cost over the alternatives of offshore funding, leads or lags in payments or short-term hedges in the foreign exchange (FOREX) market. For the enterprise funding offshore investments
in its domestic currency, or seeking offshore financing for its domestic operations, swaps alleviate the exposure inherent in a currency mismatch without potentially expensive and uncertain foreign borrowing or investment. Swaps, moreover, accomplish these purposes without the destabilizing effects on the foreign exchange market or the added capital market access requirements associated with the comparatively awkward techniques currently available.

1.03 The rapid growth of swap activity to date is largely a reflection of the perceived advantages of this technique, and there is very substantial potential for expansion of this market as awareness broadens among financial managers of the availability of swaps as a risk management tool. The principal constraint at present is not the market; rather it is the concerns of various governmental authorities as to the purposes of currency swaps and their likely longer-term effects on financial markets and national currencies.

1.04 This paper describes in a simple example the mechanics of a currency swap transaction, and then turns to the technical features of the Bank's swap program and the purpose swaps serve in the Bank's overall funding strategy. The paper then goes on to discuss the role of swaps in the broader perspective of world financial and capital markets. The final section addresses some of the public policy issues associated with currency swaps.
1.05 All swap transactions follow a common pattern. In them, the World Bank borrows U.S. dollars or Pounds sterling or some other, typically high nominal interest rate currency, either in the Euromarkets or in the domestic capital market, at the prevailing market yield, simultaneously converting the proceeds of the borrowing by selling the dollars in the spot foreign exchange market for the preferred currency, or exchanging it for that currency with the counterparty. At this point, after conversion, the Bank no longer has a dollar asset. Instead the asset is a cash foreign currency asset, but the Bank's liability is a commitment to pay annual interest payments and principal at maturity in dollar, to its bondholders. At this point, the Bank has a currency risk. The second, simultaneous step in a swap transaction is for the Bank to cover its future liability in dollars by executing a forward exchange contract, in which the Bank receives exactly the funds required to meet its liability in dollars, in exchange for the funds it would provide in the other currency. Thus, the Bank receives annually, on coupon dates and at maturity, the amounts needed to service its debt.

1.06 From the inception of the program, three major principles have guided all swap transactions. First, forward contracts are signed with only the very highest credits in the market. Typically, that means highest credit commercial banks or a triple A rated corporation (such as IBM, the first currency swap partner). The commercial banks may be acting for their own account or, often, they stand in the middle -- thereby becoming the Bank's partner in the swap transaction and the partner of the other side, the corporation whose credit standing may be very fine but simply not high enough for the World Bank to use in these transactions. The second major
principle is that the transaction leave the Bank with no uncovered currency risk for repayment on the original loan. That is, the Bank must be fully hedged on currency swaps. Finally, the third major principle has been that the effective cost of the currency in which the Bank will become obligated be at, or below, the cost of the direct borrowing of that currency by the Bank. In other words, when the Bank does a currency swap, it furnishes to the counterparty what its cost would be of doing (e.g.) SwF borrowing at that time, in the market, at that maturity. That cost fixes a ceiling, and the Bank will not engage in currency swaps which raise its cost of borrowing for individual currencies.

1.07 The net effects of the transactions are that the Bank has an inflow of desired currencies without having to tap those markets through direct borrowings. The corporate entities and banks who have tapped those markets have acted as the Bank's intermediary in these markets while the Bank acts for them in raising dollars.

1.08 Returning to the question of why the Bank engages in a transaction such as this, the following are some reasons. Since the Bank passes on its borrowing costs to the developing countries, the Bank chooses the currency mix of borrowings, and carries out its borrowing program in such a way as to avoid "market saturation", and a consequent increase in the cost of funds. By using currency swaps, the foreign exchange markets, not the capital markets, are used to provide increased access to those currencies the Bank wishes to borrow, avoiding any such effects.
A brief account of a typical Bank swap serves to set the stage for our further discussion of the program and its effects later in this memorandum:

(i) A Swap Scenario

Day 1

The Bank has just completed a $200 million 5-year bond issue in the U.S. domestic market. It carries a coupon rate of 12%, payable annually and is priced at par (100%) to yield 12 percent, 50 basis points over 5-year U.S. Treasury Notes. The total cost to the Bank including fees and other charges is 12.50%.

Late in the morning the Bank receives a call from a Swiss corporation which wants to finance expansion of a manufacturing facility in the United States. The corporation would prefer to raise the funds required for this expansion directly in the U.S. market, e.g., through a dollar bond issue, but its credit standing is such that it would be unable to obtain best rates, and the costs would be too high. In Switzerland, on the other hand, the company is a triple A credit with substantial liquidity. An alternative means of financing the U.S. plant would be for the firm to use its existing Swiss franc liquidity, to buy dollars to finance the plant, or to float a SwF bond issue and convert the proceeds into dollars. However, the firm is concerned that a later appreciation of the Swiss Franc could have a substantial and unpredictable adverse impact on its Swiss franc denominated cash flow and balance sheet.
In order to hedge the dollar flows it expects from its expanded U.S. facility, against exchange rate risk, the firm proposes to sell these dollar receipts forward, to the Bank. It thus enters a long-term forward exchange contract with the World Bank that provides for a series of annual forward sales and purchases of dollars and Swiss francs on dates coinciding with the debt service obligations of the Bank in U.S. dollars. The forward contract thus enables the firm to convert the dollar revenues from its expanded U.S. facility into a Swiss franc flow at known rates of exchange. The contract obligates the World Bank to pay a flow of Swiss francs to the counterparty and is priced to cost the equivalent of the debt service on Swiss francs borrowed at an all-in cost of 6.2%. The company at the same time, is obliged to supply a periodic dollar flow to the World Bank, equivalent to the debt service, had it borrowed U.S. dollars at an all-in cost of 12.5% to finance its plant. The attraction of this offer to the Bank is that the 6.2% is lower than the cost of a direct Swiss franc borrowing by the Bank; likewise, to the counterparty, 12.5% is a lesser cost than it could achieve on a direct dollar borrowing in its own name. The Bank considers the offer overnight.

Day 2

After further discussions, the World Bank agrees to participate for an amount of just under SwF 100 million, and with the counterparty, agrees on the final terms. They look like this:
<table>
<thead>
<tr>
<th>Year</th>
<th>Amounts Sold to Counterparty</th>
<th>Amounts Received from Counterparty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spot Exchange</td>
<td>49,581,046*</td>
<td>SwF 99,162,091</td>
</tr>
<tr>
<td>Forward Contract</td>
<td>1 SwF 6,000,000</td>
<td>$ 6,057,567</td>
</tr>
<tr>
<td></td>
<td>2 6,000,000</td>
<td>6,057,567</td>
</tr>
<tr>
<td></td>
<td>3 6,000,000</td>
<td>6,057,567</td>
</tr>
<tr>
<td></td>
<td>4 6,000,000</td>
<td>6,057,567</td>
</tr>
<tr>
<td></td>
<td>5 106,000,000</td>
<td>56,537,296</td>
</tr>
</tbody>
</table>

* Exchange rate at time of swap agreement is 1$ = 2 SwF.

There is an exchange of telexes and payment instructions confirming the transaction.

**Day 6** The World Bank purchases SwF 99,162,091 for $49,581,096 from the counterparty.

**Day 10** Representatives of the World Bank and the counterparty sign the contract, concluding the swap transaction.

1.10 Figure 1 illustrates such a typical transaction. In the diagram, the World Bank and its Swiss counterparty, each have borrowed funds which they wish to swap out of (1 and 1*). Spot purchases of the desired currencies are made (e.g., of Swiss francs by the Bank) (2 and 2*), and forward contracts concluded (3 and 3*). In this representation, the contract calls for "bullet" repayments to the counterparty i.e., payments of interest only, in years one through four, and repayment of principal in year five. There is no sinking fund or interim amortization. The World
This illustrates a typical swap off a new liability, involving fixed interest rate dollars & fixed interest rate Swiss Francs.
Bank's Swiss franc payments to the counterparty are used to repay the counterparty's Swiss franc obligation; and likewise, the Bank's forward purchases of dollars from the counterparty are used to meet the Bank's dollar liabilities (4 and 4*).

1.11 As noted elsewhere in this paper, swap transactions vary widely as to the nature and business purposes of the counterparties, the sources of the currencies supplied to the Bank and the detailed arrangements worked out to accommodate the differing interests of each participant. Nevertheless, all of the Bank's swap transactions are similar in structure to the example just described.

1.12 Historically, the forerunner of long-term currency swaps was the back-to-back loan, or parallel loan, in which the counterparties, typically firms each with access to a currency desired by the other, made loans to each other, each borrowing offsetting the other. The first such arrangements were between the U.S. dollar and U.K. sterling markets, and arose from the difficulties which foreign entities had at certain times in raising fixed-rate, long-term debt in these respective markets. The legal status of the firms' obligations to each other was that of a debt issue.

1.13 Investment banks in turn, acting as intermediaries, began to develop a business in matching reciprocal borrowing requirement for their clients, and both the range of currencies and the number of interested parties grew. Commercial banks also entered the field, often acting as principals to guarantee the credit risk of each company to the other.
Structuring these transactions as currency swaps rather than as parallel loans was soon seen to be preferable, because, although the flow of funds under each is identical, the contractual obligations of each party, under a swap, are off-balance sheet items. The swap arrangement also permitted the spot purchase or sale of funds to be separated from the forward contract, enabling, in turn, companies to hedge not only new liabilities, but also existing ones.

Section 2: World Bank Currency Swaps

2.01 Attachment I provides the details of the 58 currency swap transactions carried out by the Bank between August 1981 (the start of the program) and end of FY83. In these transactions, the Bank has: (1) borrowed US dollars or sterling either in the euro market or in the domestic capital market; (2) sold dollars in the spot foreign exchange market for another currency or exchanged dollars for another currency with a swap counterparty; and (3) entered into a long-term forward exchange contract to repurchase the dollars needed to service its dollar obligations in exchange for the swapped-for currency at various future dates corresponding to the interest and principal payment dates on the dollar bond issue that has been swapped. While this structure is similar financially to the technique of "back-to-back" loans or parallel liability assumptions from which swaps developed, the legal status of the currency swap is that of a long forward contract for purchase and sale of currencies.
2.02 For the Bank, the purpose of currency swaps has been to gain access to a preferred currency (e.g. Swiss francs) without having to tap directly the capital market concerned. The program was started at a time when the Bank was borrowing amounts of Swiss francs and other non-dollar currencies that were approaching the capacities of those markets and the Bank's official access limits, yet real and nominal rates of interest in US dollars were at historic highs. It was not in the interests of the Bank and its borrowers to continue to borrow U.S. dollars at rates of 14 to 16%, especially when interest rate differentials vis-a-vis other currencies were on the order of 6 to 8%, and there was tremendous latitude for effective borrowing costs to remain within the breakdown point of alternative dollar borrowings.

2.03 The opportunity for currency swaps initially arose because other highly rated borrowers wished to hedge long-term exposures in Swiss francs and other currencies that had been previously created through market borrowings. These counterparties were also willing to take on dollar liabilities at 14 to 16%. Using the currency swap technique, the Bank could thus acquire Swiss francs and other non-dollar currencies through the spot foreign exchange market (or directly from the counterparty) without having to draw upon the domestic capital markets of Switzerland, etc. The currency swap was an alternative method of borrowing for the Bank whereby it could make use of its more extensive access to US dollars and still end up with the preferred liability.

2.04 As the program has developed, the types of counterparty liabilities involved in swap transactions have expanded. In some
instances, especially in Swiss franc swaps, the counterparty's liability has been a relatively recent borrowing, sometimes acquired specifically for the purpose of the swap. Moreover, in some swaps with commercial banks\(^1\)/ the Bank has made use of the forward foreign exchange (FOREX) market. Partly because of the rapid growth in currency swaps and the increased liquidity they impart to the long term forward market, major commercial banks are increasingly able to deal in the FOREX market out to maturities of five years. In these transactions, there may not be a single counterparty on the other side of the swap. Rather, the commercial bank is likely to be offering one or more clients various maturities and amounts for purposes of hedging both financial and trade transactions (see Section 3 below)\(^2\)/. And, although the Bank has always swapped fixed-rate dollars for other currencies also at fixed rates, some transactions have involved interest rate swaps by the Bank's counterparty which has used the Bank's fixed interest rate dollars in a swap with a third party, for floating rate dollar funds. (This type of transaction is discussed further in Section 3).

2.05 Unlike a direct market borrowing, currency swaps in principle entail some degree of default risk for the Bank. That is, in a swap the Bank simultaneously creates (by selling dollars borrowed in the market) and covers (through the swap contract) a foreign currency exposure. However, the availability of the currency (e.g., $) required to service the Bank's

\(^1\)/ About 80% of all swaps have been with commercial banks and other financial institutions; the remainder has been with industrial companies.

\(^2\)/ The structure of a FOREX transactions is slightly different from the typical capital market swap. See Attachment 2.
borrowing on specified dates, and at specified costs, is dependent on the forward contract being fulfilled by its counterparty. Should the counterparty default on its obligation, the Bank would be left with an open position in a currency, i.e., the Bank would have an asset (its loans) in the swapped currency, but would be faced with the continued obligation to service its liability (the original dollar borrowing) denominated in dollars. The Bank would also have a profit or loss, depending on the movement of exchange rates in the interim. This exposed position could be closed by a variety of means 3/. (i) For example, another forward contract could be undertaken. This would involve the Bank in meeting whatever costs (or gains) were involved due to a change of forward exchange rates from the previous contract, but would effectively re-establish the hedge. (ii) Another means of hedging would be to immediately sell the Swiss franc asset, reconvert the currency held through the swap into US dollars (again, with a given loss or gain), and invest these such that the flows generated by the investment match the debt service on the underlying dollar borrowing. (iii) Finally, the Bank could borrow the swapped currency (e.g. SwF) at present market rates, with the terms and structure of the borrowing such that the obligations exactly match to the financial flows generated by the (e.g. SwF) asset/loan. Having hedged the exposure on the asset side, the proceeds of the Swiss franc borrowing could then be converted into US dollars and invested in an instrument with a maturity and

3/ The extent of financial exposure involved in a swap is estimated by comparing the present value of the Bank's outstanding dollar obligations which the Bank must now assume upon default of the counterparty (i.e., the stream of dollar debt service which the Bank would have received from the counterparty) with the present value in dollar of the now cancelled Swiss franc flow to the counterparty. If the former is greater than the latter, effectively the Bank owes more on its outstanding dollar borrowings than it has in Swiss francs to pay it at current rates of exchange.
coupon payments matching the remaining life of the underlying dollar
borrowing. This would hedge the liability side. Because the risk in
swaps, though small, is undeniable, in order to minimize risk, the Bank has
tightly restricted swap counterparties to banks and other financial
institutions in which it invests its liquidity portfolio and to
nonfinancial institutions with AAA or comparable credit ratings.

2.06 The Bank's general approach to pricing swap transactions has been
to attempt to obtain a cost savings on the swap as compared to a direct
market borrowing. In setting cost guidelines both sides of the swap are
"marked to market", i.e. the dollar cost offered to the counterparty is
linked to the replacement cost to the Bank of the dollars being swapped
rather than their actual cost, and the upper limit on the non-dollar
currency is set with reference to potential borrowings in the non-dollar
market. In many instances, it is possible for the Bank to borrow through
the swap market at an all-in cost well below that of a direct market
borrowing. Savings have been as large as 1% or more; more commonly, they
are in the range of 1/4 - 3/8%. The source of these savings lies in
capital market imperfections and the effect of "scarcity value" on the
borrowing costs of similarly-rated borrowers as well as in the costs
imposed on commercial enterprises by variations in exchange rates which a
swap allows them to avoid (this is discussed further below).

2.07 Most swap transactions have been brought to the Bank by
investment or commercial banks that are active in this market. As a
general rule, swap agreements are brokered deals between the Bank and a
counterparty. This is true even in instances where a commercial bank is the counterparty. In such cases the commercial bank is acting as intermediary for credit reasons (i.e. the counterparty's credit standing is not acceptable to the Bank) and/or may be packaging a series of amounts and maturities on the other side in order to offer the Bank the particular swap structure the Bank wants. The FOREX departments of some of the major commercial banks may even take temporary positions in certain maturities until the amounts can be laid off to individual counterparties.

Section 3: **Currency Swaps in the Public Policy Context**

3.01 The development of the long-term currency swap as a technique of finance has been quite rapid over the past one to two years, despite the fact that the approach has been available for some time. The reasons for this development are complex; by and large they rest on the volatility of interest rates and exchange rates (hence the need for new ways of hedging the risks of cross-border trade transactions) and on the rapid internationalization of world capital markets which has opened up new investment opportunities and increased the need for hedging assets and liabilities. This section discusses the principal motivations for currency swaps and the role they play in international trade and finance. This section first outlines the commercial (i.e. trade and investment-related) reasons for currency swaps and then discusses financial (i.e. arbitrage)
motivations. A distinction is made in both cases between activities of resident entities and nonresident entities.\textsuperscript{4/}

3.02 Despite the recent publicity associated with currency swaps, the total volume of such transactions is most likely small relative to the volume of trade and investment flows. No published or private data exist on currency swap activity, but a broad sense of the importance of swaps can perhaps be gained from the World Bank's activity -- the Bank is generally thought to be the largest single participant in the market other than commercial banks acting as intermediaries. During calendar 1982, the Bank concluded about $1.4 billion in swaps. This compares with an estimated annual foreign exchange trading volume of $80 trillion, and total nonresident borrowings in nondollar currencies in 1982 of well over $100 billion. Even in Switzerland, the market most likely to have been affected by the Bank's currency swap activity, the Bank's SwF $2.8 billion in swaps during 1982 compares to estimated gross borrowings in the Swiss capital market (resident and nonresident) of roughly SwF 40 billion over the same period. It is highly unlikely that World Bank swap activity alone has had any discernible effect on exchange rates, interest rates or capital market flows.

\textsuperscript{4/} For reasons of simplicity in exposition, the discussion in this section focuses on the currency swaps from the standpoint of public authorities in countries whose currencies (e.g. SwF) are or would be used for currency swaps out of US dollars. Thus, "nonresident" entities are generally considered to be dollar-based corporations or financial institutions whose activities could have an effect on the financial markets in (e.g.) Switzerland. It is also important to note at the outset that the discussion in this paper is based largely on what is generally known about how the foreign exchange and capital markets work and on basic principles of economics and finance. The present lack of data on either the volume of the market or on its participants precludes detailed empirical analysis or econometric estimation of potential effects.
Motivations for swaps

(1) Commercial Hedging Motivations

3.03 As a means of hedging current operations or short-term, self-liquidating transactions such as trade finance, the short-term foreign exchange (FOREX) market in the most important currencies is very large and highly liquid. Moreover, arbitrage of interest rate and forward exchange rate differentials is extensive, thus making the short-term FOREX market highly efficient mechanism (i.e. bid/offer spreads are narrow) for dealing with the risks inherent in a floating exchange rate regime. Beyond maturities of about one year, however, the FOREX markets are thin or non-existent. Currency swaps -- i.e. long-term forward exchange agreements put together on a barter basis -- have emerged in part to respond to the need for longer dated hedging vehicles, especially when the absolute volume of cover being sought is beyond what can be laid off in the inter-bank FOREX market. This close linkage of swaps to the FOREX market is not always appreciated in part because swaps grew out of barter type (back-to-back) loans and thus tend to be seen in a capital market rather than international trade context.

3.04 Figure III provides an overview of some of the more important commercial hedging needs for which currency swaps may offer an attractive vehicle. These include residents or nonresidents with a trade surplus or deficit, long-term export or import contracts, or currency exposures on either liabilities or assets.  

5/ Figure III highlights those cases in which a resident or non-resident entity would be a logical counterparty for the Bank (i.e. the entity is a forward seller of US dollars for purposes of the discussion in this paper).
FIGURE III

Overview of Long-Term Commercial Hedging Needs and Alternatives
Potential Bank Counterparties

<table>
<thead>
<tr>
<th>Type of Activity</th>
<th>Hedging Needs</th>
<th>Hedging Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Flows</td>
<td>Exporter has stream of dollar receipts in excess of dollar payments to be made.</td>
<td>Hedge through swap on long-term basis.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lead or lag payments.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hedge on an ongoing basis in short-term FOREX market.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Finance offshore in dollars.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stay exposed.</td>
</tr>
<tr>
<td>Long-term Contracts and Export Financing</td>
<td>Exporter has long-term flow of dollar receipts in excess of dollar obligations.</td>
<td>Hedge through swap or long-term forward contract.</td>
</tr>
<tr>
<td></td>
<td>Importer accepts export finance in foreign currency, and has to meet associated debt service in that currency.</td>
<td>Finance in dollars.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stay exposed.</td>
</tr>
<tr>
<td>Liability or Asset Exposures</td>
<td>Foreign company has dollar assets (fixed investment) which were financed in its domestic currency.</td>
<td>Hedge through long-term swap or long-term forward contract.</td>
</tr>
<tr>
<td></td>
<td>U.S. company has borrowed offshore to finance dollar assets.</td>
<td>Remain exposed by keeping mismatched position.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Finance dollar assets in dollars instead (obtaining counterliability).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hedge by obtaining matching asset for the non-dollar liability.</td>
</tr>
</tbody>
</table>
The first potential counterparty shown in Figure III is that of a resident exporter who receives a quasi-permanent stream of revenues in foreign currency (i.e. US dollars) but whose costs in plant, equipment and working capital are in local currency (e.g. SwF). In the absence of hedging, the exporter might attempt to use the leads or lags in payments and receipts to make the best of currency volatility. A well-known effect of this approach is that it is likely to be destabilizing to exchange rates, moving in the same direction as the arbitrage opportunities, and exacerbating the upward or downward movements in the currency. Another possible course would be to finance the dollar-generating local operation with dollar borrowings; however, a small exporter may not have as good a credit standing in the dollar credit markets as firms resident to those markets and, having to "pay up" for dollar funds, would be at a comparative disadvantage in dollar financing. Other factors, such as special legislative and accounting requirements, also inhibit offshore dollar borrowing, potentially raising costs to the smaller exporter as compared to the large multinational companies and those entities with more ready access to dollar funding. In addition, significant differentials in interest rates between the United States and major trading partners have made the nominal cost of dollar or Eurodollar borrowings substantially higher than domestic borrowings for many companies. In such circumstances, the decision to remain in an exposed position on the revenue side could appear to be the lesser evil, although subsequent developments may prove this to have been a wrong choice -- if the revenue-generating currency weakens thereby eroding profit margins and domestic debt-servicing capacity. The swap enables the exporting firm to sell its foreign currency stream of
receipts forward on a long-term basis, providing a known domestic price for the future revenues and a potentially more cost-effective way of hedging the domestic investment and funding undertaken to supply the export market.

3.06 Currency swaps also provide a mechanism for enhancing the appeal of US or nonresident export financing denominated in the exporter's currency. In many cases, the importer, not having matching revenues in the currency (e.g. SwF) being offered as part of the export financing package, may feel constrained from accepting the exchange rate exposure such financing implies. However, if a swap counterparty can be found that is willing to assume the importer's (e.g. SwF) liability at a predetermined cost, giving the importer a dollar liability in return, (the importer's cost and revenues being denominated in dollars), the attractiveness of the export finance will be enhanced, in turn strengthening the exporter's competitive position.

3.07 For largely identical reasons, resident firms exporting under long-term contracts denominated in foreign currency are also potential beneficiaries of long-term currency swaps. These firms, whose export contracts call for delivery of the product over a multi-year period and are paid in dollars, are at a disadvantage compared to dollar-based firms unless they can fix in advance the local currency equivalent of their future dollar receipts. An example might be a European aircraft manufacturer or capital goods producer. The long-term forward contract embodied in a currency swap enables such firms to hedge their future dollar receipts in precisely the same way that a short-term FOREX hedge enables
receipts in precisely the same way that a short-term FOREX hedge enables such firms to bid with certainty of currency values on short-term delivery contracts. The ability of the exporter to take on a dollar contract on a fully-hedged basis thus facilitates such long-term exporting and also underpins the long-term investment required to carry it out.

(ii) Hedging Assets and Liabilities

3.08 On a more general level, currency swaps can also be used for so-called balance sheet hedges that provide a way to hedge a firm's long-term overseas investment. To illustrate, a firm expanding overseas, but financing this expansion domestically, incurs in its local currency bond issue, a domestic currency liability. In its foreign plant and the revenues generated therefrom, the firm retains an asset and profit streams in the foreign currency. The firm may want to hedge the income of its overseas investment into the local currency in which its debt servicing or dividend payments are denominated. The currency swap thus provides an alternative to the costly offshore financing of direct foreign investments means of hedging. In the same way, overseas portfolio investment can also be hedged through the vehicle of a swap which provides for the forward sale of the foreign currency income stream as well as the maturity value.

3.09 The commercial and financial motivations for non-resident entities to enter into long-dated forward exchange agreements involving local currency are also outlined in Figure III. For example, the first World Bank swap wire IBM was a liability hedge, where the counterparty had borrowed Swiss francs and wished to insure the dollar cost of the
liability. The factors underlying these situations are the same as those outlined above for resident entities; although the specific character of the transactions will vary, the general principles of hedging a foreign currency exposure are the same. The important point to be brought out by Figure III is that there are numerous situations in which long-term hedging of trade and investment-related transactions through swaps makes sense.

3.10 For U.S.-based transnationals for example, there arose a marked increase in the demand for forward hedges of balance sheets and net assets as a result of a ruling by the U.S. Financial Accounting Standards Board on the translation of foreign assets and liabilities into U.S. dollars for financial statements. 6/ This ruling, known as FASB 8, required the accounting gains and losses arising through the new translation guidelines to be carried directly into the firms' profit-and-loss statements. 7/

6/ Accounting exposure is distinguished from economic exposure. The former measures the impact of currency changes on a firm's reported balance sheet and profit-and-loss statement. It is therefore concerned with the measurement and reporting of past activities and outcomes. The extent of exposure to potential accounting losses depend on those net assets required under a given method to be translated at current rates of exchange (as opposed to being carried on the books at past exchange rates.) Hedging accounting exposure is typically brought about by bringing exposed assets (exposed in accounting terms, but not necessarily in economic terms) in line with exposed liabilities in a given currency. Economic exposure, by contrast, arises whenever a change in currency values impact on a firm's future earning power, or net worth. This typically would be hedged by denominate debt in a currency whose changes in value will offset any changes in value of cash receipts.

7/ Indeed, because of the impact of even small translation losses and gains could make for substantial variability in the profit-and-loss statement, it was alleged that firms undertook accounting hedges even when economically they were unjustified.
Large swings in exchange rates could thus affect the reported earnings of international companies with strong currency liabilities. While borrowing in dollars was one means to avoid this accounting exposure, firms expressed more interest in operating in the forward market, and increasingly looked towards swaps as a means of hedging the dollar costs of their foreign liabilities.

3.11 The situation for such transnationals was changed in 1982, when, in response to pressures, a new ruling was issued under which translation gains and losses were recorded as a separate balance sheet item rather than as incremental profits or losses. This effectively reduced the need to hedge accounting exposure; however, the volatility of exchange rates continues to make hedging economic exposure imperative, and demand for hedging through the forward market continues to grow.

(iii) The Role of Arbitrage

3.12 The preceding discussion of the uses of currency swaps stressed the commercial and financial hedging purposes that swap transactions serve. However, one important motivation behind currency swaps is to take advantage of arbitrage opportunities that exist because of capital market inefficiencies. Such arbitrage has attracted a great deal of attention in the financial press and has been a main selling point used by investment banks in convincing many corporations and financial institutions to enter the currency swap market.
3.13 Capital market arbitrage opportunities exist for many reasons. In the World Bank's own currency swap program, the most frequent arbitrage underlying a currency swap occurs because there are a limited number of nonresident entities such as the World Bank that are able and willing to issue bonds in any currency, while investors and bondholders based in those currencies have very strong desires to diversify their portfolios to include a broader range of international credits. The result is that, depending on the relative volume of their respective borrowings, and the frequency with which they go to a particular market, borrowers of identical credit quality can pay markedly different rates of interest. In the Swiss capital market, for example, because the World Bank has been a major issuer for many years, some U.S. corporations can borrow at rates below those the Bank can achieve even though the Bank remains one of the most highly regarded nonresident names in that market. "Scarcity value" plays a large role in pricing of new issues, and market saturation is always to be watched for. The World Bank, on the other hand, continues to achieve very fine pricing in the U.S. domestic and Eurodollar markets, whose relative size is that much larger, and where the foreign names may be less well known. It is the different perceptions held in each market of the creditworthiness of the Bank and its counterparties which makes swapping of their respective liabilities mutually attractive, as it enables each party to take advantage of the others' credit standing to "borrow" more cheaply in a given currency than would otherwise be possible.

3.14 It should be noted that there are natural limits to the flows which can take place at rates attractive to both parties. Covered investment flows such as that take place through swaps leave each party
with an interest cost in the swapped currency. For the counterparty, this would be the dollar interest cost or World Bank's dollar borrowing; for the World Bank, the cost is the the SwF interest cost on the counterparty's Swiss franc borrowing. The swap will induce demand for borrowings in a given currency (e.g. SwF) only to the extent that the dollar cost of a hedged (e.g. swapped) SwF borrowing is lower than that of a direct dollar borrowing. And for the Bank, additional swapped dollar borrowings will be worthwhile only as long as the Swiss franc cost of the indirect route is lower than the direct borrowings. That is, swaps will induce flows only to the point at which this creditworthiness differential can be eliminated or narrowed.

3.15 On the other hand, what narrows the overall interest rate differentials between markets are capital flows on an uncovered basis. In other words, there must always be a party that is willing to accept an exposed position in some currency for a net capital outflow to take place.

3.16 For the domestic bondholders purchasing the nonresident counterparty's paper, arbitrage swaps have the clear advantage of permitting covered portfolio diversification. Since the swap typically serves to hedge some exposure, there is also a balance sheet improvement for the counterparty, and its liabilities thus represent a better credit to the bondholders. From the point of view of the domestic authorities, both benefits accrue without any increase in capital outflows or the amount of non-resident borrowing taking place, since such borrowing via swaps substitutes one for one with direct World Bank borrowings.
3.17 In sum, swaps for arbitrage purposes will not internationalize capital flows except temporarily, to the extent that there are differences in timing of the respective dollar and SwF borrowings and to the extent that arbitrage incentives are provided to financial institutions to act as intermediaries for borrowers whose market access may be restricted for some reason (e.g. capital rationing by government authorities).

3.18 While the existence of such arbitrage opportunities is a central part of the rationale for many currency swaps, it is important to bear in mind that swaps enable currency risks to be transferred to entities better able to deal with them, while permitting investors to achieve their desired pattern of credit risk in their portfolios. Thus, the ability to hedge cross-border capital transactions (whether by the borrower or the investor) contributes to the economic efficiency of international investment.

3.19 It is not always possible to separate the role of arbitrage as a motivation for currency swaps. The cost saving implied by arbitrage is simply a reflection of the fact that the transaction makes sense financially. Some capital market borrowings clearly would not have taken place had they not been part of a package that included a currency swap. This would be true, for example, of a corporation with little or no foreign business that absolutely would not borrow in an overseas (e.g., dollar) market except on a fully-hedged basis. In other cases, the arbitrage opportunity is only a further reason to undertake a currency swap and related borrowing which would have been undertaken anyway. The latter is particularly true for multinational firms that actively manage their exposures in a variety of currencies. For example, a firm which has
borrowed a currency that has subsequently weakened, might want to pre-pay this liability at a point when it appears cheap to do so. This prepayment could take place through a currency swap with a series of forward purchases of the borrowed currency which serves to lock in profits arising from favorable exchange market developments. The Bank, for whom the currency swap continues to serve the purpose of raising new funds in a currency more cheaply than alternative dollar borrowings, could be a counterparty to such operations. Given the volatility of markets, there are ongoing opportunities for this type of swap as parties seek to avoid the risks to their financial position from any revaluation of borrowed currencies in which they maintain an open position.

3.20 Cost-saving arbitrage opportunities deriving from creditworthiness differentials typically provide the exclusive motivation for straight interest rate swaps. Firms with anything less than the highest credit rating typically have to 'pay up' substantially in the fixed rate market, in comparison to what a triple-A credit might pay. By contrast, in the floating rate market, the spreads are not likely to be nearly so significant, giving the B-credit a comparative (but not absolute) advantage in this market. The straight interest rate swap take advantage of this opportunity for arbitrage between a triple-A credit with fixed rate funds and the B credit with floating rate funds, enabling the B credit to obtain fixed rate dollars at substantially better rates than it could directly, while the cushion provided by the wide spread provides an additional incentive for the triple-A credit wanting floating rate funds, to participate in the swaps, instead of borrowing floating dollars directly itself.
3.21 Significant potential volume for arbitrage-related swap transactions for the Bank lies with the funding activities of non-US commercial banks. Indeed, non-U.S. banks have been among the World Bank's counterparties in a number of cases. A large proportion of these institutions' offshore lending is in U.S. dollars, yet they generally lack natural funding sources in dollars. As a result, they are constantly searching for lower cost ways of obtaining dollars, mostly on a floating rate basis. Recently, European and Japanese institutions have begun to make use of their superior ability to raise fixed-rate DM and SwF as a basis for swaps into term floating-rate dollar liabilities. The Bank has been indirectly involved in such transactions as a provider of fixed-rate dollars to a German commercial bank counterparty that simultaneously swapped fixed-rate dollars for term floating-rate dollars. Because of the World Bank's comparative advantage in raising floating rate dollars relative to most of its foreign counterparties, logical expansion of the Bank's swap program would be in the direction of cross currency interest rate swaps. In these, the Bank would provide floating rate dollars directly to such institutions in exchange for fixed-rate SwF, DM, etc.

Section 4: Public Policy Considerations

4.01 The authorities' concerns with respect to swaps have focussed on two areas: First, there are worries that swaps might provide inducements for a further growth in demand for international assets and liabilities, now that they can be hedged. The concern is especially focussed on the additional pressure that increased borrowing by nonresident corporations
may place on their domestic markets to take advantage of capital market arbitrage opportunities. The second concern is the more generalized worry about expanded use of their home currency as a "reserve currency" to denominate assets and liabilities. The existence of large, interest-sensitive capital flows under a system of floating exchange rates has (in the absence of policy coordination among countries) made it more difficult for national authorities to pursue independent domestic policy. Controlling capital inflows, limiting foreigners' access to the domestic capital market, and other measures to limit the use of national currency outside national borders are all measures which domestic policymakers have used from time to time to help insure an environment under which domestic demand management policies retain their maximum effectiveness and independence. Swaps, by transforming domestic liabilities into liabilities held by foreigners, add to foreigners' claims on the domestic economy. As such, in the above context, they may appear as a cause for concern.

4.02 Section 3, in which swap motivations were outlined, described the positive benefits to trade and investment to be derived from the availability swaps and of long-term hedging possibilities. The ability to hedge trade flows and export contracts on a long-term forward basis is likely to have beneficial secondary effects on the international competitiveness of domestic firms and shelter their investment returns from the effects of volatile exchange rates. Indeed, currency swap transactions can be viewed simply as contributing additional liquidity and depth to the forward exchange market. The benefits of short-term hedging of trade flows, both to exporters and for market stability in general -- especially when compared to the volatility which can be imparted to the exchange
markets and the private losses which may be incurred by "leads and lags" -- are well known. These same benefits accrue, a fortiori, to longer-term trade flows where currency risks may be much higher.

4.03 In addition, it is worth noting that the development of a long-term forward exchange market can be expected to have generally favorable effects on exchange rate stability. Forward markets essentially link future transactions to today's spot rate, and may help at the margin to reduce the tendency for wide swings in exchange rates.

4.04 Despite these advantages, authorities may continue to be concerned with swaps. This section will discuss the extent to which these fears are warranted, assessing first the capital market impacts and how swaps can be coordinated with policy objectives and used as a policy tool, and then, swaps in the context of reserve currency issues. A technical annex details the effects of the main types of swaps on capital markets and the balance of payments.

(1) Capital Market Pressures

4.05 As noted earlier there is concern that the availability of hedging opportunities will encourage additional borrowing by nonresidents. In fact, in general, swaps will not add to domestic credit demands. This is because the economics of swaps are not based on the interest rate differentials between countries but on credit perceptions, or scarcity differentials accruing to different firms in different markets. Thus, there are natural limits to the impact that hedging through swaps can have.
in enhancing the attractiveness of borrowing offshore. As pointed out in Section 3, the swap translates not only the nature of the nonresident borrower's (e.g., U.S. firm's) off-shore liability (since the counterparty pays dollars to the World Bank), but also the cost of this offshore borrowing back into the currency being indirectly borrowed, or the currency (e.g., dollars) received through the swap. In reasonably efficient markets, the cost of a nonresident's (e.g.) SwF borrowing plus the hedge (i.e. swap) will be quite close to the cost of a direct dollar borrowing.\textsuperscript{8} Offshore borrowings with swaps are economic only within fairly narrow bands and depend on frictional inefficiencies in capital markets. These arbitrage opportunities exist at present to some degree because the world economy is still adjusting to floating exchange rates and because the growth of international trade and investment is leading to a greater integration of capital markets. This integration both creates and makes explicit such arbitrage situations, and it is a natural function of private markets to take advantage of these transitional inefficiencies.

\textbf{4.06} However, there is another reason why one would not expect significant growth in demand for borrowing by nonresidents. First, as we have seen, there must be an economic incentive. The ability of private market participants to borrow on a fully hedged basis through a swap is limited by the need to find an acceptable counterparty. There must always be either a counterparty who is willing to accept the currency exposure that the primary borrower is seeking to hedge, a counterparty with an open currency position in the opposite direction, or a counterparty such as the

\textsuperscript{8} That is, interest parity should prevail but for the differentials remaining due to credit perceptions.
Bank which wishes to diversify its liabilities. And as noted, the development of a long-term forward market permitting the closing of such open positions would generally be associated with greater economic stability and efficiency.

4.07 Given this economic advantage and a growing depth of market, the existence of hedging opportunities for foreign currency liabilities would tend to enhance the attractiveness of borrowing offshore. Hedging, for a price, reduces risk, and the removal of the uncertainty associated with borrowing a relatively low nominal interest rate currency (e.g., the SwF) that has significant potential for appreciation, may remove a barrier to nonresident borrowing to the extent that the lower interest cost plus the hedge remains less than the cost of a dollar borrowing. As far as uncovered borrowings are concerned, it is impossible to assess the importance of exchange rate uncertainty in discouraging nonresidents from offshore borrowing, but it seems fair to say that it plays a role in regulating nonresident demand in particular capital markets. Few private companies are willing to take major open positions despite the near-term advantage of lower interest rates. To the extent that they are unwilling to take such positions, the availability of forward cover at a price may encourage additional offshore borrowing if the price is right.

4.08 However, the authorities' reliance on exchange rate volatility to discourage nonresident borrowing has a number of drawbacks. First, domestic bondholders and investors are penalized by the reduced range of portfolio choices available in the absence of nonresident issuers. Second, the exchange rate may be difficult to control and overshooting and
consequent swings in capital flows may be a byproduct of such a policy. Third and most important, a policy of discouraging swaps and limiting the growth of forward markets is likely to be self-defeating. As long as firms see opportunities for capital market arbitrage or enhanced access to foreign capital markets through swaps, they will seek out counterparties for this mutually advantageous transaction. The transaction will simply take place without the knowledge of the authorities. From the authorities' point of view, it may be preferable to ensure that the activity can be monitored, rather than to drive it offshore where authorities will have less knowledge of specific transactions or the magnitudes of flows.

(ii) Swaps as a Policy Tool

4.09 To prevent excessive pressures on the domestic capital market or crowding out of domestic borrowers, the authorities often control access to the domestic market; such regulation of access is in most situations a sufficient policy tool. It is unnecessary to control swaps if the underlying primary transactions fit in with the authorities objectives and plans. However, for those authorities that seek to guide the domestic economy in a more activist way, swaps can be used as an additional policy tool for effecting, at the margin, exchange and interest rate targets. As the annex outlines, swaps with different counterparties have differing impacts on capital flows, balance of payments and other variables of interest to policy makers, depending on the parties involved in the transaction, and its precise nature. For example, swaps with a resident firm seeking, ex-post, to hedge offshore operations which were originally funded domestically will reduce credit demands in the domestic capital
markets while strengthening the exchange rate (see Annex, para 6).

Alternatively, if the World Bank's counterparty is a nonresident who has borrowed new funds to finance offshore investment, the effect on the exchange rate is more neutral and, since the World Bank's swapped borrowings substitute directly for its direct borrowings, credit demand from that source is reduced and on a net basis, demand for new issues in the domestic capital market is unchanged (see Annex, para 5).

4.10 A further aspect of capital market concern may be the possible impact of swaps on the structure and development of domestic capital markets. For example, domestic policymakers may choose to specify the amount, maturity and relative cost of borrowing for different categories of borrowers. In such a case, the authorities' guidance would limit the amount and maturity of the new borrowing—the transaction underlying a swap. At the same time, the swap would improve the overall quality of credit in the market, since a firm hedging through a swap reduces its exchange risk and thus at the margin enhances the quality of credit being placed in the domestic capital market. This same "quality enhancement" effect can be seen in both nonresident and resident entities' swapped borrowings when these are undertaken to hedge a mismatched currency position. Swaps thus tend to improve the quality of the underlying transaction being guided by the authorities, enhancing economic stability and efficiency.

4.11 These considerations, together with the trade-related benefits of long-term forward markets, suggest that policy makers need not be apprehensive about the effects of swaps on domestic capital markets. As long as
the primary transaction is controlled in line with the policy preferences of national authorities, it is unnecessary to impose separate controls on swaps. Swaps seem unlikely to undermine guidelines as to the structure and development of the capital market.

(iii) **Reserve currency concerns**

4.12 The existence of a long-term forward exchange market by itself is unlikely to compound national authorities' task of limiting the reserve currency status of their currencies. Among the reasons for a currency's attaining a reserve currency status is the desire of nonresidents to hold assets denominated in that currency on an *unhedged* basis, either for currency diversification reasons or because of expected appreciation of the currency relative to others. However, these reserve currency assets can only be created by one means: when the country in question has a current account deficit, or when capital outflows take place. As noted earlier, in the case of swaps, it is these capital outflows -- the underlying transactions -- which create these assets. In the swap context, the ability of nonresidents (e.g., the World Bank) to create assets denominated in the foreign currency is limited by the extent to which counterparties (e.g., the swap partner) wish to cover unhedged liabilities. Thus, control over the primary underlying volume of nonresident currency holdings remains the critical determinant of any expansion of reserve currency status. The subsequent shifting of the asset to another party through a swap does not increase the sum total of nonresident holdings. Moreover, creation of assets through swaps based on trade-related transactions is already possible through the short-term FOREX market. Under most reasonable
assumptions, this form of asset creation -- which is self-liquidating -- is likely to dominate in importance any long-forward activity of the same type.

4.13 Finally, the existence of long-term forward markets and hedging opportunities which swaps provide may actually tend to stabilize nonresident holdings. For example, when sentiment temporarily shifts against a particular currency (e.g. SwF), nonresidents may choose to hedge assets in the currency rather than liquidate them. They are presently limited in their ability to do so, however, by the thinness of long-forward markets. The development of a long-term forward market is thus likely on balance to have a stabilizing effect on exchange rates. Hedged foreign currency denominated assets or liabilities are much more like their domestic counterparts; and the foreign currency holdings of nonresidents, therefore, much more stable. Exchange rate fears will not impart the same volatility as when no hedging is possible.

4.14 The general conclusion of this discussion of public policy concerns is that currency swaps on balance represent a favorable development for financial markets. As long-term forward exchange contracts, they reduce risk for capital market participants and trading firms. They also contribute to the efficiency of cross-border trade and investment transactions.

4.15 The public policy concerns associated with swaps relate to their potential to undermine measures designed to limit the impact of the international economic environment on the efficacy of domestic policies,
particularly capital market controls and efforts to avoid reserve currency status. The analysis suggests that it is inappropriate to be excessively worried about swaps. The key consideration is achieving the desired control over the primary capital market transaction. Swaps, which simply rearrange currency exposures in accordance with private investor or borrower preferences, seem unlikely to frustrate the specific guidance that national authorities may wish to give to investors and borrowers. Moreover, control of swaps in the absence of control on the primary transaction runs the risk of inconsistent and self-defeating policy objectives.

4.16 These considerations suggest that authorities can -- and perhaps should -- take a reasonably relaxed view on currency swaps. This is even more true for the World Bank's swap activity, not only because of the purposes served by the swaps in the Bank's overall funding strategy, but because of the controls that national authorities have over the Bank by virtue of their membership and close association with its operations.
ANNEX A

THE EFFECTS OF CURRENCY SWAPS ON CAPITAL MARKETS
AND THE BALANCE OF PAYMENTS

1. The effects of a variety of uses of currency swaps on the capital market and the balance of payments are summarized in the figures in this annex. Figure A-1 shows the type of activities of resident entities for which currency swaps with the World Bank make sense. These are (1) asset hedging, (2) export revenue hedging, and (3) hedging of long-term contracts. Figure A-1 also summarizes for comparison purposes the main alternatives to hedging through currency swaps.

Resident Counterparties

I. Asset Hedging

2. For a domestic firm with offshore assets, a currency swap might be used for hedging in three main instances. The first would be as part of the initial investment, thus enabling the firm to finance the offshore investment domestically without a foreign currency exposure. The second case is where domestic liquidity (i.e. a domestic asset) is being exchanged for an offshore asset giving rise to an exposure which must be hedged. The third is where the asset has been acquired previously and the existing mismatched position is to be hedged, ex-post. As shown previously in Figure III, a resident firm has alternatives to the swap: one such alternative is the possibility of borrowing domestically to fund offshore assets and remaining exposed to the currency risk such exposure implies, a second is to borrow abroad to fund offshore investment. These alternatives and their implications for variables of concern to public policy makers are laid out in Figure A-I.
### Table: Summary of currency swap effects - bilateral counterparty

<table>
<thead>
<tr>
<th>Type of Transaction</th>
<th>Hedging Offsets Asset Side</th>
<th>Alternatives to Hedging with Swap</th>
<th>Hedging Trade Flows:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Direct Impact on Expiry Date</td>
<td>Hedging Offsets Asset Side</td>
<td>Alternatives to Hedging with Swap</td>
<td>Hedging Trade Flows:</td>
</tr>
<tr>
<td>1. Swap on capital market</td>
<td>Hedging Offsets Asset Side</td>
<td>Alternatives to Hedging with Swap</td>
<td>Hedging Trade Flows:</td>
</tr>
<tr>
<td>1. Swap on capital market</td>
<td>Hedging Offsets Asset Side</td>
<td>Alternatives to Hedging with Swap</td>
<td>Hedging Trade Flows:</td>
</tr>
<tr>
<td>1. Swap on capital market</td>
<td>Hedging Offsets Asset Side</td>
<td>Alternatives to Hedging with Swap</td>
<td>Hedging Trade Flows:</td>
</tr>
<tr>
<td>1. Swap on capital market</td>
<td>Hedging Offsets Asset Side</td>
<td>Alternatives to Hedging with Swap</td>
<td>Hedging Trade Flows:</td>
</tr>
<tr>
<td>1. Swap on capital market</td>
<td>Hedging Offsets Asset Side</td>
<td>Alternatives to Hedging with Swap</td>
<td>Hedging Trade Flows:</td>
</tr>
</tbody>
</table>

**Note:**
- This example refers to bilateral swap transactions for illustration only. The analysis is the same for any currency pair.
- Such transactions could include: (i) off-balance sheet by bilateral swap; (ii) portfolio investment by bilateral swap; or (iii) private direct investment by bilateral swap.
- This report is a direct impact associated with swap. Secondary or substitution effects not included.
(i) Effects of unhedged positions

3. In order to bring out the effects of a swap more clearly, it may be useful to first consider what would happen if the firm financed offshore assets domestically and simply remained exposed (see column 4 of Figure A-I). In this case, the firm will raise funds in the local capital markets and sell the proceeds of the borrowing to purchase a foreign asset and finance operations abroad. The impact of this would be as follows: in the local capital market, domestic credit demand will be increased at the margin. As local currency loan proceeds are sold in the spot exchange market, the spot exchange rate is depressed. With respect to the capital account, an outflow takes place as local currency is sold by the firm equal to the direct, or portfolio investments of the firm.

4. Alternatively, the firm could hedge its foreign asset or foreign operation by borrowing abroad in the same currency, thereby creating a true economic hedge. In this case, there will be no foreign exchange transactions, and no effects on the exchange markets. As no domestic borrowing takes place, there are no effects on the domestic capital markets or the capital account of the balance of payments. Nonetheless, such borrowing may be costly, and small firms may not always have access to the foreign markets in question.

(ii) Hedging through swaps off of new liabilities

5. The effects directly traceable to a currency swap depend on whether the asset is being hedged at the time of acquisition or
subsequently. In the former case, the firm borrows in the domestic market to fund a new foreign acquisition and simultaneously hedges its asset/liability mismatch through a swap (see first column of A-I). Borrowing on the local market will add to credit demands but this is not attributable to the swap. As the proceeds of the domestic borrowing are sold in the foreign exchange market, there will be downward pressure, offset by an equivalent demand for the currency by the World Bank (assumed to be the swap partner). In a second round of effects, subsequent disbursement of the foreign currency swap proceeds by the World Bank as loans to third world countries will put downward pressure on the exchange rate, at the margin. However, the fact that the initiating party (IBRD) has been able to obtain the desired non-dollar liability without borrowing directly in the domestic market implies less pressure on domestic interest rates than otherwise would have been the case. It is important to note in this case that there is no incremental capital market or capital account effect due to the swap. The effects of the swap itself is restricted to the spot foreign exchange market and the capital market effects are determined by the resident counterparty's activities, not the World Bank's.

(iii) **Hedging through swaps off of existing liabilities**

6. The effects are likely to be slightly different if the domestic firm is one with an existing unmatched position seeking to hedge an overseas investment, i.e. the firm has borrowed DM in some past period to fund foreign operations but subsequently chooses to cover the exposure (column 2). Since no new borrowing takes place at the time of the swap transaction, there are no additional effects on the domestic capital
market, whether by the counterparty or by the Bank, although the Bank has acquired an additional liability in SwF. With respect to the exchange market, the World Bank's sale of the proceeds of its dollar borrowing and purchase of SwF creates additional demand for this currency in the spot market.

7. There is yet another variant under which a domestic firm uses its domestic liquidity to fund acquisition of a foreign plant or other asset, incurring by this means an open exposure on its asset. This can be hedged by acquiring a dollar liability through a swap. The effects are as follows: the firm's spot sale of domestic currency and the Bank's purchases offset each other, leaving exchange markets unaffected. The long term swap-related claims which the Bank and its counterparty have on each other representing respectively, a long term capital outflow and a capital inflow are also offsetting. The counterparty's decision to acquire a foreign assets is, again, a function of its activities, not of the World Bank's.

II. Hedging trade flows

(i) Hedging short-term flows

8. Figure A-I also outlines the effects of currency swaps on hedging of long-term trade-related exposures. Again, only the cases for which the World Bank would be a logical counterparty for the long-term contract desired by a domestic firm are shown. Two situations are distinguished with essentially the same capital market and balance of payments effects.
The first is that of an exporter with a permanent excess of foreign currency funds who hedges on a long-term basis through a swap (i.e. a forward sale of these funds) (column 6). As a sale of currency takes place on the spot market and no new borrowing is involved, this type of swap has no capital market effect. There is additional net demand for the currency at the time of the swap but offsetting supply and demand in future periods. The swap thus in essence rephases the exchange rate effects of the firm’s export surplus from future periods to the present. At the margin, the swap opportunity may influence firms to finance their export business domestically rather than offshore, but the effects are only very marginal and occur only to the extent that the all-in swapped dollar cost of the SwF borrowing is less than a direct dollar borrowing, i.e., until the capital market imperfections are arbitraged away. (To the extent that World Bank’s swap borrowings substitute one for one with direct borrowings, the swap has the additional advantage that no incremental demands are placed on the capital market.)

(ii) **Hedging long-term contracts**

9. The second type of trade exposure which swaps can hedge is long-term exposure. The effects of this type of transaction are substantially similar to those of short-term trade revenue hedges (see column 7). The exporter, having concluded a long-term contract payable in dollars, will sell these forward for local currency. As before, this involves no new borrowing and has no effects on the capital market. The spot foreign exchange purchases sales offset each other.
(iii) Effects of unhedged positions

10. Figure A-I also indicates the effects of remaining unhedged and of borrowing offshore (columns 8 and 9). In the first case, the exporting firm remains exposed to exchange rate fluctuations; no borrowing or foreign exchange transactions take place. The second, describes the situation in which trade generates a permanent inflow of foreign exchange, and domestic operations are financed abroad. As the proceeds of the offshore borrowing are sold to finance local operations, there is upward pressure on the currency. In the capital market, as funding takes place abroad, pressure on the domestic capital market from this source is reduced; on the long-term capital account such foreign financing appears as a long-term inflow. However, as before, to the extent that World Bank direct and indirect borrowings are substitutes, additional direct borrowing demands will be forthcoming to offset this.

Nonresident Counterparties

11. Figure A-II outlines the implications of currency swap transactions when the counterparty is a non-resident firm.9/ The effects of the hedging alternatives on the domestic capital market and exchange markets, in many cases, parallel those of resident counterparties.

9/ Non-resident to that currency which the World Bank would receive via a swap agreement.
I. Hedging Assets

12. In hedging liabilities, the objective of a nonresident firm will typically be to hedge new offshore borrowings undertaken to finance expansion locally, or to hedge, ex-post, existing foreign currency liabilities obtained to fund domestic assets. Typically, the low nominal (unhedged) borrowing costs of offshore borrowing or the availability of export finance lie behind such foreign borrowing.

(i) Effects of Unhedged Positions

13. Again, it is instructive to begin with the case where no swap takes place, outlined in the column 3 of Figure A-II. The nonresident firm borrows offshore in the Swiss capital market, and sells the borrowing to acquire an asset in its home country. The first activity increases the demand for funds in the capital market; the subsequent sale of the acquired currency depresses its exchange rate. On the long-term capital account, there is a net outflow due to the borrowing. In later periods, the borrower's debt service represents an inflow on the current account.

14. Figure A-II also shows a possible, although unlikely alternative, (see column 4) under which the firm creates a true economic hedge, using dollar funding (from liquidity or a new dollar borrowing) to purchase SwF in order to acquire a matching asset in the foreign currency, thereby hedging the existing liability's debt servicing with SwF revenues from its asset. Creation of an economic hedge by this means is unlikely we feel, because liquidity is not going to be put to such use. However, in the
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A. By counterparty</td>
<td></td>
<td>1. Borrow $2f</td>
<td>1. Borrow $2f</td>
<td>1. Purchases $2f with $ liquidity or $ borrowing</td>
<td>1. Concludes long-term contract (e.g., for capital goods) in $2f.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Sells $2f spot for $</td>
<td>2. Sells $2f spot for $</td>
<td>2. Purchases $2f assets.</td>
<td>2. Proceeds contract in $</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Pays $ proceeds to fund business operations/finance investments.</td>
<td>3. Damages contract in $</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Pays $ proceeds to fund business operations/finance investments.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Sells $2f</td>
<td>2. Sells $2f spot for $</td>
<td>2. Sells $2f spot for $</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. lends/invests $2f.</td>
<td>3. lends/invests $2f.</td>
<td>3. lends/invests $2f.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Pays $ forward against $2f to cover debt service on $ bond issue.</td>
<td>4. Pays $ forward against $2f to cover debt service on $ bond issue.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Domestic Capital Market</td>
<td></td>
<td>2. Demand for funds increased by amount of counterparty's borrowing.</td>
<td>2. Demand for funds increased by amount of counterparty's borrowing.</td>
<td>2. Demand for funds increased by amount of counterparty's borrowing.</td>
<td>2. Demand for funds increased by amount of counterparty's borrowing.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Demand for funds increased by amount of counterparty's investment.</td>
<td>3. Demand for funds increased by amount of counterparty's investment.</td>
<td>3. Demand for funds increased by amount of counterparty's investment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Demand for funds increased by amount of counterparty's investment.</td>
<td>4. Demand for funds increased by amount of counterparty's investment.</td>
<td>4. Demand for funds increased by amount of counterparty's investment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Counterparty sells $2f.</td>
<td>2. Counterparty sells $2f.</td>
<td>2. Counterparty sells $2f.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Demand for $2f increased by amount of potential counterparty's purchases.</td>
<td>3. Demand for $2f increased by amount of potential counterparty's purchases.</td>
<td>3. Demand for $2f increased by amount of potential counterparty's purchases.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Demand for $2f increased by amount of potential counterparty's purchases.</td>
<td>4. Demand for $2f increased by amount of potential counterparty's purchases.</td>
<td>4. Demand for $2f increased by amount of potential counterparty's purchases.</td>
<td></td>
</tr>
<tr>
<td>C. Long-Term Capital Account</td>
<td></td>
<td>1. None at time of swap.</td>
<td>1. None at time of swap.</td>
<td>1. None at time of swap.</td>
<td>1. None at time of swap.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Acquisition of swap claim by counterparty and World Bank would not appear in balance of payments.</td>
<td>2. Acquisition of swap claim by counterparty and World Bank would not appear in balance of payments.</td>
<td>2. Acquisition of swap claim by counterparty and World Bank would not appear in balance of payments.</td>
<td></td>
</tr>
<tr>
<td>D. Current Account</td>
<td>Surplus increased (or deficit reduced) by counterparty's debt service.</td>
<td>None apart from the debt service flows analyzing to the counterparty's extent borrowing.</td>
<td>None apart from the debt service flows analyzing to the counterparty's extent borrowing.</td>
<td>None apart from the debt service flows analyzing to the counterparty's extent borrowing.</td>
<td>None apart from the debt service flows analyzing to the counterparty's extent borrowing.</td>
<td>None apart from the debt service flows analyzing to the counterparty's extent borrowing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Surplus increased (or deficit reduced) by potential counterparty's borrowings.</td>
<td>Surplus increased (or deficit reduced) by potential counterparty's borrowings.</td>
<td>Surplus increased (or deficit reduced) by potential counterparty's borrowings.</td>
<td>Surplus increased (or deficit reduced) by potential counterparty's borrowings.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Deficit increased (or surplus reduced) by potential counterparty's borrowings.</td>
<td>Deficit increased (or surplus reduced) by potential counterparty's borrowings.</td>
<td>Deficit increased (or surplus reduced) by potential counterparty's borrowings.</td>
<td>Deficit increased (or surplus reduced) by potential counterparty's borrowings.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>None apart from pre-committed counterparty's contract payments.</td>
<td>None apart from pre-committed counterparty's contract payments.</td>
<td>None apart from pre-committed counterparty's contract payments.</td>
<td>None apart from pre-committed counterparty's contract payments.</td>
</tr>
</tbody>
</table>

* This example refers to dollar/$2f transactions for illustration only. The analysis is the same for any currency pair.
* Those are direct effects associated with swap. Secondary or substitution effects not included.
event that it is, the capital market impact will be positive, in that the firm supplies funds to the market by its purchase of foreign assets. Demand for the foreign currency is also strengthened in the exchange markets, and there is an inflow on the long-term capital account equal to the counterparty's new investment.

(ii) Hedging through swaps off of new liabilities

15. Turning to the effects of swaps, we show first the case of nonresident firm hedging a newly acquired foreign liability through a swap (Column 1). The effects on the foreign exchange market of the sale of borrowing proceeds will be offset by the World Bank's purchase, generating no net impact. Acquisition of the liability will raise nonresidents' demands on the domestic (i.e. Swiss) capital market. However, to the extent that World Bank direct borrowings are reduced one for one by its swaps borrowings, the net demands on the capital market do not increase. On the long-term capital account, the nonresident firm's borrowing will appear as an outflow (debt servicing will appear as a current account credit item), as would the World Bank's direct borrowing were it to do so. As before, the matching swap-related assets and liabilities will offset each other in the long-term capital account. To summarize: the only net incremental direct effect of the swap will be on the spot foreign exchange market and this is a positive one in that the World Bank offsets the counterparty's sale of SwF; the swap itself does not affect the domestic capital market or the balance of payments; these are affected by the nonresident's decision to borrow offshore and the effects would occur in any case.
(iii) Hedging through swaps off of old liabilities

16. A nonresident firm may also choose to hedge an existing mismatched position through a swap off a pre-existing liability (see Column 2). At the time of the swap, no new borrowing takes place, and no additional pressures, other than those originated by the earlier underlying transaction, are placed on the domestic capital market. At the time of the swap, there is a one-sided purchase of foreign currency by the World Bank complementary to the earlier sale by the swap counterparty. Correspondingly, at the time of the swap, there are no additional long-term capital account effects due to the swap, nor impacts on the current account.

NonResidents Hedging Trade Flows

(i) Hedging short-term flows

17. It can also be desirable to hedge short-term trade flows if the mismatch between the currency in which expenditures are incurred and that in which trade revenues are received is expected to be permanent. For example, a firm with a foreign manufacturing subsidiary which produces for export might find itself in a position of having foreign currency expenditures over and above foreign currency receipts (see Column 5). The firm's long-term needs for foreign currency can be met through long-term forward purchases of (e.g.) Swiss francs through a swap with the World Bank.
(ii) Hedging long-term contracts

18. Figure A-II also outlines the case of nonresident hedging of trade flows, which parallels the cases outlined for residents. The implications of the firm with a long-term import contract with future obligations to pay in SwF are detailed in column 6. The interest of the firm lies in long-term forward purchases of SwF to cover its commitments. As only cash flows are involved, no additional borrowings are assumed to take place, and the underlying transactions have no impact on domestic capital markets. The World Bank's purchase of Swiss francs represents an additional demand for foreign exchange. This highlights the fact that the net incremental effect of swaps where one party (i.e., the Bank) is undertaking a capital transaction, while the counterparty is hedging a trade flow is that the future flows associated with the underlying trade transaction are brought forward in time. The long-term capital account is not affected by the Bank's acquisition of the SwF liability through a swap, since the liability is acquired from another nonresident.

(iii) Effects of unhedged positions

19. Instead of hedging, either of these parties may remain exposed (column 7). In such a case, neither the domestic capital market nor the capital account balance of payments are affected, since there are no borrowings and no purchases or sales of foreign exchange in the current period. The current account and the future spot market are affected, of course, by the underlying transaction.
20. Column 8 shows the rather unlikely (see para. 7 and column 4) case in which the firm acquires a foreign asset to hedge a trade deficit in the foreign currency. The effects are identical to those outlined in the case of the liability hedge.

21. The following tables attempt to summarize this discussion of swap effects: those of World Bank swaps with resident counterparties. The effects outlined in the table incorporate the underlying trade or capital market transactions that the swap is intended to hedge, that is, the tables show both the impact of the swap and the effect of the originating activity itself. As the tables show, the effects of currency swaps by the World Bank can generally expected to be neutral or positive on the exchange rate. Regarding the capital account, the effects of "swap plus underlying transaction" are also either neutral or positive, with the exception of swaps off of new liabilities. It should be emphasized again that the underlying transaction (e.g. the resident firm's desire to fund offshore operations domestically) not the swap, causes this outflow.
### Summary of Net Incremental Effects of Currency Swaps

#### Resident Counterparties

<table>
<thead>
<tr>
<th>Transaction</th>
<th>Asset Hedges</th>
<th>Trade Hedges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Effects On</td>
<td>New Liability, New Asset</td>
<td>Old Liability, Existing Asset</td>
</tr>
<tr>
<td>Capital Market Effects</td>
<td>New borrowing</td>
<td>None</td>
</tr>
<tr>
<td>Spot Foreign Exchange Market Effects</td>
<td>Offsetting Sale &amp; Purchases</td>
<td>Increases Demand a/</td>
</tr>
<tr>
<td>Long-Term Capital Account Effects</td>
<td>New borrowing generates outflow</td>
<td>None</td>
</tr>
<tr>
<td>Balance of Trade</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

*a/* For the domestic e.g. SwF currency.
### SUMMARY OF NET INCREMENTAL EFFECTS OF CURRENCY SWAPS
#### NONRESIDENT COUNTERPARTIES

<table>
<thead>
<tr>
<th>Transaction</th>
<th>Asset Hedges</th>
<th>Trade Hedges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New Liability</td>
<td>Old Liability</td>
</tr>
<tr>
<td>Capital Markets</td>
<td>New borrowing</td>
<td>None</td>
</tr>
<tr>
<td>Spot Foreign</td>
<td>Offsetting Sale and Purchase</td>
<td>Increases Demand a/</td>
</tr>
<tr>
<td>Exchange Market</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-Term Capital</td>
<td>New borrowing generates outflow</td>
<td>None</td>
</tr>
<tr>
<td>Account</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance of Trade</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

*a/* For the domestic currency e.g. swiss francs.
Most of the World Bank's swap transactions have been structured as parallel bond issues. That is, the Bank has borrowed U.S. dollars, sold part or all of the proceeds in the spot foreign exchange market (or exchange liability through forward exchange contracts with counterparties. Under these contracts, the counterparties have agreed to pay to the Bank a set of dollar flows corresponding to the Bank's debt service payments on its dollar bond issue. In turn, the Bank has agreed to pay to the counterparty a set of (e.g.) SwF flows that very closely resembles the debt service payments on a comparable maturity SwF bond issue. In other swap transactions, the cash flows on the SwF side have been based on a long-term FOREX agreement -- i.e. the Bank has hedged its dollar obligations through a set of forward exchange rates with a SwF payment stream that generally declines over time. In both cases, the most important financial item is the internal rate of return on the cash flows. The following table illustrates both swap structures:

<table>
<thead>
<tr>
<th>Exchange Date</th>
<th>Bond Structure</th>
<th>FOREX Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$ Amounts a/</td>
<td>SwF Amounts b/</td>
</tr>
<tr>
<td>Year 1</td>
<td>2,427,509</td>
<td>2,436,000</td>
</tr>
<tr>
<td>Year 2</td>
<td>2,427,509</td>
<td>2,436,000</td>
</tr>
<tr>
<td>Year 3</td>
<td>2,427,509</td>
<td>2,436,000</td>
</tr>
<tr>
<td>Year 4</td>
<td>2,427,509</td>
<td>2,436,000</td>
</tr>
<tr>
<td>Year 5</td>
<td>21,119,098</td>
<td>42,436,000</td>
</tr>
</tbody>
</table>

a/ Received by the Bank.
b/ Paid by the Bank.
Bibliography


World Bank Publications of Related Interest

Aggregate Demand and Macroeconomic Imbalances in Thailand: Simulations with the SIAM 1 Model
Wafik Grais
Focuses on the demand-side adjustments of the Thai economy to lower agricultural growth and to higher energy prices. Discusses policy measures and structural changes that might enable the economy to overcome these problems and continue to maintain high GDP rates of growth.

Stock No. WP-0448. $3.00.

An Analysis of Developing Country Adjustment Experiences in the 1970s: Low-Income Asia
Christine Wallich
This background study for World Development Report 1981 examines low-income South Asia's adjustment to the external shocks of the 1970s, especially those issues that helped make the effects of these external developments less severe in the region than in other parts of the developing world.

Stock No. WP-0487. $3.00.

Aspects of Development Bank Management
William Diamond and V. S. Raghavan
Deals exclusively with the management of development banks. The book is divided into eight sections, each dealing with one aspect of management of its problems, and of the various ways of dealing with them.


Capital Market Imperfections and Economic Development
Vinayak V. Bhatt and Alan R. Roe

The Changing Nature of Export Finance and Its Implications for Developing Countries
Albert C. Cizauskas

Compounding and Discounting Tables for Project Evaluation
J. Price Gittinger, editor

Adjustment Experience and Growth Prospects of the Semi-Industrial Countries
Frederick Jaspersen

Adjustment in Low-Income Africa
Robert Liebenthal

A Conceptual Approach to the Analysis of External Debt of the Developing Countries
Robert Z. Aliber
Development Banks
William Diamond
Operating experiences that serve as a practical guide for developing countries, with a selected list and summary description of some development banks.

LC 57-13429. ISBN 0-8018-0708-5. $5.00 (23.50) paperback.

Development Finance Companies: Aspects of Policy and Operation
William Diamond, editor; essays by E. T. Kuiper, Douglas Gustafson, and P. M. Mathew
The Johns Hopkins University Press, 1968. 130 pages (including appendix, index).


Development Prospects of Capital Surplus Oil-Exporting Countries: Iraq, Kuwait, Libya, Qatar, Saudi Arabia, UAE
Rudolf Hablützel
This background study for World Development Report 1981 discusses the production strategies and the development policies of the capital-surplus oil-exporting countries.

Stock No. WP-0483. $3.00.

Developments in and Prospects for the External Debt of the Developing Countries: 1970-80 and Beyond
Nicholas C. Hope
This background study for World Development Report 1981 analyzes the debt situation and its implications for future borrowing.

Stock No. WP-0488. $3.00.

Energy Prices, Substitution, and Optimal Borrowing in the Short Run: An Analysis of Adjustment in Oil-Importing Developing Countries
Ricardo Martin and Marcelo Selowsky
Develops a short-term model for evaluating the adjustment (particularly, external borrowing) of oil-importing developing countries to the increases in oil prices during the 1970s. Discusses the borrowing strategies that can be expected in the future and the demands that will be made on multilateral institutions.

Stock No. WP-0466. $3.00.

Exchange Rate Adjustment under Generalized Currency Floating: Comparative Analysis among Developing Countries
Romeo M. Bautista
Examines the experiences of twenty-two developing countries in adapting to the generalized floating of the world's major currencies since 1973 and discusses the implications that currency floating has on policymaking in these countries and indicates directions for further research.

Stock No. WP-0436. $3.00.

Food Policy Issues in Low-Income Countries
Edward Clay and others
A background study for World Development Report 1981. Discusses food distribution—especially its insecurity in the face of external economic pressures and potential conflicts with internal production concerns—in general and with reference to Bangladesh, Zambia, and India.

Stock No. WP-0473. $5.00.

A General Equilibrium Analysis of Foreign Exchange Shortages in a Developing Economy
Kemal Dervis, Jaime de Melo, and Sherman Robinson
Examines the consequences of alternative adjustment mechanisms to foreign exchange shortages in semi-industrial economies. Compares devaluation to two forms of import rationing and finds that adjusting by rationing is much more costly in terms of lost gross domestic product than devaluation.

Stock No. WP-0443. $3.00.

Growth and Structural Adjustment in East Asia
Parvez Hasan
Analyzes the economic performance of the five large market economies of East Asia—Korea, Thailand, the Philippines, Malaysia, and Indonesia—during the last two decades; focuses on the key factors explaining their remarkable economic growth and social progress; and identifies the main economic issues for the 1980s.

ISBN 0-8213-0102-0. $3.00.
Notes on the Mechanics of Growth and Debt
Benjamin B. King
A practical model to explore the way in which capital inflow from abroad affects economic growth.

LC 68-8701. ISBN 0-8018-0338-1, $5.00 ($3.00) paperback.

The Policy Experience of Twelve Less Developed Countries, 1973–1978
Bela Balassa
Uses the methodology applied in the author’s “The Newly Industrializing Developing Countries after the Oil Crisis” (World Bank Staff Working Paper No. 473, October 1980) to examine the policy experience of twelve less developed countries in the period following the quadrupling of oil prices in 1973–74 and the world recession of 1974–75.

Stock No. WP-0449. $3.00.

The Political Structure of the New Protectionism
Douglas R. Nelson
This background study for World Development Report 1981 presents a political-economic analysis of what has been called the “new protectionism.”

Stock No. WP-0471. $3.00.

International Adjustment in the 1980s
Vijay Joshi


The Nature of Credit Markets in Developing Countries: A Framework for Policy Analysis
Arvind Virmani
The central purpose of the paper is to analyze various forms of government intervention in the loan market in terms of their effect on efficiency.


The Newly Industrializing Developing Countries after the Oil Crisis
Bela Balassa
Stock No. WP-0437. $3.00.

Notes on the Analysis of Capital Flows to Developing Nations and the “Recycling” Problem
Ralph C. Bryant
A background study for World Development Report 1981. Summarizes and criticizes the conventional analysis of the interrelations between financial markets in the industrialized countries and capital flows to the developing nations.

Stock No. WP-0476. $3.00.

Pricing Policy for Development Management
Gerald M. Meier
Presupposing no formal training in economics, it explains the essential elements of a price system, the functions of prices, the various policies that a government might pursue in cases of market failure, and the principles of public pricing of goods and services provided by government enterprises. It also provides the would-be practitioner with an appreciation of the underlying logical structure of cost-benefit proj-

Private Bank Lending to Developing Countries
Richard O'Brien
A background study for World Development Report 1981. Describes the evolution of relationships between private banks and developing countries.

Stock No. WP-0482. $3.00.

Private Capital Flows to Developing Countries and Their Determinations: Historical Perspective, Recent Experience, and Future Prospects
Alex Fleming
A background study for World Development Report 1981. Discusses the nature and determination of recent private capital flows to developing countries. Focuses on those flows passing through the international banks and examines the prospects for and constraints on developing countries’ continuing access to the international capital markets.

Stock No. WP-0484. $3.00.

Private Direct Foreign Investment in Developing Countries
K. Billerbeck and Y. Yasugi
Stock No. WP-0348. $5.00.
Short-Run Macro-Economic Adjustment Policies in South Korea: A Quantitative Analysis
Sweder van Wijnbergen
An analysis of the startling reversal of performance of the South Korean economy in 1979 and 1980 compared with the preceding fifteen years, and an exploration of the short-run macro-economic policy options available to Korea in 1981. Highlights the role of commercial banks, foreign capital inflows, and money markets and the use of credit obtained from these sources to finance fixed and working capital.

State Finances in India
A three-volume set of papers that explores a range of issues relating to the nature of intergovernmental fiscal relations in India.

Vol. I: Revenue Sharing in India
Christine Wallich
Deals specifically with the principles of revenue sharing in India.

Vol. II: India-Studies in State Finances
Christine Wallich
Examines in detail the implications of revenue sharing for project finance.

Raja J. Chelliah and Narain Sinha
Attempts to evaluate the tax performance of particular states in terms of the average tax effort of all states.

Structural Adjustment Policies in Developing Economies
Bela Balassa
Examines structural adjustment policies (policy responses to external shocks, such as the quadrupling of oil prices and the world recession of the 1970s) of developing countries. Considers reforms in production incentives, incentives to save and to invest, public investments, sectoral policies, and monetary policies, and comments on the interdependence of the various policy measures and on the international environment in which they operate.

Structural Aspects of Turkish Inflation: 1950–1979
M. Ataman Aksoy
Inflation has been one of the major problems of the Turkish economy during the postwar period. This paper develops alternative inflation models and analyzes their performance in light of the Turkish experience in order to provide a framework on which a more realistic macro model can be developed.

Thailand: An Analysis of Structural and Non-Structural Adjustments
Arne Drud, Wafik Grais, and Dusan Vujovic
This study was prepared as a background paper for the preparation of a structural-adjustment loan to Thailand and is a follow-up to a previous paper entitled “Aggregate Demand and Macroeconomic Imbalances in Thailand.” Comparative statistics are used, within the framework of a four-sector macroeconomic model, to assess alternative ways of macroeconomic adjustment in the Thai economy. Discusses specifically fiscal policy interventions, manipulations of the exchange rate, and productivity improvements and their implications in terms of income generation, external deficit, and inflation.

World Debt Tables
A compilation of data on the external public and publicly-guaranteed debt of 101 developing countries plus eighteen additional tables of privat and non-guaranteed debt from the World Bank Debtor Reporting System. Describes the nature, content, and coverage of the data; reviews the external debt of 101 countries through 1981; contains tables on external public debt outstanding, commitments, disbursements, service payments, and net borrowings of 101 developing countries, by country, 1972–1981. (EC-167/81). December 1982. About 300 pages. ISSN 0253-2859. $75.00.
Computer tapes containing the data bases for the World Debt Tables are available from the Publications Distribution Unit, World Bank. The tapes are available to international agencies and official nonprofit agencies of member governments at a nominal fee. For information concerning fees for other organizations, please write to the addressee listed above.
Supplements to World Debt Tables issued periodically as information becomes available; the current updates are included with orders for World Debt Tables.

REPRINTS
The Impact of Contractual Savings on Resource Mobilization and Allocative Efficiency
The Experience of Malaysia
Social Security Funds in Singapore and the Philippines: Ramifications of Investment Policies
Investments of Social Security Funds in India and Sri Lanka: Legislation and Experience
Parthasarathi Shome and Katrine Anderson Saito
Policy Responses to External Shocks in Selected Latin American Countries
Bela Balassa

World Bank Reprint Series: Number 221.

Restructuring the World Economy: Round II
Holm Chenery

World Bank Reprint Series: Number 204.

Risk Assessments and Risk Premiums in the Eurodollar Market
Gershon Feder and Knud Ross

World Bank Reprint Series: Number 220.
WORLD BANK PUBLICATIONS
ORDER FORM

SEND TO:
WORLD BANK PUBLICATIONS
P.O. BOX 37525
WASHINGTON, D.C. 20013
U.S.A.

OR

WORLD BANK PUBLICATIONS
66, AVENUE D'IÉNA
75116 PARIS, FRANCE

Name: ____________________________________________________________

Address: __________________________________________________________________________

<table>
<thead>
<tr>
<th>Stock or ISBN #</th>
<th>Author, Title</th>
<th>Qty.</th>
<th>Price</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sub-Total Cost: ________________________

Postage & handling fee for more than two free items ($1.00 each): ________

Total copies: ________ Air mail surcharge ($2.00 each): ________

TOTAL PAYMENT ENCLOSED: ______________________

Make checks payable: WORLD BANK PUBLICATIONS

Prepayment on orders from individuals is requested. Purchase orders are accepted from booksellers, library suppliers, libraries, and institutions. All prices include cost of postage by the least expensive means. The prices and publication dates quoted in this Catalog are subject to change without notice.

No refunds will be given for items that cannot be filled. Credit will be applied towards future orders.

No more than two free publications will be provided without charge. Requests for additional copies will be filled at a charge of US $1.00 per copy to cover handling and postage costs.

Airmail delivery will require a prepayment of US $2.00 per copy.

Mail-order payment to the World Bank need not be in U.S. dollars, but the amount remitted must be at the rate of exchange on the day the order is placed. The World Bank will also accept Unesco coupons.