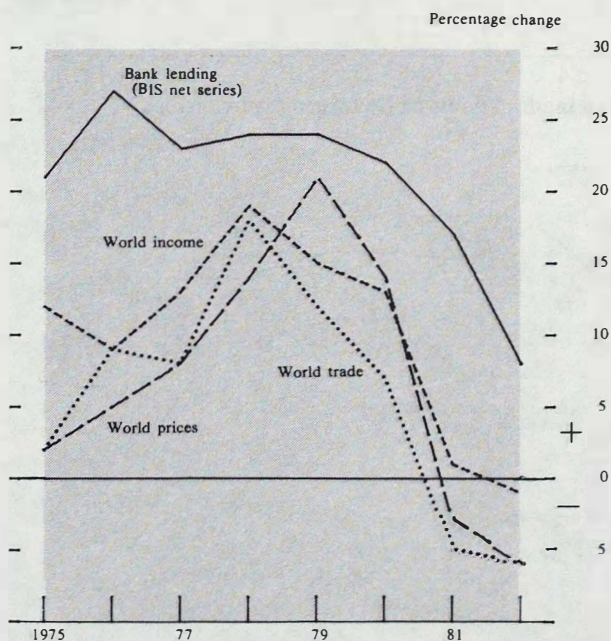


# Deflation and scaling of international bank lending

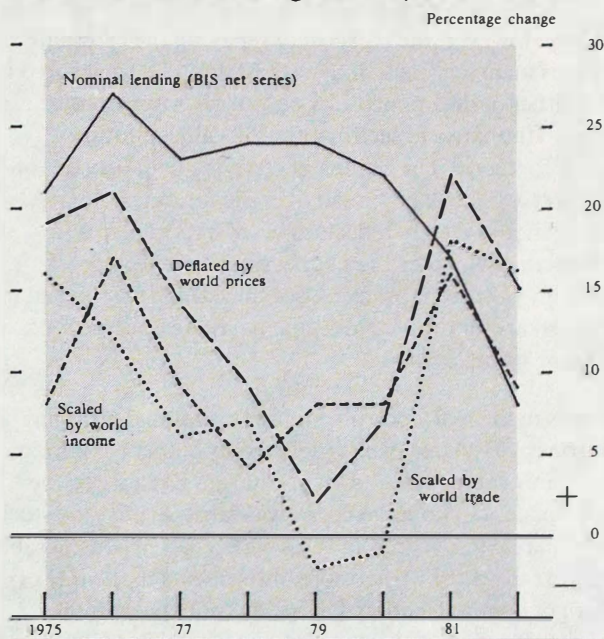
Most description and analysis of international bank lending is based on data expressed in nominal terms. While this might be sufficient for some purposes, particularly when looking at the behaviour of banks, there are also occasions when it could be useful to allow for price movements, or to compare the scale of lending with some measure of economic activity. This note<sup>(1)</sup> considers some aspects of debt accumulation from the borrower's perspective, and of the pattern of financing, by examining some possible methods of deflating or scaling<sup>(2)</sup> the nominal stock of international bank lending.

Looking at international bank lending in relation to other economic magnitudes can yield insights which are not apparent from nominal bank lending alone. For example, various price series can be used as deflators to indicate the 'real' size of a borrower's bank debt; and by smoothing year-to-year fluctuations in price movements a further perspective may be revealed. Also, a comparison of the growth of the stock of international bank lending with economic activity, trade or current account imbalances may help to illustrate the rapid growth over the last decade in the importance of banks as providers of international finance. But there are difficulties in the choice and construction of these measures.

**Chart 1**  
International bank lending and world trade, prices and income



**Chart 2**  
International bank lending: nominal, real and scaled



Earlier work on this subject<sup>(3)</sup> suggested that, although the stock of international bank lending grew rapidly in nominal dollar terms, at around 24 per cent per annum between 1975 and 1980, its growth deflated by a dollar trade price index—or scaled by the growth of world income or world trade measured in dollar terms—was somewhat lower and considerably more variable. The marked slowdown in the growth of the stock of bank lending (in nominal terms), which began in 1981, coincided with an appreciation of the US dollar, a decline in trade prices in dollar terms, stagnant world income and a falling dollar value of world trade<sup>(4)</sup> (Chart 1). Indeed, the growth of bank lending deflated or scaled in various ways was generally higher in 1981 and 1982 than over the previous years (Chart 2).

(1) Prepared by C B Briault of the Bank's International Division.

(2) It is common to use 'deflator' to refer to a price series (and similarly for a variable to be described as being in 'real' terms when it has been adjusted to take account of price movements). A distinction is therefore drawn between deflating (by a price series) and scaling, that is relating the stock of lending to some other economic indicator, such as income or trade.

(3) See 'The international banking markets in 1982' in the March 1983 *Bulletin*, pages 47-8.

(4) Data on the stock of bank lending are taken from the Bank for International Settlements' Quarterly Press Release on International Banking Developments. For total bank lending the series 'net international bank lending' (Press Release Table 1) is used. This excludes interbank business. Trade prices and values are taken from the International Monetary Fund's *International Financial Statistics* (IFS). For world and developing countries' income, Bank of England estimates of the GNP of market economies are used, based on the *United Nations Yearbook of National Accounts Statistics*. Current account balances are also Bank of England estimates, with IFS and the IMF's *Balance of Payments Yearbook* as primary sources. Percentage changes in nominal bank lending are derived from the end-period stock divided by the opening stock (at exchange rates appropriate to these dates).

If on the other hand the recent stagnation of trade prices and world income in dollar terms is regarded as being temporary, and is smoothed out by using an average of a proxy for expected future prices, then the growth of bank lending in real terms appears much lower in 1981 and 1982. Thus, interpretation is necessarily rather subjective; different results may emerge according to the approach adopted.

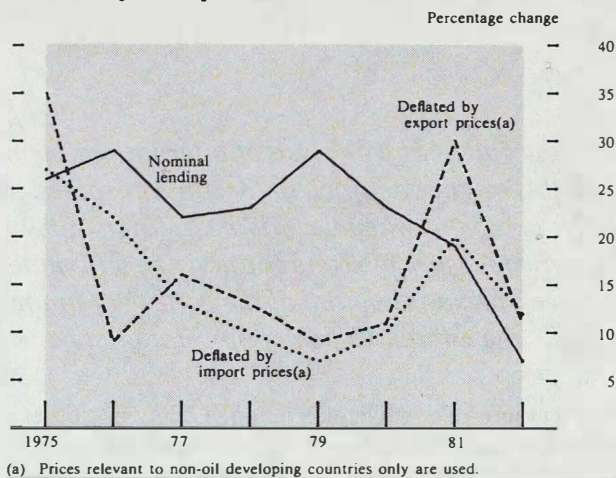
### Price deflators

The choice of an appropriate deflator for any economic variable depends on the reasons for wishing to estimate its real value. For international bank lending it will depend *inter alia* on whether the value of new borrowing or the cost of repaying existing debt is of interest. The real value of funds borrowed to finance a country's purchases from abroad might best be measured by using import prices as a deflator. However, the real cost of repaying the external debt thus incurred (including interest) could be measured in terms either of the opportunity cost of diverting domestic output to the external sector, or of the value of future imports foregone. The burden of repaying debt (say out of export revenue) will be spread over the future, so the deflator should ideally reflect expected export prices in future periods—which are not necessarily reflected accurately in current prices. Also, since trade prices tend to exhibit erratic or cyclical movements, there is a case for averaging prices over time.

Changes in the real stock of lending to non-oil developing countries by BIS area banks (deflated by current export and import unit values) are shown in Chart 3. Even when the growth of debt in nominal terms was fairly steady, the stock of debt in real terms grew at rates which varied considerably from year to year. Furthermore, movements in the rate of growth of nominal lending have sometimes been in the opposite direction to the deflated measures. This is particularly evident over 1979–81, when the slowdown in the rate of growth of the nominal stock of lending was more than offset by the much sharper downturn in the rate of growth of the relevant trade price series; the rising rate of growth of the stock of bank lending in real terms suggests countries are prepared to see the real value of their debt increase when their export prices are (perhaps cyclically) weak. Thus, at a time when the nominal data suggested banks were becoming more cautious in their international lending, the real stock of lending was growing rapidly, at least when assessed in terms of these rather static measures of the borrower's position.

The choice of deflator can have a substantial effect because of changes in the terms of trade. In 1981, when the nominal stock of these countries' debt to the banks grew by 19 per cent, its real growth was 30 per cent when deflated by export prices and 20 per cent when deflated by import prices. The real debt burden measured against current export prices therefore increased substantially, while the increase in debt in terms of the volume of imports which could be purchased was much less, an indication of the squeeze facing these countries.

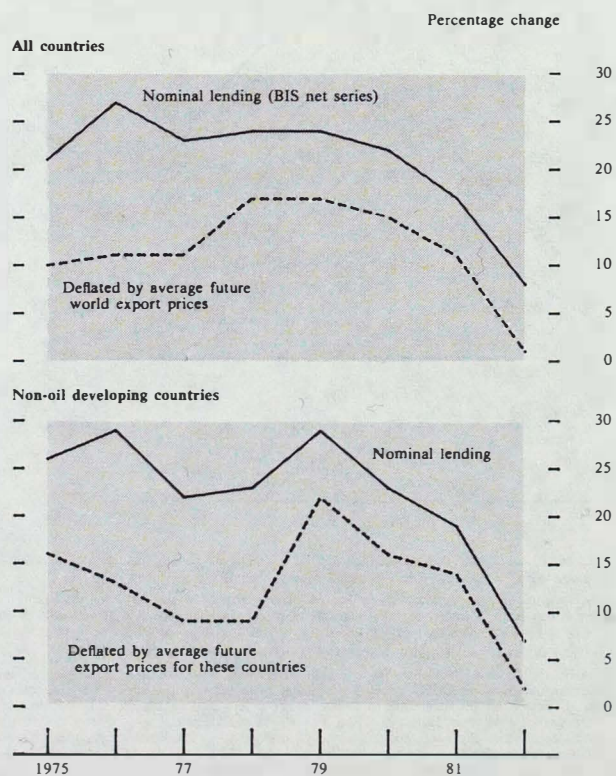
**Chart 3**  
Bank lending to non-oil developing countries:  
deflated by trade prices



The fluctuations in trade prices suggest that there may be some value in using a smoothed price series; and this would also help to reflect the expected cost of future capital repayments. There are many ways in which this could be done.

As an example, the level of the deflator in each year has been constructed as the arithmetic average of the level of the relevant price series in that period and in the next four years, using actual prices to 1982 and illustrative forecasts thereafter. The forecast path adopted here assumes that trade prices increase at around 7 per cent per annum; on this assumption inflation in trade prices appears to be at a cyclical low in 1982.

**Chart 4**  
Bank lending deflated by future export prices



Since the BIS net series for the nominal stock of bank lending grew at a fairly constant rate over the years 1975–80, the rate of growth of the real stock of lending using a smoothed price series was also fairly stable over this period (Chart 4). There was, however, a particular surge on this basis in the real stock of bank lending to the non-oil developing countries in 1979.

An interesting difference between using current and smoothed prices arises in 1982. Whereas current trade prices fell, the smoothed price series grew in 1982 by almost as much as the stock of bank lending in nominal terms. Thus in smoothed terms the real stock grew by only 1 per cent, compared with average growth of more than 10 per cent over the previous seven years; this contrasts with Charts 2 and 3 which suggest that the real stock of bank lending (unsmoothed) continued to expand strongly in 1982. The series deflated by smoothed prices show that percentage changes in the real stock of bank lending follow a similar path—albeit at a lower level—to changes in the nominal stock.<sup>(1)</sup>

Of course variables other than bank lending and prices are also important. In particular, if a trade price acceleration is mirrored by an increase in nominal interest rates, so that the real rate of interest remains constant, then the gain to a borrower arising from a fall in the real value of debt will be offset by higher interest payments.<sup>(2)</sup> In practice, however, inflation in trade prices is not reflected—over the short or even medium term—in the nominal interest rate prevailing on international bank lending, especially for the developing countries, who thus more typically face large movements in real interest rates. Nominal interest rate movements may not only fail to offset changes in the real value of debt but can reinforce these changes and put an additional burden on borrowers.

All the data used here are expressed in dollar terms. Since conversion to another currency would affect both the numerator and the denominator proportionally, it would not affect real or scaled measures. This does not mean that exchange rate movements have no effect, or that the currency composition of a borrower's debt is unimportant. Indeed, exchange rate movements will generally affect differently the nominal value of debt and any price series used to deflate the stock of debt. This will be so if the proportion of debt contracted in the various currencies differs from the weighting of goods whose prices are set<sup>(3)</sup> in these currencies.

Thus for a number of borrowers such as those in Latin America, the appreciation of the dollar over the last two years has contributed significantly to their debt burden in

real terms. For the Latin American countries as a whole, the proportion of dollar-denominated bank debt is around 90 per cent, probably much higher than the proportion of their trade whose price is set in dollars.

### Scaling factors

Besides deflating nominal bank lending by a price index to measure real lending, some further interpretation of the statistics may still be required. In particular, it would be useful to be able to judge whether a country's nominal or real bank debt is moving out of line with the growth of its trade or domestic income. Three such bases of comparison are considered: overall activity, trade and current account imbalances.

### Activity and financial intermediation

Within the industrialised countries domestic bank lending has grown over the last decade broadly in line with nominal income, although this has not been so in each individual country. For example, in the United Kingdom bank lending has grown more rapidly than nominal income, whereas in the United States the opposite has been true.

Nevertheless, banks have taken a rapidly increasing share of international financial intermediation. In part this may reflect the channelling of funds between deficit and surplus sectors within countries through the international banking markets rather than through purely domestic banking markets. Furthermore, the absolute size of world current account imbalances has increased markedly as a proportion of world income.<sup>(4)</sup> So it is not surprising that international bank lending has expanded much more rapidly than both domestic bank lending and world nominal GNP (Chart 1). The growth of international bank lending relative to world income is an indication of the banks' role in international intermediation: for example, if banks' international lending expands at the same rate as world income, this might indicate that the pattern of international intermediation (and the size of payments imbalances) is stable.

Total international bank lending, and lending just to the non-oil developing countries, in nominal terms and scaled by income, both show similar patterns (Charts 2 and 5). But as with the price deflators, use of a smoothed series rather than current values for nominal income can provide a different result. For example, it lowers the growth of lending scaled by income in 1981 and 1982 when nominal income in dollar terms grew at well below its previous trend rate.

When considering international bank lending to a single country there are further conceptual difficulties, particularly if the country is increasing its use of the

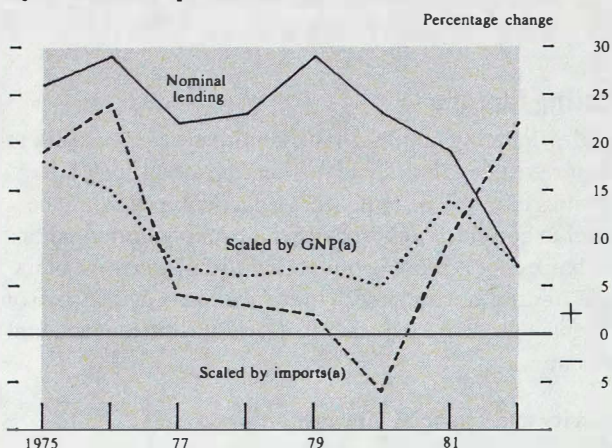
(1) However, this is dependent not only on the smoothing of the price series but also—in more recent years—on the assumptions made about future price movements. If trade prices were assumed to remain depressed in dollar terms over the next few years, this would reduce—or even reverse—the slowdown in the rate of growth of the stock of bank lending in real terms over the period 1979–82 apparent in Chart 4 and reinstate the pattern observed in Charts 2 and 3.

(2) This does not imply that the impact of inflation on debt repayment is neutral, since inflation causes the real value of the loan to be amortised at a faster rate.

(3) There is an important distinction between the price of an internationally traded commodity being invoiced (and thus in a formal sense denominated) or reported for statistical purposes in a particular currency, and being set in a currency. A commodity may be invoiced in a currency merely for convenience while its price is set in terms of another currency or basket of currencies. Indeed, the fall in world prices expressed in dollars in 1981, when the dollar strengthened, supports the proposition that world prices are not simply set in dollar terms.

(4) See P W Stanyer and Mrs J A Whitley 'Financing world payments balances' in the June 1981 *Bulletin*, page 187.

**Chart 5**  
**Bank lending to non-oil developing countries: scaled**  
**by GNP and imports**



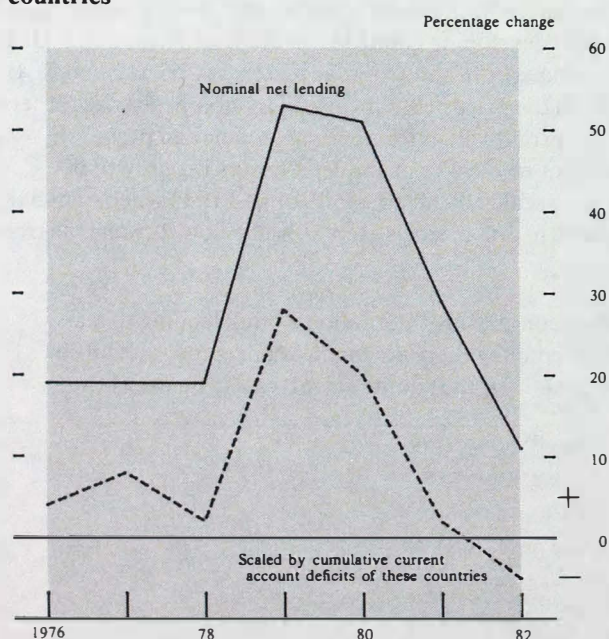
(a) Statistics relevant to non-oil developing countries only are used.

international banking market relative to other sources of funds. A country's external indebtedness to banks can increase more rapidly than its national income even if its overall debt/income ratio remains constant, so an upward movement in its scaled level of bank indebtedness need not necessarily be worrying; a judgement is required as to how far this dependence on bank finance can prudently go.

### Trade

Another economic variable, and arguably one closely associated with international bank lending, is external trade. Not all international bank lending is used directly to finance trade, nor is all external trade financed by bank lending. As with national income, shifts in the proportion of trade financed by bank lending, or in the proportion of bank lending used to finance trade, would change the value of bank lending when scaled by a measure of trade. The correspondence between bank lending and the borrower's

**Chart 6**  
**Bank lending (net of liabilities) to non-oil developing**  
**countries**



imports is perhaps more direct and suggests that imports rather than exports should be used as the scaling factor, although the ability of a borrower to repay its foreign currency debt (and interest) might be more closely related to its exports. The latter approach is often used to assess the risk involved in lending to an individual country.

The stock of bank lending scaled by imports has moved erratically. For example, in the mid-1970s, the value of the imports of the developing countries in dollar terms remained fairly steady while borrowing by these countries from the banks grew by over 25 per cent per annum (Chart 5). This coincided with a net capital inflow exceeding the sum of current account deficits as these countries accumulated reserves. Subsequently, imports grew as fast or faster than bank lending as world trade surged in both volume and dollar value terms, assisted by a weak US dollar. This was reversed after 1980, when the world economy stagnated and the dollar appreciated, to reduce the level of trade expressed in dollar terms; but borrowing from banks continued at a rapid though falling pace.

This erratic path is not entirely surprising. Changes in bank lending are a counterpart to all the other elements in a borrower's external accounts, so the level of imports alone is unlikely to be a perfect—or even necessarily a close—representation of these elements. Exports, interest payments and other capital flows may all be important.

### Current account imbalances

Although in some circumstances imports or exports might be appropriate scaling factors, in others the current account imbalance might also provide a useful standard of comparison. Scaling in this way will tend to reflect changes in the proportion of external capital flows accounted for by banks.

Since the current account imbalance can become small or negative, it may be preferable to relate bank lending to cumulated current account imbalances, beginning from a point sufficiently far in the past—preferably one at which the outstanding stock of international bank lending was small. However, countries may at times borrow from the banks in excess of their immediate financing requirements in order to boost reserves, or at other times use reserves as a substitute for borrowing. The current account deficit of individual countries or groups of countries might therefore best be compared with a net concept of bank lending which deducts the countries' external assets with the banks.

An illustration of this approach for the non-oil developing countries is given in Chart 6. The net claims of banks on this group of countries grew steadily at 19 per cent per annum from 1976 to 1978, but then jumped to grow by over 50 per cent per annum in 1979 and 1980 as these countries continued to expand their gross borrowing from banks at over 20 per cent per annum, while the rate at which they accumulated reserves declined. Scaled by their cumulative current account deficits since 1950, their net banking debt grew very little in the years other than 1979 and 1980, although the positive growth of this measure between 1976

and 1981 shows that the proportion of their deficits financed through bank intermediation was rising.

### **Use of the measures**

The measures described have been discussed and illustrated in relation to world aggregates or totals for groups of countries. Aggregation may obscure interesting differences

between countries and in practice they might be more useful when applied to individual countries than to countries as a whole. However, the purpose of this note is not to discuss the debt problems of individual countries but rather to indicate a range of measures and the differences that can result in the interpretation of bank lending according to which is chosen.