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Use of International Investment Position Statistics in UK

Prepared by the U.K.'s Office for National Statistics

USE OF INTERNATIONAL INVESTMENT POSITION STATISTICS IN UK

Introductory Note

BOPCOM-01/36 discussed at the 2001 Committee meeting described the uses of BoP statistics in UK. This paper is a companion document covering IIP data. It is primarily a training document for users and compilers to indicate the potential analyses and policy applications. It uses UK published figures, but not the most recent in all cases.

Both documents have been prepared by Geoff Tily, an economist in ONS working on the compilation, analysis and presentation of UK national accounts and balance of payments statistics. This one draws heavily on published work by colleagues at the Bank of England

Interpreting balance sheet data and financial stability: a UK example

This paper looks at how balance sheet data is interpreted, taking UK data as an example. It is split into two halves; the first half characterises balance sheet data and looks at the relationship with the balance of payments. The second half turns to the use of balance sheet data as part of financial stability analysis.

The first half of the paper draws heavily on, and indeed was motivated by, routine analyses of the UK balance sheet carried out and published each year by the Bank of England.[1] The second half draws heavily on IMF guidance and a second Bank of England (1999) paper.[2]

Part 1 : The balance sheet and the balance of payments

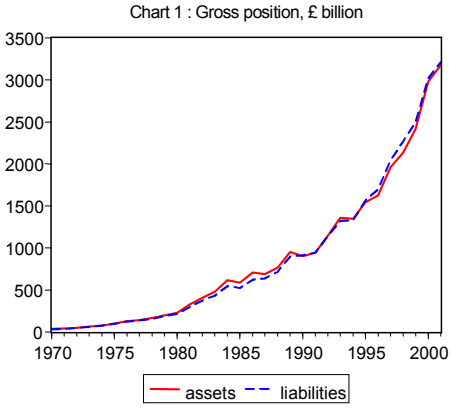
1.1 Characterising the balance sheet

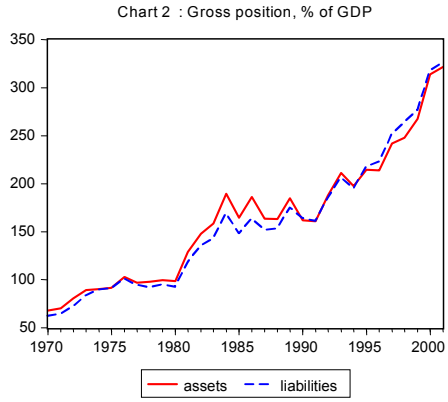
This section examines how National Statistics (NS) data characterises the UK's external assets and liabilities, puts the figures into an international context and records Bank of England discussion of relevant issues.[3]

1.1.1 Gross position

[1] The work is based primarily on Bank of England (2000); while the 2001 version of the article has now been published I continue to refer to the older one except where views expressed have changed. I am grateful to the authors for various discussions and comments.
[2] Where numerical analyses are replicated the data is brought more up to date.
[3] BoE (2000, p.353) warns of inevitable imprecision, arguing "The ONS has assessed the accuracy and reliability of data obtained from different sources. In general, data for the public and banking sectors are believed to be of the highest quality, followed by data for insurance companies and pension funds, and finally securities dealers (which is a concern given their scale), the corporate and household sectors."

At the end of 2001 the UK's assets and liabilities amounted to £ 3176 billion and £ 3215 billion respectively.[4] Both of these figures constitute over 300 per cent of GDP; charts 1 and 2 show how this share has increased steadily throughout the 1990s.





Putting the data into an international context, BoE (2001 p. 391) observe "... UK external assets and liabilities are large by international standards".

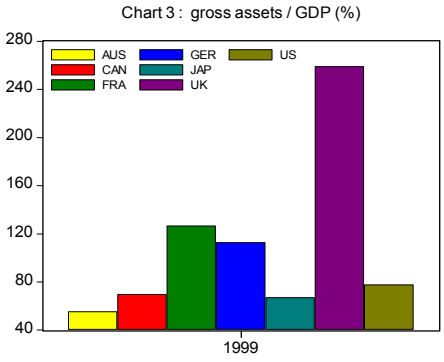


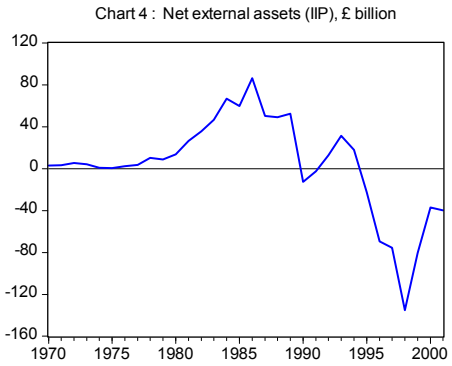
Chart 3 confirms this, with the closest other countries, France and Germany, having gross external liabilities around 100 per cent of GDP, well below the UK. Time series of data (not shown) reveal that all countries except Japan have seen increases in this measure over recent years. BoE (2000, p. 354) note "this would seem to point to a further deepening of international capital markets in the second half of the 1990s despite periods of turbulence". BoE (2001, p. 391) also observe that *growth* in UK external assets has been in-line with other countries' experience over the past ten years.

1.1.2 Net position

Chart 4 shows that at the end of 2001 the UK's net external financial balance sheet position (otherwise known as the international investment position or more simply net financial assets) was net liabilities of £39.9 billion or

[4] As with BoE and IMF work, BoP definitions of assets and liabilities that exclude inter-company transfers will be used throughout this paper.

4.0 per cent of annual GDP (chart 5). The figure constitutes a substantial recovery since the recent trough of £135 billion (16 per cent) in 1998, when the position was unprecedented relative to the UK's own economic history. Despite this recovery the UK continues to have net liabilities with the rest of the world, a situation not seen prior to the second half of the 1990s (apart from as a one-off).



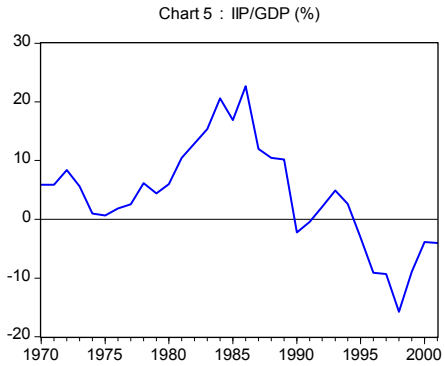
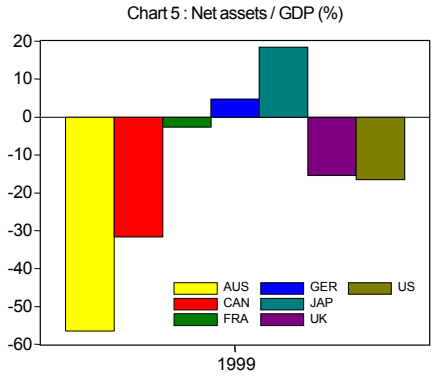


Chart 5 shows an international comparison of net financial assets as a percentage of GDP at end-1999. UK was in a similar position to the US, Canada and Australia had higher net liabilities, France and Germany's positions were broadly neutral, and Japan had the highest net asset position in the world.



Thus, from the net perspective the UK's balance sheet has not been unprecedented, but the gross levels of assets and liabilities may well be.

1.2 Determinants of the UK net liability position

In order to discuss the implications of this situation, BoE (2000 and 2001) examine why the situation has built up. This section borrows and builds on aspects of their analysis, which looks first at matters from the perspective of the current account and second in terms of changes to relative UK holdings of types of

instruments on both the assets and liabilities sides of the account. As with the BoE (2001) updated analysis, a third section is added which examines the net liabilities from sectoral perspective.

1.2.1 The IIP and the current account

The Bank (2000, p. 355) argue that:

> developments in a country's net external position can often be traced to the evolution of the current account. This is because the financial account (international capital flows that increase or decrease a country's external assets and liabilities) plus the much smaller capital account are counterpart to the current account

This section examines in more detail how the current account explains net external financial assets and looks at its importance relative to other determinants of this external position.

A balance sheet position for any asset or liability between two points in time can be crudely (i.e. this is not a formal equation) characterised as follows:

$$\text{STOCK } t = \text{STOCK } t\text{-}r\ (\text{REVALUATION } t\text{-}r,t) + \text{FLOW } t\text{-}r,t \qquad (1)$$

The stock changes either as a response to re-valuation of the existing stock of assets and liabilities or in response to purchases or sales of assets or liabilities. A full balance sheet for any sector of the economy is achieved by summing assets and liabilities across all instruments.

For the International Investment Position, this identity can be expressed as follows:

$$IIP_t = \Sigma_{i \in \text{all (+) assets / (-) liabs}} S_{i,t} = \Sigma_{i \in \text{all (+) assets / (-) liabs}} \left(S_{i,t-r} \left(P_{i,t}/P_{i,t-r}\right) + F_{i,t-r,t} \right) \qquad (2)$$

where $S_{i,t}$ is the stock of asset or liability i at time t (from the balance sheet), $P_{i,t}/P_{i,t-r}$ is the change in price of this asset / liability over the period examined (from t-r to t) and $F_{i,t-r,t}$ is the net flow of new purchases of asset / liability i over the period examined (from the financial account).

As the BoE note, the financial account is counterpart to the current account and the much smaller capital account. This means that :

$$IIP_t = CAD_{t,t-r} + \Sigma_{i \in \text{all (+) assets / (-) liabs}} S_{i,t-r} \left(P_{i,t}/P_{i,t-r}\right) \qquad (3)$$

where CAD reflects the current and capital account deficit between t and t-r. Given the very small size of the capital account, (3) shows how the change in the balance sheet or international investment position can

essentially be de-composed into the deficit on the current account and re-valuations of existing assets and liabilities.[5]

Through this reasoning an analysis of the evolution of the current account deficit over time should explain a important part of the IIP.

In the case of the UK there has been as persistent shortfall between exports and imports of goods since the middle of the 1980s, which combined with negative transfer flows, have not been offset by surpluses on services and investment income (chart 6 and 7).

Chart 6 : Current account balances, £ billion

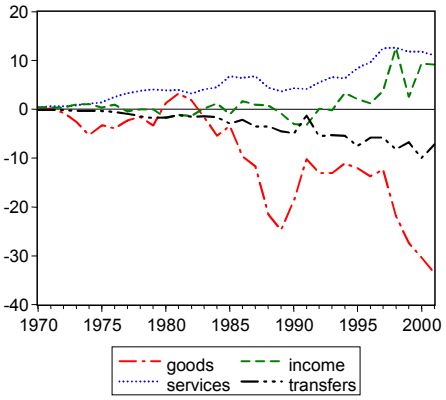
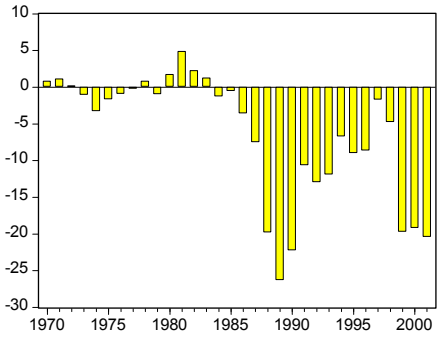
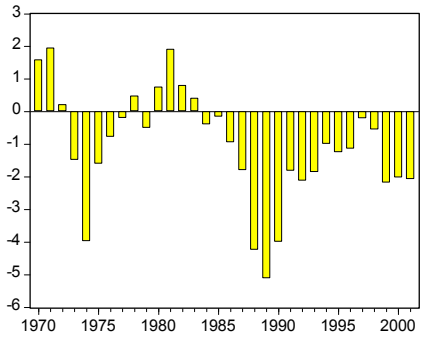


Chart 7 : Current account balance, £ billion



More generally the charts show how the UK fell into current account deficit in the middle of the 1980s, with a diminishing deficit in the middle of the 1990s, but a recent return to a fairly high deficit in the latest three years. Chart 8 shows the figures as a share of GDP: on one hand recent deficits are seen to be a way below those of the late 1980s, on the other hand the persistence of the deficit is a new phenomenon - prior to the middle of the 1980s surpluses were equally as common as deficits.

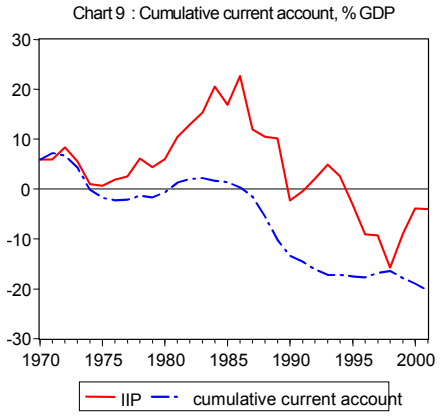
Chart 8 : Current account balance, % GDP



[5] The equation is between two arbitrary points in time, but in practice the CAD between any two points is simply the cumulative total of quarterly figures.

As equation (3) demonstrates the cumulative current account deficit is one of the two determinants of the international investment position and should therefore go some way to explaining the medium term trends in the UK net external balance. In order to finance the ongoing deficit the UK has to sell external assets and/or take on external liabilities. We would therefore expect either the UK stock of assets to run down and/or our stock of liabilities to increase. In this way a reduction in UK net external assets is a logical consequence of a persistent balance of payments deficit.

Chart 9 compares a derived series for the cumulative current account deficit with the net external balance (both series are expressed as a percentage of GDP).



The cumulative current account is constrained to the IIP in 1970. As expected the trends in the two series are broadly similar. In the early 70s surpluses on the current account lead to building net external assets, which then fell away into the 'Barber boom' of the mid 70s. Both series then re-built through to the middle of the 1980s, but then the stock of assets began to diminish substantially. By the late 1990s both series were in negative territory.

However outside these broader trends, there are periods when the two series have diverged to an increasing degree, for example in the early 1980s, in the early 1990s and between 1998-2001. Returning to equation (3) these periods of mismatch should be explainable by revaluation of stocks of assets and liabilities.

The Bank of England produce such an analysis, decomposing changes in the net external balance due to revaluation (e.g. BoE, 2000, chart 8). The main revaluation effects are exchange effects and asset price effects.

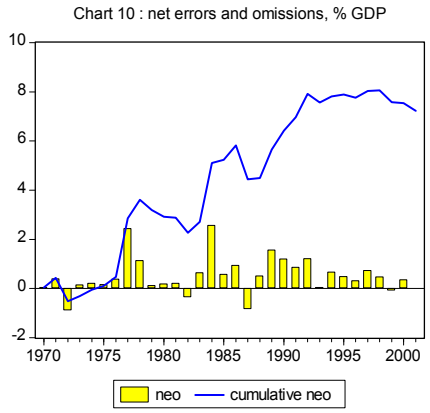
The Bank (2001, p. 394) find explanations for most periods of mismatch through such exchange rate changes, noting in general: "Depreciation in the value of sterling led to positive re-valuations of UK net external assets,

because the majority of UK external liabilities are denominated in sterling and the majority of external assets are denominated in foreign currency".

It can be argued that changes to the value of sterling explained or exacerbated: (i) the divergence in the early 1980s as sterling strengthened; (ii) the large negative shift to the net position on the external balance sheet in 1990 as UK entered the ERM; (iii) the large positive shift to the net position following departure from the ERM and; (iv) and the large negative shift to the net position in 1996 as sterling strengthened again.

Exchange rate movements do not explain all divergences. The discrepancy in recent years appears to be primarily due to asymmetries in revaluation of direct investment assets and liabilities.

The more formal analysis of revaluation carried out by the Bank involves the use of both the financial account and balance sheet. In any quarter the overall change in the balance sheet can be decomposed into the change due to quantity (from the financial account) and the change due to re-valuation (from the balance sheet net of financial flows). The change due to revaluation can then be decomposed into price and exchange effects. Such analysis may be subject to three sources of error. The first is because it is necessary to make a number of assumptions about the specific currency composition of foreign currency holdings of assets and liabilities and types of financial instruments within each category. However this is likely to be dwarfed by the second source, which is due to so-called 'net errors and omissions'. ONS consider that their estimate of the current account deficit is a better estimate of the external flow position than the financial account; most of the net errors and omissions are likely to be in the financial account. This adjustment is both large and indicates bias, with the adjustment showing that the financial account tends to understate UK increases in external liabilities, and so understates the "true" current account position (chart 10).



Thirdly error arises because the stock of assets and liabilities on the balance sheets are also estimates. The very dynamic nature of international capital markets set alongside cost and burden on business constraints mean that it will always be difficult to obtain a wholly comprehensive and accurate picture of the true position. Any decomposition of the IIP will therefore not be wholly accurate. However the above analysis suggests that it should be a reasonable guide to overall trends.

In summary the analysis in this whole of this section here demonstrates how the IIP can be decomposed into effects due to the current account deficit and those due to revaluation. Furthermore it appears that broad trends are determined by the CAD, with divergences due to revaluation effects.

1.2.2 Shifts in balance by instrument

So far the analysis has concentrated on aggregate movements in relation to the current account. BoE (2000, p. 356) argue that "insights can be gained into the development of the UK external balance by disaggregating the data according to the type of financial instrument used to carry out the investment".

The ongoing increases to the stocks of assets and liabilities (illustrated on charts 1 and 2) should be noted. The implication is that changes in stocks of assets and liabilities due to the current account deficit are small relative to changes in the stocks of assets and liabilities arising due to more general cross-border financial activity.

The composition of the gross assets and liabilities at the end of 2001 is as follows (source, BoP First Release, table K):

	£ billion
UK assets	
Direct investment	645
Portfolio – equities	385
Portfolio – debt	514
'Other' investment	1606
UK liabilities	
Direct investment	348
Portfolio – equities	547
Portfolio – debt	432
'Other' investment	1889

As can be seen, the majority of both assets and liabilities are in the 'other' category. This category is dominated by currency and deposits, and will be examined in more detail after an examination of the net flows over time.

Chart 12 : Net positions, £ billion

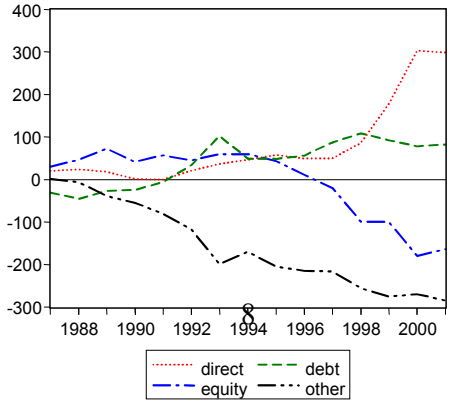


Chart 12 shows how until the late 1990s the UK has tended to be in surplus ('long') on portfolio debt and equity investment and direct investment, but in deficit ('short') on 'other' investment. The fall into deficit on equity investment over the past few years should be analysed alongside the increases to direct investment. These trends have arisen largely as a consequence of the very marked increase in merger and acquisition (M+A) activity in the late 1990s. UK acquisition of an overseas company scores as a direct investment asset, and this tends to be offset by an increase in equity liabilities issued to finance the purchase. In 2001 this M+A activity came to an abrupt halt and stocks have stopped increasing.

The Bank analysis of merger and acquisition measurement issues

The Bank examine the balance sheet effects of this unprecedented level of M+A activity in more detail. As is widely recognised, the valuation of portfolio investment at market prices (with re-valuation every quarter) set against the valuation of direct investment at book value (with only intermittent re-valuation) causes imbalances in the aggregate presentation. The implication is that the direct investment on the asset side of the UK's balance sheet will tend to be undervalued relative to the equity liability. The Bank further argues that this is a particularly important issue for the UK since the UK has a high surplus on direct investment abroad. They therefore examine alternative methods to estimate market values of FDI assets and liabilities, and look at consequent 'adjusted' IIPs. The various treatments can make substantial differences and they argue that the results suggest "... UK net direct investment assets could be sufficient to reduce significantly or even reverse the apparent overall net external liability position." (BoE, 2001, p. 397)[6]

Part of the difficulty with such adjustments is that they basically depend on either applying output or stock exchange growth rates to existing book value estimates. Because FDI tends to occur in industries that are growing quickly then re-valuation produces very different results. However the Bank first made these adjustments in 2000; since then output and equity growth has gone into reverse in many of the relevant industries. The book value method will therefore be coming closer into line with the market values. The application of such revaluation techniques is therefore very sensitive to what stage of the cycle that the analysis is carried out. It may be that a third stage of the process will be that book values overstate the true value of the companies concerned.

Other investment

When account is taken of the merger and acquisition activity it is clear that the item of most importance, from both the gross perspective and the perspective of imbalance due to the net external liability situation, is the situation on other investment and, in turn, on banking.

Further dis-aggregation of the UK's 'other investment' liabilities is obtained from the UK Pink Book 2001 Table 8.7. This shows that the UK banking sector's borrowing from the rest of the world (i.e. the rest of the world's financial assets held in the UK as currency and deposits) are as follows:

[6] Furthermore this was written at a time when the UK financial deficit was at an all time high.

£ billion	1999	2000
RoW Sterling deposits with UK banks	200	215
RoW Foreign currency deposits with UK banks	1060	1152
[Total 'other' liabilities	1713	1912]

Following from this, the stock of lending by UK banks to the overseas sector falls short of the above stock. This is the primary determinant of the overall net liability position on 'other liabilities'.

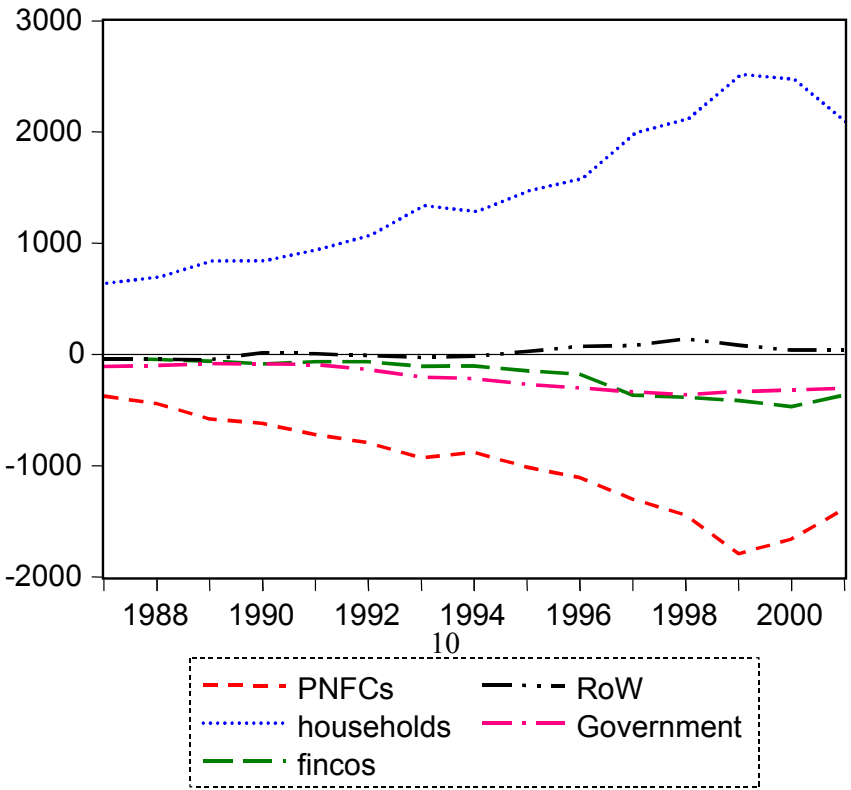
Insofar as the net external liabilities reflect the cumulative current account deficit, it is therefore seen that the current account deficit is financed from year to year by the banking system borrowing from overseas. The Bank echo this point:

> This is because UK residents can finance current account deficits either through direct borrowing overseas or indirectly through the domestic banking system. Many smaller firms and households are likely to have limited access to overseas financial markets, so, to the extent that these residents rely primarily on the banking system, the UK banking sector's net borrowing from overseas will rise with the UK current account deficit. Thus the stock of external bank debt will tend to increase with cumulative current account deficits/surpluses. (BoE, 2000, p. 362)

1.2.3 Sectoral analysis

A third approach to the examination of the build-up of UK net external liabilities is in the context of the aggregate net financial asset positions of all the sectors of the UK economy. Chart 13 shows that the net external liability position might be regarded as a consequence of the wealth of the household sector not meeting the cumulative borrowings of corporate (both financial and non-financial) and government sectors.

Chart 13 : Sector financial balances, £ billion



The chart also illustrates: (i) how the borrowing on the external account is seen to be dwarfed by the scale of both the net liabilities of the corporate sector and the net assets of the household sector; (ii) how net assets/liabilities increased rapidly over the majority of this measured period and; (iii) how this phenomenon has begun to reverse in the latest two years - primarily as a consequence of falls in the value of equities.

Part 2: Financial instability and balance sheets

2.1 Introduction

The discussion in part 1 has concentrated on characterising the balance sheet and examining the underlying forces governing movements. As the Bank of England emphasise in the opening paragraph to their paper balance sheet analysis can also inform discussions of financial stability: "One lesson from recent international financial crises has been how important it is for national authorities to monitor risk exposures in their country's external balance sheet" BoE (2000, p. 351). Two reasons are offered, the first that the balance sheet "affects a country's ability to withstand economic shocks" and the second that "the structure of the balance sheet may itself be a source of financial shocks".

The Bank of England in turn draw on work by the International Monetary Fund (IMF), for whom a primary concern is the identification of the potential for financial crises. In this way IMF work tends to focus on constructing various indicators of financial vulnerability and examining their explanatory power.

Such work has been motivated by the increased incidence of financial collapse throughout the 1990s: Mexico in 1994, Korea, Thailand and Indonesia in 1997, Russia in 1998, Argentina in 2000 and 2002, and Turkey in 2001. Indeed the Mexico crisis provided the catalyst that led to the development of the IMF's special data dissemination standards that involve contribution of detailed balance sheet information.

The IMF paper *Debt and Reserve Related Indicators of Financial Vulnerability* is based on analysis of such data:

> **This paper focuses primarily on the financial relation a country has with the rest of the world – that is, its overall "balance sheet."** The prime focus is on *external* assets and liabilities (namely, relations between residents and nonresidents), encompassing both the public and private sector. Within this overall balance sheet, the focus is on debt-related liabilities (in contrast to equity) and on reserves. (IMF, 2000, para. 23) [7]

The majority of economies studied in the IMF paper are emerging or developing economies. Whether the results have relevance for developed economies is a matter of debate and opinions appear to be mixed.

[7] No explanation is given for the exclusion of equities. Traditionally equity is excluded from such analyses because there are no statutory obligations for companies to pay dividends, but they must pay interest on holdings of debt.

The IMF themselves suggest that their analysis has some relevance to all economies: "Although the overall framework of analysis of this paper applies to all countries, the primary focus of the search for indicators lies on economies with relatively limited access to capital markets, notably emerging market economies." (IMF, 2000, para. 20). But they note (para. 28) that circumstance might militate against taking the results too literally for developed economies: "....the weight to be attached to private obligations in risk analysis will depend in large measure on the microeconomic conditions that determine market participants' risk taking behaviour". This statement is developed in a footnote as follows: "key micro conditions include institutions that foster wage and price flexibility". Overall their position is summed up: "Given conducive and stable microeconomic conditions, the overall private sector debt burden may well be high, but still not a cause for concern – as is illustrated by the history of a number of industrialised debtor countries" (para. 29).

The Bank of England appear to broadly agree on the relevance of the work to developed economies: "Although much of the recent international interest in external balance sheets has focused on emerging market economies, the analysis is also potentially useful for developed economies." (BoE, 2000, p. 352)

However Davis (1999, p. 19), in a paper written for a workshop at the Bank of England, goes further:[8]

> While account should be taken of individual countries' special features, e.g. in respect of sustainable corporate indebtedness, analysis of experience both at home and abroad is essential; many mistakes have been made when assuming that countries are in some way unique and hence patterns of financial instability are unlikely to arise – or that circumstances are now different and the lessons of history no longer apply.[9]

2.2 Identification of indicators of financial stability

For the IMF the important issues are: (i) what relevance do balance sheet data have for identification of financial stability and; (ii) can indicators be constructed using such data to warn in advance of financial instability? They pose this question as follows:

> What sort of indicators should be used to assess the degree to which a country's debt and reserve situation make it vulnerable to shocks? Can these indicators be compared against simple benchmarks to provide a useful test of the soundness of debt and reserve management policies? Bearing in mind that no indicator is perfect, and qualifications apply to any, the aim is to search for those indicators that are robust and relatively easy to consider. (IMF, 2000, paras. 19 – 20)[10]

In this way their analysis looks firstly at reserves and secondly at external debt. At the same time, the IMF alludes to, and the Bank also emphasise the importance of other sectoral (or internal) indicators of indebtedness. These are discussed in section (2.3).

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[8] Although he stresses: "Views expressed are those of the author and not necessarily those of the institutions to which he is affiliated."

[9] Analysis of financial stability is complicated by the many competing strands in the literature which seek to *explain* financial crises. This literature points to many causes and symptoms of such crises and the explanations are sometimes conflicting. Similarly there is relatively little agreement amongst economists over the competing theories. In this way, having briefly outlined a number of theories, Davies (1999, p.7) concludes: "In our view these theories are best seen as not mutually exclusive, but rather identifying relevant, albeit partial features of financial instability".

[10] It is notable that the IMF implies that the importance of the debt position is that generates a source of vulnerability to external shocks, rather than constitutes a problem in itself. This is again implicit in footnote 9 to paragraph 29: "Although sound individual decisions will not

To examine the validity of each proposed indicator of financial vulnerability the IMF construct 'crisis indices' (intended to reflect the degree of financial instability) for developing economies in 1994, 1997 and 1998. The values of these 'outturn' indicators are plotted against the various values of the 'predictive' indicator variables to see whether there is a high correlation between the proposed indicators and actual occurrence of financial crisis. On this basis they go on to suggest some critical values for the vulnerability indicators.

To illustrate the sort of calculations proposed some of the IMF/BoE techniques are carried out on UK national accounts and balance of payments data.

It should be noted up front that according to some measures the UK records high financial vulnerability. As the preceding discussion shows the degree of relevance these analyses have for developing analyses is not clear. Furthermore even within developed economies the UK may be a special case given its historic importance as a key financial market. In particular the link between reserves and the balance sheet in the UK may be tentative, but the indicators are discussed for completeness of exposition.

2.2.1 Reserve indicators

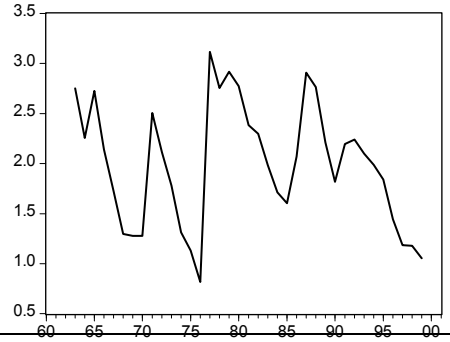
IMF (2000, para. 32) note: "The recent financial crises have made clear the very high costs that countries bear when they run short of liquidity, and the question of what is an adequate level of reserves has acquired new prominence".

Reserves are defined using the Balance of Payments manual definition, and three measures of reserve adequacy are examined: (i) reserves to imports; (ii) to monetary aggregates and; (iii) to measures of external debt.

i. Imports

On reserves to imports the IMF (2000, para. 37) note: "The traditional indicator of reserve adequacy is reserves in months of imports, and this ratio is likely to remain relevant as a simple way of scaling the level of reserves by the size and openness of the economy.". Although it is emphasised that this indicator is "generally less useful" for industrialised countries. Chart 15 produces a time series of this indicator for the UK:

Chart 15 : Reserves / imports in months



eliminate the risk of a private default sufficiently widesp[illegible]is, as large exogenous shocks may overwhelm any system, they will markedly reduce it.". This will be pursued later.

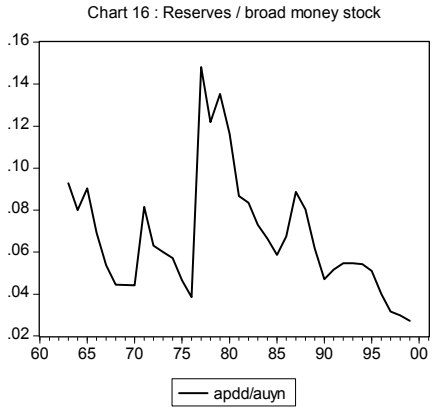
In 1999 the volume of reserves was falling towards being equivalent to one month's worth of imports (actual value 1.1), the ratio has been shrinking since the late 1970s and in 1999 (the last year for which annual reserve data is available) the figure was at its lowest level since the financial crises of the mid-1970s.

When the IMF carry out their analyses they tend to take the *reciprocal* of the measure of financial instability. This ensures that the measure will get larger as it becomes more critical. Putting the UK into their analysis would give an indicator measure of 0.9, a figure that tends to be associated with a higher crisis index. However the IMF consider that the results using this indicator are 'weak'.

ii. Reserves over money

The IMF regard the failure of import based analyses to take into account other flows on the capital account as potentially serious. They therefore turn to money-based indicators and argue: "Money-based indicators of reserves provide a measure of the potential for resident-based capital flight from the currency. An unstable demand for money or the presence of a weak banking system indicates a greater probability of such capital flight" (IMF, 2000, para. 39).[11]

At the most basic level a large money stock in relation to reserves indicates potential for capital flight. Chart 16 compares UK reserves with the broad money (M4) stock.



Again the pattern is very similar to the import based measure: with a slowly diminishing share, and recent figures lower than the figures in the financial crises of the early 1970s.

[11] The historical evolution of these measures is linked to the gold standard: "Money-based measures of reserve adequacy have been in use for many decades, since well before import-based measures came into common use. Most central banks operating under the gold standard in the interwar period were required to pursue 'some definite relation between the gold reserves, or the gold reserves plus foreign exchange, and the note issue, or note issue plus other sight liabilities.' (IMF, 200 para. 39, footnote 19)

As with the import-based index, the IMF argue that the explanatory power of this indicator is 'reasonably weak' (in particular when confidence in the domestic currency is high and money demand is stable).[12]

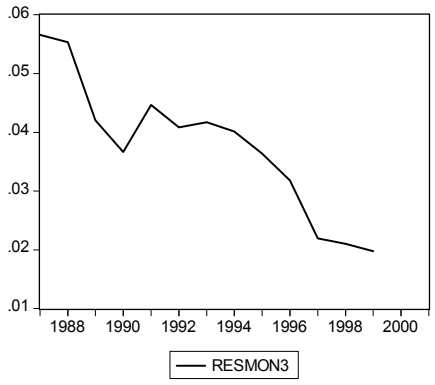
iii. Debt based indicators

The IMF note: "In recent years there has been increasing interest in comparing the level of reserves to a measure of external debt, in particular to short-term external debt by remaining maturity" (IMF, 2000, para. 41); they continue: "Empirical work both in the Fund and elsewhere suggests that the ratio of reserves to short-term external debt (R/STD), as further defined below, is indeed the single most important indicator of reserve adequacy in countries with significant but uncertain access to capital markets" (IMF, 2000, para. 42).

The IMF note that Alan Greenspan has suggested countries could minimise their financial vulnerability by adhering to a simple benchmark: reserves should not fall short of guaranteed short-term debt. The IMF finds this standard has empirical support and therefore argue: "The staff would recommend using a ratio of unity as a starting point for analysis of reserve adequacy for countries with significant but uncertain access to capital markets." (IMF, 2000, para. 48)

Chart 17 shows the position for the UK (with short-term debt defined as rest of the world currency, deposit and short-term money-market instrument assets).

Chart 17 : Reserves / short-term debt



Taken at face value, the UK fails this standard by a very large margin, with the ratio of reserves to short term debt at 0.02. (The IMF analyses of developing economies shows Korea in 1997 recording the highest outturn with a reciprocal value of 2.5, the UK reciprocal is 50.6.)

At the same time in annex III table 3 the IMF reproduce a number of their reserve based indices for selected industrial economies (at end 1998), this at least corroborates the figure of 0.02, and shows the UK indicator substantially lower than all other countries:[13]

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[12] Taking the reciprocal of the UK indicator gives a value of 36.6, significantly higher than the highest indicator for developing economies (around 13 for Pakistan).

	Res / STD	Imports	M2
Average	0.22	0.24	0.13
Canada	0.17	0.09	0.07
France	0.13	0.19	0.06
Germany	0.20	0.16	0.07
Italy	0.16	0.16	0.08
Japan	0.21	0.43	0.04
Netherlands	0.15	0.13	0.11
Spain	0.33	0.34	0.14
Sweden	0.14	0.14	0.15
Switzerland	0.21	0.48	0.16
United Kingdom	0.02	0.07	0.03
United States	0.65	0.11	0.03

However the IMF (2000, para. 48 and footnote 31) discuss how "... in most high income industrialized countries the ratio of reserves to economy-wide short-term external debt is relatively low (on average about 0.2)" and that there is a need to take into account "various factors that serve to enhance or mitigate the need for reserves in a particular country compared to such a benchmark".

In the case of the UK an important aspect of the very low ratio appears to be the very large short term liabilities of the banking sector to the overseas sector. This will be discussed in sections 2.3-2.4.

2.2.2 Debt related indicators

The IMF then turn to the predictive power of indicators of financial instability based on wider measures of debt: "[a]ppropriately defined debt indicators are a useful tool to support sound debt management, but care is needed – especially in attempts to formulate benchmarks – to make adequate distinctions between different types of debt and their impact on external vulnerability. (IMF, 2000, para. 54)[14]

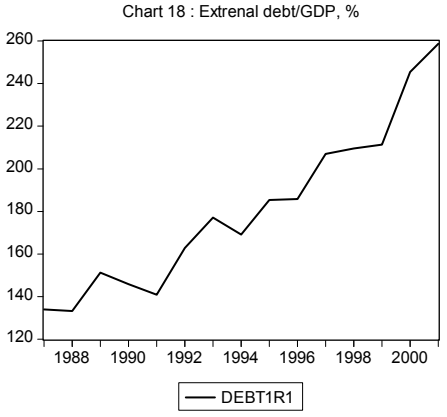
In order to examine the volume of debt the IMF suggest: "the most common debt indicators scale the external debt stock by either exports, GDP, or government revenue." (IMF, 2000, para. 57). External debt is defined in Table 1 of their paper as "consist[ing] of the non-equity elements of external liabilities (i.e. all debt instruments held by non-residents), regardless of currency of denomination". Two indices are regarded as useful: the ratio of external debt to exports ('especially useful') and the ratio of debt to GDP ('useful supplementary').

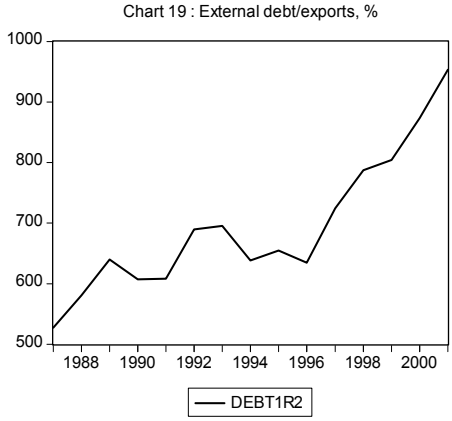
[13] There is a mismatch between IMF and my calculations for the import ratio (in 2.2.1(i)). It may be that the IMF figure reflects reserves in years rather than months of imports, in which case my figure of 1.1 could be re-scaled to 0.09 - somewhat closer to the IMF figure.
[14] They go on to argue: "As emphasised in Chapter II, private sector debt that is not based on distorted incentive structures is of less concern than private sector debt that reflects severe distortions, for example, in favor of short-term or foreign currency financing." (IMF, 2000, para. 54).

IMF then discusses interpretation: “A high ratio indicates a greater burden of servicing the debt, ... And a growing ratio, especially if the level of debt is already high, may suggest that a country is on an unsustainable path.” (IMF, 2000, para. 57). They emphasise too the importance of examining the evolution of these indicators rather than approaching them as a snapshot in time.

In the case of these measures an explicit relationship is observed between debt and ‘spreads’ on bond prices (and hence investors perceptions about an economy): “For the larger emerging markets economies, the ratio of debt to exports does seem to positively impact interest spreads on sovereign bonds. Since spreads are a useful proxy for the loss creditors expect, this suggests that repayment expectations are affected by the overall level of debt.” (IMF, 2000, para. 60)

Charts 18 and 19 carry out the two main analyses for the UK (with debt constructed as rest of the world total financial assets minus total shares and other equity):





In both cases the UK ratio has increased substantially over the periods in the graphs. The IMF offer some tentative help as to critical values, warning first that “the scope for identifying critical ranges for debt indicators is rather limited.” (IMF, 2000, para. 63). They then note estimates due to Cohen (see their footnote 48) of “critical points for debt to GDP of 50 percent, debt to exports of 200 per cent ... .”

2.3 Sectoral indicators

Discussions of financial stability also tend to emphasise the usefulness of so-called ‘sectoral indicators’. These constitute the balance sheet information for the domestic sectors of an economy: government, non-financial and financial parts of the corporate sector and the household sector. While the analysis here moves slightly away from the external position that is the main topic of this paper, the external position of the banking sector in particular helps clarify investigation of the external balance itself.

It is notable in this area that precise indicators of stability have not been specified and very few in-depth analyses are carried out.

The IMF paper initially comes at sectoral indicators from the public–private perspective: "A sectoral analysis of debt is important because the sustainability of public and private sector debt is governed by different considerations" (IMF, 2000, para. 72). However they then note:

> The present paper has a narrow focus, and it will merely note the extensive work underway elsewhere on the general issue of risk management at the institutional or sectoral level. The question this paper seeks to answer is whether there are simple debt-related indicators that provide insights into the external vulnerability of sectors – i.e., their vulnerability to changes in exchange rates and, consequently or in expectation thereof, to a cutoff from foreign lending. (IMF, 2000, para. 73)

The implication here is that there may be intrinsic interest in certain sectors but the aim of this specific paper is largely to approach matters from the external stability angle. Davis (1999) comes at the issue from a more general perspective and examines domestic sectors in greater detail, but it is still not an in-depth study.

Here the aim for each sector is simply to pick out the key arguments from both approaches.

2.3.1 Public sector

The public sector perspective tends to be particularly relevant to developing economies. UK poilicies here have been influenced by requirements of the Maastricht covergence criteria, and UK public debt is widely recognised to be well within such guidelines. The IMF's own guideline aims at "ensur[ing] that the public sector can service its debt while minimizing costs in the long run – which also implies minimizing the costs to the economy of crises resulting from imprudent debt management" (IMF, 2000, para. 74). They suggest a number of indicators: ratios of public debt to GDP and tax revenue, average debt rate, shares of foreign currency debt denomination, fixed v floating debt denomination.

2.3.2 Corporate sector

The IMF state that:

> In the wake of the recent crises it has become obvious that vulnerability analysis cannot ignore the corporate sector. Although individual firm failures can and should be addressed through bankruptcy and resolution systems, it is increasingly recognised that the organization of the corporate sector, and especially its financial structure, can impact external vulnerability ... Overextension of foreign currency financing to the corporate sector, combined with limited profit margins, and/or a financing structure that is highly leveraged or geared toward short-term financing, can lead to widespread corporate non-payment. (IMF, 2000, para. 80)

This suggests a potentially important role for corporate sector analyses. However in line with the external perspective, their own analysis concentrates on implications for exchange and interest rate mismatches. A secondary section looks at other 'more traditional indicators' such as general profitability, leverage, ratio of short-term to overall debt etc.

Davis (1999) emphasises the importance of the corporate sector more strongly: "As noted, the theory of debt and financial fragility tends to emphasise the importance of corporate or household debt accumulation as a trigger for financial fragility" (Davis, 1999, p. 10). His paper goes on to carry out an analysis of the key economic features of financial crises between 1933 and 1998 (reproduced here in annex B). 'Debt accumulation' features in each crisis except for the UK's departure from the ERM. No other indicator has that property, the closest other property, 'asset price booms' occurred in only 65 per cent of crises. Reflecting this "Debt accumulation (economy wide, by individual sectors or in individual markets)" is given lead position in his list.[15]

2.3.3 Household sector

The household sector is not covered in the IMF paper, and the detail in the Bank of England papers corresponds to that given above for the corporate sector.

2.3.4 Financial sector

The IMF (2000, para. 77) argue that "Financial sector vulnerability is a particular cause for concern as regards external vulnerability". They examine foreign currency risk, foreign currency maturity mismatches and risks associated with the relative liquidity of portfolios.

Davis (1999) discusses the position in the financial sector in slightly more detail, particularly in the context of the SE Asian crises. Davis (1999, pp. 17-8) argues that a rapid rise in debt as a consequence of the "spurt in investment" was "detectable in terms of bank lending to the non-financial sector" and that "Inadequate credit assessment, and deteriorating overall balance sheet conditions seems to have been a characteristic ... of domestic banks...".

Bank lending figures thus provide important financial stability information and Davis suggests therefore that attention should be paid to balance sheet data: "Flow of funds should also provide broad measures of the developments in banking (e.g. balance sheet expansion and capital adequacy)" (Davis, 1999, p. 14).

Perhaps reflecting this emphasis, BoE (2000) goes on to examine the specific position of the banking sector.

[15] From a data requirement perspective Davis goes on to stress that "there is a need for flow of funds balance sheet data crucially in order to track overall patterns of corporate and household sector indebtedness, relative to income or assets..." (Davis, 1999, p. 14).

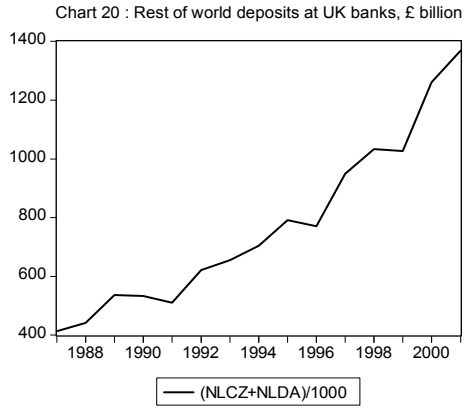
2.4 Bank of England analysis of the UK banking sector at end-1999

The discussion examines the external position of the UK banking sector with regard to firstly the overall gross level of assets and liabilities and secondly the net position and lastly the maturity composition of assets and liabilities. On the gross position they sum up:

> Deposits by non-residents with UK banks stood at £1,027 billion at end-1999. This total is very large by international standards, and easily exceeds annual UK GDP. For many countries (particularly emerging market economies), similar-sized 'other' investment liabilities (either in absolute terms or relative to GDP) would be considered a significant source of risk. However, for a country with a large financial sector, such as the United Kingdom, the interpretation is less clear, ..." (BoE, 2000, p. 361)

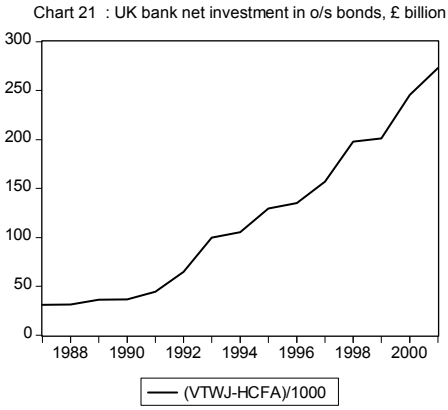
The last point echoes the points made earlier about the potentially special position of the UK as a major global financial centre.[16]

Latest National Accounts data shows that this figure for overseas deposits had sharply increased to £1,370 billion in 2001. Chart 20 shows a time series that illustrates the sharp growth in these liabilities since 1987.



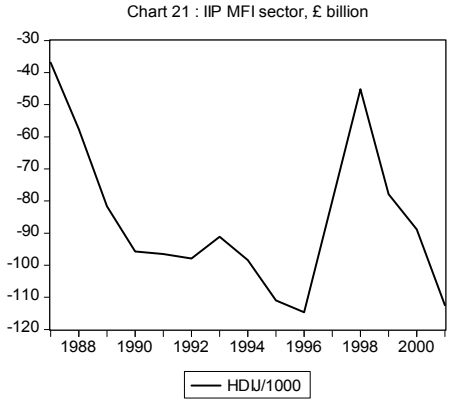
Turning to the net position, the Bank argue that net UK bank borrowing from abroad at the end of 1999 was £195 billion (constituting most of the 'other' net liabilities on 'other investment' position for the UK as a whole discussed in section 1.2). They note however that the banking sector's *overall* net position with the overseas sector depends also on its position on other financial instruments; in particular the UK is a substantial net investor in debt securities issued by non-residents.

[16] The BoE notes that many of these deposits are placed with non-UK owned banks based in the UK, and that approximately a half of deposits are placed by non-resident offices of the UK banks in question, with a similar flow in the opposite direction. In this way they argue that risks in balance sheets of UK banks might be regarded as risks to international system more generally.



The Bank essentially argues that these large net assets offset some of the net liabilities on currency and deposits.

In fact ONS produce estimates of the international investment position for each sector of the economy. The position for the monetary and financial institution sector (with slightly wider coverage than just banks) is shown in chart 21.



NS estimates have the overall net liability position of the MFI sector at £89 billion at the end of 2000 and £113 billion at the end of 2001.

On the other hand the Bank discuss the potential nature of the transactions that the banking system is conducting:

> In effect, the UK banking system is carrying out maturity transformation in foreign currency – taking short-term deposits from abroad and investing the funds in long-term debt securities issued by non-residents. This could potentially expose the banking system to liquidity risk." (BE, 2000, p. 362)

Concerns may arise not only from the degree of imbalance but also from the type of imbalance:

> Of even greater importance for financial stability is the liquidity structure of the banks' balance sheets. If banks have significant short-term liabilities and long-term assets denominated in either sterling or

> foreign currency, they face the risk of a liquidity squeeze. These risks will be mitigated to the extent that the banks manage their liquidity prudently. (BoE, 2000, p. 362-3)[17]

3. Summary

This paper has attempted to draw attention to how sophisticated users analyse and interpret balance sheet data. Such analyses are perhaps inevitably limited to highly specialised publications. Nevertheless the existence of such work as well as the article IV data requirements are testament to the importance of the figures in this area.

From the perspective of National Statistics Offices it is clearly important that compilers understand how users are using the data so that they are able to ensure that the data are fit for purpose.

This is especially the case for the UK where the specific analysis reveals a position that is unprecedented relative to recent history and to the experience of both developing and developed economies.

The IMF concluded an Article IV assessment of the UK economy in 2001, which required NS to provide the detail on financial flows discussed above in order to construct a specific assessment of 'external and financial vulnerability'. The executive summary of the analysis was published in February 2001, and focussed more on the domestic rather than external position:

> The banking sector continued to show strong profitability and capitalisation, but the authorities remained vigilant of possible vulnerabilities in the current riskier environment, particularly regarding exposures to the telecommunications sector and the increased indebtedness of households and corporations. ... Corporate and mortgage lending has also expanded rapidly and the levels of indebtedness of the household and corporate sectors are now close to previous peaks on several measures. While agreeing with the need to remain alert to the risks arising from growing indebtedness, the authorities noted that banks' exposure to vulnerable companies has declined over the past three years and that the underlying soundness of the property market – to which much of the lending was related – was significantly greater than at the previous cyclical peak. ... The authorities indicated, however, that the exposures were mainly to investment-grade borrowers rather than the smaller, riskier companies and that the loans were mainly short-term. ... Overall, while acknowledging the increased risks, the authorities viewed UK banks' capitalisation as adequate and their risk management techniques as appropriate. The staff agreed but noted that, while each of the above risks were individually quite manageable, there was a need to take account of their possible correlation. (IMF, 2001, p. 4)

[17] While the Bank note "... any risks will be mitigated if the bonds held are tradable in deep and liquid markets, and so could be liquidated at little cost", such actions are surely by definition not possible during a liquidity crisis.

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