

Financial globalisation, external balance sheets and economic adjustment

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This article investigates the implications of the size and structure of external balance sheets for the impact of shocks on domestic economies. Increased integration of international financial markets in recent years, coupled with larger international cross-holdings of assets and liabilities, has made the balance sheet channel of transmission of shocks grow in importance. This article constructs detailed decompositions of the balance sheets of the United Kingdom, the United States and Canada. These are used to illustrate what different features of balance sheets imply about the effects on domestic economies from different shocks. Finally, the impact on UK and US external balance sheets from some hypothetical scenarios is examined, and some simple rules of thumb are used to draw out the potential implications for consumption behaviour.

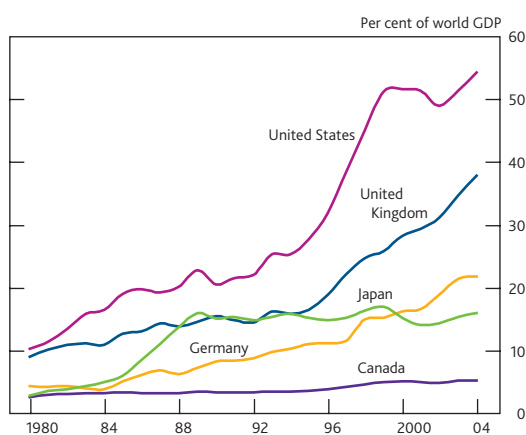
Introduction

Global financial markets have become increasingly integrated over the past 20 years, and particularly so in the past decade (Chart 1). As in many countries, the speed of financial integration of the United Kingdom with the rest of the world has outpaced the speed of trade integration. Chart 2 illustrates this, by comparing UK trade flows with UK financial account flows over the past 40 years.

Financial interlinkages between the United Kingdom and the rest of the world are broadly based. Chart 3 shows the sum of total UK external assets and liabilities at the end of 2004, decomposed by partner country. By this measure, financial links with the European Union (EU) amounted to approximately three times the United Kingdom's gross domestic product (GDP), compared with about one and a half times UK GDP with the United States. Financial links with the rest of the world amounted to over twice UK GDP.

Economic theory suggests that increased financial integration (or financial globalisation) can bring clear benefits. Reductions in the barriers to global capital flows should lead to better resource allocation, as they allow investors to move funds to countries where they expect higher returns. Financial globalisation also offers the facility to smooth domestic consumption over time and reduce exposure to country-specific risks.

Chart 1 Financial integration, 1980–2004^(a)

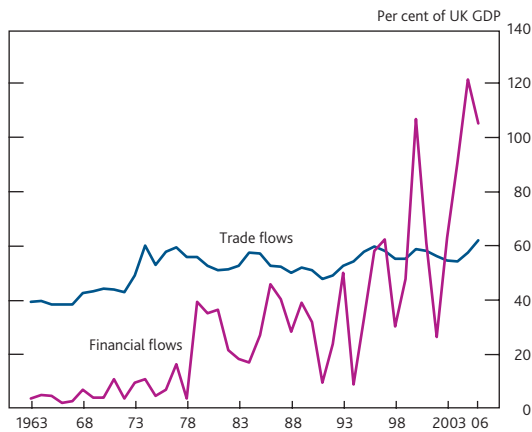


Sources: IMF *World Economic Outlook* (April 2007) and Lane and Milesi-Ferretti (2006).

(a) Financial integration is defined here as the sum of the total stocks of foreign assets and liabilities (in US dollars) as a percentage of world GDP.

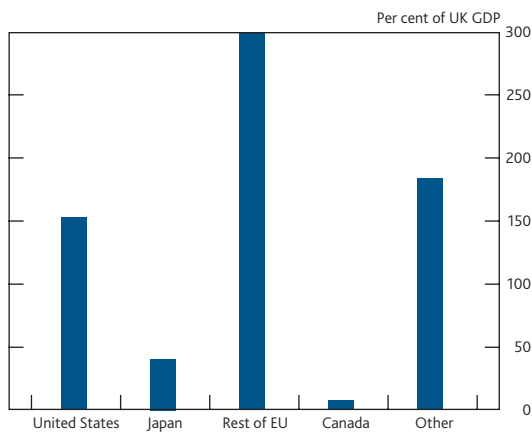
At the same time, increased financial globalisation can also alter the transmission of shocks in the world economy. Financial globalisation means that the income and wealth of domestic residents are less exposed to domestic shocks, but are more exposed to given macroeconomic and financial shocks occurring abroad. For instance, if UK residents hold a large volume of overseas marketable assets, a permanent rise in foreign asset prices can increase UK domestic demand by increasing the value of UK residents' wealth. Conversely, a fall in foreign asset prices might reduce UK domestic demand as the value of net wealth falls.

Chart 2 UK global integration by balance of payment flows, 1963–2006^(a)



(a) Financial flows are defined here as the sum of gross capital inflows and outflows (from the financial account of the United Kingdom's balance of payments) as a percentage of UK GDP. Trade flows are defined as the sum of exports and imports as a percentage of UK GDP.

Chart 3 UK financial integration in 2004 by geographical area^(a)



(a) Financial integration is defined here as the sum of the total stocks of UK foreign assets and liabilities as a percentage of UK GDP. Foreign direct investment is not adjusted for market values.

To understand how increased financial globalisation can affect the transmission of economic and financial shocks in domestic economies, it is not enough to look at just the aggregate value of the foreign assets and liabilities that a country's households, companies and government hold. The composition of foreign assets and liabilities also affects the way in which domestic and foreign shocks impact the domestic economy. This information is reflected in a country's external balance sheet, which records residents' holdings of foreign assets and liabilities and contains information about their composition.

The recent trends in financial globalisation have meant that it is becoming increasingly important for central banks and other policy-making institutions to consider the information contained in countries' external balance sheets and incorporate it in their macroeconomic analysis. For example, King (2006) has argued that balance sheet analysis should be at the heart of the International Monetary Fund's (IMF) monitoring of the world economy.

This article examines how the composition of external balance sheets could potentially affect the impact of various shocks on the domestic economy. It illustrates how the size and structure of balance sheets can influence the types of shocks an economy is most exposed to, using the external balance sheets of the United Kingdom, the United States and Canada as examples. It then goes on to look at the potential impact of shocks on UK and US external balance sheets using a set of hypothetical scenarios.

The economics of the external balance sheet

A country's external balance sheet provides a summary of the financial relationship between its domestic residents — consisting of household, business and government sectors — and the rest of the world.

The external balance sheet is influenced by cumulative capital flows — consisting of new foreign direct investment (FDI),⁽¹⁾ cross-border holdings of equities, bonds, loans and money market instruments. It also takes into account changes in the valuation of existing stocks of assets and liabilities — due to changes in market prices or exchange rates. Adding these two components gives the stocks of gross assets and liabilities. The difference between the stocks of assets and liabilities gives a country's net international investment position (NIIP).

An analysis of a country's external balance sheet can reveal information about its exposure to different kinds of risks. The proportion of assets and liabilities consisting of FDI, portfolio equities, bonds, loans or money market instruments, is important because the expected returns of different financial instruments are sensitive to different types of shocks. The geographical location and currency composition of external balance sheets also matter. These reveal something about how shocks in particular parts of the world and to particular currencies may affect a domestic economy through its external asset and liability holdings.

Generally speaking, domestic residents have two related motives for trading financial assets with foreign residents: international risk-sharing and consumption smoothing.

Without international trade in financial instruments, domestic residents can consume and invest only out of domestic income and assets. This income is subject to various risks — some of which are country-specific. Access to global financial markets allows a country's residents to purchase and issue financial instruments that may have different risk-return characteristics compared with those that are available domestically. This trade in financial assets facilitates international risk-sharing, whereby domestic residents can more easily achieve their

(1) Foreign direct investment is defined as an equity holding in a company in excess of 10% of that company's total value.

Some evidence on international risk-sharing

This box explains how financial globalisation can improve risk-sharing across countries, and discusses empirical evidence on international risk-sharing in practice.

Access to international financial markets offers the opportunity for domestic residents to trade instruments with a broader range of risk-return combinations than those available domestically. Some investors are willing to accept higher risk for the possibility that returns may be higher, whereas others prefer investments with less risk at the expense of lower expected returns. Economic theory suggests that financial globalisation can improve the welfare of domestic and foreign residents by allowing them to achieve their preferred risk-return combination in their portfolios.

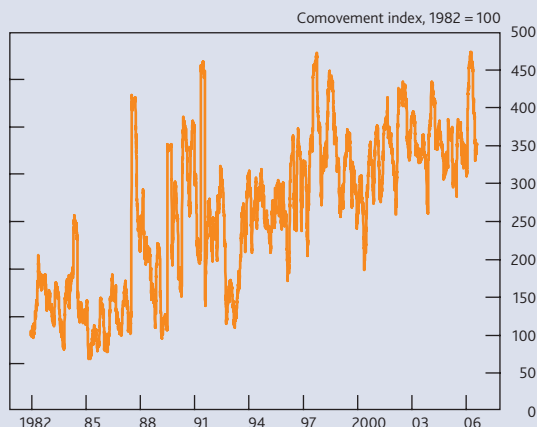
By participating in international financial markets, investors can purchase assets with higher expected returns than may be available in their domestic markets. For example, investors in developed economies can purchase equity stakes in companies in emerging market economies (EMEs) that are experiencing higher (but more volatile) growth than those in their own economy. Although this investment might be risky in comparison to domestic investments, purchases of these equity claims allow investors to capture part of the higher income growth generated by EMEs.

Investors might also use international financial markets to reduce the risks to their income. In the above example, investors from EMEs can reduce the extent of the risks they face by selling equity stakes in their expanding economies to investors from developed economies, and use the proceeds to purchase safer assets (such as government bonds) in developed economies. To the extent that prices of equities in EMEs and government bonds in developed economies do not comove, such a transaction helps to reduce the income risks faced by EME investors.

However, correlations between asset prices can change over time, particularly at times of severe economic or financial shocks. For example, if investors who have borrowed heavily to finance their investments in several markets suffer losses in one market, they may start selling in other markets to obtain liquidity, so that the price falls in one market may spill over to others.⁽¹⁾ This raises the possibility that international financial integration may itself increase the comovement of global asset prices (IMF (2007)). Indeed, there is evidence that equity prices in OECD countries have become more correlated over the past 25 years (Chart A).

Economic theory suggests that if world financial markets are fully integrated and each country's residents hold

Chart A Index of comovement in OECD equity markets^(a)



Sources: Bloomberg, Thomson Datastream and Bank calculations.

(a) Index calculated as the 60-day rolling common factor between OECD equity indices. A rise indicates an increase in the proportion of movements in different countries' equity markets that occur simultaneously.

internationally diversified asset portfolios, all 'country-specific' variation in consumption would be eliminated. In this case, domestic consumption growth would depend only on global income growth, and growth rates of consumption across countries would be equalised.

However, existing studies suggest that actual risk-sharing is not nearly this extensive in practice (Lewis (1999)), although recent evidence indicates it may be becoming more widespread (eg Sorensen *et al* (2005)). The limited cross-country risk-sharing seen in practice may reflect several factors: (i) global financial integration is still incomplete, with many EMEs still maintaining some capital controls; and (ii) people still have a preference for domestic assets (so-called 'home-bias'), possibly because investors are imperfectly informed about investment opportunities abroad.

(1) See IMF (2007) for recent evidence on financial linkages and spillovers, and Schnabel and Shin (2004) for a theoretical exposition of these intermarket spillovers.

preferred balance between risk and expected return, and insure against unexpected fluctuations in their income. The box on page 246 examines international risk-sharing in greater depth.

Consumption smoothing — through international borrowing and lending — is another motive for international trade in financial instruments. Domestic residents expect some fluctuations in domestic economic growth, but they generally dislike large variations in their consumption. One way to help avoid such fluctuations when domestic income growth is low, is to borrow funds from abroad to finance consumption, in the form of imports.⁽¹⁾ All else equal, this will result in a deteriorating current account matched by a fall in the NIIP. When the domestic economy improves, residents can repay their external debt — or purchase foreign assets. This could improve the current account position.

Although international trade in financial instruments is associated with these benefits, it also exposes domestic residents to external shocks which they would not otherwise have been subject to. The analysis presented later in this article looks at the potential impacts of these particular shocks in greater depth.

Data issues in external balance sheet analysis

An essential first step in analysing the economic implications of balance sheet structures is to construct data that is as accurate as possible. While extensive data on international financial flows are available, data on cross-country stocks of assets and liabilities have only recently begun to be collected, and are still largely incomplete.

While most countries now publish their international investment positions, usually these only give breakdowns in terms of broad asset classes, and for most countries these data only cover the relatively recent past. A thorough analysis of the external vulnerabilities also requires information on the geographical and currency decomposition of external assets and liabilities, ideally over many decades. Recently, some progress has been made in data collection, most notably by the IMF. For example, the Co-ordinated Portfolio Investment Survey (CPIS)⁽²⁾ collects international data on the geographical distribution of portfolio assets and liabilities, on an annual basis. Another notable example is work by Lane and Milesi-Ferretti (2006), who construct estimates of gross balance sheet positions by asset class for 145 countries over the period 1970 to 2004. However, neither the CPIS or the work by Lane and Milesi-Ferretti (2006) include currency decompositions.

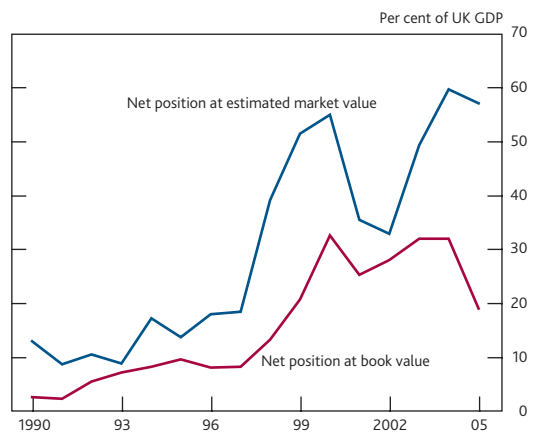
Another important area in data construction lies in the treatment of FDI. In many countries, FDI is reported at book value, which reflects the value of an asset on the purchase date rather than its market value, which reflects the current price of the asset. Unlike the book-value measure, the market-value

measure of balance sheets reflects valuation changes of assets and liabilities after they were acquired, due to movements in market prices and valuations, including exchange rates. Thus, the market-value measure is likely to capture more accurately the value that can be acquired by selling assets. In the United Kingdom, only the book value of FDI is published in official data.

For this article, market-value estimates of the currency composition of UK external assets and liabilities have been constructed. These data permit an analysis of UK balance sheet structure which can highlight exposure to particular shocks faced by the United Kingdom. The methodology used for producing these data is outlined in the box on page 248.

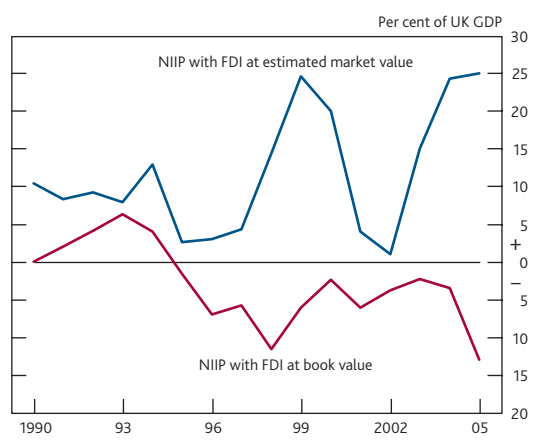
The constructed data include market-value estimates of UK FDI assets and liabilities. It is clear from **Chart 4** that these differ considerably from the published book-value estimates. A striking implication of these estimates is that, in aggregate,

Chart 4 UK net FDI: book versus estimated market values, 1990–2005



Sources: OECD, ONS, Thomson Datastream and Bank calculations.

Chart 5 UK NIIP with FDI at book and estimated market values, 1990–2005



Sources: OECD, ONS, Thomson Datastream and Bank calculations.

(1) Domestic residents can also borrow funds at home, but when a country's residents on aggregate want to borrow, then the only way to do this is to make use of international financial markets.
 (2) See www.imf.org/external/np/sta/pi/cpis.htm.

Estimating the market-value currency breakdown of the UK balance sheet

This box explains how the market-value estimate of the UK balance sheet used in this article is constructed.

Foreign direct investment

In the *Pink Book*, published by the ONS, UK foreign direct investment assets and liabilities are reported at book value, which reflects the value of an asset at the time of acquisition. Unlike portfolio equities, FDI assets are not regularly traded in financial markets, so that their market values, reflecting the current valuation of the underlying assets, need to be estimated.

In estimating the market value for UK FDI assets and liabilities, Pratten's (1996) panel data study of UK companies was used. Based on Pratten's estimates, it is assumed that in 1991, the market to book value ratio for UK FDI assets was 1.75, and the same ratio for UK FDI liabilities was 1.50. After 1991, the market value of UK FDI assets in a given country, in local currency terms, is assumed to have moved in line with the country's equity market indices. Similarly, the market value of UK FDI liabilities is assumed to have moved in line with the FTSE 100 index.⁽¹⁾

The market-value estimates of FDI assets were then converted into sterling, based on the assumption that the FDI assets in a given country are denominated in the currency of that country. Similarly, all of UK FDI liabilities are assumed to be denominated in sterling. Estimates of the geographical distribution of FDI assets were obtained from the OECD's *International Direct Investment Statistics*. The resulting estimates suggest that in 2005, the market to book value ratios for the United Kingdom's FDI assets and liabilities were 2.09 and 1.65, respectively.

the United Kingdom is estimated to have a *positive* total net asset position equivalent to 25% of UK GDP in 2005, compared to a *negative* net asset position of 13% of GDP if FDI is estimated at book value (**Chart 5**).

The balance sheet estimates used in this article are based on data that are subject to some uncertainties. Methods of construction can vary considerably from country to country. Furthermore, different agencies sometimes use different data collection methods, causing estimates of a country's external balance sheet position to vary. Although this article takes care to construct as good data as possible, all data are subject to possibly large revisions and uncertainties, and the data in this article are no different.

There is, however, great uncertainty surrounding these market-value estimates of UK FDI assets and liabilities, as the actual sales value of FDI assets could have evolved differently from equity markets.⁽²⁾

Portfolio equities

Estimates of the market value of total portfolio equity assets and liabilities were obtained from the *Pink Book*. For the currency breakdown, the IMF's Co-ordinated Portfolio Investment Survey (CPIS) data were used to obtain information about the geographical location of UK portfolio equity assets. As in the case of FDI, it is assumed that UK portfolio equity assets held in a given country are denominated in the currency of that country, whereas all UK equity liabilities are assumed to be denominated in sterling.

Portfolio debt and other investment

The market-value estimates of total portfolio debt and other investment were obtained from the *Pink Book*. For the currency breakdown, ONS estimates based on the IMF's CPIS data were used.

Reserves

The market-value estimates of total reserve assets were obtained from the *Pink Book*. The currency breakdown of reserve assets were estimated using the Bank of England's UK international reserves data.⁽³⁾

In theory, financial derivatives should also be recorded on the external balance sheet. However, these data are not currently available for the United Kingdom.

(1) Similar methods were used by Gourinchas and Rey (2005) for estimating the market value of US assets and liabilities.

(2) Whitaker (2006) has previously highlighted the measurement problems associated with the United Kingdom's NIIP.

(3) Available from www.bankofengland.co.uk/statistics/reserves/index.htm.

What do we learn from the analysis of balance sheets?

This section illustrates how analysis of the asset composition, regional distribution and currency mix of external balance sheets can help anticipate the response of a country's consumption to particular shocks.

The asset and liability composition of balance sheets

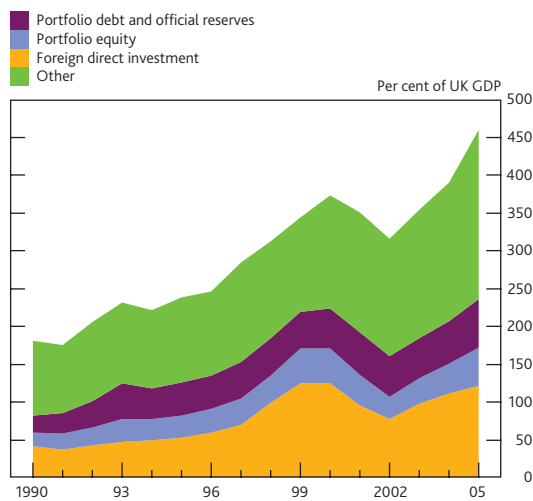
A wide range of assets are exchanged internationally. Broadly speaking, statistical agencies distinguish between FDI, portfolio equity, portfolio debt, official foreign exchange reserves, financial derivatives⁽¹⁾ and 'other' investment. The impact of shocks on domestic residents can be strongly

(1) These instruments can be used by domestic resident to hedge against unfavourable changes in the value of assets and liabilities.

influenced by the type of external assets and liabilities that are held.

The market-value estimates of UK external assets and liabilities constructed for this article, decomposed by asset class, are illustrated in **Charts 6** and **7**. The most striking feature of these charts is the size of UK gross positions relative to UK GDP. UK assets and liabilities amounted to approximately 460% and 435% of UK GDP in 2005, respectively, compared to 90% and 110% in the United States (**Charts 10** and **11**).

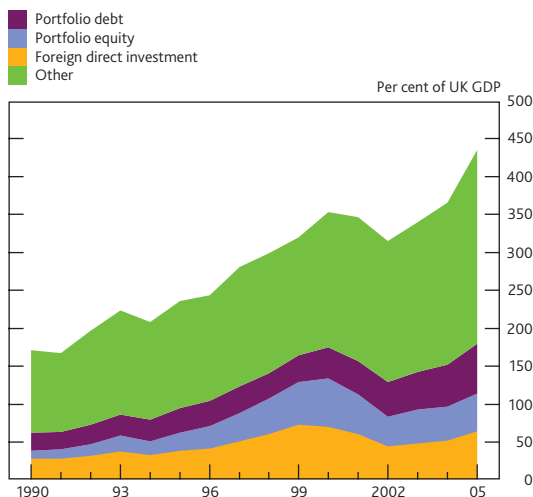
Chart 6 UK gross asset position, 1990–2005^(a)



Sources: OECD, ONS, Thomson Datastream and Bank calculations.

(a) FDI is adjusted for market values.

Chart 7 UK gross liability position, 1990–2005^(a)



Sources: OECD, ONS, Thomson Datastream and Bank calculations.

(a) FDI is adjusted for market values.

Also striking is the very large proportion of 'other' UK assets and liabilities. Data suggest that 'other' liabilities consisted of 70% foreign currency deposits and 30% loans in 2005, and 'other' assets consisted of 76% foreign currency deposits and 24% loans in 2005.⁽¹⁾ However, more detailed data on the

type and maturity of these deposits and loans are not available.

The large size of UK external balance sheet positions may reflect the international activities of large complex financial institutions (LCFIs) based in the City of London, and as a result, may not reflect UK households' direct exposures. The UK financial sector channels funds from one country to another via banks and other institutions located in the United Kingdom. Changes in the value of these exposures may not have a direct impact on UK consumers other than via their equity holdings in these financial institutions. However, extreme valuation changes in the balance sheets of LCFIs could potentially lead to financial instability, with adverse macroeconomic repercussions. As a result, any balance sheet vulnerabilities of these institutions may also represent vulnerabilities of the domestic economy, albeit of an indirect nature.

The ratio of equity to debt-type assets and liabilities is a key feature of balance sheets. Debt or 'interest-sensitive' assets include short and long-term marketable debt, money market instruments and 'other assets', which include trade credit, bank loans, currency and deposits. Equity-type assets include portfolio equities and FDI. Unlike debt, foreign purchases of domestic equity assets represent the transfer of ownership of private firms abroad.

The asset composition of the external balance sheet in net terms is similar in both the United Kingdom and the United States. External balance sheets in both countries are leveraged: they have net liabilities in debt-type securities, and net assets in equity-type securities (**Chart 8**). For this reason, their behaviour has been likened to that of a venture capitalist or hedge fund:⁽²⁾ borrowing low-risk assets, and using the proceeds to invest in riskier assets with higher expected returns.⁽³⁾

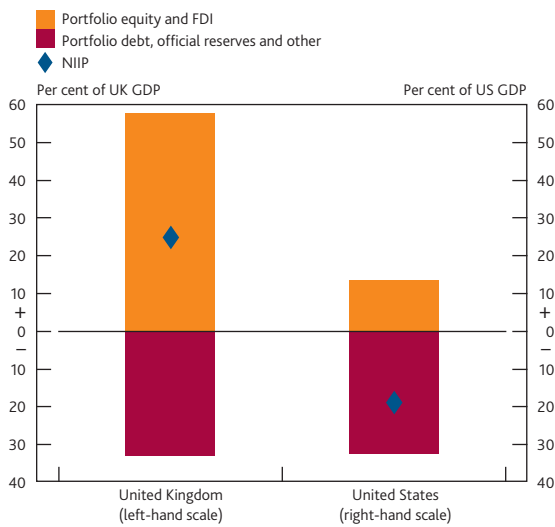
Chart 8 also illustrates that the United Kingdom's positive net asset position in 2005 was due to its equity and FDI holdings. As a result, the United Kingdom's NIIP is sensitive to developments in global equity markets. **Chart 9** shows how equity prices around the world rose in the late 1990s and then fell back again from late 2000 onwards. Since 2003, equity prices have recovered. At the same time, as shown in **Chart 5**, the United Kingdom's NIIP at market values rose from a position of broad balance in 1996 to a positive position of approximately 20% of UK GDP in 2000. Thereafter, the UK NIIP returned to approximately zero in 2002. Since 2003, the United Kingdom's NIIP has recovered alongside equity

(1) ONS *Pink Book* (2006).

(2) This comparison has been made by Whitaker (2006) for the United Kingdom, and Gourinchas and Rey (2005) for the United States.

(3) Although equity securities are generally thought to be more risky than debt, this is not necessarily true. For example, debt contracts with low credit ratings can be more risky than, say, equity claims on companies with high credit ratings.

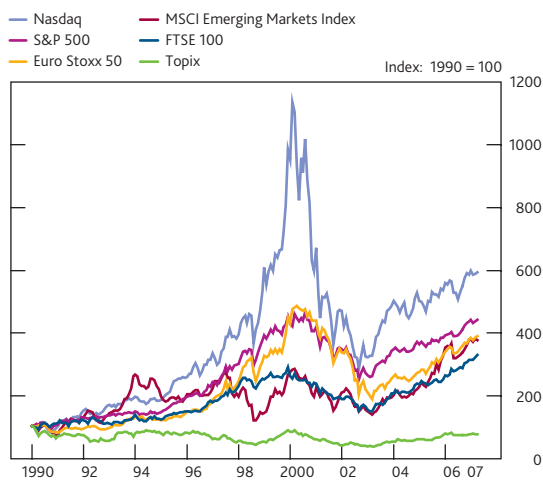
Chart 8 UK and US NIIP by asset type, 2005^(a)



Sources: OECD, ONS, Thomson Datastream, US Bureau of Economic Analysis and Bank calculations.

(a) FDI is adjusted for market values.

Chart 9 Global equity market trends



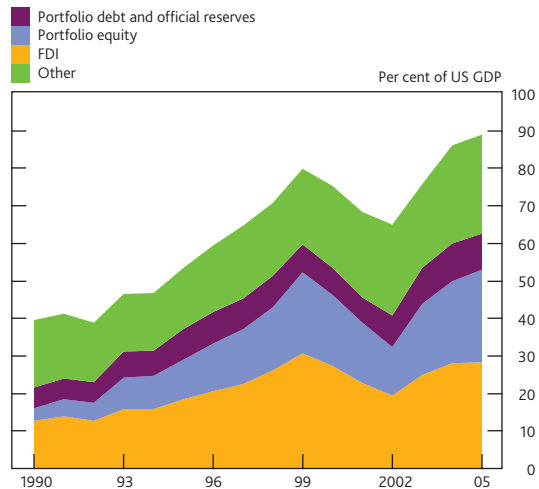
Sources: Bloomberg, Thomson Datastream and Bank calculations.

markets. This illustrates how the United Kingdom's net external asset position is exposed to variations in global equity prices through its large FDI and portfolio equity asset holdings.

Charts 10 and 11, respectively, show the estimated gross asset and liability positions of the United States, measured in market values as a percentage of US GDP. Since the early 1990s, equity-type assets (portfolio equity plus FDI) have made up an increasingly large proportion of US external assets (**Chart 10**). In contrast, equity liabilities formed an increasing proportion of total liabilities up to 2000, but subsequently have broadly remained flat, while foreign purchases of US debt have increased (**Chart 11**).

In late 2000, US equity prices began to fall sharply. If foreigners' claims on the United States had been more heavily weighted to debt rather than equity, the wealth of US households would have had to absorb a greater part of the

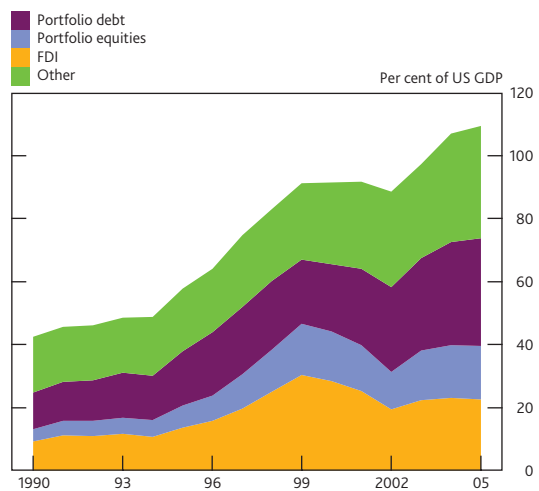
Chart 10 US gross asset position, 1990–2005^(a)



Source: US Bureau of Economic Analysis.

(a) FDI is adjusted for market values.

Chart 11 US gross liability position, 1990–2005^(a)



Source: US Bureau of Economic Analysis.

(a) FDI is adjusted for market values.

market fall. But because foreigners had increased their holdings of US equities up to 2000, some of the losses generated from the stock market correction in the United States were distributed abroad. Had global equity prices not fallen alongside US equity prices, the net external wealth of US consumers would have increased. However, during 2001–02 global equity prices did fall. Consequently, the value of US equity assets abroad fell (**Chart 10**).

Regional distribution

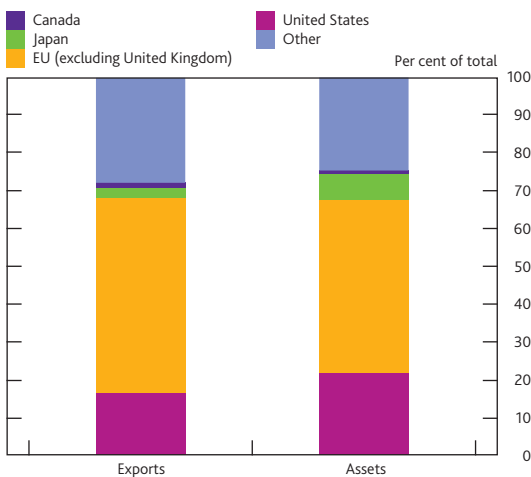
Concentration of asset holdings in a region on which a country also depends heavily for its export demand means that it will be more exposed to that region's economic cycles than suggested by its trade links alone. If residents do not actively diversify their asset portfolios, strong bilateral trade linkages are likely to be naturally reflected in linkages in asset holdings, as domestic residents receive foreign currency as payment for

exported goods (see, for example, Lane and Milesi-Ferretti (2006)).

Chart 12 breaks down the United Kingdom’s external asset holdings and trade linkages by geographic area.⁽¹⁾ The geographical distribution of its external assets adds to its exposure to the rest of the EU through trade links. If GDP growth in the rest of the EU were to slow sharply, resulting in a fall in import demand, UK export receipts would be reduced. This effect would be amplified if the euro were also to depreciate. At the same time, such developments could also reduce the value of UK holdings of external assets, increasing the impact of developments elsewhere in the EU on the United Kingdom.

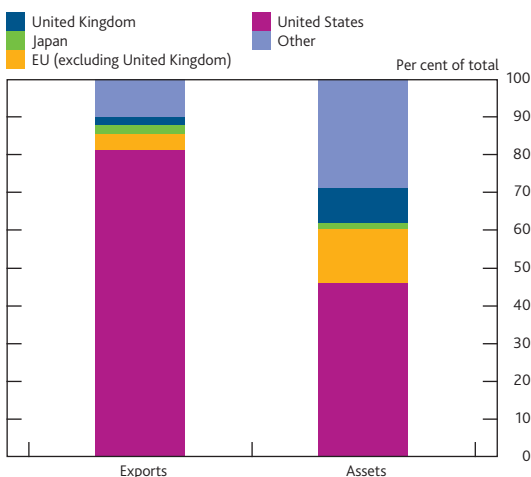
Canadian exports are also concentrated in one region, namely the United States (**Chart 13**). Similarly, the largest single share

Chart 12 UK exports and asset holdings by region, 2004(a)



Source: ONS *Pink Book* (2006).
 (a) FDI is not adjusted for market values.

Chart 13 Canadian exports and asset holdings by region, 2005(a)



Source: Statistics Canada.
 (a) FDI is not adjusted for market values.

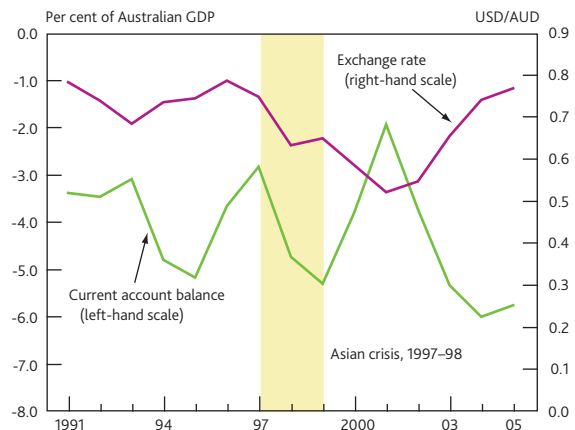
of asset holdings is with this area. That increases the likely impact on Canada of a growth slowdown in the United States that is coupled with a Canadian dollar appreciation against the US dollar.

Currency mix

Exchange rate movements generate nominal capital gains or losses in domestic currency terms when there are cross-border holdings of assets and liabilities that are denominated in different currencies — a so-called ‘currency mismatch’. For example, in the past many emerging market economies (EMEs) have issued debt denominated in foreign currency, without holding similarly sized foreign currency assets. This affected the way policymakers could respond to sharp exchange rate movements during the Asian financial crisis in 1997–98 (see, for instance, Goldstein and Turner (2004)).

The experience of Asian EMEs is in contrast to the case of Australia during the Asian crisis. During 1996–98, the Australian dollar depreciated by 20% against the US dollar (**Chart 14**). But unlike many Asian EMEs, Australia’s external liabilities were mostly denominated in domestic currency, so it was able to respond to the fall in its currency by cutting official interest rates. This helped Australia to run a larger current account deficit and achieve a higher GDP growth rate in 1998 than the year before.

Chart 14 Australian exchange rate and current account balance



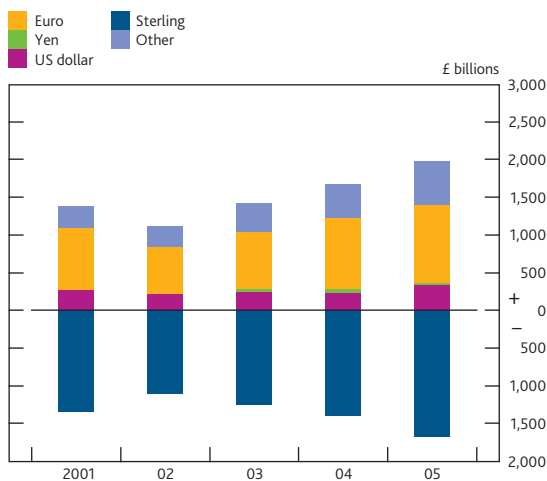
Sources: IMF *International Financial Statistics* and Thomson Datastream.

Chart 15 breaks down the United Kingdom’s external assets and liabilities (measured in market values) by currency. Like most industrialised economies, the United Kingdom has more liabilities than assets denominated in its own currency, and more assets than liabilities in foreign currencies. Thus, when sterling depreciates against other currencies, the resulting revaluation of external assets and liabilities increases UK NIIP. Conversely, when sterling appreciates against other currencies, the revaluation reduces UK NIIP. This currency mix provides an

(1) Measures of external assets by region are in book-value terms.

effective hedge against negative terms of trade shocks: when the depreciation of the domestic currency increases the costs of imports, the higher value of external wealth and income will provide additional sources of financing them. Moreover, the currency diversification of net asset positions implies that an appreciation of sterling against any one currency may not drastically reduce UK NIIP if this is accompanied by a depreciation against other currencies. For example, NIIP would not fall drastically through the revaluation effect even if the dollar depreciated sharply against sterling, as long as the euro appreciated against sterling. As **Chart 16** shows, the United States is in a similar position to the United Kingdom. In the next section, the quantitative implications of this hedging effect are illustrated for both countries.

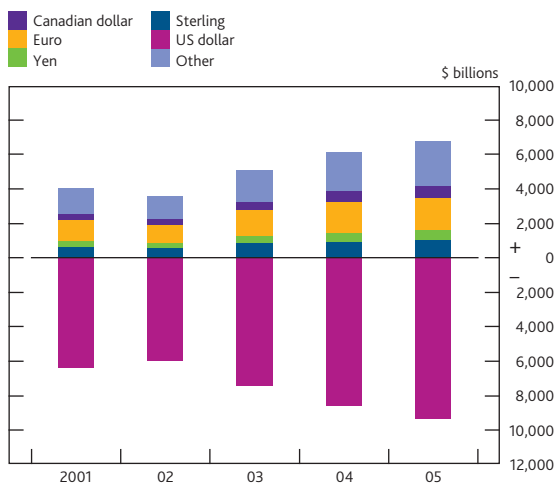
Chart 15 UK net international investment position by currency^(a)



Sources: Bank calculations based on Bank of England, IMF CPIS, OECD and ONS data.

(a) FDI is adjusted for market values.

Chart 16 US net international investment position by currency^(a)



Sources: Bank calculations based on IMF CPIS, OECD, US Bureau of Economic Analysis and US Treasury data.

(a) FDI is adjusted for market values.

Balance sheet adjustment and the real economy

How important is the balance sheet channel in influencing the real impact of shocks? This section addresses this question by considering specific examples to show the impact on external balance sheets of extreme but unlikely asset price movements.

A complete analysis which incorporates the full range of macroeconomic and financial channels for such an adjustment is not possible with currently available models. Here, the detailed decompositions of UK and US external balance sheets constructed for this article are used to examine revaluation effects for UK and US assets and liabilities. The scenarios analysed are taken from those employed in the April 2007 *Financial Stability Report (FSR)* to assess the possible implications of an unwinding of current 'global imbalances'. These scenarios do not represent forecasts, but merely serve to illustrate possible upper bounds on the impact of balance sheet revaluation on consumption.

The US current account deficit has recently reached record levels, but whether this is a concern is a subject of considerable debate. Observers fall broadly into two camps: those who argue this creates serious risks for global economic and financial stability (for example Cline (2005), Obstfeld and Rogoff (2000, 2004), Roubini and Setser (2004)); and those who argue it is simply a by-product of real and financial globalisation (for example Caballero (2006), Cooper (2005), Dooley *et al* (2003, 2004)). Without taking a view on which of these interpretations is more plausible, it is possible to make a qualified assessment of the possible impact of a sharp rebalancing.

One channel through which the US current account deficit could 'unwind' is via a large depreciation of the US dollar against other currencies. In practice, such a depreciation may occur over a prolonged period. Indeed, the dollar has already fallen by 25% against sterling since the end of 2000. However, a sharp withdrawal of capital from the United States could bring about a rapid dollar depreciation and a sharp fall in equity prices, although in practice this is not very likely. Here, two specific scenarios are considered:⁽¹⁾

(1) Scenario A, in which the dollar depreciates by 30% against the euro and 15% against sterling, while global equity prices (including US and UK equity prices) fall by 20%;

(2) Scenario B, in which the dollar depreciates by 30% against all currencies and global equity prices fall by 20%.

(1) In addition to exchange rate and equity price movements, the April 2007 *FSR* scenarios also incorporate the impact of falling UK and US property prices. The impact of such falls in property prices on external assets and liabilities is not considered here as the proportion of properties owned by non-residents is not readily available.

Scenario A — in which sterling appreciates against the dollar but depreciates against the euro — is designed to illustrate the hedging effect of the currency diversification in the UK balance sheet. Scenario B helps to illustrate the impact of a severe global asset price shock. In both scenarios, the fall in global equity prices is assumed to reduce the market value of both FDI and portfolio equities.

The following analysis complements existing studies by examining balance sheet valuation effects arising from shocks to asset prices, but without linking macroeconomic developments — such as possible paths for net exports, US interest rates and investment income — back to their balance sheet impacts.⁽¹⁾ While there are many possible sources for these shocks, and the precise economic impact will depend on these, the exact source is left open here. As such, the analysis presented here should be seen as partial and preliminary.

Table A shows the valuation changes in US assets, liabilities and the NIIP under the two scenarios as percentages of US GDP. Under Scenario A, a 20% fall in global equity prices will reduce both US external assets and liabilities. The market value of US external assets falls by 10% of US GDP due to the declines in equity prices outside the United States. The fall in the market value of US external liabilities is a little smaller, at 7% of GDP, since its equity-type liabilities (FDI and portfolio equities) are smaller than its equity-type assets. The net result is a fall in US NIIP amounting to 3% of GDP (**Table A**, row (a)).

Table A Estimated impact of shocks on US assets and liabilities^(a)

Per cent of GDP	Assets	Liabilities	NIIP
Scenario A			
(a) 20% fall in global equity prices	-10	-7	-3
(b) 30% fall in US\$ against the euro and 15% fall in US\$ against UK£	6	1	5
(a) + (b)	-4	-7	3
Scenario B			
(c) 30% fall in US\$ against all currencies	16	1	15
(a) + (c)	6	-6	13

Sources: Bank calculations based on IMF CPIS, Thomson Datastream, US Bureau of Economic Analysis and US Treasury.

(a) Calculations are based on an estimated 2005 balance sheet and the financial account of the US balance of payments in 2006. FDI is adjusted for market values. Numbers may not add up due to rounding.

In addition, currency mismatch between assets and liabilities could potentially affect the vulnerability of a country to exchange rate movements. Since US liabilities are mostly dollar denominated and assets are mostly foreign currency denominated, a fall in the dollar by 30% against the euro and 15% against sterling will increase the value of its assets by more than the value of its liabilities, thus increasing its NIIP by 5% of its GDP (**Table A**, row (b)). In fact, the capital gains

generated by these exchange rate movements are larger than the capital losses on US foreign investment produced by a 20% fall in global equity prices, thus increasing US NIIP by 3% of GDP (**Table A**, row (a)+(b)).

Under Scenario B, a 30% fall in the dollar against all other currencies will increase US NIIP by 15% of GDP (**Table A**, row (c)).⁽²⁾ Combined with a 20% fall in global equity prices this would increase its NIIP by 13% of GDP (**Table A**, row (a)+(c)). This illustrates that the US NIIP could rise in the event of shocks involving sharp falls in global equities and the dollar, because most of its liabilities are dollar denominated.

Table B illustrates how the same shocks will affect the UK balance sheet. The effect of a global equity price shock on the United Kingdom is qualitatively similar to that on the United States, as both countries hold positive net external asset positions in equity assets: a 20% fall in global equity prices reduces UK NIIP by 11% of GDP (**Table B**, row (a)). The larger UK adjustment reflects the fact that UK residents are estimated to have proportionately more equity-type assets in their portfolios than US residents.

Table B Estimated impact of shocks on UK assets and liabilities^(a)

Per cent of GDP	Assets	Liabilities	NIIP
Scenario A			
(a) 20% fall in global equity prices	-33	-22	-11
(b) 30% fall in US\$ against the euro and 15% fall in US\$ against UK£	8	-2	10
(a) + (b)	-25	-23	-1
Scenario B			
(c) 30% fall in US\$ against all currencies	-48	-40	-8
(a) + (c)	-81	-62	-19

Sources: Bank calculations based on Bank of England, IMF CPIS, OECD, ONS and Thomson Datastream.

(a) Calculations are based on an estimated 2005 balance sheet and the financial account of the UK balance of payments in 2006. FDI is adjusted for market values. Numbers may not add up due to rounding.

Scenario A illustrates the 'hedging' effect of currency diversification on the UK balance sheet. The reduction in UK NIIP due to the depreciation of the dollar against sterling is more than fully offset by the increase in the NIIP due to an appreciation of the euro against sterling, since the United Kingdom's positive net asset position in euro is larger than its net asset position in dollars (**Table B**, row (b)). In fact, the net gains in NIIP through these exchange rate movements are almost as large as the losses to NIIP due to a 20% fall in global equity prices, so that the UK NIIP falls only by 1% of

(1) The problem of incorporating detailed balance sheet interlinkages in a global general equilibrium model is currently an area of active research (see, for example, Devereux and Sutherland (2006, 2007); Evans and Hnatkoska (2005); Kollmann (2006); Engel and Matsumoto (2006); Tille (2005)). But existing studies have yet to reach a consensus over how to address this issue.

(2) A 10% fall in the US dollar would increase US NIIP by 5% of its GDP in our simulation, consistent with Gourinchas and Rey's (2005) calculation.

GDP under Scenario A (Table B, row (a)+(b)). This illustrates that asset diversification combined with differential movements in exchange rates can potentially mitigate the negative impact of large shocks in the global economy.

Scenario B assumes that the dollar falls by the same amount against all currencies, such that sterling rises against the dollar while remaining constant against all other currencies. The mirror image of the positive effect of the dollar depreciation on the US balance sheet is a negative effect on the combined balance sheets of other countries that hold dollar-denominated assets, including the United Kingdom. The precise impact on any individual country will depend upon the particular currency composition of its assets and liabilities. In the case of the United Kingdom, a 30% depreciation of the dollar against all currencies reduces its NIIP by 8% of GDP (Table B, row (c)), as its dollar-denominated assets are larger than its dollar-denominated liabilities. Combined, the global equity and dollar falls under Scenario B reduce the United Kingdom's NIIP by 19% of GDP (Table B, row (a)+(c)).

The implications of external balance sheet structures for the real economy

Although an assessment of the impact of balance sheet adjustments on the real economy is difficult with currently available models, the possible real effects in crude terms can be described using rules of thumb.

The valuation effects considered in this section, if permanent, would have a direct effect on the net wealth of domestic residents. In the long run, changes to wealth can influence the real economy through a number of channels. For example higher wealth is thought to lead directly to increases in consumption (see, for example, Poterba (2000) and Barrell and Davies (2006)). Estimates of the size of this 'wealth effect' vary over time, and depend on a number of factors, including the source of the shock that has caused the change in wealth. However, for a set of industrialised countries, Labhard *et al* (2005) estimate that on average for a 1% increase in wealth, 0.024% will be consumed per year in the long run.⁽¹⁾

Mechanically, because of diversification in external balance sheets, in Scenario A this estimate implies a long-run rise in consumption of 0.1% of GDP per year in the United States, and a negligible impact on UK consumption. In the more severe Scenario B, these estimates imply that the level of consumption could fall by around 0.5% of GDP per year in the United Kingdom, and rise by 0.3% of GDP per year in the United States in the long run, purely because of the revaluation effects.

These calculations assume that the nominal valuation changes in Tables A and B translate into long-run *real* valuation changes in assets and liabilities, and that no other

macroeconomic variable is affected. While these figures provide some crude estimates of the long-run effects of these scenarios, there are many additional factors that need to be taken into account. First, the impact of a given valuation change in the external balance sheet on consumption is likely to depend on the source of the shock which caused it, and that is not considered here. Second, it is important to consider the impact of shocks to the balance sheet on *real* wealth, which is given by nominal wealth deflated by the price of goods in residents' consumption baskets. For example, while equity price shocks directly affect real wealth, shocks to exchange rates lead to both nominal wealth effects and changes in the price of imports and exports. To the extent that UK consumption consists of goods imported from the United States, an appreciation of sterling against the dollar that leads to a fall in UK wealth may also make imports from the United States cheaper, at least partly counteracting any negative impact of changes in asset values on consumption.

Finally, various frictions in the economy can alter the short-run impact of a shock operating through the balance sheet. Depending on the friction involved these can amplify or dampen adjustment to the initial shock. Examples include: credit market frictions (Bernanke *et al* (1999), Aghion *et al* (2001), Krugman (1999), and Cespedes *et al* (2004)); and frictions influencing the speed of exchange rate pass-through.

While these arguments represent important caveats, the message from these simulations is that valuation effects arising from sudden asset price movements have the potential to cause material transfers of wealth between countries, with potentially long-run effects on consumption and economic welfare. However, effective portfolio diversification could provide a powerful mechanism to mitigate the economic impact of sharp asset price movements.

Conclusions

As a greater proportion of domestic wealth is allocated to foreign assets, domestic demand is likely to become more strongly influenced by developments abroad, while the influence of domestic factors diminishes. Thus, understanding the transmission mechanism of shocks from abroad through the external balance sheet, and its implications for domestic inflation and financial stability, is increasingly important for both central banks and international economic institutions, such as the IMF. This paper contributes to this effort by constructing market-value estimates of the United Kingdom's external balance sheet, comparing its characteristics with the balance sheets of other countries, and analysing the impact of specific external shocks on the United Kingdom's external assets and liabilities.

(1) For the United States, Fair (2004) estimates that for a permanent 1% increase in wealth, approximately 0.03% will be consumed per year.

Detailed examination of external balance sheets can help authorities understand more fully the nature of external shocks a country is exposed to. Information on the geographic dispersion, currency composition, maturity and type of assets and liabilities, when combined with information on an economy's consumption and production patterns, permit a richer analysis of the likely impact of a wide range of shocks.

Despite recent progress, research on the balance sheet channel of shock transmission mechanism between countries is still at an early stage. In particular, further research is needed to illuminate which economic factors and frictions are most important in determining the speed and magnitude of the transmission mechanism through external balance sheets.

In many cases, greater understanding of these issues is severely hampered by the lack of reliable and timely data. In particular, currency decompositions of external assets and

liabilities are not readily available for many countries. Better data therefore appear to be the first step towards piecing together a picture of the impact of financial globalisation on the international transmission mechanism.

The analysis presented in this paper suggests that the net external asset position of the United Kingdom, measured in market values, would deteriorate in response to a large adverse global equity market shock. This is because the United Kingdom holds a large positive net asset position in equity-type assets (FDI and portfolio equities). UK assets are particularly exposed to developments in other European countries, which are also important as its trading partners. However, a large depreciation of a particular currency against sterling should have a limited impact on its NIIP if accompanied by an offsetting appreciation of another major currency against sterling, since the United Kingdom's external assets are relatively well diversified across currencies.

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