ARTICLE

The UK's international investment position

Damian Whittard and Jawed Khan
Office for National Statistics

SUMMARY

This paper describes the path of the UK's net asset position with the rest of the world. Notwithstanding that the UK has run a substantial current account deficit for over a quarter of a century, at the beginning of 2009 the net asset position was not far off balance. The paper begins by detailing recent developments in both the UK's overseas balance sheet, known as the international investment position (IIP), and the current account deficit. It examines the link between the IIP and the cumulative current account deficit over the past forty years and explains that the divergence between the two is due to other changes. The paper then introduces a model which enables a decomposition of these other changes into currency, price and other volume effects. The results are reported in terms of annual and quarterly changes before conclusions are drawn.

The UK's overseas balance sheet – the IIP

The IIP records the UK's balance sheet with the rest of the world. It records the (gross) holdings of foreign assets by UK residents and the (gross) holdings of UK assets by foreign residents at a specific point in time. The net IIP (gross assets less gross liabilities), shows the stock excess of UK claims on the rest of the world over the rest of the world claims on the UK.

The IIP records assets and liabilities classified by functional category. The four functional categories are:

- direct investment (DI)
- portfolio investment (PI)
- other investment (OI)
- reserve assets

Direct investment occurs when a resident entity in one economy obtains a lasting interest in an enterprise in another economy, has a significant degree of influence, and owns at least 10 per cent equity. Portfolio investment is recorded when an investment is made representing less than 10 per cent of the equity capital and includes equity and debt securities in the form of bonds and notes, and money market instruments issued by foreign governments and foreign registered companies. Other investment is investment other than direct and portfolio investment and includes trade credit, loans, currency and deposits, and other assets and liabilities. Reserve assets are the UK's official holdings of short term assets that can very quickly be converted into cash and includes gold, convertible currencies, Special Drawing Rights, and changes to the UK reserve position in the IMF.

The data for the UK's balance sheet comes from a number of different ONS and Bank of England (BoE) sample surveys as well as various census sources. Due to the diverse sources needed to measure the UK's IIP, there is a degree of approximation. The data are also subject to revisions due to late responses to quarterly inquiries, annual benchmarking and methodological changes. It is therefore important not to place too much emphasis on precise figures. **Box 1** gives greater detail on issues with measurement.

Table 1 records the UK's IIP from 2003 to 2009. The data is presented for assets, liabilities and the net asset position. This presentation is in turn broken down by the four functional categories.

Table 1 reveals that UK assets and liabilities have grown considerably between 2003 and 2008; assets (UK investment abroad) have increased by 101 per cent and liabilities (foreign investment in the UK) have increased by 96 per cent in current terms. Growth in direct investment liabilities has been considerably faster than growth in direct investment assets, although starting from a considerably lower base. The UK continues to have a considerable net direct investment asset position. Portfolio investment assets and liabilities have grown at similar rates, approaching 80 per cent in current terms over the same period. The largest growth, however, has been in terms

Box 1
Issues with measurement

Due to the diverse data sources, the revisions process and the size of the figures involved, it is important not to put too much focus on exact numbers. The latest quarterly data, in particular, should be treated as provisional as it is subject to regular revisions up to the inclusion of annual benchmark data. The UK's assets and liabilities are over £6 trillion and therefore a 1.0 per cent measurement error in UK assets or liabilities equates to a measurement error of over £60 billion. The risks are even greater when netting two large gross figures to calculate a 'relatively' small net position. Depending on the direction of the measurement error, a 1.0 per cent measurement error in both assets and liabilities could compound the net error to £120 billion.

Wherever possible the UK's Balance of Payments is valued at market prices, however, for direct investment, when the shares are not openly traded, it is difficult to know exactly what the market price is. In line with international guidance and in order to ensure comparability across international accounts, a proxy for the market value is estimated using own funds at book value[1]. Due to data limitations, in the case of some investments, historic costs are used. The expectation is that by using book value and historic cost there will be a consistent bias to under record the market value of these estimates.

The United States Bureau of Economic Analysis (BEA) presents different values of direct investment in the IIP, including, historic cost, current-cost and market costs (Landefeld and Lawson 1991). In 1989, the BEA's revaluation of direct investment assets from historical costs to market costs increased by $431.1 billion, to $804.5 billion.

An analysis of the UK's Balance of Payments suggested that positive net investment income, which indirectly feeds through to the IIP via the financial account, was driven by UK stocks of foreign assets generating higher rates of return than stock of UK assets held by foreign residents (Whitaker 2006 and Chamberlin 2009). The authors suggested that this was because the rate of return of direct investment income may be exaggerated by underestimating the value (book value rather than market value) of direct investment assets. The same argument applies equally for liabilities, but there are two reasons why the effect is expected to be larger for assets rather than liabilities. Firstly the UK has a larger stock of foreign direct investment assets to be revalued than foreign-owned UK direct investment liabilities. And secondly, the older the stock of direct investment the greater the potential revaluation, particularly if the assets are recorded at historic cost. As the UK's flows of direct investment abroad have exceeded foreign direct investment in the UK in all but eight years from 1963 (when ONS records began) to 2009, it is likely that the UK's ownership of foreign stock, on average, will be older than the stock of foreign direct investment in the UK - thus making UK's direct investment liabilities closer to market value than its assets.

The analysis gives weight to the expectation that, as with the USA experience, if direct investment assets and liabilities were revalued to reflect market price, this would lead to an upward revaluation of the UK's IIP. This is supported by research from Pratten (1994) who estimated market price of direct investment assets to be approximately double. Senior et al (2001) updated the work and estimated that assets and liabilities could be as high as three times book value. The analysis concluded that the overall effect was likely to underestimate the UK's net external assets.

A further issue is that the UK's coverage of the IIP is incomplete as financial derivatives are currently excluded. Financial derivatives data are incorporated into the UK's financial account but published as an annex to the IIP - they are not included within the main aggregates as the data are developmental. In the June 2010 issue of the Balance of Payments Statistical Bulletin and the 2010 edition of the Balance of Payments Pink Book, ONS, for the first time, intend to introduce data on financial derivatives business of the UK banks into the main aggregates of the IIP. Data for securities dealers and insurance and pension funds will continue to be excluded from the UK's IIP whilst the data continues to be validated and estimates improved.

Table 1
UK's Annual IIP, 2003 to 2009

£ billions

	Dec–03	Dec–04	Dec–05	Dec–06	Dec–07	Dec–08	Dec–09
Total assets	3464.5	3911.4	4806.3	5212.3	6384.6	6967.5	6514.5
Of which: DI assets	691.1	678.1	705.9	741.7	913.9	1050.3	1019.9
PI assets	935.8	1092.1	1360.9	1531.1	1693.8	1664.3	1878.1
OI assets	1813.7	2118.0	2714.8	2916.6	3750.2	4216.6	3576.3
Reserve assets	23.8	23.3	24.7	22.9	26.7	36.3	40.1
Total Liabilities	3581.6	4132.1	5058.9	5564.8	6667.2	7026.7	6697.1
Of which: DI liabilities	355.5	383.3	494.2	578.3	630.2	672.3	694.7
PI liabilities	1082.9	1227.9	1461.7	1702.6	1917.6	1945.4	2328.5
OI liabilities	2143.2	2520.8	3103.0	3284.0	4119.4	4409.1	3673.8
Net IIP	–117.2	–220.7	–252.6	–352.6	–282.5	–59.2	–182.6
Of which: DI	335.6	294.7	211.7	163.4	283.8	378.1	325.2
PI	–147.0	–135.8	–100.8	–171.5	–223.8	–281.1	–450.4
OI	–329.5	–402.9	–388.2	–367.3	–369.2	–192.5	–97.5
Reserve Assets	23.8	23.3	24.7	22.9	26.7	36.3	40.1

Source: Pink Book and Balance of Payments statistical bulletin

of other investment, mainly due to increases in loans and deposits. This is unsurprising due to the global nature of the banking sector. Capital can be deposited and loaned at a moment's notice, freely moving across borders.

In the latest period, 2008 to 2009, the total value of assets and liabilities decreased as the global recession took hold which led to a write down/off of assets and a repatriation of investment funds. During this period, however, portfolio investment assets and liabilities increased considerably as investors attempted to minimise risk.

Between 2003 and 2008, whilst we have seen growth in both gross assets and liabilities, Table 1 reveals the UK's net liability position has reduced considerably. In 2006 Q4, the net liability position peaked

at £352.6 billion, before dropping to £59.2 billion in 2008 Q4. In 2009 the net liability position widened once again to £182.6 billion. This paper explores what drives these movements. In order to do this, the following sections discuss the UK's current account, its relationship to the IIP and how it, and other changes, have impacted on the IIP over time.

The UK's current account

The current account records international flows in trade in goods and services, international income flows and current transfers (Chamberlin 2009). The trade balance of goods and services is calculated by subtracting imports (debits) from exports (credits). The current account balance should not be confused with the trade balance as the current account balance also includes the balance of international income flows and current transfers. Income flows consist of compensation of employees and investment income. Compensation of employees is paid to non residents involved in the production process. International investment income is the return for providing financial assets and rent for natural resources. Current transfers record a set of miscellaneous payments where there is no corresponding exchange. Most of these transfers are government payments to and from the EU but also includes remittances. Remittances are payments from households resident in one economy to households resident in another. **Table 2** presents the UK's current account from 2003 to 2009.

Table 2 shows the UK has had a sustained current account deficit throughout the period; in fact the UK has consistently ran a current account deficit in every year since 1983. The UK's current account deficit represents net new acquisition of foreign claims on the UK. From 2006 to 2008, however, whilst the UK has continually recorded a current account deficit, Table 1 shows the UK actually decreased its net liability position. This indicates that apart from flows there are other factors that impact upon the stocks of UK assets. The following section explores this issue by detailing the link between stocks (IIP), flows (current account) and other changes.

Relationship between the net stock position, net new flow of assets and other changes

The IIP measures the stock of assets and liabilities whereas, as noted above, the current account measures flows. If a country runs a current account deficit this means that the residents are consuming more than they are producing. To pay for the difference they need to run down their assets or increase their liabilities. Either way, the effect will be to reduce the county's net IIP.

The current account is equal to the financial account plus the capital account. As the capital account is relatively small in comparison, the current account and financial account can be said to be counterparts. In practice as data for the current account and financial account come from different data sources, in balance of payments statistics, a balancing item is used. This item is called net errors and omissions and is used to ensure the balance across the current, capital and financial account.

The external balance sheet, formally known as the IIP, is directly linked to the BoP via the financial account, and as such indirectly to the current account. The current account therefore can be said to be a measure of the flow of assets and liabilities, whilst the IIP records the total value of the stock of assets and liabilities at a specific point in time. The change in IIP is calculated as detailed in **Equation 1**.

Equation 1: IIP reconciliation

$$\Delta IIP_t = F_t + C_t + P_t + O_t$$

F = Flows

C = Change in net asset values due to asset/liability currency changes

P = Change in net asset values due to asset/liability price changes

O = Other volume changes

t = time period

Equation 1 shows that the IIP at the end of a period reflects not only the flows, but other changes, including revaluation changes and other volume adjustments, which occur during the reference period. Revaluation effects have no change in the asset and liability themselves but record a change in valuation. Revaluation is split between exchange rate changes (C) and other price changes (P).

Exchange rate effects occur as assets and liabilities can be denominated in a foreign currency, but are recorded in domestic currency in a country's IIP. Therefore, when movements between the foreign and domestic currency occur, this has the effect of revaluing foreign-denominated assets. An example of this would be the UK holding $1000 of US assets purchased at an exchange rate of £1:$2. This is recorded as £500 of UK owned foreign assets in the UK's IIP. At the end of the period, if the exchange rate had depreciated to £1:$1, the UK still owns $1000 of foreign assets, but they are now worth £1000 because of exchange rate movements. The result is an increase of £500 to the UK's IIP although the quality of the asset has not changed. In this example, there would be no effect on US liabilities; they are still recorded as $1000 in the US IIP.

Price changes are most clearly demonstrated by movements in prices of equity and debt traded on the world stock markets. Examples of other changes in volume (O) include; debt cancellation and write-offs, reclassifications, entities changing residence and changes in actuarial assumptions.

How the UK's IIP has evolved over time

From 1966 to 1977 the UK only produced IIP data on an annual basis. Annual data

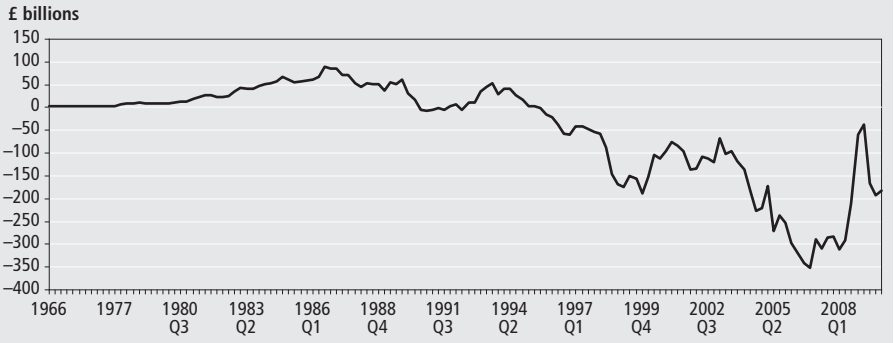
Table 2
UK's Current account, 2003 to 2009

£ billions

	2003	2004	2005	2006	2007	2008	2009
Total Credits	425.9	455.9	534.9	634.0	676.9	699.8	581.4
Of which: export of goods	188.3	190.9	211.6	243.6	220.9	251.6	227.7
export of services	102.4	112.9	119.2	134.2	150.6	170.8	161.2
income	123.2	138.3	186.7	237.6	291.3	261.1	175.6
current transfers	12.0	13.8	17.4	18.5	14.0	16.3	17.0
Total Debits	444.2	480.8	567.8	677.8	714.6	721.8	599.8
Of which: import of goods	236.9	251.8	280.2	319.9	310.6	345.0	309.5
import of services	79.7	84.5	93.4	99.5	105.8	115.6	111.9
income	105.7	120.5	164.9	228.0	270.5	230.8	146.9
current transfers	21.9	24.0	29.2	30.4	27.6	30.4	31.6
Current Balance	–18.3	–24.9	–32.8	–43.8	–37.7	–22.0	–18.4
Of which: trade in goods	–48.6	–60.9	–68.6	–76.3	–89.8	–93.4	–81.8
trade in services	22.6	28.4	25.7	34.8	44.8	55.1	49.3
net income	17.5	17.8	21.9	9.6	20.8	30.3	28.7
net current transfers	–9.8	–10.3	–11.8	–11.9	–13.5	–14.0	–14.6

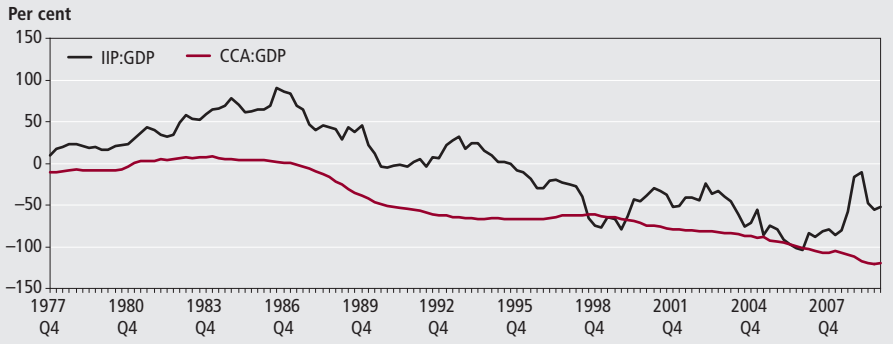
Source: ONS, Pink Book and Balance of Payments Statistical Bulletin

Figure 1
The UK's net IIP, annually from 1966 to 1977 and quarterly from 1978 Q1 to 2009 Q4



Source: ONS, Pink Book and Balance of Payments Statistical Bulletin

Figure 2
Cumulative current account (CCA) and international investment position as a percentage of quarterly GDP, 1977 Q4 to 2009 Q4



Source: ONS, Pink Book and Balance of Payments Statistical Bulletin

records the net IIP at the end of each year. From 1978 onwards the UK have published IIP data quarterly. **Figure 1** records the UK's IIP from 1996 to 2009; quarterly data has been presented when available.

Figure 1 shows that there have been four main phases in the UK's IIP since records began:

- between 1966 Q4 and 1995 Q2 the UK recorded a net asset position in all but six periods – the net assets position peaked in 1986 Q3 at £88.8 billion, 23 per cent of the annualised GDP
- between 1995 Q3 and 2006 Q4 the UK continually recorded a net liability position, due in part to the current account which was in deficit for all but four quarters over this period. The current account deficit was financed by an increase in inward foreign investment, directly increasing the UK's net liability position. The UK's net liability position peaked in 2006 Q4 at £352.6 billion, equating to 27 per cent of annualised GDP
- driven by depreciation in sterling, in 2007 and 2008, the UK's net liability position reduced considerably and reached a recent low of £36.8 billion in 2009 Q1
- from 2009 Q2, the UK's net liability position once again began to widen as world stockmarkets recovered and sterling appreciated against the other major currencies. In the latest quarter, 2009 Q4, the UK's net liability position was £182.6 billion

The net IIP is a relatively small number compared to the size of gross assets and liabilities - in 2009, the £182.6 billion net liability position was the difference between over £6.5 trillion of assets and £6.7 trillion of liabilities. Both assets and liabilities have grown substantially in the last couple of decades, partly due to the City of London's position and the globalisation of finance. The UK's assets and liabilities are now nearly five times as large as annual GDP. This means that, potentially, 10 percent depreciation in sterling could result in an increase in foreign assets of nearly half of the UK's annual GDP. As the UK's liabilities are predominantly sterling denominated, the effect is smaller for liabilities than assets.

Drivers of the movements in the IIP

In order to understand the link between the current account flows, other changes and the IIP, **Figure 2** charts the movement in the cumulative current account and the IIP as a percentage of quarterly GDP. The chart reveals a strong link between the current account and the IIP, which generally move in the same direction. There are significant divergences, however. This divergence is necessarily the result from currency, price or other volume changes.

Figure 2 shows that, in the main, the cumulative current account balance as a percentage of quarterly GDP grew steadily from 1977 Q4 to 1984 Q1 and from then on has generally deteriorated, peaking at a low in 2009 Q3. The performance of the IIP as a percentage of quarterly GDP during these periods was much more volatile. In 1982 Q3, 1990 Q4, 1999 Q4 and 2007 Q1 the IIP ratio began to diverge from the path of cumulative current account ratio. This divergence was driven in part by exchange rate fluctuations, movements in the underlying asset price and other volume changes.

Exchange rate movements

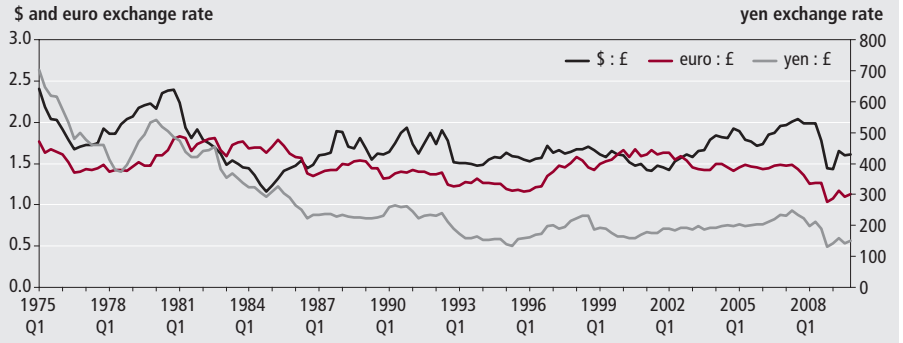
Figure 3 records the quarterly exchange rate movements from 1975 Q1 to 2009 Q4.

Although each currency has its own individual movements and timings, in general, they can be classified into four distinct phases. In the first phase (70s, 80s and early part of the 90s) there was a depreciation of sterling against the major currencies. This was followed by a period of recovery in the mid 90s and 2000s. In 2007 and 2008 there was a substantial depreciation of sterling against all the major currencies. From 2009 Q1, sterling appreciated against the major currencies, recovering some of the previous losses.

Sterling depreciated by 33 per cent against the dollar over the whole period (1975 Q1 to 2009 Q4). In the first phase, 1975 Q1 to 1984 Q4, sterling depreciated by 52 per cent. Between 1984 Q4 and 2008 Q2, the pound then rallied against the dollar and appreciated by 72 per cent. In the period 2008 Q2 to 2009 Q1 the pound noticeably depreciated by 28 per cent. Sterling has rallied in the latest quarters and appreciated by 13 per cent between 2008 Q4 and 2009 Q4.

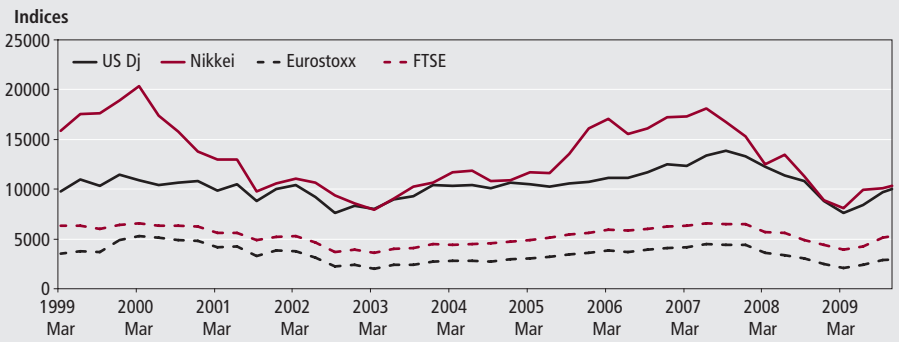
The euro to sterling exchange rate depreciated by 36 per cent over the full period (1975 Q1 and 2009 Q4). Between 1975 Q1 and 1995 Q4 sterling depreciated by 35 per cent. Between 1995 Q4 and 2001 Q2 the pound rallied against the euro,

Figure 3
Sterling exchange rate against US Dollar, euro/ECU and yen, 1975 Q1 to 2009 Q4



Source: Bank of England

Figure 4
Share price indices, 1999 Q1 to 2009 Q4



Source: ONS Financial Statistics and Yahoo Finance

appreciating by 43 per cent. From 2001 Q2 to 2008 Q4 any gains were more than offset as the pound once again depreciated against the euro by 38 per cent. Recent movements have seen the pound rebound somewhat against the euro, appreciating by 9 per cent between 2008 Q4 and 2009 Q4.

Over the whole period sterling depreciated by 79 per cent against the yen. In the first phase alone, 1975 Q1 to 1995 Q2, the pound depreciated by 81 per cent against the yen. From then on until 2007 Q2 sterling recovered, appreciating by 83 per cent. From 2007 Q2 to 2008 Q4, sterling again depreciated against the yen, this time by 47 per cent. As with the dollar and the euro, sterling rallied against the yen in the latest quarters, 15 per cent up between 2008 Q4 and 2009 Q4.

Price effects

Figure 4 details the performance of USA, European, Japanese and the UK stock markets between 1999 Q1 and 2009 Q4.

Figure 4, shows that generally the FTSE, Euro Stoxx and Dow Jones tend to track each other fairly closely and therefore price effects overall have had less of an impact on changes to the IIP than exchange rate movements. The Nikkei was the most volatile of the indices, as measured by the percentage change in the peak to trough and trough to peak movements, and has lead to considerable price movements in UK-owned Japanese stocks. At an aggregate level, however, the impact is limited as the size of UK-owned Japanese stock is considerably smaller than UK owned US and Euro stocks. In the first peak to trough movement in Figure 4, 2000 Q1 and 2003 Q1, the Nikkei contracted by 61 per cent compared to 45 per cent on the FTSE. The trough to peak movement, from 2003 Q1 to 2007 Q2, saw the Nikkei grow by 128 per cent whereas the FTSE grew by 83 per cent. In the second peak to trough movement (2007 Q2 to 2009 Q1), however, the Nikkei contracting by 55 per cent whereas the FTSE contracted by just 41 per cent. In the latest period, 2009 Q1 to 2009 Q4, the FTSE grew by 38 per cent, which was stronger than the Dow Jones and considerably stronger than the Nikkei.

Model to decompose IIP changes

In order to estimate how much of the change in the IIP was down to financial account flows, price, currency or other volume changes, a decomposition of the data is required. Reserve assets were excluded from the original model due to the relatively small size of both stocks and flows, whilst financial derivatives are excluded from the balance sheet as the data are developmental and currently not published in the main aggregates of the UK's IIP. The **Annex** to this article provides a description of the data sources, methodology and assumptions used to create the model to estimate this decomposition (Luciano 2005).

The net IIP is calculated by subtracting liabilities from assets. The ONS model calculates a decomposition of the changes in IIP, in terms of financial account flows, exchange rate, price and other volume changes for direct, portfolio and other investment. These estimates are produced at the level of gross assets and gross liabilities before the net flows and net other changes are calculated. In the following section, the model decomposition is reported for the net IIP for the annual period of 2000 to 2009 and quarterly data is also provided for the most recent year. Extreme caution should be taken when interpreting the results of the 'other' category as this estimate is calculated as a residual and not only represents the other volume changes for direct, portfolio and other investment (directly calculated within the decomposition model) but also includes all reserve asset revaluations, capital account flows and the financial account balancing item (errors and omissions). These additions to the decomposition model are included in order to reconcile the financial account flow data used in the model to the current account flow data presented in **Table 3**.

Net IIP

Table 3 shows that the UK has consistently ran a net liability position over all years and all quarters and that the flows (current account balance) have consistently had a negative effect on the overall net IIP. The net liability position peaked in 2006, before reducing substantially in 2007 and 2008 and finally reaching a recent record low in 2009 Q1. In 2007, 2008 and 2009 Q1 the UK's net IIP improved by £70.0 billion, £223.3 billion and £22.4 billion respectively; a total reduction of £315.7 billion to the UK's net liability position. The UK's net liability position improved despite the fact that it ran a current account deficit (flows) which increases the UK's liabilities with the rest of the world. The reason it was able to reduce its net liability position was due to currency and price effects and other volume changes.

Table 3
UK's net IIP and change in IIP, annuals 2000 to 2009 and quarterly 2009 Q1 – 2009 Q4

Not seasonally adjusted £ billions

			Due to:			
	IIP	Change in IIP	Current account balance	Exchange rate movement	Price movement	Other
2000	–96.2	92.0	–25.8	22.5	–12.0	107.3
2001	–136.5	–40.4	–21.1	–16.0	42.6	–45.8
2002	–120.0	16.5	–18.7	41.9	22.5	–29.2
2003	–117.2	2.9	–18.3	47.9	–4.6	–22.1
2004	–220.7	–103.5	–24.9	2.5	–23.3	–57.8
2005	–252.6	–31.9	–32.8	–15.3	–48.9	65.1
2006	–352.6	–100.0	–43.8	–43.4	15.7	–28.5
2007	–282.5	70.0	–37.7	100.4	0.5	6.9
2008	–59.2	223.3	–22.0	504.6	82.4	–341.7
2009	–182.6	–123.4	–18.4	–145.2	–180.2	220.4
2009 Q1	–36.8	22.4	–4.9	–50.1	49.8	27.6
2009 Q2	–166.0	–129.2	–5.4	–156.3	–47.0	79.6
2009 Q3	–192.2	–26.1	–6.3	99.6	–160.0	40.6
2009 Q4	–182.6	9.5	–1.8	–38.4	–23.0	72.7

Source: ONS decomposition model

Exchange rate movements

Currency effects occur as the UK's IIP is denominated in sterling yet assets (and to a lesser extent liabilities) are denominated in foreign currency. Currency changes have impacted heavily on the revaluation of the UK's IIP. Whilst continually running a current account deficit, currency changes were the primary reason why the IIP stock liability position reduced from a peak of £352.6 billion in 2006 Q4 to just £59.2 billion in 2008 Q4.

In four of the five years between 2000 and 2004, currency changes positively affected the net IIP as sterling depreciated against the euro. In 2005 and 2006 there was a negative exchange rate revaluation to the net IIP as sterling stabilised against the dollar and the euro and rallied against the yen. From 2007 to 2008 sterling depreciated considerably against the three major currencies. These movements had a dramatic effect on the IIP. Table 3 shows that the model estimates that in 2008, currency effects alone improved the UK's net IIP by £504.6 billion, partially offset by an increase in other changes. The size of the offsetting revaluation of other changes suggests that the model may be overestimating the currency revaluation in this volatile period. Regardless of the precise figure, the model clearly demonstrates, however, that currency changes are an important factor in driving the overall changes in the net IIP.

In the first two quarters of 2009 sterling rebounded against the major foreign currencies which resulted in an increase in the net liability position to £166.0 billion in 2009 Q2. In 2009 Q3 sterling depreciated against the main international currencies which once again had a positive effect on the revaluation of UK IIP. These gains were partially offset by an appreciating in sterling in 2009 Q4.

Price movements

Price effects are a result of a change in the value of the asset or liabilities which are often openly traded on the world stock markets. Table 3 shows that prior to 2008, price effects were relatively stable throughout the model, fluctuating from positive to negative values and netting out at just –£7.6 billion over the eight years. In 2008 the overall net effect was £82.4 billion, comparatively large when compared to other periods. Even though the world was going through a recession and world stock markets were falling, the overall price effect was positive. This was due to the negative price change being greater for liabilities than assets as the UK has a larger stock of portfolio investment liabilities than assets.

In 2009 Q1 price effects positively impacted on the UK's net IIP. For the remaining three quarters, and for 2009 as a whole, the overall effect on the IIP was negative. Over the year the negative effect was £180.2 billion, the majority of this effect was seen in 2009 Q3 (£160.0 billion). There are two reasons for this movement; firstly world stock markets all grew and as the UK has a considerably larger stock of portfolio investment liabilities than assets the overall net effect on the IIP was negative; and secondly, from 2009 Q2 to 2009 Q4, the FTSE outperformed the growth in other world indices during this period which increases the price of UK liabilities by more than UK owned foreign assets.

Other

Other changes, amongst other things, include the writing down of value and write offs of UK assets and liabilities. In 2008 there were considerable write-offs, particularly in the financial sector. In the model presented, however, other changes are calculated as a residual of total change minus financial account flows, currency and price effects. Careful consideration should be used when directly interpreting other changes as it not only captures volume changes, such as write-offs and reclassifications, but as a residual will also counterpart any over or under estimation of flows or revaluation effects (i.e. the error term) as well as including estimates for all reserve asset revaluations, capital account flows and the financial account balancing item.

In 2000, 2001, 2004 and 2005 other changes have been the largest contributor to the total change. In 2008, other changes decreased the UK's net IIP position by £341.7 billion. During this period a larger offsetting entry is recorded for exchange rate effects. This suggests that in this volatile period, as well as reflecting business write-offs, part of other changes may be due to an overvaluation of currency changes. What is clear, however, is that 2008 was a period when businesses experienced considerable difficulties and therefore we would expect considerable write-downs and write-offs during this period. Both assets and liabilities recorded negative other changes over this period but UK assets were written down by more than UK liabilities. In 2009, other changes were again the largest contributor to total changes which somewhat offsets the negative dual impact of currency and price effects. This is further evidence that the model may overestimate revaluation effects in volatile periods.

In 2009 Q1 other changes positively impacted on the net IIP. It was this change, combined with a positive price revaluation, which ultimately took the UK to its lowest net liability position in recent times. The main driver of the overall reduction of the net liability position, however, was sterling's depreciation in 2007 and 2008.

Conclusion

Historically the current account deficit has had a considerable negative effect on the UK's stock position; flows, however, are only part of the story. Even though the UK has consistently run a current account deficit

for the past 25 years, other changes have resulted in the UK dramatically improving its net IIP. The model developed by ONS decomposes the changes and clearly shows that the depreciation of sterling was the principal reason why the UK's net liability position reduced considerably in 2007 and 2008. This was the precursor to the recent low net liability position recorded in 2009 Q1. Further evidence also suggests that if the UK valued direct investment assets and liabilities at market price that this would further positively impact on the UK net asset position.

Taking this into account, however, the fundamental situation underpinning the historic growth of the net IIP liability position has not changed. The UK continues to run a current account deficit driven by a deficit in trade in goods and therefore will require an inward flow of finance, or a reduction in reserves, to pay for this deficit. The challenge to the policy makers in the longer term, is to address the continued current account deficit otherwise the UK, sometime in the future, may face a similar sudden market correction as that experienced in 2008.

Note

1 Own funds at book value is the estimated value of the asset/liability provided by the direct investment enterprise (DIE) from its accounting records, as opposed to the direct investor (DI). Estimates from DIE are believed to be closer to market value than estimates provided by the DI.

CONTACT

elmr@ons.gov.uk

ACKNOWLEDGEMENTS

The authors would like to thank Graeme Walker, Simon Humphries, Graeme Chamberlin and Joe Grice for their helpful comments. Any errors are the authors' responsibility.

REFERENCES

Chamberlin G (2009) 'Methods explained: The balance of payments', *Economic and Labour Market Review* (September)

Landefeld J S and Lawson A M (1991) 'Valuation of the US net international investment position', Bureau of Economic Analysis

Luciano M (2005) 'Estimation of a quarterly breakdown of changes in IIP due to changes in prices, exchange rates and other changes', Unpublished

Nguyen E L (2009) 'The international investment position of the United States at yearend 2008', Bureau of Economic Analysis (July)

Office for National Statistics (2005) 'International investment position reconciliation analysis: Estimation of currency and prices changes', Unpublished

Office for National Statistics (2009) 'The Pink Book', Palgrave Macmillan

Office for National Statistics (2009) 'United Kingdom Economic Accounts', Palgrave Macmillan (2009 Q3)

Pratten C (1994) 'The valuation of outward and inward direct investment: a report for the CSO', Department of Applied Economics, University of Cambridge

Senior S and Westwood R (2001) 'The external balance sheet of the United Kingdom: implications for financial stability?', *Bank of England Quarterly Bulletin* (Winter 2001)

Whitaker S (2006) 'The UK international investment position', *Bank of England Quarterly Bulletin* (2006 Q3)

ANNEX

Decomposition of IIP changes: data sources, methodology and assumptions

The data used in estimating the model comes from a number of data sources. IIP stock and financial account flow data for direct investment, portfolio investment and other investment comes from ONS and BoE survey sources. The aggregate stock and flow data are published in the ONS's United Kingdom Economic Accounts.

Currency changes are calculated using exchange rate movements for the dollar, euro and the yen - exchange rates are provided by the BoE. Price movements are modelled using a combination of stock and bond indices. Stock movements use weighted end quarter share prices for the Dow Jones, Euro Stoxx and Nikkei. These are adjusted close prices for the latest day in the quarter. Weighted bond indices are used for UK, US, Europe and Japan – the data is recorded for the last day in each quarter.

The model decomposes the change in stock into financial account flows, currency, price and other changes in the IIP. Theoretically other changes should capture volume changes such as write-offs, re-classifications and corrections. However, due to data limitations, other changes in our model are calculated as a residual. Therefore, other changes capture any change not attributable to flows, currency and price effects[1]. The model estimates the changes at the level of asset and liability for the three functional categories of direct investment, portfolio investment, and other investment. The changes are then aggregated to total assets, total liabilities and total net position.

The currency change is calculated by applying a currency coefficient (Cc) to the starting stock and half the flows. The reason that the currency coefficient is applied to only half the flows is that it is assumed that flows and currency changes are attributed evenly across the quarter, and therefore half of the flow transactions will already include the currency effect.

Equation 2 shows that to compose the currency coefficient a geographical weighting is applied to the change in exchange rate for that time period before summing the components.

Equation 2: Currency coefficient

$$Cc_t = \sum G_{it} \Delta X_{it}$$

Cc = Currency Coefficient
G = Geographic weighting
X = Exchange rate
t = time period
i = USA, Europe and Japan

To deduce the currency change in **Equation 3** the currency coefficient is applied to the stock at the beginning of the period and half the flows.

Equation 3: Currency change

$$C_t = \left(IIP_{t-1} + F_t / 2\right) * Cc_t$$

C = Currency change
IIP = International investment position
F = Flow
t = time period

The price revaluation follows a similar framework as that for currency revaluation. **Equation 4** shows the price coefficient is calculated using a geographical weighting of the proportion of investment applied to movements in the change of stock market indices for that region. Equity price movements are given by Dow Jones, Euro Stoxx Nikkei and FTSE and the changes in the price of debt securities are given by changes in bond indices.

Equation 4: Price coefficient

$$Pc_t = \sum IW_{it} \Delta SI_{it}$$

Pc = Price coefficient
IW = Investment weighting
SI = Stockmarket indices
t = time period
i = USA, Europe, Japan and UK

Finally, as with the currency change, the price change (P) is then estimated by applying the coefficient to the stock at the beginning of the period and half the flows in **Equation 5**.

Equation 5: Price change

$$P_t = \left(IIP_{t-1} + F_t / 2\right) * Pc_t$$

P = Price change
IIP = International investment position
F = Flow
Pc = Price coefficient
t = time period

In order to estimate the model a number of assumptions have been made in terms of the type of revaluation and the basis on which the item is to be revalued. For example, direct investment is assumed to be recorded at book value and therefore not subject to any price change effects. Direct investment liabilities (foreign direct investment in the UK) are assumed to be all in sterling and therefore not subject to any currency effects. Direct investment assets (UK direct investment abroad) are available with a geographic split rather than a currency split. The assumption is that any investment is made in the currency of the host country, in reality this will not always be the case. For simplicity the analysis has been based on currency changes for three main areas - USA, Europe and Japan. These countries account for approximately 70 per cent of total UK assets and liabilities. **Table A1** provides a scheme for the model with a full list of assumptions and comment on their validity based on type of revaluation, by functional category and transaction broken down by asset and liability.

Note

1 Outside of the decomposition model, reserve asset revaluations, capital account flows and the financial account balancing item are added to the estimate of 'other volume changes' in order to switch from a financial account flow presentation to a current account flow presentation.

Table A1
Scheme of reconciliation and assumptions

Item	Transaction	Assets/ liabilities	Type	Assumptions	Comment
Direct investment	Equity and other capital	Assets	Currency Other	1a. All assets assumed to be in foreign currency 1b. Registered at book value. 1c. Quarterly proportions assumed to be the same as annual. 1d. Proportions assumed to be the same for banks and non banks. 1e. For simplicity the currency movements are estimated for three main areas -USA, Europe and Japan.	1a. The geographical split may not be a good approximation for currency spilt - some foreign assets may be valued in sterling and therefore not subject to currency effects. 1b. Valuing at market price would improve the model. 1c. The model does not pick up changes in ownership during the period. 1d. The banks proportions are likely to be different for non banks. 1e. USA, Europe and Japan account for approximately 70 per cent of all UK direct investment assets but are used to estimate currency changes for total stock.
		Liabilities	Other	2a. All liabilities are assumed to be in domestic currency 2b. Registered at book value	2a. Some UK liabilities may be valued in foreign currency and therefore should be subject to currency effects. 2b. As 1b.
Portfolio investment	Equity	Assets	Currency Price Other	3a. Registered at market value 3b. Proportions assumed different for banks and non-banks. 3c. Assumed to reflect composition of stock price indices of three main areas: euro area, US, Japan.	3a. The price effect is calculated. 3b. Improved price and currency effect estimates as the sector level. 3c. USA, Europe and Japan account for just over 70 per cent of all UK portfolio investment assets but are used to estimate price and currency changes for total stock.
	Debt			3d. Assumed to be in foreign currency 3e. Assumed to reflect composition of bond indices for euro area, US and Japan.	3d. As 1a 3e. As 3c.
	Equity	Liabilities	Price Other	4a. Liabilities assumed to be in domestic currency 4b. Registered at market value 4c. Assumed to reflect composition of FTSE100	4a. As in 2a. 4b. As 3.a. 4c. The composition of the FTSE100 may not accurately reflect the composition of UK liabilities.
	Debt		Currency Price Other	5a. Assumed to be in sterling and three main area currencies reflecting debt issued by UK banks. 5b. Debt issues by non-banks assumed to be in sterling 5c. Assumed to reflect sterling bond index	5a. The apportionment used from the banking sector may not accurately reflect the total. 5b. As in 2a.
Other investment	Trade credits, loans and deposits, other	Assets	Currency Other	6a. Assets assumed to be in sterling and three main area currencies reflecting bank data. 6b. Registered at book value. 6c. Trade credits and other assets proportions assumed to reflect those for loans and deposits.	6a. As 5a. 6b. Reasonable assumption. 6c. Loans and deposit breakdown may not accurately reflect trade credits and other assets proportions.
	Trade credits, currency and deposits, other	Liabilities		Same as trade credits, loans and deposits and other assets listed above.	

Source: ONS (2005)