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A Financial Approach to the Balance of Payments

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ABSTRACT

A new approach to addressing balance of payments issues by analyzing the constituents of the financial account has been developed in this study and is referred to the financial approach accordingly. It pays attention to the different roles of foreign direct investment (FDI) and international portfolio investment (IPI), both of which have witnessed phenomenal increases in the last four decades. On the one hand, balance on the financial account exclusive of changes in official reserves is no longer negligible or inconsequential, and can no longer be neglected. On the other hand, FDI and IPI differ in countries' international economic relations, with different effects of FDI and IPI on trade and trade balance in particular. Responding to a noticeably changed global economic environment, this new approach is effective in addressing balance of payments issues in a new era of globalization. The illuminating results lend support to the theoretical propositions, thereby opening up a new line of research for furthering theoretical and empirical inquiries.

JEL No: F41, F21

Key words: financial account, foreign direct investment, international portfolio investment, trade balance, current account

1. Introduction

Balance of payments issues have always been issues of concern ever since international trade took place between nations. Accompanied with flows of goods and services are flows of funds or capital. Cross border capital and fund movements are always associated with cross border flows of goods and services. Thereby improvement or deterioration in trade balance or the current account comes about with certain patterns in international flows of capital or changes in the capital and financial account. As one of the channels that facilitate international trade and fund movements is the foreign exchange market, changes in the exchange rate, depreciation or appreciation of the currency, have been claimed to have a significant effect on trade balance and profound implications for the balance of payments, as often observed in the news, economic commentaries and financial columns. Therefore, major approaches to dealing with balance of payments issues have been developed over decades, including those that study explicitly the effect of exchange rate changes on the balance of payments, as well as those where exchange rate changes do not play an explicit role in balance of payments issues. The former is represented primarily by the elasticity approach and the absorption approach, and the latter by the monetary approach to the balance of payments, with which numerous empirical studies have been carried out with mixed evidence. This paper proposes a new approach to balance of payments issues by analyzing of the components of the financial account and, in particular, paying attention explicitly to the different roles of foreign direct investment (FDI) and international portfolio investment (IPI). This is in response to, and an acknowledgment of, a noticeably changed international economic environment that is rather different from those in which the above-mentioned three approaches came to

light and were applied. The rationale of this approach will be presented following the briefing of the existing three main approaches to the balance of payments below.

The elasticity approach to the balance of payments features a Keynesian analysis. This approach is based on the analysis of the price elasticity of demand for export goods and that of demand for import goods, with respect to changes in exchange rates. Therefore, this approach is all about the current account of the balance of payments, paying no attention to the capital and financial account of the balance of payments. Although the model is on the interaction between the exchange rate and the current account balances, it is largely applied to evaluate the effect of currency depreciation or currency appreciation on the balance of payments current account. In particular, it is applied to examine if a kind of currency depreciation helps improve current account balances. The approach is most featured by the Marshall-Lerner condition (Marshall 1923; Lerner 1944), which states that for depreciation of the domestic currency to be effective in terms of improving trade balance, the sum of the export elasticity and the import elasticity must be greater than unity.

The absorption approach studies the effects of exchange rate changes on income, relative prices, absorption and trade balance. It is mainly advocated by Alexander (1952), Harberger (1950), Laursen and Metzler (1950) and Meade (1951a,b). According to the name of the approach, it investigates the effect of exchange rate changes on trade balance through the absorption channel whereby income and relative prices change and adjust. Quantitatively, a change in the exchange rate which leads to an increase in absorption worsens trade balance, and a change in the exchange rate

which leads to a decrease in absorption improves trade balance, other things being equal and unchanged.

The main characteristic of the monetary approach to the balance of payments, as summarized by Frenkel and Johnson (1976) in the first sentence of the first chapter of their edited book entitled *The Monetary Approach to the Balance of Payments*, is the proposition that the balance of payments is essentially a monetary phenomenon. This is basically the statement of the Chicago School, though Frenkel and Johnson (1976) claim that the approach is described as monetary, not monetarist, with its essential foundation disposing of the criticism that it is not a theory but merely a tautology like the quantity theory of money, old and restated. Contributions to the monetary approach and its development also come from the IMF, such as Polak (1957), Prais (1961), Polak and Argy (1971) and the IMF (1977), as reviewed by Polak (1997). The two monetary approaches to the balance of payments, Keynesian versus Johnson, are contrasted in Polak (2001), to which interested readers can refer.

The elasticity and absorption approaches do not take into account the role of the financial account. While the monetary approach does consider the financial account, it focuses on official reserves and domestic credit and how they influence trade balance. Particularly in Johnson's model, trade balance is merely changes in reserves whereby balance on the financial account exclusive of changes in official reserves is not considered. This might be acceptable four decades ago, especially with a fixed exchange rate regime, but has become increasingly unrealistic ever since. Balance on the financial account exclusive of changes in official reserves is no longer negligible or inconsequential, and can no longer be neglected. For instance, the US financial

account balance is predominantly private sector activity. Amongst $1,289,854 million US owned net assets abroad in 2007, official reserves and other government assets only accounted for two percent with a figure of $22,359 million. In the same year, foreign owned net assets in the US mounted to $2,057,703 million with $411,058 million being foreign official assets that accounted for 20 percent of the total. Figure 1 exhibits the US official reserve assets abroad versus total US assets abroad, the debit side of the US financial account, and foreign official assets in the US versus total foreign owned assets in the US, the credit side of the US financial account, with part (a) being from 1960 to 1989 and part (b) being from 1990 to 2007. The scale of the vertical axis in part (b) is 10 times of that in part (a); so the curves cannot be duly observed if the whole period is not split into two horizons. Figure 2 shows the net official reserve assets and net financial account balance of the US in the whole period of 1960-2007. Making a contrast between Figure 1 and Figure 2 is helpful. It looks as if that changes in US official reserves are around half of the balance on the US financial account by observing the net data of Figure 2 alone, which plays down, but still cannot deny, the significance of the non-official part of the financial account. In theory, changes in official reserves cannot exceed the financial account balance in absolute value in either direction of flows, while net changes in official reserves can be greater than the financial account balance in absolute value. A simple example is that the balance on the financial account is zero, resulted from a net official reserve assets inflow of $10 million which offsets an outflow of $10 million in private investments.

{Figure 1 about here}

{Figure 2 about here}

It is apparent that nowadays trade balance deficits or surpluses are, to the greatest extent, offset or balanced by the non-official parts of the financial account. They are not offset or balanced by official reserves, which become negligible in quantity from the debit side of the US financial account, and indeed of other countries adopting a flexible exchange rate regime. Therefore, attention should be paid to the non-official reserve parts of the financial account as they are predominantly the largest on the financial account. Moreover, the composition and constituents of the financial account matter for the roles of FDI and IPI differ in countries' international economic relations, with different effects of FDI and IPI on trade and trade balance in particular. Intuitively, inward FDI produces import substitution when previously imported goods and brands are manufactured locally, hence reducing imports and improving trade balance. To a certain extent, FDI financed companies tend to be export-oriented, and for this reason inward FDI may promote exports and improve trade balance. The import substitution effect and the export promotion effect of inward FDI may not be associated with IPI activity. Most companies that attract foreign investors in terms of IPI are large and/or multinational. Inward IPI may help their international activity or expansion overseas and, consequently, reduce other countries' import requirements and boost other countries' exports, which have a negative effect on the reporting economy's exports and trade balance. Inward IPI may also have an income effect on imports, which deteriorates trade balance. Therefore, attention should be paid to the analysis of the components of private investments on the financial account, in addition to paying attention to the private investment activity on the financial account as a whole. PIDI analysis is therefore proposed for scrutinizing the different roles of FDI

and IPI. Moreover, DIDI analysis is to further investigate the effects of inward FDI and outward FDI. Since both PIDI analysis and DIDI analysis focus on the components of private investments on the financial account rather than official reserves, they are named the financial approach to the balance of payments in this study. Details of this approach are presented and illustrated in the next section.

2. The financial approach

Recall the relationship that explains one country's economic linkages with the rest of world holds as an identity:

$$\overset{+/-}{TB} + \overset{-/+}{NFI} = 0 \qquad (1)$$

where TB is trade balance and NFI is net foreign investment. The sign above the variables indicates how they change jointly. i.e., when trade balance is going up, balance on the financial account is going down; and then trade balance is going down, balance on the financial account is going up. Without examining the components of the financial account, the only way to reduce the trade deficit or the current account deficit is to reduce the surplus on the financial account, a relationship bounded by the identity. However, the composition of the financial account is of relevance and the roles of the constituents or components of the financial account differ with regard to trade balance. The financial approach to the balance of payments examines the different roles of the constituents or components of the financial account. Let us decompose *NFI* into *NFDI*, net foreign direct investment and *NIPI*, net international

portfolio investment including private portfolio investment and official reserve transactions. Such analysis is termed as PIDI analysis in this study. There are three different ways of change in trade balance, the FDI sub-account and the IPI sub-account while the identity holds. The three ways of change are indicated in the following three equations:

$$\overset{+/-}{TB} + \overset{-/+}{NFDI} + \overset{-/+}{NIPI} = 0 \qquad (2a)$$

$$\overset{+/-}{TB} + \overset{+/-}{NFDI} + \overset{-/+}{NIPI} = 0 \qquad (2b)$$

$$\overset{+/-}{TB} + \overset{+/-}{NFDI} + \overset{-/+}{NIPI} = 0 \qquad (2c)$$

The first of these three equations, equation (2a), tells no more than equation (1) and its identity. The second of them is what it is proposed in this paper, while the third is rather unlikely.

Working with equation (2) and taking derivative of *TB* with reference to *NFDI* yield:

$$\frac{dTB}{dNFDI} = -1 - \frac{dNIPI}{dNFDI} \qquad (3)$$

For $\frac{dTB}{dNFDI} > 0$ or the proposition that an increase in net inward FDI improves trade balance to be true, it is required that:

$$\frac{dNIPI}{dNFDI} < -1 \qquad (4)$$

or

$$-\frac{dNIPI}{dNFDI} > 1 \qquad (4')$$

i.e., the rate of substitution of *NFDI* for *NIPI* must be greater than unity. For example, if a €2 billion increase in *NFDI* results in a €1 billion in *TB*, then there must be a €3 billion fall in *NFPI* for the balance of payments identity to still hold. The rate of substitution is 1.5 in this case.

This proposition can be empirically tested as follows. One kind of test is time series analysis. One specification is regression of changes in trade balance, ΔTB_t, on changes in net FDI, $\Delta NFDI_t$:

$$\Delta TB_t = \delta_0 + \delta_1 \Delta NFDI_t + \varepsilon_t, \quad t = 1,...T \qquad (5)$$

to test the hypotheses $\delta_0 = 0$ and $\delta_1 > 0$. The proposition is validated if $\delta_0 = 0$ and $\delta_1 > 0$ are accepted. The other method is simply to inspect:

$$-\frac{\Delta NIPI_t}{\Delta NFDI_t} = \lambda \qquad (6)$$

and to check if $\lambda > 1$. The proposition is validated when $\lambda > 1$ is confirmed, which indicates that the rate of substitution of *NFDI* for *NFPI* is greater than unity. A kind of cross-sectional analysis may also be implemented as follows:

$$\left(\frac{TB}{GDP}\right)_i = \alpha + \beta\left(\frac{NFDI}{NFI}\right)_i + \mu_i, \quad i = 1,...N \tag{7}$$

where $\left(\frac{TB}{GDP}\right)_i$ is the trade balance of country i relative to its size of the economy measured in its GDP, and $\left(\frac{NFDI}{NFI}\right)_i$ is the relative significance of net FDI in the overall cross-border investment activity of country i. The proposition is validated if the statistical hypothesis $\beta > 0$ is accepted.

DIDI analysis breaks down FDI into inward FDI and outward FDI and investigates their respective effects on trade balance:

$$TB = FDI_O - FDI_I + IPI_O - IPI_I \tag{8}$$

where subscript $_O$ denotes outward and subscript $_I$ denotes inward. Both inward and outward variables take absolute values in the above equation. A cross-sectional test can be specified as follows:

$$\left(\frac{TB}{GDP}\right)_i = \alpha + \beta\left(\frac{FDI_I}{FDI_I + FDI_O}\right)_i + \mu_i, \quad i = 1,...N \tag{9}$$

where $\left(\frac{TB}{GDP}\right)_i$ same as in equation (7), is the trade balance of country i relative to its size of the economy measured in its GDP, while $\left(\frac{FDI_I}{FDI_I + FDI_O}\right)_i$ is the relative

significance of inward FDI in the overall FDI activity of country i. A statistically significant and positive β renders support to the proposition of DIDI analysis that inward FDI improve the trade balance of a country.

3. Results and analysis

The financial approach to the balance of payments, including PIDI analysis and DIDI analysis, has been proposed and demonstrated in this paper. Like the elasticity approach, the absorption approach and the monetary approach before it, empirical evidence can be mixed depending on the circumstances in which it is applied, the econometric models with which it is implemented and the technical procedures by which it is tested. As the idea of the new approach is at a preliminary stage of development, no complicated models and techniques are adopted in the current empirical study. The results are not expected to be totally convincing. None the less, this should not be taken as a disappointment, considering the performance of the three main approaches over several decades. Graphical illustrations do support the new approach to a reasonable extent so far, which is illuminating whilst modestly unconfirmed or to be confirmed by future studies. Figure 3 to Figure 6 display the major components of the balance of payments and contrasts FDI, IPI and official reserves against trade balance for the US, Japan, the UK and Germany. Part (a) of the figure plots and contrasts trade balance, FDI, IPI and official reserves over time in the annual frequency until 2007, with the starting point varying according to data

availability. Part (b) of the figure is the scatter chart for FDI against the current account and trade balance[1].

{Figure 3 about here}

{Figure 4 about here}

{Figure 5 about here}

{Figure 6 about here}

It can be observed in these graphs that trade balance and net FDI share a common trend to a certain degree and tend to move together. The pattern is rather clear in the cases of the US and Japan in part (a) of Figure 3 and Figure 4 respectively. For Japan, the two curves representing trade balance and net FDI not only move together in the same direction, but also are on the opposite sides of the horizontal axis. Despite being a competitive industrialized economy, Japan has attracted more inward FDI than its outward FDI, which has a positive effect on its export. In the UK and German cases, trade balance or the balance on the current account are understandably more volatile than their net FDI, with the data in the most recent three to four years exhibiting a pattern disagreeable to their overall movements in 18 years (UK) and 33 years (Germany). It is well known that trade balance or current account data are notoriously inaccurate, and revisions are frequently made not only to the last quarter's figure but also to the last year's figure and the figures several years back. For this reason, it is

[1] For Germany, the current account is in place for trade balance in part (a) and it is FDI against the current account only in part (b) due to the limited availability of trade balance data over a short- time period.

desirable to leave out the most recent years' data in serious analysis, an approach adopted in the configuration for part (b) of the figures. There is evidence of close positive relationship or strong association between net FDI and the current account balance or trade balance for Japan's balance of payments, being fairly manifest in part (b) of Figure 4. There exists such relationship for Germany to a less extent, as demonstrated in Figure 6; but viewing the scatters in Figure 3 and Figure 5, such relationship can barely be confirmed for the US and the UK. These observations, intuitive and unsophisticated though, suggest a new line of research. Further theoretical and empirical studies are required to yield more resounding results, adopting advanced econometric techniques and examining large samples.

4. Conclusion

A new approach to addressing balance of payments issues has been proposed and developed in this paper. This is a logical progress in research, responding to a noticeably changed and constantly changing global economic environment which fosters new analytical approaches and frameworks. Over the last four decades, the private part of the financial account, in terms of both FDI and IPI, has witnessed phenomenal increases. Balance on the financial account exclusive of changes in official reserves is no longer negligible or inconsequential, and can no longer be neglected. Moreover, FDI and IPI play rather different roles in international economic relations, with rather different effects on trade and trade balance. Acknowledging their joint significance in international capital movements and their respective roles and effects on trade balance, this new approach is effective in addressing balance of

payments issues in a new era of globalization. It is argued that improvements in trade balance or the current account is positively linked to inward FDI, to which the illuminating results lend support. A new line of research is thereby opened up for furthering theoretical and empirical studies in this important filed of economics.

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Data sources

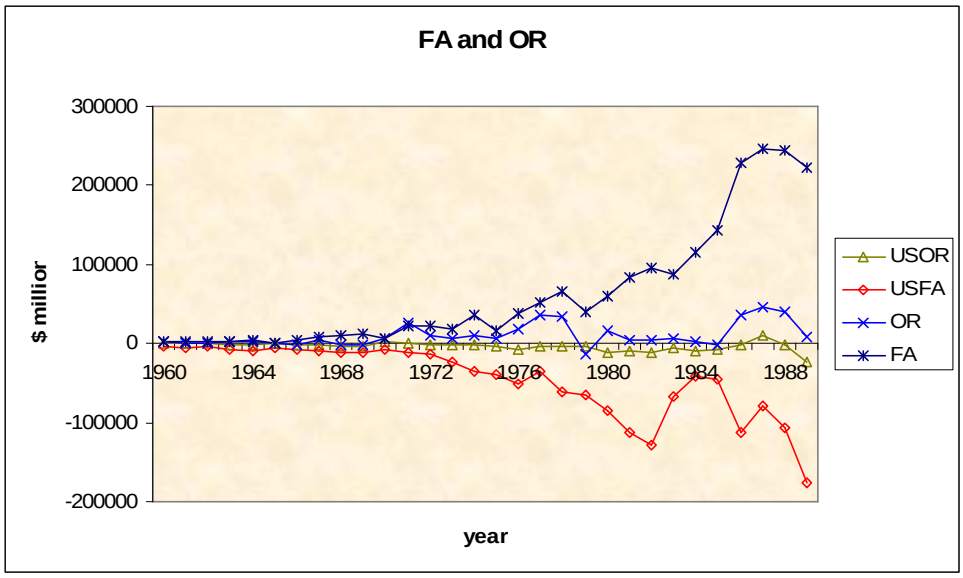
US Bureau of Economic Analysis

UK Office for National Statistics

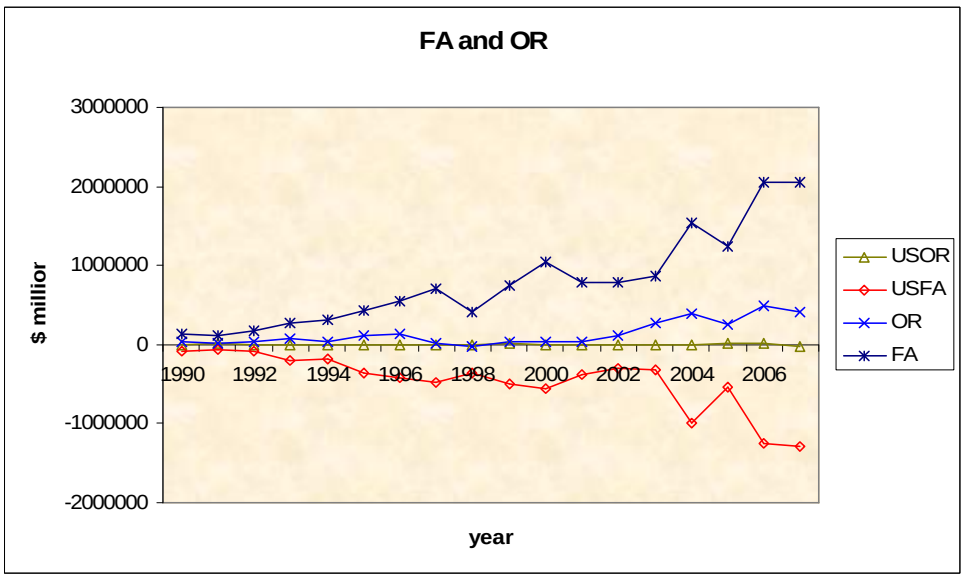
Ministry of Finance, Japan

Deutsche Bundesbank

Figures



(a) 1960 – 1989



(b) 1990 – 2007

Figure 1. US official reserves v. private investments

Source: US Bureau of Economic Analysis

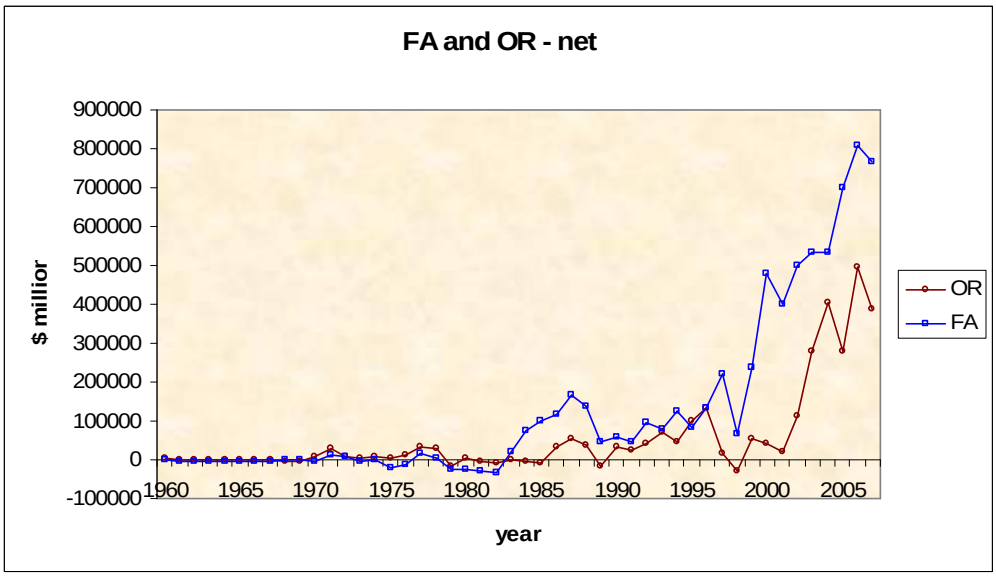
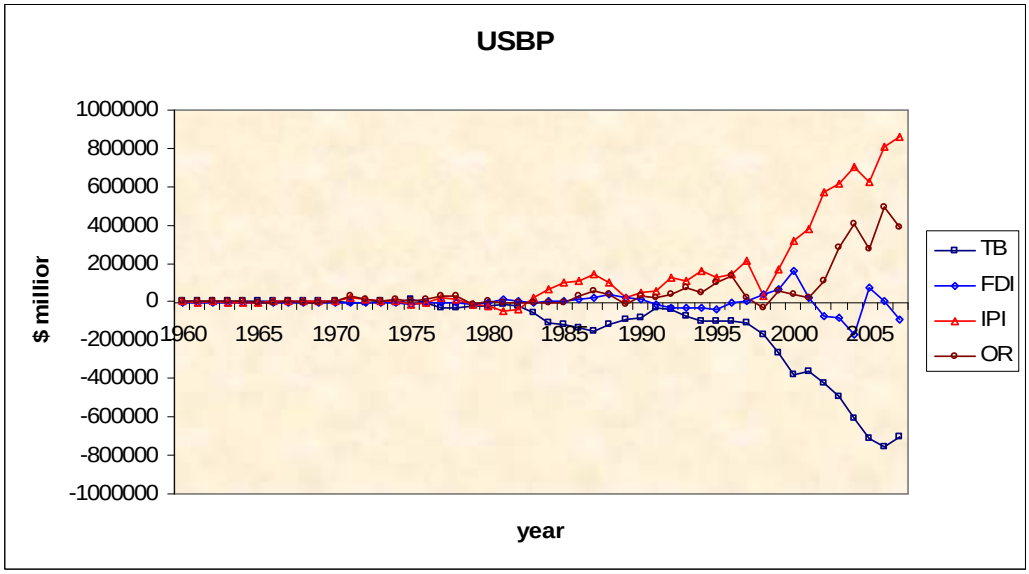
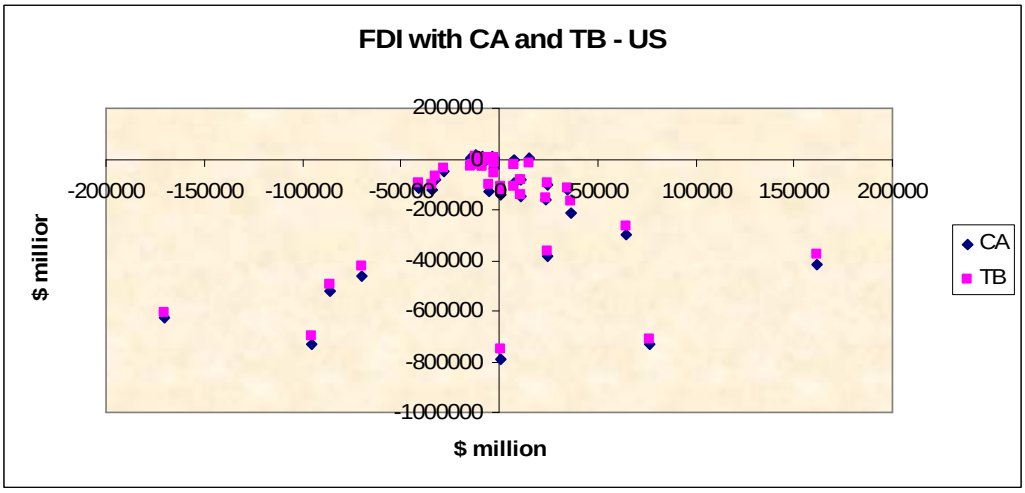


Figure 2. US official reserves v. private investments - net

Source: US Bureau of Economic Analysis



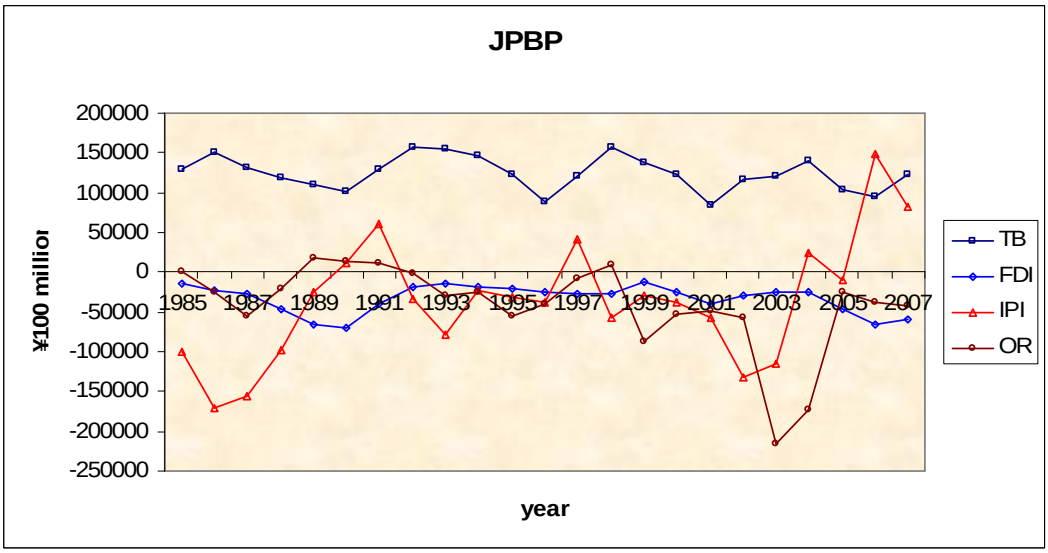
(a) Components of balance of payments



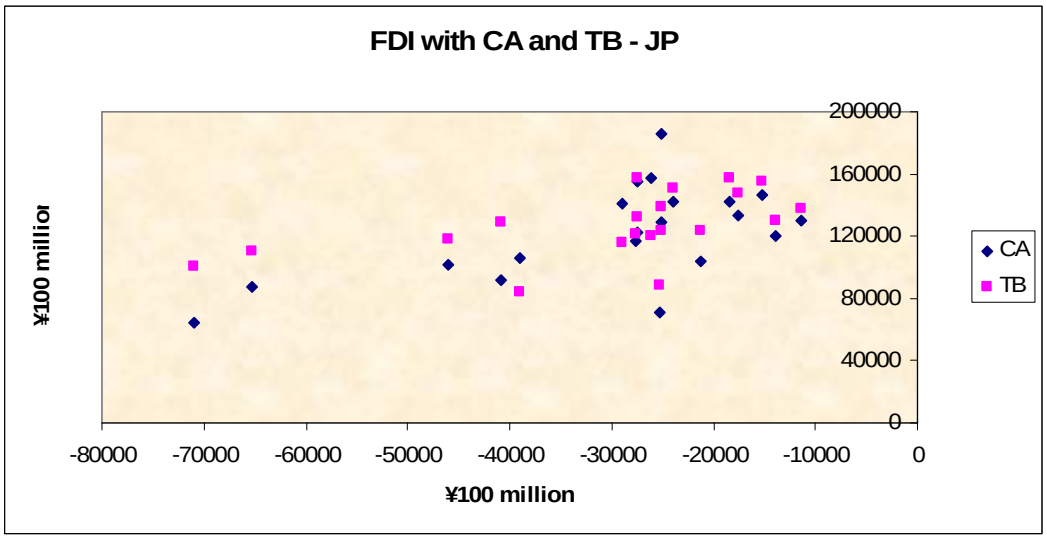
(b) Scatters of FDI v. current account/trade balance

Figure 3. Association between FDI and current account/trade balance - US

Source: US Bureau of Economic Analysis



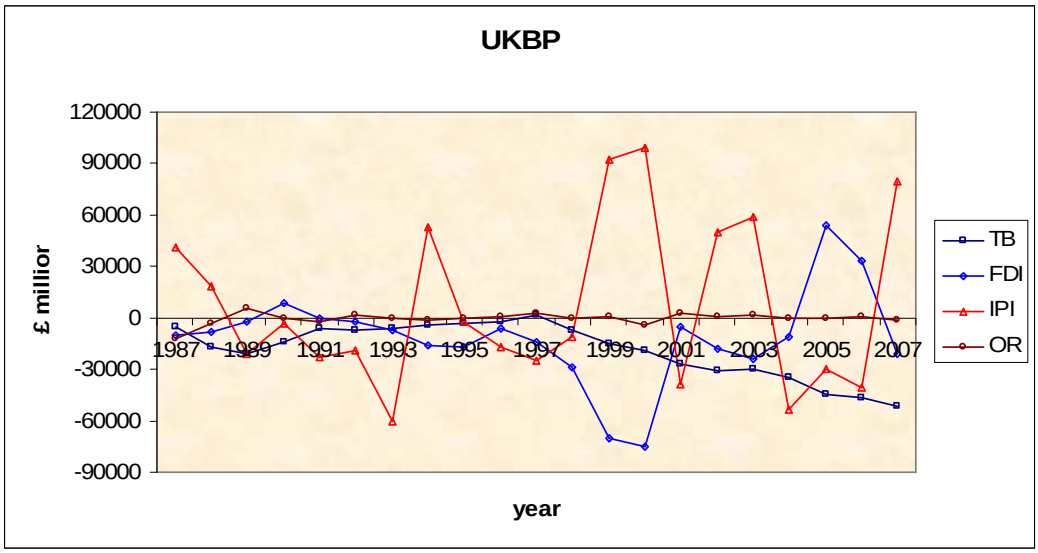
(a) Components of balance of payments



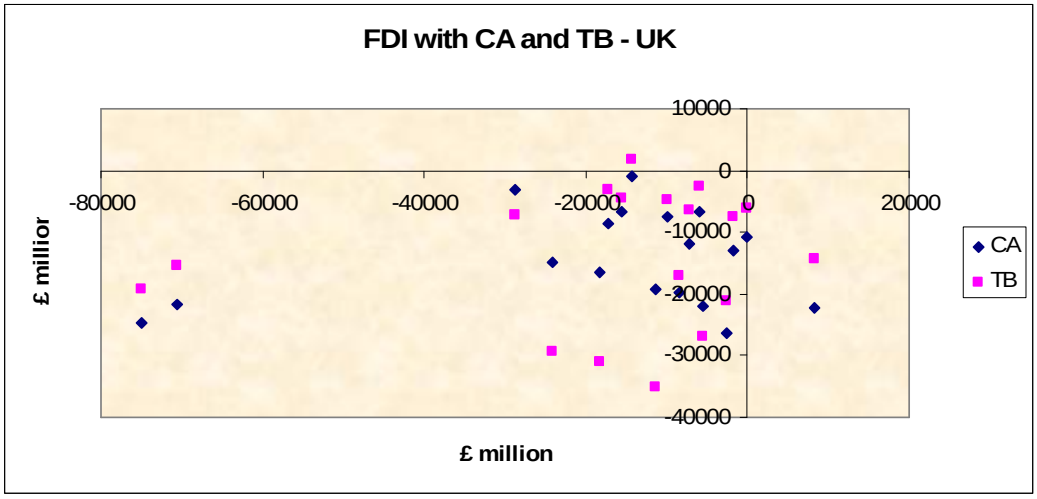
(b) Scatters of FDI v. current account/trade balance

Figure 4. Association between FDI and current account/trade balance - Japan

Source: Ministry of Finance, Japan



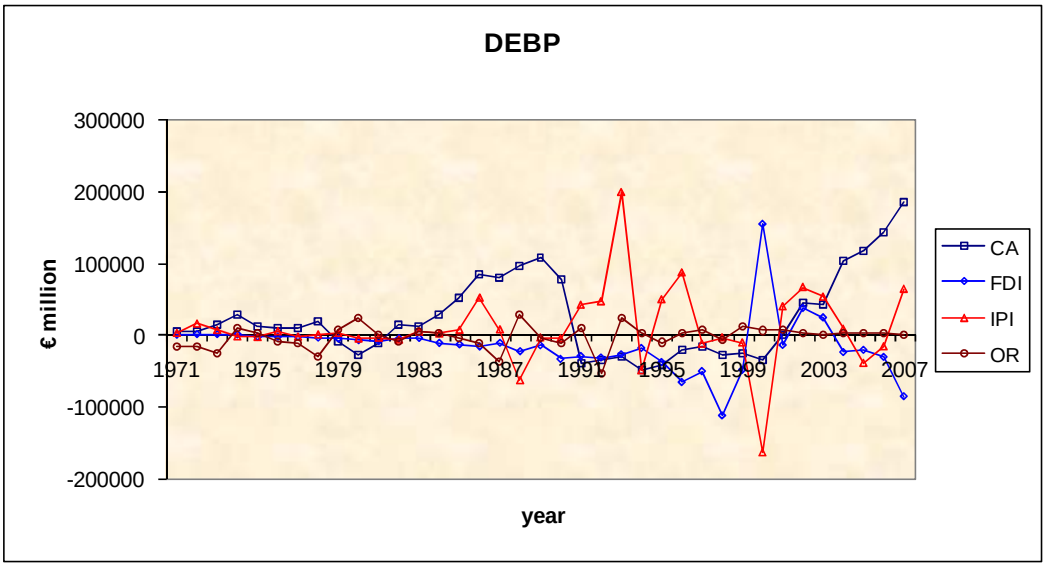
(a) Components of balance of payments



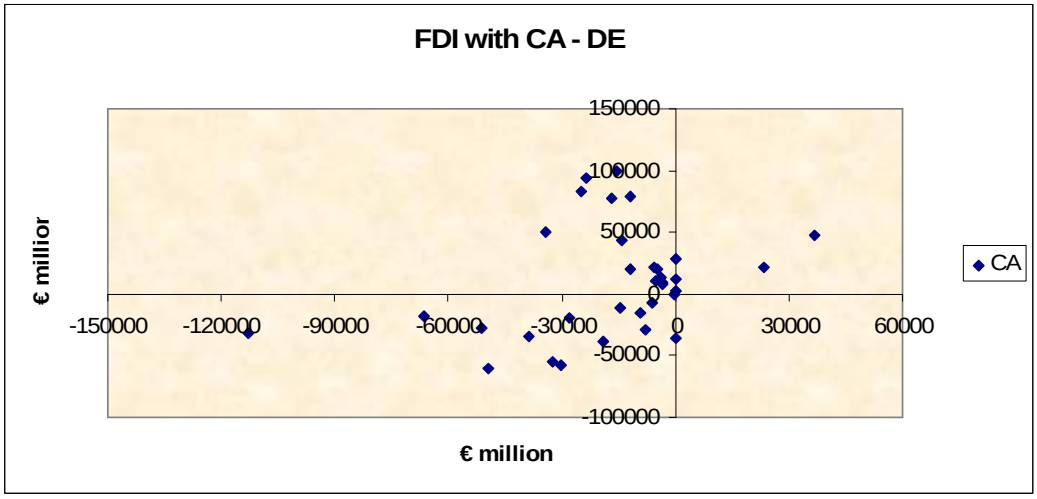
(b) Scatters of FDI v. current account/trade balance

Figure 5. Association between FDI and current account/trade balance - UK

Source: UK Office for National Statistics



(a) Components of balance of payments



(b) Scatters of FDI v. current account/trade balance

Figure 6. Association between FDI and current account/trade balance - Germany

Source: Deutsche Bundesbank