Empirical Testing of International Financial Models under Open Economy: for the Case of German Economy between Bretton-Woods and EMS

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Abstract

본 연구의 목적은 Keynesian, Fleming-Mundell, 그리고 AD-AS 모형 등 국제금융이론들이 개방경제(open economy)체제에 적용가능한지를 모형에서 가정하는 경제환경과 유사한 변동환율체제 하에서의 독일경제를 통해 검증하는 것이 다. 먼저 독일의 경제를 전후(戦後)부터 유럽의 그룹변동환율제도(EMS)가 도입된 1979년까지의 기간에 대해 이론적으로 분석하고, 고정환율제도인 브레턴우즈 체제가 붕괴되어 독립 변동환율체제가 도입된 후 EMS이전까지 개방경제에 가장 근접한 기간 동안 세 가지 모형이 어느 정도 설명력이 있는지 실제 데이터를 가지고 검증하였다.

회귀분석을 이용한 실증 연구결과 세 모형에서 예측하는 가설이 실제 경제현상과 일치함(consistent)을 발견하였고, 이는 이들 모형들이 개방된 국제경제 하에서 실제 경제현상을 분석하고 예측하는 데 적절하게 사용 될 수 있음을 보여준다. 단, 본
I. Introduction

It is frequently said that there should exist some differences between theory and practice, and it may be true to some extent. It may be also true, however, that theory is essential in providing a framework to investigate a certain real phenomenon and in predicting future events.

In this context, it is very interesting to apply major open economic models to real economic situation not only to test the validity of the models in explaining the real world but also to understand the basic mechanism of the open economy, especially when the international economy is being integrated into the gigantic global economy or blocks of markets year by year.

In this paper, we selected Germany for a country of analysis to see its key roles in Europe as well as to examine the effect of the introduction of new international monetary system (for example, the floating exchange rate regime after Bretton-Woods system) on German economy. This paper is organized as follows: in the section II, we present the economic history of Germany for 1945-1980. Then, three major models are applied to the real world to analyze the German economy in section III. We finally conclude the paper with discussion in section IV.

II. Brief History of German Economy for 1945–1980

Like other European economies, Germany has experienced almost uninterrupted growth since the second World War. The pace of economic expansion was both smoother and more rapid than in any other period of German history. Although there were cycles in the post-war period, these were in no way comparable to the much more pronounced fluctuations of pre-war years. The
5% annual output growth that was recorded between 1950 and 1979 was well above the 2.5% to 3% rates during the second half of the nineteenth century and the first half of the twentieth century as we can see in the <Table 1>.

To understand both the rapid rise of prosperity and the decline in the pace of economic development, it could be convenient to divide the target period into four periods which more or less coincide with the three and a half decades from 1945 to 1980.

**<Table 1> Economic Trends in Germany**

<table>
<thead>
<tr>
<th>Period</th>
<th>Overall characteristics of economy</th>
<th>Main events in Economy</th>
<th>Economic data(%)#</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (1945−1950)</td>
<td>Reconstruction after war</td>
<td>Marshall Plan&lt;br&gt;Monetary reform&lt;br&gt;Dismantlement of war-time control&lt;br&gt;OEEC(Europe recovery program)</td>
<td>(a) N/A (b) N/A (c) N/A (d) N/A</td>
</tr>
<tr>
<td>II (1951−1960)</td>
<td>Export-led growth</td>
<td>Rapid growth led by export demand during the Korean War&lt;br&gt;Structural change in industry&lt;br&gt;Huge inflow of well-educated human capital from East Germany (2.5 million)</td>
<td>8.0 1.9 3.8 838</td>
</tr>
<tr>
<td>III (1961−1970)</td>
<td>Conflict b/w external and internal balances</td>
<td>High inflation caused by the high money supply from the BOP surplus&lt;br&gt;High interest rates by both tight monetary policy and high inflation ⇒ sterilization by speculation for DM</td>
<td>4.7 2.6 0.6 760</td>
</tr>
<tr>
<td>IV (1971−1980)</td>
<td>Structural problem</td>
<td>Lower growth by shortage of qualified labour&lt;br&gt;High inflation and unemployment&lt;br&gt;Oil shock(stagflation)&lt;br&gt;Floating exchange rate regime and consequent appreciation of DM</td>
<td>2.9 4.5 2.4 3609</td>
</tr>
<tr>
<td>Overall (1951−1980)</td>
<td>-</td>
<td>-</td>
<td>(a) 5.3 (b) 3.1 (c) 2.4 (d) 1643</td>
</tr>
</tbody>
</table>

# (a) = GDP growth rate<br>(b) = inflation rate<br>(c) = unemployment rate<br>(d) = trade balance(US$million)
1. Reconstruction period (1945 - 1950)

The years between 1945 and the early 1950s were dominated by the attempt to rebuild and reconstruct the German economy. In a sense, they say that the German economy was constructed in those years, and the foundation was laid for what was to follow. Although the production grew fast late 1945 onward and there was some economic development and reconstruction, the major obstacle to progress forward was aslo made in this period. This obstacle actually was removed in 1948 by three interrelated policy decisions as follows: 1) the announcement of the Marshall Plan; 2) a monetary reform; and 3) a partial dismantling of wartime controls. These policy measures were linked by the decision to rebuild the German economy, and thus to accept the partition of the country which had, of course, begun much earlier. Together, they amounted to a reform of the economic constitution.

By 1950, the recovery from the ruins of the World War II was well under way and some important decisions had been made which were to determine the future course of events. For this reason, the 1948 monetary reform and the abolition of price controls have often been called ‘the parent of the German economic miracle’, along with the Marshall Plan. However, the year 1948 does not indicate the beginning of an era of the unlimited private initiative. The importance of the monetary reform and the abolition of wartime controls were that they changed the outlook of the population, raised expectations, and hence put an end to the despondence which had prevailed in the years immediately after 1945.

2. Export-led growth period (1951 - 1960)

As we can see in the <Table 1>, the growth of output between 1951 and 1960 (at about 8% per annum) was an unprecedented. It was accompanied by a rapid reduction in the unemployment, a very low rate of inflation, and a continuous surplus on the current account by a near trebling in Germany’s share in the world exports of manufacturers. By 1960, the Germany’s GDP
became the largest in Europe and so were its foreign currency reserves, while unemployment had come down to less than 1% of the labor forces. In general, three important factors are attributed to the rapid growth as follows: 1) the Korean War in 1950; 2) the rapid change in industrial structure; and 3) flexible labour supply. Even though Germany was not allowed to turn to the production for war, it could satisfy export demand and experienced the first of the export-led rapid growth. Elsewhere in Europe, the employment in the agricultural sector was lowered sharply from 25% to about 14%, meaning the rapid structural change in industry, and this shift was major source of productivity growth. In addition, another very important factor in the rapid growth was a flexible labour supply caused by the structural change and the immigrants from East Germany, more than 2.5 million (i.e., about 10% of total German labour force) between 1949 and 1961.


In the 1960s, growth became less rapid, more cyclical, and was increasingly constrained by the limited labour supply, despite a substantial inflow of foreign workers. Germany, which became very open-economy, had to deal with a series of external shocks, most of the which took the form of large capital inflows due to the speculation on the DM (Deutsche Mark). One consequence of these recurrent shocks was the increased inflation based on the exports as in the 1950s, yet unlike the persistent surpluses in 1950s that generated the ‘imported inflation’ and hence the pressure for revaluation in DM. The attempt to preserve the price stability in the face of the imported inflation led the authorities to apply several policies, such as fiscal and monetary, frequently. This can be called the ‘conflict’ between internal and external balances.

In the conflict, the successive governments chose to strive for internal balance. By giving the priority in policy to the internal stability, Germany not only undermined the international monetary system as it had been conceived in Bretton-Woods, but also helped to destroy the consensus that had been an important element in the post-war period.

In the 1970s, changes in both the external and internal environment occurred. The oil shocks (1973, 1979), and, perhaps even more influential, the collapse of the postwar international monetary system (i.e., Bretton-Woods system) created a need for structural adjustment which was very difficult to deal with. The results were the slower growth, the sizable unemployment, and a higher rate of inflation. While it is difficult to ascribe the deceleration in growth to any one factor or a group of factors, it is the main contention of the discussion which follows that the difficulties the economy had to face were the result of the particular form of growth which took place in 1950s and in 1960s. In addition, the way in which the economy reacted to the external shocks in the 1970s had much to do with what might be called the break down of the post-war consensus among social groups. More detailed about the growth, the change in the exchange rate regime from fixed to floating after the collapse of the Bretton-Woods system, the role of policies, and other key economic events will be discussed in the later sections, because this period was selected as the main time horizon for our analysis.

5. Summary of the economic history and boundary of this paper

Some important issues in the German economic history were briefly explained and summarized in <Table 1>. As can be seen in the table, for each time period, overall characteristics of the economy, main events in the economy, and major economic data were presented.

In this paper, the fourth period (i.e., 1970s) was selected to apply the macro economic models to the real world, because it is very interesting to examine the adaptation of German economy to the new environments of open economy (e.g., facing to the floating exchange rate regime after the collapse of the Bretton-Woods system).

Because we want to investigate the validity of major open-economy models, such as Keynesian, Fleming-Mundell, and AD (aggregate demand)
-AS (aggregate supply) model, the target period of this paper was set from 1971 (after the collapse of the Bretton-Woods system) to 1979 (before the effect of European Monetary System (EMS)). In other words, our analysis for the macro economic situations is focused within the boundary of the time period of 9 years (1971 - 1979) in Germany that might possibly be considered as the case of nearly perfect open economy.

III. Analysis of Open Economy from 1971 to 1979

In this section, three open economic models are used to analyze the relationship between exchange rate fluctuations and major macro economic variables, such as money, government expenditure, interest rate, and others.

1. Data

(1) Definition of economic variables

It may be useful and convenient to define the variable to be considered in this analysis. For easy understanding of some formulae and models used here, familiar characters are used in defining main variables as follow:

\[ e = \text{the nominal spot exchange rate in units of domestic currency per unit of foreign currency (i.e., } e = \text{DM/$ in the viewpoint of Germany);} \]
\[ m = \text{nominal money supply (here, M1 is used);} \]
\[ r = \text{nominal interest rate;} \]
\[ Y = \text{real GNP adjusted by price level;} \]
\[ P = \text{price level (CPI; consumer price index; } 1971 = 100) \]
\[ G = \text{government expenditures;}^{1)} \]
\[ \pi = \text{inflation rate;} \]

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1) In this paper, G refers only to government purchases of goods and service and excludes government transfers from one group of individuals within the economy to another (Yarbrough and Yarbrough (1990, p. 488)).
TB = trade balance;
KAB = capital account balance;
BOP = balance of payments;
W = wage index (hourly earnings; 1971=100).

(2) Type of data

Two types of data are used here: 1) annual data (9 observations for each variable), 2) quarterly data (9*4 = 36 data). This is due to the fact that annual data can reflect overall trends well and quarterly data can show more accurate relationship between variables statistically, let alone the seasonal effects.

2. Theoretical analysis using 3 models

When we analyze German economy during 1970s, it should be emphasized that exchange rate is under flexible regime and capital mobility is free, thereby indicating that BOP curve more flat than LM curve in the Fleming–Mundell model. In addition, the central bank (i.e., Bundesbank in Germany) uses the U.S. dollars for market intervention in using a policy. We can find several countries having the patterns after the Bretton–Woods system, except the U.S.. For the U.S., intervention actually did not happen during 1973 - 1980. Under these situations, it is natural that the monetary policy should be more effective than the fiscal policy to influence income level. In the 1970s, cyclical fluctuations were marked, and hence it could be more useful to separate time periods according to cyclical fluctuations in order to analyze this process properly by using the Keynesian and Fleming–Mundell models. Thus, these separate time periods are used to apply those short-term models and a whole time period is used to apply the AD–AS model.

2) For more detailed explanation for this argument, refer to Yarbrough and Yarbrough (1990, pp. 604 – 609).

3) Basically, the Keynesian and Fleming–Mundell models are short-term models, while the AD–AS model is a long-term model.
(1) Time period 1: 1971 - 1973

During this period, the economic growth was led by export, indicating high trade surplus. Actually TB for that period was increased as we can see in the <Figure 6>. This increase in TB from TB0 to TB1 affects total demand to change from D0 to D1, and as a result the total output changes from point A(i.e., Y0) to point B(i.e., Y1) in <Figure 1>. This can be identified from actual trend in <Figure 6> and <Figure 7>. Of course, the increase of Y caused by the increase of TB in the Keynesian model influences BOP to be surplus through the movement of IS curve (i.e., IS0 \rightarrow IS1) in the Fleming-Mundell model.

In addition, BOP surplus affects exchange rate as follows: since BOP surplus means the increase in the amount of foreign currency in domestic(German) market, the exchange rate should drop, meaning the appreciation of DM against U.S. dollar as we can see in <Figure 2> intuitively and in <Figure 5> with real data. One important thing to be mentioned is that there may exist time lag of about 1 year between changes in TB, Y, and e as can be seen in <Figure 5>, <Figure 6>, and <Figure 7>. Furthermore, it is also important to notice the fact that BOP surplus has higher correlation with KAB than with TB as <Figure 6> shows.

On the other hand, interest rates were increased by the movement of IS curve in the Fleming-Mundell model and can be identified in <Figure 8>. The drastic drop in the KAB from 1973 to 1974 can be explained by the combination of various factors as follows: 1) a decline in profitability of German economy due to the wage increases, 2) uncertainty about the long-term effect of the DM’s appreciation which followed the change of exchange rate regime from the fixed to the floating, and 3) the increase in the foreign direct investments by German firms to avoid the higher wage of domestic markets.

Finally, the equilibrium in the Fleming-Mundell model can be achieved by

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4) To reflect only international transactions in goods and services markets, only traditional trade accountings (i.e., merchandise and services) are included in the calculation of TB.
the following procedures: as the exchange rate falls, income \( y \) also falls due to the loss of competitiveness in price and the reduction in exports. Then, IS\(_1\) shifts back to IS\(_2\) by the reduction of income, and hence the equilibrium will be achieved at the point C (i.e., \( Y_2 \)) in <Figure 1>.

(2) Time period 2: 1974 – 1975

Unlike time period 1, the Bundesbank brought about a combination of monetary and fiscal policies. The central bank had regained its ability to control the money supply after the move to a floating exchange rate system and used tight monetary policy to lower the high inflation rates. Fiscal policies were also shifted into a restrictive stance because it was feared that the expansionary fiscal policy could endanger “social peace’ and further intensify the wage conflicts. As a result, tight monetary and fiscal policies became the distinctive characteristics from the time period 1, inducing lower income and interest rates than the time period 1.

To explain this in connection with the time period 1, let us use the point C in <Figure 1> as a starting equilibrium point in the beginning of 1974. As can be seen in <Figure 3>, tight fiscal policy shifts D\(_2\) to D\(_3\) in the Keynesian model, and hence reduced income from \( Y_2 \) to \( Y_3 \). By the decrease in income, IS\(_2\) shifts back to IS\(_3\) and thus BOP\(_1\) became deficit at the point D. Therefore, the exchange rate rises due to the deficit of BOP\(_1\), causing higher income \( Y_4 \) by the increase in the ability of price competitiveness and the increase in the exports. At last, increased income shifts IS\(_3\) back to IS\(_4\) and shifts BOP\(_1\) to BOP\(_2\) by the depreciation of exchange rate, and the equilibrium achieved at the point E with the backward shift of LM\(_0\) curve to LM\(_1\) by tight monetary policy. This intuitive analysis can be validated by <Figure 5>, <Figure 6>, and <Figure 7>.

(3) Time period 3: 1976 – 1979

As we can see in <Figure 9>, the money supply had been greatly increased, and the inflation rate was close to the double digit. Furthermore, massive cash inflows from abroad by the speculation for DM also contribute
to the increase in the money supply. It eroded Bundesbank’s control over the money supply. This over-supplied money shifts LM curve to the right and hence results in high income after 1976 as <Figure 7> shows.

In addition, the massive capital inflows made DM stronger and kept this trend by 1979 like the fact in <Figure 5>. In summary, we find the fact that the Keynesian and Fleming–Mundell models are really valid especially in this period and are presented in <Figure 8> and <Figure 10>.

(4) Whole period: 1971 – 1979

With the appreciation of DM, many firms of Germany lost much of their competitiveness in foreign markets and were no longer able to absorb rising labour costs. It resulted in lower profit margins and higher unemployment rates. To make matters worse, the organized labour unions succeeded in raising wages and hence the prices of products were increased. As presented in <Figure 11>, the wage index has increasingly become higher than the price index during the whole period.

Therefore, in the long-run (1971 – 1979), the price level increased continuously and the unemployment level also increased by the reasons mentioned above. To explain these facts using AD–AS model, it would be useful to summarize the overall economic situations for the whole period as follows: 1) From 1975, the government had used expansionary fiscal policy as we can see in <Figure 12>; 2) In the long run, the appreciation of exchange rate revealed a specialization pattern which was not well adapted to the cost conditions and factor price relations appropriate to a highly industrialized economy that is rich in human and physical capital, and therefore structural change which altered the appropriate specialization pattern of the economy triggered the shift of the long-run AS to backward; 3) Unlike the rapid growth of 1950s and 1960s, in the 1970s growth was sluggish and hence redundant workers did not immediately find new jobs, leading higher unemployment rate; 4) In spite of the tight monetary policies to lower the inflation rate, huge capital inflows by strong DM helped price increases continuously, but the effect of the inflation on the exchange rates
was offset by huge capital inflows (i.e., huge KAB and BOP). All these facts can be incorporated into the Keynesian, Fleming-Mundell, and AD-AS models like graph in <Figure 4>. Huge trade balance during 1971-1973 moved total demand from $D_1$ to $D_2$ and total income (output) increased from $Y_0$ to $Y_1$ (point A $\Rightarrow$ point B in the Keynesian model). As a result, IS curve shifted from $IS_0$ to $IS_1$ (point A $\Rightarrow$ point B in the Fleming-Mundell model), leading to BOP surplus at the point B in the Fleming-Mundell model. Then, BOP surplus caused e to fall (i.e., appreciation of DM) and reduced the income level from $Y_1$ to $Y_2$. In addition, strong e shifted BOP$_0$ to BOP$_1$. This reduction of income crowded out IS curve from $IS_1$ to $IS_2$. Together, BOP$_1$, IS$_2$, and the shift LM curve from $LM_0$ to $LM_1$ by the increase in the money supply formed new equilibrium at the point C in the Fleming-Mundell model.

In the Keynesian model, total demand was shifted from $D_1$ to $D_2$ by the reduction of BOP, especially by the reduction of KAB because of the decrease in interest (from $i_2$ to $i_3$). These facts are shown in <Figure 6> and <Figure 8>. For the AD-AS model, it should be emphasized that there were two major AS shocks for the whole periods. The first one was due to the huge inflows of foreign workers from late 1960s to 1974 (i.e., LRAS$_0$ $\Rightarrow$ LRAS$_1$). The second one was caused by the structural change from labour-intensified industry to capital and technology-concentrated industry ((i.e., LRAS$_1$ $\Rightarrow$ LRAS$_2$). This was led not only by the wage increase in domestic (and hence decrease in the price competitiveness), but by the huge inflows of low labour cost-oriented foreign (mainly, developing countries) goods. Therefore, the increase of AD ((i.e., AD$_0$ $\Rightarrow$ AD$_1$) induced by the expansionary fiscal policy and the increase in money supply was offset partly by the AS shocks.

(5) The effects of German economy on the U.S. economy

In the long-term view, each country has had its own independent macroeconomic policy since the collapse of Bretton-Woods system. In the short-term, however, each country is interrelated each other under the open-economy, and thus it is not strange that German economy should affect
the U.S. economy, and vice versa. The appreciation in DM influences U.S. dollar to be depreciated, because DM appreciates by the increase of dollar supply caused by the trade surplus, whereas U.S. dollar depreciates by the increase of demand for DM due to the increase of imports as well as increase in foreign investments.\(^5\) Also, the Fleming–Mundell model can be explained as the same reasoning mentioned previously.

### 3. Quantitative analysis using regression

To confirm the results obtained above by theoretically applying 3 international financial models, empirical analyses using real data were performed. In the analyses, homoskedasticity is assumed for each regression analysis, meaning that the variation of each residual is the same from time to time, because heteroskedasticity problem mainly happens for the cross-sectional data. As <Table 2> indicates, most of the regression equations are showing the same results as the theoretical results, i.e., overall relationships are very similar to the prediction by 3 models. Therefore, it is likely that more sophisticated design of regression equations and the collection of more general data will make our results more strong.

<Table 2> Regression Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>Regression equation</th>
<th>R(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keynesian model</td>
<td>TB = 1328.7 + 4.606*Y</td>
<td>0.0305</td>
</tr>
<tr>
<td></td>
<td>e = 2.738 - 0.0000828<em>TB (</em>** )</td>
<td>0.0824</td>
</tr>
<tr>
<td></td>
<td>e = 8.387 - 0.0000371<em>TB - 0.0069</em>Y (*** )</td>
<td>0.8814</td>
</tr>
<tr>
<td></td>
<td>e = 4.070 - 0.0398<em>G (</em>** )</td>
<td>0.7180</td>
</tr>
</tbody>
</table>

\(^5\) The U.S. CAB fluctuated cyclically during 1970s, but KAB mainly was deficit because of the increase in the investments by foreign countries(refer to Yarbrough and Yarbrough(1990, pp. 454–460).
### Table 2: Regression Analysis (continue)

<table>
<thead>
<tr>
<th>Model</th>
<th>Regression equation#</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fleming–Mundell model</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOP = 531.96 + 52.979*G</td>
<td></td>
<td>0.0504</td>
</tr>
<tr>
<td>BOP = 3761.1 - 262.84*i</td>
<td></td>
<td>0.0221</td>
</tr>
<tr>
<td>BOP = 192.87 + 14.99*m</td>
<td></td>
<td>0.0536</td>
</tr>
<tr>
<td>BOP = -6153.5 + 10.455*Y</td>
<td></td>
<td>0.0750</td>
</tr>
<tr>
<td>BOP = -4756.6 - 170.9<em>i + 9.701</em>Y</td>
<td></td>
<td>0.0840</td>
</tr>
<tr>
<td>BOP = -43278 - 1098.4<em>i +181.87</em>G - 193.12<em>m + 89.206</em>Y</td>
<td>(<strong>) (</strong>) (<strong>) (</strong>)</td>
<td>0.2160</td>
</tr>
<tr>
<td>e = 2.661 - 0.0000512*BOP</td>
<td>(*** )</td>
<td>0.0659</td>
</tr>
<tr>
<td><strong>AD–AS model</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P = -42.445 + 0.202*Y</td>
<td>(<strong>) (</strong>)</td>
<td>0.8286</td>
</tr>
<tr>
<td>P = 68.823 + 0.359*m</td>
<td>(*** )</td>
<td>0.9133</td>
</tr>
<tr>
<td>P = 36.501 + 0.651*w</td>
<td>(*** )</td>
<td>0.9858</td>
</tr>
<tr>
<td>P = 47.133 + 0.0869<em>Y - 0.0843</em>m</td>
<td>(*** ) (**)</td>
<td>0.9597</td>
</tr>
<tr>
<td>e = 2.2387 + 0.23*π</td>
<td>(*** )</td>
<td>0.0950</td>
</tr>
</tbody>
</table>

# Note: (*) : significant at α = 0.10  
(***): significant at α = 0.01

## IV. Conclusion

In this paper, three major international financial models (i.e., Keynesian, Fleming–Mundell, AD–AS models) were analyzed theoretically, and then they were tested empirically with the real data for the validation test. We find
that the theoretical predictions by three models are very consistent with the results from real data, implying that the traditional models have a strong explanatory power for the real world under the open-economy system.

The results, however, should be accepted with some cautions, since we did not introduce all factors and variables affecting the macroeconomy of a country. In addition, we narrowed our analysis to the German economy, meaning that we must be careful to generalize our results to other countries. The simplification of the time period also should be pointed out, because basically the AD-AS model is long-term model. The future research to overcome those problems is required.

References


Tipton, Frank B. and Robert Aldrich, An Economic and Social History of Europe, (from 1939 to present), Macmillan, 1987.

<Figure 1> Keynesian and Fleming-Mundell: 1971-1973
Figure 2: Impact of BOP surplus on $e(=DM/S)$

Figure 3: Keynesian and Fleming–Mundell: 1974–1975
<Figure 4> Keynesian, Fleming–Mundell, and AD–AS Curve
<Figure 5> Trend of Exchange Rate

<Figure 6> Trend of TB

<Figure 7> Trend of Real GNP
<Figure 8> Fleming–Mundell Model

<Figure 9> Trend of Money Supply (M1)
<Figure 10> Keynesian Model

<Figure 11> Trend of Price and Wage
<Figure 12> Trend of Tax, G, and Budget Balance