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FISCAL POLICY COORDINATION IN OECD COUNTRIES

Tuomo Mäki and
Matti Virén *

Abstract: This paper deals with fiscal policy coordination. In specifically it focuses on the question of how fiscal policy can be coordinated in the world where countries differ a lot in terms of cyclical behaviour and importance of country-specific shocks and well as the fiscal policy multipliers. To answer this question, we compute cyclical sensitivity measures for different components of the deficit variable and the discretionary measure of fiscal policy for all OECD countries for the period 1960-1996. For that purpose, we use the Blanchard Fiscal Impulse (BFI) measure. The cross-country behaviour and the GDP effects of these measures are then scrutinized. The outcome of this analysis is that very little evidence of fiscal policy coordination can be detected. This result holds even if we take into account the forecast errors in terms of GDP growth.

Key words: Fiscal policy, forecasts, coordination, JEL Classification E61

Tiivistelmä: Tutkimuksen kohteena on finanssipolitiikan koordinaatio OECD-maissa. Tarkemmin sanoen tarkoituksena on vastata kysymykseen, miten finanssipolitiikan koordinaatiota voidaan harjoittaa maailmassa, jossa eri maiden välillä on suuria eroja talouksien suhdannekäyttäytymisen ja maakohtaisten häiriöiden merkityksessä ja joissa finanssipolitiikan vaikutukset ovat erilaiset. Jotta voisimme vastata tähän kysymykseen laskemme budjettialijäämän eri komponenteille niiden suhdanneherkkyyttä kuvaavat joustot. Samoin teemme päätösperäisen budjettialijäämän suhteen. Tähän viimeksi mainittuun tarkoitukseen käytämme Blanchard finanssi-impulssivastetta, jonka laskemme OECD-maille ajanjaksolta 1960-1996. Tämän jälkeen vertailemme tämän indikaattorin suhdannekäyttäytymistä ja BKT-vaikutuksia eri maissa. Näiden tarkastelujen perusteella voimme päätellä, että finanssipolitiikan koordinaatiosta on hyvin vähän näyttöä. Tähän tulokseen päädytään, vaikka huomioitaisiin kokonaistuotannon kasvuun liittyneet ennustevirheet.

Asiasanat: Finanssipolitiikka, ennusteet, koordinaatio

Contents

1. Introduction

This paper deals with fiscal policy behaviour of OECD countries during 1960-1996. Although all (old) OECD countries are scrutinized we pay special emphasis to the EU countries. This is obviously because of the EMU and the Maastricht criteria, in particular the 3 per cent deficit criterion. The 3 per cent rule is important because it sets some explicit limits to fiscal policy actions - limits which have not existed before. Given these limits, one has to make sure that fiscal policy actions have the required effects. Accordingly, there is less room for fiscal policy errors. The question of whether fiscal policy actions are coordinated across countries is obviously a very important one in assessing the performance of fiscal policy and thus the decision maker in an individual country has at least to find out what the other countries do and preferably also what is the effect of the other countries' policies on her or his country.

At the principal level, one can quite easily demonstrate that policy coordination pays off and/or decentralized policy making is inefficient (see e.g. Canzoneri and Gray (1985) and Buiter and Marston (1985) Sachs (1984) but see also Rogoff (1985) for a counter-example). The problem is that there is a long way from this principal level to actual policy. That can be seen already by examining the structure of the theoretical models (see e.g. Oudiz and Sachs (1984)). Very little work has been done to demonstrate that policy coordination (a) is indeed possible and (b) the benefits are important (see, however, Canzoneri and Minford (1988)). The motivation of this paper is related (precisely) to this empirical implementation. Thus we try to answer the question of how to we can really coordinate fiscal policies among the OECD (EU) countries.

In order to be able to answer this question we scrutinize the differences between these countries in terms of the prerequisites for fiscal policy actions and in terms of cyclical behaviour of the whole economy and the public sector, in particular. In addition, we try to find out whether there has been any evidence of fiscal policy coordination during this period. In addition, we try to find explanations for eventual deficiencies in policy behaviour. To this aim, we look at the cyclical determination of different revenue and expenditure categories, the cyclical and discretionary components of public deficits and the forecast errors in terms of GDP growth.

The structure of the paper is the following: First we analyse the economic environment in which policy coordination is possible; in other words we try to find out under which conditions coordination is really possible. Then in section 3 we briefly examine the data to find out whether the nature of economic shocks and the prerequisites for fiscal policy would have enabled (and required) coordinated fiscal policy. In section 4 we try to identify the cyclical and discretionary components of fiscal policy using the Blanchard (1990) procedure.

Using the data for these components we then assess the cross-country correlations between the (discretionary) fiscal impulse measures (section 5). In section 6, we examine the GDP forecast errors to find out explanations for some empirical regularities (and obscurities) of the data. Finally, in section 7, some concluding remarks follow.

2.   Requirements for fiscal policy coordination

Fiscal policy coordination will not take place unless certain necessary requirements are fulfilled. In particular, the following things could be thought to be essential:

1. The cyclical behaviour of the economies and the nature of shocks must be similar.

2. The tax and transfer systems, as well as the budgetary process, must be similar.

3. Forecasts must be sufficiently accurate.

4. Different countries must share the same policy view and they must have similar prerequisites for policy actions.

If the cyclical movements are completely unrelated, there is obviously no need for policy coordination. In other words, if the output shocks are entirely country-specific, also policy measures must be country-specific. By contrast, if the shocks are common to (a relevant set of) countries, the case for policy coordination is more easily motivated[1]. A traditional way of analysing the benefits of policy coordination makes use of a Keynesian type model which highlights the importance of fiscal and foreign trade multipliers (see e.g. Fair (1979))[2]. Alternatively , the role of the terms of trade could be the main channel of transmission (see e.g. Corden (1995)). The problem is that different models produce somewhat different results in terms of spillover effects. Thus, for instance, the traditional Laursen & Metzler (1950) model predicts that domestic autonomous government expenditures which raise domestic output lower the level of output abroad, i.e. domestic spending is transmitted negatively to the world. Also the Frenkel & Razin (1985) model produces a similar result. In fact, just the sign and symmetry of inter-country spillover effects of policy is the crucial thing in determining the direction to move in coordinating macroeconomic policies.

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[1] When we speak about policy coordination among the EMU member countries, we obviously implicitly assume that the countries represent a optimum currency area where common shocks dominate country-specific shocks. In the case of the EU, the member countries are obviously quite interdependent with respect to trade so that there is no doubt of the spillover effects.

[2] A classical example of the consequences of policy coordination failures is the experience of Mitter-rand's government when it attempted to pursue independent expansionary policies for France in 1981-83.

The nature of the spillover effects is obviously not the only thing which makes policy coordination so difficult. Coordination requires also very good estimates of the policy transmission mechanism. In the case of fiscal policy, it is required that the tax and transfer system (progressivity of taxation, indexation of transfers and so on) is quite similar across countries and, of course, that the relevant parameters are known to the policy makers. Thus, for instance, if the cyclical behaviour of deficits differs very much across countries, all assessments of the state of government finances become very difficult and optimal policy (in the certainty equivalence sense) cannot be pursued (as shown already by Brainard (1967)).

Obviously, systematic fiscal policy also critically depends on the availability of accurate forecasts. Thus, if forecast values on the cyclical behaviour of output are completely unrelated to actual values and if the forecasts errors are uncorrelated between countries, policy coordination may fail although one could, of course, attempt to coordinate the policy actions.

The question of policy goals is somewhat difficult because there is no agreement on the level of agreement between economists and policy makers on the desirability of policy activism and the direction and magnitude of "the right policy" (see e.g. Region Magazine (1997)). As far as policy prerequisites and constraints are concerned we know that countries differ a lot for instance in terms of debt and the size of the public sector. We also know that countries do differ in terms of the functioning of the labour market and the inflationary effects of aggregate demand changes. All of these differences obviously make it very difficult to pursue similar policy rules in different countries [3].

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[3] See e.g. Oudiz and Sachs (1984) for a review of problems in specifying a model for policy coordination and evaluating the gains from coordination. See also Tanzi and Schuknecht (1997) for cross-country comparisons on the role and the size of government.

3. Differences in fiscal policy environment in OECD countries

Next we briefly review some indicators of the fiscal policy environment in OECD countries for the period 1960-1996. The indicator give us some idea of the level of interdependence of economies and the role of common shocks. The indicators also illustrate the room for manoeuvring in terms of (additional) public expenditure and debt. Assume for instance that the policy make evaluates the possibilities of fiscal expansion. Then, for sure, the borrowing possibilities and the (expected) borrowing costs, the inflationary consequences of fiscal expansion affect at least the magnitude of the fiscal policy action.

1. Correlations between GDP growth rates between 21 OECD countries, Figure 1

2. An assessment of country-specific output shocks, Figure 2

3. GDP elasticities of government revenues, Figures 3 and 4

4. GDP elasticities of government expenditure, Figures 5 and 6

Clearly the cyclical movement (output shocks) are far from being highly correlated. In some countries, like Finland, country-specific shocks dominate output fluctuations. But the most difficult obstacles are related to the overall fiscal policy environment (cf. Table 1). The size of the public sector is somewhat different in these countries but the differences in the level of deficit and debt are far more important[4]. Not only is the level of debt different, but also the market value of debt is different. Thus, the maturity of debt varies a lot. Also the balance between domestic and foreign debt seems to follow a country-specific pattern. From the fiscal point of view, the important thing is the borrowing cost, i.e the interest rate. The differences are clearly important. For instance, a comparison of the United States and Greece indicates that the borrowing cost could be even threefold among the OECD countries. In some cases (see the ratings) excessive borrowing would not succeed but it would face some credit rationing. Finally, it can be seen that the inflationary consequences of fiscal expansion are probably quite different owing to the differences in the functioning of the labour markets in the OECD countries.

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[4] The level of government debt is important not only because of its effect on credit risk (and thus on borrowing costs). Recently, there has been a growing interest in the theoretical implications of debt on the fiscal policy transmission mechanism. For instance, Sutherland (1997) has shown that the power of fiscal policy to affect consumption can greatly vary depending on the level of public debt. Thus, when debt reaches extreme values a fiscal deficit can have a contractionary effect.

All in all, the indicators in Table 1 suggest that fiscal policy actions affect output in a quite different way in these countries. Obviously, one should at least know the fiscal policy multipliers. There is, however, no up-to-date assessment of these indicators. One may only suspect that they differ at least as much as the monetary policy multipliers (see e.g. Ramaswamy and Sloek (1997)).

The most important differences are, however, related to the cyclical behaviour of government expenditure and revenues. Thus, the corresponding GDP elasticities are not only different in terms of magnitude but also different in terms the sign. Thus, it is very difficult to forecast the development of government expenditure and revenues and it clear that even if the output increased (decreased) in the similar way in all countries, government deficits would behave in a completely different way. The differences in other policy environment variables (debt & unemployment) are, however, even much larger. The most surprising fact is, however, that the GDP elasticities of government revenues and expenditures differ enormously between countries suggesting the systems are very different indeed.

4. Distinguishing between cyclical and discretionary components of fiscal policy

This analysis boils down to computing the Blanchard fiscal impulse measure. This measure is applied, for instance, in Alessina and Perotti (1997). We have, however, computed the measure somewhat differently. First we used the GDP, not unemployment, as the reference series. Secondly, we have disaggregated both revenues and expenditures and made the cyclical adjustments for each individual disaggregate before aggregating all items to the aggregate deficit variable.

Thus, the estimating equation we have used is of the following type:

$$x_{it} = a_0 + a_1 y_t + a_2 t + u_t,$$

where x_i indicates the growth rate of real revenues (or expenditures) in category i, y the rate of real GDP growth, t the time trend and u the error term. Given the estimated parameters and the residual terms we can compute the values of x_{it} conditional on the values of y in previous periods.

By using actual lagged values of expenditure/GDP or revenue/GDP and the GDP deflator, we transform the growth rates of the revenue and expenditure variables into the corresponding GDP ratios (obtaining the percentage shares of, for instance, transfers relative to nominal GDP). The measure of the Blanchard Fiscal Impulse is then constructed as the difference between the cyclically adjusted primary deficit in period t and the actual primary deficit in period t-1, as a share of GDP.[5]

The BFI values are displayed in Figure 7. The time series correlations between the BFI and the GDP growth rates, on the one hand, and between the actual

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[5] The GDP variable is used here as the reference variable because it is very difficult to distinguish cyclical and secular components of the unemployment rate in most of the OECD countries. This also shows up in estimation results of the revenue and expenditure equations. In the case of the unemployment rate a considerable portion of the results turned out to be completely perverse. The unemployment rate conditional and the GDP growth rate conditional BFI values differed considerably over countries. Thus, the average correlation between these two measures turned out to be 0.74. Clearly, this result illustrates the difficulties that the policy makers face in assessing the cyclical situation and the magnitude of cyclical deficit effects. Disaggregation of revenues and expenditures was of lesser importance so that the aggregated and disaggregated BFI values were quite similar (a complete set of results is available upon request from the authors). Finally, a comment on the IMF data merit note. That is because we also used the IMF data for structural (non-cyclical) deficits. The qualitative results with these data were quite similar to those presented in this paper but there were some important differences which again emphasize the amount of uncertainty we have in coordinating fiscal policies (for the IMF data, see Tanzi and Fanizza (1995)).

primary deficit and the GDP growth rates, on the other hand, are reported in Figures 8 and 9.

On the basis of these figures one can argue that discretionary policy has been quite different in different countries. In some countries, e.g. Finland, the policy has been quite procyclical while in some other countries some contracyclical features can be detected. Given these differences, it is already obvious that policy actions have not been coordinated because they have not followed in any way the same policy rule.

On the other hand, we can suspect that the effectiveness of fiscal policy differs a lot across countries. To get some idea of these differences we carried out a cross-country analysis with a small VAR model in the same way in Ramaswamy and Sloek (1997). Thus, the model which was estimated made use of three variables: GDP growth y, the rate of inflation p and the BFI. In addition, linear time trend was added in the model as an exogenous variable. The BFI was used in two alternative ways: either as an endogenous (in the VAR sense) or as an exogenous variable. In the former case, the BFI was treated in the same way as y and p while in the latter case it was treated in the same as the time trend[6].

The lag structure of the model was determined on the basis of the Schwartz Bayesian Information Criterium (SBIC). Given those values we concluded that the proper lag length is just 1 and that the lag length was used in the experiments for all countries although in a couple of cases a better result was obtained with the lag length equalling 2 (the results with two lags were qualitatively quite similar, however). As for the empirical results, we display here only the BFI effects. In Figure 10 we report the impulse responses of BFI and Figure 11 the coefficient estimate of BFI, both from the GDP growth rate equation.

Some comments on the results merit note. There are considerable differences between countries in terms of effectiveness of fiscal policy but that something one might expect on the basis the analyses we have done thus far. Looking at the impulse responses, the differences in the dynamics of fiscal policy effects are, in fact, not so important. There are some countries like Sweden, Denmark, Netherlands, France, Greece, and Spain where the effects are very small and even of the "wrong" sign both in the short and long run. But in the case of countries, in which the effects are more important (like Finland, Austria, Germany, Ireland, UK, Italy, Portugal, Canada, Australia and the United States) the dynamics of fiscal policy effects is quite similar. The effect of a fiscal policy shock lasts two or three years but then dies out quite quickly. The set of countries does not come

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[6] If the BFI is treated in the same way as y and p, we have to interpret the results in such a way that they reflect both the fiscal policy multiplier and the fiscal policy reaction function. In the latter case, fiscal policy must be treated as discretionary .

as a complete surprise. It is only Italy which does not so obviously belong to the latter set of countries but rather to the set of Mediterranean countries.

The coefficient estimates of the (exogenous) BFI variable reported in Figure 11 largely follow the same pattern as the impulse responses in Figure 10. Thus, there are again weak and strong fiscal effect countries. In the case of the USA, Canada, Germany, Ireland, Italy and Austria fiscal policy seems to be quite effective while in the case of Denmark, Sweden, Greece and Spain fiscal policy seems to be almost impotent (or even affecting in the wrong way). The other countries lie somewhere between these two polar cases but they do not form any homogenous group[7].

The elasticities of deficits with respect to GDP allow us to estimate the critical growth rate of GDP which is required in order to keep the budget deficit below the 3 per cent level (excluding periods in which the GDP decreases more than 0.75 or 2.00 per cent). We have computed these critical values (for the parameter values of 1998) and given these values we have sorted the cross-country data in ascending order. The corresponding country rankings are reported in Figures 12 and 13[8].

Figure 12 contains a cross-plot of these country rankings and the actual value of the budget deficit (in relation to GDP according to the Maastricht treaty definition). One can easily see that Greece, Spain, Italy (in addition to Australia which obviously has not to worry about the deficit criterion) are countries which most critically need high growth to cope with the Maastricht criterion. By contrast, Switzerland, Denmark, Norway and Finland have quite good prospects in managing with this critical value - assuming, of course, that the future developments follow the same rule as in entire period of 1960-1995.

As can be see from Figure 13, this is not necessarily the case. In this figure, we reported the country rankings using two alternative model specifications: the one which includes a linear time trend and the other which includes both a linear and a quadratic time trend in the deficit- GDP regression. In the latter case, most recent developments in the relationship between deficits and GDP growth are allowed to affect separately the critical GDP growth rate estimate.

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[7] The countries which plan to participate in EMU from the beginning do not completely follow the pattern of fiscal policy effectiveness illustrated above. The same problem seems, however, to apply to the effectiveness of monetary policy (see Ramaswamy and Sloek 1997). The results for Japan are quite sensitive in terms of lag structure. If the current period value of BFI is included the sign is clearly negative.

[8] Some of the computed critical values of the GDP growth rates obtained such large values that we could not place them in the same graph with the other countries' values. Therefore, we use here the country rankings only.

For most countries, the critical GDP values (and thus the country ranking) do not change even if they include the quadratic time trend variable. For some countries, most notably for Denmark and Finland, the inclusion of the quadratic time trend variable makes a huge difference. Thus, if for instance Finland followed the long-run rule (give by the data for 1960-1995), the three per cent rule would be quite irrelevant (the probability that the budget deficit would exceed 3 per cent in "normal years" would be simply zero). But in the light of the developments in the 1990s this possibility is not excluded. In fact, Finland would be one of the poor performers in terms of fiscal discipline[9].

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[9] The puzzling results for Finland can be explained by referring to figure 7 which includes the graph for the actual deficit variable. Before 1990, the government budget was always running a surplus but after that (when Finland was hit by an exceptionally severe depression in 1991-1993) the deficit has been very large. Also in the case of Denmark, the data seem to include several regimes which obviously make it difficult to forecast the future developments of deficits, and fiscal policy in general.

5. Evidence on policy coordination

In trying to answer the question of whether policy actions have indeed been coordinated we simply scrutinize the cross-country correlations between BFI variables. These correlations are displayed in Figure 14. Moreover, the relationship between these correlations and the cross-country correlations in terms of GDP growth rates is presented in Figure 15. The same relationship but in terms of the actual primary deficit instead of the BFI variable is presented in Figure 16.

The correlations are remarkably low. One fourth of the correlation coefficients are even negative! For the sake of comparison one should notice that only a few of the GDP growth rate correlations are negative (see Figures 1 and 14). Thus average correlation is about 0.1, which does not give much support to idea that there has been a lot of coordination in fiscal policy actions.

Correlation analysis is not, of course, not a very powerful tool in analysing the performance of policy coordination. To obtain more affirmative results, one should try to identify the relevant policy reaction functions. We did indeed try to do that but the results were not very encouraging. We could not find any evidence of systematic fiscal policy interaction in terms of other countries' cyclical situation. [10]

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[10] The policy reaction functions performed very badly because the Blanchard Fiscal Impulse turned out to be only very weakly correlated with the GDP growth in other countries. Thus, if pairwise correlation coefficients are computed for the BFI and GDP the growth, only 24 out of 420 coefficients were significant at the 5 percent level of significance (19 were positive). Given this evidence, one can hardly find only systematic policy reaction function from the data.

6.   An assessment of forecast performance

In the light of these results one obviously tries to find an explanation for the nonexistence of evidence on policy coordination. One quite natural explanation concerns forecasts errors.

Assuming that fiscal policy actions are based on forecast values of GDP growth, one could hypothesize that if forecast values are completely unrelated to actual values it would look like there is no policy coordination. To evaluate this possibility we examine the OECD forecasts (which are published in Economic Outlook publications in June). The corresponding forecast errors are displayed in Figure 17. The relationship between forecast errors for the next year and actual GDP growth rates is in turn displayed in Figure 18. Finally the relationship between these forecast errors and actual primary deficits is displayed in Figure 19. The data for forecast errors are reported in Tables 2-4 in the Appendix.

The forecast errors appear to be very large indeed which explains our earlier findings in terms of policy coordination.[11] The problem is, however, that the errors are almost perfectly correlated with actual GDP growth rate values ($r = .87$). Thus, the OECD has largely failed to forecast the cyclical movements in GDP but this failure is similar for all countries. This can be seen from Figure 20 which contains the time series graphs for the GDP growth rate and corresponding forecasts and forecast errors. The one-year-ahead forecasts have been quite invariant over time being close to the past growth rates of GDP (see the reported coefficients of variation for the actual GDP growth and corresponding forecasts in Table 5). This observation is supported by empirical analyses which make use of the following data description equation:

$$e_t = a_o + a_1 y_t + a_2 e_{OECD,t} + a_3 e_{t-1} + u_t,$$

where e denotes the one-year-ahead forecast errors, y the growth rate of GDP, e_{OECD} the (unweighted) avergate forecast error for all OECD countries and u the error term (see Andersen (1997) for a similar analysis for the G7 countries). The estimation results with the 1982-1996 data are presented in Table 5.

Some comments on the results merit note. The equation fits into the data very well showing that the forecast errors are far from being uncorrelated. The cofficient of y_t, in particular, is very large - even close to one - suggesting that OECD has indeed failed to forecast the changes in the growth rate of GDP (or more precisely, the deviations of GDP growth form the corresponding average rate). The coefficient of e_{OECD} is positive (except of the UK) indicating that

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[11] The country average of the Mean Absolute Error (MAE) for the sum of the current and next year's GDP growth rate forecasts is 2.5 %.

forecast errors are similar across countries. Thus, the overall cyclical assessment is incorrect. Finally, the coefficient of the lagged forecast error term is negative (although rather unprecise) which suggests that OECD reacts to large positive forecast errors by increasing the forecast value of the following year's GDP growth rate.

The behaviour of forecasts and forecast errors is obvously an important thing from to viewpoint of policy coordination and it would require more analysis. Here, one may only point out that that the forecast errors do no seem to explain the above presented results in terms of policy coordination. Thus, if one scrutinizes the relationship between deficits and forecast errors (see Figure 19) it can be seen that these variables are more or less completely unrelated.

7. Concluding remarks

All in all, there has been very little evidence on policy coordination among the OECD countries. Given the policy environment this is not surprising. Large differences between countries - both in terms of institutions and values of various macroeconomic indicators - create formidable obstacles for coordinated policy actions. To obtain better coordination one has to harmonize the whole fiscal policy process. Also the prerequisites for fiscal policy actions must become more similar. In particular, better quality forecasts are required. Finally, some further convergence between (the EU) countries must take place before coordination may really pay off.

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OECD Economic Studies No. 26

Fitch-IBCA Report, January 15, 1997

Vinas and Jimeno (1966)

OECD Economic Outlook (June issue)

Figure 1   *Frequency distribution of GDP Growth Rate Correlations*
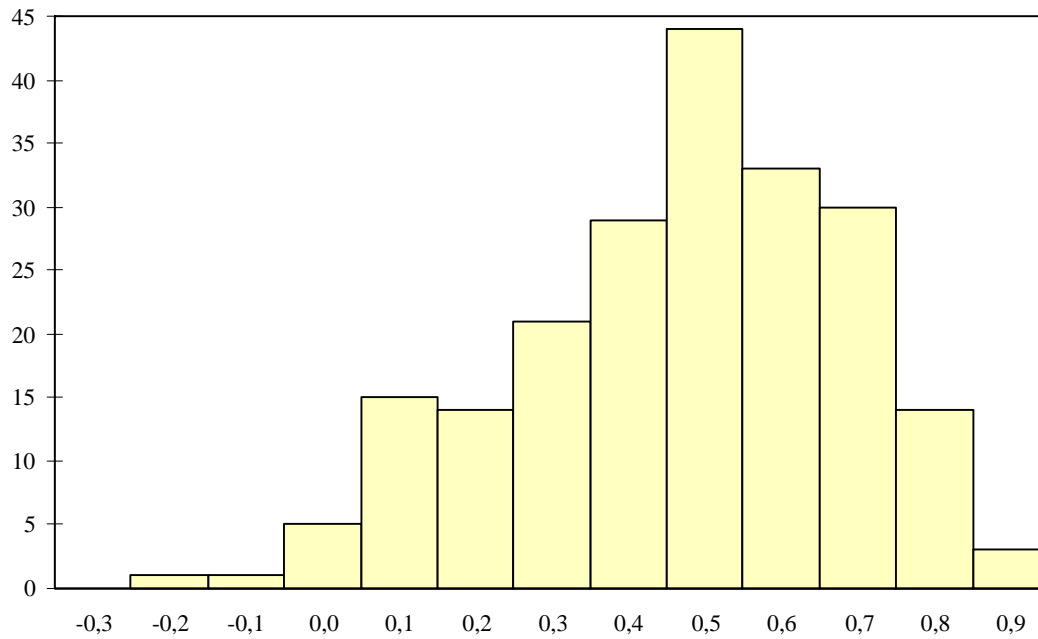
Figure 2   *Common and Country-Specific Variance of GDP for EU Countries, 1964-96*

Common variance with the EU area

Country-specific variance
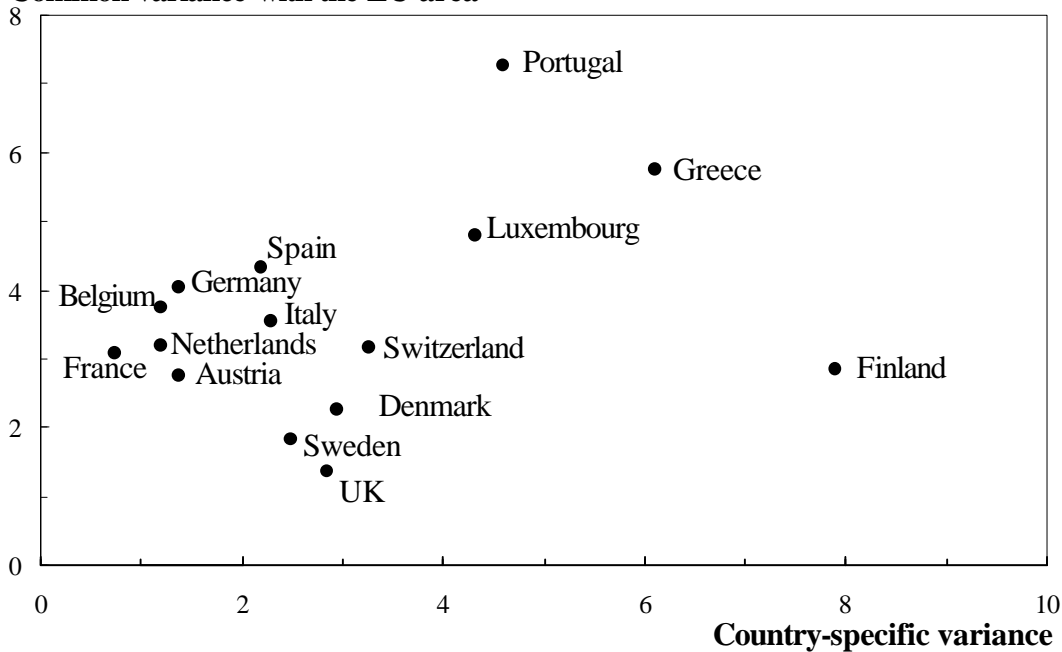
The values are obtained by running a regression $\Delta y_{it} = \boldsymbol{a} + \boldsymbol{b} \, \Delta y_{EU,t} + u_t$, where Δy_{it} is the GDP growth rate for country i while y_{EU} denotes the corresponding value for the EU aggregate. Var (u_t) and (Var (Δy_{it})-Var(u_t)) represent the common and country-specific variance components.

Figure 3   *GDP Elasticities of Government Revenues, 1961-95*

Total revenue

Total taxes

Direct taxes

Indirect taxes

Social security contributions

Other income
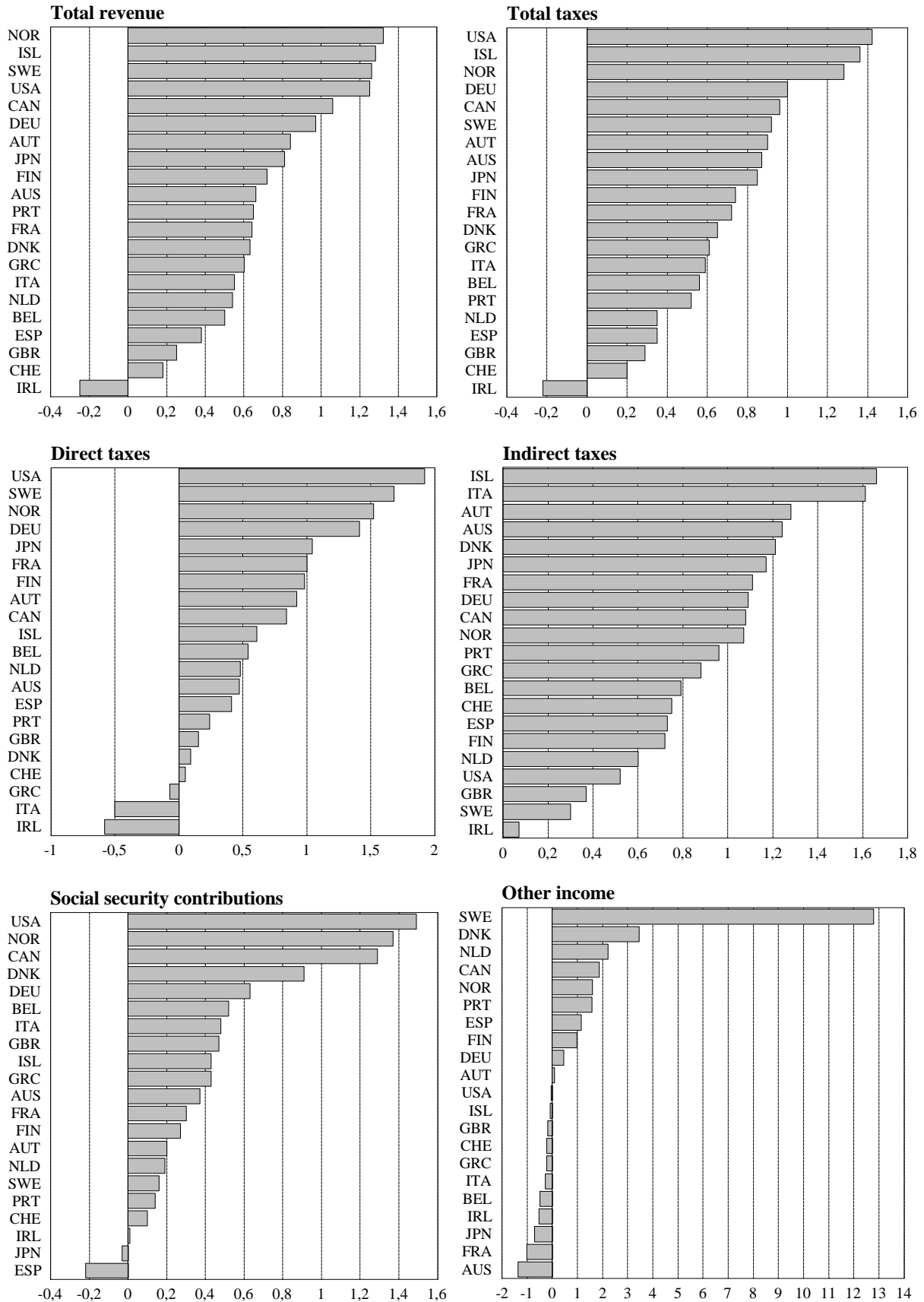
Figure 4   *Median GDP Elasticities of Government Revenues in OECD Countries, 1961-95*
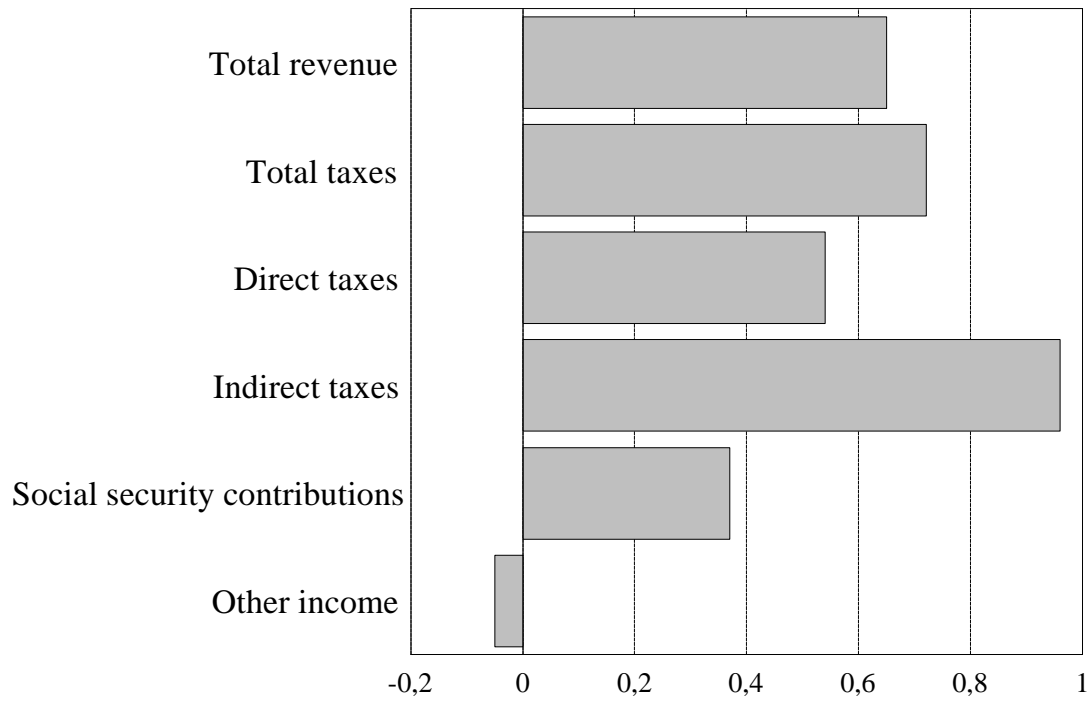
Figure 5 *GDP Elasticities of Government Expenditure, 1961-95*

Total expenditure

Consumption expenditure

Current transfers to households

Industrial subsidies

Investment
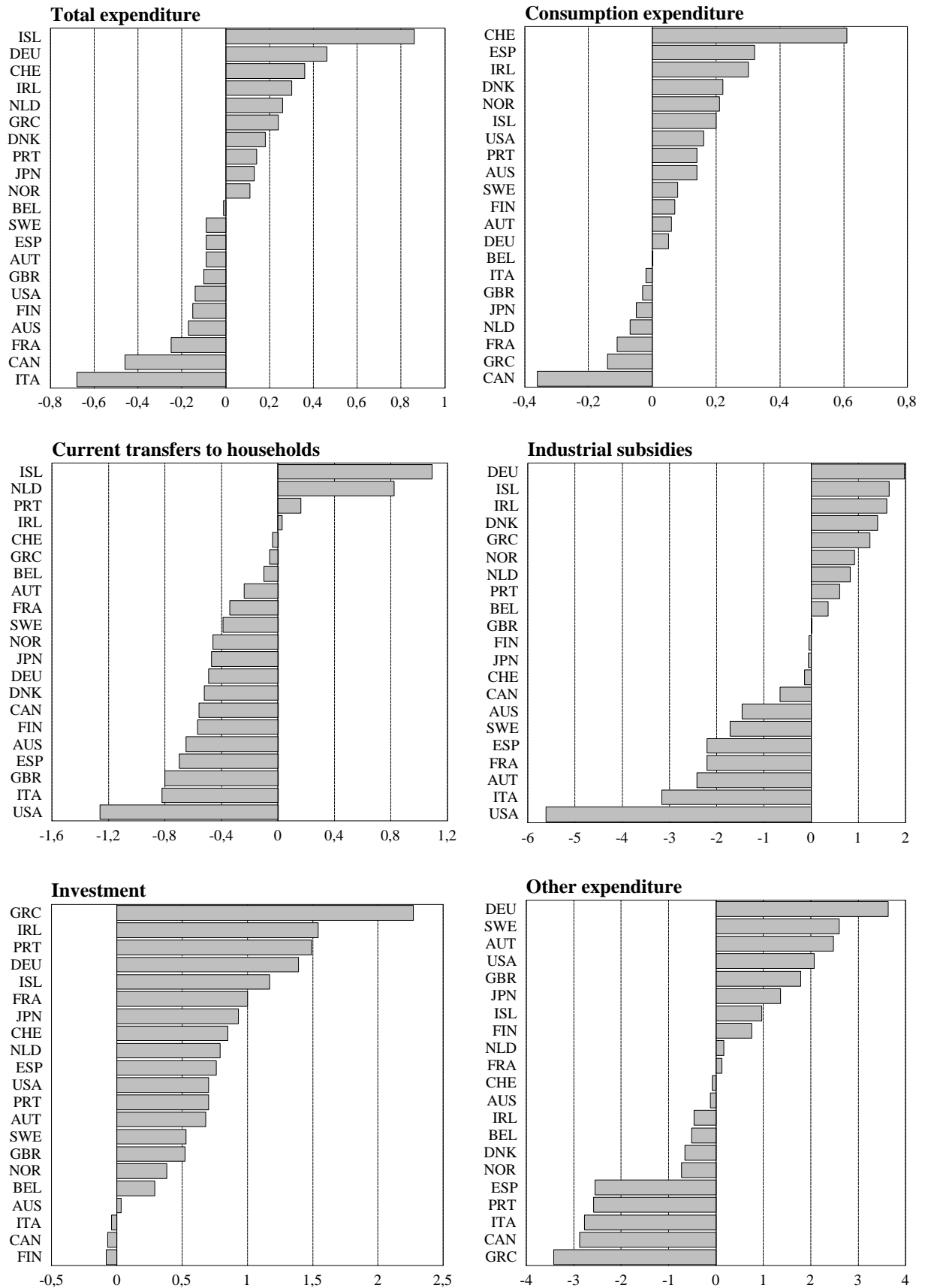
Other expenditure

Figure 6   *Median Elasticities of Government Expenditure in OECD Countries,*
1961-95
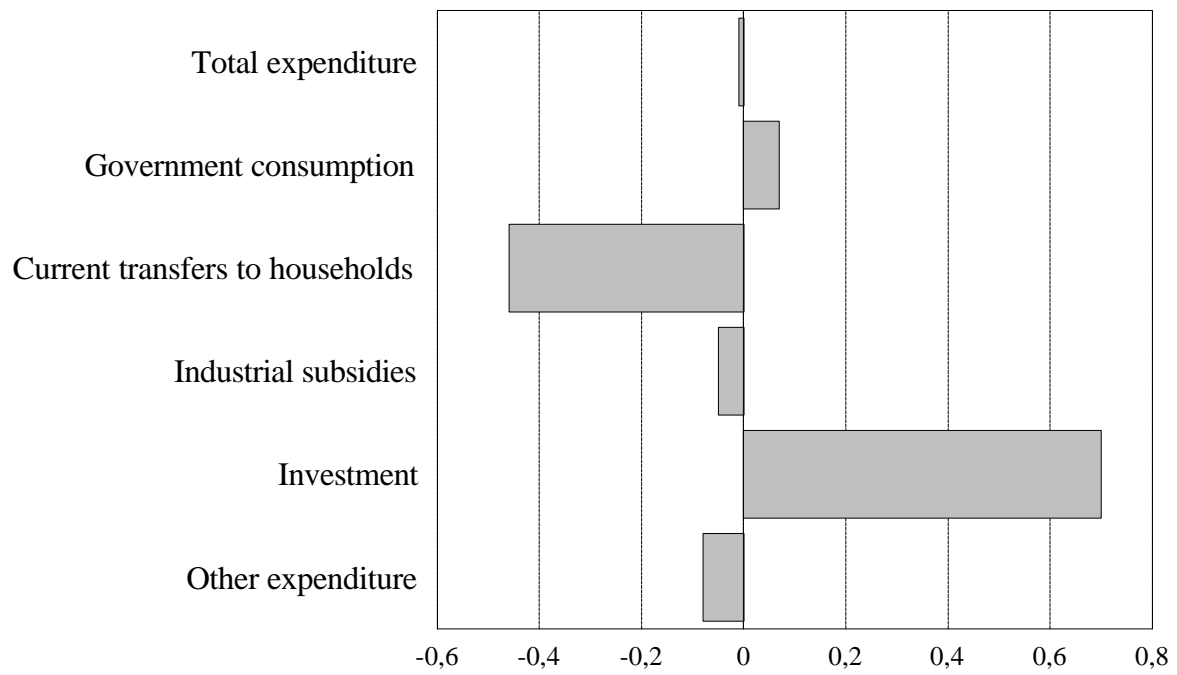
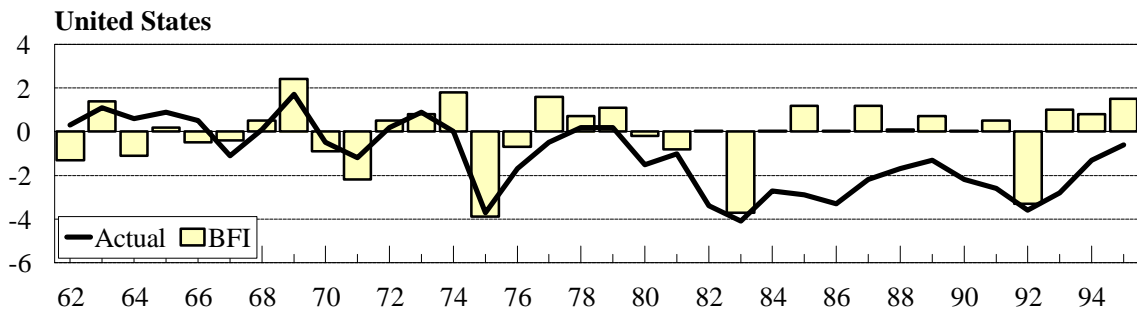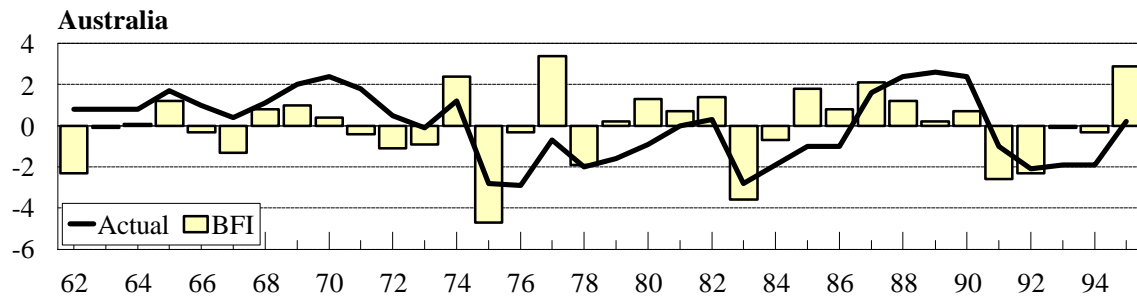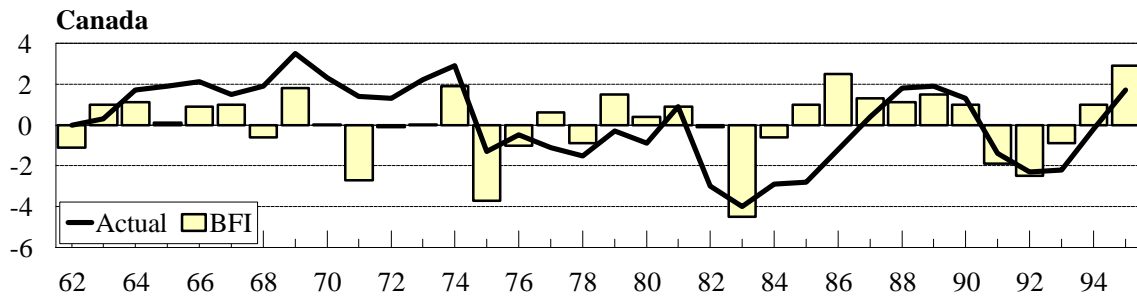# Figure 7   *Primary Deficit and the Blanchard Fiscal Impulse, 1962-95*

Finland

Sweden

Denmark

Norway

Iceland

Netherlands

Belgium

France

Austria

Germany

Ireland

United Kingdom

Switzerland

Italy

Greece

Portugal

Spain

Canada

Australia
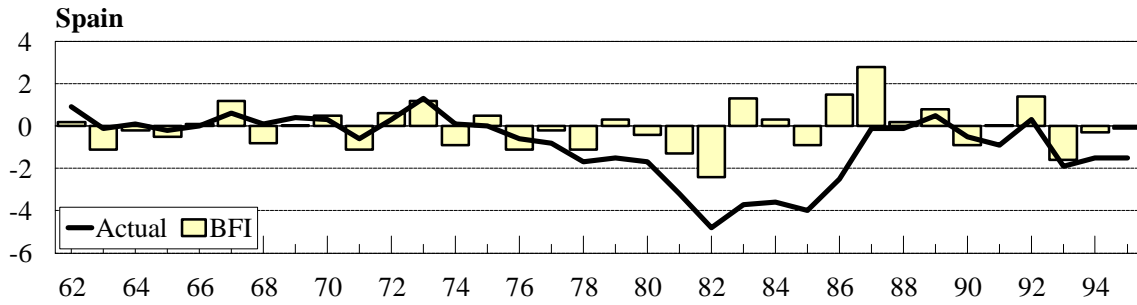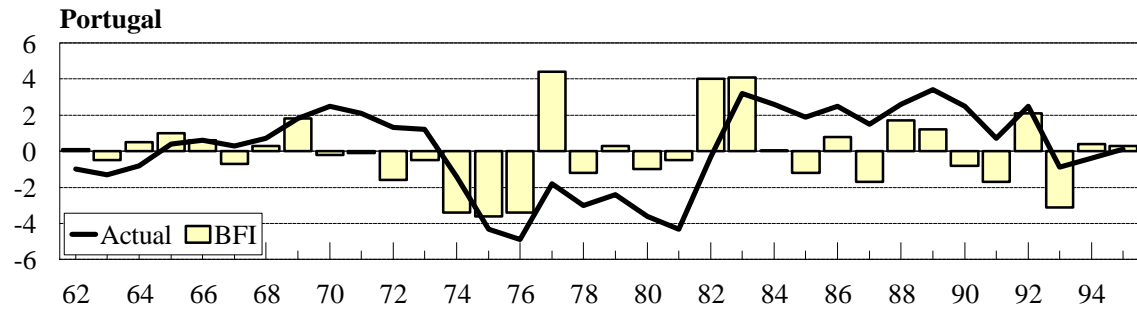
United States

Japan
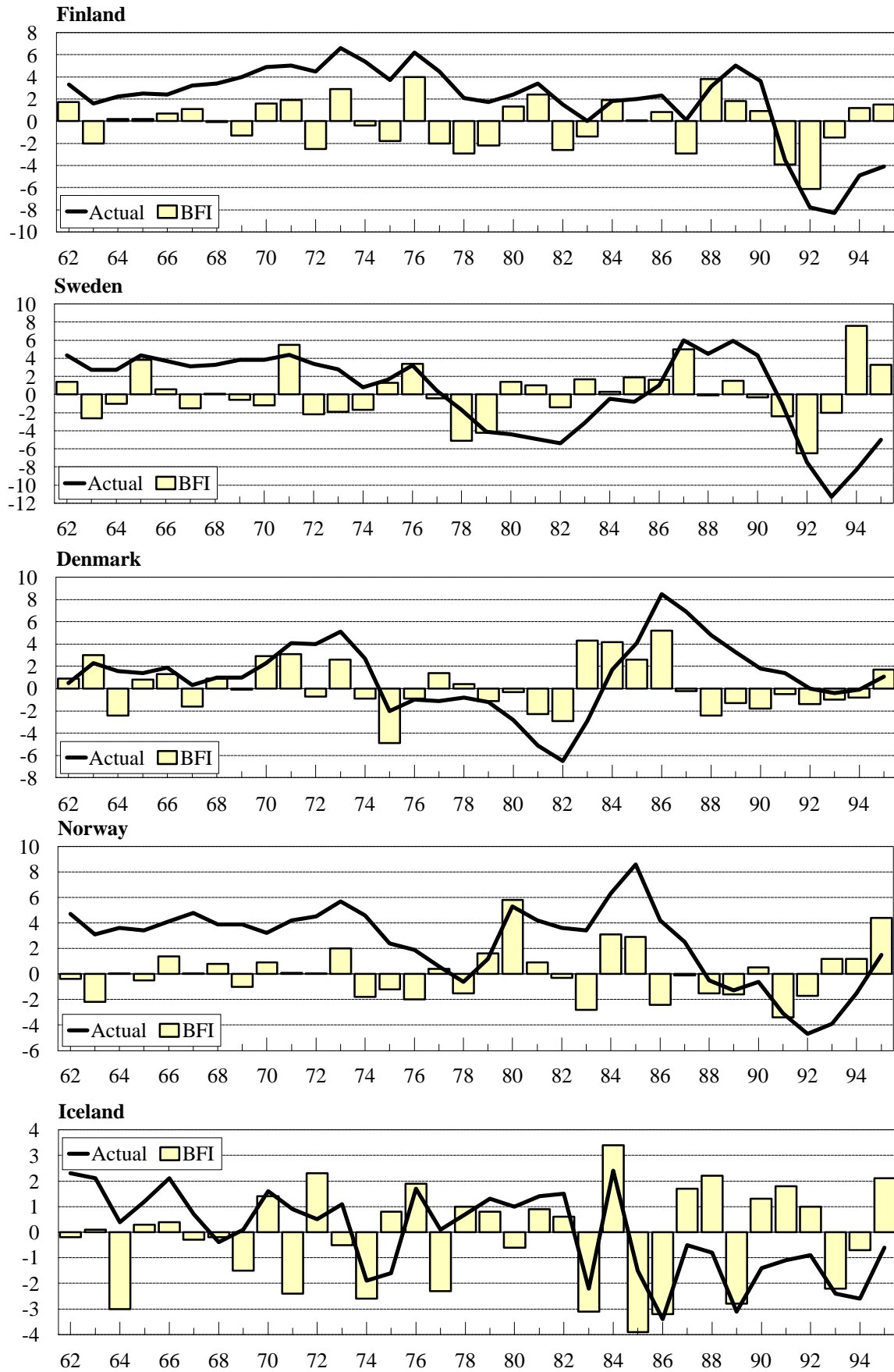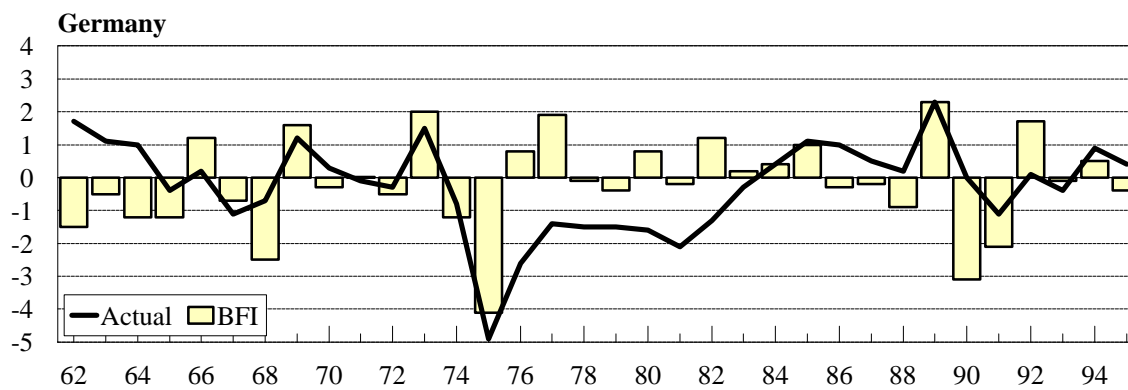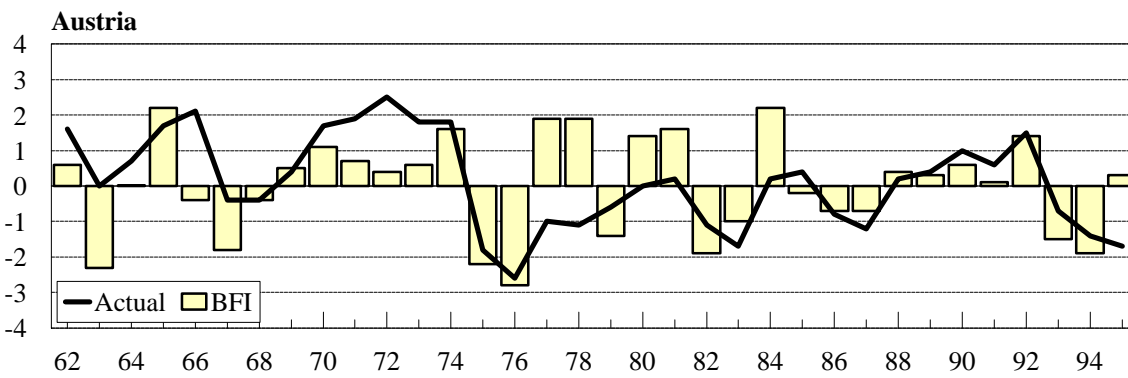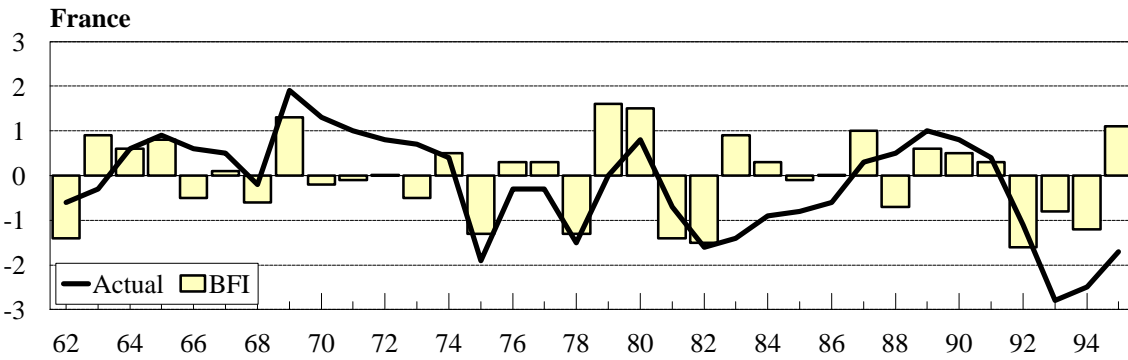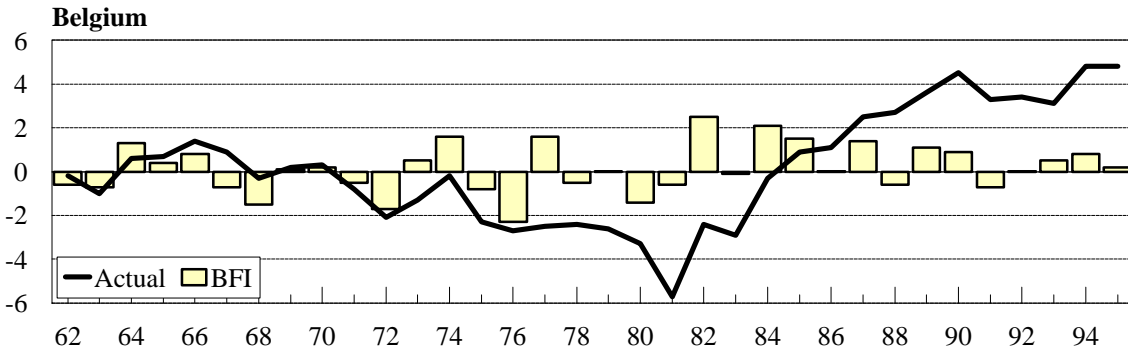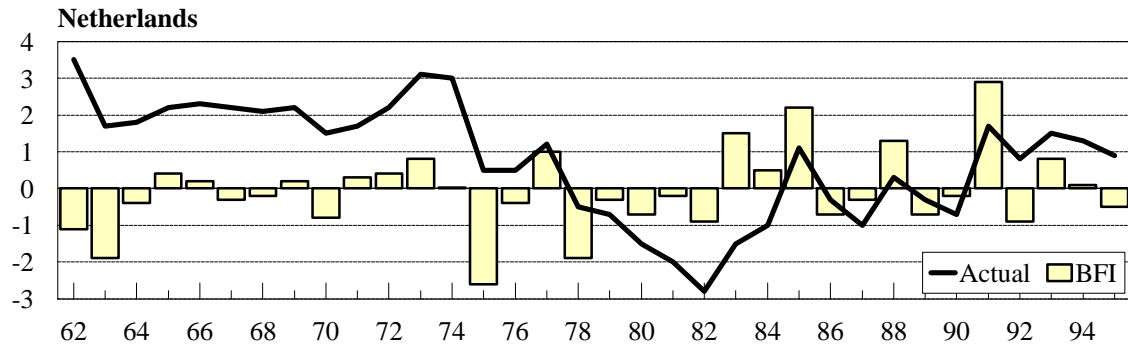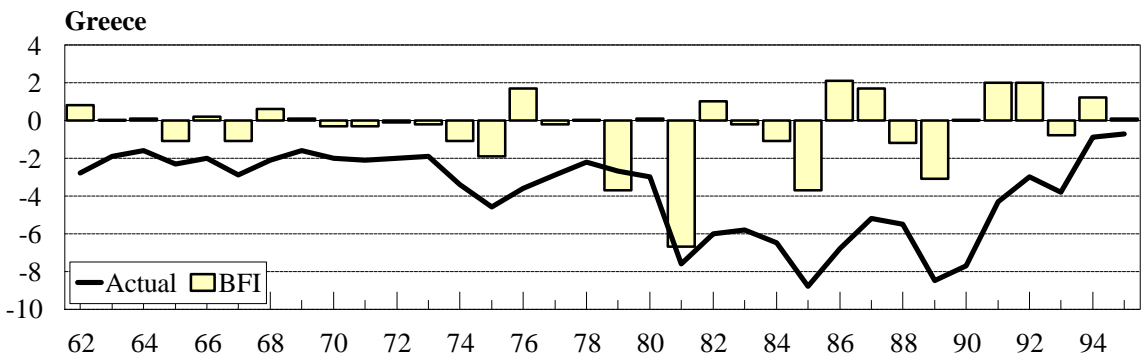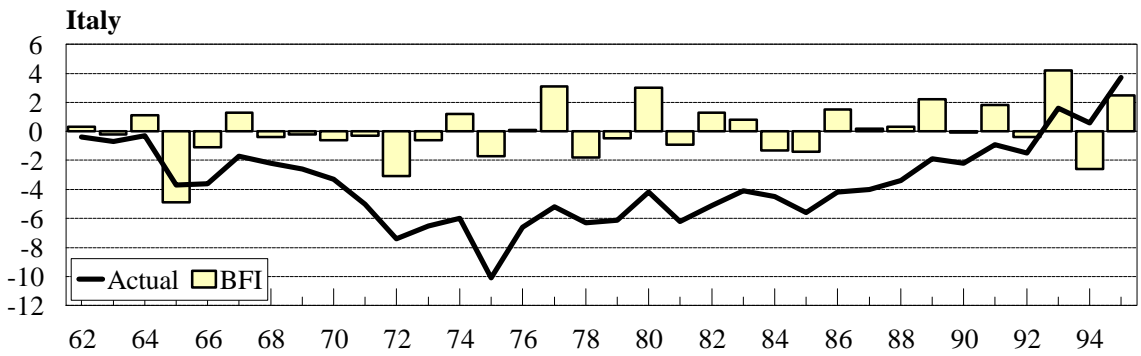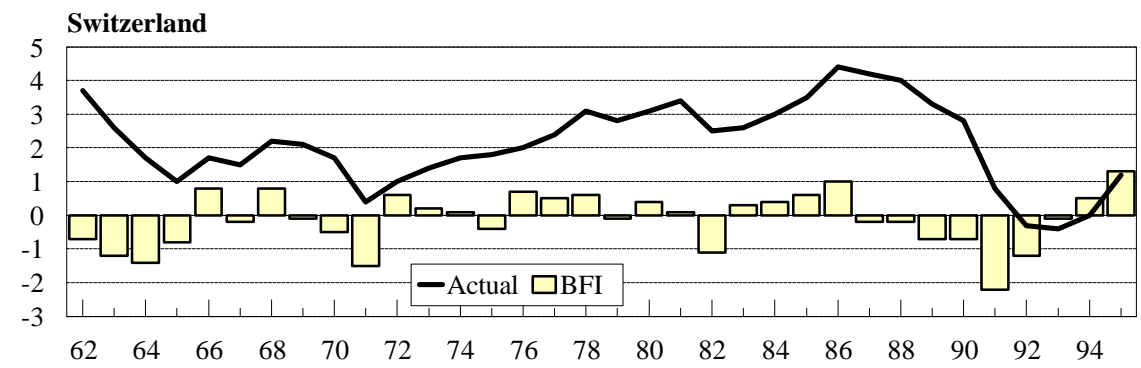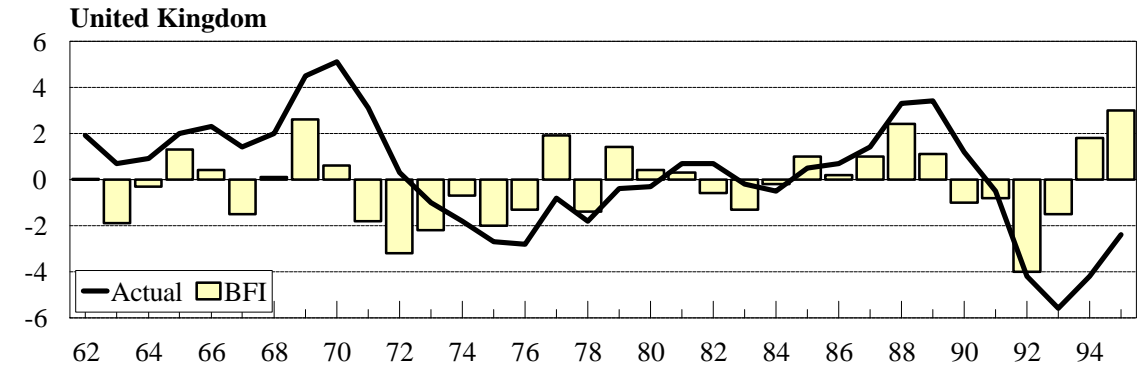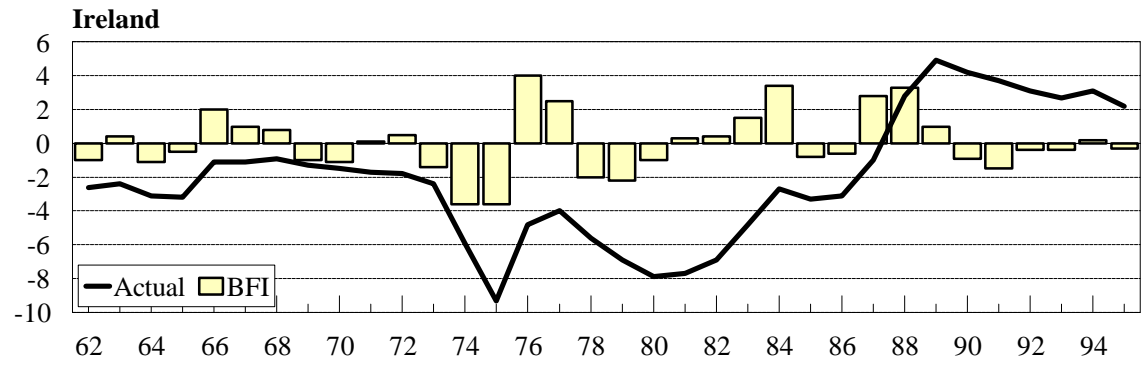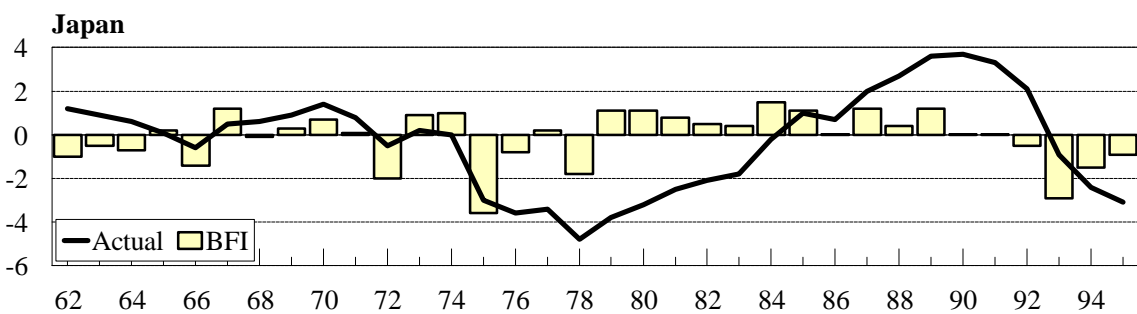
Figure 8   *Correlation between the Blanchard Fiscal Impulse and the GDP Growth Rate, 1962-95*
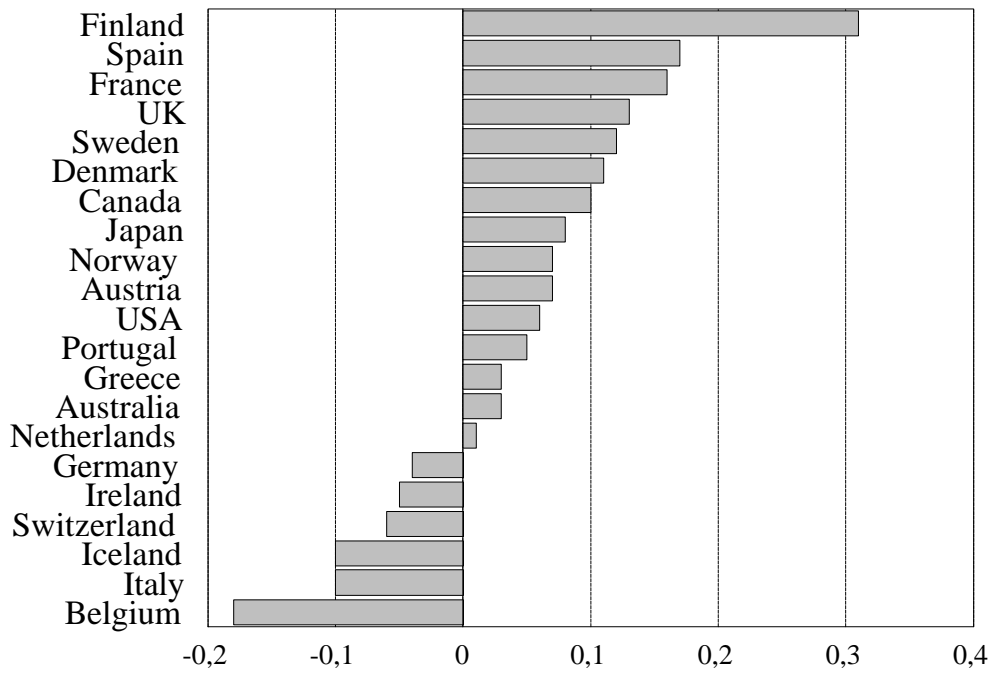

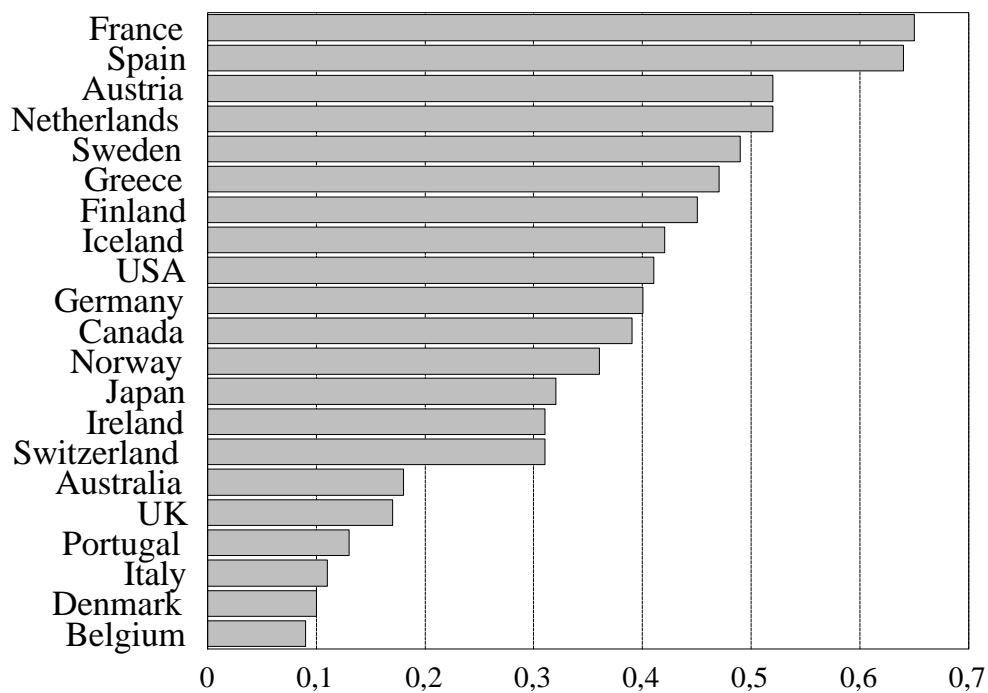*Figure 9*   *Correlation between Primary Deficit and the GDP Growth Rate, 1961-95*

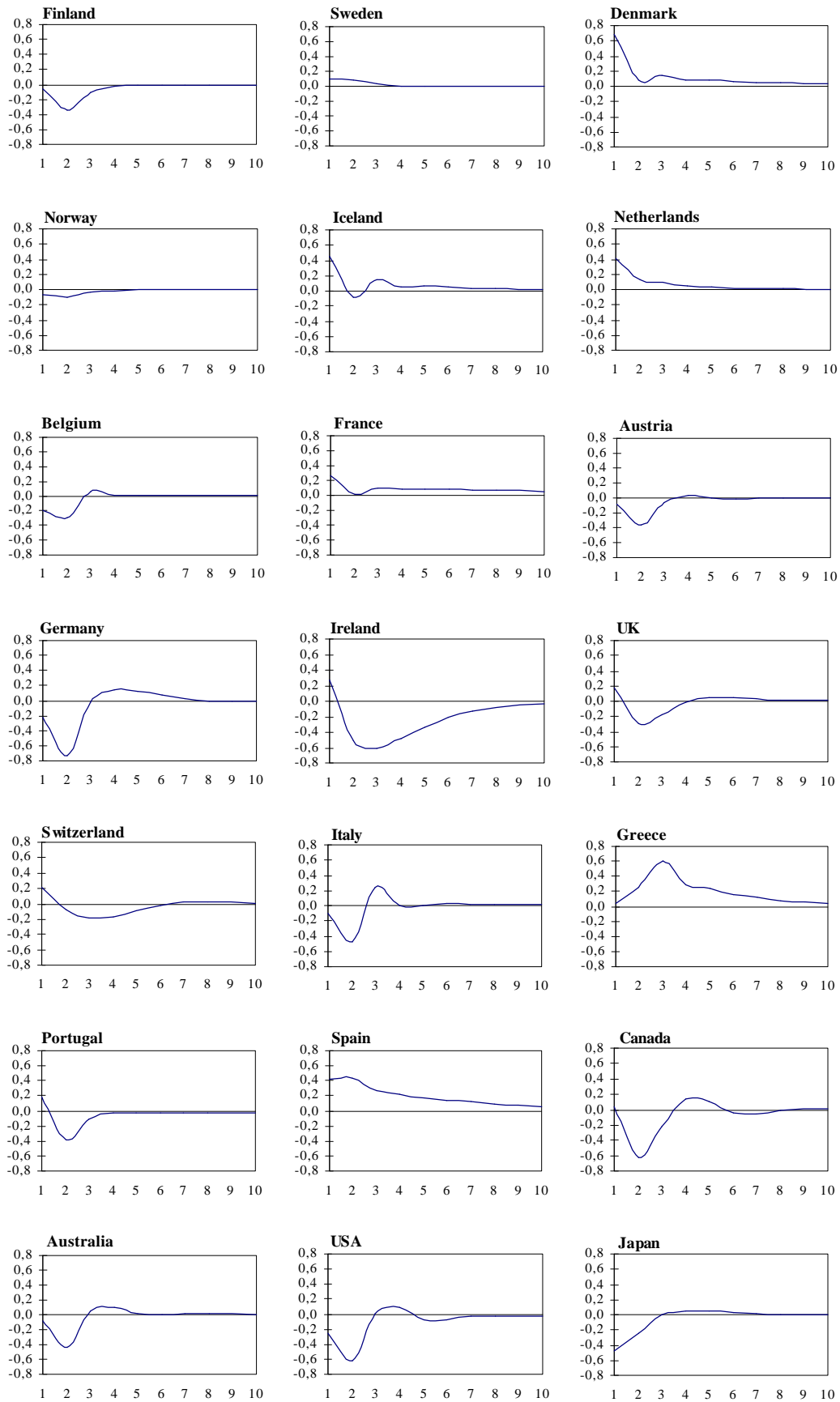*Figure 10   Fiscal Policy Impulse Responses with Respect to GDP Growth*

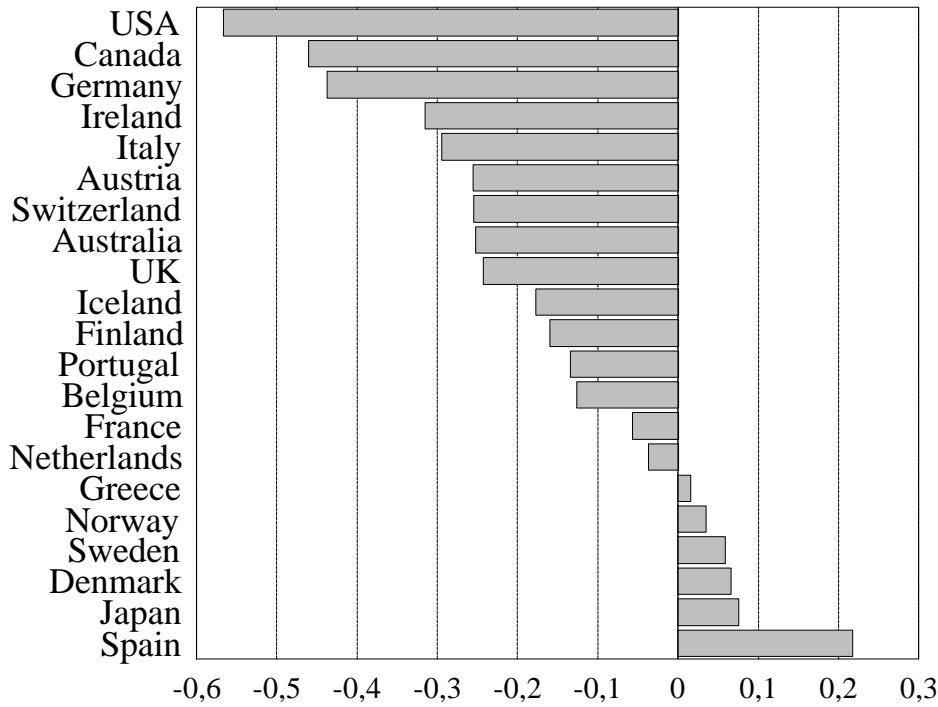*Figure 11*   *Coefficients of BFI in the GDP Growth Rate Equation*

Figure 12   *Country Rankings in Terms of the Critical Value of GDP Growth Rate*
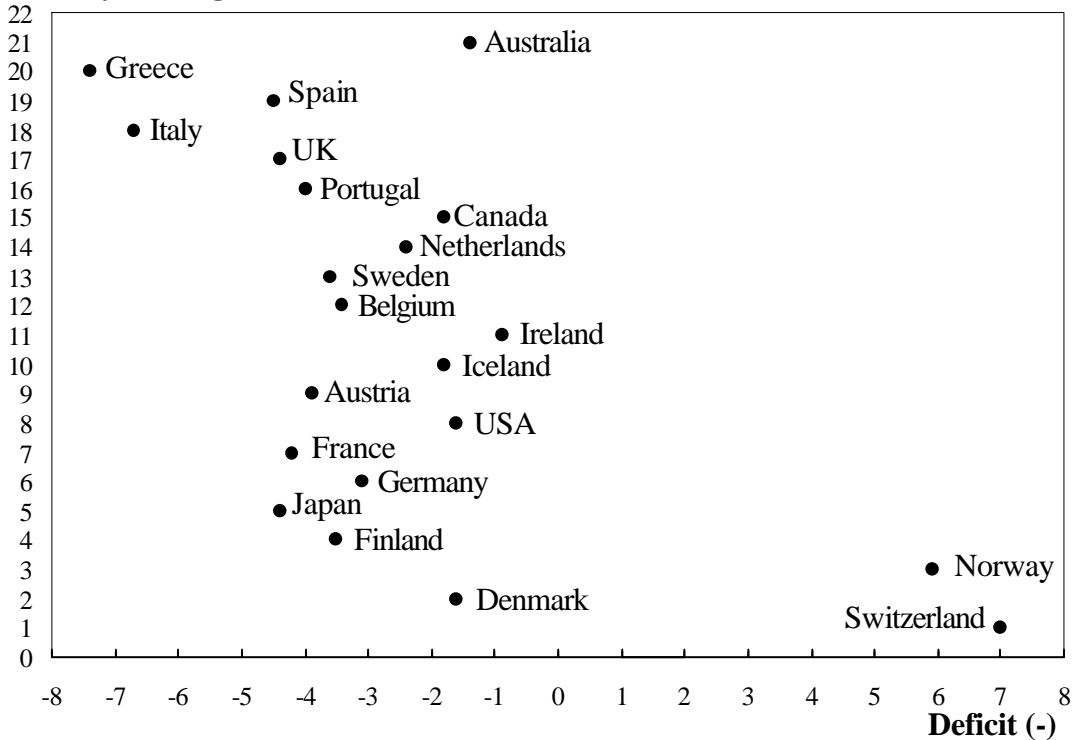
Figure 13   *Country Rankings with Different Trend Variable Specifications*

Country ranking with a linear trend

Country ranking with a quadratic
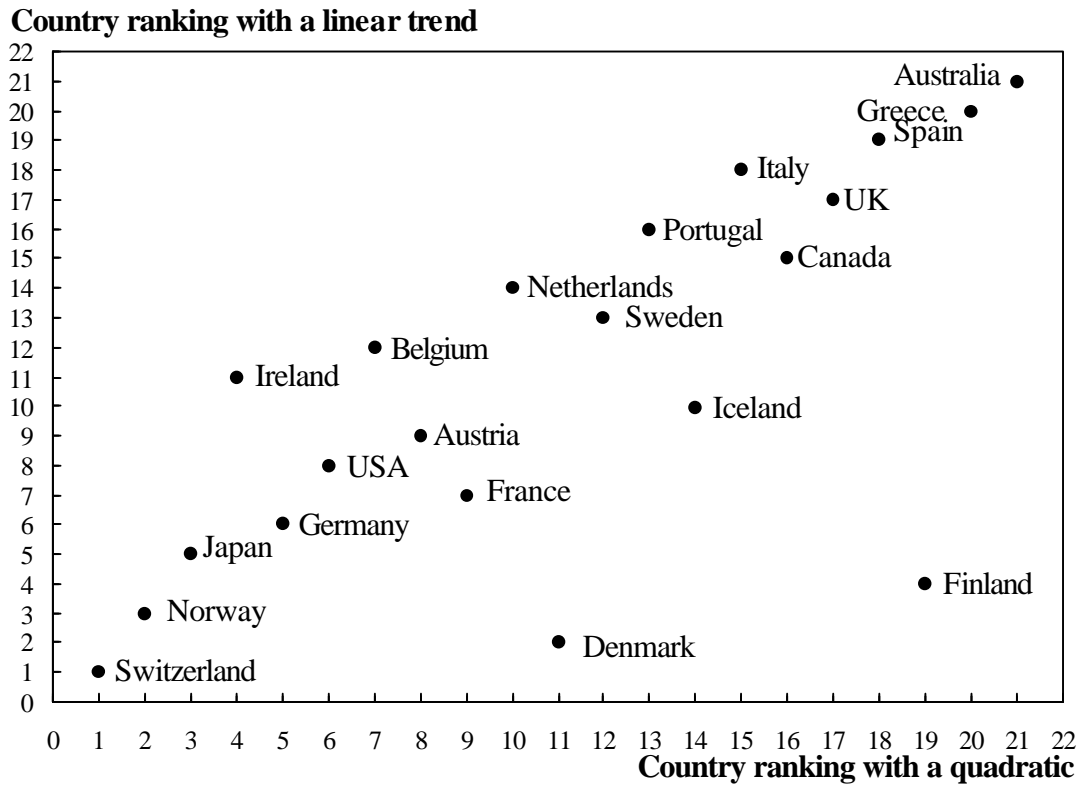
Figure 14   *Frequency distribution of BFI Correlations*
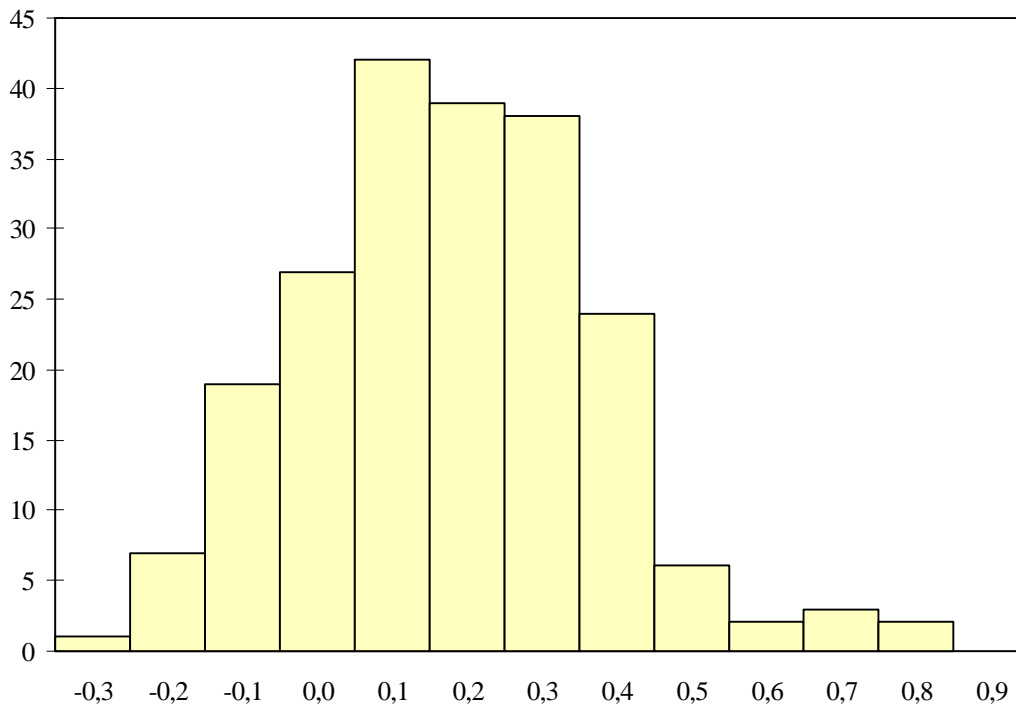
Figure 15   *Cross-Country Correlation between the Blanchard Fiscal Impulse and the GDP Growth Rates, 1962-95*

GDP growth correlations
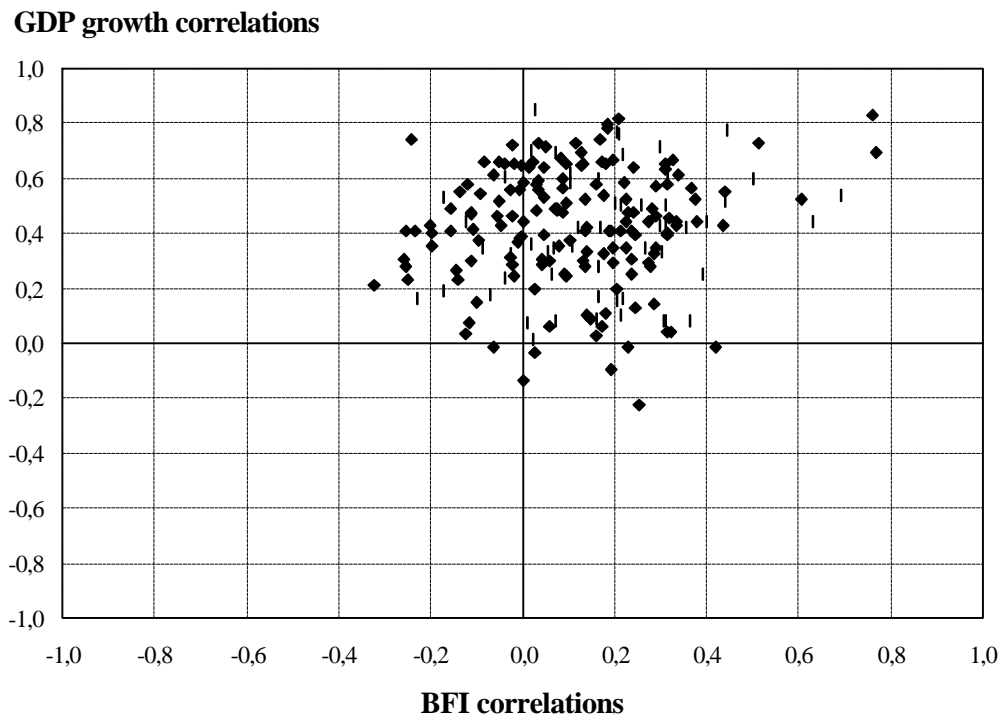
BFI correlations

Figure 16   *Cross-Country Correlation between Actual Primary Deficits and the GDP Growth Rates, 1962-95*

GDP growth correlations

Actual primary deficit correlations
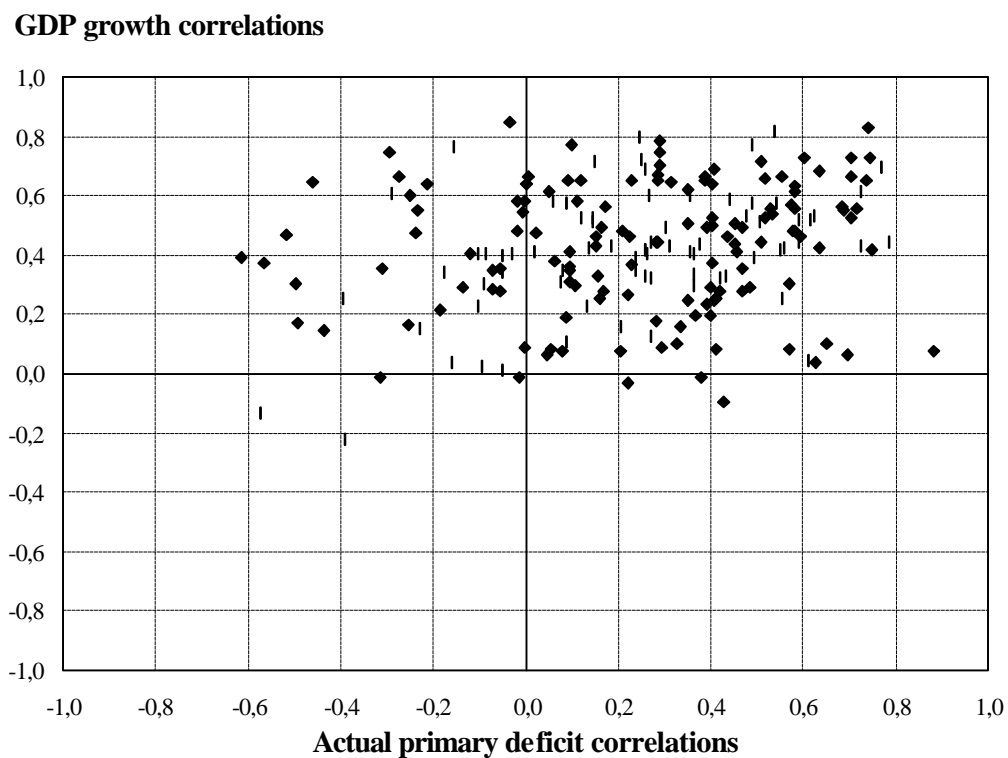
Figure 17   *Forecast Errors for GDP Growth Rates, 1981-96, %*
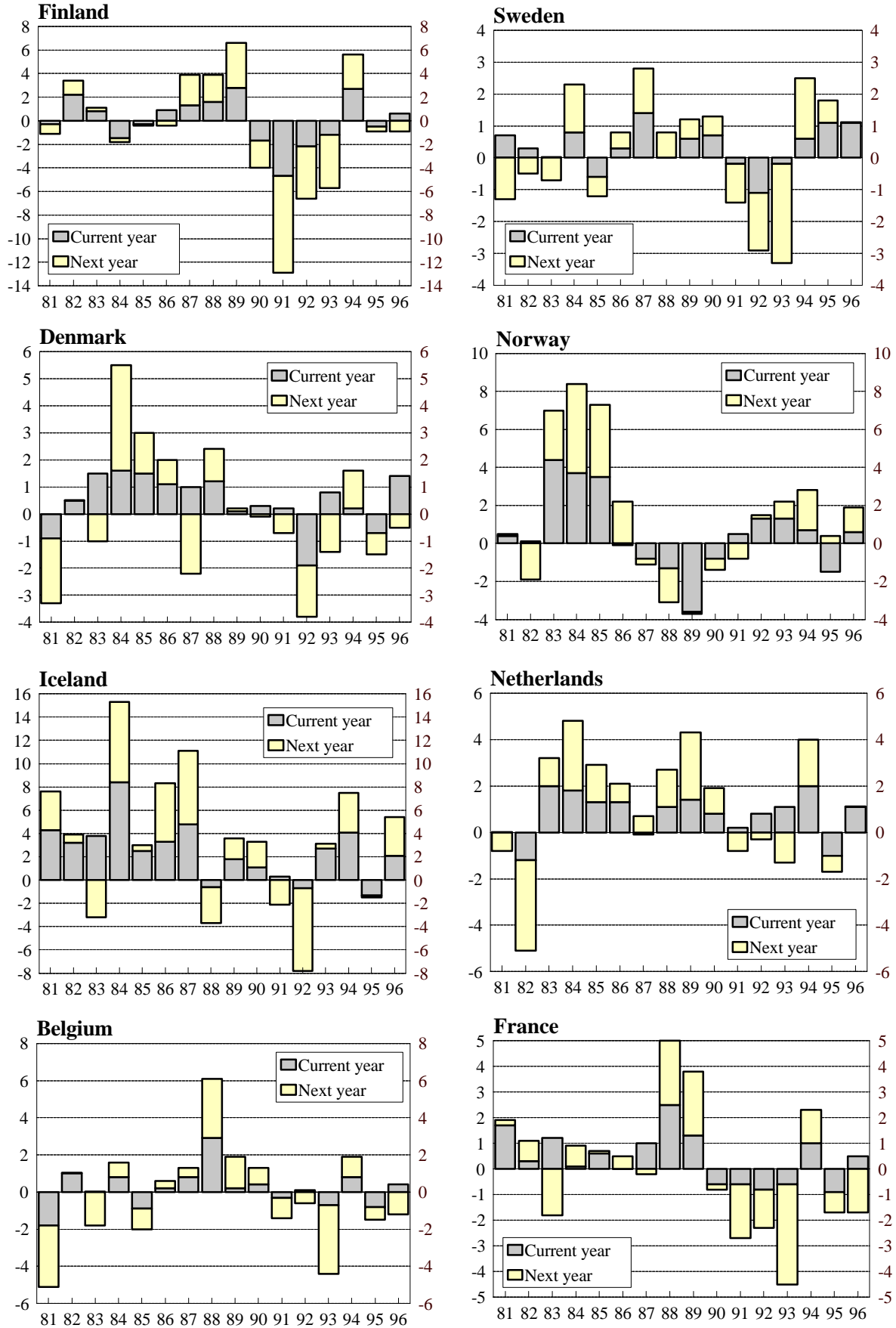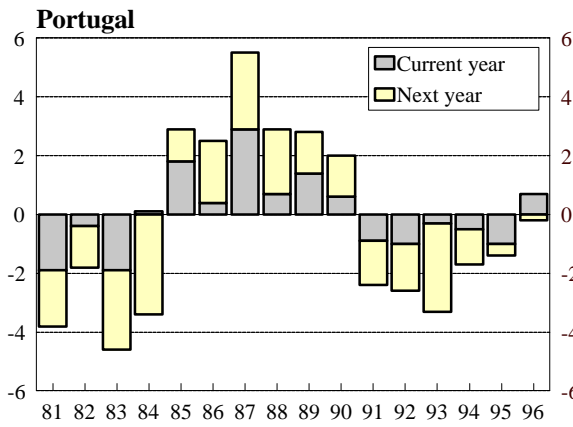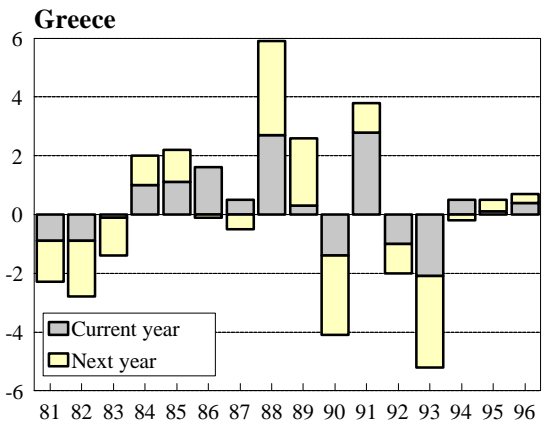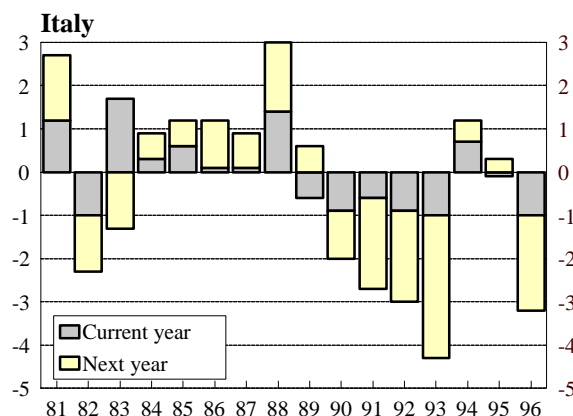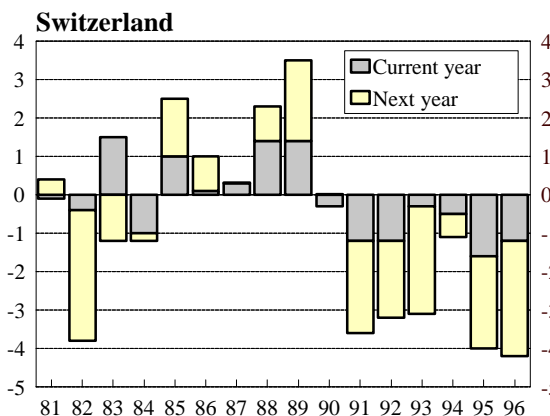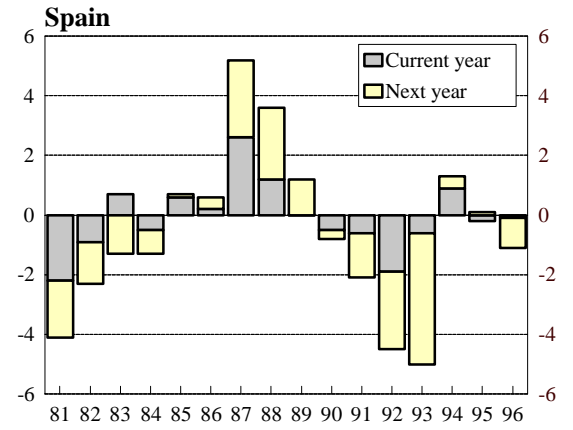
Figure 18   Actual GDP Growth Rates and Forecast Errors, 1981-96

Actual GDP growth
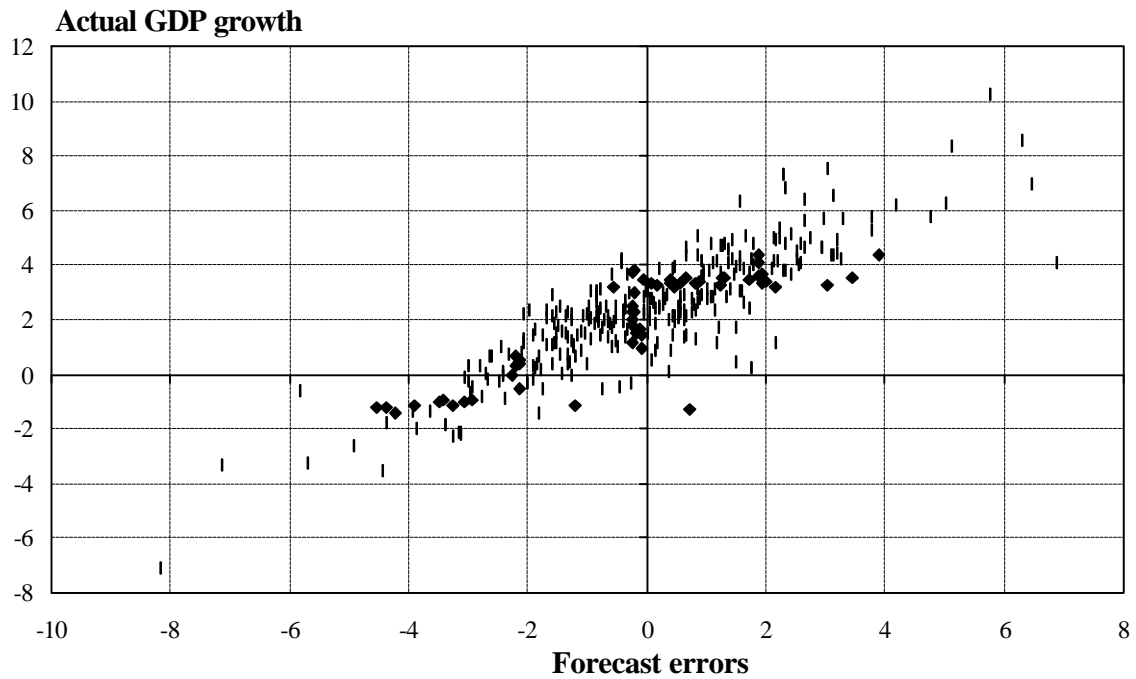
Forecast errors

Figure 19   Primary Deficits and GDP Forecast Errors, 1981-96

Primary deficit/GDP

Forecast errors
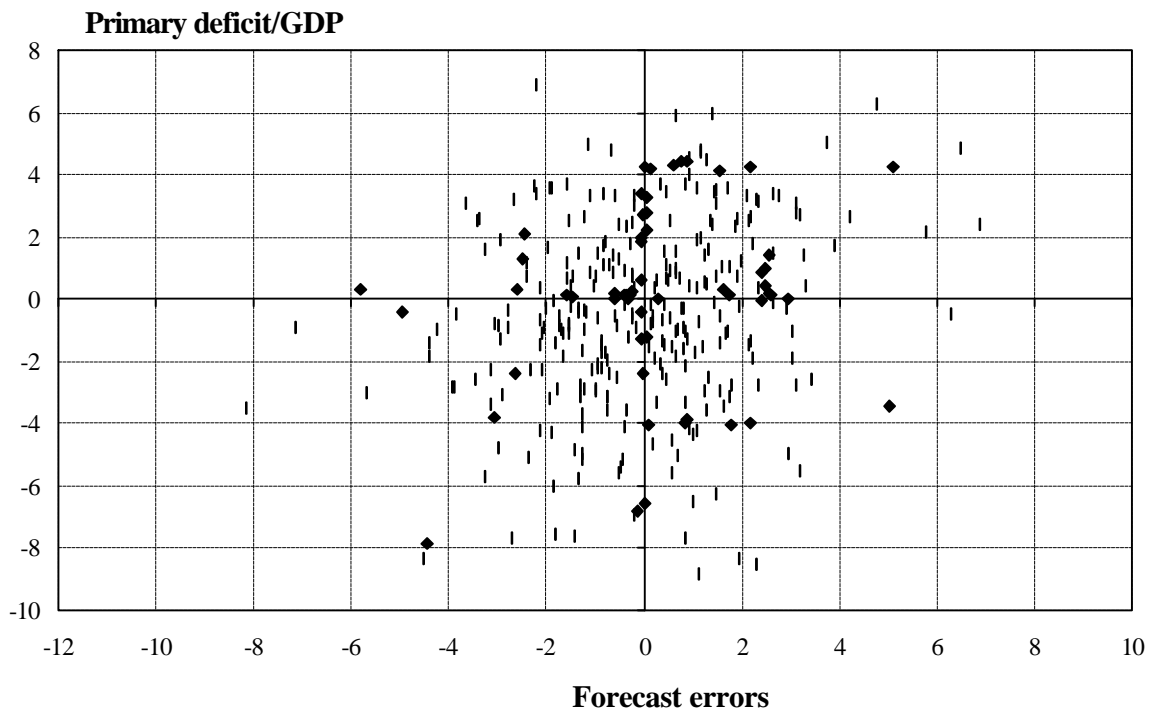
Figure 20   *GDP Growth Rates and Forecasts*

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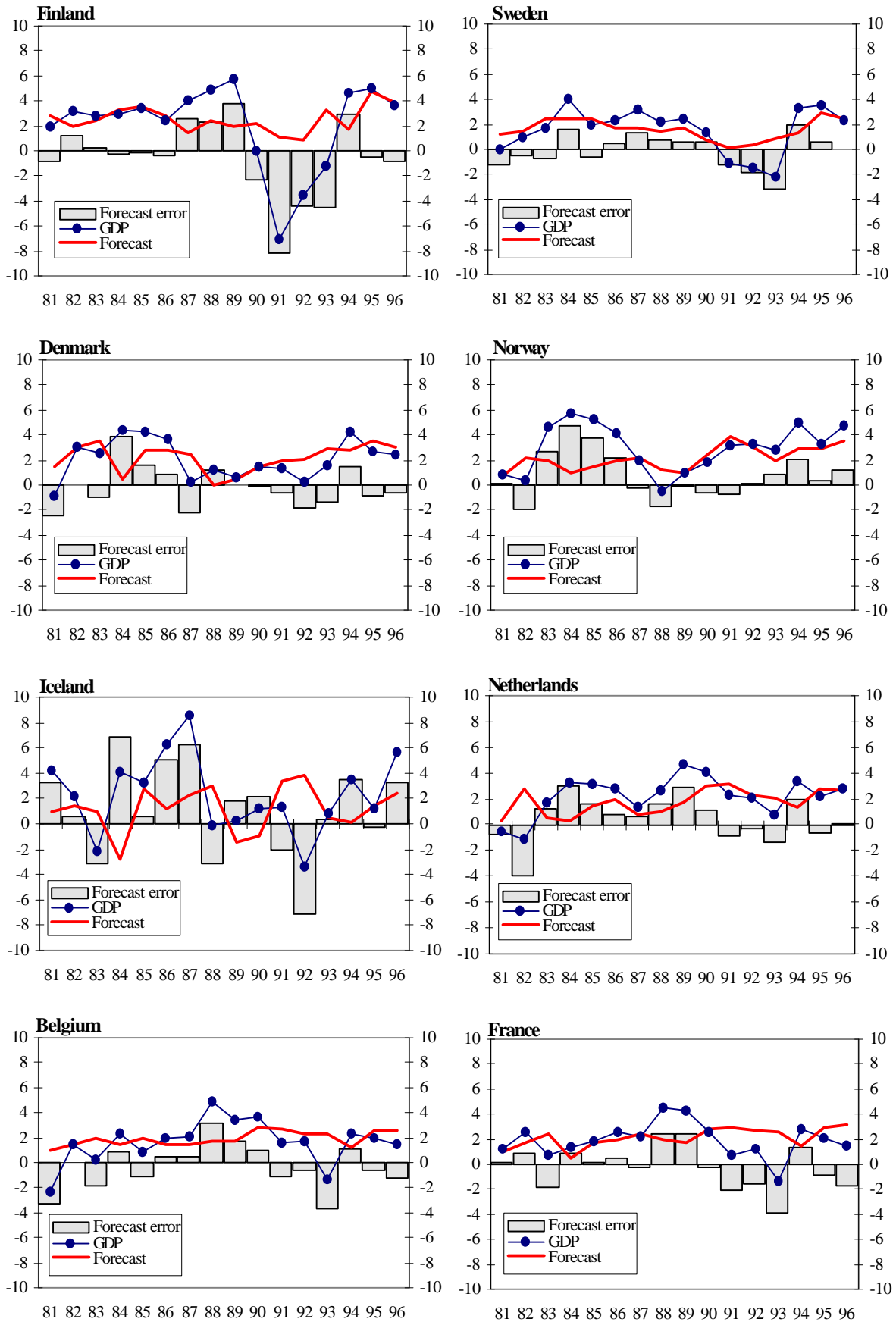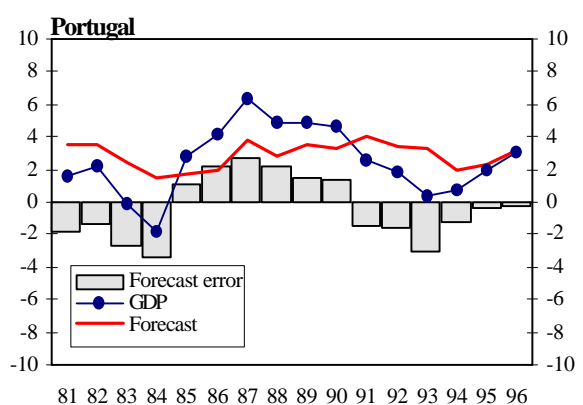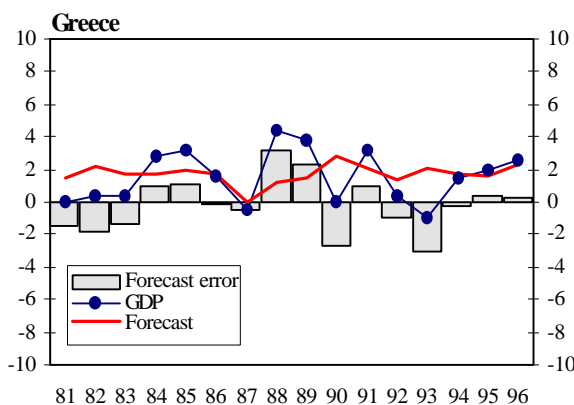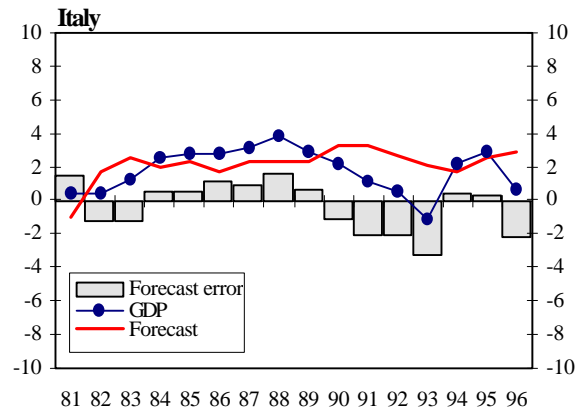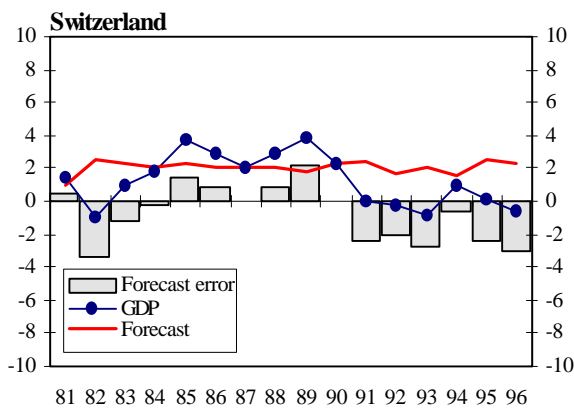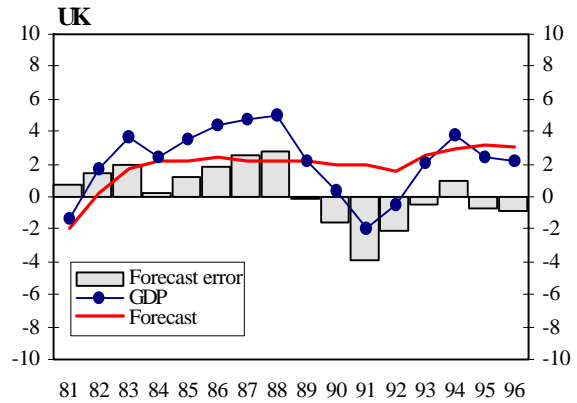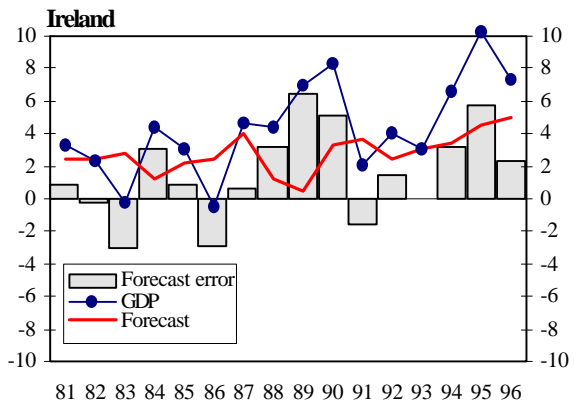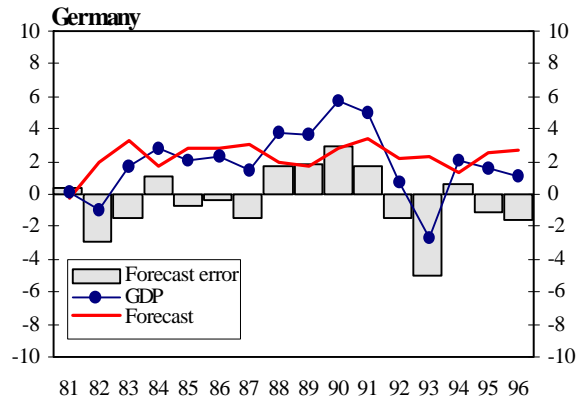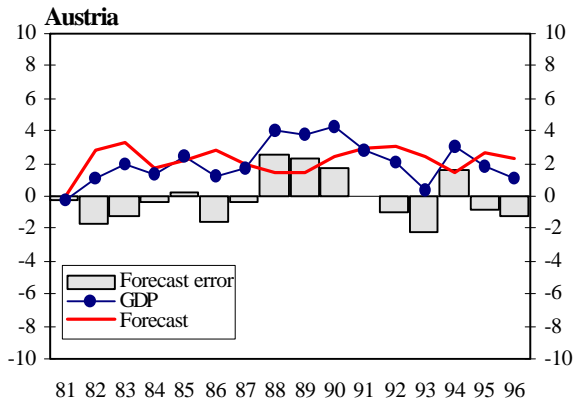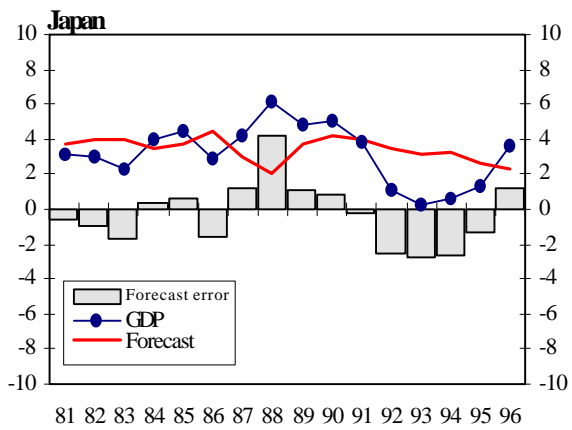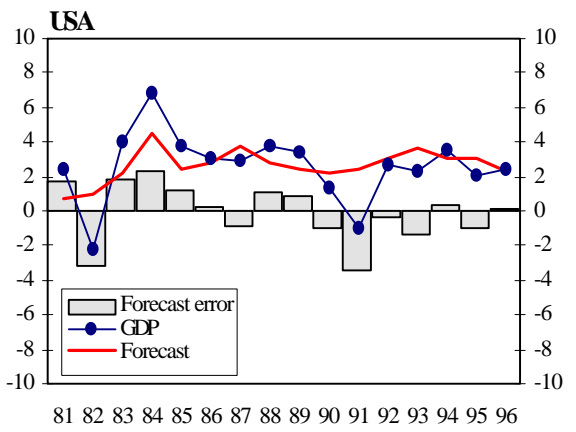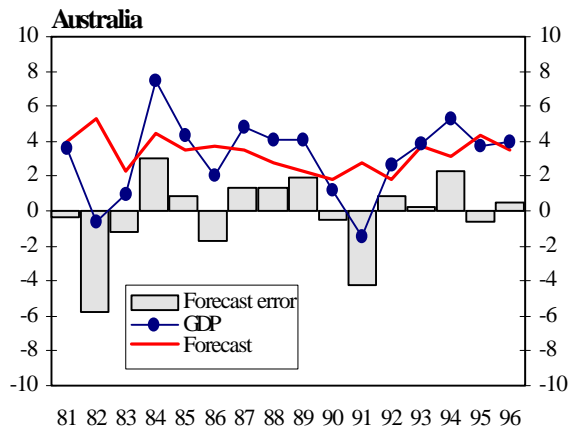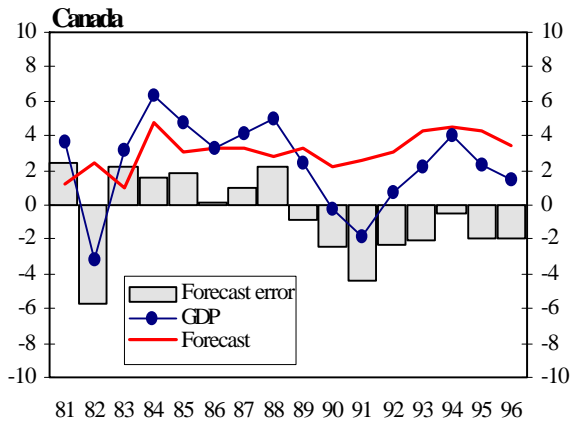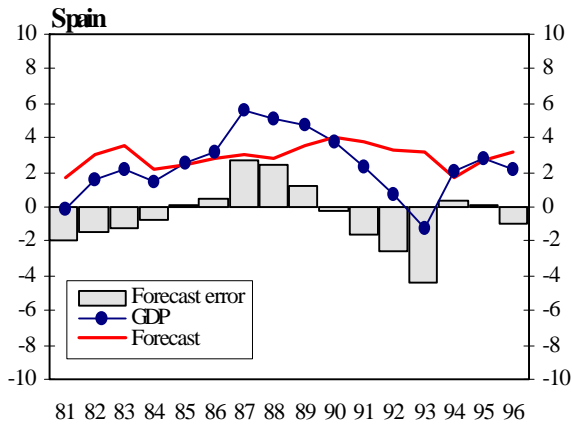
Table 1   *Some Indicators of Fiscal Policy Manoeuvring Possibilities*

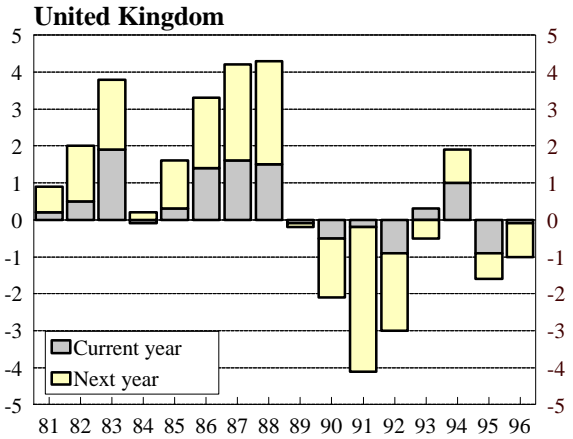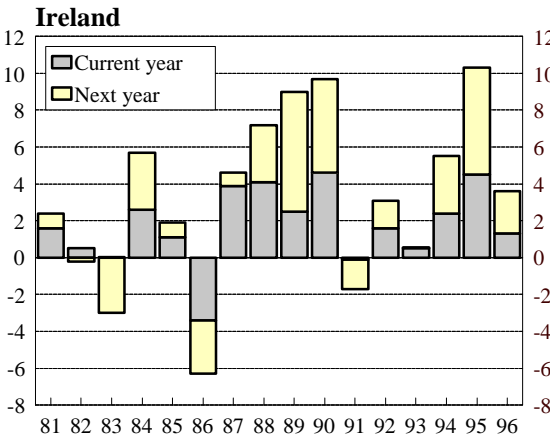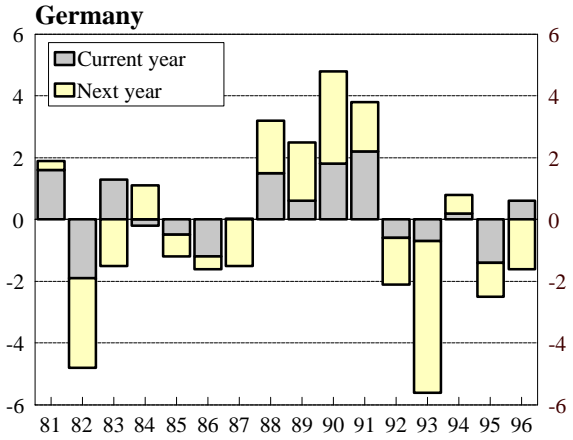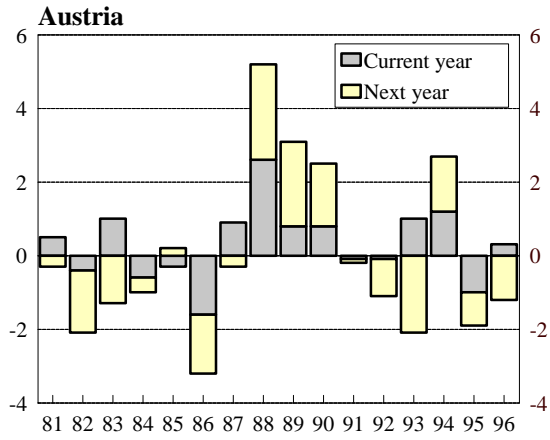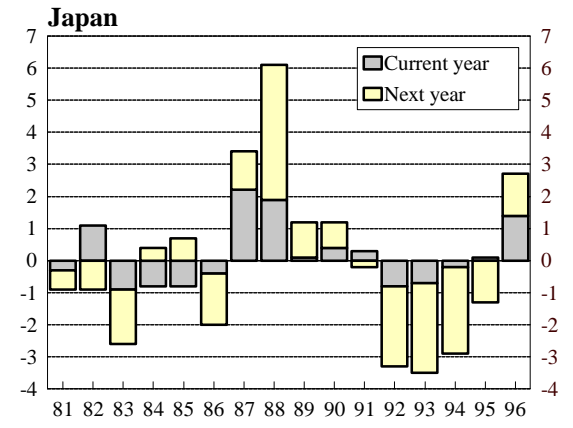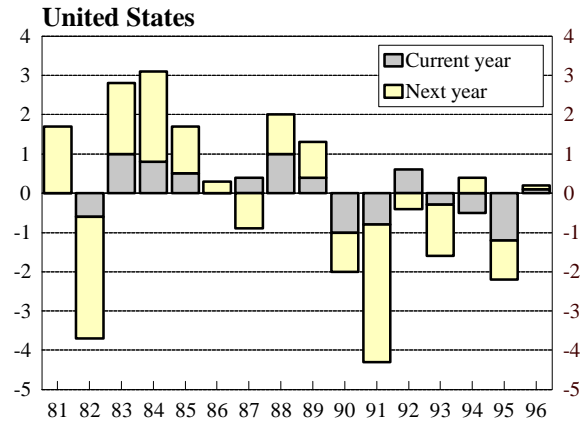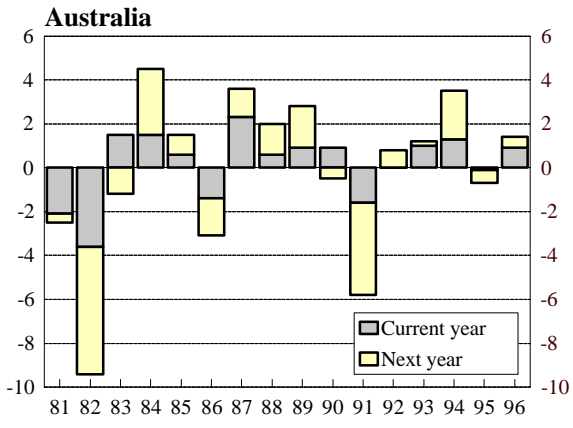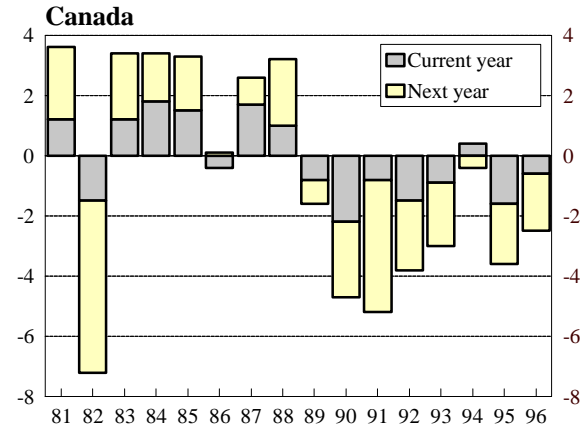|	Public sector expenditure / GDP, %	Public sector wages / GDP	Budget deficit / GDP	Gross debt / GDP	Interest expenditure / gross debt, %	Share of foreign debt (central government)	Share of long-term debt (central government)	Fitch IBCA rating	S&P rating	Moody's rating	Un-employment rate	Real wage inflexibility	Net un-employment benefit replacement rates
	1996	1996	1996	1996	1996	92/96	92/96	1997	1997	1997	1996	60/94	1994/5
Finland	58.7	15.4	-3.3	58.0	9.9	61	96	AA+	AA	Aa1	16.3	1.7	93
Sweden	64.3	17.9	-3.3	79.4	9.4	47	90	AA-	AA+	Aa3	8.1	1.4	100
Denmark	56.7	18.0	-1.1	70.8	9.3	17	100	AA+	AA+	Aa1	8.8	1.1	83
Norway	44.6	13.5	5.9	40.7	7.0	26	73	AAA	AAA	Aaa	4.9	..	76
Iceland	37.8	13.6	-1.4	57.6	6.9	60	90	..	..	..	4.4	..	..
Netherlands	49.6	9.5	-2.3	76.6	7.3	25	96	AAA	AAA	Aaa	6.7	1.5	88
Belgium	53.0	12.1	-3.2	126.9	6.8	14	82	AA+	AA+	Aa1	12.8	1.4	64
France	54.8	14.5	-4.1	63.0	6.1	2	..	AAA	AAA	Aaa	12.3	1.6	62
Austria	51.9	12.5	-4.0	69.5	6.3	21	100	AAA	AAA	Aaa	6.3	0.9	..
Germany	48.8	10.2	-3.4	64.9	5.7	41	98	AAA	AAA	Aaa	10.3	1.5	72
Ireland	36.6	10.3	-0.5	76.2	6.6	..	..	AA+	AA	Aa1	11.9	1.7	58
United Kingdom	41.8	8.8	-4.7	61.2	6.0	17	75	AAA	AAA	Aaa	8.0	1.2	74
Switzerland	47.6	11.2	7.0	24.3	4.8	0	63	AAA	AAA	Aaa	4.7	..	81
Italy	52.7	11.6	-6.7	123.7	8.8	6	59	AA-	AA	Aa3	12.1	1.0	13
Greece	44.6	11.3	-7.6	112.6	10.2	21	47	BBB	BBB-	Baa1	10.3	..	..
Portugal	45.0	14.6	-3.2	68.1	7.3	7	..	AA-	AA-	Aa3	7.3	..	..
Spain	43.6	11.5	-4.5	74.8	7.3	16	56	AA	AA	Aa2	22.2	1.9	55
Canada	44.7	12.1	-1.8	100.3	9.4	21	58	AA	AA+	Aa2	9.7	..	56
Australia	36.4	11.6	-1.2	42.8	8.7	30	..	AA	AA	Aa2	8.5	..	57
United States	32.7	9.8	-1.1	63.1	3.7	23	79	AAA	AAA	Aaa	5.4	0.7	14
Japan	36.2	7.2	-4.4	82.6	4.4	0	95	AAA	AAA	Aaa	3.4	0.9	58

Table 2   *Forecast Errors of GDP Growth Rates for the Current Year, 1981-96*

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	MAE
Finland	-0.3	2.2	0.8	-1.5	-0.3	0.9	1.3	1.6	2.8	-1.7	-4.7	-2.2	-1.2	2.7	-0.5	0.6	1.6
Sweden	0.7	0.3	0.0	0.8	-0.6	0.3	1.4	0.0	0.6	0.7	-0.2	-1.1	-0.2	0.6	1.1	1.1	0.6
Denmark	-0.9	0.5	1.5	1.6	1.5	1.1	1.0	1.2	0.1	0.3	0.2	-1.9	0.8	0.2	-0.7	1.4	0.9
Norway	0.4	0.1	4.4	3.7	3.5	-0.1	-0.8	-1.3	-3.6	-0.8	0.5	1.3	1.3	0.7	-1.5	0.6	1.5
Iceland	4.3	3.2	3.8	8.4	2.5	3.3	4.8	-0.6	1.8	1.1	0.3	-0.7	2.7	4.1	-1.3	2.1	2.8
Netherlands	0.0	-1.2	2.0	1.8	1.3	1.3	-0.1	1.1	1.4	0.8	0.2	0.8	1.1	2.0	-1.0	1.1	1.1
Belgium	-1.8	1.0	0.0	0.8	-0.9	0.2	0.8	2.9	0.2	0.4	-0.3	0.1	-0.7	0.8	-0.8	0.4	0.8
France	1.7	0.3	1.2	0.1	0.6	0.0	1.0	2.5	1.3	-0.6	-0.6	-0.8	-0.6	1.0	-0.9	0.5	0.9
Austria	0.5	-0.4	1.0	-0.6	-0.3	-1.6	0.9	2.6	0.8	0.8	-0.1	-0.1	1.0	1.2	-1.0	0.3	0.8
Germany	1.6	-1.9	1.3	-0.2	-0.5	-1.2	0.0	1.5	0.6	1.8	2.2	-0.6	-0.7	0.2	-1.4	0.6	1.0
Ireland	1.6	0.5	0.0	2.6	1.1	-3.4	3.9	4.1	2.5	4.6	-0.1	1.6	0.5	2.4	4.5	1.3	2.2
United Kingdom	0.2	0.5	1.9	-0.1	0.3	1.4	1.6	1.5	-0.1	-0.5	-0.2	-0.9	0.3	1.0	-0.9	-0.1	0.7
Switzerland	-0.1	-0.4	1.5	-1.0	1.0	0.1	0.3	1.4	1.4	-0.3	-1.2	-1.2	-0.3	-0.5	-1.6	-1.2	0.8
Italy	1.2	-1.0	1.7	0.3	0.6	0.1	0.1	1.4	-0.6	-0.9	-0.6	-0.9	-1.0	0.7	-0.1	-1.0	0.8
Greece	-0.9	-0.9	-0.1	1.0	1.1	1.6	0.5	2.7	0.3	-1.4	2.8	-1.0	-2.1	0.5	0.1	0.4	1.1
Portugal	-1.9	-0.4	-1.9	0.1	1.8	0.4	2.9	0.7	1.4	0.6	-0.9	-1.0	-0.3	-0.5	-1.0	0.7	1.0
Spain	-2.2	-0.9	0.7	-0.5	0.6	0.2	2.6	1.2	0.0	-0.5	-0.6	-1.9	-0.6	0.9	-0.2	-0.1	0.9
Canada	1.2	-1.5	1.2	1.8	1.5	-0.4	1.7	1.0	-0.8	-2.2	-0.8	-1.5	-0.9	0.4	-1.6	-0.6	1.2
Australia	-2.1	-3.6	1.5	1.5	0.6	-1.4	2.3	0.6	0.9	0.9	-1.6	0.0	1.0	1.3	-0.1	0.9	1.3
United States	0.0	-0.6	1.0	0.8	0.5	0.0	0.4	1.0	0.4	-1.0	-0.8	0.6	-0.3	-0.5	-1.2	0.1	0.6
Japan	-0.3	1.1	-0.9	-0.8	-0.8	-0.4	2.2	1.9	0.1	0.4	0.3	-0.8	-0.7	-0.2	0.1	1.4	0.8

Table 3   *Forecast Errors of GDP Growth Rates for the Next Year, 1981-96*

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	MAE
Finland	-0.8	1.2	0.3	-0.3	-0.1	-0.4	2.6	2.3	3.8	-2.3	-8.2	-4.4	-4.5	2.9	-0.4	-0.9	2.2
Sweden	-1.3	-0.5	-0.7	1.5	-0.6	0.5	1.4	0.8	0.6	0.6	-1.2	-1.8	-3.1	1.9	0.7	0.0	1.1
Denmark	-2.4	0.0	-1.0	3.9	1.5	0.9	-2.2	1.2	0.1	-0.1	-0.7	-1.9	-1.4	1.4	-0.8	-0.5	1.2
Norway	0.1	-1.9	2.6	4.7	3.8	2.2	-0.3	-1.8	-0.1	-0.6	-0.8	0.2	0.9	2.1	0.4	1.3	1.5
Iceland	3.3	0.7	-3.2	6.9	0.5	5.0	6.3	-3.1	1.8	2.2	-2.1	-7.1	0.4	3.4	-0.2	3.3	3.1
Netherlands	-0.8	-3.9	1.2	3.0	1.6	0.8	0.7	1.6	2.9	1.1	-0.8	-0.3	-1.3	2.0	-0.7	0.0	1.4
Belgium	-3.3	0.0	-1.8	0.8	-1.1	0.4	0.5	3.2	1.7	0.9	-1.1	-0.6	-3.7	1.1	-0.7	-1.2	1.4
France	0.2	0.8	-1.8	0.8	0.1	0.5	-0.2	2.5	2.5	-0.2	-2.1	-1.5	-3.9	1.3	-0.8	-1.7	1.3
Austria	-0.3	-1.7	-1.3	-0.4	0.2	-1.6	-0.3	2.6	2.3	1.7	-0.1	-1.0	-2.1	1.5	-0.9	-1.2	1.2
Germany	0.3	-2.9	-1.5	1.1	-0.7	-0.4	-1.5	1.7	1.9	3.0	1.6	-1.5	-4.9	0.6	-1.1	-1.6	1.6
Ireland	0.8	-0.2	-3.0	3.1	0.8	-2.9	0.7	3.1	6.5	5.1	-1.6	1.5	0.0	3.1	5.8	2.3	2.5
United Kingdom	0.7	1.5	1.9	0.2	1.3	1.9	2.6	2.8	-0.1	-1.6	-3.9	-2.1	-0.5	0.9	-0.7	-0.9	1.5
Switzerland	0.4	-3.4	-1.2	-0.2	1.5	0.9	0.0	0.9	2.1	0.0	-2.4	-2.0	-2.8	-0.6	-2.4	-3.0	1.5
Italy	1.5	-1.3	-1.3	0.6	0.6	1.1	0.8	1.6	0.6	-1.1	-2.1	-2.1	-3.3	0.5	0.3	-2.2	1.3
Greece	-1.4	-1.9	-1.3	1.0	1.1	-0.1	-0.5	3.2	2.3	-2.7	1.0	-1.0	-3.1	-0.2	0.4	0.3	1.3
Portugal	-1.9	-1.4	-2.7	-3.4	1.1	2.1	2.6	2.2	1.4	1.4	-1.5	-1.6	-3.0	-1.2	-0.4	-0.2	1.7
Spain	-1.9	-1.4	-1.3	-0.8	0.1	0.4	2.6	2.4	1.2	-0.3	-1.5	-2.6	-4.4	0.4	0.1	-1.0	1.4
Canada	2.4	-5.7	2.2	1.6	1.8	0.1	0.9	2.2	-0.8	-2.5	-4.4	-2.3	-2.1	-0.4	-2.0	-1.9	2.1
Australia	-0.4	-5.8	-1.2	3.0	0.9	-1.7	1.3	1.4	1.9	-0.5	-4.2	0.8	0.2	2.2	-0.6	0.5	1.7
United States	1.7	-3.1	1.8	2.3	1.2	0.3	-0.9	1.0	0.9	-1.0	-3.5	-0.4	-1.3	0.4	-1.0	0.1	1.3
Japan	-0.6	-0.9	-1.7	0.4	0.7	-1.6	1.2	4.2	1.1	0.8	-0.2	-2.5	-2.8	-2.7	-1.3	1.3	1.5

Table 4   *Forecast Errors of GDP Growth Rates for the Current and the Next Year, 1981-96*

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	MAE
Finland	-1.2	3.5	1.1	-1.8	-0.4	0.5	3.9	3.9	6.5	-4.0	-12.8	-6.7	-5.8	5.7	-1.0	-0.2	3.7
Sweden	-0.5	-0.2	-0.7	2.3	-1.1	0.8	2.8	0.8	1.3	1.3	-1.4	-2.9	-3.3	2.6	1.7	1.0	1.6
Denmark	-3.3	0.5	0.5	5.5	3.1	2.0	-1.2	2.3	0.1	0.3	-0.4	-3.7	-0.5	1.7	-1.6	0.8	1.7
Norway	0.5	-1.8	7.0	8.5	7.3	2.1	-1.0	-3.0	-3.7	-1.5	-0.3	1.4	2.1	2.9	-1.1	1.8	2.9
Iceland	7.5	3.8	0.7	15.3	3.1	8.3	11.1	-3.7	3.5	3.2	-1.8	-7.9	3.1	7.6	-1.6	5.4	5.5
Netherlands	-0.8	-5.1	3.2	4.8	2.9	2.0	0.6	2.7	4.4	1.9	-0.7	0.6	-0.3	4.0	-1.6	1.2	2.3
Belgium	-5.0	1.0	-1.8	1.6	-2.0	0.6	1.3	6.1	1.9	1.3	-1.5	-0.5	-4.3	2.0	-1.4	-0.7	2.1
France	1.9	1.1	-0.6	0.9	0.8	0.5	0.8	5.0	3.8	-0.8	-2.7	-2.4	-4.6	2.4	-1.7	-1.3	1.9
Austria	0.2	-2.1	-0.3	-1.0	-0.1	-3.1	0.6	5.1	3.2	2.6	-0.1	-1.0	-1.2	2.8	-1.8	-1.0	1.6
Germany	1.9	-4.9	-0.2	0.9	-1.2	-1.6	-1.5	3.2	2.5	4.8	3.9	-2.0	-5.7	0.9	-2.4	-1.0	2.4
Ireland	2.4	0.3	-3.0	5.7	1.9	-6.4	4.6	7.2	8.9	9.7	-1.7	3.1	0.4	5.6	10.2	3.6	4.7
United Kingdom	0.9	2.0	3.9	0.1	1.6	3.3	4.1	4.3	-0.1	-2.1	-4.0	-3.1	-0.3	2.0	-1.6	-0.9	2.1
Switzerland	0.4	-3.9	0.3	-1.2	2.4	1.0	0.3	2.3	3.5	-0.3	-3.7	-3.2	-3.1	-1.1	-4.0	-4.1	2.2
Italy	2.7	-2.3	0.4	0.9	1.1	1.2	0.9	3.0	0.0	-2.0	-2.6	-3.1	-4.2	1.1	0.3	-3.2	1.8
Greece	-2.4	-2.7	-1.4	2.0	2.2	1.5	0.1	5.9	2.6	-4.1	3.8	-2.0	-5.2	0.3	0.5	0.6	2.3
Portugal	-3.8	-1.7	-4.6	-3.3	2.9	2.5	5.5	2.8	2.8	2.0	-2.4	-2.5	-3.3	-1.7	-1.4	0.5	2.7
Spain	-4.1	-2.4	-0.6	-1.3	0.7	0.6	5.3	3.6	1.2	-0.7	-2.2	-4.5	-5.0	1.3	-0.1	-1.1	2.2
Canada	3.6	-7.2	3.3	3.4	3.3	-0.4	2.6	3.2	-1.6	-4.7	-5.2	-3.9	-3.0	-0.1	-3.5	-2.6	3.2
Australia	-2.5	-9.4	0.3	4.5	1.5	-3.1	3.6	2.0	2.8	0.4	-5.9	0.9	1.2	3.6	-0.7	1.3	2.7
United States	1.7	-3.8	2.8	3.1	1.7	0.3	-0.5	2.1	1.2	-2.0	-4.2	0.2	-1.7	-0.1	-2.1	0.3	1.7
Japan	-0.9	0.1	-2.6	-0.4	-0.2	-2.0	3.3	6.1	1.2	1.2	0.1	-3.2	-3.5	-2.8	-1.3	2.6	2.0

Table 5   *SUR Estimates of the Forecast Error Model*

	y	t	e_{OECD}	t	e_{t-1}	t	constant	t	R^2	DW	CV_y	CV_F
Finland	0.77	6.39	0.54	1.65	-0.15	-1.34	-2.21	-5.57	0.91	1.10	1.68	0.40
Sweden	0.51	3.86	0.30	1.60	-0.12	-1.07	-0.83	-3.14	0.87	1.69	1.20	0.50
Denmark	0.71	4.56	0.61	3.49	-0.22	-1.63	-1.56	-3.80	0.78	1.52	0.78	0.50
Norway	0.90	7.23	0.37	2.24	0.05	0.37	-1.96	-4.88	0.87	1.38	0.64	0.43
Iceland	1.02	8.09	0.85	2.76	-0.33	-3.27	-0.89	-1.95	0.90	1.54	1.33	1.52
Netherlands	0.84	4.95	0.64	3.71	-0.25	-2.37	-1.33	-3.08	0.90	1.23	0.70	0.56
Belgium	0.92	11.00	0.31	3.38	-0.17	-3.43	-1.88	-10.12	0.97	1.25	1.07	0.29
France	0.95	5.52	0.37	2.06	-0.14	-1.40	-2.13	-5.60	0.91	1.06	0.73	0.35
Austria	-0.57	-1.42	0.66	2.10	0.71	2.53	1.11	1.15	0.44	1.33	0.64	0.37
Germany	0.88	9.53	0.26	1.81	-0.02	-0.21	-2.18	-8.85	0.95	2.04	1.10	0.39
Ireland	0.83	7.39	0.51	2.09	-0.03	-0.28	-2.02	-3.77	0.89	1.46	0.67	0.43
United Kingdom	0.88	6.94	-0.32	-1.49	0.24	1.52	-1.99	-5.83	0.90	1.48	0.97	0.65
Switzerland	1.07	12.37	0.04	0.43	-0.08	-1.54	-2.23	-15.19	0.98	1.63	1.26	0.19
Italy	0.83	3.81	0.28	1.34	-0.03	-0.27	-2.03	-4.57	0.91	1.12	0.75	0.45
Greece	0.88	7.38	0.28	1.81	-0.06	-0.58	-1.54	-6.09	0.90	1.95	1.06	0.35
Portugal	0.89	9.61	0.41	4.22	-0.19	-1.89	-2.63	-8.92	0.96	2.51	0.87	0.27
Spain	0.94	8.61	0.40	3.70	-0.22	-2.74	-2.93	-8.95	0.97	1.82	0.75	0.22
Canada	0.73	5.02	0.44	1.30	-0.20	-1.55	-2.68	-6.67	0.89	1.35	1.05	0.34
Australia	0.84	5.42	0.30	1.06	-0.14	-1.09	-2.77	-4.95	0.85	1.21	0.72	0.30
United States	0.64	5.78	0.24	1.24	-0.07	-0.63	-1.85	-5.66	0.89	1.87	0.79	0.35
Japan	1.15	6.77	0.09	0.54	-0.24	-1.77	-4.00	-6.63	0.90	1.16	0.53	0.20

t's denote the t-ratios. The dependent variable is e_t. CV_y is the coefficient of variation for the actual GDP growth and CV_F is the corresponding measure for the GDP growth forecasts. The average value of CV_y is 0.92 and CV_F 0.43.