

What caused the 2000/01 slowdown? Results from a VAR analysis of G7 GDP components

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Abstract

In this paper a VAR-based analysis of shocks to G7 GDP components during the 2000/01 slowdown is presented. The patterns of shocks across the components and across the G7 countries are documented, and measures provided of their persistence. The shocks during the preceding expansion are also considered, and are used to discuss possible business cycle asymmetries, and a comparison made with the pattern of shocks during the previous slowdown in 1990. The analysis is then extended to derive shocks to components that explicitly take into account the roles played by monetary policy and oil prices in 2000/01.

Key words: G7, GDP components, business cycle.

JEL classification: C32, E32, E52, Q43.

Summary

The recent slowdown in the world economy has rekindled interest in the major shocks affecting the business cycle, both at a global and country level. While this interest is not unusual at the current phase in the cycle, there are other factors that explain why this time it has been more intense than usual. First, the recent slowdown came at the end of one of the longest expansions on record. Second, it seemed to have affected several countries at the same time, so one question is whether the slowdown was due to common shocks. And third, there was a perception that the international transmission of shocks has changed.

Using a method first developed by Olivier Blanchard, this paper conducts an analysis of the shocks to GDP components, which in our case include private and public consumption, residential, business and government investment, exports, imports and changes in inventories. Such an analysis has two main benefits. First, it provides a counterpart to stories cast in terms of component developments, for example the role of revisions to expected future profitability, especially in the information, communications and technology sector, or the role of the millennium changeover. Second, it provides a more detailed picture of developments during the slowdown than can be obtained by looking only at GDP, and thus a useful cross-check on work aimed at identifying the shocks affecting GDP.

The analysis is based on a vector autoregression of GDP components, which is used to account for their interrelationships and to provide series of corresponding innovations. There are potentially other variables explaining the behaviour of GDP components, but using only components data has the advantage of capturing empirical regularities in a parsimonious set-up. The innovations are then used to extract component-specific shocks, which form the basis for the analysis. These shocks capture the movements in the components that are not explained by the components' history and exclude the factor common to all components. So the shocks are a catch-all of a range of potential structural factors. This analysis is applied to the G7 countries individually and as a group, thereby extending previous research to a cross-sectional dimension. The paper obtains estimates of the shocks during the slowdown in 2000/01, the expansion preceding it, and the previous slowdown in 1990. A second set of estimates of the shocks during 2000/01 explicitly takes into account the stance of monetary policy and the oil price.

The estimates indicate that there were shocks to several components and several countries during 2000/01. While some of the shocks were similar across the three largest G7 economies, consistent with the perception of a highly synchronised slowdown, other shocks were more country-specific. For example, there were differences in the shocks affecting Germany relative to the other countries of the euro area. Among the components, the largest and most persistent shocks in 2000/01 affected business investment, inventories and net trade. There were also large shocks to private sector consumption, but these occurred mainly in the early and late stages of the slowdown. The pattern of shocks during the preceding expansion was much more subdued. Though consumption shocks did play a role, for example, they were smaller in size and showed less persistence. More generally, the paper finds that shocks were less persistent and on average smaller (due to smaller size and offsetting signs) during the expansion, especially over a longer period. While this need not be significant, it is consistent with the common perception that expansions tend to be longer and have a slower pace than contractions.

There are several differences between the shocks during 2000/01 and those during the previous slowdown in 1990. These relate to the overall balance of shocks (which was negative for much longer in 2000/01), the major shocks (despite the shock in 2001 Q3, shocks to private sector consumption seem to have been more persistent in 1990) and the extent to which shocks were correlated across the G7 countries (while some shocks were similar for the United States, Japan and Germany in 2000/01, the United States experienced a specific pattern of shocks in 1990). Finally, when the analysis also accounts for the stance of monetary policy and oil prices in 2000/01, it appears that about half of the balance of shocks can be attributed to these factors. Their impact though varies over the period of the slowdown. Whereas they contributed considerably in the early stages of the slowdown, they became less important as the slowdown wore on, and eventually started to contribute to the recovery, a reflection of the declines in interest rates and the oil price that was under way at that time.

1 Introduction

The world economy slowed in the second half of the year 2000 and into 2001, bringing to a halt one of the longest modern-day expansions to date. Since then, questions on the causes of the slowdown and the prospects for recovery have been the key questions for forecasters and policy-makers alike. Questions like these are frequently asked at this stage of the cycle, but there has been added interest on this occasion, given the synchronous nature of the downturn, the length of the preceding expansion and changes in the international transmission of shocks due to a deepening of global linkages.

In this paper we conduct a VAR-based analysis of the shocks to GDP components during the slowdown. Such an analysis has two main benefits. First, it provides a counterpart to stories cast in terms of component developments. One such story is that a downward revision to expected future productivity precipitated a fall in investment, in particular in the ICT sector, in which case we would expect to see negative shocks to private sector investment. Another story centres on the behaviour of inventories. It suggests that there were post-Y2K inventory adjustments, undertaken to reverse the earlier build-up that occurred prior to the changeover. We would expect this to show as negative shocks to inventories post-Y2K, and positive shocks earlier on. The other main benefit of looking at the shocks to GDP components is that we get a more detailed picture of developments during the slowdown than can be obtained by looking only at GDP. In this way, the component-based analysis provides an ideal complement to the analysis of shocks to GDP, as presented for the same episode by Peersman (2002). One could also add to this that components tend to follow specific patterns under different theories of the business cycle, and these could therefore be tested directly in this framework.

For our analysis, we use the approach suggested by Blanchard (1993), and applied by Ramaswamy and Rendu (2000) to Japan and Catao and Ramaswamy (1995) to the United Kingdom. This approach is based on a VAR of GDP components, which serves to extract innovations to the components that are then purged of a common or GDP factor to derive component-specific shocks. In extension of previous research, we estimate this VAR for all G7 countries, and thus provide the first analysis with a cross-sectional dimension. We also estimate a VAR for the G7 aggregate, and so can comment on the relationship between shocks at the aggregate and country levels. Our sample period is 1986 Q3 to 2002 Q2, and the components

available to us are private and public consumption, investment by households, businesses and government, exports, imports and changes in inventories (see Section 2.3 for details).

Our key results are the following. First, at the G7 level, we find that the overall balance of shocks was negative in every quarter from 2000 Q2 to 2001 Q3, one of the most persistent negative balances of shocks in our sample. In this period, large negative shocks affected most components, in particular net trade, inventories and business investment, and most countries, including the three largest G7 economies. We also detect a large negative shock to private sector consumption in 2001 Q3, which most likely reflected the impact of September 11. Second, we find differences between the pattern of shocks during this period and the previous slowdown in 1990. Despite the large consumption shock in 2001 Q3, for example, shocks to consumption played less of a role during 2000/01 than in 1990. More generally, our results suggest that negative shocks affected more components and countries during 2000/01, and the overall balance of shocks was negative for longer and larger in 2000/01 than in 1990. Finally, we find that the shocks during 2000/01 to some extent reflect the stance of monetary policy and the oil price. For the G7 as a whole, we attribute about one half of the overall balance of shocks to those factors. They contributed negatively (ie they had a contractionary impact) between 2000 Q3 and 2001 Q2, but less so from 2001 Q3 onwards, when interest rates and the oil price had started to fall.

The paper proceeds as follows. In the next section, we present the empirical approach, with the emphasis on how to derive and interpret the component shocks. The results follow in the subsequent sections. Section 3 covers the 2000/01 slowdown, including the preceding expansion. Section 4 reports on the comparison with the previous slowdown in 1990. Section 5 provides the results for an extension that takes into account explicitly the role played by monetary policies and the oil price. Section 6 concludes.

2 The empirical approach

We take the empirical approach suggested by Blanchard (1993) ‘to pinpoint, if not the deep, at least the proximate causes’ of the 1990 recession in the United States, and subsequently applied to other countries by Ramaswamy and Rendu (2000) and Catao and Ramaswamy (1995).⁽¹⁾ This approach is based on a VAR of GDP components, which is used to account for the empirical

(1) The quote is from Blanchard (1993, page 270).

regularities among the components and to provide a series of corresponding innovations. These innovations are then purged of their common element in order to extract component-specific shocks, which form the basis for the analysis.

Given the focus on the VAR residuals, this approach requires that the series in the VAR are stationary, while issues related to possible cointegration relationships do not have to be addressed explicitly.⁽²⁾ This has the advantage of avoiding cointegration tests that are known to have low power in small samples. The approach also has a number of other advantages. As it uses complete components data, it is well-suited to investigate their joint behaviour, while at the same time limiting data requirements to the absolute minimum.⁽³⁾ It also sidesteps the use of identifying assumptions, which are usually controversial and would almost certainly be so in the context of GDP components. The drawback is that the shocks in Blanchard (1993) may reflect more than one structural factor and thus cannot be interpreted in the same way as the shocks derived in the conventional structural VAR literature. Given that they are not orthogonal, the usual tools of VAR analysis, such as impulse response functions and variance decompositions, are also not available. This is not a problem, however, as the focus is on the shocks themselves, as in Blanchard (1993).

2.1 *Deriving the component shocks*

The approach suggested by Blanchard (1993) consists of two stages. The aim of stage 1 is to capture the empirical regularities among the components of GDP. It is based on a VAR such that

$$Z_t = D_t + \sum_{j=1}^l A_j Z_{t-j} + U_t \quad (1)$$

where A_j is a matrix of coefficients, D_t is a matrix of deterministic variables, U_t a vector of white-noise residuals, and Z_t is a vector containing the GDP components, in our case private and public consumption, investment by households, businesses and government, exports, imports and changes in inventories. In order to achieve stationarity, the trending components (consumption, investment, exports and imports) are log-differenced while inventories are transformed into a ratio to GDP.

(2) See Blanchard (1993).

(3) In the literature on monetary transmission, some authors have looked at the effect of a policy shock on the components (eg Christiano, Eichenbaum and Evans (2000) for the US and Peersman and Smets (2001) for the euro area). While these models are appropriate for that purpose, they are not very useful in gauging the pattern among the components over the business cycle, which is the focus here.

The equations in (1) can be written as

$$z_{i,t} = d_t + \sum_{j=1}^l a_{i,j} z_{i,t-j} + \sum_{\substack{k=1 \\ k \neq i}}^n \sum_{j=1}^l a_{k,j} z_{k,t-j} + u_{i,t} \quad (2)$$

where the $u_{i,t}$ are the residuals associated with component i . These (first-stage) residuals summarise the part of component i that cannot be explained on the basis of past values of any of the components, and potentially also include the effects of omitted variables, such as prices, interest rates and, for an open economy, exchange rates. As in any VAR, the residuals may also be correlated across equations. An important source of cross-equation correlation of the residuals is the common factor affecting all components, which we denote $u_{GDP,t}$. This factor can be obtained by aggregating the innovations across all components,

$$u_{GDP,t} = \sum_i \frac{z_{i,t}}{\sum_i z_{i,t}} u_{i,t} \quad (3)$$

or, alternatively, from an additional equation relating GDP to the components.⁽⁴⁾⁽⁵⁾

The aim of stage 2 is to extract this common factor, and in this way obtain an innovation that is more specific to the component and can be referred to as a ‘shock’. This is done by regressing the first-stage residuals on the common factor. This requires the use of instrumental variables, given that the regressor (the common factor) is partly endogenous (it is an average of the residuals) and thus is potentially correlated with the disturbance term. Ramaswamy and Rendu (2000) and Catao and Ramaswamy (1995) suggest to instrument with the innovations to public consumption and exports, which we denote $u_{\gamma,t}$ and $u_{\chi,t}$, and to estimate

$$u_{i,t} = \alpha_0 + \alpha_1 \hat{u}_{GDP,t} + \varepsilon_{i,t} \quad (4)$$

where $\hat{u}_{GDP,t}$ is the fitted value from the auxiliary regression of $u_{GDP,t}$ on $u_{\gamma,t}$ and $u_{\chi,t}$, and $\varepsilon_{i,t}$ are the second-stage residuals.⁽⁶⁾

2.2 Interpreting the component shocks

The second-stage residuals therefore are more specific to the components. They indicate to what extent each component diverges from the pattern that would be expected on the basis of the other components or the common factor. But they are also going to reflect the differences in volatility

(4) See Blanchard (1993).

(5) The residuals from the inventory equation, which are in terms of inventories to GDP, are used as such, as in Ramaswamy and Rendu (2000) and Catao and Ramaswamy (1995).

(6) Blanchard (1993) uses only the export residual.

across components and across countries, so it is helpful for the analysis to divide by their standard deviation and consider the normalised residuals $\tilde{\varepsilon}_{i,t}$ with $\tilde{\varepsilon}_{i,t} = \frac{\varepsilon_{i,t}}{\delta_{\varepsilon_{i,t}}} \sim N(0, 1)$.⁽⁷⁾ These normalised second-stage residuals are what Blanchard (1993) refers to as the component ‘shocks’, and we maintain this terminology here.⁽⁸⁾

The component shocks can then be used to construct a measure of the overall balance of shocks. This is done by aggregating the component shocks, in analogy to **(3)**, such that

$$\varepsilon_{GDP,t} = \sum_i \frac{z_{i,t}}{\sum_i z_{i,t}} \varepsilon_{i,t} \quad (5)$$

and applying the same normalisation as before to obtain $\tilde{\varepsilon}_{GDP,t} = \frac{\varepsilon_{GDP,t}}{\delta_{\varepsilon_{GDP,t}}} \sim N(0, 1)$.⁽⁹⁾ The balance of shocks can also be obtained by normalising the residual from the additional equation used alternatively to obtain the implied GDP residual in **(3)**. To see why the measure in **(5)** captures the overall balance of shocks, consider a situation in which the component shocks are all positive. In this case, the balance of shocks is also positive, and the larger in absolute terms the larger the shocks to the components. If instead the component shocks have different signs, the balance of shocks is ambiguous, and can be positive or negative, depending on the extent to which positive and negative component shocks offset each other. The more they offset each other, the closer the balance of shocks is to zero.⁽¹⁰⁾

As indicated before, the shocks in this approach are quite different from the structural shocks in the identified VAR literature, which are associated with aggregate supply and demand, as in Blanchard and Quah (1989), or a combination of supply and demand shocks, as in Shapiro and Watson (1988) or Gali (1992).⁽¹¹⁾ An interesting question therefore is how the shocks identified in those VARs can be mapped into the component shocks, because this would enable us to probe the pattern of shocks identified in those other VAR models. Unfortunately, such a mapping is not unique. To see this, consider the effects of a supply shock (say, to productivity): this would affect

(7) This normalisation implies that 68% of shocks will be less than one, and 95% less than two in absolute value. Moreover, a unit shock equals a shock of one standard deviation.

(8) It is important to note that these ‘shocks’ may still be correlated. This is in contrast to the identified VAR literature, where the shocks are orthogonal, so that it becomes possible to compute the variance decompositions.

(9) Note that due to the non-zero correlations among the component shocks, the (normalised) balance of shocks generally is not equal to the weighted sum of the (normalised) component shocks, nor is the (normalised) balance of shocks for the G7 equal to the weighted sum of the (normalised) balance of shocks to country GDPs.

(10) Alternatively, the balance of shocks in **(5)** could be viewed as the overall contribution of the component shocks to GDP. This is because the component shocks are approximate (qoq) percentage changes, by virtue of $\log x \approx x - 1$, so that the products of component shocks and component to GDP ratio, $\varepsilon_{i,t} \frac{z_{i,t}}{\sum_i z_{i,t}}$, are approximate contributions to (qoq) GDP growth.

(11) Peersman (2002) in his analysis of the 2000/01 slowdown uses shocks to supply, real demand, monetary policy and the oil price.

private sector investment, and probably inventories, but it could also affect private sector consumption, if the latter depends on expectations of future income that are affected by the productivity shock. Or consider the effects of a real demand shock: this would be consistent with shocks to private sector consumption or the trade balance if it was due to changes in preferences, but would also be consistent with a shock to public sector spending if the shock reflected changes in fiscal policy. Given that there is no unique pattern in the component shocks we have to exercise caution when drawing structural inferences in Sections 3 and 4.

2.3 The data

Our data cover the period 1986 Q1 to 2001 Q4, and are sourced from the OECD national accounts statistics. The components available are private sector consumption, business and residential investment, government consumption and investment, exports, imports and changes in inventories.⁽¹²⁾ We aggregate country data using 1998 GDP weights to obtain the G7 GDP components (see Chart 1).⁽¹³⁾

According to our G7 GDP series, average quarter-on-quarter GDP growth was 0.7% in our sample, but nil during 2000/01. In fact, growth was negative between 2001 Q2 and Q4. Using classical business cycle dating methods, which define contractions as at least two consecutive quarters of negative GDP growth, the period from 2000 Q2 to Q4 would therefore constitute a technical recession. Interestingly, we find that the overall balance of shocks for the G7 was negative during this period, too, but it was also negative between 2001 Q1 and Q3, ie there was a total of six consecutive quarters with a negative balance of shocks. We focus on this period in our analysis and proceed in analogy when we turn to the preceding expansion in Section 3.4 and the previous slowdown in Section 4.

3 Results for the 2000/01 slowdown

There are two ways to analyse the shocks in the period 2000 Q2 to 2001 Q3.⁽¹⁴⁾ The most obvious way is to consider the shocks quarter by quarter. This has the advantage of highlighting

(12) For Italy, business and residential investment are computed from private sector investment, using the average shares among the other G7 countries.

(13) The weights are the following: United States 47.9%, Japan 16.6%, Germany 10.2%, France 7.1%, Italy 7%, United Kingdom 6.9% and Canada 4.3%.

(14) This applies also to the balance of shocks.

any correlation of the shocks across components, across countries or between countries and the G7 aggregate. The other way is to consider the shocks cumulated over time, as in Blanchard (1993), Ramaswamy and Rendu (2000) and Catao and Ramaswamy (1995). The cumulated shocks are obtained by summing the shocks one by one, so that the cumulated shock for period t equals the sum of the shocks or balance of shocks up to period t . Given that they are derived from the shocks, the cumulated shocks are in the same units, ie (cumulated) standard deviations. The advantage of this approach is it indicates more clearly which shocks were the most important over time.

Given that both ways to analyse the shocks (and the balance of shocks) have advantages, we first look at shocks and balance of shocks one by one in Section 3.1 and then consider the cumulated shocks and balance of shocks in Section 3.2. The results are presented in Table A. The cumulated shocks and cumulated balance of shocks are also shown in Charts 4 and 5).⁽¹⁵⁾

3.1 The shocks quarter by quarter

In 2000 Q2, the overall balance of shocks for the G7 aggregate was small. There were small negative shocks to a few components, but there was also a large positive shock to public sector consumption. In 2000 Q3, the balance of shocks was much larger, and exceeded two standard deviations (recall that only 5% of the shocks are this large). In this quarter, large negative shocks affected net trade, inventories and private sector consumption, and only two components (business and residential investment) did not experience any negative shock, which explains why the balance of shocks was so large.

There were then two quarters with a smaller but still sizable balance of shocks. In 2000 Q4, some of the negative shocks were repeated from the previous quarter (private consumption, public investment and net trade) and the other shocks were generally small. In 2001 Q1, the picture was quite different, with large negative shocks to business investment and inventories, but also large positive shocks for public spending. The balance of shocks then was again above two standard deviations in 2001 Q2, driven by large negative shocks to public investment and, as in 2001 Q1, inventories. There was also a renewed negative shock to net trade, but the shock to business

(15) When plotting the cumulated shocks, a positive shock translates into a positive slope (a negative shock into a negative slope), and the slope steepens with the size of the shock (because a larger shock means a larger change to the cumulated shock). In the plots, we cumulate the shocks from 1990 Q1, so as to include the previous slowdown discussed in Section 4.

investment turned positive from the previous quarter. The final quarter (2001 Q3) was characterised by another sizable shock to consumption, and further negative shocks to inventories and net trade. But there was also a second consecutive positive shock to business investment, so that the overall balance for shocks was below one standard deviation.

Across the G7 countries, large negative balances started to occur in 2000 Q3 (for the United States, Japan and Germany), and in two of these countries (the United States and Germany) they remained negative for the whole period up to 2001 Q3 (Japan had a positive balance in 2001 Q1). There was also a sizable negative balance for the United Kingdom in 2000 Q3, but this became smaller in subsequent quarters and turned positive for 2001 Q2 and Q3. For France and Italy, the balance was not quite as large in 2000 Q3, and both had a positive balance in the following quarter (for Italy also in 2001 Q1). The largest negative balance in those countries occurred in 2001 Q1 (France) and 2001 Q2 (Italy).

The component shocks across the G7 countries initially affected residential investment, especially in the United States, Canada, and Japan, and private consumption in some countries, such as the United States, Japan, France and Italy. The consumption shocks continued into 2000 Q3, and then also affected most of the other countries, Canada being the only country with no consumption shock in that quarter. In 2000 Q3, there were also negative shocks to inventories and net trade, except in Canada and Italy. There were then several large shocks to business investment (in the United States, Canada and Germany in 2000 Q4 and in Japan, the United Kingdom and France one quarter later, in 2001 Q1). The investment shocks persisted in the United States, Germany and the United Kingdom into 2001 Q2, but in other countries were quickly reversed. In 2001 Q3, most countries experienced a negative shock to private consumption, probably a reflection of September 11.

From this first set of results, it appears that there were some similarities in the pattern of shocks across the G7 countries, notably the United States, Japan and Germany. All of these suffered from large consumption shocks in 2000 Q3, although their persistence was much higher in the United States, while elsewhere they turned positive before becoming negative again in 2001 Q2 and Q3 (in France they actually stayed positive). There were also large negative business investment shocks for the United States, Japan and Germany starting in 2000 Q4, and similarities in the shocks to net trade for the United States and Japan. Due to the weight of these components in

GDP, and the weight of these countries in the G7 aggregate, these shocks had a large impact on the overall balance of shocks, especially since some of them were also quite persistent. While these similarities may suggest a common cause, other patterns seem to reflect factors more country-specific. For Germany, for example, there was a distinct pattern of negative shocks to public investment and inventories. This pattern is particularly interesting, since it differs from that for the other major euro-area countries. For Japan, we find extraordinarily large shocks to public investment in 2000 Q2 to 2001 Q3 period, with opposite signs, possibly a reflection of the fiscal stimulus applied to the Japanese economy.

3.2 *The cumulated shocks*

Not surprisingly, the pattern of shocks is reflected in the cumulated shocks (see again Table A and Charts 4 and 5).⁽¹⁶⁾ The cumulated balance for the G7 for 2000 Q2 to 2001 Q3 was one of the largest for any six-quarter period in our sample, due to the concentration of large negative shocks over this period. Across the G7 countries, the cumulated balance was largest for the United States, where sizable and frequent negative shocks affected some of the most important components, eg private consumption and business investment. It was also relatively large for Japan and Germany, the other countries experiencing either large (Japan) or persistent (Germany) negative shocks. For the remaining countries, the cumulated balance was only about two standard deviations (for the United Kingdom) or below (for Canada, France and Italy). However, more recently (ie up to 2002 Q2), some of the negative shocks did unwind in the United States and the G7 aggregate, thus leading to a reduction in the corresponding balances of shocks, while further negative shocks accentuated the cumulated balance of shocks for the euro-area countries.

Across the components for the G7 aggregate, the largest cumulated shocks (again over 2000 Q2 to 2001 Q3) affected inventories and net trade. These have a low weight in GDP, but there were also sizable cumulated shocks to public investment and private consumption, which have a larger weight. A positive cumulated shock affected public consumption, consistent with a discretionary fiscal policy aiming to mitigate the effects of the slowdown. More recently (ie up to 2002 Q2), the cumulated balance for inventories and net trade continued to weigh on GDP, but the cumulated balance for public investment and especially private consumption came down due to recent

(16) We cumulate shocks and balances of shocks from 2000 Q2 to 2001 Q3 (the period on which we report the results quarter by quarter) as well as for the longer period extending from 2000 Q2 to the end of our sample in 2002 Q2, which enables us to discuss how the pattern of shocks has evolved since.

positive shocks.

Across the components for the G7 countries, the picture was similar with respect to public consumption. But while inventories and net trade were important at the aggregate level, they were generally not important across the G7 countries, except for net trade in the United States and Japan, and inventories in Germany (and perhaps also Italy). The cumulated shocks for the more important components (private consumption and business investment) were both large only for the United States and Germany, reflecting the large and persistent shocks hitting those components in these two countries. For the other countries, no more than one of these components experienced a large negative cumulated shock (private consumption for Canada and Italy, and business investment in the case of the United Kingdom), and the shock to the other component was smaller or even positive (eg business investment for Japan, or private consumption in France).

3.3 Summary

Our findings so far provide evidence for a range of shocks during the slowdown. There were large shocks to private sector consumption, business investment as well as other components including public sector spending, inventories and net trade. Moreover, some shocks affected several countries at the same time, suggesting a possible common cause, eg the large consumption shocks in 2000 Q2-Q3 and 2001 Q2-Q3, the shocks to business investment between 2000 Q4 - 2001 Q2 and the shocks to inventories in 2001 Q1-Q2. In other cases, the shocks seemed to be country-specific, eg the public consumption shocks in Japan or the inventory shocks for Germany and some of the other euro-area countries. As we have pointed out before, it is difficult to link the component shocks to a single structural factor, as several structural factors have the potential of ‘explaining’ the observed component shocks. But our evidence would be consistent with initial real demand shocks impacting on consumption and possibly net trade, followed by supply shocks reflected in shocks to business investment and later by renewed demand shocks.

The negative shocks during the slowdown appear to have been concentrated on the three largest G7 economies, especially the United States and Germany, which due to their weight determined to a large extent the picture for the G7. The United States was probably hit by the most one-sided and most severe concentration of shocks, but there were also several negative shocks in Germany (where further negative shocks occurred in the most recent quarters, while in the United States

positive shocks started to lower the balance of shocks). The United Kingdom, Canada and countries in the euro area other than Germany seem to have fared better, experiencing relatively smaller shocks, and having negative shocks reversed more quickly, so that the cumulated shocks for those countries did not reach the same magnitude or were reversed faster.

3.4 The shocks during the preceding expansion

In this section, we turn to the expansion that preceded the slowdown. There are two main reasons for doing so. First, by analysing the pattern of component shocks, we may be able to shed some light on the stories behind the expansion, such as the new economy hypothesis, of course subject to the limitations to drawing structural inferences with our approach outlined in Section 2. Second, analysing the shocks during the expansion may give an insight into possible asymmetry between expansions and contractions. Readers focusing on the slowdown should feel free to rejoin the discussion in Section 4. In analogy to the analysis above, we now look at the period for which the overall balance of shocks was positive. This was the case between 1999 Q2 and 2000 Q1, a total of four quarters and two quarters short of the number during the slowdown, a first result to note. Given common perceptions about the length of the expansion, we compute some results also for a longer period going back to 1995 Q3, during which the balance of shocks for the G7 was never negative for more than one quarter. These results are shown in Table B.

For the G7 aggregate, the overall balance of shocks was initially small. It then increased to the largest balance of the period in 1999 Q3, and subsequently was again more modest in 1999 Q4 and 2001 Q1. We note a large shock to private consumption in 1999 Q2 and also Q3. Most of the other component shocks in that quarter were relatively small, and the other noticeable shocks, eg to public investment and inventories, were actually negative. In 1999 Q3, the shocks were generally larger, but some of the shocks again had a negative sign, such as residential and public investment. Into 1999 Q4, all shocks except public consumption (which remained large and positive) reversed signs. In 2000 Q1, private consumption and investment experienced positive shocks, and so did net trade, but this was offset by negative shocks to public spending.

For the G7 countries, the balance of shocks was larger than for the G7 aggregate in some cases, but in others had the opposite sign, eg for the United States, Canada and the United Kingdom in 2000 Q1. In fact only for France and Italy was the balance of shocks positive throughout, albeit

always relatively small (Germany had a positive balance except in the first quarter). The United States, Canada and France experienced a sequence of positive consumption shocks throughout the period, which in the United States were coupled with two large shocks to public consumption in 1999 Q3 and Q4. In the other countries, shocks to consumption were negative and large in some quarters. For the euro-area countries, on the other hand, the most persistent positive shocks were shocks to business investment, inventories and net trade. From these results, it appears as if the component shocks during this period were not quite as large as those during the slowdown. The two consumption shocks for the G7, for example, exceeded one standard deviation, but these shocks were to be larger during the slowdown, and then there were more of them and more large shocks to other components as well. These facts are also apparent when we cumulate the shocks and balance of shocks over this period.

For the G7 aggregate, the cumulated balance of shocks reached about two standard deviations, and only two countries had a larger balance of shocks (France and Italy, as a reflection of the persistence of shocks to business investment, inventories and net trade in these cases). The largest cumulated G7 component shocks were those to (private and public) consumption, followed by the net trade shocks. These were offset by the negative cumulated shocks to other components, such as (private and public) investment and inventories, so that the overall balance was not so large. When we look at the longer period starting in 1995 Q3, the cumulated private consumption shock was much the same and, as a result, far less important relative to shocks to other components. The cumulated shock to public consumption actually was negative, which could be a reflection of fiscal consolidation in the period before 1999. The most important shocks over the longer period were those to business and residential investment, as well as inventories.

For the G7 countries, the cumulated shocks also differed between the shorter and longer period. Regarding consumption, for example, there were two countries with two positive balances (the United States and United Kingdom) while in the other cases signs changed, mostly from negative to positive (Canada, Japan and France). This further obscures the role of consumption in this period. But more generally as well, there were a few instances in which cumulated shocks were positive pre and post-1999 Q2. To some extent this is of course expected, as the balance of shocks pre-1999 Q2 is occasionally negative.

We draw three conclusions from this section. First, shocks were generally smaller than during the

slowdown. We conclude this from the smaller average size of shocks, and slower build-up of shocks to the components. Second, relatively few shocks had the same (positive) sign throughout, especially if we look at the longer period since 1995 Q3. These characteristics may be specific to this episode, but they are compatible with the view that economic downturns tend to be short and sharp, while expansions are longer and less pronounced.⁽¹⁷⁾ Third, looking at the pattern of shocks across components and countries, it seems that there is less correlation of shocks during the expansion than during the slowdown. Given the previous conclusions, it is plausible that this is another reflection of an asymmetry over the cycle rather than a trend in time.

4 A comparison of 2000/01 and 1990

In this section, we go even further back, and ask whether the 2000/01 slowdown was different from the previous one. The period we analyse here extends from 1990 Q2 to Q4, much shorter than in 2000/01 (see Table A and Charts 4 and 5).⁽¹⁸⁾ This period is much shorter than that in 2000/01, only half as many quarters with a negative balance of shocks. As before, we start with an analysis of the individual shocks, and then discuss the cumulated shocks, first at the G7 aggregate, then for the G7 countries.

For the G7, this period started with a large balance in 1999 Q2, followed by a smaller balance in Q3 and the largest negative balance in 1999 Q4, a sequence reminiscent of the more recent episode. The size of the balance of shocks was also somewhat smaller than in 2000/01. When it comes to the component shocks, further differences begin to emerge. The initial shock in 1990 Q2 affected private sector consumption and investment (both residential and business), but there were positive shocks to public sector consumption and investment, while there was no such pattern in 2000/01. The shocks following in 1990 Q3 and Q4 impacted most, and consistently, on consumption and residential investment, suggesting that consumption shocks were important throughout the 1990 slowdown, while during 2000/01 they were important initially and towards the end, but not (and in fact they were positive) in between.⁽¹⁹⁾

For the G7 countries, a negative balance of shocks in 1990 Q2 affected the United States, Canada,

(17) See for example the evidence for the United States provided in Hamilton (1989) or Bayoumi and Helbling (2003).

(18) The balance of shocks was also negative during 1992 Q2-Q3 and 1995 Q1-Q2, but we will not look at those episodes in detail.

(19) This is consistent with the results reported by Blanchard (1993) in his seminal paper on the 1990 recession in the United States.

the United Kingdom, France and Italy, but the balance was positive for Germany and Japan. The initial shock thus affected a similar number of countries in 1990 as in 2000/01, but the shocks (both positive and negative) were larger in 1990. The other difference is that there was an initial negative balance of shocks for the United States, Japan and Germany in 2000/01, but only the United States in 1990.

Let us summarise the key results from this comparison. The first key result relates to the persistence of the shocks. At the aggregate level, the shocks during 2000/01 were negative for longer than during the previous slowdown in 1990 (six quarters compared with three). There were also differences in the sequence of shocks. In 1990, the initial shock first and foremost affected consumption, which remained the major source of shocks throughout the slowdown. There was much less of a role for consumption in the recent slowdown, at least at the early and middle stages. While consumption was affected initially in some countries, those shocks were comparatively small, and there were no further large consumption shocks until the end of the slowdown in 2001 Q3-Q4. Another key result concerns the countries affected by the major shocks. During 2000/01, the major shocks affected the United States, Japan and Germany, while in the previous slowdown they affected first and foremost the United States. Combined with the evidence for Canada, this seems to further support the perception that at least some of the major shocks during 2000/01 had a common cause, while in 1990 most shocks were limited geographically (eg the consumption and residential investment shocks for North America).

5 Accounting for monetary policy and oil price in 2000/01

As we have emphasised in Section 2, the basic VAR in equation (1) is the most concise specification for capturing the joint dynamics of the components of GDP, and it is used for this reason by Blanchard (1993) and others. However, as we have observed above, the residuals are driven partly by omitted variables, and it may be possible to increase the efficiency and informativeness of our estimates by adding more variables to the information set; there are other reduced forms which contain more variables. As always, there is a trade-off between parsimony and comprehensiveness. Catao and Ramaswamy (1995) use the real interest rate, the real exchange rate and the ratio of household wealth to GDP, in order to capture the monetary policy stance and wealth effects. Ramaswamy and Rendu (2000) also use the real interest rate, as well as the ratio of budget to GDP, designed to proxy fiscal policy.

We propose to use short-term interest rates as a measure of monetary policy and to account explicitly for oil prices, for several reasons.⁽²⁰⁾ First, these factors have varied substantially over the period we are interested in, and including them therefore has the potential of adding a lot of explanatory power. Interest rates first increased as monetary policy tightened towards the end of 1999 and into 2000 and then fell significantly from later in 2000 into 2001 as policy loosened (see Chart 2); the oil price doubled between 1998 and the middle of 2000 (see Chart 3), before falling back significantly at about the same time as interest rates. Moreover, given that these are key variables in the business cycle, they are also routinely included in standard VARs, and so enable us to conduct some sort of comparison between the shocks identified in those and the changes in the pattern of shocks we observe once these variables are taken into account.⁽²¹⁾⁽²²⁾

5.1 The extended approach

We thus add the (3-month) interest rate and the dollar price per barrel of Brent crude oil to the variables in the VAR, so that the equations in VAR (1) now have the form

$$z_{i,t} = d_t + \sum_{j=1}^l r_t + \sum_{j=1}^l p_t + \sum_{j=1}^l a_{i,j} z_{i,t-j} + \sum_{\substack{k=1 \\ k \neq i}}^n \sum_{j=1}^l a_{k,j} z_{k,t-j} + \tilde{u}_{i,t} \quad (6)$$

where $\tilde{u}_{i,t}$ are the new residuals associated with component i , r_t is the 3-month rate (nominal), p_t the Brent oil price and d_t is made up of the same terms as before. The interest rate and the oil price are assumed to be stationary, and so are included in levels. We denote the common factor in the extended VAR as

$$\tilde{u}_{GDP,t} = \sum_i \frac{z_{i,t}}{\sum_i z_{i,t}} \tilde{u}_{i,t} \quad (7)$$

so that the second-stage regressions can be written as

$$\tilde{u}_{i,t} = \tilde{\alpha}_0 + \tilde{\alpha}_1 \tilde{u}_{GDP,t} + \tilde{\varepsilon}_{i,t} \quad (8)$$

where $\tilde{u}_{GDP,t}$ is the fitted value from the auxiliary regression $u_{GDP,t}$ on $u_{\gamma,t}$ and $u_{\chi,t}$, in analogy to equation (4). As a result, we obtain a new set of shocks $\tilde{\varepsilon}_{i,t}$ and, derived from that, a new balance

(20) We have also experimented with VARs that include only one of these variables at a time, and we report on the relevant results from these exercises where they matter.

(21) The case for adding fiscal variables, as in Catao and Ramaswamy (1995) and Ramaswamy and Rendu (2000), is not as compelling, given that this is already captured, at least in part, by the public consumption and investment components in the VAR, and because there have been no movements in fiscal policy that are of the same magnitude as the changes in policy and oil prices during the period of the slowdown.

(22) Note that the aim is not to derive any policy shock or oil price shock, but to obtain a new set of component shocks, which now take into account the effects of policy and the oil price (in contrast to the identified VAR literature these effects may reflect unsystematic or systematic monetary policy).

of shocks $\tilde{\varepsilon}_{GDP,t}$, computed as

$$\tilde{\varepsilon}_{GDP,t} = \sum_i \frac{z_{i,t}}{\sum_i z_{i,t}} \tilde{\varepsilon}_{i,t} \quad (9)$$

which is similar to equation (5).

The new shocks can be interpreted as shocks excluding the impact of monetary policy and oil prices. In analogy, the new balance of shocks can be interpreted as a balance corrected for the impact of monetary policy and oil prices. The best measure of the impact of monetary policy and oil prices therefore is the difference between these new shocks (or new balance of shocks) and the shocks (or balance of shocks) discussed in Sections 3 and 4, $\delta_{i,t} = \varepsilon_{i,t} - \tilde{\varepsilon}_{i,t}$ (or $\delta_{GDP,t} = \varepsilon_{GDP,t} - \tilde{\varepsilon}_{GDP,t}$). If the new shocks are smaller than those discussed in Section 3, so that the difference is positive, ie $\delta_{i,t} > 0$, this says that ignoring policy and oil price leads to overstating the shocks (in analogy for the balance of shocks if $\delta_{GDP,t} > 0$), with the size of the difference providing an indication of how important the two factors were. These numbers are reported in Table C and plotted in Charts 6 to 7.

5.2 Results from the extended approach

For the G7 aggregate, the resulting balance of shocks during the 2000/01 slowdown was consistently smaller than that reported in Sections 3 and 4. The difference amounted to minus one standard deviation in 2000 Q2, as well as 2000 Q4 and 2001 Q1, but was smaller than half a standard deviation in the final quarter, 2001 Q3 (subsequently, the resulting balance of shocks increased in size, and in 2002 Q1 and Q2 actually exceeded the original balance of shocks, so that the difference turned positive). When cumulated from 2000 Q2 to 2001 Q3, the new balance of shocks for the G7 was roughly half as large as the original one in Sections 3 and 4. This means that when we take into account the effects monetary policy and the oil price, the shocks on average were half as large during 2000 Q2 to 2001 Q3.⁽²³⁾ The difference between the G7 component shocks was negative, ie shocks were smaller when accounting for the effect of monetary policy and the oil price, in the case of private consumption, public investment, inventories and net trade (with the largest difference affecting inventories and private consumption). By contrast, the difference was positive and shocks actually larger in the case of business and residential investment and public consumption. This is slightly surprising, given that monetary policy and the oil price is expected to have a similar impact on these components.

(23) The results obtained when estimating VARs that include only one of these variables at a time generally suggest a greater role for the oil price than monetary policy during 2000/01.

For the G7 countries, the balance of shocks differed most for the United States and least for the countries of the euro area, with Canada and Japan in between. In most cases, the difference evolved similarly to the G7, starting off relatively large and then becoming smaller towards the end of the period (as in Canada, Japan, the United Kingdom and Italy) or the end of the sample in 2002 Q2 (as in France). The only country where the difference remained negative throughout was Germany. There are also interesting patterns in the component shocks at the country level. The negative differences in shocks to private consumption and public investment were most noticeable in the United States, Japan and Germany, suggesting that for these components the difference made by policy and the oil price was similar across the largest G7 economies. But in the case of inventories, the negative difference between the shocks was due to the euro area and the United Kingdom, while the difference in net trade shocks was confined to the United States.

6 Conclusion

In this paper, we have used a method first developed by Olivier Blanchard to present a VAR-based analysis of shocks to G7 GDP components, documenting their size, persistence and coincidence across the components and the G7 countries. We obtained sets of results for the slowdown in 2000/01 and the expansion preceding it, the previous slowdown in 1990, as well as a set of results for the 2000/01 slowdown which explicitly takes into account the stance of monetary policy and the oil price.

For the slowdown in 2000/01, we find large negative shocks to net trade, inventories and business investment. Some of the component shocks affected several countries at the same time, or within a short space of time, and thus are suggestive of a common cause. But there were also differences in the pattern of shocks, most notably between Germany and the other euro-area countries. When comparing the shocks in 2000/01 to those during the previous slowdown in 1990, we find several differences. These differences relate to the overall balance of shocks (which was negative for much longer in 2000/01), the major shocks (despite the shock in 2001 Q3, shocks to private sector consumption seem to have been more persistent in 1990) and the extent to which shocks were correlated across the G7 countries (while there was a pattern shared by the three largest economies in 2000/01, the United States had a specific pattern of shocks in 1990).

Finally, we extend the analysis to account explicitly for the stance of monetary policy and the oil

price in 2000/01. We find that these factors explain about one half of the negative balance of shocks for the G7 for the period 2000 Q2 to 2001 Q3. Their effect though became smaller towards the end of the slowdown, and eventually changed signs (so as to alleviate the slowdown or to contribute to the recovery), a reflection of the falls in interest rates and oil prices that had started at that time. More generally, these results support the view that a range of structural factors was at work during the 2000/01 slowdown. In order to put our findings into perspective, it would be interesting to extend the analysis presented in this paper to a sample including the 1970s. We leave this for future work.

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Tables

Table A: Shocks - slowdowns

G7	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	0.01	0.11	-0.50	-0.45	1.94	0.20	-0.63	-0.16
2000 Q3	-1.20	0.48	0.20	-0.52	-0.75	-1.08	-1.96	-2.38
2000 Q4	-0.45	-0.26	-0.01	-0.48	0.21	0.15	-0.94	-0.87
2001 Q1	0.61	-2.11	0.24	2.03	1.09	-2.50	-0.16	-0.89
2001 Q2	-0.20	1.08	-0.55	-1.59	0.74	-2.06	-2.16	-2.26
2001 Q3	-0.69	0.80	-0.11	-1.37	-0.09	-0.46	-0.81	-0.94
2000 Q1-2001 Q3	-1.91	0.11	-0.74	-2.38	3.15	-5.75	-6.66	-7.51
2001 Q4	1.14	-0.54	0.15	1.63	1.51	-1.44	-0.03	0.24
2002 Q1	0.65	0.09	-0.35	-0.13	0.26	0.86	1.24	1.48
2002 Q2	-0.20	1.35	-1.31	-0.82	-0.17	0.26	-0.89	-0.62
2001 Q4-2002 Q2	1.58	0.89	-1.51	0.68	1.60	-0.32	0.33	1.10
2000 Q1-2002 Q2	-0.33	1.00	-2.25	-1.70	4.75	-6.07	-6.34	-6.41
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1990 Q2	-0.95	-1.16	-1.37	0.17	0.53	0.15	-0.72	-0.98
1990 Q3	-0.77	0.30	-1.76	0.05	-0.17	0.07	0.08	-0.40
1990 Q4	-2.42	0.80	-1.02	0.74	0.31	-1.98	-0.54	-1.84
1990 Q2-Q4	-4.14	-0.06	-4.16	0.96	0.67	-1.76	-1.18	-3.21
<hr/>								
United States	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	-0.21	-0.08	-1.06	-1.39	1.68	0.78	0.24	0.46
2000 Q3	-0.45	-0.30	-0.73	-0.32	0.05	0.32	-1.26	-1.70
2000 Q4	-0.26	-1.46	0.25	-0.01	0.36	0.53	-1.30	-1.19
2001 Q1	-0.75	-1.42	0.78	0.56	0.83	-1.03	-0.46	-1.48
2001 Q2	-0.45	-1.85	-0.71	1.40	0.66	-0.57	-1.18	-2.00
2001 Q3	-0.31	0.65	-0.51	-2.58	-0.05	0.04	-1.09	-0.94
2000 Q1-2001 Q3	-2.43	-4.45	-1.98	-2.35	3.53	0.07	-5.05	-6.86
2001 Q4	2.19	-0.79	-1.34	1.79	1.62	-1.91	-0.38	0.17
2002 Q1	0.87	0.09	1.10	1.11	0.05	0.19	-0.01	1.15
2002 Q2	-0.33	0.23	-0.77	-0.80	0.77	0.79	-1.08	-0.98
2001 Q4-2002 Q2	2.73	-0.47	-1.02	2.10	2.45	-0.93	-1.48	0.35
2000 Q2-2002 Q2	0.30	-4.93	-3.00	-0.25	5.98	-0.86	-6.53	-6.51
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1990 Q2	-1.01	-1.72	-2.37	0.31	0.05	1.08	-0.13	-0.88
1990 Q3	-0.49	0.88	-2.02	-0.36	-0.77	0.90	-1.91	-1.09
1990 Q4	-2.92	-0.73	-2.24	0.89	-0.38	-0.21	0.55	-2.13
1990 Q2-Q4	-4.43	-1.58	-6.63	0.84	-1.10	1.77	-1.50	-4.10

Table A: (Continued)

Canada	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	0.05	0.27	-1.06	-0.84	-0.28	0.56	-0.14	-0.23
2000 Q3	0.98	-0.54	2.31	0.51	0.68	0.85	0.93	1.60
2000 Q4	-1.95	-1.29	-0.65	-1.18	-0.11	-0.56	0.61	-0.51
2001 Q1	0.00	-0.02	-0.22	1.09	-1.03	-0.34	-0.10	-0.43
2001 Q2	0.31	-0.01	-0.72	0.33	1.06	0.62	-1.19	-1.18
2001 Q3	-1.13	0.84	0.42	0.16	-0.52	0.35	-0.72	-0.94
2000 Q1-2001 Q3	-1.74	-0.74	0.08	0.08	-0.20	1.47	-0.62	-1.69
2001 Q4	-0.45	-2.34	1.02	0.36	-1.10	-0.67	1.36	0.41
2002 Q1	1.06	-0.14	1.66	-0.60	0.16	0.60	1.41	1.93
2002 Q2	1.27	0.66	-1.48	1.29	1.13	0.03	-0.98	-0.46
2001 Q4-2002 Q2	1.87	-1.82	1.19	1.05	0.20	-0.04	1.79	1.88
2000 Q2-2002 Q2	0.14	-2.56	1.28	1.12	-0.01	1.43	1.18	0.19
1990 Q2	-1.52	-0.55	-1.57	-0.94	-1.30	0.08	0.18	-0.96
1990 Q3	-1.70	-1.04	-1.60	-0.33	1.32	-1.68	-0.60	-1.45
1990 Q4	0.73	-0.42	-1.47	-1.13	1.60	-0.73	-1.04	-0.76
Cumulated	-2.49	-2.01	-4.64	-2.40	1.62	-2.33	-1.46	-3.17
Japan								
2000 Q2	-0.44	-0.30	-0.56	0.44	2.54	-0.63	-0.60	-0.50
2000 Q3	-1.59	1.09	0.49	-0.60	-0.99	-0.41	-1.28	-1.76
2000 Q4	-0.06	1.55	0.63	-1.27	-1.44	0.13	-1.92	-0.75
2001 Q1	1.55	-1.69	-1.55	2.43	0.02	-0.46	0.05	0.75
2001 Q2	0.60	2.23	-0.93	-3.39	-0.18	-1.47	-0.75	-0.64
2001 Q3	-0.44	-0.47	1.24	0.68	-0.33	0.61	-0.62	-0.44
2000 Q1-2001 Q3	-0.38	2.41	-0.68	-1.70	-0.37	-2.23	-5.12	-3.34
2001 Q4	-0.10	-0.48	0.31	0.13	-0.09	-0.86	-0.06	-0.64
2002 Q1	0.23	0.11	-0.76	-0.03	-0.86	-1.69	1.81	0.54
2002 Q2	1.07	-0.06	-0.11	0.07	-0.80	-0.16	1.40	1.57
2001 Q4-2002 Q2	1.20	-0.42	-0.56	0.17	-1.74	-2.71	3.14	1.47
2000 Q2-2002 Q2	0.82	1.99	-1.24	-1.54	-2.11	-4.94	-1.99	-1.87
1990 Q2	0.70	-0.49	0.08	0.36	0.92	0.27	1.63	1.32
1990 Q3	-0.80	0.09	0.91	0.59	-0.58	0.38	0.44	0.20
1990 Q4	-1.25	0.70	-0.07	0.09	0.44	-0.36	-0.30	-0.54
1990 Q2-Q4	-1.35	0.30	0.91	1.03	0.78	0.30	1.78	0.99

Table A: (Continued)

United Kingdom	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	-0.19	-0.40	-0.32	0.61	0.29	0.30	0.06	0.01
2000 Q3	-0.47	-0.30	-0.15	-0.57	1.52	-0.51	-1.15	-1.32
2000 Q4	-0.34	1.03	-0.03	1.13	-1.41	-1.10	-0.49	-0.76
2001 Q1	0.43	-1.47	0.48	-0.63	2.05	-0.84	-0.14	-0.65
2001 Q2	-0.03	-0.64	-0.67	1.12	-1.74	-0.09	0.40	0.12
2001 Q3	0.51	-1.62	-0.35	0.34	0.24	0.29	0.33	0.29
2000 Q1-2001 Q3	-0.09	-3.40	-1.05	2.01	0.95	-1.96	-0.98	-2.31
2001 Q4	0.74	0.03	0.04	-0.37	1.11	-0.31	-0.42	-0.15
2002 Q1	-0.70	-1.19	0.66	-0.13	2.29	0.25	-0.62	-0.48
2002 Q2	-0.12	-0.13	0.07	0.86	-1.81	0.39	0.52	0.48
2001 Q4-2002 Q2	-0.09	-1.29	0.78	0.36	1.59	0.33	-0.52	-0.15
2000 Q2-2002 Q2	-0.18	-4.69	-0.27	2.37	2.54	-1.63	-1.51	-2.47
1990 Q2	-1.28	-0.02	-0.85	-0.78	0.30	0.12	-0.40	-0.60
1990 Q3	-2.02	-0.94	1.79	0.81	-0.22	-3.53	-2.46	-3.35
1990 Q4	-0.61	0.33	0.91	-0.19	0.59	-1.52	-0.52	-0.92
1990 Q2-Q4	-3.91	-0.62	1.85	-0.16	0.67	-4.93	-3.37	-4.87
Germany								
	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	0.34	-0.58	-0.34	0.04	-0.04	0.22	0.19	0.23
2000 Q3	-0.98	0.92	-0.32	-0.45	-0.58	-0.54	-0.60	-0.99
2000 Q4	-1.36	-1.34	0.04	-0.91	1.32	-0.03	-0.90	-1.02
2001 Q1	0.32	-1.73	-0.91	-1.00	-0.21	-0.85	0.35	-0.37
2001 Q2	0.14	-1.76	-0.33	-1.35	-0.39	-0.70	0.17	-0.44
2001 Q3	-0.48	-0.64	-0.27	-0.71	-0.43	-1.68	0.43	-0.81
2000 Q1-2001 Q3	-2.03	-5.14	-2.13	-4.37	-0.32	-3.59	-0.37	-3.40
2001 Q4	-0.78	0.55	0.24	-0.75	0.39	-1.00	-0.53	-0.94
2002 Q1	-0.84	-0.11	0.13	0.10	0.77	-1.20	0.79	-0.29
2002 Q2	-0.27	0.32	-1.85	-1.40	0.29	0.06	0.12	-0.13
2001 Q4-2002 Q2	-1.88	0.76	-1.48	-2.06	1.45	-2.14	0.38	-1.37
2000 Q2-2002 Q2	-3.91	-4.38	-3.61	-6.43	1.13	-5.74	0.01	-4.77
1990 Q2	0.29	-0.07	0.56	0.88	1.51	0.25	0.26	0.51
1990 Q3	0.77	-0.97	-2.35	2.79	-0.68	1.29	2.04	1.65
1990 Q4	0.13	0.13	-0.35	2.06	-2.48	0.63	0.02	0.08
1990 Q2-Q4	1.19	-0.91	-2.14	5.72	-1.64	2.17	2.32	2.23

Table A: (Continued)

France	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	-0.87	-0.64	0.10	0.76	1.16	-0.04	-0.12	-0.27
2000 Q3	-0.35	0.07	-0.45	0.29	-0.17	1.53	-1.47	-0.66
2000 Q4	0.22	0.98	-0.17	-0.25	1.27	1.18	0.63	1.57
2001 Q1	0.79	-1.01	-0.03	1.34	-0.77	-2.08	-0.39	-1.28
2001 Q2	0.29	0.30	-0.95	-0.27	-0.86	-0.07	-0.83	-0.89
2001 Q3	1.05	0.22	0.28	0.00	0.69	-0.53	0.04	0.33
2000 Q1-2001 Q3	1.14	-0.08	-1.23	1.86	1.33	0.00	-2.14	-1.20
2001 Q4	0.10	0.10	-0.33	0.41	-0.57	-2.52	-0.77	-2.00
2002 Q1	0.16	1.34	-0.51	0.28	0.21	0.39	0.38	0.77
2002 Q2	0.50	-1.41	0.01	0.35	1.01	-1.42	0.12	-0.43
2001 Q4-2002 Q2	0.76	0.04	-0.83	1.05	0.65	-3.55	-0.28	-1.65
2000 Q2-2002 Q2	1.89	-0.04	-2.06	2.91	1.97	-3.55	-2.42	-2.85
1990 Q2	0.50	0.03	-1.62	0.11	-1.31	1.06	-1.66	-0.56
1990 Q3	-0.98	0.80	-1.51	0.96	1.10	0.49	-0.68	-0.41
1990 Q4	-0.58	-1.46	-0.79	-0.54	-1.22	0.22	-1.12	-1.28
1990 Q2-Q4	-1.07	-0.63	-3.92	0.53	-1.43	1.77	-3.47	-2.25
Italy								
	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	-0.36	0.09	-0.41	-0.95	-1.05	-0.47	-0.20	-0.38
2000 Q3	-0.31	0.18	-0.28	-0.84	1.02	-0.60	0.17	-0.23
2000 Q4	0.20	-0.22	0.71	0.10	1.41	1.00	1.30	1.24
2001 Q1	-0.30	0.57	0.25	-1.27	0.94	-0.14	0.26	0.09
2001 Q2	-0.59	-0.15	-1.13	0.20	-0.51	-1.20	-1.08	-1.26
2001 Q3	-1.60	-0.86	-0.78	0.30	0.10	-1.00	-0.85	-1.07
2000 Q1-2001 Q3	-2.97	-0.38	-1.63	-2.45	1.92	-2.42	-0.40	-1.62
2001 Q4	0.11	-0.23	-0.41	-1.38	-0.37	-0.93	-0.68	-0.84
2002 Q1	-0.98	-0.91	-0.06	-0.47	1.00	0.22	-0.07	0.02
2002 Q2	0.69	0.79	-0.39	2.17	-0.35	-0.10	-0.46	-0.24
2001 Q4-2002 Q2	-0.18	-0.35	-0.86	0.32	0.29	-0.81	-1.20	-1.07
2000 Q2-2002 Q2	-3.15	-0.73	-2.49	-2.13	2.20	-3.23	-1.61	-2.68
1990 Q2	-0.27	-1.21	-1.41	-1.02	0.00	-1.00	-0.82	-0.95
1990 Q3	0.09	-1.33	-1.03	-0.59	-0.05	-0.61	-0.79	-0.70
1990 Q4	0.48	-2.40	-3.47	-2.17	-0.59	-3.45	-3.51	-3.45
1990 Q2-Q4	0.30	-4.94	-5.92	-3.78	-0.64	-5.07	-5.12	-5.10

Table B: Shocks - expansion

G7

	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
1995 Q3-1999 Q1	0.32	5.40	1.79	-0.31	-4.43	6.26	-2.34	2.24
1999 Q2	1.07	-0.14	0.17	-0.49	0.34	-0.55	-0.13	0.13
1999 Q3	1.17	-0.09	-0.99	-0.87	0.89	-0.37	1.05	0.93
1999 Q4	-0.24	-1.21	0.53	0.67	1.09	0.92	0.23	0.45
2000 Q1	0.74	1.04	0.94	-0.86	-0.39	-1.08	0.72	0.58
1999 Q2-2000 Q1	2.74	-0.40	0.65	-1.55	1.93	-1.08	1.87	2.09
1995 Q3-2000 Q1	3.06	5.00	2.44	-1.86	-2.50	5.17	-0.47	4.33

United States

	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
1995 Q3-1999 Q1	1.78	5.63	7.91	1.03	-2.65	0.75	0.23	5.77
1999 Q2	0.86	-0.22	-0.02	0.62	-0.72	-0.45	-0.81	-0.66
1999 Q3	0.98	-0.02	-0.42	-0.01	1.08	-0.44	0.19	0.66
1999 Q4	0.13	-1.24	0.21	0.68	1.73	0.91	0.90	1.60
2000 Q1	0.45	0.88	0.89	0.01	-0.92	-0.40	-0.97	-0.50
1999 Q2-2000 Q1	2.42	-0.60	0.66	1.30	1.17	-0.39	-0.69	1.10
1995 Q3-2000 Q1	4.20	5.03	8.57	2.33	-1.48	0.36	-0.47	6.87

Canada

	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
1995 Q3-1999 Q1	-2.53	3.12	3.94	-2.30	-5.99	1.48	2.14	1.93
1999 Q2	0.74	0.25	0.85	1.58	0.69	-0.27	-0.49	-0.11
1999 Q3	0.35	-0.63	-0.50	-0.49	-0.14	0.00	0.84	0.80
1999 Q4	0.62	0.52	1.04	1.08	0.37	1.11	0.65	1.46
2000 Q1	-0.71	0.03	-0.21	-0.96	-0.79	0.41	0.15	-0.14
1999 Q2-2000 Q1	1.00	0.16	1.18	1.21	0.13	1.24	1.16	2.01
1995 Q3-2000 Q1	-1.53	3.28	5.12	-1.09	-5.86	2.72	3.30	3.94

Japan

	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
1995 Q3-1999 Q1	-4.49	1.25	-1.21	-1.57	-3.29	0.76	-1.64	-4.98
1999 Q2	0.72	-1.11	1.39	-0.81	2.51	0.14	0.63	0.67
1999 Q3	0.92	0.05	-0.93	-0.77	-0.04	0.00	1.08	0.77
1999 Q4	-1.16	1.30	-0.27	-0.13	-0.44	-0.69	-1.64	-1.44
2000 Q1	-0.85	1.45	1.17	-0.78	0.00	-0.63	2.14	1.33
1999 Q2-2000 Q1	-0.36	1.69	1.35	-2.48	2.03	-1.18	2.21	1.33
1995 Q3-2000 Q1	-4.85	2.94	0.14	-4.05	-1.26	-0.42	0.57	-3.65

Table B: (Continued)

United Kingdom	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
1995 Q3-1999 Q1	3.27	4.54	0.09	-4.41	-0.46	1.52	-2.64	0.50
1999 Q2	-0.35	-1.00	-0.07	-1.12	-0.38	-0.91	0.60	-0.53
1999 Q3	-0.16	-0.05	-0.97	-0.52	0.40	0.94	1.20	1.11
1999 Q4	1.20	-0.63	0.94	-0.10	1.08	0.87	0.05	0.83
2000 Q1	0.25	-2.15	0.90	-0.12	0.38	-1.53	-0.91	-1.78
1999 Q2-2000 Q1	0.94	-3.83	0.80	-1.86	1.47	-0.63	0.94	-0.37
1995 Q3-2000 Q1	4.20	0.71	0.89	-6.27	1.01	0.89	-1.70	0.12

Germany	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
1995 Q3-1999 Q1	-4.53	4.98	1.96	-1.56	1.24	-0.54	-3.29	-2.98
1999 Q2	-1.42	0.33	0.70	-0.57	-1.13	-1.10	-0.80	-1.51
1999 Q3	0.60	0.10	-0.15	1.64	0.52	0.65	0.78	1.03
1999 Q4	0.33	-1.33	-1.80	-0.83	-0.03	0.65	0.96	0.57
2000 Q1	-0.52	1.34	-1.30	0.24	0.17	0.19	0.61	0.23
1999 Q2-2000 Q1	-1.02	0.45	-2.54	0.48	-0.47	0.39	1.56	0.31
Cumulated	-5.55	5.43	-0.58	-1.07	0.77	-0.15	-1.73	-2.67

France	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
1995 Q3-1999 Q1	-4.63	2.79	4.58	-7.05	-3.84	2.05	-2.99	-3.20
1999 Q2	0.66	0.37	1.29	-0.37	-0.54	0.68	0.49	1.09
1999 Q3	0.66	0.34	-0.57	0.10	-0.25	-1.82	1.84	0.84
1999 Q4	0.68	-0.47	-0.58	0.72	1.80	1.12	0.19	1.19
2000 Q1	1.13	1.08	1.46	0.08	0.15	0.42	0.53	1.49
1999 Q2-2000 Q1	3.13	1.32	1.60	0.52	1.16	0.40	3.05	4.61
1995 Q3-2000 Q1	-1.51	4.11	6.18	-6.53	-2.68	2.45	0.06	1.41

Italy	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
1995 Q3-1999 Q1	1.41	0.26	-0.82	4.54	-3.80	-0.82	-1.53	-1.01
1999 Q2	-1.62	0.17	0.26	0.47	-0.96	0.05	0.02	-0.01
1999 Q3	0.96	2.02	1.46	0.59	0.66	1.38	1.50	1.62
1999 Q4	-0.12	1.00	0.93	0.24	-0.37	0.77	0.77	0.86
2000 Q1	0.57	0.17	0.30	0.18	0.85	0.09	0.46	0.35
1999 Q2-2000 Q1	-0.21	3.36	2.95	1.48	0.18	2.28	2.75	2.82
1995 Q3-2000 Q1	1.21	3.62	2.13	6.02	-3.62	1.47	1.23	1.81

Table C: Differences in shocks

G7	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	-0.23	0.14	0.04	-0.32	0.38	-1.09	-0.60	-1.00
2000 Q3	-0.60	0.53	0.20	-0.35	0.28	-0.64	-0.55	-0.49
2000 Q4	-0.57	0.09	0.02	-0.18	0.66	-1.39	-0.45	-1.02
2001 Q1	-0.84	0.17	0.05	-0.34	0.62	-1.02	-0.76	-1.13
2001 Q2	-0.85	0.56	0.19	-0.43	0.32	-0.72	-0.69	-0.77
2001 Q3	-0.33	0.11	0.03	-0.02	0.25	-0.44	-0.11	-0.25
2000 Q1-2001 Q3	-3.41	1.61	0.54	-1.64	2.51	-5.32	-3.16	-4.67
2001 Q4	-0.17	0.04	0.02	-0.16	-0.08	0.20	-0.13	-0.11
2002 Q1	0.77	0.01	0.01	-0.17	-0.49	0.66	-0.17	0.27
2002 Q2	0.14	0.36	0.12	-0.28	-0.30	0.28	-0.25	0.14
2001 Q4-2002 Q2	0.74	0.40	0.14	-0.62	-0.88	1.14	-0.55	0.30
2000 Q1-2002 Q2	-2.67	2.01	0.68	-2.25	1.64	-4.18	-3.70	-4.37

United States	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	-0.76	-0.68	-0.53	-0.01	0.71	-0.09	-0.41	-1.10
2000 Q3	-0.59	-0.18	-0.29	-0.14	0.43	0.06	-0.35	-0.59
2000 Q4	-0.77	-0.37	-0.50	-0.23	0.66	0.01	-0.60	-1.05
2001 Q1	-0.81	-0.39	-0.65	-0.13	0.64	0.01	-0.43	-0.88
2001 Q2	-0.63	-0.13	-0.35	-0.09	0.36	0.07	-0.15	-0.39
2001 Q3	-0.26	-0.06	-0.06	-0.12	0.21	0.03	-0.32	-0.37
2000 Q1-2001 Q3	-3.82	-1.81	-2.38	-0.72	3.00	0.09	-2.26	-4.38
2001 Q4	-0.38	-0.12	0.02	-0.06	0.07	-0.05	-0.06	-0.19
2002 Q1	0.79	0.49	0.72	-0.36	-0.56	-0.01	-0.41	0.26
2002 Q2	0.42	0.48	0.62	-0.40	-0.36	0.10	-0.55	0.03
2001 Q4-2002 Q2	0.83	0.85	1.35	-0.81	-0.85	0.04	-1.02	0.09
2000 Q2-2002 Q2	-2.99	-0.96	-1.02	-1.53	2.16	0.13	-3.28	-4.29

Canada	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	-0.16	0.23	-0.44	-0.23	0.21	-0.25	-0.61	-0.79
2000 Q3	0.03	0.29	-0.72	-0.21	0.10	-0.46	-0.67	-0.81
2000 Q4	-0.13	0.29	-0.67	-0.28	0.35	-0.34	-0.91	-1.10
2001 Q1	-0.18	0.21	-0.31	-0.22	0.20	-0.22	-0.49	-0.62
2001 Q2	-0.24	0.08	0.25	-0.11	-0.13	0.07	0.04	-0.05
2001 Q3	-0.16	0.05	0.62	-0.05	-0.31	0.11	0.41	0.37
2000 Q1-2001 Q3	-0.84	1.15	-1.28	-1.10	0.43	-1.09	-2.23	-3.00
2001 Q4	0.01	0.10	0.51	0.00	-0.36	-0.07	0.39	0.42
2002 Q1	0.19	0.06	0.39	0.09	-0.52	-0.15	0.51	0.56
2002 Q2	-0.15	0.02	0.40	-0.03	-0.28	0.06	0.29	0.23
2001 Q4-2002 Q2	0.05	0.18	1.29	0.06	-1.15	-0.16	1.18	1.21
2000 Q2-2002 Q2	-0.80	1.34	0.01	-1.03	-0.72	-1.24	-1.05	-1.79

Table C: (Continued)

Japan	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	-0.22	0.27	-0.06	-0.29	-0.28	-0.15	-0.18	-0.34
2000 Q3	-0.21	0.08	-0.06	-0.11	-0.27	-0.07	-0.06	-0.32
2000 Q4	-0.30	0.28	-0.20	-0.23	-0.32	-0.24	-0.01	-0.39
2001 Q1	-0.38	0.57	-0.32	-0.43	-0.37	-0.42	-0.04	-0.47
2001 Q2	-0.41	0.50	-0.24	-0.47	-0.47	-0.35	-0.17	-0.61
2001 Q3	-0.03	-0.04	-0.04	0.07	-0.05	-0.01	0.09	0.01
2000 Q1-2001 Q3	-1.55	1.65	-0.93	-1.46	-1.77	-1.23	-0.37	-2.12
2001 Q4	-0.17	0.17	-0.11	-0.14	-0.22	-0.12	-0.03	-0.24
2002 Q1	0.04	-0.03	0.01	0.04	0.10	0.05	0.02	0.12
2002 Q2	0.12	-0.07	-0.01	0.13	0.24	0.03	0.12	0.31
2001 Q4-2002 Q2	0.00	0.07	-0.10	0.03	0.12	-0.03	0.12	0.19
2000 Q2-2002 Q2	-1.55	1.72	-1.03	-1.43	-1.65	-1.26	-0.25	-1.93

United Kingdom	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	0.06	-0.10	-0.13	0.09	0.09	-0.24	-0.14	-0.27
2000 Q3	0.21	-0.20	-0.10	-0.04	0.12	-0.12	-0.10	-0.24
2000 Q4	0.24	-0.29	-0.18	0.00	0.17	-0.48	-0.15	-0.35
2001 Q1	0.43	-0.27	-0.07	-0.14	0.16	-0.20	0.03	-0.07
2001 Q2	0.14	-0.10	-0.05	-0.03	0.07	-0.15	0.00	-0.07
2001 Q3	0.45	-0.20	0.04	-0.22	0.11	0.09	0.14	0.18
2000 Q1-2001 Q3	1.53	-1.16	-0.49	-0.35	0.71	-1.10	-0.22	-0.82
2001 Q4	0.30	-0.16	0.04	-0.17	0.06	0.07	0.10	0.15
2002 Q1	0.42	-0.10	0.24	-0.44	-0.01	0.67	0.35	0.55
2002 Q2	0.37	-0.13	0.17	-0.31	0.02	0.35	0.27	0.41
2001 Q4-2002 Q2	1.09	-0.39	0.45	-0.92	0.07	1.09	0.72	1.12
2000 Q2-2002 Q2	2.63	-1.55	-0.05	-1.27	0.78	-0.01	0.49	0.30

Germany	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	-0.14	-0.39	-0.30	-0.32	0.02	-0.28	0.07	-0.21
2000 Q3	-0.16	-0.35	-0.33	-0.50	0.03	-0.36	0.05	-0.21
2000 Q4	-0.07	-0.69	-0.53	-0.54	0.00	-0.49	0.13	-0.25
2001 Q1	-0.23	-0.56	-0.47	-0.45	0.02	-0.34	0.10	-0.27
2001 Q2	-0.24	-0.13	-0.28	-0.31	0.04	-0.24	0.04	-0.19
2001 Q3	-0.46	-0.22	-0.55	-0.82	0.10	-0.44	0.07	-0.39
2000 Q1-2001 Q3	-1.31	-2.34	-2.47	-2.93	0.22	-2.16	0.48	-1.52
2001 Q4	-0.36	-0.12	-0.41	-0.66	0.08	-0.40	0.06	-0.29
2002 Q1	-0.20	0.10	-0.20	-0.42	0.07	-0.14	-0.01	-0.18
2002 Q2	-0.26	0.09	-0.18	-0.27	0.07	-0.25	0.02	-0.19
2001 Q4-2002 Q2	-0.83	0.06	-0.79	-1.35	0.23	-0.79	0.08	-0.65
2000 Q2-2002 Q2	-2.13	-2.27	-3.26	-4.29	0.45	-2.95	0.55	-2.18

Table C: (Continued)

France	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	0.00	-0.11	-0.31	0.23	0.17	-0.09	-0.03	-0.06
2000 Q3	0.01	-0.02	0.02	0.12	0.07	-0.10	0.00	-0.03
2000 Q4	0.01	-0.20	-0.36	0.28	0.23	-0.10	-0.02	-0.08
2001 Q1	-0.02	-0.13	-0.35	0.23	0.28	-0.08	-0.05	-0.06
2001 Q2	0.00	-0.11	-0.10	0.22	0.21	-0.09	-0.02	-0.05
2001 Q3	-0.01	-0.17	-0.40	0.28	0.24	-0.10	-0.03	-0.07
2000 Q1-2001 Q3	-0.01	-0.74	-1.52	1.36	1.21	-0.55	-0.14	-0.35
2001 Q4	-0.01	-0.08	-0.12	0.19	0.16	-0.09	-0.04	-0.04
2002 Q1	0.03	0.08	0.33	-0.03	-0.11	-0.09	0.02	0.00
2002 Q2	0.02	0.15	0.23	0.00	-0.14	-0.09	0.00	0.00
2001 Q4-2002 Q2	0.05	0.15	0.43	0.16	-0.10	-0.28	-0.02	-0.04
2000 Q2-2002 Q2	0.04	-0.60	-1.09	1.52	1.12	-0.83	-0.16	-0.40

Italy	Consumption	Business investment	Residential investment	Public investment	Public consumption	Inventories	Trade balance	Balance of shocks
2000 Q2	0.05	0.18	-0.09	0.03	0.08	-0.18	0.04	-0.05
2000 Q3	-0.02	0.07	-0.11	-0.02	0.10	0.08	-0.07	-0.06
2000 Q4	-0.13	-0.01	0.00	-0.02	0.16	-0.22	-0.04	-0.18
2001 Q1	-0.04	0.07	-0.31	0.06	0.13	-0.17	0.05	-0.09
2001 Q2	0.04	0.07	-0.06	-0.24	0.04	-0.09	0.02	0.01
2001 Q3	0.00	0.07	-0.27	-0.30	0.08	-0.21	-0.02	-0.06
2000 Q1-2001 Q3	-0.11	0.45	-0.84	-0.48	0.58	-0.79	-0.01	-0.43
2001 Q4	0.11	-0.23	-0.41	-1.38	-0.37	-0.93	-0.68	-0.84
2002 Q1	-0.98	-0.91	-0.06	-0.47	1.00	0.22	-0.07	0.02
2002 Q2	0.69	0.79	-0.39	2.17	-0.35	-0.10	-0.46	-0.24
2001 Q4-2002 Q2	-0.18	-0.35	-0.86	0.32	0.29	-0.81	-1.20	-1.07
2000 Q2-2002 Q2	-0.29	0.10	-1.70	-0.16	0.86	-1.60	-1.21	-1.50

Charts

Chart 1: GDP components (G7)

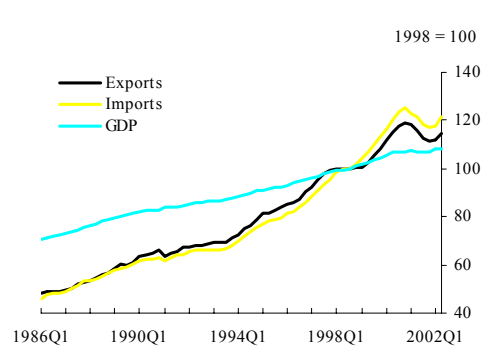
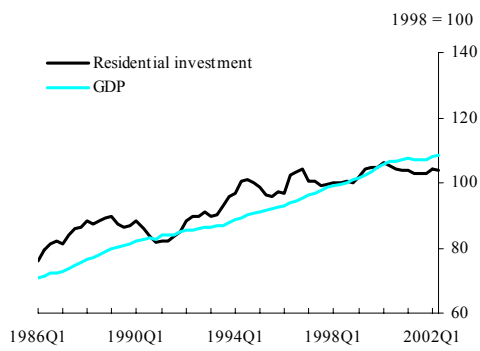
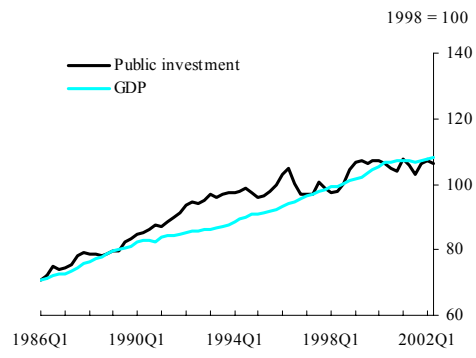
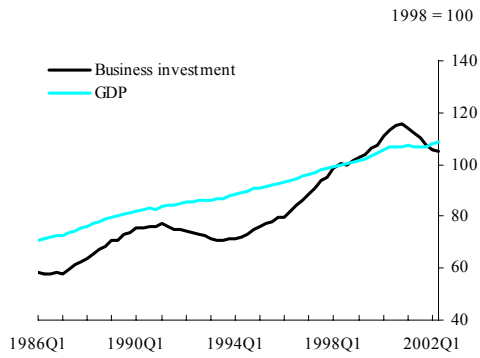
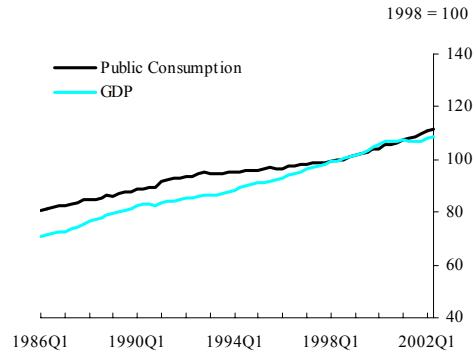
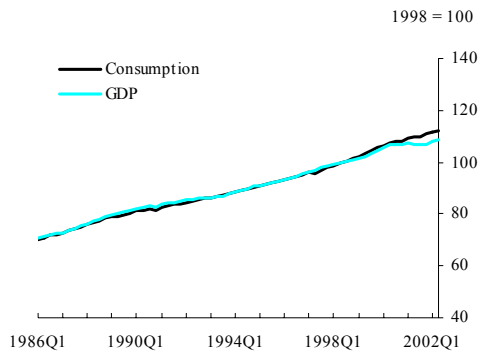


Chart 2: Interest rates (3 month)

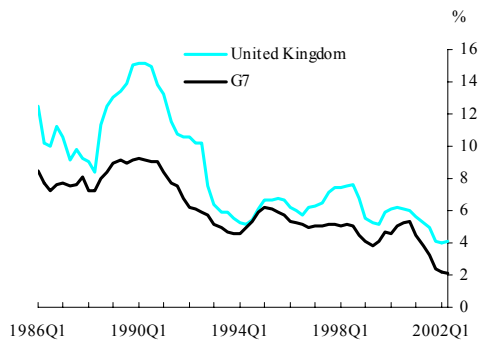
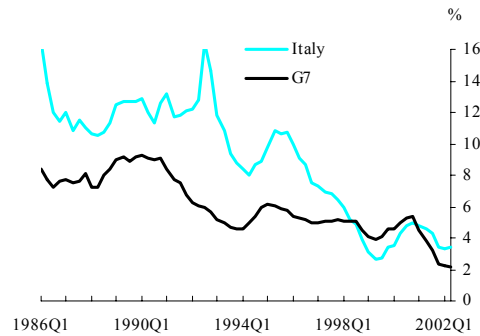
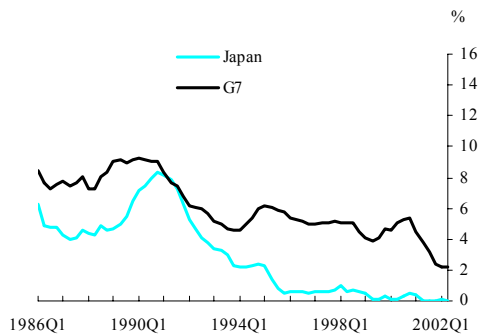
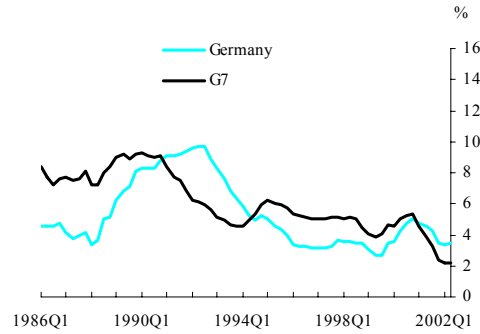
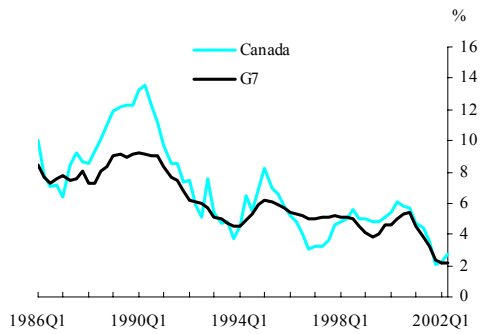
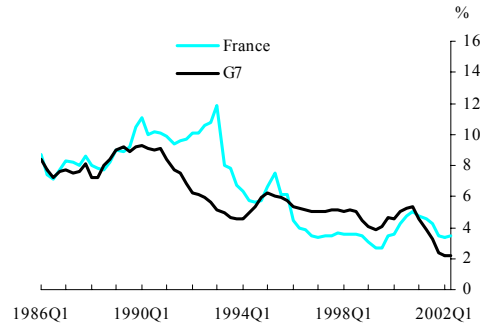
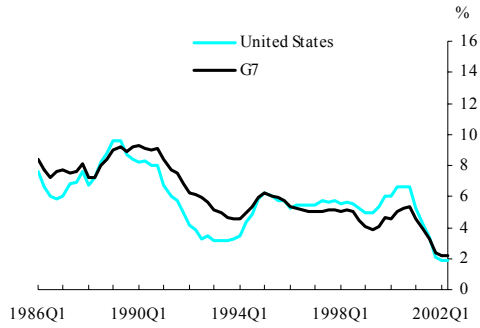


Chart 3: Oil price

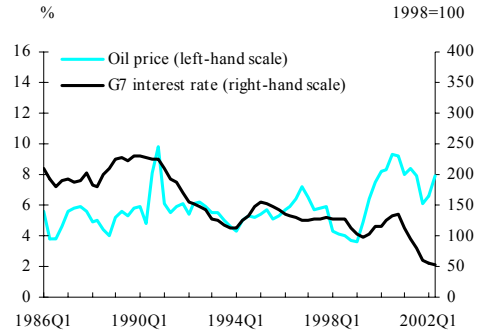


Chart 4: Cumulated balance of shocks

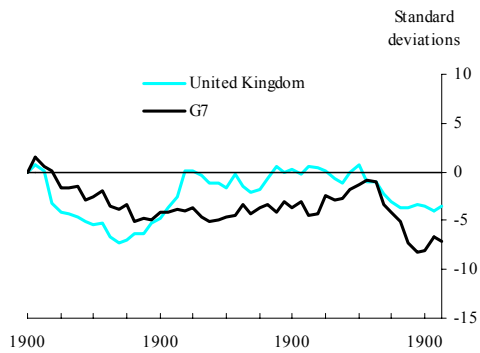
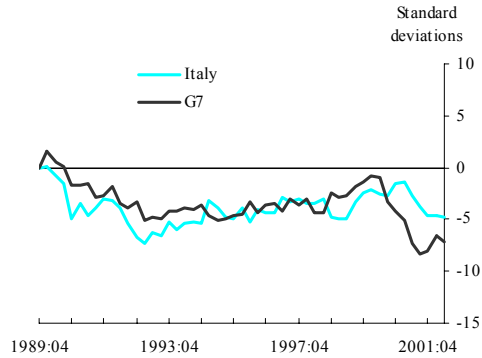
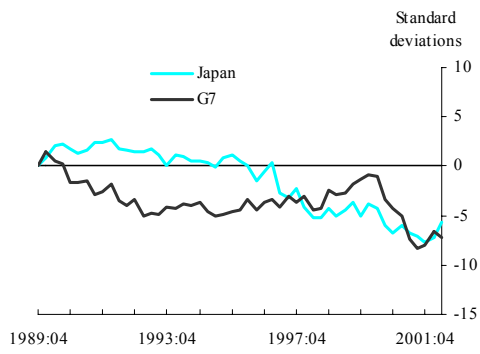
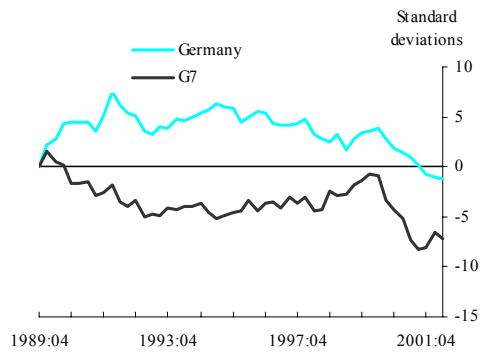
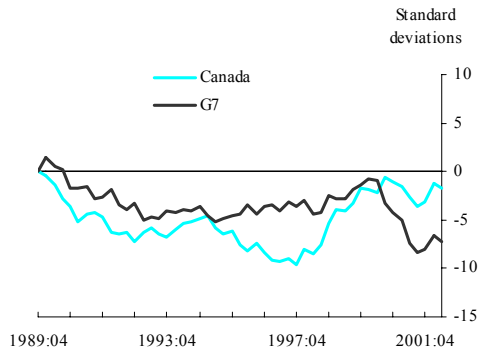
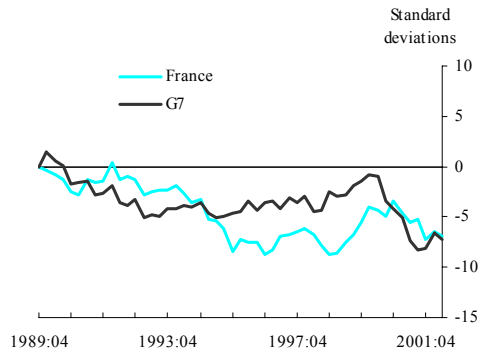
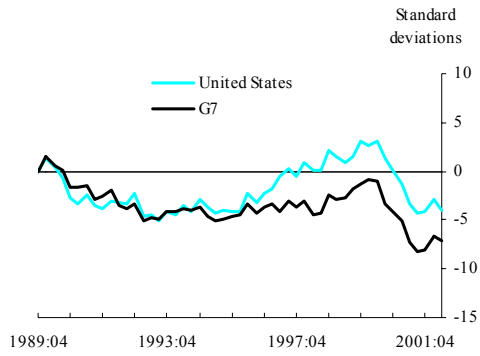


Chart 5: Cumulated shocks for G7

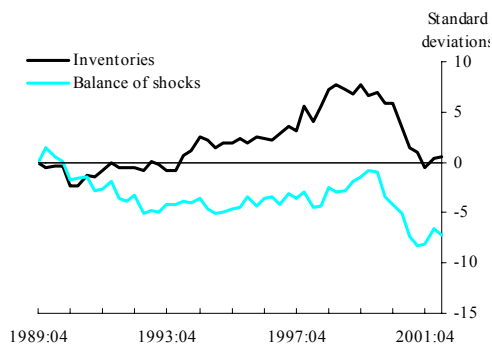
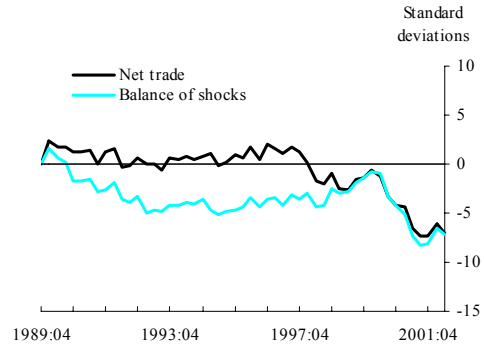
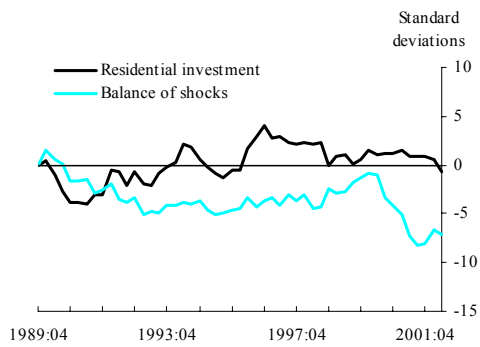
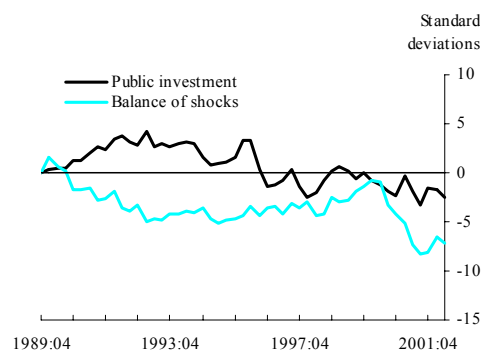
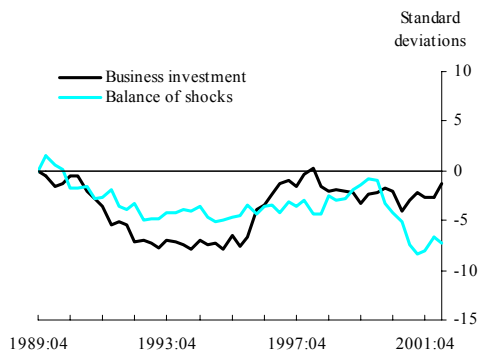
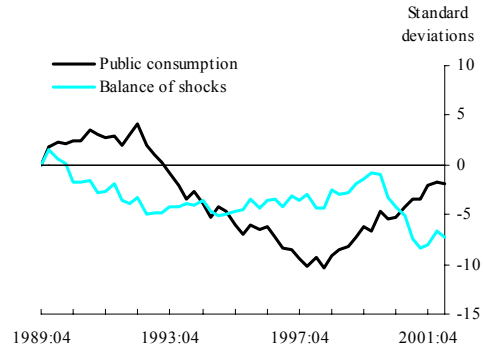
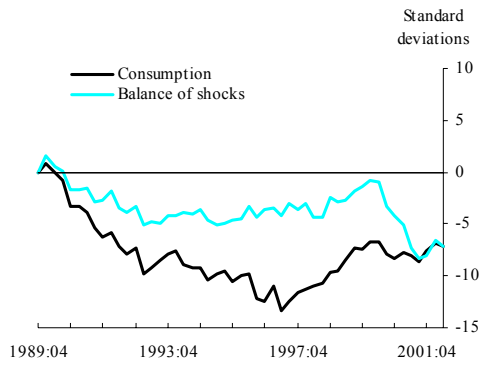


Chart 6: Difference in balance of shocks

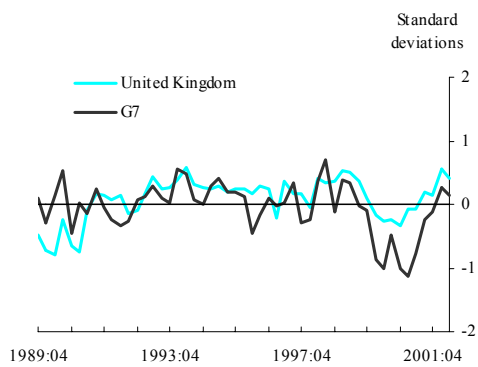
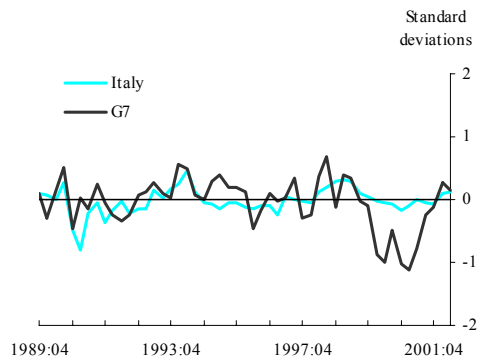
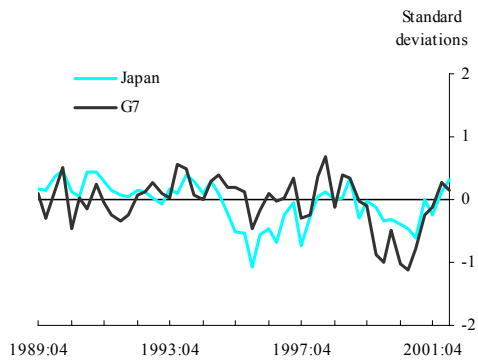
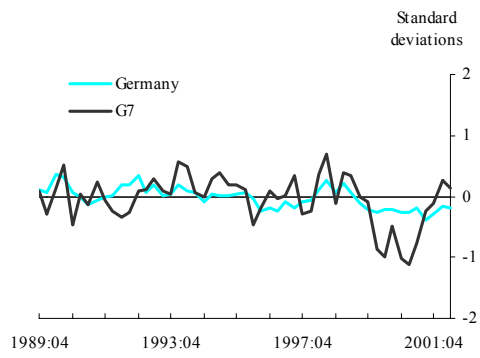
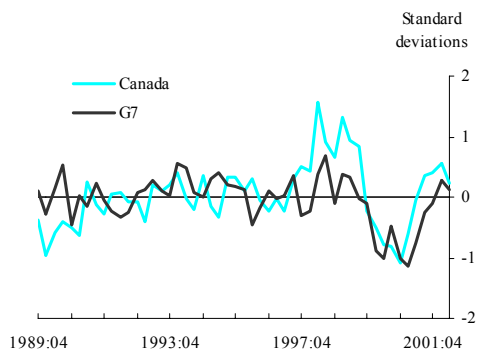
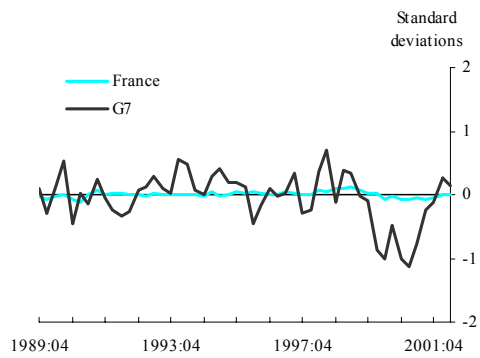
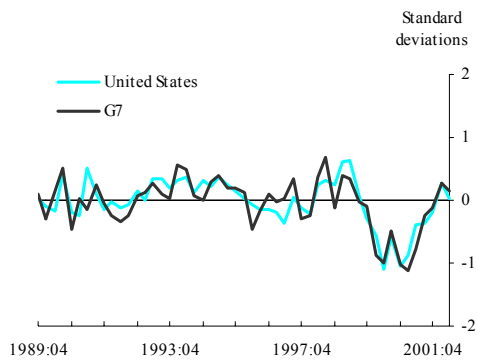


Chart 7: Difference in shocks for G7

