UNIVERSITY OF CALIFORNIA AT BERKELEY

Department of Economics

Berkeley, California 94720

Working Paper No. 91-166

The Stabilizing Properties of a Nominal GNP Rule in an Open Economy

Jeffrey A. Frankel and Menzie Chinn

Economics Department
University of California at Berkeley

May 1991

Key words: nominal GNP, monetary targeting, rules vs. discretion, time consistency, money growth rule

JEL Classification: E52, E42, F41

Menzie Chinn will be an Assistant Professor at the University of California, Santa Cruz in 1991-92. We would like to thank the Institute of Business and Economic Research at the University of California at Berkeley for research support in 1990-91.

Abstract

The main paper examines the ability of a nominal GNP rule for monetary policy to stabilize output and inflation in an open economy. Other regimes considered are a money rule, an exchange rate or gold price rule, and discretion. The rules compare favorably to discretion to the extent that a time-consistent commitment to a nominal anchor is needed to eliminate an inflationary bias in the economy. The choice among the three rules depends on the relative magnitudes of the three sorts of disturbances considered: supply shocks, money demand shocks, and exchange rate shocks. The paper computes the actual variances of these shocks, to allow a more definitive comparison of regimes. When the shocks are assumed uncorrelated, nominal GNP targeting dominates the other regimes for an extremely wide range of parameter values. When allowance is made for the correlation between money demand shocks and exchange rate shocks, for some major countries there exist some parameter values where the nominal GNP rule does not dominate the exchange rate rule, but the overall case for the nominal GNP rule is still strong, especially for the United States.

The Appendix documents at length the various approaches that were taken to estimating the supply, velocity, and exchange rate shocks. It then presents the tables showing the numerical implications for the loss function of the alternative regimes considered, and how the choice of regime depends on the magnitude of the two key parameters.

The Stabilizing Properties of a Nominal GNP Rule in an Open Economy

This paper makes a theoretical case in favor of a commitment to a nominal GNP target on the part of the monetary authorities, as compared to two other popularly-proposed targets, the money supply and the exchange rate. Bean (1984) and West (1986) show conditions under which a nominal GNP rule stabilizes output more effectively than a money rule. But in their framework, it would not make sense for the monetary authorities to adopt any rule, if the alternative were the ability to use discretion to respond to new disturbances. The present paper carries the analysis further, not just by adding the exchange rate rule to the list of candidates, but also by adopting the framework of time-consistency, in which one can weigh the advantages of rules in general against the advantages of discretion.[1] We begin by examining the general argument for rules vs. discretion.

The high inflation rates of the 1970s swung a majority of analysts of monetary policy away from a focus on the merits of full discretion so as to respond to unforeseen disturbances in the economy, toward a new appreciation of the gains from imposing a credible pre-commitment or rule on monetary policy. A common

---

[1] A time-consistent or dynamically-consistent regime is one that manages to prevent the monetary authorities in the future from breaking whatever commitment to monetary discipline they have proclaimed, where they otherwise might have an incentive to do so. For surveys of the rules vs. discretion debate and the implications of the time-consistency literature, see Barro (1986), Fischer (1988a), and Rogoff (1987).

metaphor is "tying the hands" of the monetary authorities. The inflation-reducing gain comes from convincing workers and others that, because the central bank will not be able to inflate even if it wants to, they should expect a low inflation rate and so should settle for low wages. But the commitment must be credible or, in modern terminology, dynamically consistent.

1. Nominal Anchors

In practical policy terms, a regime of credible pre-commitment generally means singling out a particular nominal anchor, a nominal variable that the central bank pledges to keep close to a constant or pre-determined path. The nominal variable is usually neither a policy instrument that the government controls directly, like unborrowed reserves, nor a policy goal that enters the ultimate political objective function, like the inflation rate, but is rather an intermediate target. The reason for specifying and publically announcing a single observable intermediate target, rather than some more complicated function of instruments or goals, is presumably that it enables a skeptical public to monitor what the central bank is doing, and to evaluate whether it is fulfilling its proclaimed policy.[2]

---

[2] Surprisingly, the phenomenon whereby the authorities proclaim a simple target range for an intermediate variable so that the public can monitor its degree of commitment has not been definitively modeled (though Levine, 1991, has now addressed this issue). Under standard assumptions, there is little theoretical justification for an intermediate target, as Friedman (1977, 1984) pointed out some years ago. The present paper takes as given that,

Two competing candidates for the nominal anchor had attracted the most political support in the United States by the end of the 1970s, particularly among the more extreme proponents of rigid commitment. The monetarists favored a pre-announced target path for M1 (or perhaps some other monetary aggregate), while the supply-siders and gold bugs, among others, favored a fixed price for gold or a basket of commodities. The monetarist prescription became the official policy of the Federal Reserve in the period 1979-1982. It was subsequently abandoned on grounds considered quite sensible by most: the demand for M1 underwent such a large shift in the period 1982-86, that a continued rigid adherence to the monetarist money growth rule would have been extremely restrictive.[3] There is no reason to think that this large shift in money demand was a one-time non-recurring phenomenon. Those who favor some degree of pre-commitment to a nominal target now look elsewhere for a candidate.

Commitment to the price of gold or other commodities is often

---

if the authorities make a commitment, it is to a single nominal variable.

[3] M1 grew 10.3 per cent per year from 1982:II to 1986:II. Even with the recovery that began in 1983 and continued through the four years and beyond, nominal GNP grew more slowly than the money supply: 8.0 per cent per year. Thus velocity declined at 2.3 per cent per year, in contrast to its past historical pattern of <u>increasing</u> at roughly 3 per cent a year. If the Fed had followed the explicit monetarist prescription of rigidly pre-committing to a money growth rate such as 3 per cent, and velocity had followed the same path, then nominal GNP would have grown at only 0.7 per cent a year. This number is an upper bound, because with even lower inflation than occurred, velocity would almost certainly have fallen even more than it did. The implication seems clear that the 1981-82 recession would have lasted another five years!

considered impractical, and has not been tried since the days of the gold standard. It is pointed out that shifts in the demand for gold appear, judging from the variability of the price of gold during the period that it has been market-determined, to be even larger than shifts in the demand for money. Fixing the price of gold would needlessly transmit these disturbances to the money supply and thereby to the rest of the economy.

Other candidates for nominal anchor have been proposed besides the money supply and the price of gold. Some historically inflation-prone European countries have sought to pre-commit credibly to a non-inflationary monetary policy by adopting the exchange rate vis-a-vis the German mark or the European Currency Unit as their nominal anchor, an option that is particularly attractive for a relatively small open economy where exchange rate uncertainty is also regarded as undesirable for its own sake.[4] Even for the United States there is support for committing to an exchange rate target, though usually with a wide band.[5] Ron McKinnon has proposed a "gold standard without gold," in which exchange rates would be fixed among the dollar, yen and mark, with a worldwide nominal anchor imposed so as to prevent worldwide inflation.[6]

---

[4] See, for example, Giavazzi and Pagano (1988) and Frenkel and Goldstein (1986).

[5] Williamson (1983) and Williamson and Miller (1987).

[6] In the scheme of McKinnon (1984), dubbed a world monetarist standard, the worldwide nominal anchor was to be the total of the three countries' money supplies (valued at the fixed exchange rates). In McKinnon (1988), the anchor is to be a worldwide price

This paper makes no judgment on the desirable degree of precommitment to a nominal target. But it shows that, given precommitment to a nominal target, nominal GNP makes a more suitable target than the three other nominal variables that have been proposed: the money supply, the price of gold, or the exchange rate.

The general argument in a closed-economy context has been made well by others.[7] In the event of disturbances in the banking system, disturbances in the public's demand for money, or other disturbances affecting the demand for goods, a policy of holding nominal GNP steady insulates the economy; neither real income nor the price level need be affected. In the event of disturbances to supply, such as the oil price increases of the 1970s, the change is divided equi-proportionately between an increase in the price level and a fall in output. For some countries, this is roughly the split that a discretionary policy would choose anyway. In general, fixing nominal GNP will not give precisely the right answer, depending on the weights on inflation and real growth in the objective function. But if the choice is among the available

---

index.

[7] Tobin (1980), Gordon (1985), Hall (1985), Taylor (1985) and McCallum (1987, 1988ab), for example, argue in favor of targeting nominal GNP in the closed-economy context. The idea also has proponents in the United Kingdom: Vines et al (1983), Meade (1984) and Brittan (1987), in addition to Bean (1983). Some have developed international variants of nominal-GNP targeting, such as Williamson and Miller (1987, 7-10), who propose targeting nominal demand as part of their "blueprint" for exchange rate target zones. But theoretical analysis in the open-economy is still quite limited. [Frankel (1988, 1989) proposes nominal-GNP targeting in the context of international coordination of policy.]

nominal anchors, nominal GNP gives an outcome characterized by greater stability of output and the price level.

This paper breaks new ground (apparently) in that it uses the time-consistency approach to monetary policy in an open economy with three sources of disturbances (supply shocks, money or goods demand shocks, and exchange rate shocks), and evaluates the nominal GNP regime in comparison to alternative regimes in which the money supply, exchange rate, or price of gold are chosen for nominal anchor.[8] The next section begins by showing that a nominal GNP target strictly dominates a money supply target, in the sense of minimizing a quadratic loss function, regardless how important inflation-fighting credibility is. The subsequent section shows that a nominal GNP target also dominates an exchange rate or price-of-gold target if certain plausible restrictions are placed on the parameters. (For example, we must rule out that extraordinarily high weight is placed directly on the objective of stabilizing the exchange rate or price of gold). The final section offers empirical estimates of the variances of the supply, money-demand, and exchange-rate disturbances, including an allowance for correlation between the latter two, to show over how wide a range of the parameters the nominal GNP rule dominates.

---

[8] It is sometimes claimed that the case for nominal GNP targeting has only taken into account disturbances in money demand or goods demand, not in supply, or that it has not been shown superior in an open economy. (Dornbusch and Frankel, 1988, 175-76.)

2. A comparison of discretion and three alternative rules

We compare four possible policy regimes: (1) full discretion by national policy-makers, (2) a rigid money supply rule, (3) a rigid nominal GNP rule, and (4) a rigid exchange rate (or price of gold) rule. In the case of each of the possible nominal anchors, proponents sometimes have in mind a target zone system; the assumption of a rigid rule makes the analysis simpler.[9] The approach, incorporating the advantages both to rules and discretion, follows Rogoff (1985b) and Fischer (1988a), who in turn follow Kydland and Prescott (1977) and Barro and Gordon (1983).

Throughout, we assume an aggregate supply relationship:

(1) $y = y^* + b(p-p^e) + u,$

where y represents output, y^* potential output, p the price level, p^e the expected price level (or they could be the actual and expected inflation rates, respectively), and u a supply disturbance, with all variables expressed as logs.

2a. The closed-economy objective function

We begin with the case where the objective function includes output and the price level, but not the exchange rate, import prices, or the trade balance; we call this the case of a closed

---

[9] Rogoff (1985b) warns that the welfare-ranking among the candidate variables for rigid targeting need not be the same as the welfare-ranking among the candidate variables for partial commitment.

economy. The loss function is simply:

$$(2) \quad L = a\,p^2 + (y - ky^*)^2,$$

where a is the weight assigned to the inflation objective, and we assume that the lagged or expected price level relative to which p is measured can be normalized to zero.[10] We impose $k > 1$, which builds in an expansionary bias to discretionary policy-making.

$$(3) \quad L = a\,p^2 + [y^*(1-k) + b(p-p^e) + u]^2.$$

(i) Discretionary policy

Under full discretion, the policy-maker each period chooses Aggregate Demand so as to minimize that period's L, with p^e given.

$$(4) \quad (1/2)\,dL/dp = ap + [y^*(1-k) + b(p-p^e) + u]b = 0.$$

$$(5) \quad p = [-y^*(1-k)b + b^2p^e - bu] \,/\, [a+b^2].$$

Under rational expectations,

$$(6) \quad p^e = Ep = -y^*(1-k)b/a.$$

So we can solve (5) for the price level:

$$(7) \quad p = -\,y^*(1-k)[b/a] - u\,b/[a+b^2].$$

From (2), the expected loss function then works out to:

$$(8) \quad EL = (1 + b^2/a)[y^*(1-k)]^2 + [a/(a+b^2)]\,var(u).$$

The first term represents the inflationary bias in the system, while the second represents the effect of the supply disturbance after the authorities have chosen the optimal split between inflation and output.

(ii) Money rule

---

[10] Bean (1984) and West (1986) use a quadratic objective function that includes only output. But clearly inflation must be added to the objective function if one wants to be able to consider the advantages of pre-committing to a nominal target or rule.

To consider alternative regimes, we must be explicit about the money market equilibrium condition. (In case 1, it was implicit that the money supply m was the variable that the authorities were using to control demand.)

$$(9) \quad m = p + y - v,$$

where v represents velocity shocks. We assume v uncorrelated with u. If the authorities pre-commit to a fixed money growth rule in order to reduce expected inflation in long-run equilibrium, then they must give up on affecting y. The optimal money growth rate is the one that sets Ep at the target value for p, namely 0. Thus they will set the money supply m at Ey, which in this case is y^*. The Aggregate Demand equation thus becomes

$$(10) \quad p + y = y^* + v.$$

Combining with the Aggregate Supply relationship (1), the equilibrium is given by

$$(11) \quad y = y^* + (u + bv)/(1+b), \qquad p = (v - u)/(1+b).$$

Substituting into (2), the expected loss function is

$$(12) \quad EL = (1-k)^2 y^{*2} + \{(1+a)var(u) + [a+b^2]var(v)\}/(1+b)^2.$$

The first term is smaller than the corresponding term in the discretion case, because the pre-commitment reduces expected inflation; but the second term is probably larger, because the authorities have given up the ability to respond to money demand shocks. Which regime is better, discretion or a money rule, depends on how big the shocks are, and how big a weight (a) is placed on inflation-fighting.

(iii) Nominal GNP rule

In the case of a nominal GNP rule, the authorities vary the money supply in such a way as to accommodate velocity shocks. (10) is replaced by the condition that $p + y$ is constant. The solution is the same as in case 2, but with the v disturbance dropped. Thus the expected loss collapses from *(12)* to:

(13) $EL = (1-k)^2y^{*2} + [(1+a)/(1+b)^2]var(u)$.

This unambiguously dominates the money rule case. It is still not possible, without knowing $var(u)$ or a, to say that the rule dominates discretion. It is quite likely, especially if the variance of u is substantial, that an absolute commitment to a rule would be unwisely constraining. Hence the argument for a target zone rather than a single number, and for subjecting the Central Bank Chairman to a mere loss of reputation if he misses the target rather than a firing squad. But it seems clear that, to whatever extent the country chooses to commit to a nominal anchor, nominal GNP dominates the money supply as the candidate for anchor.

2b The open-economy objective function

We reconsider here a likely objection to choosing nominal GNP as the focus of monetary policy in an open economy, that it neglects the exchange rate. The alternative of setting monetary policy so as to stabilize the exchange rate will not look attractive unless the exchange rate enters the objective function, perhaps indirectly via the consumer price index or the trade

balance. Here we confront the argument head-on, and include the exchange rate directly in the loss function along with output and the price level; we call this the case of the open-economy objective function. Thus we replace *(2)* with:

(14) $L = a\,p^2 + (y-ky^*)^2 + c\,s^2$,

where s is the spot exchange rate measured relative to some equilibrium or target value and c is the weight placed on exchange rate stability per se. We are implicitly assuming that policy-makers wish to minimize long-term swings of the exchange rate around its average value, rather than short-term uncertainty in the exchange rate.[11]

There is no point in specifying an elaborate model of the exchange rate. All the empirical results say that most of the variation in the exchange rate cannot be explained (even ex post; we say nothing of prediction) by measurable macroeconomic variables, and thus can only be attributed to an error term that we here call e. But we must include the money supply in the equation; otherwise we do not allow the authorities the possibility of affecting the exchange rate. Our equation is thus simply:

(15) $s = m - y + e$.

We assume that e is uncorrelated with the supply disturbance u, but

---

[11] If uncertainty were the issue, given that exchange rates are close to random walks the first difference of the residual in the exchange rate equation (15) would come closest to capturing the appropriate error term. The empirical exercise described in the last section of this paper was repeated with exchange rate and velocity shocks computed in this way. The results, reported in an Appendix written by Menzie Chinn, are somewhat different, but overall support nominal GNP targeting as strongly as the results reported.

below will allow it to be correlated with the money demand disturbance v.[12]

Though our primary interpretation of s is as the spot price of foreign currency, a second possible interpretation of s in what follows is as the spot price of gold. It is hard to see why the price of gold should enter directly into the objective function, even more so than the exchange rate; but this simply biases our results in favor of the position of the gold bugs.

From *(9)*,

(16) $s = p - v + e$.

We assume that the same Aggregate supply relationship holds as before, equation *(1)*.

So we can write the loss function *(14)* as:

(17) $L = ap^2 + [(1-k)y^* + b(p-p^e) + u]^2 + c(p-v+e)^2$.

We proceed as before to consider possible regimes.

(i) Discretion

$$(1/2)\partial L/\partial p = ap + [y^*(1-k) + b(p-p^e) + u]b + c(p-v+e) = 0.$$

(18) $p = [-y^*(1-k)b + b^2p^e - bu + c(v-e)] / [a+b^2+c]$.

The rationally expected p is given by $p^e = Ep$:

(19) $p^e = -(1-k)by^*/(a+c)$.

Substituting into *(19)* yields:

(20) $p = -(1-k)y^*[b/(a+c)] + [c(v-e)-bu]/[a+b^2+c]$.

The loss function is

---

[12] This paper thus generalizes the argument made in Frankel (1989).

$$(21)\quad EL = [(1-k)y^*]^2\ (a+b^2+c)/(a+c)\ +$$
$$\{(a+c)var(u)\ +\ c(a+b^2)[var(v)\ +\ var(e)]\}/(a+b^2+c).$$

(ii) Money rule

As when we considered a money rule before, so that expected inflation is zero the authorities set m at y^*, and *(10)* applies. Thus the same solution *(11)* for y and p also applies. The exchange rate is given by substituting the solution for p from *(11)* into *(16)*:

$$(22)\quad s = e - [(u+bv)/(1+b)].$$

The additional s term is the only difference from *(12)* in the expected loss function:

$$(23)\quad EL = [y^*(1-k)]^2\ +\ [(1+a+c)/(1+b^2)]var(u)\ +$$
$$[(a+b^2+cb^2)/(1+b)^2]var(v)\ +\ [c]var(e).$$

Again the comparison with discretion depends on the various magnitudes.

(iii) Nominal GNP rule

When the monetary authorities are able to vary m so as to keep $p + y$ constant, the velocity shocks v drop out. The expected loss function becomes

$$(24)\quad EL = [y^*(1-k)]^2\ +\ [(1+a+c)/(1+b)^2]\ var(u)\ +\ c\ var(e).$$

As before, the nominal GNP rule unambiguously dominates the money rule.

In practice the e shocks in the exchange rate equation are very large, and dwarf the u shocks in the aggregate supply

equation, as is documented below. (The exchange rate often moves ten per cent in a year, without corresponding movements in the money supply or other observable macroeconomic variables; try to imagine similar movements of real output.) If the weight c on the s target is substantial, then the last term in the expected loss equation may be important.

(iv) Exchange rate (or gold) rule

Again, the authorities cannot affect y in long-run equilibrium. But now it is the exchange rate that they peg in such a way that $Ep = 0$, which from (16) is $s = 0$. The ex post price level is then given by

(25) $p = v - e$.

From (1),

(26) $y = y^* + b(v-e) + u$.

From (14),

(27) $EL = (a+b^2)Var(v-e) + [y^*(1-k)]^2 + Var(u)$.

Assume, to begin with, that v and e are uncorrelated, so that $Var(v-e)$ can be replaced with $Var(v) + Var(e)$. The coefficient on $var(e)$ is $(a+b^2)$, as compared to the coefficient c in the expected loss (24) under the nominal GNP rule. We made the point above that e shocks in practice dwarf u shocks. Reasoning on this basis, even if v shocks are also small and $a=c$ (the objective function puts no greater weight on a 10 per cent fluctuation of the price level than on a 10 per cent fluctuation of the exchange rate), which is extremely conservative, the expected loss from fixing s is greater

than the expected loss from fixing nominal GNP. The reason is that under an exchange rate rule *e* shocks are allowed to affect the money supply and therefore the overall price level. Once we allow for *v* shocks (which are in between *u* and *e* shocks in magnitude, as we will see below), the case for nominal GNP targeting is even stronger. One would have to put extraordinarily high weight on the exchange rate objective to prefer an exchange rate rule.

Under the secondary interpretation of *s* as the price of gold rather than the price of foreign exchange, the *e* shocks are likely to be at least as large, and the argument for it receiving heavy weight directly in the objective function even more difficult to make. In short, the nominal GNP rule seems to dominate all three of the other candidates for nominal target, the money supply, the exchange rate, and the price of gold.

3. Estimates of Actual Disturbance Variances (Including an Allowance for Correlation Between Two)

The foregoing analysis was predicated on the assumption of a zero correlation among the three kinds of disturbances: supply shocks, money demand or goods demand shocks, and exchange rate shocks. In the case of supply shocks, this assumption will be retained. Although it is not difficult to think of reasons why there might by either a positive or negative correlation of supply shocks with exchange rate shocks, or with money demand shocks, one has no a priori sense of a strong correlation of either sign. One

could extend the empirical analysis offered here to allow for such a correlation, but to do so would require making it dependent on one or another set of details of model specification. The approach throughout this paper is to keep the model as general as possible.[13]

The assumption that money demand shocks v and exchange rate shocks e are uncorrelated, however, may be too strong to sustain seriously, as it is likely that they are in fact positively correlated. An upward shift in the U.S. demand for money such as occurred in the early 1980s will cause an appreciation of the dollar (even in the absence of changes in the money supply or real income). Indeed, McKinnon (1984, 1988) believes that shifts in countries' money demands are the dominant source of fluctuations in exchange rates.

In the derivations above we did not actually use the assumption that v and e shocks are uncorrelated until after equation (27). Thus that equation, representing the loss function for the exchange rate rule, remains unchanged, as does equation (24) representing the loss function for the nominal GNP rule. The difference between the two is

$$(28)\quad Diff\ EL = \{(a+b^2)Var(v-e) + Var(u)\} - \{c\ Var(e) + [(1+a+c)/(1+b)^2]Var(u)\}.$$

---

[13] Warwick McKibbin and the author have begun to use the McKibbin-Sachs Global model, which is specified in far more detail than the simple model analyzed here, to compare nominal GNP targeting to other regimes. All disturbances are allowed to be correlated. The results so far bear out the stabilizing properties of nominal GNP targeting. (Frankel, 1991).

The nominal GNP rule dominates the exchange rate rule if this difference is positive; but unlike in the preceding section we must allow for the covariance between ***v*** and ***e*** when computing ***Var(v-e)***. (The comparison between the nominal GNP rule and the money rule, showing how the latter always dominates, so long as ***Var(v)*** is positive, remains unaffected.) This section of the paper describes estimation of this difference for four countries over the last twenty years: the United States, Germany, Japan, and the United Kingdom. Details of the calculation methods and results are given in an Appendix written by Menzie Chinn.

The variable definitions are as follows.

y = log of real GNP (seasonally adjusted).

p = log of implicit GNP deflator.

m = log of M1 money supply.[14]

s = log of the IMF's MERM-weighted exchange rate index (period average) expressed as the price of foreign currency. The equations specified earlier for money demand and the exchange rate, ***(9)*** and ***(15)*** respectively, were so simple as to be parameter-free; thus the disturbance terms ***v*** and ***e*** can be computed directly, with no estimation required. Their variances are given for each of the four countries in Table 1. As claimed in the preceding section, the magnitude of the exchange rate disturbances is many times greater than the magnitude of the money demand disturbances. But for the cases of Germany and the U.K. there is a fairly high positive correlation between these two disturbances, so that ***Var***

---

[14] Repeating the analysis with M2 produced similar results.

(v-e) is substantially less than *Var (v) + Var (e)*.

It is impossible to compute the supply disturbances without taking a stand on at least one parameter, *b*, the elasticity of supply with respect to (unexpected) changes in the price level. We repeat equation *(1)*:

(1) $$y - y^* = b\,(p - p^e) + u.$$

Two of the techniques we tried for estimating the log of potential GNP, *y**, were a fitted quadratic trend and a 5-year centered moving average. The expected log price level was estimated with an ARIMA process. Regression estimates of equation *(1)* are reported in the Appendix.[15] In one respect the estimates were relatively robust with respect to which method of estimation was used for *y**: for each country, the standard error of the regression, representing the magnitude of the *u* shocks, was roughly in the same range regardless which method of estimation was used. In particular, *Var(u)* was always far smaller than *Var(e)*, and smaller than *Var(v)* as well, as claimed in the preceding section.

In another respect, however, the estimates of equation *(1)* were not robust: the estimates of the coefficient *b* varied depending on how *y** was estimated. Our preferred method, the five-year moving average, produced a statistically significant value of 1.36 for the United States, but produced lower values for the other countries, and was not statistically significant for the United Kingdom.

---

[15] This approach to estimating potential output and the supply shocks is referred to as the "transitory supply shock" approach in the Appendix, because it implies that the *u* shocks are transitory.

The sign of the criterion expression *(28)* is far more sensitive to the parameter *b* in the case where we allow for *v* and *e* to be correlated than it was in the preceding section. The magnitude of the elasticity of the supply relationship is perhaps the most controversial question in macroeconomics, so I am reluctant to assert a choice among the possible estimates. Instead, we follow an approach that allows the reader to choose *b*.

We proceed, as in the preceding section, to stack the odds in favor of the exchange rate rule by assuming that the objective function gives a weight to the exchange rate that might be as large as the weight given to the price level; thus we assume *c=a* (a very conservative assumption, especially for a country like the United States where internationally traded goods are a relatively small share of the economy). The difference in the expected loss under a nominal GNP rule and an exchange rate rule is then solely a function of the parameters a and b, given our estimates of *Var(v-e)* and *Var(e)*, and given that an estimate of *Var(u)* follows from equation *(1)* and any given parameter choice for *b*. In the Appendix we consider for each country a whole range of possible values for *a* (from 0 to 6) and a similar range for *b*, and show in a table the value of the criterion expression for each combination.

The Appendix first reports the case where *v* and *e* shocks are uncorrelated. For all countries the nominal GNP rule dominates the exchange rate rule, for all values of *a* and *b*, as claimed in the preceding section.

We next allow for the correlation of *v* and *e* shocks. For the

cases of the United States and Japan, it is again true that the nominal GNP rule dominates the exchange rate rule, for all values of *a* and *b*. For Germany and the United Kingdom, however, the answer depends on *a* and *b*. To help evaluate these two cases, figures 1 and 2 show possible values of *a* on the horizontal axis and *b* on the vertical axis, and plot the boundary that indicates the region where a nominal GNP rule dominates an exchange rate rule.

A pattern is evident in the results: the relative attractiveness of the nominal GNP rule depends directly on the magnitude of *b* relative to *a*. The parameter *b* is to be interpreted as the loss in output (in per cent) that the economy would have to suffer for each per centage point reduction in inflation. The point estimate of *b* that emerged in the computation of the supply shocks was 1.4 for the United States and 1.1 for Japan.[16] In this vicinity, a sufficient condition for the nominal GNP rule to dominate the exchange rate rule for the case of the United Kingdom is the simple condition that $b/a > 1$.

The reader can decide whether he or she believes that $b/a > 1$ by conducting a simple thought experiment. If it were possible, hypothetically, to undertake a current monetary expansion to raise

---

[16] The estimate of *b* was lower and less significant for the United Kingdom and Germany. Gray and Spencer (1990) recently estimated *b* to be in the range 1.5 to 2.4 for the United States. Gordon (1987, p.724) estimated the "sacrifice ratio" at 6.5 for the United States, 2.3 for Japan, and in between for Europe. For values of *b* that high on our graphs, the condition on *a* necessary for nominal GNP targeting to dominate is easier to satisfy than $b/a > 1$, even for Germany.

output and employment where the only cost was higher inflation in the current period -- all future or long-run costs in terms of higher expected inflation and actual inflation (or future recessions induced to bring inflation back down) being somehow suppressed -- would the short-run gains of higher y outweigh the short-run costs of higher p? Most economists do not believe that the short-run costs of inflation ("shoe-leather costs" of trips to the bank, confusion of relative price signals, uncertainty, etc) are very high. The argument against inflating rather consists of the long-run considerations, with which the adoption of any nominal anchor (money supply, nominal GNP, exchange rate, or price of gold) is explicitly designed to deal. It follows that a in the objective function is thought to be less than b, and we are in the upper-left triangular half of the graphs. The conclusion is that the nominal GNP rule again dominates, not just for the United States but for the other countries as well.

One might be concerned that the preceding analysis overstated the magnitude of the supply disturbances in an important respect, to the extent that the particular choice for b differs from the OLS estimate reported in the tables. For a given value of b, the entire discrepancy from equation (1), $(y-y^*) - b(p-p^e)$, was assigned to the disturbance term u (with the quadratic-trend method used for estimating y^*). But given that the uncertainty surrounding the proper estimate of b derives largely from uncertainty surrounding the measure of y^*, it might seem that part of the discrepancy should be assigned to y^* rather than to u.

As a check on the sensitivity of the results to the method of estimation of the supply shocks, we repeat the analysis without depending on the quadratic trend method of estimating y^*. For any given value of b, we first compute $y - b(p-p^e)$. The breakdown between y^* and u is then estimated by an ARIMA process. In this way, u is constructed as the unforecastable component of shifts in the supply relationship. When the value of the loss function is computed, the boundary of parameter values indicating the attractiveness of the different regimes lies just where it did with the earlier method of estimation (to within the degree of precision of the tables).[17] The money and exchange rate shocks are so much larger than the supply shocks that the effect on the results of the method of estimation of the latter is negligible. Thus the nominal GNP rule still seems to dominate.

* * * *

[17] Again, the results are available in an Appendix. This approach to computing the supply shocks is referred to there as the "permanent supply shock" approach, because the ARIMA process entails the conclusion that the u disturbances have a unit root.

Table 1: Estimated Variances of Disturbances

1974:1 to 1989.4

	U.S.	Germany	Japan	United Kingdom
Money demand shock *v*	.00612	.00521	.00323	.04219
Exchange rate shock *e*	.02065	.01138	.01794	.07477
Supply shock[18] *u*	.00061	.00043	.00015	.00080
Covariance of *v* and *e*	.00025	.00676	.00053	.04251

[18] These are the "temporary supply shocks," estimated as the residuals in a regression of the output gap on the unexpected change in the price level.

FIG. 1:German Nom. GNP Policy Frontier

Area above line is nom. target superior

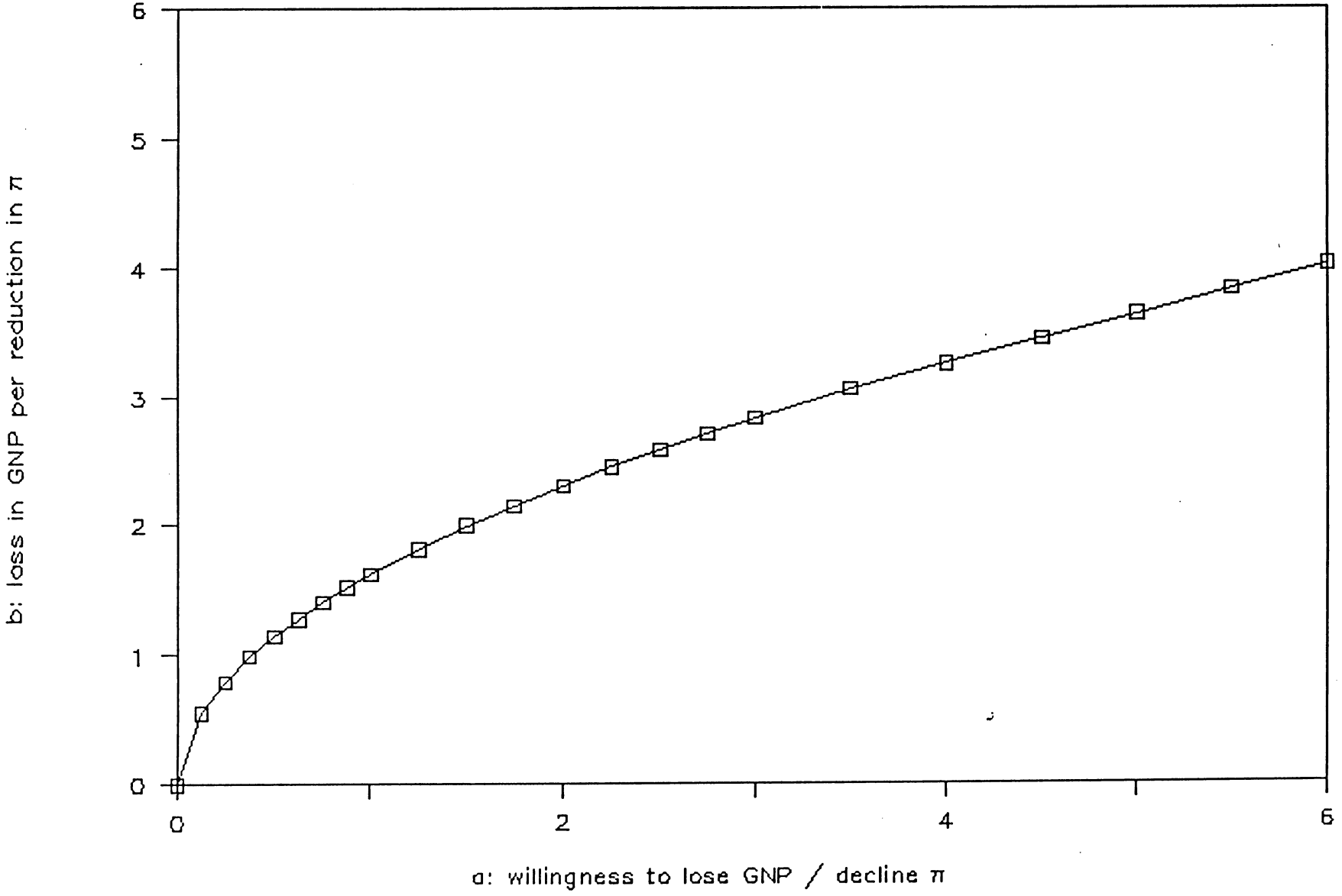
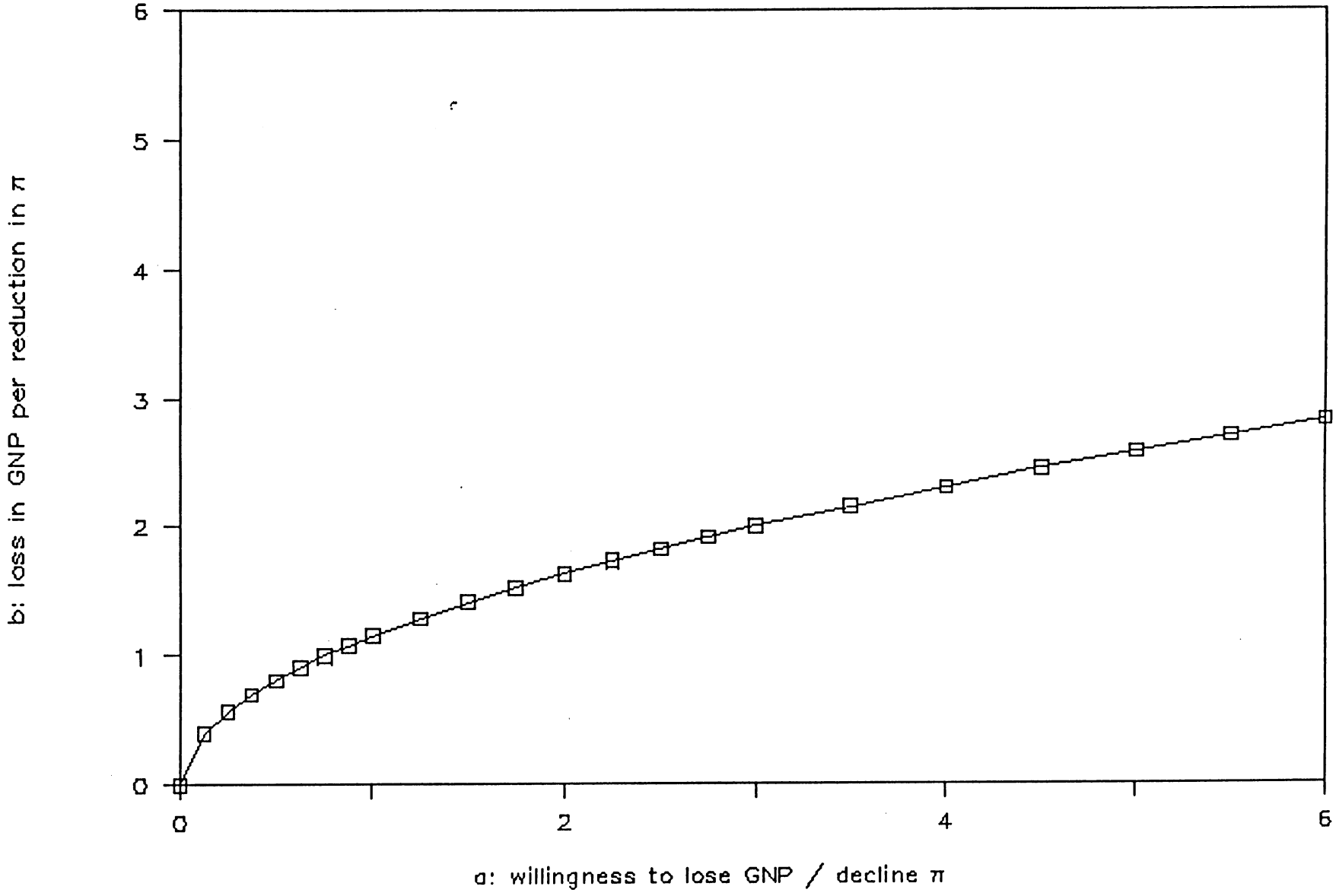


FIG. 2:UK Nom. GNP Policy Frontier

Area above line is nom. target superior



References

Barro, Robert. 1986. Recent developments in the theory of rules versus discretion. The Economic Journal 96, 23-37.

Barro, Robert, and David Gordon. 1983. A positive theory of monetary policy in a natural rate model. Journal of Political Economy 91, 4, August, 589-610.

Bean, Charles, 1983, "Targeting Nominal Income: An Appraisal," Economic Journal 93, December, 806-819.

Boughton, James. 1989. "Policy Assignment Strategies with Somewhat Flexible Exchange Rates." In B.Eichengreen, M.Miller and R.Portes, eds., Exchange Rate Regimes and Macroeconomic Policy, forthcoming.

Brittan, Samuel. 1987. The role and limits of government, revised edition. London: Wildwood House.

Dornbusch, Rudiger and Jeffrey Frankel. 1988. The flexible exchange rate system: Experience and alternatives. NBER working paper no. 2464. In S.Borner, ed., International finance and trade in a polycentric world. MacMillan: London.

Fischer, Stanley. 1988a. Rules vs. discretion in monetary policy. NBER Working Paper No. 2518, February.

Frankel, Jeffrey. 1988. "A Proposal for Policy Coordination: International Nominal Targeting (INT)." In International Payments Imbalances in the 1980's, N. Fieleke, ed., Federal Reserve Bank of Boston: Boston, Ma.

----------. 1989. "International Nominal Targeting (INT): A Proposal for Overcoming Obstacles to Policy Coordination," NBER Working Paper 2856. In Global Disequilibrium, edited by J. McCallum and R. Mundell, special issue of Rivista di Politica Economica, 79, no.12, December.

----------. 1991. "The Obstacles to Macroeconomic Policy Coordination in the 1990s and an Analysis of International Nominal Targeting (INT)," in International Trade and Global Development, edited by K.A. Koekkoek and L.B.M. Mennes, Routledge House, forthcoming, 1991.

Frenkel, Jacob, and Morris Goldstein. 1986. A guide to target zones. IMF Staff Papers, 33, 4, December.

Friedman, Benjamin. 1977, "The Inefficiency of Short-Run Monetary Targets for Monetary Policy," Brookings Papers on Economic Activity 2, 293-335.

----------. 1984. The value of intermediate targets in implementing monetary policy. In Price stability and public policy, Kansas City, Mo.: Federal Reserve Bank of Kansas City. Pp. 169-191.

Giavazzi, Francesco, and Marco Pagano. 1988. The advantage of tying one's hands: EMS discipline and central bank credibility. European Economic Review 32, June: 1055-1082.

Gordon, Robert. 1985. The conduct of domestic monetary policy. In Monetary policy in our times. A.Ando et al, eds. Cambridge, Ma.: M.I.T. Press. Pp. 45-81.

----------. 1987. Productivity, wages, and prices inside and outside of manufacturing in the U.S., Japan, and Europe. European Economic Review 31, no. 3, April: 685-739.

Gray, J.A. and D.E. Spencer. 1990. Price prediction errors and real activity: A reassessment. Economic Inquiry 28, 4, Oct., 658-81.

Hall, Robert. 1985. Monetary policy with an elastic price standard. Price stability and public policy, Federal Reserve Bank of Kansas City.

Kydland, F. and E.Prescott. 1977. Rules rather than discretion: The inconsistency of optimal plans. Journal of Political Economy, 85, June: 473-491.

Levine, Paul. 1991. Should rules be simple? Centre for Economic Policy Research Discussion Paper No. 515, London, March.

McCallum, Bennett. 1987. The case for rules in the conduct of monetary policy: A concrete example, Federal Reserve Bank of Richmond Economic Review, September/October: 10-18.

_____. 1988a. Robustness properties of a rule for monetary policy. Carnegie-Rochester Conference Series on Public Policy. Revised, February.

_____. 1988b. The role of demand management in the maintenance of full employment. NBER Working Paper No. 2520, February .

McKinnon, Ronald. 1984. An international standard for monetary stabilization. Washington, D.C.: Institute for International Economics.

_____. 1988. Monetary and exchange rate policies for international financial stability. Journal of Economic Perspectives, Winter: 83-103.

Meade, James. 1984. A new Keynesian Bretton Woods. Three Banks

Review, June.

Miller, Marcus and John Williamson. 1988. The international monetary system: An analysis of alternative regimes. Centre for Economic and Policy Research Discussion Paper No. 266, July. European economic review, 32, 5, June: 1031-1048.

Rogoff, Kenneth. 1985a. Can international monetary policy coordination be counterproductive? Journal of International Economics 18: 199-217.

_____. 1985b. The optimal degree of commitment to an intermediate monetary target. Quarterly Journal of Economics 100, November: 1169-1189.

_____. 1987. Reputational constraints on monetary policy. In K.Brunner and A.Meltzer, eds., Carnegie-Rochester Conference Series on Public Policy 26, Spring (Supplement to the Journal of Monetary Economics).

Taylor, John. 1985. What would nominal GNP targeting do to the business cycle? Carnegie-Rochester Conference Series on Public Policy 22: 61-84.

Tobin, James. 1980. Stabilization policy ten years after. Brookings Papers on Economic Activity 1: 19-72.

Vines, D., J. Maciejowski, and J.E. Meade, 1983, Demand Management, George Allen: London.

West, Kenneth, 1986, "Targeting Nominal Income: A Note," Economic Journal, 96, Dec., 1077-1083.

Williamson, John. 1983. The exchange rate system. Washington, D.C.: Institute for International Economics.

Williamson, John and Marcus Miller. 1987. Targets and indicators: A blueprint for the international coordination of economic policy. Policy analyses in international economics, no. 22, September. Washington, D.C.: Institute for International Economics.

APPENDIX TO

"The Stabilizing Properties of a Nominal GNP Rule in an Open Economy" by Jeffrey Frankel

by Menzie David Chinn

ABSTRACT: This appendix reports the results of some calculations of supply, exchange rate and velocity shocks, for the United States, Germany, Japan and the UK, 1974.1 to 1989.4. It then presents some calculations of expected loss functions given certain parameter and shock variance configurations under the nominal GNP targeting (in an open-economy context) and exchange rate targeting regimes.

The basic results can be illustrated thus:

CHART 1
Nominal GNP Targeting Relative to Exchange Rate Targeting

Supply Shock Modeling

Exchange Rate and Velocity Shock Modeling		Permanent	Transitory
	MS	Dominates except for small b/a ratio in UK, low in Germany[1]	Dominates except for small b/a ratio in UK, low in Germany[2]
	DS	Dominates except for small b/a ratios in US, UK, Japan; and except for b/a ratios less than 2.5 in Germany[3]	Dominates except for small b/a ratios in US, UK; moderate b/a ratios in Japan; and Germany. [4]

"Permanent" indicates that the supply shocks are identified as the residual of an ARIMA model of potential GNP, and "Transitory" indicates that supply shocks are the residuals of a Keynesian-style output gap minus a price surprise. The former implies that potential GNP possesses a unit root and supply shocks are therefore highly persistent; the latter, that supply shocks are possibly serially correlated, but have temporary effects on output. MS indicates that the shocks are defined as a deviation from a mean, and DS that the shocks are the first differences. For reasons discussed below, the results in Cell [1] and Cell [2] are probably the most realistic. The assumptions underlying Cell [4] results are the least plausible.

I. Data Preliminaries

A. Type and Sources

Most of the quarterly data are from OECD Main Economic Indicators: Historical Statistics, 1969/1988, and September 1990 issue of MEI. Real GNP, money and the GNP deflator variables are from this source (GDP for the UK). The nominal exchange rate variable is the IMF nominal MERM (effective) exchange rate index (1980=100), derived from the IMF International Financial Statistics Supplement on Exchange Rates up to 1984, and from various issues of IFS thereafter.

Real GNP (GDP) and the GNP (GDP) deflator are seasonally adjusted (s.a.). The money variables (M1 and M2) are end-of-period not-seasonally adjusted (n.s.a) data.[1] The IMF MERM index is a period average.[2]

B. Variable Names and Descriptions

SYMBOL	MNEMONIC	DESCRIPTION
y	LRGNP##	log Real ## GNP, s.a.
y*	LRGDPX##	log Real OECD GDP except for GDP of ## (index 1985=100, see below), s.a.
p	LPGNP##	log GNP implicit price deflator, s.a.
m	LM1##	log M1, end-of-period, n.s.a.
	LM2##	log M2, end-of-period, n.s.a.[3]
m*	LM1_X##	log OECD M1 except for M1 of ## (index 1985=100, see below), s.a.
	LM2_X##	log OECD M2 except for M2 of ## (index 1985=100, see below), s.a.
-s	LMERM##	log of IMF MERM index, period average
ep	LPPIE##	log of PPI for fuel or petroleum, period avg.

---

[1] Note the use of not-seasonally-adjusted data produces a larger variance of the velocity shock, since seasonal adjustment usually "smooths" the variable.

[2] Use of period average nominal exchange rates biases downward the estimate of the exchange rate shock. Note that the negative of LMERM## is used because the MERM index is expressed in aggregate foreign currency units per US$, rather than the reverse.

[3] Actually, this measure is officially designated M1 plus quasi-money by MEI.

v LV1## = LPGNP## + LRGNP## - LM1##
   LV2## = LPGNP## + LRGNP## - LM2##

p^e LP##_H log price surprise

Where ## takes on the values:

US	United States
G	Germany
J	Japan
UK	United Kingdom

C. Constructing the Exchange Rate Shock

In the text, the rest-of-world (ROW) variables are normalized to zero, so that e = s - m + y. In the empirical implementation, the following definition is adopted:

e = s - (m - m*) + (y - y*)

where the * denotes rest-of-OECD (ROECD) variables.

e LE1##_R = -LMERM## + LRGNP## - LM1## - LRGDPX## + LM1_X##
   LE2##_R = -LMERM## + LRGNP## - LM2## - LRGDPX## + LM2_X##

The ROECD indices are generated in the following manner:

y* LRGDPX## = log{[RGDPOECD - wy##(RGDP##_Z)](1/(1-wy##))}
m* LM1_X## = log{[M1OECD - wm1##(M1##_Z)](1/(1-wm1##))}
    LM2_X## = log{[M2OECD - wm2##(M1##_Z)](1/(1-wm2##))}

where the _Z suffixes denote variables re-expressed as an index 1985=100. wy##, wm1## and wm2## are Purchasing Power Parity weights published in OECD Main Economic Indicators. The weights are based on 1985 PPP indices.

Weights	wy	wm1	wm2
US	.398	.328	.459
G	.074	.067	.032
J	.143	.199	.199
UK	.062	.056	.036

II. Constructing Potential GNP, Price Surprises, and Supply Shocks

A. Discussion and Procedure

In order to calculate the supply shocks, one first needs to

measure potential GNP. The primary procedure adopted is to assume that potential GNP is equal to actual (log real) GNP, after adjusting for variation due to price surprises, viz.:

<A1> $$y^* \equiv y - b\underbrace{(p - p^e)}_{\text{"price surprise"}}$$

where:
y is log real GNP
y* is log real potential GNP
p is the log price level
p^e is the expected log price level

Then the supply shock is measured as the squared standard error of regression for an ARIMA of y*. Hence supply shocks are identified as the unpredictable (on the basis of own-history) component of potential GNP.

This procedure is consistent with a unit root in y*. This time series characterization of potential GNP is implied by some simple formulations of real business cycle models. For instance, suppose y* is an ARIMA (0,1,0).

<A2> $$y^*_t = \delta + y^*_{t-1} + u_t \ ,$$

where for simplicity, assume u_t is white noise. Then a regression of the first difference of the y* series on a constant yields a residual that can be interpreted as an unforecastable "technology shock".

<A3> $$\hat{u}_t \equiv y^*_t - y^*_{t-1} - \hat{\delta}$$

This particular identifying assumption implies that "supply shocks" are permanent, in that they are permanently incorporated into potential GNP. This contrasts with the assumption implicit in the alternative approaches discussed in Section III.

In the empirical analysis, ARIMAs are estimated. In several cases, different ARIMAs could be fitted with about equal success, defined by such criteria as t-statistics and R-squareds. However, fairly parsimonious specifications were usually adequate. The specifications were:

US: ARIMA(1,1,0) or ARIMA(2,1,0)
UK: ARIMA(0,1,0) or ARIMA(0,1,1)
Ger: ARIMA(4,1,0), ARIMA(1,1,1), ARIMA(0,1,1), ARIMA(1,1,0)
Jap: ARIMA(1,1,1), ARIMA(1,1,2), or ARIMA(1,1,0)

With the choice of ARIMA varying as the "b" parameter took on different assumed values. There is quite a bit of diversity of

specifications, although the SERs don't vary too much from one to the other.

The y* series for the four countries, assuming b = 2.00 in each case, are presented in Figures 1, 5, 9 and 13, labeled as ##PT2.00. The corresponding supply shocks are presented in Figures 4, 8, 12 and 16 as UL##2.

Clearly, in order to obtain u_t, we need b, and $(p-p^e)$. The "b" parameter is chosen in a grid search,[4] and $(p-p^e)$ is defined in the following section.

B. Price Surprises

The log level of the implicit GNP deflator for each country (LPGNP##) is clearly integrated. A Box-Jenkins identification procedure was implemented on the first difference of each of these series (DLPGNP##), and various ARMA processes were fit. Hence LPGNP## is modeled as an ARIMA (see Table 1).

To obtain the expected price series, the forecasts from a regression in differences over the 1969.3-89.4 period are added to lagged values of the actual price level. In one sense, these are not surprises, because information from the entire sample period is used in forming optimal forecasts.[5]

Then one can generate a log price surprise (or "forecast error") series by subtracting LP##_H from LPGNP##.

<A4> LPSURP## ≡ LPGNP## - LP##_H

These forecasts are approximately unbiased. A regression of the forecast errors (in levels) on a constant yields a statistically insignificant coefficient for all price surprise series (see Table 1, "Avg. F'cast Error" row), so that one can interpret the errors as having essentially zero mean.

C. Biases

Note that our measure of price expectations is a "generated regressor". If one were to run a regression using it, one would therefore obtain a downwardly biased (although consistent)

---

[4] So there is no "generated regressor" problem in so far as inference on b is concerned.

[5] A plausible alternative procedure is to form the one-step-ahead forecasts using rolling regressions.

estimate of the "b" parameter.[6] Since we are performing a grid search on b, this is not a problem for inference. However the measurement error, induced by the fact that our measure of p^e is not equal to the true p^e, will bias the estimate of the supply shock.

Fortunately, if the measurement error in the price surprise variable is either uncorrelated with, or positively correlated with, potential GNP, then the estimated variance of potential GNP is upwardly biased. For small b values, this bias will tend to make the nominal GNP targeting regime look less favorable than it actually is. This is because the necessary condition for the open-economy nominal GNP targeting superiority is:

$$[(1+2a)/(1+b)^2]\mathrm{Var}(u) + a.\mathrm{Var}(e) < \mathrm{Var}(u) + (a+b^2)\mathrm{Var}(v-e)$$

for $c \leq a$.

I doubt that the magnitude of the bias is sufficient to impact substantially the simulation results.

III. Alternative Methods of Calculating Supply Shocks

A. Calculating Alternative Supply Shocks

Several alternative ways of estimating the supply shock (u) arise using this identity:

<A5> $$\tilde{u} = \underbrace{(y-y^*)}_{\text{output gap}} - b\underbrace{(p-p^e)}_{\text{price surprise}}$$

where $\tilde{u}$ depends on the manner in which the output gap is calculated. Some attempts to gauge the plausibility of these alternative approaches, and to assess the sensitivity of the results to the preferred approach are discussed next.

B. Output Gap Construction

In order to calculate the output gap, one first needs a measure of potential GNP. Two alternative measures of potential GNP were constructed: (i) a fitted quadratic in time called

---

[6] See Pagan (1984) for details.

TREND##1; (ii) a 5-year centered moving average called TREND##3;[7] TREND##1 corresponds to the old-style Keynesian measure of potential GNP. Note that TREND##3 loses observations at both ends of the sample in calculating the moving averages.

Variable (i) was estimated using a regression from 1969.1 - 89.4. The results are reported in Table 2A. An augmented Dickey-Fuller test rejects the null of a unit root in the residuals at 5% for the US, Germany and Japan.[8] The actual GNP series and the three different potential GNP series (items (i), (ii) and the measure described in Section II, assuming b=2) are presented in Figure 1, 5, 9 and 13.

Given two additional measures of potential GNP or GDP, one can obtain two additional measures of the supply shock. Which one appears to be most reasonable depends in part upon which one yields plausible results in regressions. Hence, it is useful to review what each of these specifications implies for the estimate of the "b" parameter.

C. Estimating "b"

The two different regressions were run: of log output on either of the two measure of potential output, a constant and the price surprise variable. In preliminary regressions, the constant was statistically insignificant, and the coefficient on the measure of potential was essentially unity.[9] Hence, the regressions were run with the log output gap as the dependent variable, and the price surprise as the RHS variable, with the constant suppressed.[10]

As indicated in Table 2B, the various specifications yield quite different results. First note the following:

- GAP##1 is log real GNP/GDP minus fitted quadratic in time (see Table 1).
- GAP##3 is log real GNP/GDP minus a 5-year centered moving

---

[7] A 3 year centered moving average was also calculated, but moved too closely with actual GNP to be considered a plausible measure of potential.

[8] Using MacKinnon (1990) critical values documented in MicroTSP (Hall, Johnston and Lilien, 1990: 16-6).

[9] This result is to be expected, since the potential measure is usually some linear transformation (or close to linear) of the actual output series.

[10] The suppression of the constant explains some of the negative R^2 statistics in Table 2B.

average of log real GNP/GDP.

The price surprise coefficient is statistically significant in two out of the four cases (US, Japan), and not significant in the German and UK cases. I performed unit root tests to see if the results might be due to spurious correlation. All of the regressions with GAP##1 as a regressand could reject the null of a unit root in the residuals, with the exception of the UK. Given the current debate on power of unit root tests, and the issue of whether splines can fit GNP series as well as unit root processes, it is uncertain what to make of this result.

One might attribute the odd results (especially with respect to the UK and Germany) to the particular price expectations formation process adopted, but similar regressions with price expectations derived from a VAR(3) in levels of money, output and prices were also run, and yielded similar coefficient estimates.

The implied supply shocks derived using GAP##1 regressions are presented in Figures 4, 8, 12 and 16 as the U##1 series.

IV. Variances of Exchange Rate and Velocity Shocks

A. Basic Definition

Graphs of velocity and exchange rate are presented in Figures 2 and 3 for the US; 6 and 7 for Germany; 10 and 11 for Japan; and 14 and 15 for the UK. **Notice that the variances of the supply shocks are dwarfed by those of velocity, and especially exchange rate, shocks.**

	variance LE1##_RR	variance LV1##	covariance LE1##_RR,LV1##
US	.020652	.006123	.000248
Ger	.011375	.005209	.006759
Jap	.017942	.003225	.000526
UK	.074772	.042186	.042507

In the context of the theoretical model, the shocks are defined as the deviations from a mean; hence the sample variances are the appropriate measures.

B. Discussion and an Alternative Procedure

If one looks at the relevant graphs one notes that the exchange rate (s + y - m) and velocity (p + y - m) variables appear to have trends (except perhaps for the Japanese

variables). They also appear to possess unit roots, which is unsurprising given the well known near-random walk behavior of real exchange rates; thus one might model the shocks as the first difference of the series minus the drift term.[11] When this is done, one obtains the following variances and covariances:

	variance LE1##_RR	variance LV1##	covariance LE1##_RR,LV1##
US	.001874	.000910	.000639
Ger	.004676	.003579	.003859
Jap	.004363	.002647	.002586
UK	.002510	.001502	.001088

V. Calculation of Shock Variances and Loss Functions for Various Parameter Values

A grid search was performed for values of the loss function given "a" ϵ {0, .125, .25, .375, .50, .625, .75, .875, 1.00, 1.25, 1.50, 1.75, 2.00, 2.25, 2.5, 2.75, 3.00, 3.50, 4.00, 4.50, 5.00, 5.50, 6.00} and "b" ϵ {0, .25, .50, .75, 1.00, 1.50, 2.00, ...}. We used the sample variances for v and e shocks (defined either way), and for each value of b the supply shock (and implicitly the y*) consistent with that value of b.

A. Results

The central results, using the supply shocks described in Section II, and exchange rate and velocity shocks defined in Section IV.A, are presented in Tables 3a-d. Assuming zero correlation between velocity and exchange rate shocks, nominal GNP targeting dominates unambiguously in all cases and for all values of a and b.[12]

More mixed results obtain when the empirical covariances are used. For Germany and the UK, there do exist combinations of parameter values for which the exchange rate rule dominates the

---

[11] The failure to reject a unit root in the velocity variable is a bit odd, since one tends to think of money, income and prices as cointegrated, but this result is typical.

[12] This is a reasonable case to examine since the empirical correlations are negative as often as they are positive.

nominal GNP targeting rule: those with sufficiently high b/a ratios, as indicated in the text. These results are presented in Tables 4a-d, and Figures A1-A2 (and correspond to Cell [1] in Chart 1). Note that for the US and Japan, no combination of parameters yields a nominal-GNP-targeting-inferior result.

The results do not change if the alternative means of calculating supply shocks, described in Section III, is adopted (see Tables 5a-d); hence no separate figures are provided. These results correspond to Cell [2].

If the alternative method of calculating exchange rates and velocity shocks described in V.B is used, but the original ("permanent") method of calculating supply shocks is adopted (i.e. Cell [3]), then again nominal GNP targeting dominates for most plausible combinations of b and a for the US and UK (Tables 6a-d, Figures A3-A6). This applies with less force to Japan; for Germany, however, there is a substantial nominal-GNP-targeting inferior region.

When a revised manner of calculating the supply shocks and exchange rate/velocity shocks are used (Cell [4]) then the case for nominal GNP superiority is slightly weaker than in was the case in Cell [3]. Exchange rate targeting dominates only for Germany. For reasons discussed below, Cell [4] is the least plausible (Tables 7a-d).

B. Interpretation

Only for the last combination of procedure does there appear to be substantive nominal GNP targeting inferior areas. Hence, the desirability of nominal GNP targeting depends critically upon two issues: (i) which model of supply shocks is most realistic; and (ii) what priors one has for the b parameters in each country.

■ Supply shock modeling: On the first point, note that the "permanent" approach to isolating the supply shocks is probably the most reasonable. That is because the alternative approach (used in Cells [2] and [4]) attribute all omitted factors to the supply shock. This is troublesome, because the implied supply shocks correspond closely to what one might consider to be aggregate demand impulses.[13]

Even the potential GNP measures derived by the preferred (permanent shock) approach are more variable than the actual GNP

---

[13] That is, they show a lot of serial correlation. This is in contrast to the alternative measure of supply shocks which appear more like white noise.

series. Since most reasonable priors would make potential GNP more smooth than actual, the interpretation is problematic.[14] However, it does indicate that the preferred measure is an upwardly biased measure of the supply shock variance, so that we have set the case for nominal GNP targeting very conservatively.

As a rough check, it is informative to consult what the recent literature on what stochastic trend-cycle decompositions have to say about the variance of the supply shocks. Stock and Watson (1988: 156) survey estimates of the proportion of the variance of movements in GNP attributable to changes in the trend. These estimates range from 0.34 to 0.73. The variance of the first differences of US log real GNP over the 1974.1-89.4 period is (on a quarterly basis) 0.00011.[15] This implies that the variance of the permanent component ranges between 0.000037 to 0.000080. The variances used in the simulations range between 0.000098 to 0.000380 (for b=0 to b=3).

■ The b parameter: There is great uncertainty about this particular parameter. This uncertainty is illustrated in Chart 2, where different estimates are presented.

---

[14] This result is due to the fact that regressions involving price surprises do not usually yield the correct coefficient sign, unless there is extensive searching, or some ad hoc correction for adjustment costs. See for instance Fair's (1979) paper.

[15] These are R^2 (corr=min) statistics from Table 1 of Stock and Watson (1988). They are derived from various ARIMA and ARIMA-unobserved components models estimated over data from the 1947.1-85.4 period. Note that these ratios are only meaningful in the context of stochastic trends (i.e., when potential GNP has a unit root).

CHART 2
Estimates of the b Parameter

	US	Ger.	Jap.	UK
b (Sargent, 1973)	2.9-3.5			
b (Gray, Spencer 1990)	1.5-2.4			
GAP1 b	1.60	0.33	0.69	0.46
GAP3 b	1.36	0.59	1.07	0.22
b(max) (Lucas,1973)	10.10	4.56	na	1.99
b(max) (Ball, et al.)	5.61	1.76	0.70	na
sacrifice ratio (Gordon)	6.5	4.8(i)	2.3	4.8(i)
GAP1 $1/\beta \approx b$	2.73	2.07	0.97	1.92
GAP3 $1/\beta \approx b$	2.20	1.15	0.69	1.47

Notes:
(i) Estimates for Europe in general.

Direct Estimates of b

In Section III.C., using a Keynesian definition of the output gap (GAP1), one finds that the point estimates of b for the US, Germany, Japan and the UK were 1.60, 0.33, 0.69 and 0.46 respectively. These estimates imply that Germany and the UK are in the nominal GNP targeting inferior regions of the graphs for certain (usually quite high) values of the "a" parameter. However, the condition that b/a > 1 would be sufficient to rule out this result. Furthermore, recall that any price surprise mis-measurement will induce a downwards bias due to errors-in-variables problems. Similar parameter estimates are obtained if the other Keynesian type output gap (GAP3) is used instead.

Other direct estimates of b are hard to find. For the US, applying Okun's Law to Sargent's (1973) estimate of the elasticity of unemployment with respect to price surprises of 8.7 yields an estimate of between 2.9 and 3.5.[16] Fair (1979) found lower or negative estimates of b. Hall and Taylor (1988: 405) attribute this result to the influence of oil price shocks in

[16] Depending upon whether a value of 2.5 or 3 is used. The latter is more appropriate given Sargent's sample period.

Fair's extended sample. Gray and Spencer (1990) argue that taking into account energy price surprises in the regressions will yield appropriate inferences on b. In fact their estimates for the US (on annual data) range between 1.51 to 2.37.[17]

Upper bounds on b

An indirect measure of b can be obtained using a different methodology.[18] Lucas (1981, reprint of 1973), in his original test of the Lucas supply curve, provides parameter estimates which place upper bounds on b. Setting the variance of exogenous shift variables to zero, he can write (p.137):

<A6> $\pi = b/(1+b)$

Using his point estimates of π, one obtains $b_{US} \leq 10.1$, $b_{Ger} \leq 4.56$ and $b_{UK} \leq 1.99$. More recently, Ball, Mankiw and Romer (1988: 36) have provided estimates based on post-1972 annual data which indicate $b_{US} \leq 5.61$ and $b_{Jap} \leq 0.70$; $b_{Ger} \leq 1.76$, based on 1948-86 data. The caveat here is that these are only upper bounds.

The Output Sacrifice Ratio

An alternative approach is to interpret the "output sacrifice ratio" -- the cumulative lost output per permanent reduction of inflation -- loosely as a measure of b. Taylor (1985) observes:

<A7> $y_t = b(p_t - p^e_t) + y^*_t$

Inverting this equation:

<A8> $p_t = p^e_t + \beta(y_t - y^*_t) \qquad \beta \equiv 1/b$

Subtracting p_{t-1} from both sides yields:

<A9> $p_t - p_{t-1} = p^e_t - p_{t-1} + \beta(y_t - y^*_t)$,

---

[17] I attempted to obtain better estimates of the relevant price surprise variable by using the residuals from a regression of the price surprise on the energy price surprise series. Unfortunately, the transformed series were almost indistinguishable from the original and yielded similar estimates of potential GNP.

[18] The differing methodology complicates interpretation. The π parameter is the coefficient on log nominal GNP, in a regression of log output on log nominal GNP, lagged log output and a time trend.

which looks like an expectations augmented Phillips' Curve. 1/ß is the "output sacrifice ratio". Dornbusch and Fischer (1990: 541) calculate the sacrifice ratio for the 1982 recession/disinflation as about 4.0, although estimates for previous recessions, the range of ratios was 5 to 10. Gordon and King (1982) use a VAR to estimate this sacrifice ratio between -1.7 to 5.5 .

In Gordon (1987: 724), estimates derived from simulations based on 1964-84 data are provided for the US, Japan and Europe: 6.5, 2.3 and 4.8. These values of b are such that nominal GNP targeting is likely to dominate except for a very few cases.

In order to develop estimates consonant with the 1974.1-89.4 period, the output gap measures developed in Section III were used in Phillips curve regressions. The general form of the regressions were:[19]

<A10> $$p_t - p_{t-1} = \Sigma_{i=1}^{8} \tau_i (p_{t-i} - p_{t-i-1}) + \Sigma_{i=0}^{4} \beta_i (y-y^*)_{t-i} + \Sigma_{i=0}^{4} \theta_i (ep_{t-i} - ep_{t-i-1}) + \text{seasonal dummies}$$

where:

ep is the log producer price index for energy

These distributed lags were unconstrained, although polynomial distributed lags were also attempted. In general, the sum of coefficients on lagged inflation summed to about .7 to .8. The sum of coefficients on the concurrent and lagged output gap (either GAP1 or GAP3) was taken as the inverse of the sacrifice ratio. This implies that b is 2.73, 2.07, 0.97 and 1.92 for the US, Germany, Japan and the UK, respectively. Slightly lower values are obtained if GAP3 is used rather than GAP1.

Overall, these results indicate nominal GNP targeting appears likely to dominate exchange rate targeting for plausible parameter values.

C. Sensitivity Analyses

A certain amount of sensitivity analysis has already been incorporated in the above discussion. To assess the robustness of the results, the following permutations were examined: (i) trend stationary exchange rate and velocity shocks; and (ii) using M2 instead of M1.

---

[19] The UK regressions omit the energy prices, because inclusion yields implausibly low sum of coefficients on lagged inflation, and implausibly high sum of coefficients on energy price changes.

The first modification yielded no unambiguous results. Usually the trend stationary shocks implied results somewhere in between those implied by mean and difference stationarity. Specifically, the nominal GNP targeting inferior regions were slightly larger than in the mean stationary case, but substantially smaller than those in the difference stationary case.

The second modification also provided some mixed results. For Cells [1] and [3], if M2 is used, then Japan shows a larger nominal-GNP-targeting inferior region. The other policy frontiers are essentially unchanged.[20]

[20] Simulations with M2 were only performed for Cells [1] and [3].

VI. Data on Disk

The various macro data series are stored in a MicroTSP file called «INTAPDAT». The simulations are stored in Lotus 1-2-3 worksheets. They are as follows:

Cell	Lotus Worksheet	Description
	SHOCKSIM.WK1	Transitory, MS, no correlation
	SHOCKSI2.WK1	Permanent, MS, no correlation
[2]	SHKSIMCO.WK1	Transitory, MS
[4]	SHKSIMC1.WK1	Transitory, DS
[1]	SHKSIMC2.WK1	Permanent, MS
[3]	SHKSIMC3.WK1	Permanent, DS

where:
Transitory denotes method in Section III.
Permanent denotes method in Section II.
MS denotes method in Section IV.A.
DS denotes method in Section IV.B.
no correlation denotes assumed zero correlation betw. v, e.

The graphing data, derived by linear interpolation of the worksheet data, is stored in the MicroTSP file «INTGRAPH», and the Lotus 1-2-3 worksheet «INTGRAPH.WKS».

REFERENCES

Ball, L., N.G. Mankiw and D. Romer. 1988."The New Keynesian Economics and the Output-Inflation Tradeoff." Brookings Papers on Economic Activity. (1): 1-65.

Dornbusch, R. and S. Fischer. 1990. Macroeconomics. (McGraw-Hill: NY).

Fair, R.C. 1979. "An Analysis of Four Macroeconometric Models." Journal of Political Economy. 87(4) (Aug.): 701-18.

Gordon, R.J. 1987."Productivity, Wages, and Prices Inside and Outside of Manufacturing in the US, Japan and Europe." European Economic Review. 31(3) (April): 685-739.

Gordon, R.J. and S.R. King. 1982. "The Output Cost of Disinflation in a Traditional and Vector Autoregression Models." Brookings Papers on Economic Activity. (1): 205-42.

Gray, J.A. and D.E. Spencer. 1990. "Price Prediction Errors and Real Activity: A Reassessment." Economic Inquiry. 28(4) (Oct.): 658-81.

Hall, R.E., J. Johnston and D.M. Lilien. 1990. MicroTSP User's Manual 7.0 (Quantitative Micro Software: Irvine, CA).

Hall, R.E. and J.B. Taylor. 1988. Macroeconomics. (Norton: NY).

Lucas, R.E. 1981. "Some International Evidence on Output-Inflation Tradeoffs." Studies in Business Cycle Theory. (MIT: Cambridge, MA): 131-45, reprint of the 1973 AER paper.

MacKinnon, J.G. 1990."Critical Values for Cointegration Tests." UCSD Dept. of Economics Working Paper 90-4.

Pagan, A. 1984. "Econometric Issues in the Analysis of Regression with Generated Regressions." International Economic Review. 25(1) (February): 221-47.

Sargent, T.J. 1973."Rational Expectations, the Real Rate of Interest, and the Natural Rate of Unemployment." Brookings Papers in Economic Activity (2), pp. 429-472.

Stock, J.H. and M.W. Watson. 1988."Variable Trends in Economic Time Series." Journal of Economic Perspectives. 2(3) (Summer): 147-174.

intappxf
19.4.1991

TABLE 1
Expected Price Level Changes

Dependent Variable: First Difference of log GNP or GDP deflator

Variable	US	Germany	Japan	UK
CONSTANT	.0136 (.0062)**	.0096 (.0013)**	.0088 (.0059)	.0241 (.0056)***
MA(1)	-0.4561 (.1474)***			
AR(1)	0.9270 (.0949)***		0.5866 (.1095)***	0.4218 (.1057)***
AR(2)			0.2837 (.1090)**	0.3587 (.1055)***
AR(3)				
AR(4)		0.4255 (.0971)***		
Adj-R^2	.579	.189	.689	.498
SER	.0042	.0064	.0070	.0111
DW	2.00	2.09	1.79	2.01
Q(5)	0.823	7.039	6.054	2.776
Sample	69.3-89.4	70.2-89.4	69.4-90.1	69.4-89.4
T	82	79	82	81
PRED. (in levels)	LPUS_H	LPG_H	LPJ_J	LPUK_H
Avg Fcast Error	.0003 (.5399)	.0005 (.0008)	.0004 (.0008)	.0001 (.0012)

NOTES: (Standard errors in parentheses). SER is standard error of regression. DW is the Durbin-Watson statistic. The Q statistic here is distributed Chi^2 with d.f. equal to 5 plus the maximum lag length. PRED is the name of the predicted or expected price level variable(i.e., after reintegrating from differences to levels). Avg Fcast Error is the mean forecast error of the expected price level series, in levels. The figures in parentheses are standard errors for these mean errors.

TABLE 2A
Estimating Potential GNP/GDP

Dependent Variable: Log Real GNP or GDP

Variable	US	Germany	Japan	UK
CONSTANT	7.8864	7.1537	11.9440	12.4893
	(.0081)***	(.0071)***	(.0073)***	(.0098)***
TIME	.0054	.0071	.0123	.0037
	(.0004)***	(.0004)***	(.0004)***	(.0005)***
$TIME^2$	1.37E-5	-2.03E-5	-1.97E-5	1.60E-5
	(5.3E-6)**	(4.6E-6)***	(4.7E-6)***	(6.4E-6)**
$Adj\text{-}R^2$	.976	.973	.992	.941
SER	.0254	.0221	.0229	.0306
DW	0.18	0.34	0.21	0.25
Q(5)	174.45	127.06	116.83	203.25
ADF	-3.31**	-3.49**	-2.96**	-2.00
Sample	69.1-89.4	69.1-89.4	69.1-89.4	69.1-89.4
T	84	84	84	84
PRED.	TRENDUS1	TRENDG1	TRENDJ1	TRENDUK1

NOTES: (Standard errors in parentheses). SER is standard error of regression. DW is Durbin-Watson statistic. Q(5) is the Q-statistic for five lags, distributed Chi^2, with 5 d.f. ADF is the augmented Dickey-Fuller statistic for the residuals. T is the number of observations, while Sample is the sample period. PRED. is the name of the predicted value of potential GNP/GDP derived using this regression.

*(**)[***] denotes significance at 10% (5%) [1%] level.

TABLE 2B
Output Gap - Price Surprise Regressions

Dependent Variable: Log Output Gap

Dependent Variable	Price Surprise	$\bar{R}^2$	SER	DW	ADF	Sample [T]
GAPUS1	1.6036 (.6088)***	.08	.0242	0.36	-3.00**	69.2-89.4 [83]
GAPUS3	1.3620 (.5783)**	.04	.0202	0.46	-3.34**	71.2-87.4 [67]
GAPG1	.3338 (.3289)	.01	.0208	0.40	-2.86*	69.2-89.4 [83]
GAPG3	.5930 (.3032)*	.03	.0151	0.73	-4.51***	71.2-87.3 [66]
GAPJ1	.6879 (.3154)**	.05	.0206	0.35	-2.62*	69.2-89.4 [83]
GAPJ3	1.0726 (.2621)***	.14	.0146	0.63	-2.96**	71.2-87.3 [66]
GAPUK1	.4562 (.2979)	.03	.0296	0.35	-1.86	69.2-89.4 [83]
GAPUK3	.2239 (.1930)	-.02	.0184	0.81	-3.06**	71.2-87.3 [66]

NOTES: See Notes to Table 1. Regression of log output gap, variously measured, on log price surprise, with no intercept term included. "Price Surprise" is the coefficient on the log price surprise. ADF is the augmented Dickey-Fuller statistic. Sample is the sample period for estimation by OLS. [T] is the number of observations.

- GAP##1 is log real GNP/GDP minus fitted quadratic in time (see Table 1).
- GAP##3 is log real GNP/GDP minus a 5-year centered moving average of log real GNP/GDP.

- Price surprise (LPSURP##) is the log actual price level minus an ARIMA estimated price (see Table 1).

FIG.3:US Nom. GNP Policy Frontier—DS

Area above line is nom. target superior

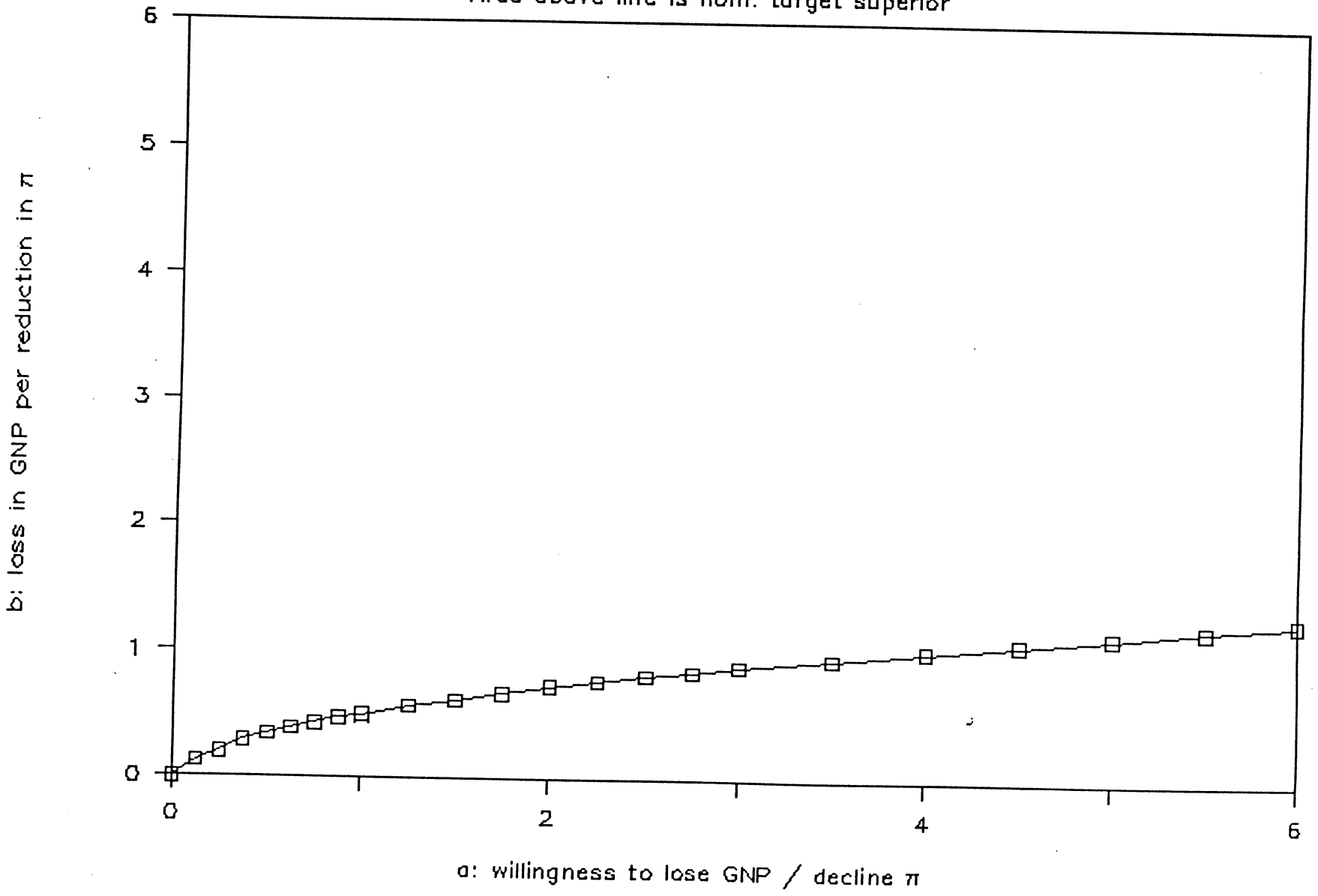


FIG.4:German Nom.GNP Policy Frontier—DS

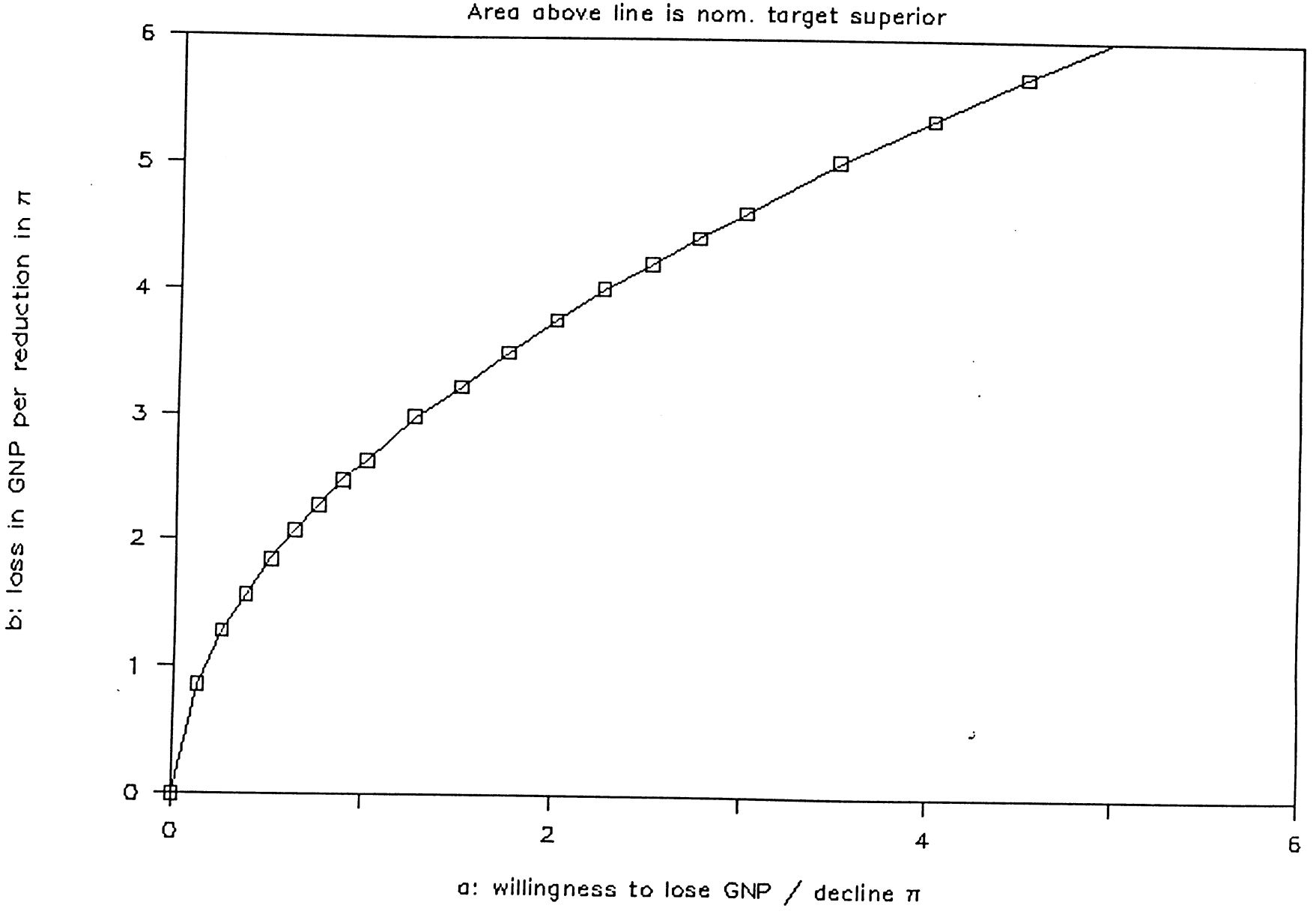


FIG.5:Japan Nom.GNP Policy Frontier—DS

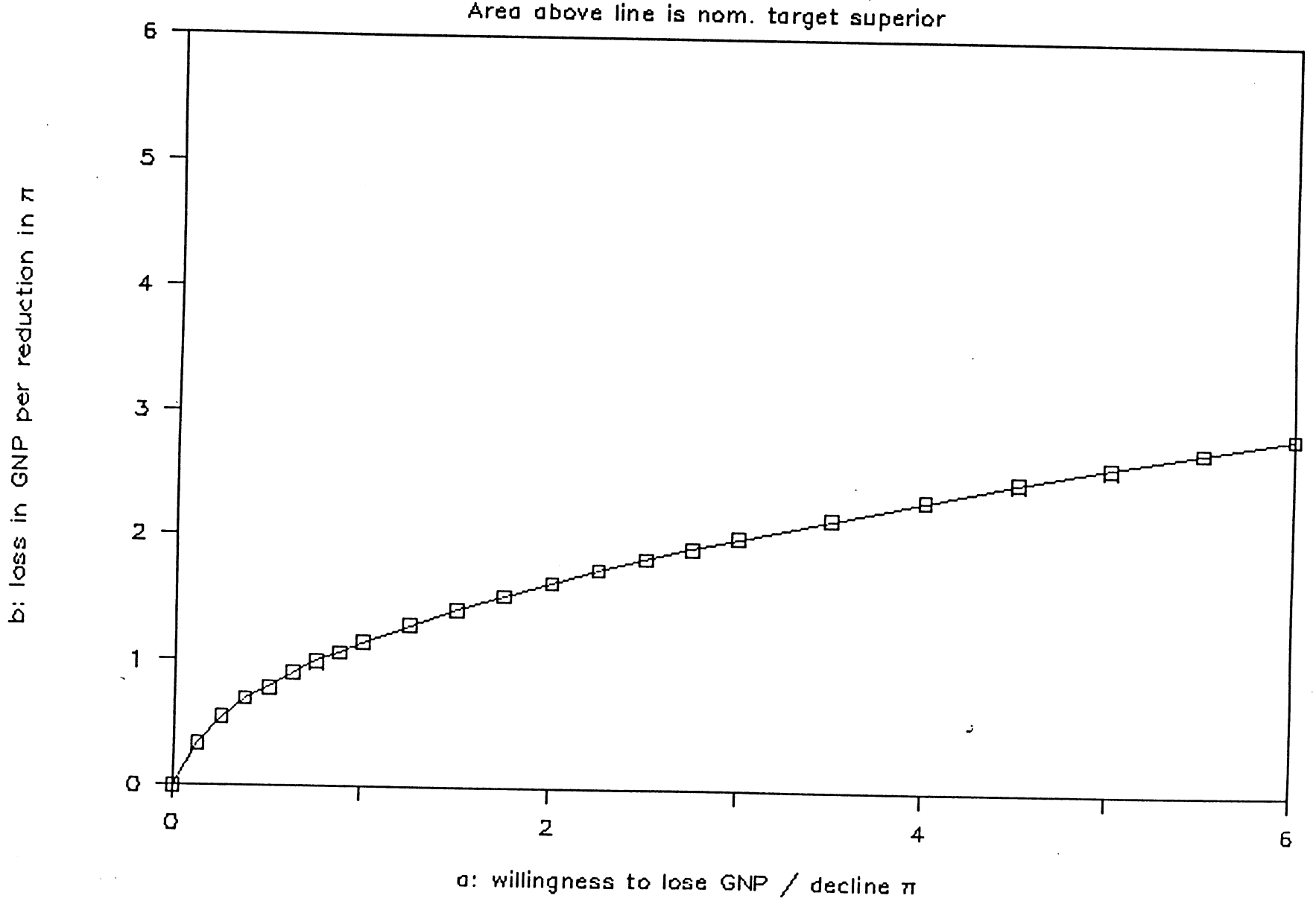


FIG.6:UK Nom.GNP Policy Frontier—DS

Area above line is nom. target superior

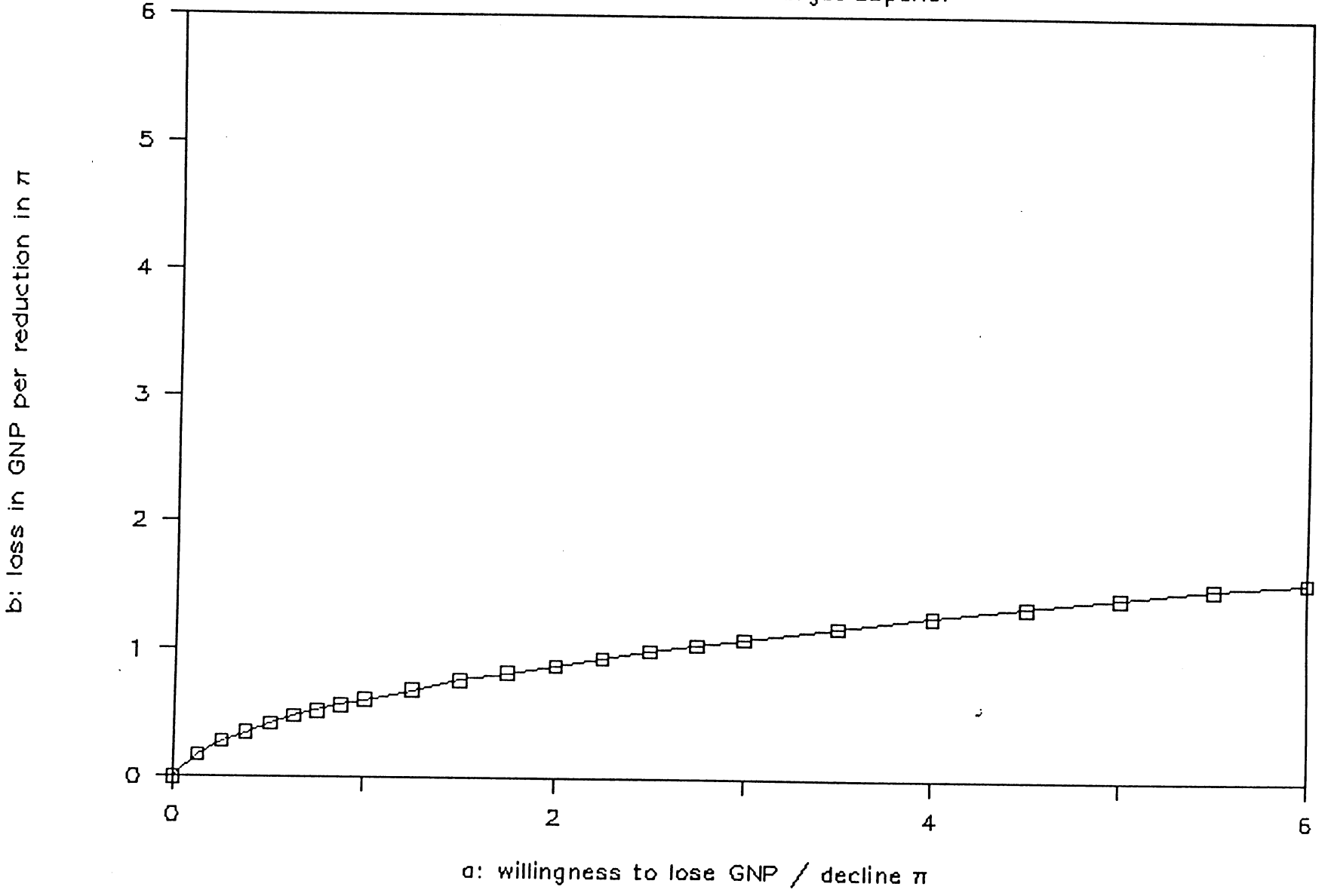


FIGURE 1: US log real GNP, Quad. Time Trend, 5-Year Moving Average, and Lucas Supply Implied Potential GNP

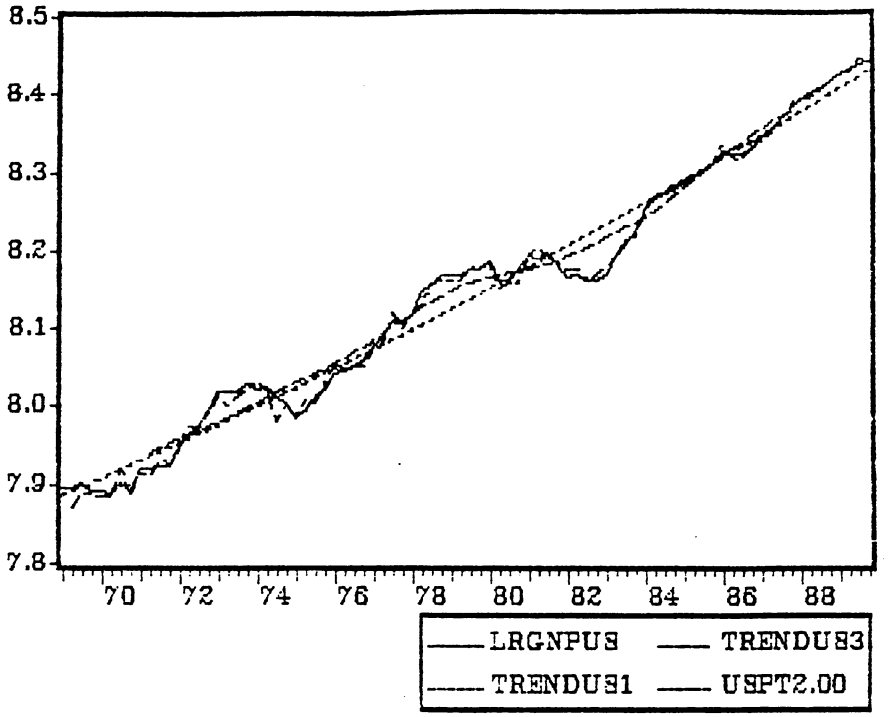


FIGURE 2: Log M1 and M2 velocity

M1 solid line, left scale; M2 dashed line, right scale

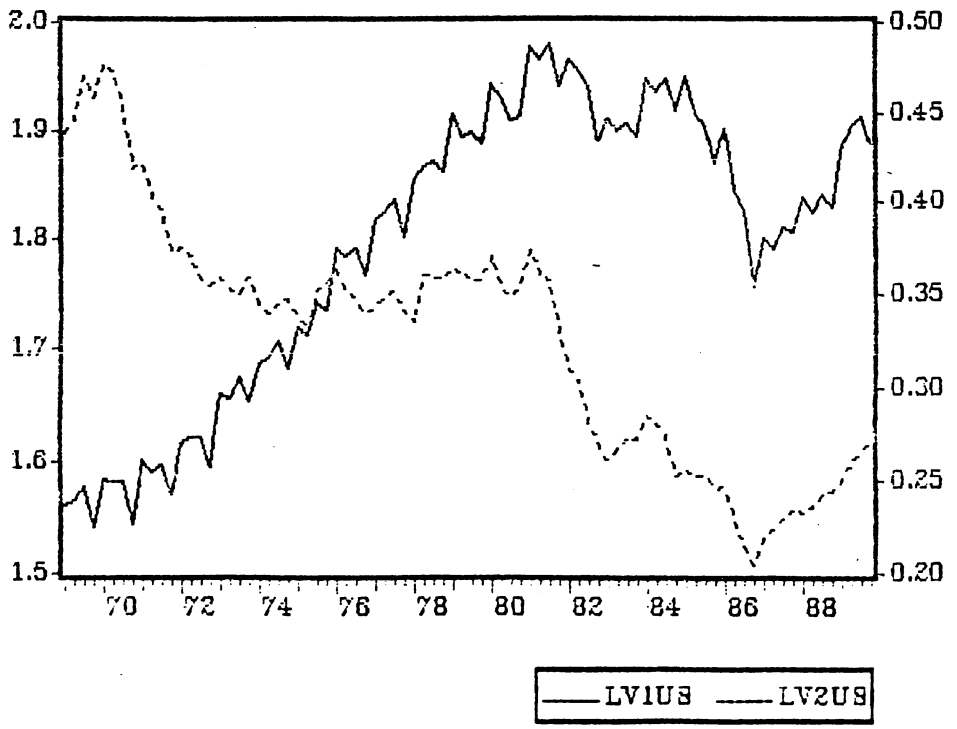


FIGURE 3: US exchange rate shocks

-LMERMUS - LM1US + LM1 XUS + LRGNPUS - LRGDPXUS

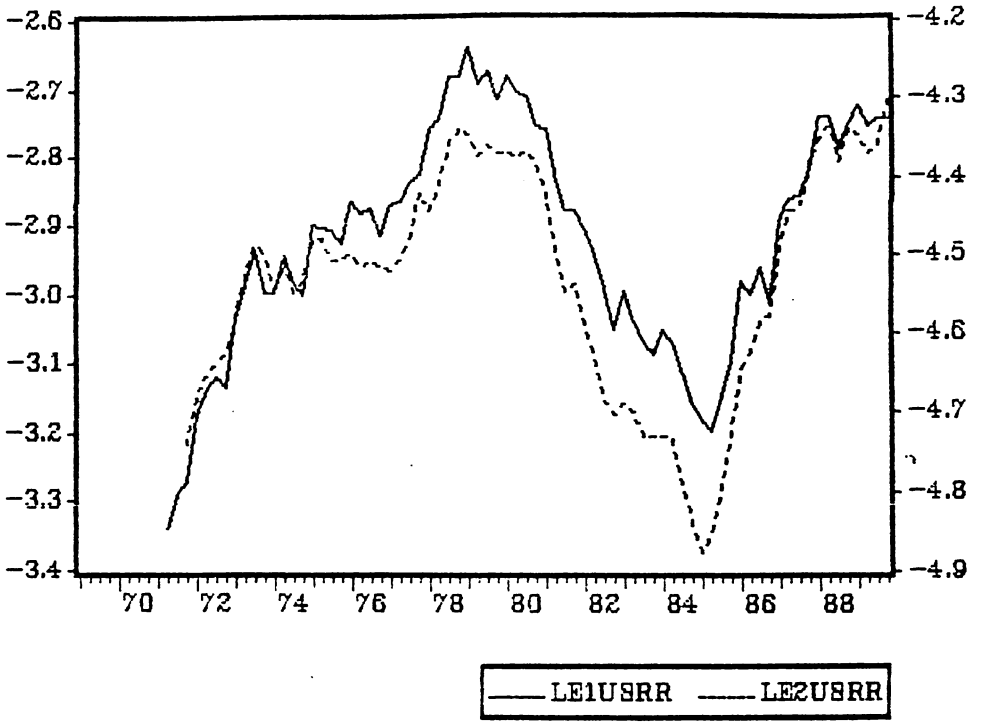


FIGURE 4: US supply shocks

UUS1: Resid from GAPUS1 OLS; ULUS2: Resid from ARIMA

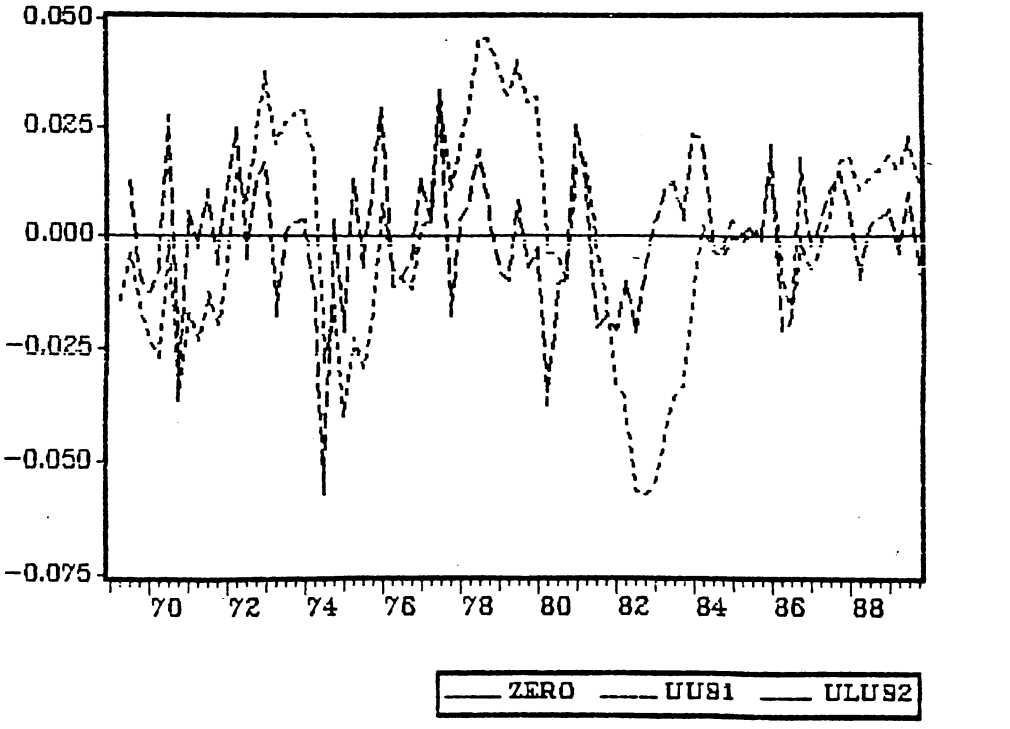


FIGURE 5: German log real GNP, Quad. Time Trend, 5-Year Moving Average and Lucas Supply Implied Potential GNP

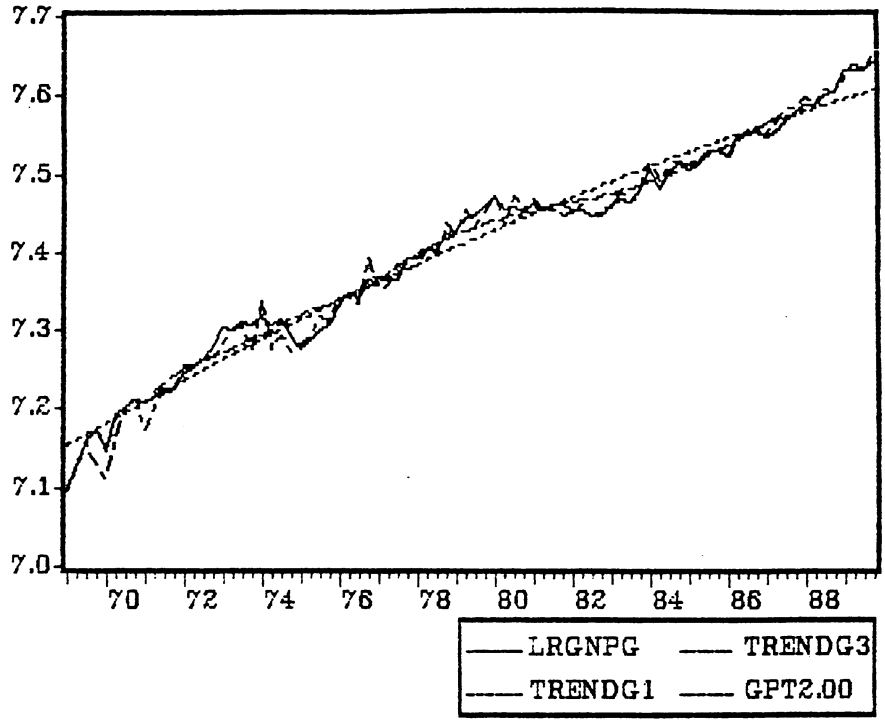


FIGURE 6: German log M1 and M2 velocity

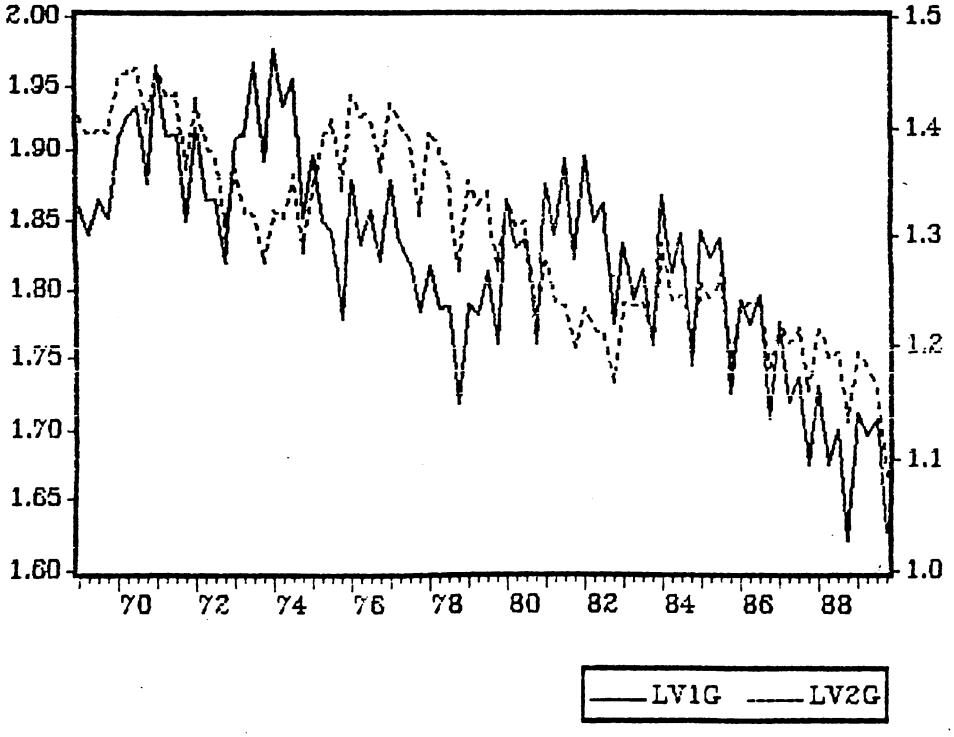


FIGURE 7: German exchange rate shocks

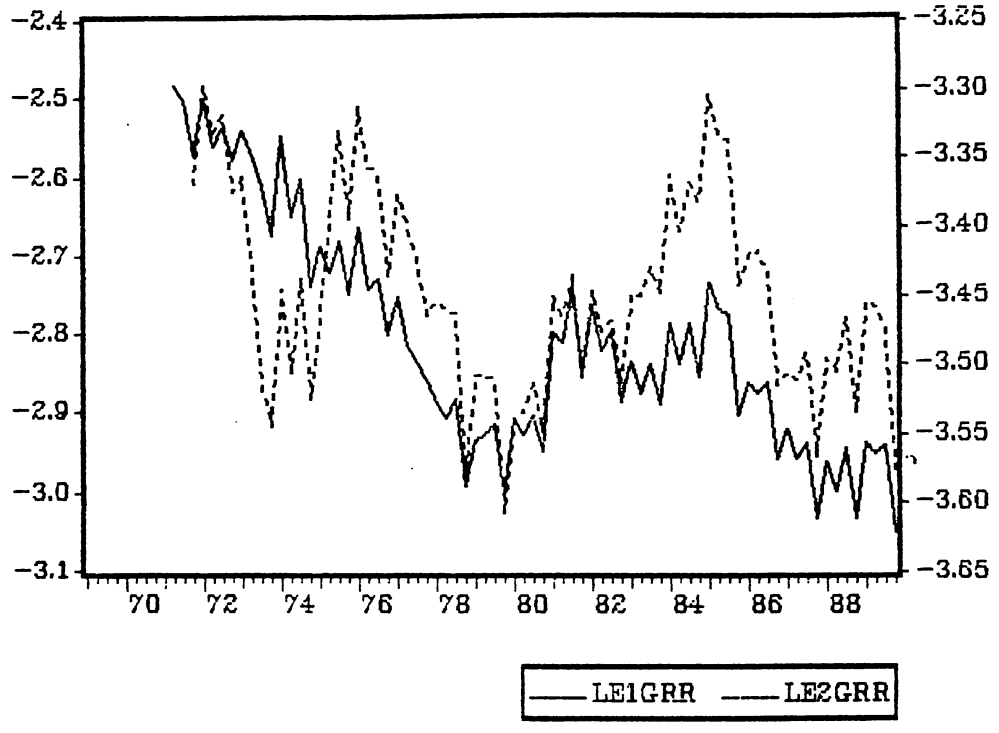


FIGURE 8: German supply shocks

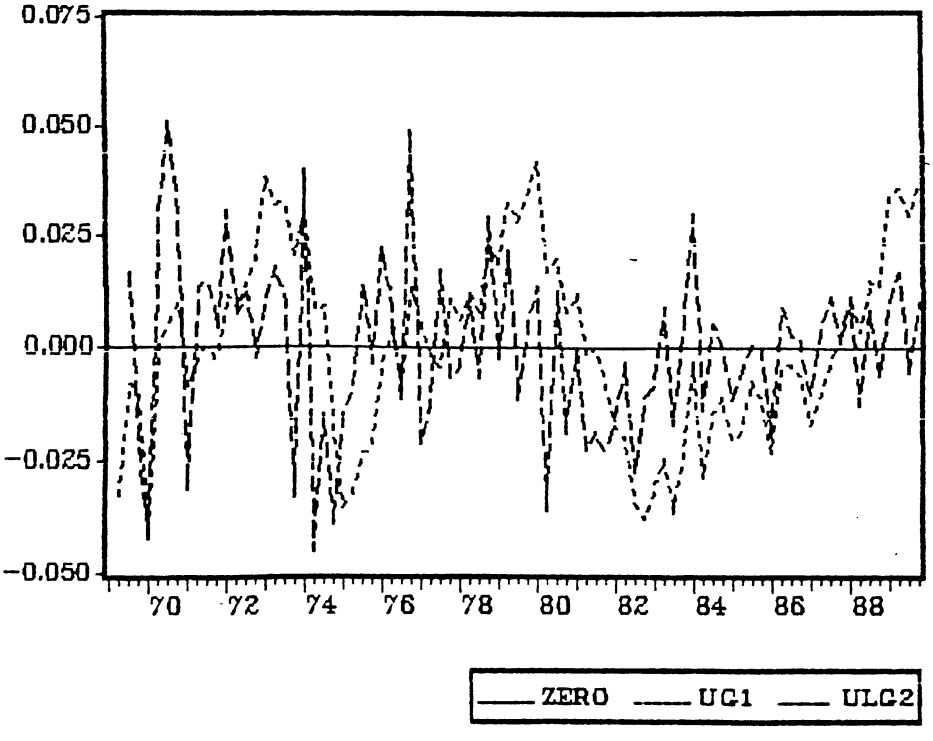


FIGURE 9: Japanese log real GNP, Quad. Time Trend, 5-Year Moving Average and Lucas Supply Implied Potential GNP

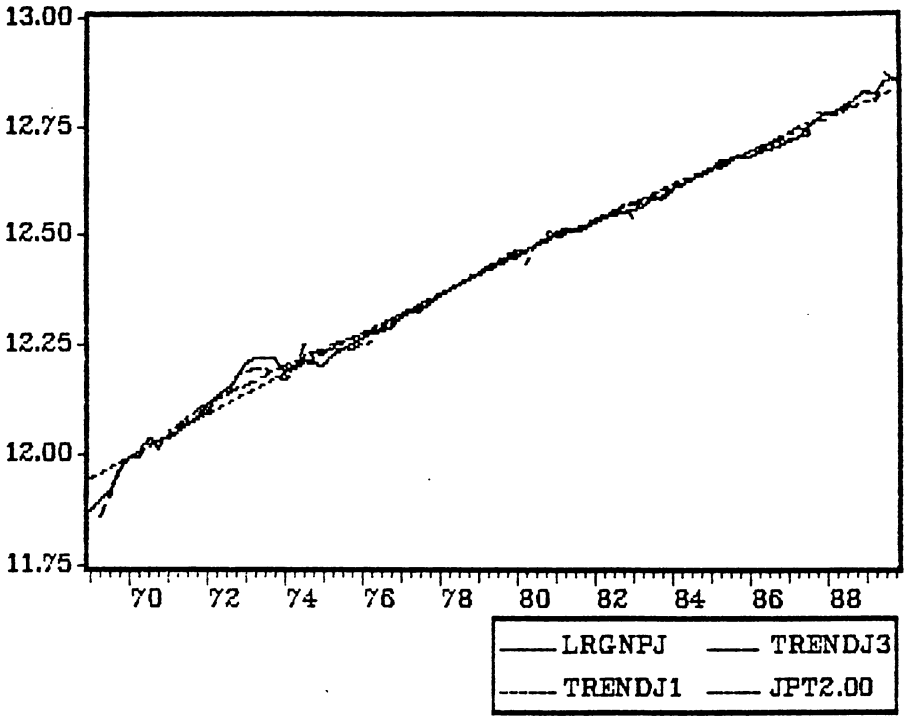


FIGURE 10: Japanese log M1 and M2 velocity

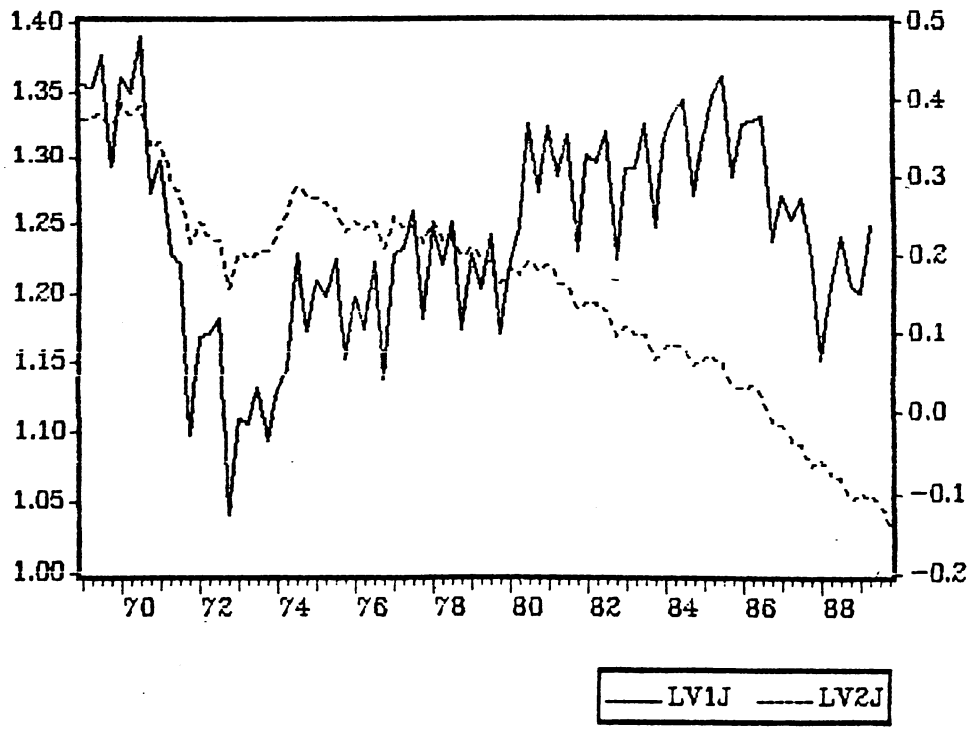


FIGURE 11: Japanese exchange rate shocks

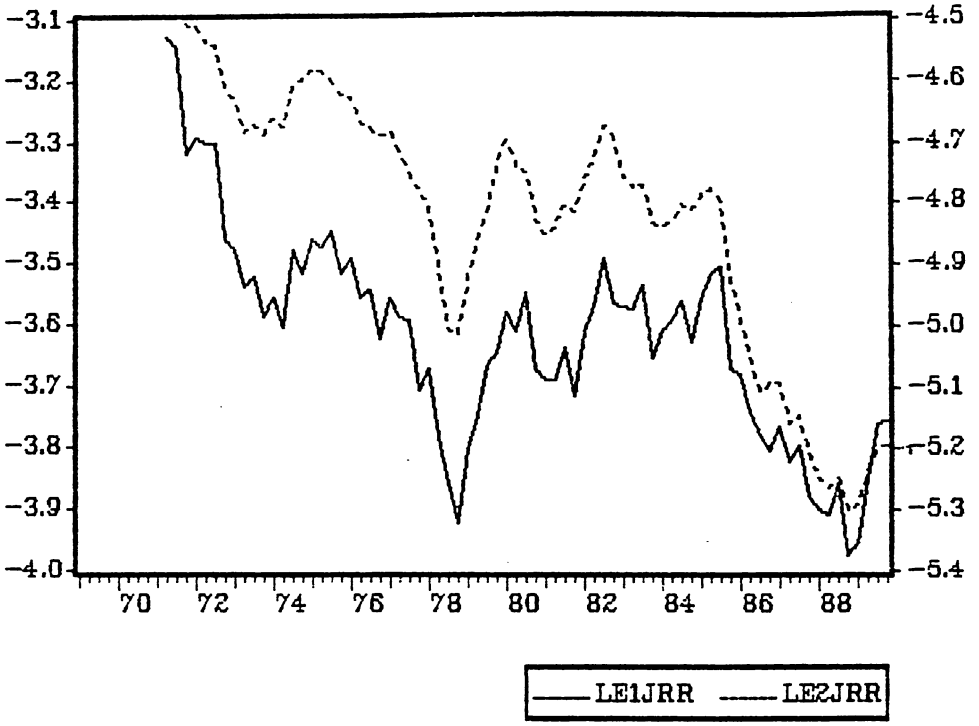


FIGURE 12: Japanese supply shocks

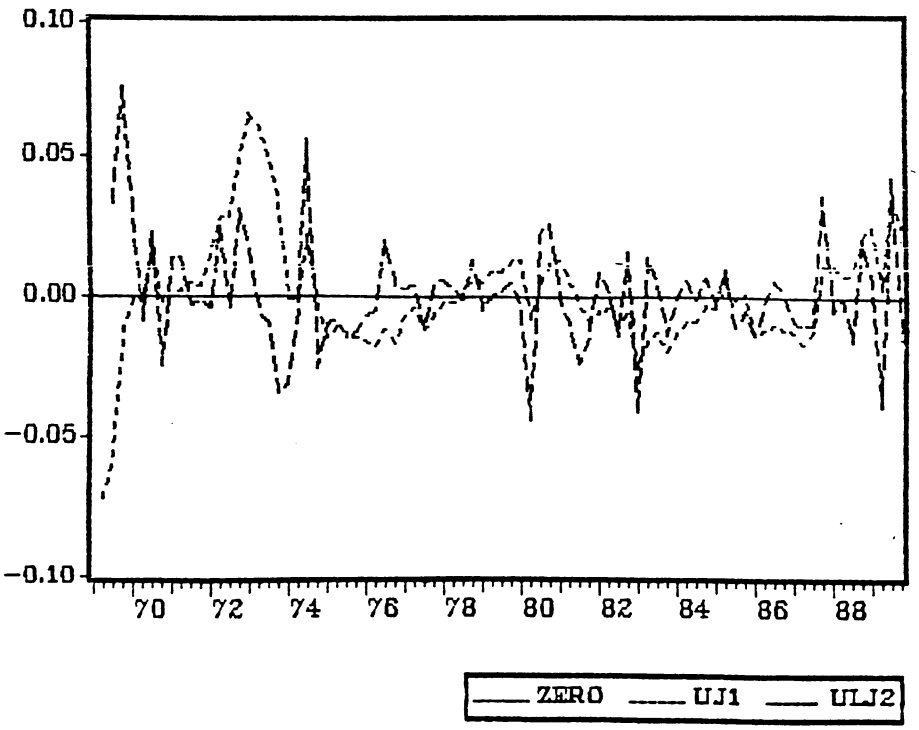


FIGURE 13: UK log real GNP, Quad. Time Trend, 5-Year Moving Average and Lucas Supply Implied Potential GNP

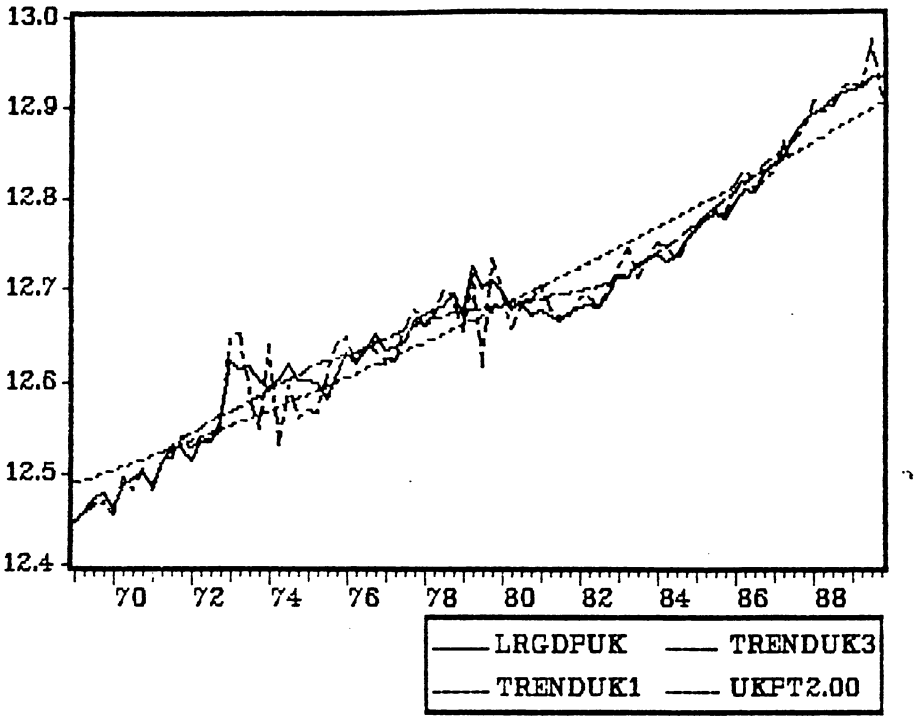


FIGURE 14: UK log M1 and M2 velocity

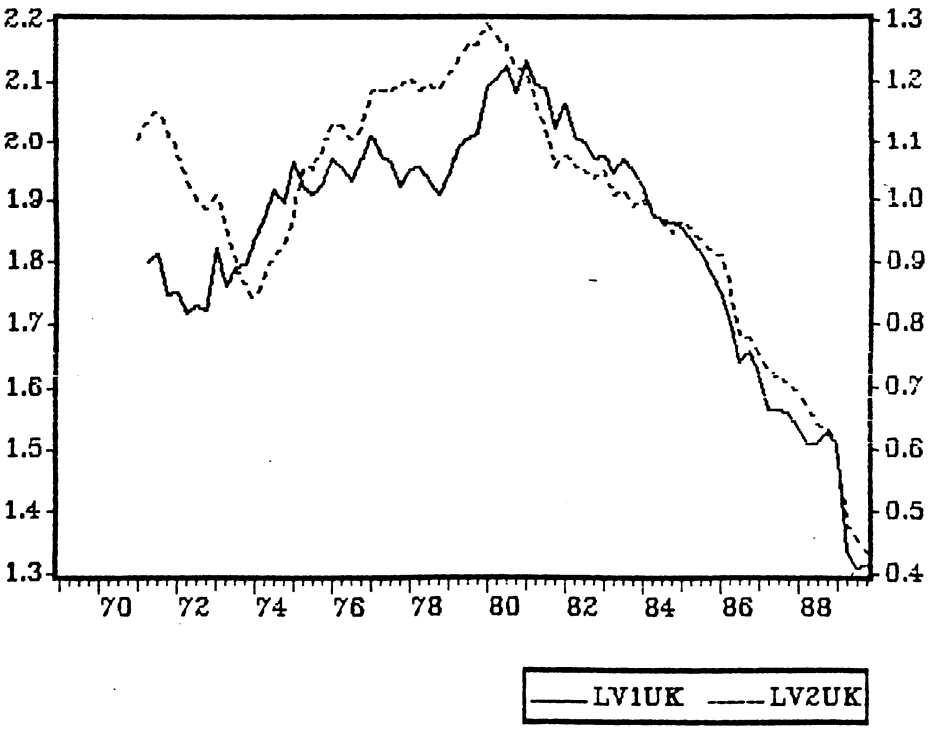


FIGURE 15: UK exchange rate shocks

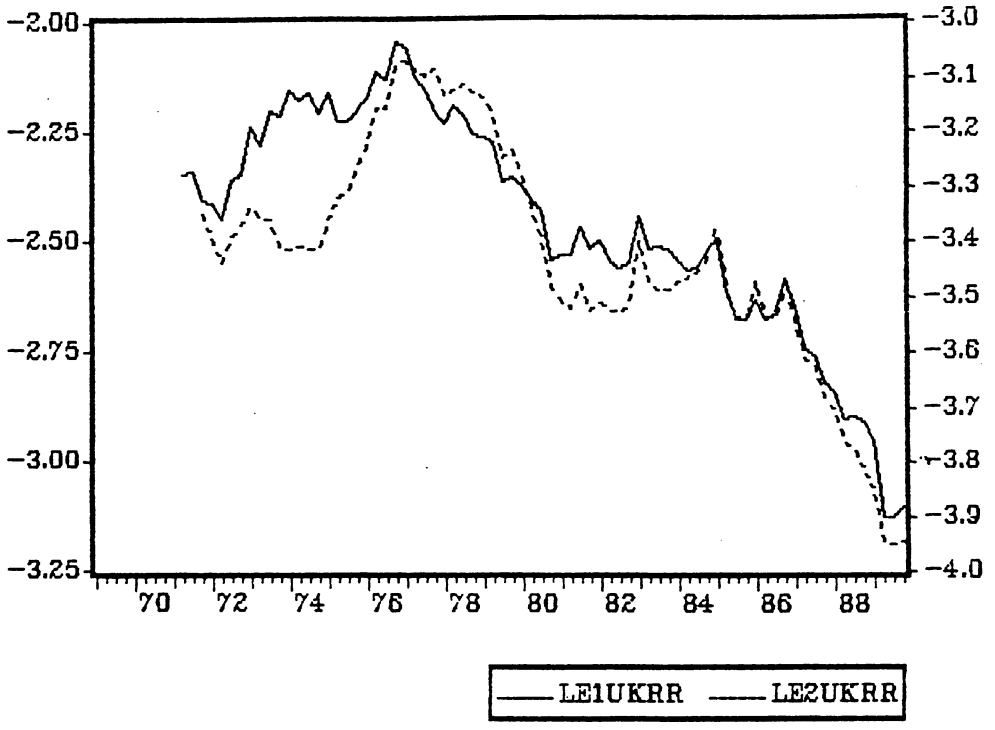


FIGURE 16: UK supply shocks

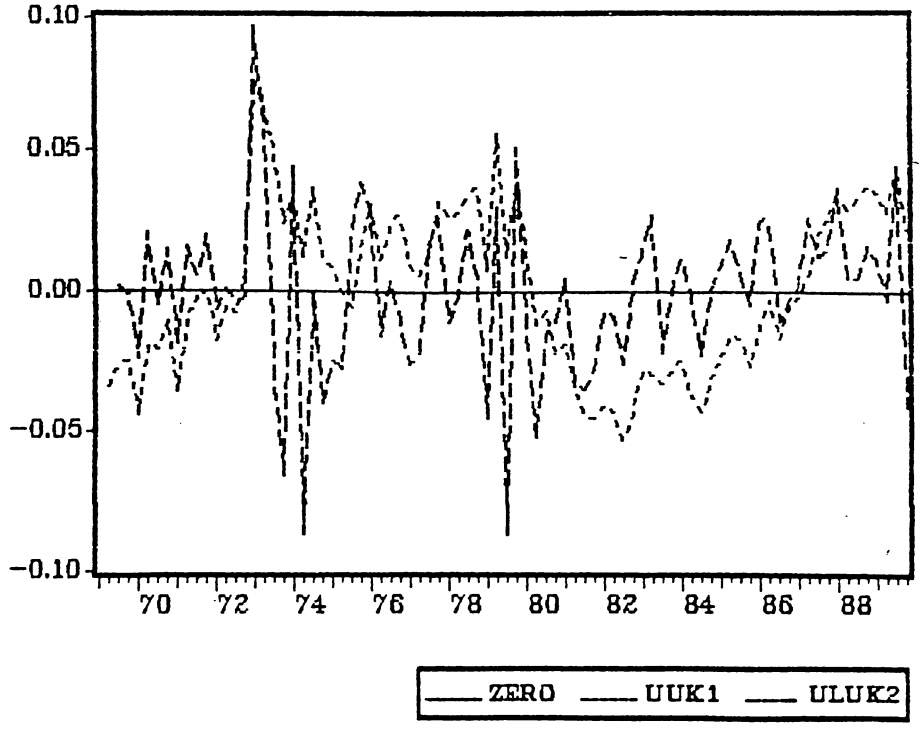


TABLE 3a-d: SHOCKSI2.WK1 rev. 18.4.1991

US LOSS SIMULATION Date: 31.Oct.1990 Rev.: 18.4.1991

Nominal GNP targeting rule Beta

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2
0	0.00009	0.00006	0.00004	0.00004	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002
0.25	0.00530	0.00525	0.00523	0.00522	0.00521	0.00521	0.00520	0.00520	0.00520	0.00520
0.5	0.01052	0.01045	0.01042	0.01040	0.01039	0.01038	0.01038	0.01038	0.01038	0.01038
0.75	0.01573	0.01564	0.01561	0.01558	0.01557	0.01556	0.01556	0.01556	0.01556	0.01555
1	0.02094	0.02084	0.02080	0.02077	0.02075	0.02074	0.02074	0.02074	0.02073	0.02073
1.25	0.02615	0.02603	0.02598	0.02595	0.02593	0.02592	0.02592	0.02592	0.02591	0.02591
1.5	0.03136	0.03123	0.03117	0.03113	0.03111	0.03110	0.03110	0.03109	0.03109	0.03108
1.75	0.03658	0.03642	0.03636	0.03632	0.03629	0.03628	0.03628	0.03627	0.03627	0.03626
2	0.04179	0.04162	0.04155	0.04150	0.04147	0.04146	0.04145	0.04145	0.04144	0.04144
5	0.10433	0.10396	0.10380	0.10370	0.10364	0.10360	0.10360	0.10359	0.10357	0.10356
Var(u)	0.00009	0.0001	0.00011	0.00012	0.00013	0.00015	0.00019	0.00020	0.00021	0.00024
Var(e1)		0.02065								
Var(v1)		0.00612								

Exchange Rate or gold rule (assuming vel and exch shocks independent)

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2
0	0.00009	0.00177	0.00680	0.01518	0.02691	0.04199	0.06043	0.06874	0.08221	0.10734
0.25	0.00679	0.00846	0.01349	0.02187	0.03360	0.04868	0.06713	0.07544	0.08891	0.11403
0.5	0.01348	0.01516	0.02019	0.02857	0.04030	0.05538	0.07382	0.08213	0.09560	0.12073
0.75	0.02017	0.02185	0.02688	0.03526	0.04699	0.06207	0.08051	0.08882	0.10229	0.12742
1	0.02687	0.02854	0.03358	0.04195	0.05368	0.06877	0.08721	0.09552	0.10899	0.13412
1.25	0.03356	0.03524	0.04027	0.04865	0.06038	0.07546	0.09390	0.10221	0.11568	0.14081
1.5	0.04026	0.04193	0.04696	0.05534	0.06707	0.08215	0.10059	0.10890	0.12237	0.14750
1.75	0.04695	0.04862	0.05366	0.06204	0.07377	0.08885	0.10729	0.11560	0.12907	0.15420
2	0.05364	0.05532	0.06035	0.06873	0.08046	0.09554	0.11398	0.12229	0.13576	0.16089
5	0.13397	0.13564	0.14068	0.14905	0.16078	0.17587	0.19431	0.20262	0.21609	0.24122

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2
0	0	0.00170	0.00675	0.01514	0.02687	0.04196	0.06040	0.06871	0.08218	0.10731
0.25	0.00148	0.00320	0.00825	0.01665	0.02839	0.04347	0.06192	0.07023	0.08370	0.10883
0.5	0.00296	0.00470	0.00976	0.01816	0.02990	0.04499	0.06343	0.07174	0.08522	0.11035
0.75	0.00444	0.00620	0.01127	0.01967	0.03141	0.04650	0.06495	0.07326	0.08673	0.11186
1	0.00592	0.00770	0.01277	0.02118	0.03293	0.04802	0.06646	0.07477	0.08825	0.11338
1.25	0.00740	0.00920	0.01428	0.02269	0.03444	0.04953	0.06798	0.07629	0.08976	0.11490
1.5	0.00889	0.01070	0.01579	0.02420	0.03595	0.05105	0.06949	0.07781	0.09128	0.11642
1.75	0.01037	0.01220	0.01729	0.02571	0.03747	0.05256	0.07101	0.07932	0.09280	0.11793
2	0.01185	0.01369	0.01880	0.02722	0.03898	0.05408	0.07252	0.08084	0.09431	0.11945
5	0.02963	0.03168	0.03687	0.04535	0.05714	0.07226	0.09071	0.09902	0.11251	0.13765

Note: 74.1-89.1 empirical var/cov. are used.
Note: SHOCKSI2 uses ARIMA defined supply shocks and mean
stationary vel/exch rate shocks, BUT assumes ZERO covariance betw.
vel and exch rate shocks.
Note: correct LE1## used.
Note: Correct LE1##_RR used as of 18.4.1991

TABLE 3a-d: SHOCKSI2.WK1 rev. 18.4.1991

GERMAN LOSS SIMULATION Date: 31.Oct.1990

Nominal GNP targeting Beta

a \ b	0	0.25	0.33	0.5	0.75	1	1.5	2
0	0.00012	0.00008	0.00007	0.00006	0.00004	0.00004	0.00003	0.00003
0.25	0.00302	0.00296	0.00295	0.00293	0.00291	0.00290	0.00290	0.00289
0.5	0.00592	0.00585	0.00583	0.00580	0.00578	0.00577	0.00576	0.00575
0.75	0.00883	0.00873	0.00871	0.00868	0.00865	0.00863	0.00862	0.00861
1	0.01173	0.01161	0.01159	0.01155	0.01152	0.01150	0.01148	0.01147
1.25	0.01464	0.01450	0.01447	0.01443	0.01439	0.01436	0.01435	0.01434
1.5	0.01754	0.01738	0.01735	0.01730	0.01725	0.01723	0.01721	0.01720
1.75	0.02045	0.02027	0.02023	0.02018	0.02012	0.02009	0.02007	0.02006
2	0.02335	0.02315	0.02311	0.02305	0.02299	0.02296	0.02294	0.02292
5	0.05820	0.05777	0.05768	0.05754	0.05741	0.05733	0.05729	0.05725
Var(u)	0.00012	0.00012	0.00012	0.00013	0.00015	0.00016	0.00023	0.00031
Var(e1)		0.01137						
Var(v1)		0.00520						

Exchange Rate or gold rule (assuming vel and exch shocks independent)

a \ b	0	0.25	0.33	0.5	0.75	1	1.5	2
0	0.00012	0.00116	0.00193	0.00428	0.00947	0.01675	0.03755	0.06664
0.25	0.00426	0.00530	0.00608	0.00842	0.01362	0.02089	0.04169	0.07079
0.5	0.00841	0.00945	0.01022	0.01257	0.01777	0.02504	0.04584	0.07493
0.75	0.01255	0.01360	0.01437	0.01672	0.02191	0.02918	0.04999	0.07908
1	0.01670	0.01774	0.01851	0.02086	0.02606	0.03333	0.05413	0.08323
1.25	0.02085	0.02189	0.02266	0.02501	0.03020	0.03748	0.05828	0.08737
1.5	0.02499	0.02603	0.02681	0.02915	0.03435	0.04162	0.06242	0.09152
1.75	0.02914	0.03018	0.03095	0.03330	0.03850	0.04577	0.06657	0.09566
2	0.03328	0.03433	0.03510	0.03745	0.04264	0.04991	0.07072	0.09981
5	0.08303	0.08408	0.08485	0.08720	0.09239	0.09967	0.12047	0.14956

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.33	0.5	0.75	1	1.5	2
0	0	0.00108	0.00186	0.00422	0.00942	0.01671	0.03751	0.06661
0.25	0.00124	0.00234	0.00312	0.00549	0.01070	0.01799	0.03879	0.06789
0.5	0.00248	0.00360	0.00439	0.00676	0.01198	0.01927	0.04008	0.06918
0.75	0.00372	0.00486	0.00565	0.00803	0.01326	0.02055	0.04136	0.07046
1	0.00496	0.00612	0.00692	0.00930	0.01454	0.02183	0.04264	0.07175
1.25	0.00620	0.00738	0.00818	0.01058	0.01581	0.02311	0.04392	0.07303
1.5	0.00744	0.00865	0.00945	0.01185	0.01709	0.02439	0.04521	0.07432
1.75	0.00869	0.00991	0.01072	0.01312	0.01837	0.02567	0.04649	0.07560
2	0.00993	0.01117	0.01198	0.01439	0.01965	0.02695	0.04777	0.07689
5	0.02483	0.02631	0.02717	0.02965	0.03498	0.04233	0.06317	0.09230

TABLE 3a-d: SHOCKSI2.WK1 rev. 18.4.1991

JAPAN LOSS SIMULATION Date: 31.Oct.1990

Nominal GNP targeting rule Beta

a \ b	0	0.25	0.5	0.69	0.75	1	1.5	2
0	0.00007	0.00005	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
0.25	0.00460	0.00456	0.00454	0.00453	0.00453	0.00453	0.00453	0.00453
0.5	0.00912	0.00907	0.00905	0.00903	0.00904	0.00903	0.00903	0.00904
0.75	0.01365	0.01358	0.01355	0.01354	0.01354	0.01354	0.01353	0.01354
1	0.01817	0.01809	0.01806	0.01804	0.01804	0.01804	0.01803	0.01804
1.25	0.02270	0.02261	0.02256	0.02254	0.02254	0.02254	0.02253	0.02254
1.5	0.02722	0.02712	0.02707	0.02705	0.02705	0.02704	0.02703	0.02705
1.75	0.03175	0.03163	0.03157	0.03155	0.03155	0.03154	0.03153	0.03155
2	0.03627	0.03614	0.03608	0.03605	0.03605	0.03605	0.03603	0.03605
5	0.09057	0.09028	0.09014	0.09008	0.09009	0.09007	0.09004	0.09009
Var(u)	0.00007	0.00008	0.00008	0.00009	0.00010	0.00013	0.00019	0.00031
Var(e1)		0.01794						
Var(v1)		0.00322						

Exchange Rate or gold rule (assuming vel and exch shocks independent)

a \ b	0	0.25	0.5	0.69	0.75	1	1.5	2
0	0.00007	0.00140	0.00538	0.01017	0.01201	0.02130	0.04781	0.08498
0.25	0.00537	0.00669	0.01067	0.01546	0.01730	0.02659	0.05310	0.09027
0.5	0.01066	0.01198	0.01596	0.02075	0.02259	0.03188	0.05840	0.09556
0.75	0.01595	0.01727	0.02125	0.02605	0.02788	0.03717	0.06369	0.10085
1	0.02124	0.02257	0.02654	0.03134	0.03318	0.04246	0.06898	0.10614
1.25	0.02653	0.02786	0.03183	0.03663	0.03847	0.04775	0.07427	0.11144
1.5	0.03182	0.03315	0.03713	0.04192	0.04376	0.05305	0.07956	0.11673
1.75	0.03712	0.03844	0.04242	0.04721	0.04905	0.05834	0.08486	0.12202
2	0.04241	0.04373	0.04771	0.05250	0.05434	0.06363	0.09015	0.12731
5	0.10591	0.10723	0.11121	0.11601	0.11784	0.12713	0.15365	0.19081

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.5	0.69	0.75	1	1.5	2
0	0	0.00135	0.00534	0.01014	0.01197	0.02126	0.04778	0.08494
0.25	0.00076	0.00213	0.00612	0.01093	0.01276	0.02205	0.04857	0.08573
0.5	0.00153	0.00291	0.00691	0.01171	0.01355	0.02284	0.04936	0.08652
0.75	0.00230	0.00369	0.00770	0.01250	0.01434	0.02363	0.05015	0.08731
1	0.00306	0.00447	0.00848	0.01329	0.01513	0.02442	0.05095	0.08810
1.25	0.00383	0.00525	0.00927	0.01408	0.01592	0.02521	0.05174	0.08889
1.5	0.00460	0.00603	0.01005	0.01487	0.01671	0.02600	0.05253	0.08967
1.75	0.00536	0.00681	0.01084	0.01566	0.01750	0.02679	0.05332	0.09046
2	0.00613	0.00759	0.01163	0.01645	0.01828	0.02758	0.05411	0.09125
5	0.01533	0.01695	0.02107	0.02592	0.02775	0.03705	0.06360	0.10072

TABLE 3a-d: SHOCKSI2.WK1 rev. 18.4.1991

UK LOSS SIMULATION Date: 31.Oct.1990

Nominal GNP targeting Beta

a \ b	0	0.25	0.46	0.5	0.75	1	1.5	2
0	0.00017	0.00011	0.00009	0.00009	0.00008	0.00008	0.00008	0.00008
0.25	0.01895	0.01886	0.01884	0.01883	0.01882	0.01882	0.01882	0.01882
0.5	0.03774	0.03762	0.03758	0.03758	0.03756	0.03755	0.03755	0.03755
0.75	0.05652	0.05637	0.05632	0.05632	0.05630	0.05629	0.05629	0.05629
1	0.07530	0.07512	0.07506	0.07506	0.07503	0.07502	0.07502	0.07503
1.25	0.09408	0.09387	0.09381	0.09380	0.09377	0.09376	0.09376	0.09376
1.5	0.11286	0.11262	0.11255	0.11254	0.11251	0.11250	0.11249	0.11250
1.75	0.13165	0.13137	0.13129	0.13128	0.13125	0.13123	0.13123	0.13124
2	0.15043	0.15013	0.15004	0.15002	0.14998	0.14997	0.14996	0.14997
5	0.37581	0.37515	0.37495	0.37492	0.37483	0.37480	0.37479	0.37481
Var(u)	0.00017	0.00018	0.00021	0.00021	0.00027	0.00034	0.00052	0.00077
Var(e1)		0.07477						
Var(v1)		0.04218						

Exchange Rate or gold rule (assuming vel and exch shocks independent)

a \ b	0	0.25	0.46	0.5	0.75	1	1.5	2
0	0.00017	0.00749	0.02495	0.02945	0.06606	0.11730	0.26368	0.46861
0.25	0.02941	0.03673	0.05419	0.05869	0.09530	0.14653	0.29292	0.49785
0.5	0.05865	0.06597	0.08343	0.08793	0.12454	0.17577	0.32216	0.52709
0.75	0.08789	0.09521	0.11267	0.11717	0.15377	0.20501	0.35140	0.55633
1	0.11713	0.12445	0.14191	0.14641	0.18301	0.23425	0.38064	0.58557
1.25	0.14637	0.15369	0.17115	0.17565	0.21225	0.26349	0.40988	0.61481
1.5	0.17561	0.18293	0.20039	0.20489	0.24149	0.29273	0.43912	0.64404
1.75	0.20485	0.21217	0.22963	0.23413	0.27073	0.32197	0.46836	0.67328
2	0.23409	0.24141	0.25887	0.26337	0.29997	0.35121	0.49760	0.70252
5	0.58497	0.59228	0.60975	0.61425	0.65085	0.70209	0.84847	1.05340

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.33	0.5	0.75	1	1.5	2
0	0	0.00737	0.02486	0.02936	0.06597	0.11721	0.26360	0.46852
0.25	0.01045	0.01786	0.03535	0.03985	0.07647	0.12771	0.27410	0.47902
0.5	0.02091	0.02835	0.04585	0.05035	0.08697	0.13822	0.28460	0.48953
0.75	0.03137	0.03883	0.05635	0.06085	0.09747	0.14872	0.29511	0.50003
1	0.04183	0.04932	0.06684	0.07135	0.10798	0.15923	0.30561	0.51053
1.25	0.05228	0.05981	0.07734	0.08185	0.11848	0.16973	0.31612	0.52104
1.5	0.06274	0.07030	0.08784	0.09234	0.12898	0.18023	0.32662	0.53154
1.75	0.07320	0.08079	0.09833	0.10284	0.13948	0.19074	0.33713	0.54204
2	0.08366	0.09127	0.10883	0.11334	0.14998	0.20124	0.34763	0.55255
5	0.20915	0.21713	0.23479	0.23932	0.27601	0.32729	0.47368	0.67859

TABLE 4a-d: SHKSIMC2.WK1 rev. 18.4.1991

US LOSS SIMULATION Date: 31.Oct.1990 Rev.: 18.April.1991

Nominal GNP targeting rule Beta

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2
0	0.00009	0.00006	0.00004	0.00004	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002
0.125	0.00270	0.00266	0.00264	0.00263	0.00262	0.00262	0.00262	0.00261	0.00261	0.00261
0.25	0.00530	0.00525	0.00523	0.00522	0.00521	0.00521	0.00520	0.00520	0.00520	0.00520
0.375	0.00791	0.00785	0.00783	0.00781	0.00780	0.00779	0.00779	0.00779	0.00779	0.00779
0.5	0.01052	0.01045	0.01042	0.01040	0.01039	0.01038	0.01038	0.01038	0.01038	0.01038
0.625	0.01312	0.01305	0.01301	0.01299	0.01298	0.01297	0.01297	0.01297	0.01297	0.01296
0.75	0.01573	0.01564	0.01561	0.01558	0.01557	0.01556	0.01556	0.01556	0.01556	0.01555
0.875	0.01833	0.01824	0.01820	0.01818	0.01816	0.01815	0.01815	0.01815	0.01814	0.01814
1	0.02094	0.02084	0.02080	0.02077	0.02075	0.02074	0.02074	0.02074	0.02073	0.02073
1.25	0.02615	0.02603	0.02598	0.02595	0.02593	0.02592	0.02592	0.02592	0.02591	0.02591
1.5	0.03136	0.03123	0.03117	0.03113	0.03111	0.03110	0.03110	0.03109	0.03109	0.03108
1.75	0.03658	0.03642	0.03636	0.03632	0.03629	0.03628	0.03628	0.03627	0.03627	0.03626
2	0.04179	0.04162	0.04155	0.04150	0.04147	0.04146	0.04145	0.04145	0.04144	0.04144
2.25	0.04700	0.04681	0.04674	0.04668	0.04665	0.04664	0.04663	0.04663	0.04662	0.04661
2.5	0.05221	0.05201	0.05192	0.05187	0.05183	0.05182	0.05181	0.05181	0.05180	0.05179
2.75	0.05742	0.05720	0.05711	0.05705	0.05702	0.05699	0.05699	0.05698	0.05698	0.05697
3	0.06264	0.06240	0.06230	0.06223	0.06220	0.06217	0.06217	0.06216	0.06215	0.06214
3.5	0.07306	0.07279	0.07268	0.07260	0.07256	0.07253	0.07252	0.07252	0.07251	0.07250
4	0.08348	0.08318	0.08305	0.08297	0.08292	0.08289	0.08288	0.08287	0.08286	0.08285
4.5	0.09391	0.09357	0.09343	0.09333	0.09328	0.09325	0.09324	0.09323	0.09322	0.09320
5	0.10433	0.10396	0.10380	0.10370	0.10364	0.10360	0.10360	0.10359	0.10357	0.10356
5.5	0.11475	0.11435	0.11418	0.11407	0.11400	0.11396	0.11395	0.11394	0.11393	0.11391
6	0.12518	0.12474	0.12455	0.12443	0.12436	0.12432	0.12431	0.12430	0.12428	0.12426
Var(u)	0.00009	0.0001	0.00011	0.00012	0.00013	0.00015	0.00019	0.00020	0.00021	0.00024

Var(e1) = 0.02065 Cov(e1,v = 0.00024

Var(v1) = 0.00612

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2
0	0.00009	0.00174	0.00668	0.01490	0.02641	0.04122	0.05932	0.06747	0.08069	0.10536
0.125	0.00338	0.00502	0.00996	0.01819	0.02970	0.04450	0.06260	0.07076	0.08398	0.10864
0.25	0.00666	0.00831	0.01325	0.02147	0.03298	0.04779	0.06589	0.07404	0.08726	0.11193
0.375	0.00995	0.01159	0.01653	0.02476	0.03627	0.05107	0.06917	0.07733	0.09055	0.11521
0.5	0.01323	0.01488	0.01982	0.02804	0.03955	0.05436	0.07246	0.08061	0.09383	0.11850
0.625	0.01652	0.01816	0.02310	0.03132	0.04284	0.05764	0.07574	0.08390	0.09712	0.12178
0.75	0.01980	0.02145	0.02639	0.03461	0.04612	0.06093	0.07903	0.08718	0.10040	0.12507
0.875	0.02309	0.02473	0.02967	0.03789	0.04941	0.06421	0.08231	0.09047	0.10369	0.12835
1	0.02637	0.02802	0.03296	0.04118	0.05269	0.06750	0.08560	0.09375	0.10697	0.13164
1.25	0.03294	0.03459	0.03953	0.04775	0.05926	0.07407	0.09216	0.10032	0.11354	0.13821
1.5	0.03951	0.04116	0.04610	0.05432	0.06583	0.08063	0.09873	0.10689	0.12011	0.14478
1.75	0.04608	0.04773	0.05267	0.06089	0.07240	0.08720	0.10530	0.11346	0.12668	0.15135
2	0.05265	0.05430	0.05924	0.06746	0.07897	0.09377	0.11187	0.12003	0.13325	0.15792
2.25	0.05922	0.06087	0.06580	0.07403	0.08554	0.10034	0.11844	0.12660	0.13982	0.16449
2.5	0.06579	0.06744	0.07237	0.08060	0.09211	0.10691	0.12501	0.13317	0.14639	0.17106
2.75	0.07236	0.07401	0.07894	0.08717	0.09868	0.11348	0.13158	0.13974	0.15296	0.17763
3	0.07893	0.08058	0.08551	0.09374	0.10525	0.12005	0.13815	0.14631	0.15953	0.18419
3.5	0.09207	0.09371	0.09865	0.10688	0.11839	0.13319	0.15129	0.15945	0.17267	0.19733
4	0.10521	0.10685	0.11179	0.12002	0.13153	0.14633	0.16443	0.17259	0.18581	0.21047
4.5	0.11835	0.11999	0.12493	0.13316	0.14467	0.15947	0.17757	0.18573	0.19895	0.22361
5	0.13149	0.13313	0.13807	0.14630	0.15781	0.17261	0.19071	0.19887	0.21209	0.23675
5.5	0.14463	0.14627	0.15121	0.15944	0.17095	0.18575	0.20385	0.21201	0.22523	0.24989
6	0.15777	0.15941	0.16435	0.17259	0.18409	0.19889	0.21699	0.22515	0.23837	0.26303

TABLE 4a-d: SHKSIMC2.WK1 rev. 18.4.1991

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2
0	0	0.00167	0.00663	0.01486	0.02638	0.04118	0.05929	0.06744	0.08066	0.10533
0.125	0.00067	0.00236	0.00732	0.01555	0.02707	0.04188	0.05998	0.06814	0.08136	0.10603
0.25	0.00135	0.00305	0.00801	0.01625	0.02777	0.04258	0.06068	0.06883	0.08206	0.10672
0.375	0.00203	0.00374	0.00870	0.01694	0.02846	0.04327	0.06137	0.06953	0.08275	0.10742
0.5	0.00271	0.00442	0.00939	0.01763	0.02916	0.04397	0.06207	0.07023	0.08345	0.10812
0.625	0.00339	0.00511	0.01008	0.01833	0.02985	0.04466	0.06276	0.07092	0.08415	0.10881
0.75	0.00407	0.00580	0.01077	0.01902	0.03055	0.04535	0.06346	0.07162	0.08484	0.10951
0.875	0.00475	0.00649	0.01146	0.01971	0.03124	0.04605	0.06415	0.07231	0.08554	0.11021
1	0.00543	0.00717	0.01215	0.02041	0.03194	0.04675	0.06485	0.07301	0.08623	0.11090
1.25	0.00678	0.00855	0.01354	0.02179	0.03333	0.04814	0.06624	0.07440	0.08763	0.11230
1.5	0.00814	0.00992	0.01492	0.02318	0.03471	0.04953	0.06763	0.07579	0.08902	0.11369
1.75	0.00950	0.01130	0.01630	0.02457	0.03610	0.05092	0.06902	0.07718	0.09041	0.11508
2	0.01086	0.01267	0.01768	0.02595	0.03749	0.05231	0.07042	0.07858	0.09180	0.11647
2.25	0.01222	0.01405	0.01906	0.02734	0.03888	0.05370	0.07181	0.07997	0.09320	0.11787
2.5	0.01357	0.01542	0.02045	0.02873	0.04027	0.05509	0.07320	0.08136	0.09459	0.11926
2.75	0.01493	0.01680	0.02183	0.03011	0.04166	0.05649	0.07459	0.08275	0.09598	0.12065
3	0.01629	0.01817	0.02321	0.03150	0.04305	0.05788	0.07598	0.08414	0.09737	0.12205
3.5	0.01901	0.02092	0.02597	0.03427	0.04583	0.06066	0.07876	0.08693	0.10016	0.12483
4	0.02172	0.02367	0.02874	0.03705	0.04861	0.06344	0.08155	0.08971	0.10294	0.12762
4.5	0.02444	0.02642	0.03150	0.03982	0.05139	0.06622	0.08433	0.09249	0.10573	0.13041
5	0.02715	0.02917	0.03427	0.04259	0.05417	0.06900	0.08711	0.09528	0.10851	0.13319
5.5	0.02987	0.03192	0.03703	0.04537	0.05694	0.07179	0.08989	0.09806	0.11130	0.13598
6	0.03258	0.03467	0.03979	0.04814	0.05972	0.07457	0.09268	0.10084	0.11408	0.13876

Note: The covariances are the empirical covariances for the 74.1-89.4 period
Note: SHKSIMC2 uses ARIMA supply shocks but mean stationary vel/exch rate shocks
Note: Correct LE1## variable used.
Note: Correct LE1##_RR variable now used 18.4.1991

TABLE 4a-d: SHKSIMC2.WK1 rev. 18.4.1991

GERMAN LOSS SIMULATION Date: 31.Oct.1990

Nominal GNP targeting rBeta

a \ b	0	0.25	0.33	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	4
0	0.00012	0.00008	0.00007	0.00006	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002
0.125	0.00157	0.00152	0.00151	0.00149	0.00148	0.00147	0.00146	0.00146	0.00146	0.00146	0.00146	0.00146	0.00145
0.25	0.00302	0.00296	0.00295	0.00293	0.00291	0.00290	0.00290	0.00290	0.00289	0.00289	0.00289	0.00289	0.00288
0.375	0.00447	0.00440	0.00439	0.00437	0.00435	0.00433	0.00433	0.00433	0.00432	0.00432	0.00432	0.00432	0.00431
0.5	0.00592	0.00585	0.00583	0.00580	0.00578	0.00577	0.00576	0.00576	0.00575	0.00575	0.00575	0.00575	0.00574
0.625	0.00738	0.00729	0.00727	0.00724	0.00722	0.00720	0.00719	0.00719	0.00718	0.00718	0.00718	0.00717	0.00717
0.75	0.00883	0.00873	0.00871	0.00868	0.00865	0.00863	0.00862	0.00862	0.00861	0.00861	0.00861	0.00860	0.00860
0.875	0.01028	0.01017	0.01015	0.01012	0.01008	0.01006	0.01005	0.01005	0.01004	0.01004	0.01004	0.01003	0.01003
1	0.01173	0.01161	0.01159	0.01155	0.01152	0.01150	0.01148	0.01148	0.01147	0.01147	0.01147	0.01146	0.01146
1.25	0.01464	0.01450	0.01447	0.01443	0.01439	0.01436	0.01435	0.01435	0.01433	0.01434	0.01433	0.01432	0.01432
1.5	0.01754	0.01738	0.01735	0.01730	0.01725	0.01723	0.01721	0.01721	0.01719	0.01720	0.01719	0.01718	0.01718
1.75	0.02045	0.02027	0.02023	0.02018	0.02012	0.02009	0.02007	0.02007	0.02005	0.02006	0.02005	0.02004	0.02004
2	0.02335	0.02315	0.02311	0.02305	0.02299	0.02296	0.02293	0.02294	0.02291	0.02292	0.02291	0.02290	0.02289
2.25	0.02625	0.02604	0.02599	0.02592	0.02586	0.02582	0.02580	0.02580	0.02577	0.02578	0.02577	0.02576	0.02575
2.5	0.02916	0.02892	0.02887	0.02880	0.02873	0.02869	0.02866	0.02866	0.02863	0.02864	0.02863	0.02862	0.02861
2.75	0.03206	0.03181	0.03175	0.03167	0.03160	0.03155	0.03152	0.03153	0.03149	0.03150	0.03149	0.03148	0.03147
3	0.03497	0.03469	0.03463	0.03455	0.03446	0.03442	0.03438	0.03439	0.03435	0.03436	0.03435	0.03434	0.03432
3.5	0.04078	0.04046	0.04039	0.04029	0.04020	0.04014	0.04011	0.04011	0.04007	0.04009	0.04007	0.04006	0.04005
4	0.04658	0.04623	0.04616	0.04604	0.04594	0.04587	0.04583	0.04584	0.04579	0.04581	0.04579	0.04578	0.04576
4.5	0.05239	0.05200	0.05192	0.05179	0.05168	0.05160	0.05156	0.05157	0.05151	0.05153	0.05151	0.05150	0.05148
5	0.05820	0.05777	0.05768	0.05754	0.05741	0.05733	0.05728	0.05729	0.05723	0.05725	0.05723	0.05722	0.05720
5.5	0.06401	0.06353	0.06344	0.06329	0.06315	0.06306	0.06301	0.06302	0.06295	0.06297	0.06295	0.06293	0.06292
6	0.06982	0.06930	0.06920	0.06904	0.06889	0.06879	0.06874	0.06874	0.06867	0.06870	0.06867	0.06865	0.06863
Var(u)	0.00012	0.00012	0.00012	0.00013	0.00015	0.00016	0.00019	0.00023	0.00024	0.00031	0.00039	0.00050	0.00074
Var(e1)		0.01137		Cov(e1,v1)		0.00675							
Var(v1)		0.00520											

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.33	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	4
0	0.00012	0.00031	0.00046	0.00090	0.00187	0.00323	0.00498	0.00713	0.00963	0.01257	0.01956	0.02809	0.04979
0.125	0.00050	0.00070	0.00084	0.00128	0.00225	0.00361	0.00536	0.00752	0.01002	0.01295	0.01994	0.02847	0.05018
0.25	0.00088	0.00108	0.00123	0.00166	0.00264	0.00400	0.00574	0.00790	0.01040	0.01334	0.02032	0.02886	0.05056
0.375	0.00127	0.00146	0.00161	0.00205	0.00302	0.00438	0.00613	0.00828	0.01078	0.01372	0.02071	0.02924	0.05094
0.5	0.00165	0.00185	0.00199	0.00243	0.00340	0.00476	0.00651	0.00867	0.01117	0.01410	0.02109	0.02962	0.05133
0.625	0.00203	0.00223	0.00237	0.00281	0.00379	0.00515	0.00689	0.00905	0.01155	0.01449	0.02147	0.03001	0.05171
0.75	0.00242	0.00261	0.00276	0.00320	0.00417	0.00553	0.00728	0.00943	0.01193	0.01487	0.02186	0.03039	0.05209
0.875	0.00280	0.00300	0.00314	0.00358	0.00455	0.00591	0.00766	0.00982	0.01232	0.01525	0.02224	0.03077	0.05248
1	0.00318	0.00338	0.00352	0.00396	0.00494	0.00630	0.00804	0.01020	0.01270	0.01564	0.02262	0.03116	0.05286
1.25	0.00395	0.00415	0.00429	0.00473	0.00570	0.00706	0.00881	0.01096	0.01347	0.01640	0.02339	0.03192	0.05363
1.5	0.00471	0.00491	0.00506	0.00550	0.00647	0.00783	0.00957	0.01173	0.01423	0.01717	0.02416	0.03269	0.05439
1.75	0.00548	0.00568	0.00582	0.00626	0.00724	0.00859	0.01034	0.01250	0.01500	0.01794	0.02492	0.03345	0.05516
2	0.00625	0.00645	0.00659	0.00703	0.00800	0.00936	0.01111	0.01326	0.01576	0.01870	0.02569	0.03422	0.05593
2.25	0.00701	0.00721	0.00736	0.00780	0.00877	0.01013	0.01187	0.01403	0.01653	0.01947	0.02645	0.03499	0.05669
2.5	0.00778	0.00798	0.00812	0.00856	0.00954	0.01089	0.01264	0.01480	0.01730	0.02024	0.02722	0.03575	0.05746
2.75	0.00855	0.00874	0.00889	0.00933	0.01030	0.01166	0.01341	0.01556	0.01806	0.02100	0.02799	0.03652	0.05822
3	0.00931	0.00951	0.00966	0.01010	0.01107	0.01243	0.01417	0.01633	0.01883	0.02177	0.02875	0.03729	0.05899
3.5	0.01085	0.01104	0.01119	0.01163	0.01260	0.01396	0.01571	0.01786	0.02036	0.02330	0.03029	0.03882	0.06052
4	0.01238	0.01258	0.01272	0.01316	0.01413	0.01549	0.01724	0.01940	0.02190	0.02483	0.03182	0.04035	0.06205
4.5	0.01391	0.01411	0.01426	0.01470	0.01567	0.01703	0.01877	0.02093	0.02343	0.02637	0.03335	0.04189	0.06359
5	0.01545	0.01564	0.01579	0.01623	0.01720	0.01856	0.02031	0.02246	0.02496	0.02790	0.03489	0.04342	0.06512
5.5	0.01698	0.01718	0.01732	0.01776	0.01873	0.02009	0.02184	0.02400	0.02650	0.02943	0.03642	0.04495	0.06666
6	0.01851	0.01871	0.01885	0.01929	0.02027	0.02162	0.02337	0.02553	0.02803	0.03097	0.03795	0.04648	0.06819

TABLE 4a-d: SHKSIMC2.WK1 rev. 18.4.1991

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.33	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	4
0	0	0.00023	0.00039	0.00084	0.00182	0.00319	0.00494	0.00709	0.00960	0.01254	0.01952	0.02806	0.04976
0.125	-0.0010	-0.0008	-0.0006	-0.0002	0.00077	0.00214	0.00389	0.00605	0.00855	0.01149	0.01848	0.02701	0.04872
0.25	-0.0021	-0.0018	-0.0017	-0.0012	-0.0002	0.00109	0.00284	0.00500	0.00751	0.01044	0.01743	0.02597	0.04767
0.375	-0.0032	-0.0029	-0.0027	-0.0023	-0.0013	0.00004	0.00179	0.00395	0.00646	0.00939	0.01638	0.02492	0.04663
0.5	-0.0042	-0.0039	-0.0038	-0.0033	-0.0023	-0.0010	0.00075	0.00290	0.00541	0.00835	0.01534	0.02387	0.04558
0.625	-0.0053	-0.0050	-0.0048	-0.0044	-0.0034	-0.0020	-0.0002	0.00185	0.00437	0.00730	0.01429	0.02283	0.04453
0.75	-0.0064	-0.0061	-0.0059	-0.0054	-0.0044	-0.0031	-0.0013	0.00080	0.00332	0.00625	0.01324	0.02178	0.04349
0.875	-0.0074	-0.0071	-0.0070	-0.0065	-0.0055	-0.0041	-0.0023	-0.0002	0.00227	0.00520	0.01220	0.02073	0.04244
1	-0.0085	-0.0082	-0.0080	-0.0075	-0.0065	-0.0052	-0.0034	-0.0012	0.00123	0.00416	0.01115	0.01969	0.04139
1.25	-0.0106	-0.0103	-0.0101	-0.0096	-0.0086	-0.0072	-0.0055	-0.0033	-0.0008	0.00206	0.00906	0.01759	0.03930
1.5	-0.0128	-0.0124	-0.0122	-0.0118	-0.0107	-0.0093	-0.0076	-0.0054	-0.0029	-0.0000	0.00696	0.01550	0.03721
1.75	-0.0149	-0.0145	-0.0144	-0.0139	-0.0128	-0.0114	-0.0097	-0.0075	-0.0050	-0.0021	0.00487	0.01341	0.03512
2	-0.0171	-0.0167	-0.0165	-0.0160	-0.0149	-0.0135	-0.0118	-0.0096	-0.0071	-0.0042	0.00277	0.01131	0.03303
2.25	-0.0192	-0.0188	-0.0186	-0.0181	-0.0170	-0.0156	-0.0139	-0.0117	-0.0092	-0.0063	0.00068	0.00922	0.03093
2.5	-0.0213	-0.0209	-0.0207	-0.0202	-0.0191	-0.0177	-0.0160	-0.0138	-0.0113	-0.0084	-0.0014	0.00713	0.02884
2.75	-0.0235	-0.0230	-0.0228	-0.0223	-0.0212	-0.0198	-0.0181	-0.0159	-0.0134	-0.0105	-0.0035	0.00504	0.02675
3	-0.0256	-0.0251	-0.0249	-0.0244	-0.0233	-0.0219	-0.0202	-0.0180	-0.0155	-0.0125	-0.0055	0.00294	0.02465
3.5	-0.0299	-0.0294	-0.0292	-0.0286	-0.0276	-0.0261	-0.0244	-0.0222	-0.0197	-0.0167	-0.0097	-0.0012	0.02047
4	-0.0342	-0.0336	-0.0334	-0.0328	-0.0318	-0.0303	-0.0285	-0.0264	-0.0238	-0.0209	-0.0139	-0.0054	0.01629
4.5	-0.0384	-0.0378	-0.0376	-0.0370	-0.0360	-0.0345	-0.0327	-0.0306	-0.0280	-0.0251	-0.0181	-0.0096	0.01210
5	-0.0427	-0.0421	-0.0418	-0.0413	-0.0402	-0.0387	-0.0369	-0.0348	-0.0322	-0.0293	-0.0223	-0.0137	0.00792
5.5	-0.0470	-0.0463	-0.0461	-0.0455	-0.0444	-0.0429	-0.0411	-0.0390	-0.0364	-0.0335	-0.0265	-0.0179	0.00374
6	-0.0513	-0.0505	-0.0503	-0.0497	-0.0486	-0.0471	-0.0453	-0.0432	-0.0406	-0.0377	-0.0307	-0.0221	-0.0004

TABLE 4a-d: SHKSIMC2.WK1 rev. 18.4.1991

JAPAN LOSS SIMULATION Date: 31.Oct.1990

Nominal GNP targeting rule Beta

a \ b	0	0.25	0.5	0.69	0.75	1	1.25	1.5	1.75	2
0	0.00007	0.00005	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
0.125	0.00234	0.00230	0.00229	0.00228	0.00228	0.00228	0.00228	0.00228	0.00228	0.00228
0.25	0.00460	0.00456	0.00454	0.00453	0.00453	0.00453	0.00453	0.00453	0.00453	0.00453
0.375	0.00686	0.00681	0.00679	0.00678	0.00678	0.00678	0.00678	0.00678	0.00678	0.00678
0.5	0.00912	0.00907	0.00905	0.00903	0.00904	0.00903	0.00903	0.00903	0.00904	0.00904
0.625	0.01139	0.01133	0.01130	0.01129	0.01129	0.01128	0.01128	0.01128	0.01129	0.01129
0.75	0.01365	0.01358	0.01355	0.01354	0.01354	0.01354	0.01353	0.01353	0.01354	0.01354
0.875	0.01591	0.01584	0.01580	0.01579	0.01579	0.01579	0.01578	0.01578	0.01579	0.01579
1	0.01817	0.01809	0.01806	0.01804	0.01804	0.01804	0.01803	0.01803	0.01804	0.01804
1.25	0.02270	0.02261	0.02256	0.02254	0.02254	0.02254	0.02253	0.02253	0.02254	0.02254
1.5	0.02722	0.02712	0.02707	0.02705	0.02705	0.02704	0.02704	0.02703	0.02705	0.02705
1.75	0.03175	0.03163	0.03157	0.03155	0.03155	0.03154	0.03154	0.03153	0.03155	0.03155
2	0.03627	0.03614	0.03608	0.03605	0.03605	0.03605	0.03604	0.03603	0.03605	0.03605
2.25	0.04080	0.04065	0.04058	0.04055	0.04056	0.04055	0.04054	0.04053	0.04055	0.04056
2.5	0.04532	0.04516	0.04509	0.04506	0.04506	0.04505	0.04504	0.04503	0.04506	0.04506
2.75	0.04985	0.04967	0.04959	0.04956	0.04956	0.04955	0.04954	0.04954	0.04956	0.04956
3	0.05437	0.05419	0.05410	0.05406	0.05406	0.05406	0.05404	0.05404	0.05406	0.05406
3.5	0.06342	0.06321	0.06311	0.06307	0.06307	0.06306	0.06305	0.06304	0.06307	0.06307
4	0.07247	0.07223	0.07212	0.07207	0.07208	0.07206	0.07205	0.07204	0.07207	0.07208
4.5	0.08152	0.08126	0.08113	0.08108	0.08108	0.08107	0.08105	0.08104	0.08108	0.08108
5	0.09057	0.09028	0.09014	0.09008	0.09009	0.09007	0.09006	0.09004	0.09009	0.09009
5.5	0.09962	0.09930	0.09915	0.09909	0.09909	0.09908	0.09906	0.09905	0.09909	0.09909
6	0.10867	0.10833	0.10816	0.10809	0.10810	0.10808	0.10806	0.10805	0.10810	0.10810
Var(u)	0.00007	0.00008	0.00008	0.00009	0.00010	0.00013	0.00016	0.00019	0.00026	0.00031
Var(e1)		0.01794		Cov(e1,v1)		0.00052				
Var(v1)		0.00322								

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.5	0.69	0.75	1	1.25	1.5	1.75	2
0	0.00007	0.00133	0.00511	0.00967	0.01142	0.02024	0.03159	0.04545	0.06186	0.08077
0.125	0.00259	0.00385	0.00763	0.01218	0.01393	0.02276	0.03410	0.04796	0.06437	0.08328
0.25	0.00510	0.00636	0.01014	0.01470	0.01645	0.02527	0.03661	0.05048	0.06689	0.08580
0.375	0.00762	0.00888	0.01266	0.01721	0.01896	0.02779	0.03913	0.05299	0.06940	0.08831
0.5	0.01013	0.01139	0.01517	0.01973	0.02147	0.03030	0.04164	0.05550	0.07192	0.09083
0.625	0.01265	0.01391	0.01769	0.02224	0.02399	0.03282	0.04416	0.05802	0.07443	0.09334
0.75	0.01516	0.01642	0.02020	0.02476	0.02650	0.03533	0.04667	0.06053	0.07695	0.09586
0.875	0.01767	0.01893	0.02271	0.02727	0.02902	0.03785	0.04919	0.06305	0.07946	0.09837
1	0.02019	0.02145	0.02523	0.02979	0.03153	0.04036	0.05170	0.06556	0.08197	0.10089
1.25	0.02522	0.02648	0.03026	0.03481	0.03656	0.04539	0.05673	0.07059	0.08700	0.10591
1.5	0.03025	0.03151	0.03529	0.03984	0.04159	0.05042	0.06176	0.07562	0.09203	0.11094
1.75	0.03528	0.03654	0.04031	0.04487	0.04662	0.05545	0.06679	0.08065	0.09706	0.11597
2	0.04030	0.04156	0.04534	0.04990	0.05165	0.06047	0.07182	0.08568	0.10209	0.12100
2.25	0.04533	0.04659	0.05037	0.05493	0.05668	0.06550	0.07685	0.09071	0.10712	0.12603
2.5	0.05036	0.05162	0.05540	0.05996	0.06170	0.07053	0.08187	0.09573	0.11215	0.13106
2.75	0.05539	0.05665	0.06043	0.06499	0.06673	0.07556	0.08690	0.10076	0.11718	0.13609
3	0.06042	0.06168	0.06546	0.07002	0.07176	0.08059	0.09193	0.10579	0.12221	0.14112
3.5	0.07048	0.07174	0.07552	0.08007	0.08182	0.09065	0.10199	0.11585	0.13226	0.15117
4	0.08054	0.08179	0.08557	0.09013	0.09188	0.10071	0.11205	0.12591	0.14232	0.16123
4.5	0.09059	0.09185	0.09563	0.10019	0.10194	0.11076	0.12211	0.13597	0.15238	0.17129
5	0.10065	0.10191	0.10569	0.11025	0.11199	0.12082	0.13216	0.14602	0.16244	0.18135
5.5	0.11071	0.11197	0.11575	0.12030	0.12205	0.13088	0.14222	0.15608	0.17249	0.19140
6	0.12077	0.12203	0.12580	0.13036	0.13211	0.14094	0.15228	0.16614	0.18255	0.20146

TABLE 4a-d: SHKSIMC2.WK1 rev. 18.4.1991

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.5	0.69	0.75	1	1.25	1.5	1.75	2
0	0	0.00128	0.00507	0.00964	0.01138	0.02021	0.03155	0.04542	0.06182	0.08073
0.125	0.00025	0.00154	0.00534	0.00990	0.01164	0.02047	0.03182	0.04568	0.06209	0.08100
0.25	0.00050	0.00180	0.00560	0.01016	0.01191	0.02074	0.03208	0.04594	0.06235	0.08126
0.375	0.00075	0.00206	0.00586	0.01042	0.01217	0.02100	0.03235	0.04621	0.06261	0.08152
0.5	0.00100	0.00232	0.00612	0.01069	0.01243	0.02126	0.03261	0.04647	0.06288	0.08179
0.625	0.00125	0.00257	0.00638	0.01095	0.01270	0.02153	0.03287	0.04674	0.06314	0.08205
0.75	0.00151	0.00283	0.00664	0.01121	0.01296	0.02179	0.03314	0.04700	0.06340	0.08231
0.875	0.00176	0.00309	0.00691	0.01148	0.01322	0.02205	0.03340	0.04726	0.06367	0.08258
1	0.00201	0.00335	0.00717	0.01174	0.01349	0.02232	0.03366	0.04753	0.06393	0.08284
1.25	0.00251	0.00387	0.00769	0.01227	0.01401	0.02284	0.03419	0.04806	0.06445	0.08336
1.5	0.00302	0.00438	0.00821	0.01279	0.01454	0.02337	0.03472	0.04858	0.06498	0.08389
1.75	0.00352	0.00490	0.00874	0.01332	0.01506	0.02390	0.03525	0.04911	0.06551	0.08442
2	0.00403	0.00542	0.00926	0.01384	0.01559	0.02442	0.03577	0.04964	0.06603	0.08494
2.25	0.00453	0.00594	0.00978	0.01437	0.01611	0.02495	0.03630	0.05017	0.06656	0.08547
2.5	0.00503	0.00645	0.01031	0.01490	0.01664	0.02548	0.03683	0.05070	0.06709	0.08599
2.75	0.00554	0.00697	0.01083	0.01542	0.01717	0.02600	0.03736	0.05122	0.06761	0.08652
3	0.00604	0.00749	0.01136	0.01595	0.01769	0.02653	0.03788	0.05175	0.06814	0.08705
3.5	0.00705	0.00852	0.01240	0.01700	0.01874	0.02758	0.03894	0.05281	0.06919	0.08810
4	0.00806	0.00956	0.01345	0.01805	0.01980	0.02864	0.03999	0.05386	0.07024	0.08915
4.5	0.00906	0.01059	0.01450	0.01911	0.02085	0.02969	0.04105	0.05492	0.07129	0.09020
5	0.01007	0.01163	0.01554	0.02016	0.02190	0.03074	0.04210	0.05597	0.07235	0.09125
5.5	0.01108	0.01266	0.01659	0.02121	0.02295	0.03180	0.04316	0.05703	0.07340	0.09230
6	0.01209	0.01369	0.01764	0.02226	0.02400	0.03285	0.04421	0.05809	0.07445	0.09336

TABLE 4a-d: SHKSIMC2.WK1 rev. 18.4.1991

UK LOSS SIMULATION Date: 31.Oct.1990

Nominal GNP targeting rBeta

a \ b	0	0.25	0.46	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3
0	0.00017	0.00011	0.00009	0.00009	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00009
0.125	0.00956	0.00949	0.00947	0.00946	0.00945	0.00945	0.00945	0.00945	0.00945	0.00945	0.00945	0.00945
0.25	0.01895	0.01886	0.01884	0.01883	0.01882	0.01882	0.01881	0.01882	0.01882	0.01882	0.01882	0.01882
0.375	0.02835	0.02824	0.02821	0.02820	0.02819	0.02818	0.02818	0.02818	0.02818	0.02819	0.02819	0.02819
0.5	0.03774	0.03762	0.03758	0.03758	0.03756	0.03755	0.03755	0.03755	0.03755	0.03755	0.03756	0.03756
0.625	0.04713	0.04699	0.04695	0.04695	0.04693	0.04692	0.04692	0.04692	0.04692	0.04692	0.04693	0.04693
0.75	0.05652	0.05637	0.05632	0.05632	0.05630	0.05629	0.05629	0.05629	0.05629	0.05629	0.05630	0.05630
0.875	0.06591	0.06574	0.06569	0.06569	0.06566	0.06566	0.06565	0.06565	0.06566	0.06566	0.06566	0.06567
1	0.07530	0.07512	0.07506	0.07506	0.07503	0.07502	0.07502	0.07502	0.07502	0.07503	0.07503	0.07504
1.25	0.09408	0.09387	0.09381	0.09380	0.09377	0.09376	0.09376	0.09376	0.09376	0.09376	0.09377	0.09378
1.5	0.11286	0.11262	0.11255	0.11254	0.11251	0.11250	0.11249	0.11249	0.11250	0.11250	0.11251	0.11252
1.75	0.13165	0.13137	0.13129	0.13128	0.13125	0.13123	0.13123	0.13123	0.13123	0.13124	0.13125	0.13125
2	0.15043	0.15013	0.15004	0.15002	0.14998	0.14997	0.14996	0.14996	0.14997	0.14997	0.14998	0.14999
2.25	0.16921	0.16888	0.16878	0.16877	0.16872	0.16870	0.16870	0.16870	0.16870	0.16871	0.16872	0.16873
2.5	0.18799	0.18763	0.18752	0.18751	0.18746	0.18744	0.18743	0.18743	0.18744	0.18744	0.18746	0.18747
2.75	0.20677	0.20638	0.20626	0.20625	0.20620	0.20617	0.20617	0.20617	0.20617	0.20618	0.20619	0.20621
3	0.22556	0.22513	0.22501	0.22499	0.22493	0.22491	0.22490	0.22491	0.22491	0.22492	0.22493	0.22495
3.5	0.26312	0.26264	0.26249	0.26247	0.26241	0.26238	0.26237	0.26238	0.26238	0.26239	0.26241	0.26242
4	0.30068	0.30014	0.29998	0.29996	0.29988	0.29985	0.29985	0.29985	0.29985	0.29986	0.29988	0.29990
4.5	0.33825	0.33764	0.33746	0.33744	0.33736	0.33733	0.33732	0.33732	0.33733	0.33734	0.33736	0.33738
5	0.37581	0.37515	0.37495	0.37492	0.37483	0.37480	0.37479	0.37479	0.37480	0.37481	0.37483	0.37485
5.5	0.41338	0.41265	0.41243	0.41241	0.41231	0.41227	0.41226	0.41226	0.41227	0.41228	0.41231	0.41233
6	0.45094	0.45015	0.44992	0.44989	0.44978	0.44974	0.44973	0.44973	0.44974	0.44975	0.44978	0.44981
Var(u)	0.00017	0.00018	0.00021	0.00021	0.00027	0.00034	0.00042	0.00052	0.00064	0.00077	0.00108	0.00144
Var(e1)		0.07477		Cov(e1,v1)		0.04250						
Var(v1)		0.04218										

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.46	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3
0	0.00017	0.00217	0.00697	0.00820	0.01824	0.03228	0.05034	0.07240	0.09847	0.12855	0.20074	0.28895
0.125	0.00417	0.00617	0.01096	0.01219	0.02223	0.03628	0.05433	0.07640	0.10247	0.13255	0.20473	0.29295
0.25	0.00815	0.01016	0.01495	0.01619	0.02622	0.04027	0.05832	0.08039	0.10646	0.13654	0.20873	0.29694
0.375	0.01215	0.01415	0.01895	0.02018	0.03022	0.04426	0.06232	0.08438	0.11045	0.14053	0.21272	0.30093
0.5	0.01615	0.01815	0.02294	0.02417	0.03421	0.04825	0.06631	0.08837	0.11445	0.14453	0.21671	0.30493
0.625	0.02014	0.02214	0.02693	0.02817	0.03820	0.05225	0.07030	0.09237	0.11844	0.14852	0.22071	0.30892
0.75	0.02413	0.02613	0.03093	0.03216	0.04220	0.05624	0.07430	0.09636	0.12243	0.15251	0.22470	0.31291
0.875	0.02813	0.03013	0.03492	0.03615	0.04619	0.06023	0.07829	0.10035	0.12643	0.15651	0.22869	0.31690
1	0.03212	0.03412	0.03891	0.04015	0.05018	0.06423	0.08228	0.10435	0.13042	0.16050	0.23268	0.32090
1.25	0.04010	0.04211	0.04690	0.04813	0.05817	0.07221	0.09027	0.11233	0.13841	0.16849	0.24067	0.32889
1.5	0.04809	0.05009	0.05488	0.05612	0.06615	0.08020	0.09826	0.12032	0.14639	0.17647	0.24866	0.33687
1.75	0.05608	0.05808	0.06287	0.06410	0.07414	0.08819	0.10624	0.12831	0.15438	0.18446	0.25664	0.34486
2	0.06406	0.06607	0.07086	0.07209	0.08213	0.09617	0.11423	0.13629	0.16237	0.19245	0.26463	0.35284
2.25	0.07205	0.07405	0.07884	0.08008	0.09011	0.10416	0.12222	0.14428	0.17035	0.20043	0.27262	0.36083
2.5	0.08004	0.08204	0.08683	0.08806	0.09810	0.11215	0.13020	0.15227	0.17834	0.20842	0.28060	0.36882
2.75	0.08802	0.09002	0.09482	0.09605	0.10609	0.12013	0.13819	0.16025	0.18632	0.21641	0.28859	0.37680
3	0.09601	0.09801	0.10280	0.10404	0.11407	0.12812	0.14617	0.16824	0.19431	0.22439	0.29658	0.38479
3.5	0.11198	0.11398	0.11878	0.12001	0.13005	0.14409	0.16215	0.18421	0.21028	0.24036	0.31255	0.40076
4	0.12795	0.12996	0.13475	0.13598	0.14602	0.16006	0.17812	0.20018	0.22626	0.25634	0.32852	0.41673
4.5	0.14393	0.14593	0.15072	0.15195	0.16199	0.17604	0.19409	0.21616	0.24223	0.27231	0.34449	0.43271
5	0.15990	0.16190	0.16669	0.16793	0.17796	0.19201	0.21007	0.23213	0.25820	0.28828	0.36047	0.44868
5.5	0.17587	0.17787	0.18267	0.18390	0.19394	0.20798	0.22604	0.24810	0.27417	0.30426	0.37644	0.46465
6	0.19185	0.19385	0.19864	0.19987	0.20991	0.22396	0.24201	0.26408	0.29015	0.32023	0.39241	0.48063

TABLE 4a-d: SHKSIMC2.WK1 rev. 18.4.1991

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.46	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3
0	0	0.00206	0.00687	0.00810	0.01815	0.03220	0.05025	0.07232	0.09839	0.12847	0.20065	0.28886
0.125	-0.0053	-0.0033	0.00149	0.00273	0.01277	0.02682	0.04488	0.06694	0.09301	0.12309	0.19528	0.28349
0.25	-0.0107	-0.0087	-0.0039	-0.0026	0.00740	0.02145	0.03950	0.06157	0.08764	0.11772	0.18990	0.27811
0.375	-0.0161	-0.0140	-0.0092	-0.0080	0.00202	0.01607	0.03413	0.05619	0.08226	0.11234	0.18452	0.27273
0.5	-0.0215	-0.0194	-0.0146	-0.0134	-0.0033	0.01070	0.02876	0.05082	0.07689	0.10697	0.17915	0.26736
0.625	-0.0269	-0.0248	-0.0200	-0.0187	-0.0087	0.00532	0.02338	0.04544	0.07152	0.10159	0.17377	0.26198
0.75	-0.0323	-0.0302	-0.0253	-0.0241	-0.0141	-0.0000	0.01801	0.04007	0.06614	0.09622	0.16840	0.25661
0.875	-0.0377	-0.0356	-0.0307	-0.0295	-0.0194	-0.0054	0.01263	0.03470	0.06077	0.09084	0.16302	0.25123
1	-0.0431	-0.0409	-0.0361	-0.0349	-0.0248	-0.0107	0.00726	0.02932	0.05539	0.08547	0.15765	0.24585
1.25	-0.0539	-0.0517	-0.0469	-0.0456	-0.0356	-0.0215	-0.0034	0.01857	0.04464	0.07472	0.14690	0.23510
1.5	-0.0647	-0.0625	-0.0576	-0.0564	-0.0463	-0.0322	-0.0142	0.00782	0.03389	0.06397	0.13614	0.22435
1.75	-0.0755	-0.0732	-0.0684	-0.0671	-0.0571	-0.0430	-0.0249	-0.0029	0.02314	0.05322	0.12539	0.21360
2	-0.0863	-0.0840	-0.0791	-0.0779	-0.0678	-0.0537	-0.0357	-0.0136	0.01239	0.04247	0.11464	0.20285
2.25	-0.0971	-0.0948	-0.0899	-0.0886	-0.0785	-0.0645	-0.0464	-0.0244	0.00164	0.03172	0.10389	0.19209
2.5	-0.1079	-0.1055	-0.1006	-0.0994	-0.0893	-0.0752	-0.0572	-0.0351	-0.0091	0.02097	0.09314	0.18134
2.75	-0.1187	-0.1163	-0.1114	-0.1101	-0.1001	-0.0860	-0.0679	-0.0459	-0.0198	0.01022	0.08239	0.17059
3	-0.1295	-0.1271	-0.1222	-0.1209	-0.1108	-0.0967	-0.0787	-0.0566	-0.0305	-0.0005	0.07164	0.15984
3.5	-0.1511	-0.1486	-0.1437	-0.1424	-0.1323	-0.1182	-0.1002	-0.0781	-0.0520	-0.0220	0.05014	0.13833
4	-0.1727	-0.1701	-0.1652	-0.1639	-0.1538	-0.1397	-0.1217	-0.0996	-0.0735	-0.0435	0.02863	0.11683
4.5	-0.1943	-0.1917	-0.1867	-0.1854	-0.1753	-0.1612	-0.1432	-0.1211	-0.0950	-0.0650	0.00713	0.09533
5	-0.2159	-0.2132	-0.2082	-0.2069	-0.1968	-0.1827	-0.1647	-0.1426	-0.1165	-0.0865	-0.0143	0.07382
5.5	-0.2375	-0.2347	-0.2297	-0.2285	-0.2183	-0.2042	-0.1862	-0.1641	-0.1380	-0.1080	-0.0358	0.05232
6	-0.2590	-0.2563	-0.2512	-0.2500	-0.2398	-0.2257	-0.2077	-0.1856	-0.1595	-0.1295	-0.0573	0.03081

TABLE 5a-d: SHKSIMCO.WK1 rev.18.4.1991

US LOSS SIMULATION Date: 31.Oct.1990 Rev.: 18.April.1991

Nominal GNP targeting rule

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2
0	0.00066	0.00041	0.00028	0.00020	0.00015	0.00001	0.00009	0.00009	0.00008	0.00006
0.125	0.00340	0.00310	0.00293	0.00283	0.00277	0.00259	0.00270	0.00269	0.00268	0.00266
0.25	0.00615	0.00578	0.00558	0.00547	0.00539	0.00518	0.00531	0.00529	0.00528	0.00526
0.375	0.00890	0.00847	0.00823	0.00810	0.00801	0.00776	0.00791	0.00790	0.00788	0.00786
0.5	0.01164	0.01115	0.01089	0.01073	0.01063	0.01035	0.01052	0.01050	0.01048	0.01046
0.625	0.01439	0.01384	0.01354	0.01336	0.01325	0.01293	0.01312	0.01311	0.01308	0.01306
0.75	0.01714	0.01652	0.01619	0.01600	0.01587	0.01551	0.01573	0.01571	0.01569	0.01565
0.875	0.01988	0.01921	0.01884	0.01863	0.01849	0.01810	0.01834	0.01831	0.01829	0.01825
1	0.02263	0.02189	0.02150	0.02126	0.02111	0.02068	0.02094	0.02092	0.02089	0.02085
1.25	0.02813	0.02726	0.02680	0.02653	0.02635	0.02585	0.02615	0.02613	0.02609	0.02605
1.5	0.03362	0.03263	0.03211	0.03179	0.03159	0.03102	0.03137	0.03134	0.03130	0.03125
1.75	0.03911	0.03800	0.03741	0.03706	0.03683	0.03619	0.03658	0.03654	0.03650	0.03644
2	0.04461	0.04337	0.04271	0.04232	0.04208	0.04136	0.04179	0.04175	0.04170	0.04164
2.25	0.05010	0.04874	0.04802	0.04759	0.04732	0.04653	0.04700	0.04696	0.04691	0.04684
2.5	0.05559	0.05411	0.05332	0.05286	0.05256	0.05170	0.05221	0.05217	0.05211	0.05203
2.75	0.06109	0.05948	0.05863	0.05812	0.05780	0.05687	0.05743	0.05738	0.05731	0.05723
3	0.06658	0.06486	0.06393	0.06339	0.06304	0.06204	0.06264	0.06259	0.06252	0.06243
3.5	0.07757	0.07560	0.07454	0.07392	0.07352	0.07237	0.07306	0.07300	0.07293	0.07282
4	0.08856	0.08634	0.08515	0.08445	0.08400	0.08271	0.08349	0.08342	0.08333	0.08322
4.5	0.09954	0.09708	0.09576	0.09498	0.09448	0.09305	0.09391	0.09384	0.09374	0.09361
5	0.11053	0.10782	0.10637	0.10551	0.10496	0.10339	0.10433	0.10425	0.10415	0.10401
5.5	0.12152	0.11856	0.11698	0.11604	0.11544	0.11373	0.11476	0.11467	0.11455	0.11440
6	0.13251	0.12930	0.12759	0.12657	0.12593	0.12407	0.12518	0.12509	0.12496	0.12479
Var(u)	0.00066	0.00064	0.00063	0.00062	0.00062	0.00006	0.00061	0.00061	0.00061	0.00061

Var(e1) = 0.02065 Cov(e1,v = 0.00024

Var(v1) = 0.00612

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2
0	0.00066	0.00229	0.00720	0.01540	0.02689	0.04112	0.05974	0.06788	0.08109	0.10573
0.125	0.00394	0.00557	0.01049	0.01869	0.03018	0.04440	0.06302	0.07117	0.08437	0.10901
0.25	0.00723	0.00886	0.01377	0.02197	0.03346	0.04769	0.06631	0.07445	0.08766	0.11230
0.375	0.01051	0.01214	0.01706	0.02526	0.03675	0.05097	0.06959	0.07774	0.09094	0.11558
0.5	0.01380	0.01543	0.02034	0.02854	0.04003	0.05426	0.07288	0.08102	0.09423	0.11886
0.625	0.01708	0.01871	0.02363	0.03183	0.04332	0.05754	0.07616	0.08431	0.09751	0.12215
0.75	0.02037	0.02199	0.02691	0.03511	0.04660	0.06083	0.07945	0.08759	0.10080	0.12543
0.875	0.02365	0.02528	0.03020	0.03840	0.04989	0.06411	0.08273	0.09088	0.10408	0.12872
1	0.02694	0.02856	0.03348	0.04168	0.05317	0.06740	0.08602	0.09416	0.10737	0.13200
1.25	0.03351	0.03513	0.04005	0.04825	0.05974	0.07397	0.09259	0.10073	0.11394	0.13857
1.5	0.04008	0.04170	0.04662	0.05482	0.06631	0.08054	0.09915	0.10730	0.12051	0.14514
1.75	0.04665	0.04827	0.05319	0.06139	0.07288	0.08711	0.10572	0.11387	0.12708	0.15171
2	0.05321	0.05484	0.05976	0.06796	0.07945	0.09368	0.11229	0.12044	0.13365	0.15828
2.25	0.05978	0.06141	0.06633	0.07453	0.08602	0.10025	0.11886	0.12701	0.14022	0.16485
2.5	0.06635	0.06798	0.07290	0.08110	0.09259	0.10682	0.12543	0.13358	0.14679	0.17142
2.75	0.07292	0.07455	0.07947	0.08767	0.09916	0.11339	0.13200	0.14015	0.15336	0.17799
3	0.07949	0.08112	0.08604	0.09424	0.10573	0.11996	0.13857	0.14672	0.15992	0.18456
3.5	0.09263	0.09426	0.09918	0.10738	0.11887	0.13309	0.15171	0.15986	0.17306	0.19770
4	0.10577	0.10740	0.11232	0.12052	0.13201	0.14623	0.16485	0.17300	0.18620	0.21084
4.5	0.11891	0.12054	0.12546	0.13366	0.14515	0.15937	0.17799	0.18614	0.19934	0.22398
5	0.13205	0.13368	0.13860	0.14680	0.15829	0.17251	0.19113	0.19928	0.21248	0.23712
5.5	0.14519	0.14682	0.15174	0.15994	0.17143	0.18565	0.20427	0.21242	0.22562	0.25026
6	0.15833	0.15996	0.16488	0.17308	0.18457	0.19879	0.21741	0.22556	0.23876	0.26340

TABLE 5a-d: SHKSIMCO.WK1 rev.18.4.1991

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2
0	0	0.00187	0.00692	0.01520	0.02674	0.04111	0.05964	0.06779	0.08101	0.10566
0.125	0.00053	0.00247	0.00755	0.01585	0.02740	0.04181	0.06032	0.06847	0.08169	0.10634
0.25	0.00107	0.00307	0.00818	0.01650	0.02807	0.04251	0.06100	0.06915	0.08237	0.10703
0.375	0.00161	0.00367	0.00882	0.01716	0.02873	0.04321	0.06167	0.06983	0.08306	0.10772
0.5	0.00215	0.00427	0.00945	0.01781	0.02940	0.04391	0.06235	0.07051	0.08374	0.10840
0.625	0.00269	0.00487	0.01008	0.01846	0.03006	0.04461	0.06303	0.07120	0.08442	0.10909
0.75	0.00322	0.00547	0.01071	0.01911	0.03073	0.04531	0.06371	0.07188	0.08511	0.10978
0.875	0.00376	0.00607	0.01135	0.01976	0.03139	0.04601	0.06439	0.07256	0.08579	0.11046
1	0.00430	0.00667	0.01198	0.02042	0.03206	0.04671	0.06507	0.07324	0.08647	0.11115
1.25	0.00538	0.00787	0.01324	0.02172	0.03339	0.04811	0.06643	0.07460	0.08784	0.11252
1.5	0.00645	0.00907	0.01451	0.02303	0.03471	0.04951	0.06778	0.07596	0.08920	0.11389
1.75	0.00753	0.01027	0.01578	0.02433	0.03604	0.05091	0.06914	0.07732	0.09057	0.11527
2	0.00860	0.01147	0.01704	0.02563	0.03737	0.05231	0.07050	0.07868	0.09194	0.11664
2.25	0.00968	0.01266	0.01831	0.02694	0.03870	0.05371	0.07186	0.08004	0.09330	0.11801
2.5	0.01076	0.01386	0.01957	0.02824	0.04003	0.05511	0.07322	0.08141	0.09467	0.11938
2.75	0.01183	0.01506	0.02084	0.02955	0.04136	0.05651	0.07457	0.08277	0.09604	0.12076
3	0.01291	0.01626	0.02210	0.03085	0.04269	0.05791	0.07593	0.08413	0.09740	0.12213
3.5	0.01506	0.01866	0.02463	0.03346	0.04535	0.06072	0.07865	0.08685	0.10013	0.12487
4	0.01721	0.02106	0.02716	0.03607	0.04801	0.06352	0.08136	0.08957	0.10287	0.12762
4.5	0.01936	0.02346	0.02969	0.03868	0.05066	0.06632	0.08408	0.09230	0.10560	0.13037
5	0.02152	0.02586	0.03222	0.04129	0.05332	0.06912	0.08679	0.09502	0.10833	0.13311
5.5	0.02367	0.02826	0.03475	0.04389	0.05598	0.07192	0.08951	0.09774	0.11106	0.13586
6	0.02582	0.03066	0.03728	0.04650	0.05864	0.07472	0.09222	0.10047	0.11380	0.13860

Note: The covariances are the empirical covariances for the 74.1-89.4 period
Note: SHKSIMCO uses output-gap defined supply shocks and mean
stationary vel/exch rate shocks.
Note: Correct LEI## variables now used.
Note: Recorrected LE##_RR variable now used.

TABLE 5a-d: SHKSIMCO.WK1 rev.18.4.1991

GERMAN LOSS SIMULATION Date: 31.Oct.1990

Nominal GNP targeting rBeta

a \ b	0	0.25	0.33	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	3.5	4
0	0.00043	0.00027	0.00024	0.00018	0.00014	0.00010	0.00008	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00003
0.125	0.00196	0.00176	0.00172	0.00165	0.00159	0.00155	0.00153	0.00151	0.00150	0.00149	0.00147	0.00147	0.00146	0.00146
0.25	0.00349	0.00325	0.00320	0.00312	0.00305	0.00300	0.00297	0.00295	0.00293	0.00292	0.00291	0.00290	0.00289	0.00289
0.375	0.00502	0.00474	0.00468	0.00459	0.00451	0.00445	0.00441	0.00439	0.00437	0.00436	0.00434	0.00433	0.00432	0.00432
0.5	0.00655	0.00623	0.00617	0.00606	0.00596	0.00590	0.00586	0.00583	0.00581	0.00579	0.00577	0.00576	0.00575	0.00575
0.625	0.00808	0.00772	0.00765	0.00753	0.00742	0.00735	0.00730	0.00727	0.00725	0.00723	0.00721	0.00719	0.00718	0.00718
0.75	0.00961	0.00921	0.00913	0.00900	0.00888	0.00880	0.00875	0.00871	0.00868	0.00866	0.00864	0.00862	0.00861	0.00861
0.875	0.01115	0.01070	0.01061	0.01047	0.01033	0.01025	0.01019	0.01015	0.01012	0.01010	0.01007	0.01006	0.01005	0.01004
1	0.01268	0.01219	0.01210	0.01194	0.01179	0.01170	0.01163	0.01159	0.01156	0.01154	0.01151	0.01149	0.01148	0.01147
1.25	0.01574	0.01518	0.01506	0.01488	0.01470	0.01459	0.01452	0.01447	0.01443	0.01441	0.01437	0.01435	0.01434	0.01433
1.5	0.01880	0.01816	0.01803	0.01782	0.01762	0.01749	0.01741	0.01735	0.01731	0.01728	0.01724	0.01721	0.01720	0.01719
1.75	0.02186	0.02114	0.02099	0.02076	0.02053	0.02039	0.02030	0.02023	0.02019	0.02015	0.02011	0.02008	0.02006	0.02005
2	0.02492	0.02412	0.02395	0.02369	0.02345	0.02329	0.02318	0.02311	0.02306	0.02302	0.02297	0.02294	0.02292	0.02291
2.25	0.02798	0.02710	0.02692	0.02663	0.02636	0.02619	0.02607	0.02599	0.02594	0.02589	0.02584	0.02580	0.02578	0.02577
2.5	0.03104	0.03008	0.02988	0.02957	0.02927	0.02909	0.02896	0.02887	0.02881	0.02877	0.02870	0.02867	0.02865	0.02863
2.75	0.03411	0.03306	0.03285	0.03251	0.03219	0.03198	0.03185	0.03175	0.03169	0.03164	0.03157	0.03153	0.03151	0.03149
3	0.03717	0.03604	0.03581	0.03545	0.03510	0.03488	0.03474	0.03463	0.03456	0.03451	0.03444	0.03440	0.03437	0.03435
3.5	0.04329	0.04200	0.04174	0.04133	0.04093	0.04068	0.04051	0.04040	0.04031	0.04025	0.04017	0.04012	0.04009	0.04007
4	0.04941	0.04797	0.04767	0.04720	0.04676	0.04647	0.04629	0.04616	0.04606	0.04599	0.04590	0.04585	0.04581	0.04579
4.5	0.05554	0.05393	0.05360	0.05308	0.05258	0.05227	0.05206	0.05192	0.05181	0.05174	0.05164	0.05158	0.05154	0.05151
5	0.06166	0.05989	0.05953	0.05896	0.05841	0.05807	0.05784	0.05768	0.05756	0.05748	0.05737	0.05730	0.05726	0.05723
5.5	0.06778	0.06585	0.06546	0.06484	0.06424	0.06386	0.06361	0.06344	0.06332	0.06322	0.06310	0.06303	0.06298	0.06295
6	0.07390	0.07182	0.07139	0.07071	0.07007	0.06966	0.06939	0.06920	0.06907	0.06897	0.06884	0.06876	0.06871	0.06867
Var(u)	0.00043	0.00042	0.00042	0.00042	0.00042	0.00043	0.00044	0.00045	0.00047	0.00049	0.00055	0.00062	0.00071	0.00082
Var(e1)		0.01137		Cov(e1,v1)		0.00675								
Var(v1)		0.00520												

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.33	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	3.5	4
0	0.00043	0.00062	0.00076	0.00119	0.00215	0.00350	0.00523	0.00735	0.00986	0.01276	0.01971	0.02822	0.03827	0.04987
0.125	0.00081	0.00100	0.00114	0.00157	0.00253	0.00388	0.00561	0.00774	0.01024	0.01314	0.02010	0.02860	0.03865	0.05025
0.25	0.00120	0.00138	0.00152	0.00196	0.00292	0.00426	0.00600	0.00812	0.01063	0.01352	0.02048	0.02898	0.03904	0.05064
0.375	0.00158	0.00177	0.00191	0.00234	0.00330	0.00465	0.00638	0.00850	0.01101	0.01391	0.02086	0.02937	0.03942	0.05102
0.5	0.00196	0.00215	0.00229	0.00272	0.00368	0.00503	0.00676	0.00889	0.01139	0.01429	0.02125	0.02975	0.03980	0.05140
0.625	0.00235	0.00253	0.00267	0.00310	0.00406	0.00541	0.00715	0.00927	0.01178	0.01467	0.02163	0.03013	0.04018	0.05179
0.75	0.00273	0.00292	0.00306	0.00349	0.00445	0.00580	0.00753	0.00965	0.01216	0.01506	0.02201	0.03052	0.04057	0.05217
0.875	0.00311	0.00330	0.00344	0.00387	0.00483	0.00618	0.00791	0.01003	0.01254	0.01544	0.02240	0.03090	0.04095	0.05255
1	0.00350	0.00368	0.00382	0.00425	0.00521	0.00656	0.00830	0.01042	0.01293	0.01582	0.02278	0.03128	0.04133	0.05294
1.25	0.00426	0.00445	0.00459	0.00502	0.00598	0.00733	0.00906	0.01118	0.01369	0.01659	0.02354	0.03205	0.04210	0.05370
1.5	0.00503	0.00521	0.00536	0.00579	0.00675	0.00809	0.00983	0.01195	0.01446	0.01736	0.02431	0.03281	0.04287	0.05447
1.75	0.00580	0.00598	0.00612	0.00655	0.00751	0.00886	0.01060	0.01272	0.01523	0.01812	0.02508	0.03358	0.04363	0.05524
2	0.00656	0.00675	0.00689	0.00732	0.00828	0.00963	0.01136	0.01348	0.01599	0.01889	0.02584	0.03435	0.04440	0.05600
2.25	0.00733	0.00751	0.00766	0.00809	0.00905	0.01039	0.01213	0.01425	0.01676	0.01966	0.02661	0.03511	0.04517	0.05677
2.5	0.00810	0.00828	0.00842	0.00885	0.00981	0.01116	0.01290	0.01502	0.01753	0.02042	0.02738	0.03588	0.04593	0.05754
2.75	0.00886	0.00905	0.00919	0.00962	0.01058	0.01193	0.01366	0.01578	0.01829	0.02119	0.02814	0.03665	0.04670	0.05830
3	0.00963	0.00981	0.00995	0.01039	0.01135	0.01269	0.01443	0.01655	0.01906	0.02195	0.02891	0.03741	0.04747	0.05907
3.5	0.01116	0.01135	0.01149	0.01192	0.01288	0.01423	0.01596	0.01808	0.02059	0.02349	0.03044	0.03895	0.04900	0.06060
4	0.01269	0.01288	0.01302	0.01345	0.01441	0.01576	0.01749	0.01962	0.02213	0.02502	0.03198	0.04048	0.05053	0.06213
4.5	0.01423	0.01441	0.01455	0.01499	0.01595	0.01729	0.01903	0.02115	0.02366	0.02655	0.03351	0.04201	0.05207	0.06367
5	0.01576	0.01595	0.01609	0.01652	0.01748	0.01883	0.02056	0.02268	0.02519	0.02809	0.03504	0.04355	0.05360	0.06520
5.5	0.01729	0.01748	0.01762	0.01805	0.01901	0.02036	0.02209	0.02421	0.02672	0.02962	0.03657	0.04508	0.05513	0.06673
6	0.01883	0.01901	0.01915	0.01958	0.02054	0.02189	0.02363	0.02575	0.02826	0.03115	0.03811	0.04661	0.05666	0.06827

TABLE 5a-d: SHKSIMCO.WK1 rev.18.4.1991

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.33	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	3.5	4
0	0	0.00034	0.00051	0.00100	0.00201	0.00339	0.00514	0.00728	0.00980	0.01270	0.01967	0.02818	0.03823	0.04984
0.125	-0.0011	-0.0007	-0.0005	-0.0000	0.00093	0.00232	0.00408	0.00622	0.00874	0.01165	0.01862	0.02713	0.03719	0.04879
0.25	-0.0022	-0.0018	-0.0016	-0.0011	-0.0001	0.00126	0.00302	0.00516	0.00769	0.01060	0.01757	0.02608	0.03614	0.04774
0.375	-0.0034	-0.0029	-0.0027	-0.0022	-0.0012	0.00019	0.00196	0.00411	0.00664	0.00954	0.01652	0.02503	0.03509	0.04670
0.5	-0.0045	-0.0040	-0.0038	-0.0033	-0.0022	-0.0008	0.00090	0.00305	0.00558	0.00849	0.01547	0.02398	0.03404	0.04565
0.625	-0.0057	-0.0051	-0.0049	-0.0044	-0.0033	-0.0019	-0.0001	0.00199	0.00453	0.00744	0.01442	0.02293	0.03300	0.04460
0.75	-0.0068	-0.0062	-0.0060	-0.0055	-0.0044	-0.0030	-0.0012	0.00094	0.00347	0.00639	0.01337	0.02189	0.03195	0.04356
0.875	-0.0080	-0.0074	-0.0071	-0.0065	-0.0055	-0.0040	-0.0022	-0.0001	0.00242	0.00533	0.01232	0.02084	0.03090	0.04251
1	-0.0091	-0.0085	-0.0082	-0.0076	-0.0065	-0.0051	-0.0033	-0.0011	0.00136	0.00428	0.01127	0.01979	0.02985	0.04146
1.25	-0.0114	-0.0107	-0.0104	-0.0098	-0.0087	-0.0072	-0.0054	-0.0032	-0.0007	0.00218	0.00917	0.01769	0.02776	0.03937
1.5	-0.0137	-0.0129	-0.0126	-0.0120	-0.0108	-0.0093	-0.0075	-0.0054	-0.0028	0.00007	0.00707	0.01560	0.02566	0.03728
1.75	-0.0160	-0.0151	-0.0148	-0.0142	-0.0130	-0.0115	-0.0097	-0.0075	-0.0049	-0.0020	0.00497	0.01350	0.02357	0.03518
2	-0.0183	-0.0173	-0.0170	-0.0163	-0.0151	-0.0136	-0.0118	-0.0096	-0.0070	-0.0041	0.00287	0.01140	0.02147	0.03309
2.25	-0.0206	-0.0195	-0.0192	-0.0185	-0.0173	-0.0157	-0.0139	-0.0117	-0.0091	-0.0062	0.00077	0.00930	0.01938	0.03099
2.5	-0.0229	-0.0218	-0.0214	-0.0207	-0.0194	-0.0179	-0.0160	-0.0138	-0.0112	-0.0083	-0.0013	0.00721	0.01728	0.02890
2.75	-0.0252	-0.0240	-0.0236	-0.0228	-0.0216	-0.0200	-0.0181	-0.0159	-0.0133	-0.0104	-0.0034	0.00511	0.01519	0.02681
3	-0.0275	-0.0262	-0.0258	-0.0250	-0.0237	-0.0221	-0.0203	-0.0180	-0.0155	-0.0125	-0.0055	0.00301	0.01309	0.02471
3.5	-0.0321	-0.0306	-0.0302	-0.0294	-0.0280	-0.0264	-0.0245	-0.0223	-0.0197	-0.0167	-0.0097	-0.0011	0.00890	0.02053
4	-0.0367	-0.0350	-0.0346	-0.0337	-0.0323	-0.0307	-0.0287	-0.0265	-0.0239	-0.0209	-0.0139	-0.0053	0.00471	0.01634
4.5	-0.0413	-0.0395	-0.0390	-0.0380	-0.0366	-0.0349	-0.0330	-0.0307	-0.0281	-0.0251	-0.0181	-0.0095	0.00052	0.01215
5	-0.0458	-0.0439	-0.0434	-0.0424	-0.0409	-0.0392	-0.0372	-0.0349	-0.0323	-0.0293	-0.0223	-0.0137	-0.0036	0.00796
5.5	-0.0504	-0.0483	-0.0478	-0.0467	-0.0452	-0.0435	-0.0415	-0.0392	-0.0365	-0.0336	-0.0265	-0.0179	-0.0078	0.00378
6	-0.0550	-0.0528	-0.0522	-0.0511	-0.0495	-0.0477	-0.0457	-0.0434	-0.0408	-0.0378	-0.0307	-0.0221	-0.0120	-0.0004

TABLE 5a-d: SHKSIMCO.WK1 rev.18.4.1991

JAPAN LOSS SIMULATION Date: 31.Oct.1990

Nominal GNP targeting rule Beta

a \ b	0	0.25	0.5	0.69	0.75	1	1.25	1.5	1.75	2
0	0.00014	0.00008	0.00006	0.00005	0.00004	0.00004	0.00003	0.00003	0.00003	0.00002
0.125	0.00241	0.00235	0.00232	0.00230	0.00230	0.00229	0.00228	0.00228	0.00228	0.00227
0.25	0.00469	0.00462	0.00458	0.00456	0.00456	0.00454	0.00453	0.00453	0.00453	0.00452
0.375	0.00697	0.00688	0.00684	0.00682	0.00681	0.00680	0.00679	0.00678	0.00678	0.00678
0.5	0.00925	0.00915	0.00909	0.00907	0.00907	0.00905	0.00904	0.00903	0.00903	0.00903
0.625	0.01153	0.01141	0.01135	0.01133	0.01132	0.01130	0.01129	0.01128	0.01128	0.01128
0.75	0.01380	0.01368	0.01361	0.01358	0.01358	0.01356	0.01354	0.01353	0.01353	0.01353
0.875	0.01608	0.01594	0.01587	0.01584	0.01583	0.01581	0.01579	0.01579	0.01578	0.01578
1	0.01836	0.01821	0.01813	0.01809	0.01809	0.01806	0.01805	0.01804	0.01803	0.01803
1.25	0.02292	0.02274	0.02265	0.02261	0.02260	0.02257	0.02255	0.02254	0.02253	0.02253
1.5	0.02747	0.02727	0.02716	0.02712	0.02711	0.02707	0.02705	0.02704	0.02703	0.02703
1.75	0.03203	0.03180	0.03168	0.03163	0.03162	0.03158	0.03156	0.03154	0.03153	0.03153
2	0.03659	0.03633	0.03620	0.03614	0.03613	0.03609	0.03606	0.03604	0.03603	0.03603
2.25	0.04114	0.04086	0.04072	0.04065	0.04064	0.04059	0.04056	0.04055	0.04053	0.04053
2.5	0.04570	0.04539	0.04523	0.04517	0.04515	0.04510	0.04507	0.04505	0.04504	0.04503
2.75	0.05025	0.04992	0.04975	0.04968	0.04966	0.04961	0.04957	0.04955	0.04954	0.04953
3	0.05481	0.05445	0.05427	0.05419	0.05417	0.05411	0.05408	0.05405	0.05404	0.05403
3.5	0.06392	0.06351	0.06330	0.06321	0.06319	0.06312	0.06308	0.06306	0.06304	0.06303
4	0.07303	0.07257	0.07234	0.07224	0.07221	0.07214	0.07209	0.07206	0.07204	0.07203
4.5	0.08215	0.08163	0.08137	0.08126	0.08123	0.08115	0.08110	0.08106	0.08104	0.08103
5	0.09126	0.09069	0.09041	0.09028	0.09025	0.09016	0.09010	0.09007	0.09005	0.09003
5.5	0.10037	0.09975	0.09944	0.09931	0.09927	0.09917	0.09911	0.09907	0.09905	0.09903
6	0.10948	0.10881	0.10848	0.10833	0.10829	0.10819	0.10812	0.10808	0.10805	0.10803
Var(u)	0.00014	0.00014	0.00014	0.00014	0.00015	0.00016	0.00018	0.00020	0.00023	0.00026
Var(e1)		0.01794		Cov(e1,v1)		0.00052				
Var(v1)		0.00322								

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.5	0.69	0.75	1	1.25	1.5	1.75	2
0	0.00014	0.00139	0.00517	0.00972	0.01146	0.02028	0.03161	0.04546	0.06183	0.08072
0.125	0.00265	0.00391	0.00768	0.01224	0.01398	0.02279	0.03412	0.04798	0.06435	0.08324
0.25	0.00517	0.00642	0.01020	0.01475	0.01649	0.02530	0.03664	0.05049	0.06686	0.08575
0.375	0.00768	0.00894	0.01271	0.01727	0.01901	0.02782	0.03915	0.05300	0.06938	0.08827
0.5	0.01019	0.01145	0.01523	0.01978	0.02152	0.03033	0.04167	0.05552	0.07189	0.09078
0.625	0.01271	0.01396	0.01774	0.02229	0.02403	0.03285	0.04418	0.05803	0.07440	0.09329
0.75	0.01522	0.01648	0.02025	0.02481	0.02655	0.03536	0.04670	0.06055	0.07692	0.09581
0.875	0.01774	0.01899	0.02277	0.02732	0.02906	0.03788	0.04921	0.06306	0.07943	0.09832
1	0.02025	0.02151	0.02528	0.02984	0.03158	0.04039	0.05172	0.06558	0.08195	0.10084
1.25	0.02528	0.02654	0.03031	0.03487	0.03661	0.04542	0.05675	0.07060	0.08698	0.10587
1.5	0.03031	0.03157	0.03534	0.03989	0.04164	0.05045	0.06178	0.07563	0.09200	0.11090
1.75	0.03534	0.03659	0.04037	0.04492	0.04666	0.05548	0.06681	0.08066	0.09703	0.11592
2	0.04037	0.04162	0.04540	0.04995	0.05169	0.06051	0.07184	0.08569	0.10206	0.12095
2.25	0.04540	0.04665	0.05043	0.05498	0.05672	0.06554	0.07687	0.09072	0.10709	0.12598
2.5	0.05042	0.05168	0.05546	0.06001	0.06175	0.07056	0.08190	0.09575	0.11212	0.13101
2.75	0.05545	0.05671	0.06048	0.06504	0.06678	0.07559	0.08693	0.10078	0.11715	0.13604
3	0.06048	0.06174	0.06551	0.07007	0.07181	0.08062	0.09195	0.10581	0.12218	0.14107
3.5	0.07054	0.07180	0.07557	0.08013	0.08187	0.09068	0.10201	0.11586	0.13224	0.15113
4	0.08060	0.08185	0.08563	0.09018	0.09192	0.10074	0.11207	0.12592	0.14229	0.16118
4.5	0.09066	0.09191	0.09569	0.10024	0.10198	0.11079	0.12213	0.13598	0.15235	0.17124
5	0.10071	0.10197	0.10574	0.11030	0.11204	0.12085	0.13219	0.14604	0.16241	0.18130
5.5	0.11077	0.11203	0.11580	0.12036	0.12210	0.13091	0.14224	0.15609	0.17247	0.19136
6	0.12083	0.12208	0.12586	0.13041	0.13215	0.14097	0.15230	0.16615	0.18252	0.20141

TABLE 5a-d: SHKSIMCO.WK1 rev.18.4.1991

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.5	0.69	0.75	1	1.25	1.5	1.75	2
0	0	0.00130	0.00510	0.00967	0.01141	0.02023	0.03157	0.04543	0.06180	0.08069
0.125	0.00023	0.00155	0.00536	0.00993	0.01167	0.02050	0.03184	0.04569	0.06206	0.08096
0.25	0.00047	0.00180	0.00562	0.01019	0.01193	0.02076	0.03210	0.04595	0.06233	0.08122
0.375	0.00070	0.00205	0.00587	0.01044	0.01219	0.02102	0.03236	0.04622	0.06259	0.08149
0.5	0.00094	0.00230	0.00613	0.01070	0.01245	0.02128	0.03262	0.04648	0.06286	0.08175
0.625	0.00118	0.00255	0.00638	0.01096	0.01271	0.02154	0.03289	0.04674	0.06312	0.08201
0.75	0.00141	0.00280	0.00664	0.01122	0.01297	0.02180	0.03315	0.04701	0.06338	0.08228
0.875	0.00165	0.00305	0.00689	0.01148	0.01323	0.02206	0.03341	0.04727	0.06365	0.08254
1	0.00189	0.00330	0.00715	0.01174	0.01349	0.02232	0.03367	0.04753	0.06391	0.08281
1.25	0.00236	0.00379	0.00766	0.01225	0.01400	0.02285	0.03420	0.04806	0.06444	0.08334
1.5	0.00283	0.00429	0.00817	0.01277	0.01452	0.02337	0.03472	0.04859	0.06497	0.08386
1.75	0.00330	0.00479	0.00868	0.01329	0.01504	0.02389	0.03525	0.04912	0.06550	0.08439
2	0.00378	0.00529	0.00919	0.01381	0.01556	0.02442	0.03577	0.04964	0.06602	0.08492
2.25	0.00425	0.00579	0.00971	0.01432	0.01608	0.02494	0.03630	0.05017	0.06655	0.08545
2.5	0.00472	0.00629	0.01022	0.01484	0.01660	0.02546	0.03682	0.05070	0.06708	0.08598
2.75	0.00519	0.00679	0.01073	0.01536	0.01711	0.02598	0.03735	0.05122	0.06761	0.08651
3	0.00567	0.00728	0.01124	0.01587	0.01763	0.02651	0.03787	0.05175	0.06814	0.08703
3.5	0.00661	0.00828	0.01226	0.01691	0.01867	0.02755	0.03892	0.05280	0.06919	0.08809
4	0.00756	0.00928	0.01328	0.01794	0.01971	0.02860	0.03998	0.05386	0.07025	0.08915
4.5	0.00850	0.01027	0.01431	0.01898	0.02074	0.02964	0.04103	0.05491	0.07130	0.09021
5	0.00945	0.01127	0.01533	0.02001	0.02178	0.03069	0.04208	0.05596	0.07236	0.09126
5.5	0.01039	0.01227	0.01635	0.02104	0.02282	0.03173	0.04313	0.05702	0.07341	0.09232
6	0.01134	0.01327	0.01738	0.02208	0.02385	0.03278	0.04418	0.05807	0.07447	0.09338

UK LOSS SIMULATION Date: 31.Oct.1990

Nominal GNP targeting rBeta

a \ b	0	0.25	0.46	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3
0	0.00084	0.00052	0.00037	0.00035	0.00026	0.00020	0.00016	0.00014	0.00012	0.00011	0.00011	0.00009
0.125	0.01040	0.00999	0.00981	0.00979	0.00967	0.00960	0.00955	0.00952	0.00950	0.00949	0.00948	0.00946
0.25	0.01996	0.01947	0.01925	0.01922	0.01908	0.01900	0.01894	0.01890	0.01888	0.01886	0.01886	0.01883
0.375	0.02951	0.02895	0.02869	0.02866	0.02849	0.02839	0.02833	0.02829	0.02826	0.02824	0.02823	0.02820
0.5	0.03907	0.03843	0.03813	0.03809	0.03791	0.03779	0.03772	0.03767	0.03764	0.03761	0.03760	0.03757
0.625	0.04863	0.04790	0.04758	0.04753	0.04732	0.04719	0.04711	0.04705	0.04702	0.04699	0.04698	0.04694
0.75	0.05819	0.05738	0.05702	0.05697	0.05673	0.05659	0.05650	0.05644	0.05639	0.05637	0.05635	0.05631
0.875	0.06775	0.06686	0.06646	0.06640	0.06614	0.06599	0.06588	0.06582	0.06577	0.06574	0.06573	0.06568
1	0.07730	0.07633	0.07590	0.07584	0.07555	0.07538	0.07527	0.07520	0.07515	0.07512	0.07510	0.07505
1.25	0.09642	0.09529	0.09478	0.09471	0.09438	0.09418	0.09405	0.09397	0.09391	0.09387	0.09385	0.09379
1.5	0.11554	0.11424	0.11366	0.11358	0.11320	0.11297	0.11283	0.11273	0.11267	0.11262	0.11260	0.11254
1.75	0.13465	0.13320	0.13254	0.13245	0.13203	0.13177	0.13161	0.13150	0.13142	0.13137	0.13135	0.13128
2	0.15377	0.15215	0.15142	0.15132	0.15085	0.15057	0.15038	0.15026	0.15018	0.15012	0.15010	0.15002
2.25	0.17288	0.17110	0.17031	0.17019	0.16968	0.16936	0.16916	0.16903	0.16894	0.16887	0.16885	0.16876
2.5	0.19200	0.19006	0.18919	0.18906	0.18850	0.18816	0.18794	0.18779	0.18769	0.18762	0.18760	0.18750
2.75	0.21112	0.20901	0.20807	0.20794	0.20732	0.20695	0.20672	0.20656	0.20645	0.20638	0.20634	0.20624
3	0.23023	0.22797	0.22695	0.22681	0.22615	0.22575	0.22549	0.22532	0.22521	0.22513	0.22509	0.22498
3.5	0.26846	0.26588	0.26471	0.26455	0.26380	0.26334	0.26305	0.26285	0.26272	0.26263	0.26259	0.26246
4	0.30670	0.30378	0.30248	0.30229	0.30145	0.30093	0.30060	0.30039	0.30024	0.30013	0.30009	0.29994
4.5	0.34493	0.34169	0.34024	0.34004	0.33910	0.33852	0.33816	0.33792	0.33775	0.33764	0.33759	0.33743
5	0.38316	0.37960	0.37800	0.37778	0.37674	0.37612	0.37571	0.37545	0.37526	0.37514	0.37508	0.37491
5.5	0.42139	0.41751	0.41577	0.41552	0.41439	0.41371	0.41327	0.41298	0.41278	0.41264	0.41258	0.41239
6	0.45962	0.45542	0.45353	0.45326	0.45204	0.45130	0.45082	0.45051	0.45029	0.45014	0.45008	0.44987
Var(u)	0.00084	0.00081	0.00080	0.00080	0.00080	0.00082	0.00085	0.00090	0.00096	0.00104	0.00136	0.00152
Var(e1)		0.07477		Cov(e1,v1)		0.04250						
Var(v1)		0.04218										

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.46	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3
0	0.00084	0.00281	0.00756	0.00878	0.01877	0.03276	0.05076	0.07278	0.09880	0.12883	0.20102	0.28903
0.125	0.00483	0.00680	0.01155	0.01278	0.02276	0.03675	0.05476	0.07677	0.10279	0.13282	0.20501	0.29302
0.25	0.00883	0.01079	0.01554	0.01677	0.02675	0.04075	0.05875	0.08076	0.10678	0.13681	0.20901	0.29702
0.375	0.01282	0.01479	0.01954	0.02076	0.03075	0.04474	0.06274	0.08476	0.11078	0.14080	0.21300	0.30101
0.5	0.01681	0.01878	0.02353	0.02476	0.03474	0.04873	0.06674	0.08875	0.11477	0.14480	0.21699	0.30500
0.625	0.02081	0.02277	0.02752	0.02875	0.03873	0.05273	0.07073	0.09274	0.11876	0.14879	0.22099	0.30900
0.75	0.02480	0.02677	0.03152	0.03274	0.04273	0.05672	0.07472	0.09673	0.12276	0.15278	0.22498	0.31299
0.875	0.02879	0.03076	0.03551	0.03674	0.04672	0.06071	0.07872	0.10073	0.12675	0.15678	0.22897	0.31698
1	0.03279	0.03475	0.03950	0.04073	0.05071	0.06471	0.08271	0.10472	0.13074	0.16077	0.23297	0.32098
1.25	0.04077	0.04274	0.04749	0.04872	0.05870	0.07269	0.09070	0.11271	0.13873	0.16876	0.24095	0.32896
1.5	0.04876	0.05073	0.05548	0.05670	0.06669	0.08068	0.09868	0.12069	0.14671	0.17674	0.24894	0.33695
1.75	0.05675	0.05871	0.06346	0.06469	0.07467	0.08867	0.10667	0.12868	0.15470	0.18473	0.25693	0.34494
2	0.06473	0.06670	0.07145	0.07267	0.08266	0.09665	0.11466	0.13667	0.16269	0.19272	0.26491	0.35292
2.25	0.07272	0.07468	0.07944	0.08066	0.09065	0.10464	0.12264	0.14465	0.17067	0.20070	0.27290	0.36091
2.5	0.08070	0.08267	0.08742	0.08865	0.09863	0.11263	0.13063	0.15264	0.17866	0.20869	0.28089	0.36890
2.75	0.08869	0.09066	0.09541	0.09663	0.10662	0.12061	0.13861	0.16063	0.18665	0.21668	0.28887	0.37688
3	0.09668	0.09864	0.10339	0.10462	0.11460	0.12860	0.14660	0.16861	0.19463	0.22466	0.29686	0.38487
3.5	0.11265	0.11462	0.11937	0.12059	0.13058	0.14457	0.16257	0.18458	0.21061	0.24063	0.31283	0.40084
4	0.12862	0.13059	0.13534	0.13657	0.14655	0.16054	0.17855	0.20056	0.22658	0.25661	0.32880	0.41681
4.5	0.14460	0.14656	0.15131	0.15254	0.16252	0.17652	0.19452	0.21653	0.24255	0.27258	0.34478	0.43279
5	0.16057	0.16253	0.16729	0.16851	0.17850	0.19249	0.21049	0.23250	0.25852	0.28855	0.36075	0.44876
5.5	0.17654	0.17851	0.18326	0.18448	0.19447	0.20846	0.22646	0.24848	0.27450	0.30453	0.37672	0.46473
6	0.19251	0.19448	0.19923	0.20046	0.21044	0.22443	0.24244	0.26445	0.29047	0.32050	0.39269	0.48070

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.46	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3
0	0	0.00229	0.00718	0.00843	0.01851	0.03256	0.05060	0.07263	0.09867	0.12871	0.20091	0.28894
0.125	-0.0055	-0.0031	0.00173	0.00298	0.01309	0.02715	0.04520	0.06724	0.09328	0.12333	0.19553	0.28356
0.25	-0.0111	-0.0086	-0.0037	-0.0024	0.00767	0.02175	0.03980	0.06185	0.08790	0.11794	0.19015	0.27818
0.375	-0.0166	-0.0141	-0.0091	-0.0078	0.00225	0.01634	0.03441	0.05646	0.08251	0.11256	0.18477	0.27280
0.5	-0.0222	-0.0196	-0.0146	-0.0133	-0.0031	0.01094	0.02901	0.05107	0.07713	0.10718	0.17938	0.26743
0.625	-0.0278	-0.0251	-0.0200	-0.0187	-0.0085	0.00553	0.02362	0.04568	0.07174	0.10180	0.17400	0.26205
0.75	-0.0333	-0.0306	-0.0254	-0.0242	-0.0140	0.00013	0.01822	0.04029	0.06636	0.09641	0.16862	0.25667
0.875	-0.0389	-0.0360	-0.0309	-0.0296	-0.0194	-0.0052	0.01283	0.03490	0.06097	0.09103	0.16324	0.25130
1	-0.0445	-0.0415	-0.0363	-0.0351	-0.0248	-0.0106	0.00743	0.02952	0.05559	0.08565	0.15786	0.24592
1.25	-0.0556	-0.0525	-0.0472	-0.0459	-0.0356	-0.0214	-0.0033	0.01874	0.04481	0.07488	0.14710	0.23516
1.5	-0.0667	-0.0635	-0.0581	-0.0568	-0.0465	-0.0322	-0.0141	0.00796	0.03404	0.06412	0.13633	0.22441
1.75	-0.0779	-0.0744	-0.0690	-0.0677	-0.0573	-0.0431	-0.0249	-0.0028	0.02327	0.05335	0.12557	0.21366
2	-0.0890	-0.0854	-0.0799	-0.0786	-0.0681	-0.0539	-0.0357	-0.0135	0.01250	0.04259	0.11481	0.20290
2.25	-0.1001	-0.0964	-0.0908	-0.0895	-0.0790	-0.0647	-0.0465	-0.0243	0.00173	0.03182	0.10405	0.19215
2.5	-0.1112	-0.1073	-0.1017	-0.1004	-0.0898	-0.0755	-0.0573	-0.0351	-0.0090	0.02106	0.09328	0.18139
2.75	-0.1224	-0.1183	-0.1126	-0.1113	-0.1007	-0.0863	-0.0681	-0.0459	-0.0198	0.01029	0.08252	0.17064
3	-0.1335	-0.1293	-0.1235	-0.1221	-0.1115	-0.0971	-0.0788	-0.0567	-0.0305	-0.0004	0.07176	0.15988
3.5	-0.1558	-0.1512	-0.1453	-0.1439	-0.1332	-0.1187	-0.1004	-0.0782	-0.0521	-0.0219	0.05023	0.13837
4	-0.1780	-0.1731	-0.1671	-0.1657	-0.1548	-0.1403	-0.1220	-0.0998	-0.0736	-0.0435	0.02871	0.11687
4.5	-0.2003	-0.1951	-0.1889	-0.1874	-0.1765	-0.1620	-0.1436	-0.1213	-0.0951	-0.0650	0.00718	0.09536
5	-0.2225	-0.2170	-0.2107	-0.2092	-0.1982	-0.1836	-0.1652	-0.1429	-0.1167	-0.0865	-0.0143	0.07385
5.5	-0.2448	-0.2390	-0.2325	-0.2310	-0.2199	-0.2052	-0.1868	-0.1645	-0.1382	-0.1081	-0.0358	0.05234
6	-0.2671	-0.2609	-0.2542	-0.2528	-0.2415	-0.2268	-0.2083	-0.1860	-0.1598	-0.1296	-0.0573	0.03083

TABLE 6a-d: SHKSIMC3.WK1 rev. 18.4.1991

US LOSS SIMULATION Date: 31.Oct.1990 Rev.: 18.April.1991

Nominal GNP targeting rule Beta

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2	2.5	3
0	0.00009	0.00006	0.00004	0.00004	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002
0.125	0.00005	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
0.25	0.00061	0.00056	0.00054	0.00052	0.00052	0.00051	0.00051	0.00051	0.00051	0.00050	0.00050	0.00050
0.375	0.00087	0.00081	0.00078	0.00077	0.00076	0.00075	0.00075	0.00075	0.00075	0.00075	0.00074	0.00074
0.5	0.00113	0.00106	0.00103	0.00101	0.00100	0.00100	0.00099	0.00099	0.00099	0.00099	0.00098	0.00098
0.625	0.00139	0.00131	0.00128	0.00126	0.00124	0.00124	0.00124	0.00123	0.00123	0.00123	0.00122	0.00122
0.75	0.00164	0.00156	0.00152	0.00150	0.00149	0.00148	0.00148	0.00148	0.00147	0.00147	0.00146	0.00146
0.875	0.00190	0.00181	0.00177	0.00175	0.00173	0.00172	0.00172	0.00172	0.00171	0.00171	0.00170	0.00170
1	0.00216	0.00206	0.00202	0.00199	0.00197	0.00196	0.00196	0.00196	0.00196	0.00195	0.00194	0.00194
1.25	0.00268	0.00256	0.00251	0.00248	0.00246	0.00245	0.00245	0.00244	0.00244	0.00243	0.00243	0.00242
1.5	0.00320	0.00306	0.00300	0.00297	0.00295	0.00293	0.00293	0.00293	0.00292	0.00292	0.00291	0.00290
1.75	0.00371	0.00356	0.00350	0.00346	0.00343	0.00342	0.00341	0.00341	0.00340	0.00340	0.00339	0.00338
2	0.00423	0.00406	0.00399	0.00394	0.00392	0.00390	0.00390	0.00389	0.00389	0.00388	0.00387	0.00386
2.25	0.00475	0.00456	0.00448	0.00443	0.00440	0.00439	0.00438	0.00438	0.00437	0.00436	0.00435	0.00434
2.5	0.00527	0.00506	0.00498	0.00492	0.00489	0.00487	0.00486	0.00486	0.00485	0.00484	0.00483	0.00482
2.75	0.00578	0.00556	0.00547	0.00541	0.00538	0.00535	0.00535	0.00534	0.00534	0.00533	0.00531	0.00530
3	0.00630	0.00607	0.00596	0.00590	0.00586	0.00584	0.00583	0.00583	0.00582	0.00581	0.00579	0.00578
3.5	0.00734	0.00707	0.00695	0.00688	0.00683	0.00681	0.00680	0.00679	0.00678	0.00677	0.00675	0.00674
4	0.00837	0.00807	0.00794	0.00785	0.00780	0.00778	0.00777	0.00776	0.00775	0.00774	0.00772	0.00770
4.5	0.00941	0.00907	0.00892	0.00883	0.00878	0.00874	0.00874	0.00873	0.00872	0.00870	0.00868	0.00867
5	0.01044	0.01007	0.00991	0.00981	0.00975	0.00971	0.00970	0.00969	0.00968	0.00967	0.00964	0.00963
5.5	0.01147	0.01107	0.01090	0.01079	0.01072	0.01068	0.01067	0.01066	0.01065	0.01063	0.01060	0.01059
6	0.01251	0.01207	0.01188	0.01176	0.01169	0.01165	0.01164	0.01163	0.01161	0.01159	0.01157	0.01155
Var(u)	0.00009	0.0001	0.00011	0.00012	0.00013	0.00015	0.00019	0.00020	0.00021	0.00024	0.00030	0.00037

Var(e1) = 0.00187 Cov(e1,v = 0.00063

Var(v1) = 0.00091

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2	2.5	3
0	0.00009	0.00019	0.00048	0.00097	0.00164	0.00251	0.00358	0.00405	0.00483	0.00626	0.00972	0.01393
0.125	0.00028	0.00038	0.00067	0.00115	0.00183	0.00270	0.00376	0.00424	0.00501	0.00645	0.00990	0.01412
0.25	0.00047	0.00057	0.00086	0.00134	0.00202	0.00288	0.00395	0.00443	0.00520	0.00664	0.01009	0.01431
0.375	0.00066	0.00075	0.00105	0.00153	0.00221	0.00307	0.00414	0.00462	0.00539	0.00683	0.01028	0.01449
0.5	0.00085	0.00094	0.00124	0.00172	0.00239	0.00326	0.00433	0.00481	0.00558	0.00702	0.01047	0.01468
0.625	0.00103	0.00113	0.00142	0.00191	0.00258	0.00345	0.00452	0.00499	0.00577	0.00721	0.01066	0.01487
0.75	0.00122	0.00132	0.00161	0.00210	0.00277	0.00364	0.00471	0.00518	0.00596	0.00739	0.01085	0.01506
0.875	0.00141	0.00151	0.00180	0.00228	0.00296	0.00383	0.00489	0.00537	0.00614	0.00758	0.01103	0.01525
1	0.00160	0.00170	0.00199	0.00247	0.00315	0.00401	0.00508	0.00556	0.00633	0.00777	0.01122	0.01544
1.25	0.00198	0.00207	0.00237	0.00285	0.00352	0.00439	0.00546	0.00594	0.00671	0.00815	0.01160	0.01581
1.5	0.00235	0.00245	0.00274	0.00322	0.00390	0.00477	0.00584	0.00631	0.00708	0.00852	0.01197	0.01619
1.75	0.00273	0.00282	0.00312	0.00360	0.00428	0.00514	0.00621	0.00669	0.00746	0.00890	0.01235	0.01657
2	0.00310	0.00320	0.00350	0.00398	0.00465	0.00552	0.00659	0.00707	0.00784	0.00928	0.01273	0.01694
2.25	0.00348	0.00358	0.00387	0.00435	0.00503	0.00590	0.00697	0.00744	0.00821	0.00965	0.01310	0.01732
2.5	0.00386	0.00395	0.00425	0.00473	0.00541	0.00627	0.00734	0.00782	0.00859	0.01003	0.01348	0.01770
2.75	0.00423	0.00433	0.00463	0.00511	0.00578	0.00665	0.00772	0.00819	0.00897	0.01041	0.01386	0.01807
3	0.00461	0.00471	0.00500	0.00548	0.00616	0.00703	0.00809	0.00857	0.00934	0.01078	0.01423	0.01845
3.5	0.00536	0.00546	0.00575	0.00624	0.00691	0.00778	0.00885	0.00932	0.01010	0.01154	0.01499	0.01920
4	0.00612	0.00621	0.00651	0.00699	0.00766	0.00853	0.00960	0.01008	0.01085	0.01229	0.01574	0.01995
4.5	0.00697	0.00697	0.00726	0.00774	0.00842	0.00929	0.01035	0.01083	0.01160	0.01304	0.01649	0.02071
5	0.00752	0.00772	0.00801	0.00850	0.00917	0.01004	0.01111	0.01158	0.01236	0.01380	0.01725	0.02146
5.5	0.00828	0.00847	0.00877	0.00925	0.00992	0.01079	0.01186	0.01234	0.01311	0.01455	0.01800	0.02221
6	0.00913	0.00923	0.00952	0.01000	0.01068	0.01154	0.01261	0.01309	0.01385	0.01530	0.01875	0.02297

TABLE 6a-d: SHKSIMC3.WK1 rev. 18.4.1991

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2	2.5	3
0	0	0.00013	0.00043	0.00093	0.00161	0.00248	0.00355	0.00402	0.00480	0.00624	0.00969	0.01391
0.125	-0.0000	0.00006	0.00038	0.00087	0.00155	0.00242	0.00349	0.00397	0.00474	0.00618	0.00964	0.01385
0.25	-0.0001	0.00000	0.00032	0.00081	0.00150	0.00237	0.00344	0.00392	0.00469	0.00613	0.00959	0.01380
0.375	-0.0002	-0.0000	0.00026	0.00076	0.00144	0.00231	0.00338	0.00386	0.00464	0.00608	0.00953	0.01375
0.5	-0.0002	-0.0001	0.00020	0.00070	0.00139	0.00226	0.00333	0.00381	0.00458	0.00603	0.00948	0.01370
0.625	-0.0003	-0.0001	0.00014	0.00064	0.00133	0.00221	0.00328	0.00376	0.00453	0.00597	0.00943	0.01365
0.75	-0.0004	-0.0002	0.00008	0.00059	0.00128	0.00215	0.00322	0.00370	0.00448	0.00592	0.00938	0.01359
0.875	-0.0004	-0.0003	0.00002	0.00053	0.00122	0.00210	0.00317	0.00365	0.00442	0.00587	0.00932	0.01354
1	-0.0005	-0.0003	-0.0000	0.00048	0.00117	0.00205	0.00312	0.00360	0.00437	0.00582	0.00927	0.01349
1.25	-0.0007	-0.0004	-0.0001	0.00036	0.00106	0.00194	0.00301	0.00349	0.00426	0.00571	0.00917	0.01339
1.5	-0.0008	-0.0006	-0.0002	0.00025	0.00095	0.00183	0.00290	0.00338	0.00416	0.00560	0.00906	0.01328
1.75	-0.0009	-0.0007	-0.0003	0.00014	0.00084	0.00172	0.00279	0.00327	0.00405	0.00550	0.00896	0.01318
2	-0.0011	-0.0008	-0.0004	0.00003	0.00073	0.00161	0.00269	0.00317	0.00395	0.00539	0.00885	0.01308
2.25	-0.0012	-0.0009	-0.0006	-0.0000	0.00062	0.00151	0.00258	0.00306	0.00384	0.00529	0.00875	0.01297
2.5	-0.0014	-0.0011	-0.0007	-0.0001	0.00051	0.00140	0.00247	0.00295	0.00373	0.00518	0.00865	0.01287
2.75	-0.0015	-0.0012	-0.0008	-0.0003	0.00040	0.00129	0.00236	0.00285	0.00363	0.00508	0.00854	0.01276
3	-0.0016	-0.0013	-0.0009	-0.0004	0.00029	0.00118	0.00226	0.00274	0.00352	0.00497	0.00844	0.01266
3.5	-0.0019	-0.0016	-0.0011	-0.0006	0.00007	0.00097	0.00204	0.00253	0.00331	0.00476	0.00823	0.01245
4	-0.0022	-0.0018	-0.0014	-0.0008	-0.0001	0.00075	0.00183	0.00231	0.00309	0.00455	0.00802	0.01224
4.5	-0.0025	-0.0021	-0.0016	-0.0010	-0.0003	0.00054	0.00161	0.00210	0.00288	0.00434	0.00781	0.01204
5	-0.0028	-0.0023	-0.0018	-0.0013	-0.0005	0.00032	0.00140	0.00188	0.00267	0.00413	0.00760	0.01183
5.5	-0.0030	-0.0025	-0.0021	-0.0015	-0.0007	0.00011	0.00118	0.00167	0.00246	0.00391	0.00739	0.01162
6	-0.0033	-0.0028	-0.0023	-0.0017	-0.0010	-0.0001	0.00097	0.00146	0.00224	0.00370	0.00718	0.01141

Note: The covariances are the empirical covariances for the 74.1-89.4 period
Note: SHKSIMC3 uses ARIMA supply shocks and Difference Stationary
vel/exch rate shocks.
Note: Correct LE1# variables used.
Note: Correct LE1##_RR variable used 18.4.1991

TABLE 6a-d: SHKSIMC3.WK1 rev. 18.4.1991

GERMAN LOSS SIMULATION Date: 31.Oct.1990

Nominal GNP targeting rBeta

a \ b	0	0.25	0.33	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	4	5	6
0	0.00012	0.00008	0.00007	0.00006	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002
0.125	0.00073	0.00068	0.00067	0.00066	0.00064	0.00063	0.00063	0.00063	0.00062	0.00062	0.00062	0.00062	0.00062	0.00062	0.00062
0.25	0.00135	0.00129	0.00127	0.00126	0.00124	0.00123	0.00122	0.00122	0.00121	0.00122	0.00121	0.00121	0.00121	0.00121	0.00121
0.375	0.00196	0.00189	0.00188	0.00186	0.00183	0.00182	0.00181	0.00182	0.00181	0.00181	0.00181	0.00180	0.00180	0.00180	0.00180
0.5	0.00258	0.00250	0.00248	0.00245	0.00243	0.00242	0.00241	0.00241	0.00240	0.00240	0.00240	0.00240	0.00239	0.00239	0.00239
0.625	0.00319	0.00310	0.00308	0.00305	0.00303	0.00301	0.00300	0.00300	0.00299	0.00300	0.00299	0.00299	0.00298	0.00298	0.00298
0.75	0.00380	0.00371	0.00369	0.00365	0.00363	0.00361	0.00360	0.00360	0.00358	0.00359	0.00358	0.00358	0.00358	0.00357	0.00357
0.875	0.00442	0.00431	0.00429	0.00425	0.00422	0.00420	0.00419	0.00419	0.00418	0.00418	0.00418	0.00417	0.00417	0.00417	0.00416
1	0.00503	0.00492	0.00489	0.00485	0.00482	0.00480	0.00478	0.00479	0.00477	0.00478	0.00477	0.00476	0.00476	0.00476	0.00476
1.25	0.00626	0.00612	0.00610	0.00605	0.00601	0.00599	0.00597	0.00597	0.00596	0.00596	0.00595	0.00595	0.00594	0.00594	0.00594
1.5	0.00749	0.00733	0.00730	0.00725	0.00721	0.00718	0.00716	0.00716	0.00714	0.00715	0.00714	0.00713	0.00713	0.00713	0.00712
1.75	0.00872	0.00854	0.00851	0.00845	0.00840	0.00837	0.00835	0.00835	0.00833	0.00833	0.00832	0.00832	0.00831	0.00831	0.00831
2	0.00995	0.00975	0.00971	0.00965	0.00959	0.00956	0.00954	0.00954	0.00951	0.00952	0.00951	0.00950	0.00950	0.00949	0.00949
2.25	0.01118	0.01096	0.01092	0.01085	0.01079	0.01075	0.01072	0.01073	0.01070	0.01071	0.01070	0.01069	0.01068	0.01068	0.01067
2.5	0.01241	0.01217	0.01213	0.01205	0.01198	0.01194	0.01191	0.01191	0.01188	0.01189	0.01188	0.01187	0.01186	0.01186	0.01186
2.75	0.01364	0.01338	0.01333	0.01325	0.01317	0.01313	0.01310	0.01310	0.01307	0.01308	0.01307	0.01306	0.01305	0.01304	0.01304
3	0.01487	0.01459	0.01454	0.01445	0.01437	0.01432	0.01429	0.01429	0.01425	0.01427	0.01425	0.01424	0.01423	0.01423	0.01422
3.5	0.01733	0.01701	0.01695	0.01685	0.01675	0.01670	0.01666	0.01667	0.01662	0.01664	0.01662	0.01661	0.01660	0.01659	0.01659
4	0.01979	0.01943	0.01936	0.01925	0.01914	0.01908	0.01904	0.01904	0.01900	0.01901	0.01899	0.01898	0.01897	0.01896	0.01896
4.5	0.02225	0.02185	0.02177	0.02165	0.02153	0.02146	0.02141	0.02142	0.02137	0.02138	0.02136	0.02135	0.02133	0.02133	0.02132
5	0.02471	0.02427	0.02418	0.02404	0.02392	0.02384	0.02379	0.02380	0.02374	0.02376	0.02373	0.02372	0.02370	0.02369	0.02369
5.5	0.02717	0.02669	0.02659	0.02644	0.02630	0.02622	0.02616	0.02617	0.02611	0.02613	0.02610	0.02609	0.02607	0.02606	0.02605
6	0.02962	0.02911	0.02900	0.02884	0.02869	0.02860	0.02854	0.02855	0.02848	0.02850	0.02848	0.02846	0.02844	0.02843	0.02842
Var(u)	0.00012	0.00012	0.00012	0.00013	0.00015	0.00016	0.00019	0.00023	0.00024	0.00031	0.00039	0.00050	0.00074	0.00104	0.00139
Var(e1)		0.00467		Cov(e1,v1)		0.00385									
Var(v1)		0.00357													

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.33	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	4	5	6
0	0.00012	0.00016	0.00018	0.00027	0.00045	0.00070	0.00103	0.00144	0.00189	0.00246	0.00376	0.00534	0.00934	0.01448	0.02075
0.125	0.00018	0.00022	0.00025	0.00033	0.00052	0.00077	0.00109	0.00151	0.00196	0.00253	0.00382	0.00540	0.00941	0.01455	0.02082
0.25	0.00025	0.00029	0.00032	0.00040	0.00058	0.00084	0.00116	0.00158	0.00203	0.00259	0.00389	0.00547	0.00948	0.01462	0.02088
0.375	0.00032	0.00036	0.00039	0.00047	0.00065	0.00090	0.00123	0.00165	0.00209	0.00266	0.00396	0.00554	0.00955	0.01469	0.02095
0.5	0.00038	0.00042	0.00045	0.00054	0.00072	0.00097	0.00129	0.00171	0.00216	0.00273	0.00402	0.00561	0.00961	0.01475	0.02102
0.625	0.00045	0.00049	0.00052	0.00060	0.00078	0.00104	0.00136	0.00178	0.00223	0.00279	0.00409	0.00567	0.00968	0.01482	0.02109
0.75	0.00052	0.00056	0.00059	0.00067	0.00085	0.00110	0.00143	0.00185	0.00229	0.00286	0.00416	0.00574	0.00975	0.01489	0.02115
0.875	0.00059	0.00063	0.00065	0.00074	0.00092	0.00117	0.00150	0.00191	0.00236	0.00293	0.00423	0.00581	0.00981	0.01496	0.02122
1	0.00065	0.00069	0.00072	0.00080	0.00099	0.00124	0.00156	0.00198	0.00243	0.00300	0.00429	0.00587	0.00988	0.01502	0.02129
1.25	0.00079	0.00083	0.00086	0.00094	0.00112	0.00137	0.00170	0.00212	0.00256	0.00313	0.00443	0.00601	0.01002	0.01516	0.02142
1.5	0.00092	0.00096	0.00099	0.00107	0.00126	0.00151	0.00183	0.00225	0.00270	0.00327	0.00456	0.00614	0.01015	0.01529	0.02156
1.75	0.00106	0.00110	0.00112	0.00121	0.00139	0.00164	0.00197	0.00239	0.00283	0.00340	0.00470	0.00628	0.01029	0.01543	0.02169
2	0.00119	0.00123	0.00126	0.00134	0.00152	0.00178	0.00210	0.00252	0.00297	0.00353	0.00483	0.00641	0.01042	0.01556	0.02183
2.25	0.00133	0.00137	0.00139	0.00148	0.00166	0.00191	0.00224	0.00265	0.00310	0.00367	0.00497	0.00655	0.01055	0.01569	0.02196
2.5	0.00146	0.00150	0.00153	0.00161	0.00179	0.00205	0.00237	0.00279	0.00324	0.00380	0.00510	0.00668	0.01069	0.01583	0.02209
2.75	0.00159	0.00163	0.00166	0.00175	0.00193	0.00218	0.00250	0.00292	0.00337	0.00394	0.00523	0.00682	0.01082	0.01596	0.02223
3	0.00173	0.00177	0.00180	0.00188	0.00206	0.00231	0.00264	0.00306	0.00350	0.00407	0.00537	0.00695	0.01096	0.01610	0.02236
3.5	0.00200	0.00204	0.00207	0.00215	0.00233	0.00258	0.00291	0.00333	0.00377	0.00434	0.00564	0.00722	0.01123	0.01637	0.02263
4	0.00227	0.00231	0.00233	0.00242	0.00260	0.00285	0.00318	0.00360	0.00404	0.00461	0.00591	0.00749	0.01149	0.01664	0.02290
4.5	0.00254	0.00258	0.00260	0.00269	0.00287	0.00312	0.00345	0.00386	0.00431	0.00488	0.00618	0.00776	0.01176	0.01690	0.02317
5	0.00281	0.00284	0.00287	0.00296	0.00314	0.00339	0.00371	0.00413	0.00458	0.00515	0.00644	0.00803	0.01203	0.01717	0.02344
5.5	0.00307	0.00311	0.00314	0.00322	0.00341	0.00366	0.00398	0.00440	0.00485	0.00542	0.00671	0.00829	0.01230	0.01744	0.02371
6	0.00334	0.00338	0.00341	0.00349	0.00368	0.00393	0.00425	0.00467	0.00512	0.00569	0.00698	0.00856	0.01257	0.01771	0.02398

TABLE 6a-d: SHKSIMC3.WK1 rev. 18.4.1991

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.33	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	4	5	6
0	0	0.00007	0.00011	0.00021	0.00040	0.00066	0.00099	0.00141	0.00186	0.00242	0.00372	0.00531	0.00931	0.01446	0.02072
0.125	-0.0005	-0.0004	-0.0004	-0.0003	-0.0001	0.00013	0.00046	0.00088	0.00133	0.00190	0.00320	0.00478	0.00879	0.01393	0.02020
0.25	-0.0010	-0.0009	-0.0009	-0.0008	-0.0006	-0.0003	-0.0000	0.00035	0.00081	0.00137	0.00267	0.00425	0.00826	0.01341	0.01967
0.375	-0.0016	-0.0015	-0.0014	-0.0013	-0.0011	-0.0009	-0.0005	-0.0001	0.00028	0.00085	0.00215	0.00373	0.00774	0.01288	0.01915
0.5	-0.0021	-0.0020	-0.0020	-0.0019	-0.0017	-0.0014	-0.0011	-0.0006	-0.0002	0.00032	0.00162	0.00320	0.00721	0.01236	0.01862
0.625	-0.0027	-0.0026	-0.0025	-0.0024	-0.0022	-0.0019	-0.0016	-0.0012	-0.0007	-0.0002	0.00110	0.00268	0.00669	0.01183	0.01810
0.75	-0.0032	-0.0031	-0.0030	-0.0029	-0.0027	-0.0025	-0.0021	-0.0017	-0.0012	-0.0007	0.00057	0.00215	0.00617	0.01131	0.01757
0.875	-0.0038	-0.0036	-0.0036	-0.0035	-0.0033	-0.0030	-0.0026	-0.0022	-0.0018	-0.0012	0.00005	0.00163	0.00564	0.01078	0.01705
1	-0.0043	-0.0042	-0.0041	-0.0040	-0.0038	-0.0035	-0.0032	-0.0028	-0.0023	-0.0017	-0.0004	0.00110	0.00512	0.01026	0.01653
1.25	-0.0054	-0.0052	-0.0052	-0.0051	-0.0048	-0.0046	-0.0042	-0.0038	-0.0033	-0.0028	-0.0015	0.00005	0.00407	0.00921	0.01548
1.5	-0.0065	-0.0063	-0.0063	-0.0061	-0.0059	-0.0056	-0.0053	-0.0049	-0.0044	-0.0038	-0.0025	-0.0009	0.00302	0.00816	0.01443
1.75	-0.0076	-0.0074	-0.0073	-0.0072	-0.0070	-0.0067	-0.0063	-0.0059	-0.0054	-0.0049	-0.0036	-0.0020	0.00197	0.00711	0.01338
2	-0.0087	-0.0085	-0.0084	-0.0083	-0.0080	-0.0077	-0.0074	-0.0070	-0.0065	-0.0059	-0.0046	-0.0030	0.00092	0.00606	0.01233
2.25	-0.0098	-0.0095	-0.0095	-0.0093	-0.0091	-0.0088	-0.0084	-0.0080	-0.0075	-0.0070	-0.0057	-0.0041	-0.0001	0.00501	0.01128
2.5	-0.0109	-0.0106	-0.0105	-0.0104	-0.0101	-0.0098	-0.0095	-0.0091	-0.0086	-0.0080	-0.0067	-0.0051	-0.0011	0.00397	0.01023
2.75	-0.0120	-0.0117	-0.0116	-0.0115	-0.0112	-0.0109	-0.0105	-0.0101	-0.0096	-0.0091	-0.0078	-0.0062	-0.0022	0.00292	0.00918
3	-0.0131	-0.0128	-0.0127	-0.0125	-0.0123	-0.0120	-0.0116	-0.0112	-0.0107	-0.0101	-0.0088	-0.0072	-0.0032	0.00187	0.00814
3.5	-0.0153	-0.0149	-0.0148	-0.0146	-0.0144	-0.0141	-0.0137	-0.0133	-0.0128	-0.0122	-0.0109	-0.0093	-0.0053	-0.0002	0.00604
4	-0.0175	-0.0171	-0.0170	-0.0168	-0.0165	-0.0162	-0.0158	-0.0154	-0.0149	-0.0144	-0.0130	-0.0114	-0.0074	-0.0023	0.00394
4.5	-0.0197	-0.0192	-0.0191	-0.0189	-0.0186	-0.0183	-0.0179	-0.0175	-0.0170	-0.0165	-0.0151	-0.0135	-0.0095	-0.0044	0.00184
5	-0.0219	-0.0214	-0.0213	-0.0210	-0.0207	-0.0204	-0.0200	-0.0196	-0.0191	-0.0186	-0.0172	-0.0156	-0.0116	-0.0065	-0.0002
5.5	-0.0240	-0.0235	-0.0234	-0.0232	-0.0228	-0.0225	-0.0221	-0.0217	-0.0212	-0.0207	-0.0193	-0.0177	-0.0137	-0.0086	-0.0023
6	-0.0262	-0.0257	-0.0255	-0.0253	-0.0250	-0.0246	-0.0242	-0.0238	-0.0233	-0.0228	-0.0214	-0.0198	-0.0158	-0.0107	-0.0044

TABLE 6a-d: SHKSIMC3.WK1 rev. 18.4.1991

JAPAN LOSS SIMULATION Date: 31.Oct.1990

Nominal GNP targeting rule Beta

a \ b	0	0.25	0.5	0.69	0.75	1	1.25	1.5	1.75	2	2.5	3
0	0.00007	0.00005	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
0.125	0.00064	0.00061	0.00059	0.00058	0.00058	0.00058	0.00058	0.00058	0.00058	0.00058	0.00058	0.00059
0.25	0.00120	0.00116	0.00115	0.00114	0.00114	0.00114	0.00113	0.00113	0.00114	0.00114	0.00114	0.00114
0.375	0.00177	0.00172	0.00170	0.00169	0.00169	0.00169	0.00169	0.00168	0.00169	0.00169	0.00169	0.00170
0.5	0.00233	0.00228	0.00226	0.00224	0.00225	0.00224	0.00224	0.00224	0.00225	0.00225	0.00225	0.00225
0.625	0.00290	0.00284	0.00281	0.00280	0.00280	0.00280	0.00279	0.00279	0.00280	0.00280	0.00280	0.00280
0.75	0.00346	0.00340	0.00337	0.00335	0.00335	0.00335	0.00335	0.00334	0.00335	0.00335	0.00336	0.00336
0.875	0.00403	0.00396	0.00392	0.00391	0.00391	0.00390	0.00390	0.00390	0.00391	0.00391	0.00391	0.00391
1	0.00459	0.00451	0.00448	0.00446	0.00446	0.00446	0.00445	0.00445	0.00446	0.00446	0.00446	0.00447
1.25	0.00572	0.00563	0.00559	0.00557	0.00557	0.00557	0.00556	0.00556	0.00557	0.00557	0.00557	0.00558
1.5	0.00685	0.00675	0.00670	0.00668	0.00668	0.00667	0.00667	0.00666	0.00668	0.00668	0.00668	0.00669
1.75	0.00798	0.00786	0.00781	0.00778	0.00779	0.00778	0.00777	0.00777	0.00779	0.00779	0.00779	0.00780
2	0.00911	0.00898	0.00892	0.00889	0.00889	0.00889	0.00888	0.00887	0.00889	0.00889	0.00890	0.00890
2.25	0.01025	0.01010	0.01003	0.01000	0.01000	0.01000	0.00999	0.00998	0.01000	0.01000	0.01001	0.01001
2.5	0.01138	0.01121	0.01114	0.01111	0.01111	0.01110	0.01109	0.01109	0.01111	0.01111	0.01112	0.01112
2.75	0.01251	0.01233	0.01225	0.01222	0.01222	0.01221	0.01220	0.01219	0.01222	0.01222	0.01222	0.01223
3	0.01364	0.01345	0.01336	0.01332	0.01333	0.01332	0.01331	0.01330	0.01333	0.01333	0.01333	0.01334
3.5	0.01590	0.01568	0.01558	0.01554	0.01554	0.01553	0.01552	0.01551	0.01554	0.01554	0.01555	0.01556
4	0.01816	0.01792	0.01780	0.01775	0.01776	0.01775	0.01773	0.01772	0.01776	0.01776	0.01777	0.01778
4.5	0.02042	0.02015	0.02002	0.01997	0.01998	0.01996	0.01995	0.01993	0.01997	0.01998	0.01998	0.02000
5	0.02268	0.02238	0.02224	0.02219	0.02219	0.02218	0.02216	0.02215	0.02219	0.02219	0.02220	0.02221
5.5	0.02494	0.02462	0.02447	0.02440	0.02441	0.02439	0.02437	0.02436	0.02440	0.02441	0.02442	0.02443
6	0.02720	0.02685	0.02669	0.02662	0.02662	0.02661	0.02659	0.02657	0.02662	0.02662	0.02663	0.02665
Var(u)	0.00007	0.00008	0.00008	0.00009	0.00010	0.00013	0.00016	0.00019	0.00026	0.00031	0.00043	0.00058
Var(e1)		0.00436		Cov(e1,v1)		0.00258						
Var(v1)		0.00264										

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.5	0.69	0.75	1	1.25	1.5	1.75	2	2.5	3
0	0.00007	0.00019	0.00054	0.00097	0.00113	0.00197	0.00303	0.00432	0.00588	0.00766	0.01191	0.01712
0.125	0.00030	0.00042	0.00077	0.00120	0.00136	0.00220	0.00326	0.00455	0.00611	0.00789	0.01214	0.01734
0.25	0.00053	0.00065	0.00100	0.00143	0.00159	0.00243	0.00349	0.00478	0.00634	0.00812	0.01237	0.01757
0.375	0.00076	0.00088	0.00123	0.00166	0.00182	0.00265	0.00371	0.00501	0.00657	0.00834	0.01260	0.01780
0.5	0.00099	0.00111	0.00146	0.00189	0.00205	0.00288	0.00394	0.00524	0.00680	0.00857	0.01283	0.01803
0.625	0.00122	0.00134	0.00169	0.00212	0.00228	0.00311	0.00417	0.00547	0.00703	0.00880	0.01306	0.01826
0.75	0.00145	0.00157	0.00192	0.00235	0.00251	0.00334	0.00440	0.00570	0.00726	0.00903	0.01329	0.01849
0.875	0.00168	0.00180	0.00215	0.00257	0.00274	0.00357	0.00463	0.00593	0.00749	0.00926	0.01352	0.01872
1	0.00191	0.00203	0.00238	0.00280	0.00297	0.00380	0.00486	0.00616	0.00772	0.00949	0.01375	0.01895
1.25	0.00237	0.00249	0.00284	0.00326	0.00343	0.00426	0.00532	0.00662	0.00818	0.00995	0.01421	0.01941
1.5	0.00283	0.00295	0.00330	0.00372	0.00389	0.00472	0.00578	0.00708	0.00864	0.01041	0.01467	0.01987
1.75	0.00329	0.00341	0.00376	0.00418	0.00435	0.00518	0.00624	0.00753	0.00910	0.01087	0.01513	0.02033
2	0.00375	0.00387	0.00422	0.00464	0.00481	0.00564	0.00670	0.00799	0.00956	0.01133	0.01558	0.02079
2.25	0.00421	0.00432	0.00468	0.00510	0.00527	0.00610	0.00716	0.00845	0.01001	0.01179	0.01604	0.02125
2.5	0.00467	0.00478	0.00514	0.00556	0.00573	0.00656	0.00762	0.00891	0.01047	0.01225	0.01650	0.02171
2.75	0.00513	0.00524	0.00559	0.00602	0.00619	0.00702	0.00808	0.00937	0.01093	0.01271	0.01696	0.02217
3	0.00558	0.00570	0.00605	0.00648	0.00665	0.00748	0.00854	0.00983	0.01139	0.01317	0.01742	0.02263
3.5	0.00650	0.00662	0.00697	0.00740	0.00756	0.00839	0.00946	0.01075	0.01231	0.01409	0.01834	0.02354
4	0.00742	0.00754	0.00789	0.00832	0.00848	0.00931	0.01037	0.01167	0.01323	0.01500	0.01926	0.02446
4.5	0.00834	0.00846	0.00881	0.00923	0.00940	0.01023	0.01129	0.01259	0.01415	0.01592	0.02018	0.02538
5	0.00926	0.00938	0.00973	0.01015	0.01032	0.01115	0.01221	0.01350	0.01507	0.01684	0.02110	0.02630
5.5	0.01018	0.01029	0.01065	0.01107	0.01124	0.01207	0.01313	0.01442	0.01598	0.01776	0.02201	0.02722
6	0.01110	0.01121	0.01156	0.01199	0.01216	0.01299	0.01405	0.01534	0.01690	0.01868	0.02293	0.02814

TABLE 6a-d: SHKSIMC3.WK1 rev. 18.4.1991

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.5	0.69	0.75	1	1.25	1.5	1.75	2	2.5	3
0	0	0.00014	0.00050	0.00093	0.00110	0.00193	0.00299	0.00429	0.00585	0.00762	0.01188	0.01708
0.125	-0.0003	-0.0001	0.00018	0.00061	0.00078	0.00161	0.00267	0.00397	0.00552	0.00730	0.01155	0.01675
0.25	-0.0006	-0.0005	-0.0001	0.00028	0.00045	0.00128	0.00235	0.00364	0.00520	0.00697	0.01123	0.01643
0.375	-0.0010	-0.0008	-0.0004	-0.0000	0.00013	0.00096	0.00202	0.00332	0.00487	0.00665	0.01090	0.01610
0.5	-0.0013	-0.0011	-0.0007	-0.0003	-0.0001	0.00064	0.00170	0.00300	0.00455	0.00632	0.01058	0.01578
0.625	-0.0016	-0.0014	-0.0011	-0.0006	-0.0005	0.00031	0.00138	0.00267	0.00423	0.00600	0.01025	0.01545
0.75	-0.0020	-0.0018	-0.0014	-0.0010	-0.0008	-0.0000	0.00105	0.00235	0.00390	0.00567	0.00993	0.01513
0.875	-0.0023	-0.0021	-0.0017	-0.0013	-0.0011	-0.0003	0.00073	0.00203	0.00358	0.00535	0.00960	0.01480
1	-0.0026	-0.0024	-0.0020	-0.0016	-0.0014	-0.0006	0.00040	0.00170	0.00325	0.00503	0.00928	0.01448
1.25	-0.0033	-0.0031	-0.0027	-0.0023	-0.0021	-0.0013	-0.0002	0.00106	0.00260	0.00438	0.00863	0.01383
1.5	-0.0040	-0.0038	-0.0033	-0.0029	-0.0027	-0.0019	-0.0008	0.00041	0.00195	0.00373	0.00798	0.01318
1.75	-0.0046	-0.0044	-0.0040	-0.0036	-0.0034	-0.0026	-0.0015	-0.0002	0.00131	0.00308	0.00733	0.01253
2	-0.0053	-0.0051	-0.0047	-0.0042	-0.0040	-0.0032	-0.0021	-0.0008	0.00066	0.00243	0.00668	0.01188
2.25	-0.0060	-0.0057	-0.0053	-0.0048	-0.0047	-0.0038	-0.0028	-0.0015	0.00001	0.00178	0.00603	0.01123
2.5	-0.0067	-0.0064	-0.0060	-0.0055	-0.0053	-0.0045	-0.0034	-0.0021	-0.0006	0.00113	0.00538	0.01058
2.75	-0.0073	-0.0070	-0.0066	-0.0061	-0.0060	-0.0051	-0.0041	-0.0028	-0.0012	0.00048	0.00473	0.00993
3	-0.0080	-0.0077	-0.0073	-0.0068	-0.0066	-0.0058	-0.0047	-0.0034	-0.0019	-0.0001	0.00408	0.00928
3.5	-0.0093	-0.0090	-0.0086	-0.0081	-0.0079	-0.0071	-0.0060	-0.0047	-0.0032	-0.0014	0.00279	0.00798
4	-0.0107	-0.0103	-0.0099	-0.0094	-0.0092	-0.0084	-0.0073	-0.0060	-0.0045	-0.0027	0.00149	0.00668
4.5	-0.0120	-0.0116	-0.0112	-0.0107	-0.0105	-0.0097	-0.0086	-0.0073	-0.0058	-0.0040	0.00019	0.00538
5	-0.0134	-0.0130	-0.0125	-0.0120	-0.0118	-0.0110	-0.0099	-0.0086	-0.0071	-0.0053	-0.0011	0.00408
5.5	-0.0147	-0.0143	-0.0138	-0.0133	-0.0131	-0.0123	-0.0112	-0.0099	-0.0084	-0.0066	-0.0024	0.00278
6	-0.0161	-0.0156	-0.0151	-0.0146	-0.0144	-0.0136	-0.0125	-0.0112	-0.0097	-0.0079	-0.0037	0.00148

TABLE 6a-d: SHKSIMC3.WK1 rev. 18.4.1991

UK LOSS SIMULATION Date: 31.Oct.1990

Nominal GNP targeting rBeta

a \ b	0	0.25	0.46	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3
0	0.00017	0.00011	0.00009	0.00009	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00009
0.125	0.00053	0.00046	0.00043	0.00043	0.00042	0.00042	0.00041	0.00041	0.00042	0.00042	0.00042	0.00042
0.25	0.00089	0.00080	0.00077	0.00077	0.00076	0.00075	0.00075	0.00075	0.00075	0.00075	0.00076	0.00076
0.375	0.00125	0.00114	0.00111	0.00111	0.00109	0.00109	0.00108	0.00108	0.00109	0.00109	0.00109	0.00109
0.5	0.00161	0.00148	0.00145	0.00144	0.00143	0.00142	0.00142	0.00142	0.00142	0.00142	0.00143	0.00143
0.625	0.00196	0.00183	0.00179	0.00178	0.00176	0.00176	0.00175	0.00175	0.00176	0.00176	0.00176	0.00177
0.75	0.00232	0.00217	0.00213	0.00212	0.00210	0.00209	0.00209	0.00209	0.00209	0.00209	0.00210	0.00210
0.875	0.00268	0.00251	0.00246	0.00246	0.00244	0.00243	0.00242	0.00242	0.00243	0.00243	0.00243	0.00244
1	0.00304	0.00286	0.00280	0.00280	0.00277	0.00276	0.00276	0.00276	0.00276	0.00276	0.00277	0.00278
1.25	0.00375	0.00354	0.00348	0.00347	0.00344	0.00343	0.00343	0.00343	0.00343	0.00344	0.00344	0.00345
1.5	0.00447	0.00423	0.00416	0.00415	0.00411	0.00410	0.00410	0.00410	0.00410	0.00411	0.00411	0.00412
1.75	0.00519	0.00492	0.00483	0.00482	0.00479	0.00477	0.00477	0.00477	0.00477	0.00478	0.00479	0.00479
2	0.00590	0.00560	0.00551	0.00550	0.00546	0.00544	0.00544	0.00544	0.00544	0.00545	0.00546	0.00547
2.25	0.00662	0.00629	0.00619	0.00618	0.00613	0.00611	0.00611	0.00611	0.00611	0.00612	0.00613	0.00614
2.5	0.00734	0.00697	0.00687	0.00685	0.00680	0.00678	0.00678	0.00678	0.00678	0.00679	0.00680	0.00681
2.75	0.00805	0.00766	0.00754	0.00753	0.00747	0.00745	0.00745	0.00745	0.00745	0.00746	0.00747	0.00749
3	0.00877	0.00835	0.00822	0.00820	0.00815	0.00812	0.00812	0.00812	0.00812	0.00813	0.00815	0.00816
3.5	0.01020	0.00972	0.00957	0.00956	0.00949	0.00946	0.00946	0.00946	0.00946	0.00947	0.00949	0.00950
4	0.01163	0.01109	0.01093	0.01091	0.01083	0.01080	0.01080	0.01080	0.01080	0.01081	0.01083	0.01085
4.5	0.01307	0.01246	0.01228	0.01226	0.01218	0.01214	0.01214	0.01214	0.01215	0.01215	0.01218	0.01220
5	0.01450	0.01383	0.01364	0.01361	0.01352	0.01349	0.01348	0.01348	0.01349	0.01350	0.01352	0.01354
5.5	0.01593	0.01521	0.01499	0.01496	0.01486	0.01483	0.01481	0.01482	0.01483	0.01484	0.01486	0.01489
6	0.01737	0.01658	0.01634	0.01632	0.01621	0.01617	0.01615	0.01616	0.01617	0.01618	0.01621	0.01623
Var(u)	0.00017	0.00018	0.00021	0.00021	0.00027	0.00034	0.00042	0.00052	0.00064	0.00077	0.00108	0.00144
Var(e1)		0.00251		Cov(e1,v1)		0.00108						
Var(v1)		0.00150										

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.46	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3
0	0.00017	0.00029	0.00060	0.00067	0.00130	0.00217	0.00329	0.00466	0.00627	0.00812	0.01256	0.01797
0.125	0.00040	0.00052	0.00082	0.00090	0.00153	0.00240	0.00352	0.00489	0.00650	0.00835	0.01279	0.01820
0.25	0.00063	0.00075	0.00105	0.00113	0.00176	0.00263	0.00375	0.00512	0.00672	0.00858	0.01302	0.01843
0.375	0.00086	0.00098	0.00128	0.00136	0.00199	0.00286	0.00398	0.00535	0.00695	0.00881	0.01325	0.01866
0.5	0.00109	0.00121	0.00151	0.00159	0.00222	0.00309	0.00421	0.00558	0.00718	0.00904	0.01348	0.01889
0.625	0.00132	0.00144	0.00174	0.00182	0.00245	0.00332	0.00444	0.00580	0.00741	0.00927	0.01371	0.01912
0.75	0.00155	0.00167	0.00197	0.00205	0.00268	0.00355	0.00467	0.00603	0.00764	0.00950	0.01394	0.01935
0.875	0.00178	0.00190	0.00220	0.00228	0.00291	0.00378	0.00490	0.00626	0.00787	0.00973	0.01416	0.01958
1	0.00201	0.00213	0.00243	0.00251	0.00314	0.00401	0.00513	0.00649	0.00810	0.00996	0.01439	0.01981
1.25	0.00247	0.00259	0.00289	0.00297	0.00360	0.00447	0.00559	0.00695	0.00856	0.01041	0.01485	0.02027
1.5	0.00293	0.00305	0.00335	0.00343	0.00405	0.00493	0.00605	0.00741	0.00902	0.01087	0.01531	0.02073
1.75	0.00339	0.00351	0.00381	0.00389	0.00451	0.00539	0.00651	0.00787	0.00948	0.01133	0.01577	0.02119
2	0.00385	0.00397	0.00427	0.00435	0.00497	0.00585	0.00697	0.00833	0.00994	0.01179	0.01623	0.02164
2.25	0.00430	0.00443	0.00473	0.00480	0.00543	0.00631	0.00742	0.00879	0.01040	0.01225	0.01669	0.02210
2.5	0.00476	0.00488	0.00519	0.00526	0.00589	0.00676	0.00788	0.00925	0.01086	0.01271	0.01715	0.02256
2.75	0.00522	0.00534	0.00565	0.00572	0.00635	0.00722	0.00834	0.00971	0.01132	0.01317	0.01761	0.02302
3	0.00568	0.00580	0.00610	0.00618	0.00681	0.00768	0.00880	0.01017	0.01178	0.01363	0.01807	0.02348
3.5	0.00660	0.00672	0.00702	0.00710	0.00773	0.00860	0.00972	0.01108	0.01269	0.01455	0.01899	0.02440
4	0.00752	0.00764	0.00794	0.00802	0.00865	0.00952	0.01064	0.01200	0.01361	0.01546	0.01990	0.02532
4.5	0.00844	0.00856	0.00886	0.00894	0.00956	0.01044	0.01156	0.01292	0.01453	0.01638	0.02082	0.02624
5	0.00936	0.00948	0.00978	0.00985	0.01048	0.01136	0.01247	0.01384	0.01545	0.01730	0.02174	0.02715
5.5	0.01027	0.01039	0.01070	0.01077	0.01140	0.01227	0.01339	0.01476	0.01637	0.01822	0.02266	0.02807
6	0.01119	0.01131	0.01161	0.01169	0.01232	0.01319	0.01431	0.01568	0.01728	0.01914	0.02358	0.02899

TABLE 6a-d: SHKSIMC3.WK1 rev. 18.4.1991

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.46	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3
0	0	0.00018	0.00050	0.00058	0.00121	0.00209	0.00321	0.00457	0.00618	0.00803	0.01247	0.01788
0.125	-0.0001	0.00006	0.00039	0.00047	0.00110	0.00198	0.00310	0.00447	0.00607	0.00793	0.01236	0.01777
0.25	-0.0002	-0.0000	0.00028	0.00036	0.00100	0.00188	0.00300	0.00436	0.00597	0.00782	0.01226	0.01767
0.375	-0.0003	-0.0001	0.00017	0.00025	0.00089	0.00177	0.00289	0.00426	0.00586	0.00772	0.01215	0.01756
0.5	-0.0005	-0.0002	0.00006	0.00014	0.00079	0.00167	0.00279	0.00415	0.00576	0.00761	0.01204	0.01745
0.625	-0.0006	-0.0003	-0.0000	0.00003	0.00068	0.00156	0.00268	0.00405	0.00565	0.00750	0.01194	0.01735
0.75	-0.0007	-0.0005	-0.0001	-0.0000	0.00057	0.00145	0.00258	0.00394	0.00555	0.00740	0.01183	0.01724
0.875	-0.0009	-0.0006	-0.0002	-0.0001	0.00047	0.00135	0.00247	0.00383	0.00544	0.00729	0.01172	0.01713
1	-0.0010	-0.0007	-0.0003	-0.0002	0.00036	0.00124	0.00237	0.00373	0.00534	0.00719	0.01162	0.01703
1.25	-0.0012	-0.0009	-0.0005	-0.0005	0.00015	0.00103	0.00215	0.00352	0.00512	0.00697	0.01141	0.01681
1.5	-0.0015	-0.0011	-0.0008	-0.0007	-0.0000	0.00082	0.00194	0.00331	0.00491	0.00676	0.01119	0.01660
1.75	-0.0018	-0.0014	-0.0010	-0.0009	-0.0002	0.00061	0.00173	0.00310	0.00470	0.00655	0.01098	0.01639
2	-0.0020	-0.0016	-0.0012	-0.0011	-0.0004	0.00040	0.00152	0.00289	0.00449	0.00634	0.01077	0.01617
2.25	-0.0023	-0.0018	-0.0014	-0.0013	-0.0006	0.00019	0.00131	0.00268	0.00428	0.00613	0.01056	0.01596
2.5	-0.0025	-0.0020	-0.0016	-0.0015	-0.0009	-0.0000	0.00110	0.00246	0.00407	0.00592	0.01034	0.01574
2.75	-0.0028	-0.0023	-0.0018	-0.0018	-0.0011	-0.0002	0.00089	0.00225	0.00386	0.00570	0.01013	0.01553
3	-0.0030	-0.0025	-0.0021	-0.0020	-0.0013	-0.0004	0.00068	0.00204	0.00365	0.00549	0.00992	0.01532
3.5	-0.0036	-0.0029	-0.0025	-0.0024	-0.0017	-0.0008	0.00026	0.00162	0.00322	0.00507	0.00949	0.01489
4	-0.0041	-0.0034	-0.0029	-0.0028	-0.0021	-0.0012	-0.0001	0.00120	0.00280	0.00465	0.00907	0.01446
4.5	-0.0046	-0.0039	-0.0034	-0.0033	-0.0026	-0.0017	-0.0005	0.00078	0.00238	0.00422	0.00864	0.01404
5	-0.0051	-0.0043	-0.0038	-0.0037	-0.0030	-0.0021	-0.0010	0.00036	0.00196	0.00380	0.00822	0.01361
5.5	-0.0056	-0.0048	-0.0042	-0.0041	-0.0034	-0.0025	-0.0014	-0.0000	0.00154	0.00338	0.00779	0.01318
6	-0.0061	-0.0052	-0.0047	-0.0046	-0.0038	-0.0029	-0.0018	-0.0004	0.00111	0.00295	0.00737	0.01275

TABLE 7a-d: SHKSIMC1.WK1 rev. 18.4.1991

US LOSS SIMULATION Date: 31.Oct.1990 Rev.: 18.April.1991

Nominal GNP targeting rule Beta

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2
0	0.00066	0.00041	0.00028	0.00020	0.00015	0.00001	0.00009	0.00009	0.00008	0.00006
0.125	0.00106	0.00075	0.00058	0.00049	0.00042	0.00024	0.00035	0.00034	0.00033	0.00031
0.25	0.00146	0.00109	0.00089	0.00077	0.00070	0.00048	0.00061	0.00060	0.00058	0.00057
0.375	0.00186	0.00142	0.00119	0.00106	0.00097	0.00072	0.00087	0.00086	0.00084	0.00082
0.5	0.00225	0.00176	0.00150	0.00134	0.00124	0.00096	0.00113	0.00111	0.00109	0.00107
0.625	0.00265	0.00210	0.00180	0.00163	0.00152	0.00119	0.00139	0.00137	0.00135	0.00132
0.75	0.00305	0.00244	0.00211	0.00191	0.00179	0.00143	0.00165	0.00163	0.00160	0.00157
0.875	0.00345	0.00278	0.00241	0.00220	0.00206	0.00167	0.00190	0.00188	0.00186	0.00182
1	0.00385	0.00311	0.00272	0.00248	0.00233	0.00191	0.00216	0.00214	0.00211	0.00207
1.25	0.00465	0.00379	0.00333	0.00305	0.00288	0.00238	0.00268	0.00265	0.00262	0.00258
1.5	0.00545	0.00447	0.00394	0.00363	0.00343	0.00285	0.00320	0.00317	0.00313	0.00308
1.75	0.00625	0.00514	0.00455	0.00420	0.00397	0.00333	0.00372	0.00368	0.00364	0.00358
2	0.00705	0.00582	0.00516	0.00477	0.00452	0.00380	0.00423	0.00420	0.00415	0.00408
2.25	0.00785	0.00649	0.00577	0.00534	0.00506	0.00428	0.00475	0.00471	0.00466	0.00459
2.5	0.00865	0.00717	0.00638	0.00591	0.00561	0.00475	0.00527	0.00522	0.00517	0.00509
2.75	0.00945	0.00784	0.00699	0.00648	0.00616	0.00523	0.00579	0.00574	0.00567	0.00559
3	0.01025	0.00852	0.00760	0.00705	0.00670	0.00570	0.00630	0.00625	0.00618	0.00609
3.5	0.01185	0.00987	0.00882	0.00819	0.00780	0.00665	0.00734	0.00728	0.00720	0.00710
4	0.01344	0.01122	0.01004	0.00934	0.00889	0.00760	0.00837	0.00831	0.00822	0.00810
4.5	0.01504	0.01258	0.01126	0.01048	0.00998	0.00855	0.00941	0.00933	0.00924	0.00911
5	0.01664	0.01393	0.01248	0.01162	0.01107	0.00950	0.01044	0.01036	0.01026	0.01011
5.5	0.01824	0.01528	0.01370	0.01276	0.01216	0.01045	0.01148	0.01139	0.01127	0.01112
6	0.01984	0.01663	0.01492	0.01390	0.01326	0.01140	0.01251	0.01242	0.01229	0.01213
Var(u)	0.00066	0.00064	0.00063	0.00062	0.00062	0.00006	0.00061	0.00061	0.00061	0.00061

Var(e1) = 0.00187 Cov(e1,v = 0.00063

Var(v1) = 0.00091

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2
0	0.00066	0.00074	0.00101	0.00147	0.00212	0.00241	0.00400	0.00446	0.00522	0.00663
0.125	0.00084	0.00093	0.00120	0.00166	0.00231	0.00260	0.00418	0.00465	0.00541	0.00682
0.25	0.00103	0.00111	0.00138	0.00185	0.00250	0.00279	0.00437	0.00484	0.00560	0.00701
0.375	0.00122	0.00130	0.00157	0.00203	0.00269	0.00297	0.00456	0.00503	0.00578	0.00720
0.5	0.00141	0.00149	0.00176	0.00222	0.00287	0.00316	0.00475	0.00522	0.00597	0.00739
0.625	0.00160	0.00168	0.00195	0.00241	0.00306	0.00335	0.00494	0.00540	0.00616	0.00757
0.75	0.00179	0.00187	0.00214	0.00260	0.00325	0.00354	0.00513	0.00559	0.00635	0.00776
0.875	0.00197	0.00206	0.00233	0.00279	0.00344	0.00373	0.00531	0.00578	0.00654	0.00795
1	0.00216	0.00224	0.00251	0.00298	0.00363	0.00392	0.00550	0.00597	0.00673	0.00814
1.25	0.00254	0.00262	0.00289	0.00335	0.00400	0.00429	0.00588	0.00635	0.00710	0.00852
1.5	0.00292	0.00300	0.00327	0.00373	0.00438	0.00467	0.00626	0.00672	0.00748	0.00889
1.75	0.00329	0.00337	0.00364	0.00411	0.00476	0.00505	0.00663	0.00710	0.00786	0.00927
2	0.00367	0.00375	0.00402	0.00448	0.00513	0.00542	0.00701	0.00748	0.00823	0.00965
2.25	0.00405	0.00413	0.00440	0.00486	0.00551	0.00580	0.00739	0.00785	0.00861	0.01002
2.5	0.00442	0.00450	0.00477	0.00524	0.00589	0.00618	0.00776	0.00823	0.00898	0.01040
2.75	0.00480	0.00488	0.00515	0.00561	0.00626	0.00655	0.00814	0.00860	0.00936	0.01077
3	0.00517	0.00526	0.00553	0.00599	0.00664	0.00693	0.00851	0.00898	0.00974	0.01115
3.5	0.00593	0.00601	0.00628	0.00674	0.00739	0.00768	0.00927	0.00973	0.01049	0.01190
4	0.00668	0.00676	0.00703	0.00749	0.00815	0.00843	0.01002	0.01049	0.01124	0.01266
4.5	0.00743	0.00751	0.00779	0.00825	0.00890	0.00919	0.01077	0.01124	0.01200	0.01341
5	0.00819	0.00827	0.00854	0.00900	0.00965	0.00994	0.01153	0.01199	0.01275	0.01416
5.5	0.00894	0.00902	0.00929	0.00975	0.01041	0.01069	0.01228	0.01275	0.01350	0.01492
6	0.00969	0.00977	0.01005	0.01051	0.01116	0.01145	0.01303	0.01350	0.01426	0.01567

TABLE 7a-d: SHKSIMC1.WK1 rev. 18.4.1991

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.5	0.75	1	1.25	1.5	1.6	1.75	2
0	0	0.00032	0.00073	0.00126	0.00197	0.00240	0.00390	0.00437	0.00514	0.00656
0.125	-0.0002	0.00017	0.00061	0.00117	0.00188	0.00235	0.00383	0.00430	0.00507	0.00650
0.25	-0.0004	0.00002	0.00049	0.00107	0.00180	0.00230	0.00376	0.00424	0.00501	0.00644
0.375	-0.0006	-0.0001	0.00038	0.00097	0.00171	0.00225	0.00369	0.00417	0.00494	0.00638
0.5	-0.0008	-0.0002	0.00026	0.00088	0.00163	0.00220	0.00362	0.00410	0.00487	0.00631
0.625	-0.0010	-0.0004	0.00014	0.00078	0.00154	0.00215	0.00355	0.00403	0.00481	0.00625
0.75	-0.0012	-0.0005	0.00002	0.00068	0.00146	0.00210	0.00348	0.00396	0.00474	0.00619
0.875	-0.0014	-0.0007	-0.0000	0.00058	0.00137	0.00205	0.00341	0.00389	0.00468	0.00612
1	-0.0016	-0.0008	-0.0002	0.00049	0.00129	0.00201	0.00333	0.00382	0.00461	0.00606
1.25	-0.0021	-0.0011	-0.0004	0.00029	0.00112	0.00191	0.00319	0.00369	0.00448	0.00593
1.5	-0.0025	-0.0014	-0.0006	0.00010	0.00095	0.00181	0.00305	0.00355	0.00434	0.00581
1.75	-0.0029	-0.0017	-0.0009	-0.0000	0.00078	0.00171	0.00291	0.00341	0.00421	0.00568
2	-0.0033	-0.0020	-0.0011	-0.0002	0.00061	0.00161	0.00277	0.00327	0.00408	0.00556
2.25	-0.0038	-0.0023	-0.0013	-0.0004	0.00044	0.00152	0.00263	0.00314	0.00395	0.00543
2.5	-0.0042	-0.0026	-0.0016	-0.0006	0.00027	0.00142	0.00249	0.00300	0.00381	0.00530
2.75	-0.0046	-0.0029	-0.0018	-0.0008	0.00010	0.00132	0.00235	0.00286	0.00368	0.00518
3	-0.0050	-0.0032	-0.0020	-0.0010	-0.0000	0.00122	0.00221	0.00273	0.00355	0.00505
3.5	-0.0059	-0.0038	-0.0025	-0.0014	-0.0004	0.00102	0.00192	0.00245	0.00328	0.00480
4	-0.0067	-0.0044	-0.0030	-0.0018	-0.0007	0.00083	0.00164	0.00218	0.00302	0.00455
4.5	-0.0076	-0.0050	-0.0034	-0.0022	-0.0010	0.00063	0.00136	0.00190	0.00275	0.00430
5	-0.0084	-0.0056	-0.0039	-0.0026	-0.0014	0.00044	0.00108	0.00163	0.00249	0.00404
5.5	-0.0092	-0.0062	-0.0044	-0.0030	-0.0017	0.00024	0.00080	0.00135	0.00222	0.00379
6	-0.0101	-0.0068	-0.0048	-0.0033	-0.0020	0.00004	0.00051	0.00108	0.00196	0.00354

Note: The covariances are the empirical covariances for the 74.1-89.4 period
Note: SHKSIMC1 is a worksheet with DS velocity/exch rate shocks and
supply shocks derived by an output-gap approach.
Note: Uses correct LE1## data.
Note: Uses correct LE1##_RR variables 18.4.1991

TABLE 7a-d: SHKSIMC1.WK1 rev. 18.4.1991

GERMAN LOSS SIMULATION
Nominal GNP targeting rBeta

a \ b	0	0.25	0.33	0.5	0.75	1	1.25	1.5	1.75	2
0	0.00043	0.00027	0.00024	0.00018	0.00014	0.00010	0.00008	0.00007	0.00006	0.00005
0.125	0.00112	0.00092	0.00088	0.00082	0.00075	0.00072	0.00069	0.00067	0.00066	0.00065
0.25	0.00182	0.00158	0.00153	0.00145	0.00137	0.00133	0.00130	0.00127	0.00126	0.00125
0.375	0.00251	0.00223	0.00217	0.00208	0.00199	0.00194	0.00190	0.00188	0.00186	0.00185
0.5	0.00320	0.00288	0.00282	0.00271	0.00261	0.00255	0.00251	0.00248	0.00246	0.00244
0.625	0.00390	0.00354	0.00346	0.00334	0.00323	0.00316	0.00312	0.00308	0.00306	0.00304
0.75	0.00459	0.00419	0.00411	0.00398	0.00385	0.00377	0.00372	0.00369	0.00366	0.00364
0.875	0.00528	0.00484	0.00475	0.00461	0.00447	0.00439	0.00433	0.00429	0.00426	0.00424
1	0.00598	0.00549	0.00540	0.00524	0.00509	0.00500	0.00493	0.00489	0.00486	0.00484
1.25	0.00736	0.00680	0.00669	0.00650	0.00633	0.00622	0.00615	0.00610	0.00606	0.00603
1.5	0.00875	0.00811	0.00798	0.00777	0.00757	0.00744	0.00736	0.00730	0.00726	0.00723
1.75	0.01014	0.00941	0.00927	0.00903	0.00881	0.00867	0.00857	0.00851	0.00846	0.00843
2	0.01152	0.01072	0.01056	0.01030	0.01005	0.00989	0.00979	0.00971	0.00966	0.00962
2.25	0.01291	0.01203	0.01185	0.01156	0.01129	0.01111	0.01100	0.01092	0.01086	0.01082
2.5	0.01430	0.01333	0.01314	0.01282	0.01253	0.01234	0.01221	0.01213	0.01206	0.01202
2.75	0.01568	0.01464	0.01443	0.01409	0.01376	0.01356	0.01343	0.01333	0.01326	0.01321
3	0.01707	0.01595	0.01572	0.01535	0.01500	0.01478	0.01464	0.01454	0.01446	0.01441
3.5	0.01984	0.01856	0.01830	0.01788	0.01748	0.01723	0.01706	0.01695	0.01687	0.01680
4	0.02262	0.02117	0.02088	0.02041	0.01996	0.01968	0.01949	0.01936	0.01927	0.01920
4.5	0.02539	0.02378	0.02346	0.02294	0.02244	0.02212	0.02192	0.02177	0.02167	0.02159
5	0.02816	0.02640	0.02604	0.02546	0.02492	0.02457	0.02434	0.02418	0.02407	0.02399
5.5	0.03094	0.02901	0.02862	0.02799	0.02739	0.02702	0.02677	0.02659	0.02647	0.02638
6	0.03371	0.03162	0.03120	0.03052	0.02987	0.02946	0.02919	0.02901	0.02887	0.02877
Var(u)	0.00043	0.00042	0.00042	0.00042	0.00042	0.00043	0.00044	0.00045	0.00047	0.00049
Var(e1)		0.00467		Cov(e1,v1)		0.00385				
Var(v1)		0.00357								

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.33	0.5	0.75	1	1.25	1.5	1.75	2
0	0.00043	0.00046	0.00048	0.00056	0.00073	0.00097	0.00128	0.00166	0.00212	0.00265
0.125	0.00050	0.00052	0.00055	0.00062	0.00079	0.00104	0.00135	0.00173	0.00219	0.00271
0.25	0.00056	0.00059	0.00062	0.00069	0.00086	0.00110	0.00141	0.00180	0.00225	0.00278
0.375	0.00063	0.00066	0.00068	0.00076	0.00093	0.00117	0.00148	0.00187	0.00232	0.00285
0.5	0.00070	0.00073	0.00075	0.00083	0.00100	0.00124	0.00155	0.00193	0.00239	0.00291
0.625	0.00077	0.00079	0.00082	0.00089	0.00106	0.00130	0.00162	0.00200	0.00246	0.00298
0.75	0.00083	0.00086	0.00088	0.00096	0.00113	0.00137	0.00168	0.00207	0.00252	0.00305
0.875	0.00090	0.00093	0.00095	0.00103	0.00120	0.00144	0.00175	0.00213	0.00259	0.00312
1	0.00097	0.00100	0.00102	0.00109	0.00126	0.00151	0.00182	0.00220	0.00266	0.00318
1.25	0.00110	0.00113	0.00115	0.00123	0.00140	0.00164	0.00195	0.00234	0.00279	0.00332
1.5	0.00124	0.00126	0.00129	0.00136	0.00153	0.00177	0.00209	0.00247	0.00293	0.00345
1.75	0.00137	0.00140	0.00142	0.00150	0.00167	0.00191	0.00222	0.00261	0.00306	0.00359
2	0.00151	0.00153	0.00156	0.00163	0.00180	0.00204	0.00236	0.00274	0.00319	0.00372
2.25	0.00164	0.00167	0.00169	0.00177	0.00194	0.00218	0.00249	0.00287	0.00333	0.00386
2.5	0.00177	0.00180	0.00183	0.00190	0.00207	0.00231	0.00262	0.00301	0.00346	0.00399
2.75	0.00191	0.00194	0.00196	0.00204	0.00221	0.00245	0.00276	0.00314	0.00360	0.00412
3	0.00204	0.00207	0.00209	0.00217	0.00234	0.00258	0.00289	0.00328	0.00373	0.00426
3.5	0.00231	0.00234	0.00236	0.00244	0.00261	0.00285	0.00316	0.00355	0.00400	0.00453
4	0.00258	0.00261	0.00263	0.00271	0.00288	0.00312	0.00343	0.00382	0.00427	0.00480
4.5	0.00285	0.00288	0.00290	0.00298	0.00315	0.00339	0.00370	0.00408	0.00454	0.00507
5	0.00312	0.00315	0.00317	0.00325	0.00342	0.00366	0.00397	0.00435	0.00481	0.00533
5.5	0.00339	0.00342	0.00344	0.00351	0.00368	0.00393	0.00424	0.00462	0.00508	0.00560
6	0.00366	0.00368	0.00371	0.00378	0.00395	0.00419	0.00451	0.00489	0.00535	0.00587

TABLE 7a-d: SHKSIMC1.WK1 rev. 18.4.1991

Difference between Exchange Rate Rule and Nom GNP Targetting

a \ b	0	0.25	0.33	0.5	0.75	1	1.25	1.5	1.75	2
0	0	0.00018	0.00024	0.00037	0.00059	0.00086	0.00119	0.00159	0.00206	0.00259
0.125	-0.0006	-0.0003	-0.0003	-0.0001	0.00003	0.00031	0.00065	0.00105	0.00152	0.00206
0.25	-0.0012	-0.0009	-0.0009	-0.0007	-0.0005	-0.0002	0.00011	0.00052	0.00099	0.00153
0.375	-0.0018	-0.0015	-0.0014	-0.0013	-0.0010	-0.0007	-0.0004	-0.0000	0.00046	0.00100
0.5	-0.0025	-0.0021	-0.0020	-0.0018	-0.0016	-0.0013	-0.0009	-0.0005	-0.0000	0.00047
0.625	-0.0031	-0.0027	-0.0026	-0.0024	-0.0021	-0.0018	-0.0014	-0.0010	-0.0006	-0.0000
0.75	-0.0037	-0.0033	-0.0032	-0.0030	-0.0027	-0.0024	-0.0020	-0.0016	-0.0011	-0.0005
0.875	-0.0043	-0.0039	-0.0037	-0.0035	-0.0032	-0.0029	-0.0025	-0.0021	-0.0016	-0.0011
1	-0.0050	-0.0044	-0.0043	-0.0041	-0.0038	-0.0034	-0.0031	-0.0026	-0.0022	-0.0016
1.25	-0.0062	-0.0056	-0.0055	-0.0052	-0.0049	-0.0045	-0.0041	-0.0037	-0.0032	-0.0027
1.5	-0.0075	-0.0068	-0.0066	-0.0064	-0.0060	-0.0056	-0.0052	-0.0048	-0.0043	-0.0037
1.75	-0.0087	-0.0080	-0.0078	-0.0075	-0.0071	-0.0067	-0.0063	-0.0059	-0.0054	-0.0048
2	-0.0100	-0.0091	-0.0089	-0.0086	-0.0082	-0.0078	-0.0074	-0.0069	-0.0064	-0.0059
2.25	-0.0112	-0.0103	-0.0101	-0.0097	-0.0093	-0.0089	-0.0085	-0.0080	-0.0075	-0.0069
2.5	-0.0125	-0.0115	-0.0113	-0.0109	-0.0104	-0.0100	-0.0095	-0.0091	-0.0085	-0.0080
2.75	-0.0137	-0.0127	-0.0124	-0.0120	-0.0115	-0.0111	-0.0106	-0.0101	-0.0096	-0.0090
3	-0.0150	-0.0138	-0.0136	-0.0131	-0.0126	-0.0122	-0.0117	-0.0112	-0.0107	-0.0101
3.5	-0.0175	-0.0162	-0.0159	-0.0154	-0.0148	-0.0143	-0.0139	-0.0134	-0.0128	-0.0122
4	-0.0200	-0.0185	-0.0182	-0.0176	-0.0170	-0.0165	-0.0160	-0.0155	-0.0149	-0.0144
4.5	-0.0225	-0.0209	-0.0205	-0.0199	-0.0192	-0.0187	-0.0182	-0.0176	-0.0171	-0.0165
5	-0.0250	-0.0232	-0.0228	-0.0222	-0.0215	-0.0209	-0.0203	-0.0198	-0.0192	-0.0186
5.5	-0.0275	-0.0255	-0.0251	-0.0244	-0.0237	-0.0230	-0.0225	-0.0219	-0.0213	-0.0207
6	-0.0300	-0.0279	-0.0274	-0.0267	-0.0259	-0.0252	-0.0246	-0.0241	-0.0235	-0.0228

TABLE 7a-d: SHKSIMC1.WK1 rev. 18.4.1991

JAPAN LOSS SIMULATION

Nominal GNP targeting rule Beta

a \ b	0	0.25	0.5	0.69	0.75	1	1.25	1.5	1.75	2
0	0.00014	0.00008	0.00006	0.00005	0.00004	0.00004	0.00003	0.00003	0.00003	0.00002
0.125	0.00072	0.00065	0.00062	0.00061	0.00060	0.00059	0.00059	0.00058	0.00058	0.00058
0.25	0.00130	0.00122	0.00118	0.00116	0.00116	0.00115	0.00114	0.00114	0.00113	0.00113
0.375	0.00188	0.00179	0.00174	0.00172	0.00172	0.00170	0.00169	0.00169	0.00169	0.00168
0.5	0.00246	0.00236	0.00230	0.00228	0.00228	0.00226	0.00225	0.00224	0.00224	0.00224
0.625	0.00304	0.00292	0.00287	0.00284	0.00283	0.00281	0.00280	0.00280	0.00279	0.00279
0.75	0.00362	0.00349	0.00343	0.00340	0.00339	0.00337	0.00336	0.00335	0.00334	0.00334
0.875	0.00420	0.00406	0.00399	0.00396	0.00395	0.00393	0.00391	0.00390	0.00390	0.00389
1	0.00478	0.00463	0.00455	0.00452	0.00451	0.00448	0.00447	0.00446	0.00445	0.00445
1.25	0.00594	0.00576	0.00567	0.00563	0.00562	0.00559	0.00558	0.00556	0.00556	0.00555
1.5	0.00710	0.00690	0.00680	0.00675	0.00674	0.00670	0.00668	0.00667	0.00666	0.00666
1.75	0.00827	0.00803	0.00792	0.00787	0.00785	0.00782	0.00779	0.00778	0.00777	0.00776
2	0.00943	0.00917	0.00904	0.00898	0.00897	0.00893	0.00890	0.00889	0.00888	0.00887
2.25	0.01059	0.01030	0.01016	0.01010	0.01009	0.01004	0.01001	0.00999	0.00998	0.00997
2.5	0.01175	0.01144	0.01129	0.01122	0.01120	0.01115	0.01112	0.01110	0.01109	0.01108
2.75	0.01291	0.01258	0.01241	0.01233	0.01232	0.01226	0.01223	0.01221	0.01219	0.01218
3	0.01407	0.01371	0.01353	0.01345	0.01343	0.01337	0.01334	0.01331	0.01330	0.01329
3.5	0.01639	0.01598	0.01578	0.01568	0.01566	0.01560	0.01556	0.01553	0.01551	0.01550
4	0.01872	0.01825	0.01802	0.01792	0.01789	0.01782	0.01777	0.01774	0.01772	0.01771
4.5	0.02104	0.02052	0.02027	0.02015	0.02013	0.02004	0.01999	0.01996	0.01994	0.01992
5	0.02336	0.02280	0.02251	0.02239	0.02236	0.02226	0.02221	0.02217	0.02215	0.02213
5.5	0.02568	0.02507	0.02476	0.02462	0.02459	0.02449	0.02443	0.02439	0.02436	0.02435
6	0.02801	0.02734	0.02700	0.02685	0.02682	0.02671	0.02664	0.02660	0.02657	0.02656
Var(u)	0.00014	0.00014	0.00014	0.00014	0.00015	0.00016	0.00018	0.00020	0.00023	0.00026
Var(e1)		0.00436		Cov(e1,v1)		0.00258				
Var(v1)		0.00264								

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.5	0.69	0.75	1	1.25	1.5	1.75	2
0	0.00014	0.00025	0.00060	0.00102	0.00118	0.00200	0.00305	0.00433	0.00585	0.00761
0.125	0.00037	0.00048	0.00083	0.00125	0.00141	0.00223	0.00328	0.00456	0.00608	0.00784
0.25	0.00060	0.00071	0.00106	0.00148	0.00164	0.00246	0.00351	0.00479	0.00631	0.00807
0.375	0.00083	0.00094	0.00129	0.00171	0.00187	0.00269	0.00374	0.00502	0.00654	0.00830
0.5	0.00105	0.00117	0.00152	0.00194	0.00210	0.00292	0.00397	0.00525	0.00677	0.00853
0.625	0.00128	0.00140	0.00175	0.00217	0.00233	0.00315	0.00420	0.00548	0.00700	0.00876
0.75	0.00151	0.00163	0.00198	0.00240	0.00256	0.00338	0.00443	0.00571	0.00723	0.00899
0.875	0.00174	0.00186	0.00221	0.00263	0.00279	0.00360	0.00466	0.00594	0.00746	0.00922
1	0.00197	0.00209	0.00244	0.00286	0.00302	0.00383	0.00489	0.00617	0.00769	0.00945
1.25	0.00243	0.00255	0.00289	0.00332	0.00348	0.00429	0.00534	0.00663	0.00815	0.00990
1.5	0.00289	0.00301	0.00335	0.00377	0.00394	0.00475	0.00580	0.00709	0.00861	0.01036
1.75	0.00335	0.00346	0.00381	0.00423	0.00440	0.00521	0.00626	0.00755	0.00907	0.01082
2	0.00381	0.00392	0.00427	0.00469	0.00485	0.00567	0.00672	0.00801	0.00953	0.01128
2.25	0.00427	0.00438	0.00473	0.00515	0.00531	0.00613	0.00718	0.00847	0.00999	0.01174
2.5	0.00473	0.00484	0.00519	0.00561	0.00577	0.00659	0.00764	0.00893	0.01045	0.01220
2.75	0.00519	0.00530	0.00565	0.00607	0.00623	0.00705	0.00810	0.00939	0.01091	0.01266
3	0.00565	0.00576	0.00611	0.00653	0.00669	0.00751	0.00856	0.00985	0.01137	0.01312
3.5	0.00657	0.00668	0.00703	0.00745	0.00761	0.00843	0.00948	0.01076	0.01228	0.01404
4	0.00748	0.00760	0.00795	0.00837	0.00853	0.00935	0.01040	0.01168	0.01320	0.01496
4.5	0.00840	0.00852	0.00886	0.00929	0.00945	0.01026	0.01131	0.01260	0.01412	0.01587
5	0.00932	0.00943	0.00978	0.01020	0.01037	0.01118	0.01223	0.01352	0.01504	0.01679
5.5	0.01024	0.01035	0.01070	0.01112	0.01128	0.01210	0.01315	0.01444	0.01596	0.01771
6	0.01116	0.01127	0.01162	0.01204	0.01220	0.01302	0.01407	0.01536	0.01688	0.01863

TABLE 7a-d: SHKSIMC1.WK1 rev. 18.4.1991

Difference between Exchange Rate Rule and Non GNP Targetting

a \ b	0	0.25	0.5	0.69	0.75	1	1.25	1.5	1.75	2
0	0	0.00016	0.00053	0.00097	0.00113	0.00196	0.00301	0.00430	0.00582	0.00759
0.125	-0.0003	-0.0001	0.00020	0.00064	0.00080	0.00163	0.00269	0.00398	0.00550	0.00726
0.25	-0.0007	-0.0005	-0.0001	0.00031	0.00047	0.00130	0.00236	0.00365	0.00518	0.00693
0.375	-0.0010	-0.0008	-0.0004	-0.0000	0.00015	0.00098	0.00204	0.00333	0.00485	0.00661
0.5	-0.0014	-0.0011	-0.0007	-0.0003	-0.0001	0.00065	0.00171	0.00301	0.00453	0.00629
0.625	-0.0017	-0.0015	-0.0011	-0.0006	-0.0005	0.00033	0.00139	0.00268	0.00421	0.00596
0.75	-0.0021	-0.0018	-0.0014	-0.0010	-0.0008	0.00000	0.00106	0.00236	0.00388	0.00564
0.875	-0.0024	-0.0022	-0.0017	-0.0013	-0.0011	-0.0003	0.00074	0.00203	0.00356	0.00532
1	-0.0028	-0.0025	-0.0021	-0.0016	-0.0014	-0.0006	0.00041	0.00171	0.00324	0.00499
1.25	-0.0035	-0.0032	-0.0027	-0.0023	-0.0021	-0.0012	-0.0002	0.00106	0.00259	0.00435
1.5	-0.0042	-0.0038	-0.0034	-0.0029	-0.0028	-0.0019	-0.0008	0.00041	0.00194	0.00370
1.75	-0.0049	-0.0045	-0.0041	-0.0036	-0.0034	-0.0026	-0.0015	-0.0002	0.00129	0.00306
2	-0.0056	-0.0052	-0.0047	-0.0042	-0.0041	-0.0032	-0.0021	-0.0008	0.00065	0.00241
2.25	-0.0063	-0.0059	-0.0054	-0.0049	-0.0047	-0.0039	-0.0028	-0.0015	0.00000	0.00176
2.5	-0.0070	-0.0065	-0.0060	-0.0056	-0.0054	-0.0045	-0.0034	-0.0021	-0.0006	0.00112
2.75	-0.0077	-0.0072	-0.0067	-0.0062	-0.0060	-0.0052	-0.0041	-0.0028	-0.0012	0.00047
3	-0.0084	-0.0079	-0.0074	-0.0069	-0.0067	-0.0058	-0.0047	-0.0034	-0.0019	-0.0001
3.5	-0.0098	-0.0093	-0.0087	-0.0082	-0.0080	-0.0071	-0.0060	-0.0047	-0.0032	-0.0014
4	-0.0112	-0.0106	-0.0100	-0.0095	-0.0093	-0.0084	-0.0073	-0.0060	-0.0045	-0.0027
4.5	-0.0126	-0.0120	-0.0114	-0.0108	-0.0106	-0.0097	-0.0086	-0.0073	-0.0058	-0.0040
5	-0.0140	-0.0133	-0.0127	-0.0121	-0.0119	-0.0110	-0.0099	-0.0086	-0.0071	-0.0053
5.5	-0.0154	-0.0147	-0.0140	-0.0134	-0.0133	-0.0123	-0.0112	-0.0099	-0.0084	-0.0066
6	-0.0168	-0.0160	-0.0153	-0.0148	-0.0146	-0.0136	-0.0125	-0.0112	-0.0096	-0.0079

TABLE 7a-d: SHKSIMC1.WK1 rev. 18.4.1991

UK LOSS SIMULATION
Nominal GNP targeting rBeta

a \ b	0	0.25	0.46	0.5	0.75	1	1.25	1.5	1.75	2
0	0.00084	0.00052	0.00037	0.00035	0.00026	0.00020	0.00016	0.00014	0.00012	0.00011
0.125	0.00137	0.00096	0.00078	0.00075	0.00064	0.00057	0.00052	0.00049	0.00047	0.00045
0.25	0.00189	0.00141	0.00119	0.00116	0.00102	0.00093	0.00088	0.00084	0.00081	0.00080
0.375	0.00242	0.00185	0.00160	0.00156	0.00140	0.00130	0.00123	0.00119	0.00116	0.00114
0.5	0.00294	0.00229	0.00200	0.00196	0.00177	0.00166	0.00159	0.00154	0.00151	0.00148
0.625	0.00347	0.00274	0.00241	0.00237	0.00215	0.00203	0.00194	0.00189	0.00185	0.00183
0.75	0.00399	0.00318	0.00282	0.00277	0.00253	0.00239	0.00230	0.00224	0.00220	0.00217
0.875	0.00452	0.00363	0.00323	0.00317	0.00291	0.00276	0.00266	0.00259	0.00254	0.00251
1	0.00504	0.00407	0.00364	0.00357	0.00329	0.00312	0.00301	0.00294	0.00289	0.00285
1.25	0.00609	0.00496	0.00445	0.00438	0.00405	0.00385	0.00372	0.00364	0.00358	0.00354
1.5	0.00714	0.00585	0.00527	0.00519	0.00481	0.00458	0.00444	0.00434	0.00427	0.00423
1.75	0.00819	0.00674	0.00608	0.00599	0.00557	0.00531	0.00515	0.00504	0.00496	0.00491
2	0.00924	0.00763	0.00690	0.00680	0.00633	0.00604	0.00586	0.00574	0.00566	0.00560
2.25	0.01029	0.00851	0.00772	0.00760	0.00709	0.00677	0.00657	0.00644	0.00635	0.00628
2.5	0.01134	0.00940	0.00853	0.00841	0.00784	0.00750	0.00728	0.00714	0.00704	0.00697
2.75	0.01239	0.01029	0.00935	0.00921	0.00860	0.00823	0.00799	0.00784	0.00773	0.00765
3	0.01345	0.01118	0.01016	0.01002	0.00936	0.00896	0.00871	0.00854	0.00842	0.00834
3.5	0.01555	0.01296	0.01180	0.01163	0.01088	0.01042	0.01013	0.00994	0.00980	0.00971
4	0.01765	0.01473	0.01343	0.01324	0.01240	0.01188	0.01155	0.01134	0.01119	0.01108
4.5	0.01975	0.01651	0.01506	0.01485	0.01391	0.01334	0.01298	0.01274	0.01257	0.01246
5	0.02185	0.01829	0.01669	0.01647	0.01543	0.01480	0.01440	0.01414	0.01395	0.01383
5.5	0.02395	0.02007	0.01832	0.01808	0.01695	0.01626	0.01583	0.01553	0.01534	0.01520
6	0.02605	0.02184	0.01995	0.01969	0.01847	0.01772	0.01725	0.01693	0.01672	0.01657
Var(u)	0.00084	0.00081	0.00080	0.00080	0.00080	0.00082	0.00085	0.00090	0.00096	0.00104
Var(e1)		0.00251		Cov(e1,v1)		0.00108				
Var(v1)		0.00150								

Exchange Rate or gold rule (assuming vel and exch shocks correlated

a \ b	0	0.25	0.46	0.5	0.75	1	1.25	1.5	1.75	2
0	0.00084	0.00093	0.00119	0.00126	0.00183	0.00265	0.00372	0.00503	0.00659	0.00839
0.125	0.00107	0.00116	0.00142	0.00149	0.00206	0.00288	0.00395	0.00526	0.00682	0.00862
0.25	0.00130	0.00138	0.00165	0.00172	0.00229	0.00311	0.00418	0.00549	0.00705	0.00885
0.375	0.00153	0.00161	0.00188	0.00194	0.00252	0.00334	0.00441	0.00572	0.00728	0.00908
0.5	0.00176	0.00184	0.00211	0.00217	0.00275	0.00357	0.00464	0.00595	0.00751	0.00931
0.625	0.00199	0.00207	0.00233	0.00240	0.00298	0.00380	0.00487	0.00618	0.00773	0.00954
0.75	0.00222	0.00230	0.00256	0.00263	0.00321	0.00403	0.00510	0.00641	0.00796	0.00977
0.875	0.00245	0.00253	0.00279	0.00286	0.00344	0.00426	0.00533	0.00664	0.00819	0.01000
1	0.00268	0.00276	0.00302	0.00309	0.00367	0.00449	0.00556	0.00687	0.00842	0.01023
1.25	0.00314	0.00322	0.00348	0.00355	0.00413	0.00495	0.00601	0.00732	0.00888	0.01068
1.5	0.00360	0.00368	0.00394	0.00401	0.00459	0.00541	0.00647	0.00779	0.00934	0.01114
1.75	0.00405	0.00414	0.00440	0.00447	0.00505	0.00587	0.00693	0.00824	0.00980	0.01160
2	0.00451	0.00460	0.00486	0.00493	0.00550	0.00633	0.00739	0.00870	0.01026	0.01206
2.25	0.00497	0.00506	0.00532	0.00539	0.00596	0.00678	0.00785	0.00916	0.01072	0.01252
2.5	0.00543	0.00552	0.00578	0.00585	0.00642	0.00724	0.00831	0.00962	0.01118	0.01298
2.75	0.00589	0.00598	0.00624	0.00631	0.00688	0.00770	0.00877	0.01008	0.01164	0.01344
3	0.00635	0.00644	0.00670	0.00677	0.00734	0.00816	0.00923	0.01054	0.01210	0.01390
3.5	0.00727	0.00735	0.00761	0.00768	0.00826	0.00908	0.01015	0.01146	0.01301	0.01482
4	0.00819	0.00827	0.00853	0.00860	0.00918	0.01000	0.01106	0.01238	0.01393	0.01574
4.5	0.00910	0.00919	0.00945	0.00952	0.01010	0.01092	0.01199	0.01329	0.01485	0.01665
5	0.01002	0.01011	0.01037	0.01044	0.01101	0.01184	0.01290	0.01421	0.01577	0.01757
5.5	0.01094	0.01103	0.01129	0.01136	0.01193	0.01275	0.01382	0.01512	0.01669	0.01849
6	0.01186	0.01194	0.01221	0.01228	0.01285	0.01367	0.01474	0.01605	0.01761	0.01941

May 24, 1991

Working Paper Series
Department of Economics
University of California, Berkeley

Individual copies are available for $3.50 in the USA or Canada, $6.00 to Europe/South America, $7.00 to Japan/Middle East. Papers may be obtained from the Institute of Business and Economic Research: send requests to IBER, 156 Barrows Hall, University of California, Berkeley CA 94720. Prepayment is required. Make checks or money orders payable to "The Regents of the University of California."

90-131 "And Now Won/Dollar Negotiations? Lessons From the Yen/Dollar Agreement of 1984." Jeffrey A. Frankel. January 1990.

90-132 "One Money for Europe? Lessons from the US Currency Union." Barry Eichengreen. January 1990.

90-133 "Does Foreign Exchange Intervention Matter? Disentangling the Portfolio and Expectations Effects for the Mark." Kathryn Dominguez and Jeffrey A. Frankel. January 1990.

90-134 "The Constrained Asset Share Estimation (CASE) Method: Testing Mean-Variance Efficiency of the U.S. Stock Market." Charles Engel, Jeffrey A. Frankel, Kenneth A. Froot, and Anthony Rodrigues. January 1990.

90-135 "International Nominal Targeting (INT): A Proposal for Overcoming Obstacles to Policy Coordination." Jeffrey A. Frankel. January 1990.

90-136 "One-Sided Patience with One-Sided Communication Does Not Justify Stackelberg Equilibrium." Eddie Dekel and Joseph Farrell. February 1990.

90-137 "Japanese Finance: A Survey." Jeffrey A. Frankel. March 1990.

90-138 "Government Policy, Individual Actions, and Safety: Some Evidence for Motor Vehicles." Theodore E. Keeler. April, 1990.

90-139 "Adverse Selection, Short-Term Contracting, and the Underprovision of On-the-Job Training." Benjamin Hermalin. February 1990.

90-140 "Why Legal Restrictions on Private Contracts Can Enhance Efficiency." Philippe Aghion and Benjamin Hermalin. April 1990.

90-141 "Moral Hazard and Verifiability: The Effects of Renegotiation in Agency." Benjamin E. Hermalin and Michael L. Katz. May 1990.

90-142 "The Financial System and the Economic Crisis of the Interwar Years." Barry Eichengreen. June 1990.

90-143 "Nonstandard Methods in Mathematical Economics." Robert M. Anderson. June 1990.

90-144 "Before the Accord: U.S. Monetary-Financial Policy 1945-51." Barry Eichengreen and Peter M. Garber. June 1990.

90-145 "The Impact of Permanent and Temporary Import Surcharges on the U.S. Trade Deficit." Barry Eichengreen and Lawrence H. Goulder. July 1990.

90-146 "Trends and Cycles in Foreign Lending." Barry Eichengreen. July 1990.

90-147 "Relaxing the External Constraint: Europe in the 1930s." Barry Eichengreen. July 1990.

90-148 "The Effects of Competitive Pressures on Executive Behavior." Benjamin E. Hermalin. September 1990.

90-149 "The 1933 World Economic Conference as an Instance of Failed International Cooperation." Barry Eichengreen and Marc Uzan. October 1990.

90-150 "Costs and Benefits of European Monetary Unification." Barry Eichengreen. October 1990.

90-151 "Is Europe an Optimum Currency Area?" Barry Eichengreen. October 1990.

90-152 "Major Fiscal Trends in the 1980s and Implications for the 1990s." George Break. October 1990.

90-153 "Historical Research on International Lending and Debt." Barry Eichengreen. December 1990.

91-154 "Risktaking, Capital Markets, and Market Socialism." Pranab Bardhan. January 1991.

91-155 "Is Inequality Harmful for Growth? Theory and Evidence." Torsten Persson and Guido Tabellini. January 1991.

91-156 "The Origins and Nature of the Great Slump, Revisited." Barry Eichengreen. March 1991.

91-157 "The Making of Exchange Rate Policy in the 1980s." Jeffrey Frankel. March 1991.

91-158 "Exchange Rate Forecasting Techniques, Survey Data, and Implications for the Foreign Exchange Market." Jeffrey Frankel and Kenneth Froot. March 1991.

91-159 "Convertibility and the Czech Crown." Jeffrey Frankel. March 1991.

91-160 "The Obstacles to Macroeconomic Policy Coordination in the 1990s and an Analysis of International Nominal Targeting (INT)." Jeffrey A. Frankel. March 1991.

91-161 "Highway Safety, Economic Behavior, and Driving Environment." Theodore E. Keeler. March 1991.

91-162 "Can Informal Cooperation Stabilize Exchange Rates? Evidence from the 1936 Tripartite Agreement." Barry Eichengreen and Caroline R. James. March 1991.

91-163 "Reneging and Renegotiation." Matthew Rabin. April 1991.

91-164 "A Model of Pre-game Communication." Matthew Rabin. April 1991.

91-165 "Contracting Between Sophisticated Parties: A More Complete View of Incomplete Contracts and Their Breach." Benjamin E. Hermalin and Michael L. Katz. May 1991.

91-166 "The Stabilizing Properties of a Nominal GNP Rule in an Open Economy." Jeffrey A. Frankel and Menzie Chinn. May 1991.

91-167 "A Note on Internationally Coordinated Policy Packages Intended to Be Robust Under Model Uncertainty or Policy Cooperation Under Uncertainty: The Case for Some Disappointment." Jeffrey A. Frankel. May 1991.