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Budgetary Disequilibrium and the Monetary Role of the Government Budget:
Deficit Financing in the Netherlands

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Abstract

This paper studies the choice between debt and money financing of government deficits in the Netherlands. The inference is based on an econometric model for the deficit financing strategy of the 1960s. Against the background of this model, it is shown that the financing strategy breaks down in the 1970s and that this breakdown may have been related to rising budgetary disequilibrium. Short-term policy flexibility requires that deviations of budget variables from their long-run equilibrium paths be limited and controlled. If disequilibrium rises to excessive proportions, as it did in the 1970s, then countercyclical policies may be overshadowed by disequilibrium feedback or even be abandoned altogether.

I. Introduction

This paper studies the association of budgetary disequilibrium with the monetary role of the government budget in the context of fiscal policy as implemented in the Netherlands. Its purpose is threefold. First, a model is formulated and estimated for the deficit financing strategy in the Netherlands of the 1960s. Second, the paper argues that this regular and predictable policy concerning the choice between debt and money financing was abandoned in the early 1970s, initially because changing external circumstances prompted the government to use this instrument differently, but ultimately because budgetary disequilibrium made it difficult to use it as a short-run instrument at all. Thus, the paper discusses one possible consequence of budgetary disequilibrium, but not how such disequilibrium can be avoided [for this wider issue, see Kremers (1985)]. Third, these findings are placed in a wider perspective of recent theoretical and empirical work on the merits of alternative budgetary policies. Combining theoretical, econometric, and historical evidence, this paper is intended to contribute to a wider endeavour to analyse systematically the operating characteristics of alternative budgetary policy rules.

The justification for studying deficit financing policies in the Dutch context is threefold. First, the Netherlands occupies a fairly unique position in that for prolonged periods of time its budgetary policies have been made to follow stable and well-publicized rules. This does not mean that policies in other countries have been unstable, but the public discussions on stable and predictable policy behavior in the Netherlands help uncover regular patterns and specify empirical representations of budgetary disequilibrium. Moreover, with the first oil shock in the early 1970s, a change occurred in Dutch fiscal policy. After the mid-1970s, attention shifted from economic stabilization to the redressment of long-term budgetary equilibrium in public debt, deficits, and taxation. This policy change enables one to study the interplay between fiscal policy and the deficit financing strategy under different regimes. In spite of this interest, the deficit financing choice has been neglected in the international literature on budgetary policy in the Netherlands [see Dixon (1972), Chand (1977), and Diamond (1977)].

Second, the Netherlands is a typical small, open, industrialized economy. 1/ An understanding of Dutch experiences may yield insight into problems of a broader set of similar countries. 2/ Moreover, Dutch budgetary policy has long been formulated in terms of aggregate rules for

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1/ For a discussion of the economic consequences of budgetary disequilibrium in developing countries, see Tanzi (1982).

2/ For similarities of disequilibrium in the form of excessive public indebtedness in Belgium and the Netherlands, see Moerman and Vuchelen (1985) and Benelux (1986).

public spending and taxation. Wildavsky (1983) and Peacock (1985) have recently argued strongly in favor of adopting such aggregate rules in the United States, Canada and the United Kingdom, so that again the Dutch experience may provide an interesting example for comparison.

Third, the paper focuses on the Netherlands because it is a low-inflation country with a careful monetary tradition. The phenomenon of excessive budgetary disequilibrium, giving rise to a perceived risk of explosive economic developments, tends to be associated with the expe-riences of high-inflation economies. However, while the occurrence of substantial budgetary disequilibrium may not directly present such extreme risks to countries with a more conservative monetary tradition, it remains true that the short- to medium-term flexibility of monetary policy can be affected.

The argument is structured as follows. In order to enable the reader to judge the economic background of deficit financing in the Netherlands, the Dutch fiscal and monetary setting is summarized in Sections II and III, respectively. The main argument, however, is pre-sented in Section IV, where the model for the deficit financing strategy of the 1960s is developed and the breakdown of the model and the subse-quent transformation of deficit financing policy in the 1970s are dis-cussed. Section V concludes and briefly considers the implications of these results for recent theoretical and empirical research on this subject.

Throughout the paper the distinction between debt and money financing coincides with that made in the monetary analysis of the Netherlands Bank: money financing is reflected in the Dutch liquidity concept M2. 1/ Debt financing refers to any debt not included in M2, usually called funded debt, issued on the capital market. As will be shown, by over- or underfunding (i.e. by issuing non-monetary debt in excess or short of the total budget deficit), the central government (the "Rijk") can make a contribution to monetary policy.

II. Developments in Fiscal Policy

During the 1960s, fiscal policy was executed along the ex ante rules of Structural Budget Policy (SBP) [Dixon (1972), Burger (1973, 1975), Chand (1977), Diamond (1977), Den Dunnen (1981)]. This policy can be summarized by the objective of a long-run government deficit attuned to

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1/ M2 is defined as the sum of notes and coin, demand and time deposits, liquid savings, foreign exchange balances, and short-term claims on the public authorities insofar as held by the general public. However, various corrections are normally applied; see Fase (1977, 1985). Public debt of a maturity of up to five years is included in M2, but the maturity of included private instruments is generally only up to two years.

the normal private sector saving surplus, after allowance for the desired surplus for development aid on the current account of the balance of payments. This can easily be expressed in terms of the National Income Accounts—see Burger (1975).

The underlying philosophy of SBP meant that actual deficits were of limited concern. In the short term, they were supposed to fluctuate countercyclically. The econometric study of the Dutch public finances reported in Kremers (1985) reveals the following regular patterns. During the 1960s, both real spending and taxation reacted to real national income growth with a positive impact elasticity. The impact elasticity of spending was smaller than that of taxation, so that on impact the deficit fluctuated countercyclically. Furthermore, there were feedbacks to keep both real spending and taxation on their trends. However, the long-run elasticities of real spending and taxation with respect to real national income exceeded unity, so that these trends were steeper than that of real national income (Chart 1). No systematic feedback from the stock of public debt or a related variable has been found. During the 1960s the debt/income ratio fell steadily and the interest/income ratio remained relatively constant, thus perhaps satisfying the policymakers' preferences on that score (Charts 2 and 3).

Hence, the ingredients of a controlled fiscal policy seem to have been operative, although obviously the trend rise of the government's share in national income could not go on forever. Given the SBP target for the long-term deficit, however, the paths of spending and taxation were considered to involve political choices, to be made outside the SBP framework.

During the transition from the 1960s to the 1970s, the rise of real public spending increasingly became an autonomous process, largely unrelated to national income growth. Open-ended social programs undoubtedly played a role in this change [Halberstadt et al. (1982a,b)], which occurred in a period of optimism due to steady economic growth and the prospect of very substantial natural gas revenues [Chart 2 and Kremers (1986a)].

Rising disequilibrium of the public finances became apparent after the first oil shock, as the growth rates of real national income and of tax revenues dipped. After the mid-1970s, fiscal policy became a combination of virtually autonomous expenditure growth on the one hand, and efforts to stabilize the tax burden and to control the deficit on the other. In practice, despite the intentions formulated in the annual budgets, the countercyclical aspect of the budget was thus lost sight of. Instead, policies were directed at ridding the public finances of substantial structural disequilibria in debt, deficits, and taxation, which, owing to the pressure from spending growth, kept building up in the meantime. Only during recent years has the government started to find ways of reducing the pressure emanating from excessive public

CHART 1
THE NETHERLANDS
CENTRAL GOVERNMENT EXPENDITURES AND REVENUES, 1960–1982
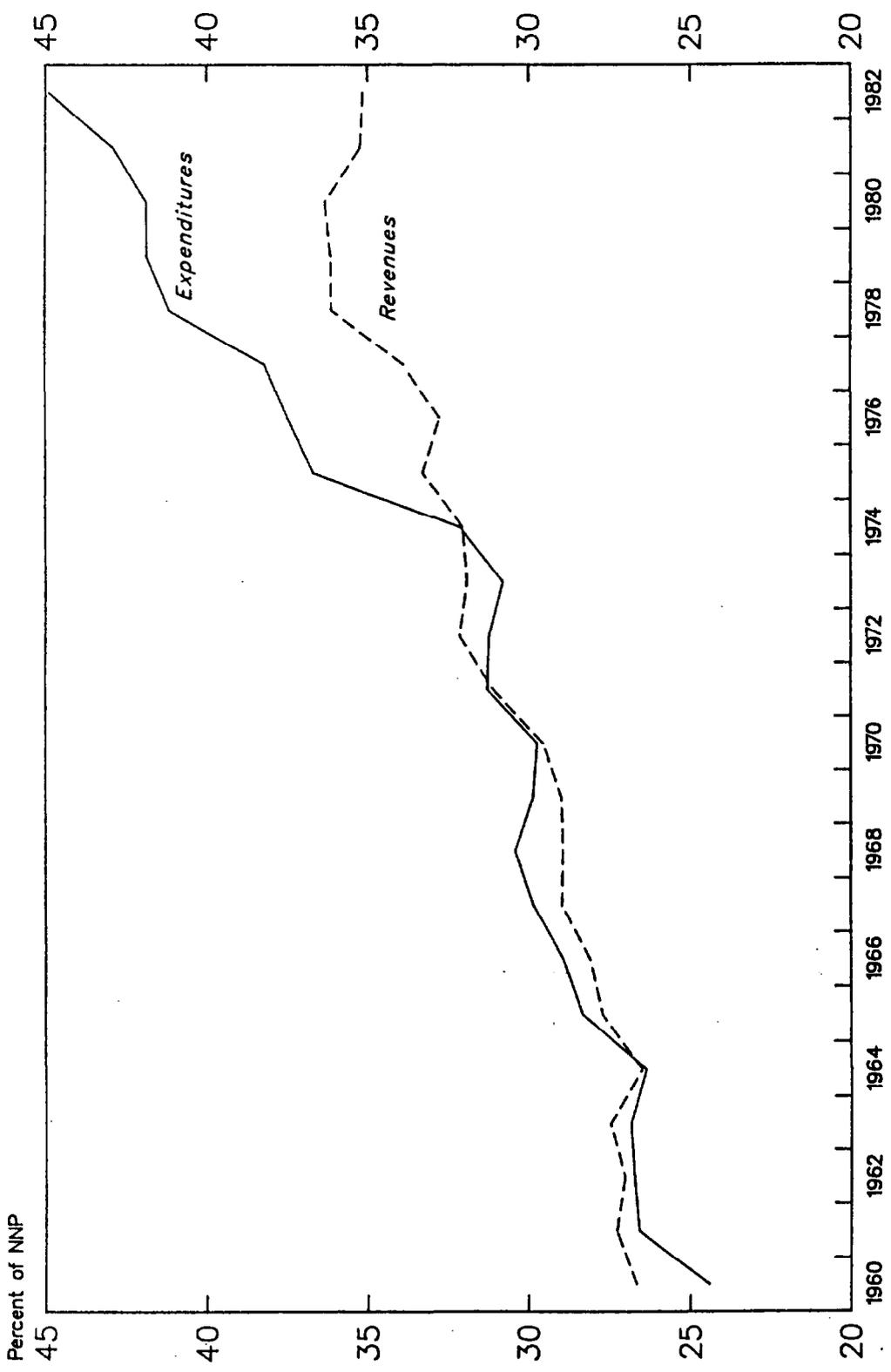
Percent of NNP

Source: Appendix I.

CHART 2
## THE NETHERLANDS
CENTRAL GOVERNMENT INTEREST PAYMENTS AND GAS REVENUES, 1960–1982

Percent of NNP
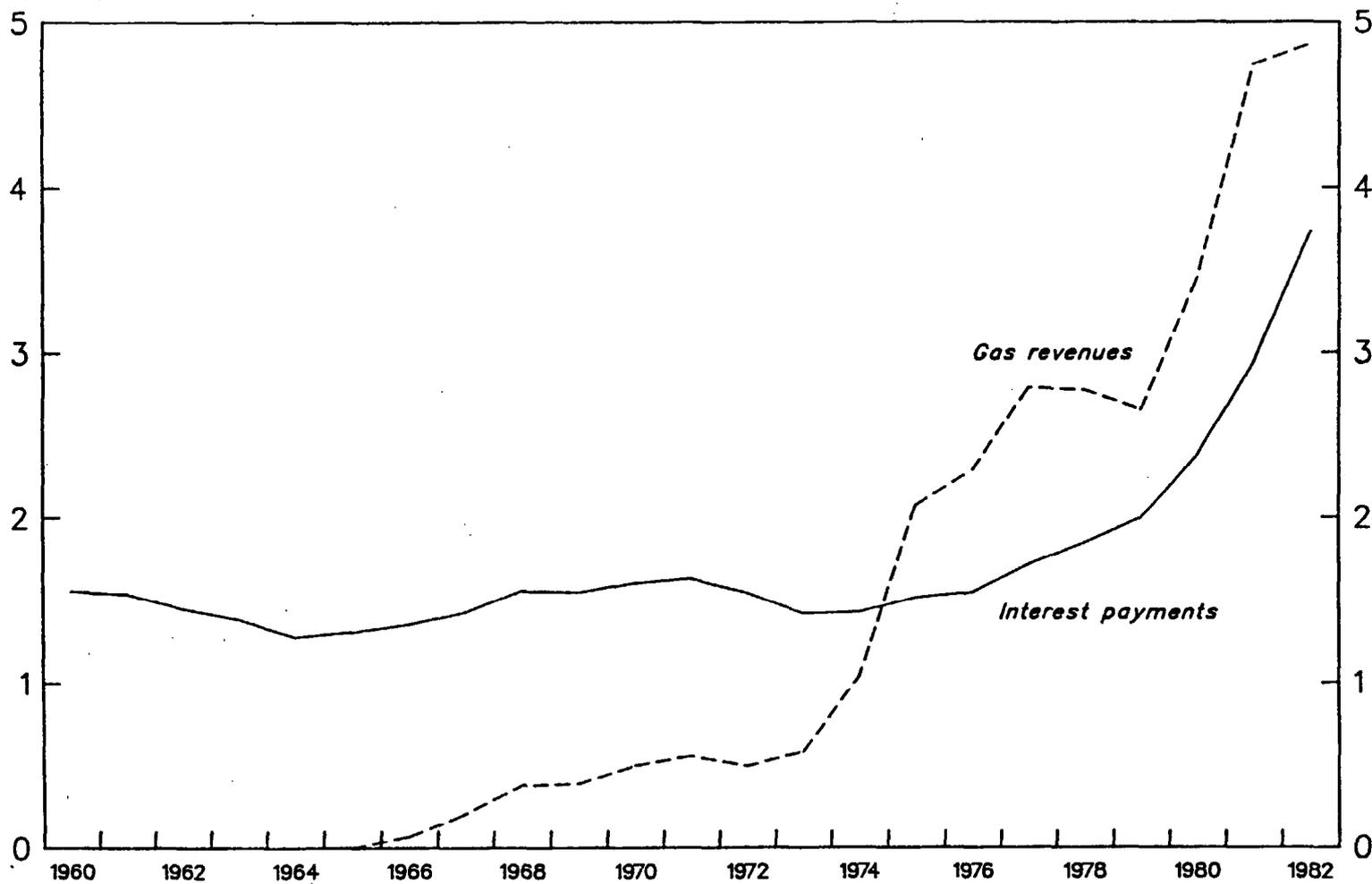
Source: Appendix I.

CHART 3
THE NETHERLANDS
DEBT/INCOME RATIO

$(BFU_t + BFL_t)/Y_t$
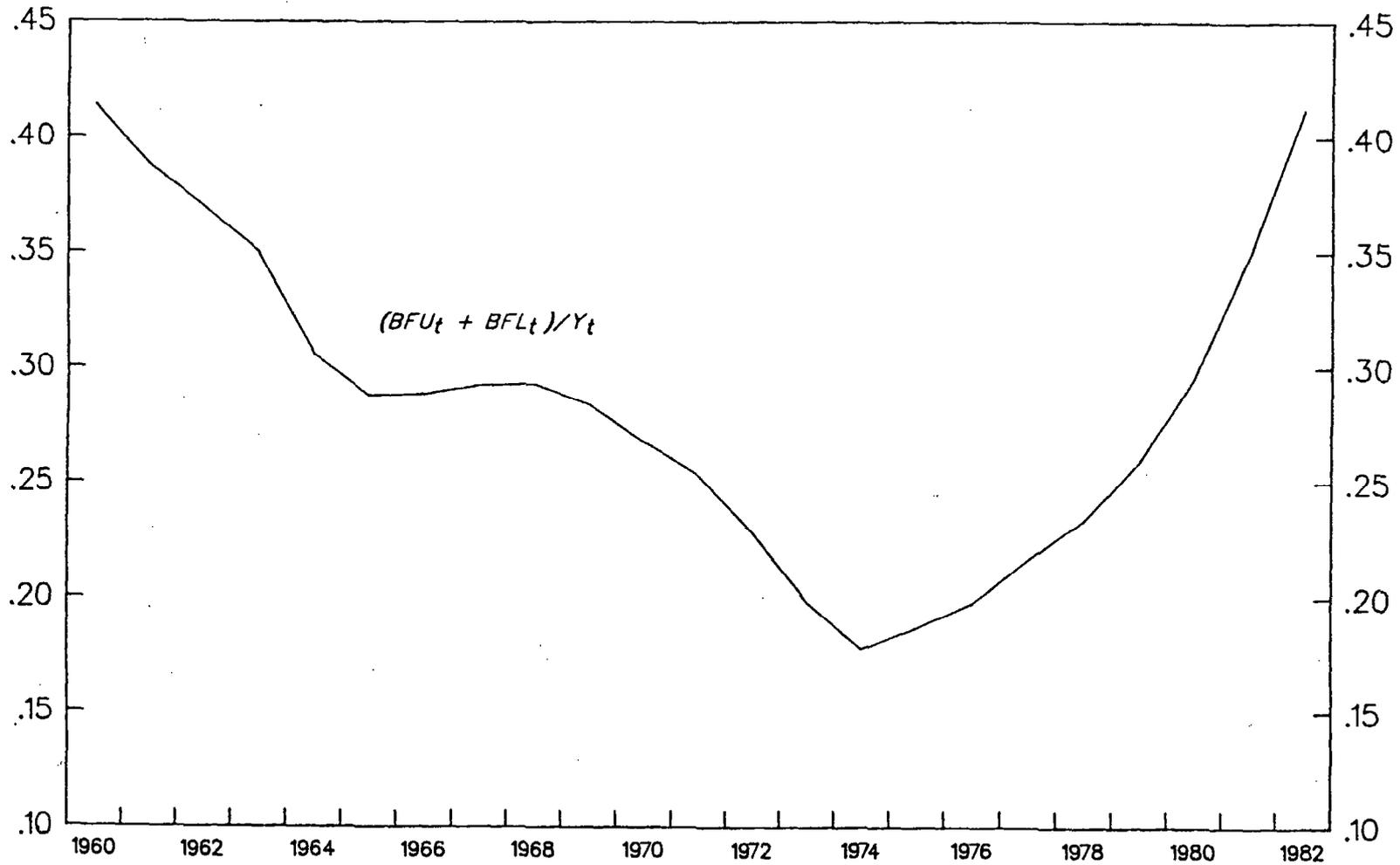
Source: Appendix I.

Note: BFU_t represents funded public debt and BFL_t represents floating public debt (for an explanation, see Section I), and Y_t is net national product. Annual averages.

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CHART 4
THE NETHERLANDS
SHARE OF FUNDED DEBT IN TOTAL PUBLIC DEBT

$BFU_t / (BFU_t + BFL_t)$

spending. In the next section it will be shown that the escape route of large-scale monetization was avoided, which meant that spending, taxation, and the economy had to share the burden of adjustment.

Before proceeding to the monetary aspects of budgetary policy in the following sections, some observations can be made on the relation between budgetary disequilibrium and budgetary uncertainty [see Kremers (1986b)]. The estimated variance-covariance structure around the regular budgetary patterns just described characterizes the budget's absorption of uncertainty, caused by prediction and planning errors. Since both ex ante budget plans and ex post budget realizations must satisfy the budget constraint, the differences between the two (the budgetary error terms representing budgetary uncertainty) must also satisfy the budget constraint. Thus, uncertainty which enters the budget through prediction and planning errors must be absorbed somewhere in the same budget. A budget variable which absorbs a substantial proportion of these disturbances can be called a budget buffer. The estimated variance-covariance structure indicates a buffer role for the budget deficit during the 1960s, which shifted to public expenditure in the 1970s. Indeed, the difficulties to control the deficit and the tax burden during the 1970s and 1980s necessitated the introduction of budgeting techniques such as cash limits on public spending to absorb unexpected setbacks in tax revenues. This effectively increased the role of public spending as the budget buffer. Excessive disequilibrium in the public finances tended not only to violate the budget's short-run stabilization function, but also to hinder a sensible absorption of budgetary uncertainty. Moreover, in addition to this disadvantageous shift of the buffer role from the deficit to public expenditure, budgetary disequilibrium may have added directly to monetary uncertainty, as shall be suggested in Section IV.

III. Developments in Monetary Policy

In order to clarify the wider significance of the deficit financing choice, this section offers a brief review of the principles of monetary policy in the Netherlands [see Den Dunnen (1979, 1981a,b) and Fase (1985) for details]. After that, the paper turns to the analysis of deficit financing in Section IV.

The Netherlands has a small and very open economy, with liberal international capital movements and a preference for stable exchange rates. Both in order to create a stable environment for international trade and in order to reap the benefits of associating with a large low-inflation economy, the Dutch guilder has for decades (both during Bretton Woods and after) been attached closely to the deutsche mark, the currency of its largest trading partner. It participates in the exchange rate mechanism of the EMS.

These circumstances render monetary conditions in the Netherlands particularly sensitive to those in Germany [Budd and Warburton (1981)]. The guilder exchange rate is normally stabilized through central bank operation on the money and foreign exchange markets [Timmerman (1977), Huijser (1980)]. Owing to institutional arrangements, the money and capital markets have tended to be separate markets, which is argued at least in the short run to offer some scope for an independent domestic monetary policy. 1/

As far as the exchange rate target allows, this policy is quantity-oriented and directed toward preventing inflationary pressures emanating from domestic liquidity conditions. Three sources of liquidity (M2) creation are distinguished: the banking sector, the government budget, and the balance of payments. The supervision of liquidity creation by the commercial banking sector on behalf of the private sector is the *direct responsibility of the central bank. Its instruments include both* balance sheet requirements and temporary direct credit rationing.

Liquidity creation through the government budget is the direct responsibility of the Government. 2/ The Netherlands Bank does not hold a significant portfolio of long-term government debt. Open market policy is not conducted with such debt, because this would be feared to "indirectly open the road to the monetary financing of government expenditure" [Zijlstra (1979, p. 18)]. As will be shown below, the short-run rules for monetary debt creation through the government budget have been subject to change [see also Burger (1975) and Den Dunnen (1979, 1981b)], but on average it is supposed to be limited to the amount necessary for a smooth operation of the financial system.

The monetary influence of the balance of payments (defined more precisely below) is normally accepted for its equilibrating consequences. 3/

1/ In this context, the availability of temporary external capital controls as an instrument of the Netherlands Bank can play a role as well. See e.g. Den Dunnen (1973, 1981a) and Van Loo (1983, 1985) for the monetary setting in the Netherlands, and Boughton (1983) for a theoretical analysis. Current financial innovations may have implications for Dutch monetary policy, but it seems too early for a rigorous assessment [Nivard (1986)].

2/ It should be noted that in the Netherlands the monetary and budgetary policymakers (the Netherlands Bank and the Government, i.e. the Cabinet) have distinct operational responsibilities, even though normally policies are made in close cooperation. Even though the ultimate responsibility for monetary policy lies with the Government, the maintenance of the external and internal value of the guilder is delegated to the Bank (exchange rate policy, money supply policy, supervision of the banking system), which has its own voice in policy discussions on monetary issues.

3/ Not in the first place through prices and interest rates, but rather through direct import and output effects; see Knoester and Van Sinderen (1985).

Temporary international capital movements of a speculative nature can be absorbed temporarily by the Netherlands Bank, or by the Government as discussed below.

Finally, it should be emphasized that these sources of money creation are not generally independent, and that the exchange rate target remains the first priority. From this brief sketch it is obvious that monetary policymaking in a small open economy such as the Dutch may have its occasional dilemma to face [Holtrop (1963)]. It has always been stressed by the Dutch monetary authorities that, in view of these difficult circumstances, their set of instruments should be as diverse as possible [Zijlstra (1979)]. Moreover, exactly because in the medium term monetary conditions in the Netherlands are so dependent on those in Germany, it is imperative to utilize with care the limited freedom available to pursue an independent course. This refers in particular to the impact of international confidence in Dutch fiscal and monetary policies, which may offer the Netherlands the opportunity to maintain relatively low real interest rates [Duisenberg (1982), Van Loo (1984)]. The link with the subject of this paper (the sustainability of fiscal policy; budgetary and monetary uncertainty) is immediately obvious.

IV. Deficit Financing and Budgetary Disequilibrium

Against this background, the analysis can now proceed to consider the deficit financing policies. First the policy of the 1960s will be examined, and subsequently it will be discussed how this policy changed in the 1970s.

During the SBP of the 1960s, the monetary and fiscal aspects of budgetary policy were seen as two clearly separate issues. Or, as Dr. Holtrop, who was President of the Netherlands Bank from 1946 to 1967, once put it: "A budget deficit, by itself, has no monetary meaning. The important point is out of which resources it is financed" [Holtrop (1963)]. In the 1960s, as perceived budgetary disequilibrium was still limited, the deficit financing method could indeed be used as a separate instrument. It was set in support of the equilibrating role of the domestic capital market. Den Dunnen (1981b) of the Netherlands Bank formulated this policy as follows:

"By keeping their capital market borrowing in line with the average long-term savings surplus of the personal and business sector and not with the actual surplus, the public authorities can bring about an interest rate development which exerts an additional balancing influence on the economy. In the case of excessive economic growth, with the savings surplus of the private sector relatively small, the capital market will not spontaneously accomodate public sector borrowing of a size equal to the long-run fiscal deficit. If, nevertheless, an attempt to

that effect is made, interest rates will be pushed up, and con-
tribute to a slow-down of private expenditure. Conversely, if
in periods of a cyclical slow-down the actual financial deficit
exceeds the long-term deficit, and the public authorities do
not attune their capital market borrowing (entirely) to the
relatively large actual savings surplus of the private sector,
interest rates will fall, facilitating a recovery in private
sector expenditure."

Hence, under SBP the deficit financing method formed a second level at
which the budget was intended to fluctuate countercyclically. In Appen-
dix III, this summary of the deficit financing strategy is further sup-
ported with policy statements from the Annual Budgets after 1959.

Be that as it may, it remains to be tested whether these policy
intentions were actually put into practice. This test will be divided
into two parts. First, in a model for non-monetary public debt creation
it is analysed econometrically whether policy was actually made along the
predictable lines summarized above. Second, it is tested whether the
explanatory variables from the ensuing equation for non-monetary debt
creation add anything to the explanation of fiscal policy patterns (pub-
lic spending and taxation), and whether variables that help explain the
patterns of fiscal policy are significant in the equation for the debt.
The mutual insignificance of these sets of variables would provide evi-
dence for the proposition that the deficit financing method indeed played
a separate role.

The policy description by Den Dunnen can be formalized as a standard
error-correction model. This model entails that the creation of public
debt BFU_t (funded, i.e. non-monetary debt, not included in M2) follows
the total deficit financing requirement in a smoothed way. [1] Writing
the total stock of debt liabilities as B_t and the part which is included
in M2 as BFL_t (floating), the identity $B_t \equiv BFU_t + BFL_t$ shows that if BFU_t
is smoothed relative to B_t, then BFL_t must absorb the short-run fluctua-
tions of the fiscal deficit ΔB_t (where Δ is the difference operator).
Although the dynamics of our estimated model will be slightly more com-
plicated, it is instructive to consider the following stylized version
of the error-correction model:

$$\Delta bfu_t = \alpha_1 \Delta b_t - \alpha_2 (bfu-b)_{t-1} + \underline{\alpha_3 x_t} \qquad (1)$$

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[1] A more detailed justification for error-correction models in terms
of agents reacting to conditional expectations and ex post disequilibria
can be found in Hendry and Richard (1983). See also Hendry (1985,1986)
and Hendry and Ericsson (1985).

where lowercase letters denote the natural logarithms of the corresponding uppercase levels, and $\alpha_1 > 0$, $0 < \alpha_2 < 1$. The vector $\underline{x}_t$ contains any other relevant variables such as possibly a constant, current and lagged variables-- see below.

If $\alpha_1 < 1$ then bfu_t follows the development of b_t in a smoothed fashion. In the extreme case where $\alpha_1 = 0$, funded debt creation on impact does not respond to the deficit at all, but follows the actual financing requirement only in a lagged, smoothed way. This extreme case represents the description by Den Dunnen cited above. It can be further clarified by deriving the hypothetical long-run equilibrium solution of (1) on a steady growth path (designated by the superscript "eq") by substituting $\Delta bfu_t = \Delta b_t = \pi$:

$$(BFU/B)^{eq} = \exp[(\alpha_1 - 1)\pi/\alpha_2 + \underline{\alpha_3 x}/\alpha_2] \tag{2}$$

in order to rewrite (1) in terms of deviations from this hypothetical underlying trend:

$$(\Delta bfu_t - \pi) = \alpha_1(\Delta b_t - \pi) - \alpha_2[(bfu - b) - (bfu - b)^{eq}]_{t-1} \tag{3}$$

The error-correction term $[(bfu - b) - (bfu - b)^{eq}]_{t-1}$ ensures that in the long run public debt creation remains in line with the total financing requirement, taking into account the average long-run amount of money financing necessary for the smooth operation of the financial system. If α_1 is small then the short-run path of BFU_t is smoothed relative to that of B_t. For $\alpha_1 = 0$, BFU_t follows its hypothetical long-run trend and only reacts to disequilibria built up in the past. Still, it should be emphasized that in error-correction models the underlying long-run development is indeed a hypothetical one. This is clearly brought out by (1), where the hypothetical long-run solution may change with the values of $\underline{x}_t$ and economic growth is not restricted to be constant.

Summarizing, in the long run both ΔB_t and ΔBFU_t were attuned to the private sector's saving surplus, the difference constituting the long-run allowance for money creation through the budget. In the short run ΔB_t fluctuated countercyclically [see SBP and Kremers (1985)], but ΔBFU_t was smoothed. With in addition a cyclical behavior of private saving, the result was intended to be a budgetary policy which would be countercyclical not only at the level of the total deficit, but also in the way the deficit was financed. Note finally that the deficit and debt creation were attuned to some measure of the long-run private sector saving surplus, not to actual saving. Private saving is therefore not included in our model explicitly, but BFU is specified as a smooth function of B.

The model for bfu_t was estimated with quarterly data, which are described in Appendix I. In addition to the variables discussed above, attention was paid to the role of actual and expected inflation, cycles in real national income, the monetary influence of the balance of payments, and interest rates. On the basis of the Dutch policies outlined above, one would not expect the deficit financing strategy to have been used directly as an anti-inflationary instrument, but rather as a device for macroeconomic stabilization in parallel with the monetary influence of the balance of payments. One would not expect a direct impact of interest rates on the deficit financing strategy, since short-term rates tended to be manipulated for exchange rate purposes and long-term rates were as much as possible left to the capital market. Except from exchange rate stabilization, monetary policy in the Netherlands is quantity-oriented— although the deficit financing strategy was obviously intended to influence long-run interest rates in an indirect way (see Den Dunnen as quoted above).

The modeling strategy was flexible with respect to short-run dynamics, and resulted in the two estimated error-correction models reported in Table 1. 1/

These estimates satisfy the usual design criteria for dynamic models of economic behavior [Hendry (1986)]. 2/ A brief explanation of the design criteria is provided in Appendix II, and their outcomes will now first be reviewed. The squared partial correlation coefficients give an impression of the explanatory contribution of the corresponding variables [Theil (1979, p. 175)], and indicate that in both models the error-correction term $(bfu-b)_{t-4}$ plays a prominent role. Furthermore, Table 2 shows the correlation matrix of the variables in Table 1. The low correlations between explanatory variables indicate that the parameters can be identified with sufficient precision. The low correlations of single explanatory variables with the dependent variable suggest that no single explanatory variable has major explanatory power without the contributions of the others. There is no sign of autocorrelation up to 12th order (BP, η_2, ξ_2), heteroskedasticity $(\eta_4, \xi_4, ARCH)$, or non-normal residuals $(SK, EK, NORM)$. Ordinary least squares is appropriate, since the equations

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1/ For the rationale and applications of this modeling strategy, see Hendry and Richard (1983, pp. 111-2 and 151-2), Hendry and Ericsson (1985, pp. 29-30), and Masson (1986). All computations were done with the GIVE program, which is part of the AUTOREG library [Hendry and Srba (1980)].

2/ For the use of the terminology "diagnostics" and "design criteria" rather than "tests", see Hendry (1986). A real test of our models consists of an assessment of the macroeconomic consequences of these policy regimes and their changes, and forms the subject of further research.

Table 1. The Netherlands: Two Quarterly Models for Funded Public Debt, 1960:1-1971:4.

Dependent variable: $\Delta_4 bfu_t - \Delta_4 p_t^e$		1	2
Estimates	$(bfu-b)_{t-4}$	-0.16 (.01) [.87]	-0.16 (.01) [.91]
	$\Delta(bfu-b)_{t-4}$	-0.20 (.05) [.20]	-0.18 (.05) [.23]
	$(bfu-y)_{t-5}$	-0.07 (.01) [.48]	-0.07 (.01) [.61]
	$\Delta_2\Delta_4(y-p)_t$		0.12 (.03) [.15]
	$\Delta_4 BOP_{t-2}$		-0.21 (.06) [.23]
Diagnostics	T	48	48
	$\bar{R}^2$	0.52	0.64
	$100\hat{\sigma}$	1.24%	1.06%
	BP	14.14 (12)	9.92 (12)
	η_2	1.20 (6,39)	1.30 (6,37)
	ξ_2	7.48 (6)	8.33 (6)
	η_4	0.38 (6,38)	1.11 (15,27)
	ξ_4	2.73 (6)	18.31 (15)
	ARCH	0.49 (1)	2.77 (1)
	SK	0.39	-0.27
	EK	-0.17	-0.82
	NORM	1.19 (2)	1.74 (2)
	η_1 (1970-71)	0.86 (8,37)	1.26 (8,35)
	ξ_1 (1970-71)	7.27 (8)	11.38 (8)
	η_1 (1972-73)	5.59*(8,45)	8.67*(8,43)
	ξ_1 (1972-73)	58.25*(8)	94.79*(8)

Note: See Appendix I for the data used, Appendix II for an explanation of the diagnostics, Table 2 for the data correlations, and Chart 5 for the actual and fitted values of Column 2. The values in parentheses following coefficient estimates are heteroskedasticity-consistent standard errors [White (1980), Domowitz and White (1982)], and those in square brackets denote squared partial correlation coefficients [Theil (1979)]. The values in parentheses following diagnostics are the degrees of freedom for the relevant test statistics (see Appendix II), and starred values indicate significance at 1% (unstarred diagnostics are insignificant at 10%).

Table 2. Correlation Matrix of the Variables in Table 1

		1	2	3	4	5
1	$\Delta_4 bfu_t - \Delta_4 p_t^e$					
2	$(bfu-b)_{t-4}$	-0.29				
3	$\Delta(bfu-b)_{t-4}$	-0.30	0.28			
4	$(bfu-y)_{t-5}$	-0.46	-0.35	-0.22		
5	$\Delta_2\Delta_4(y-p)_t$	0.22	-0.08	-0.10	0.05	
6	$\Delta_4 BOP_{t-2}$	-0.16	0.08	0.07	-0.24	0.12

Note: 1960:1-1971:4

contain only lagged explanatory variables 1/ and the proposition that—conditional on this information set—the errors are innovations cannot be rejected [Engle et al. (1983)].

In both models the unit restriction on expected inflation $\Delta_4 p_t^e$ could not be rejected. Inclusion of current or lagged prices appeared inappropriate; apparently there was no tendency to rely more or less heavily on debt financing as a reaction to variations in actual or expected inflation.

The chosen lag structure is data-based and seems reasonable. In addition to the error-correction variable there is a short-run dynamic impact from the lagged change in debt disequilibrium $\Delta(bfu-b)_{t-4}$. The presence of the lagged debt/income ratio $(bfu-y)_{t-5}$ indicates that governments had the tendency to finance a larger proportion of their deficits by money creation when the debt/income ratio was relatively high. 2/ Such behavior could point either at an inclination to reduce excessive indebtedness through inflationary money financing, or at a more conventional countercyclical policy whereby relatively more money financing occurs when national income is below trend and the debt/income ratio is temporarily high, vice versa. The latter would be consistent with the underlying policy philosophy quoted above. Indeed, this inference is supported

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1/ Except $\Delta_2\Delta_4(y-p)_t$, as explained below.
2/ See the long-run solution in (4) below. As regards the five-quarter lag, it may be noted that a three-quarter moving average of $(bfu-y)$ lagged by one year leads to very similar results.

CHART 5
THE MODEL FOR FUNDED PUBLIC DEBT IN THE NETHERLANDS:
ACTUAL AND FITTED VALUES
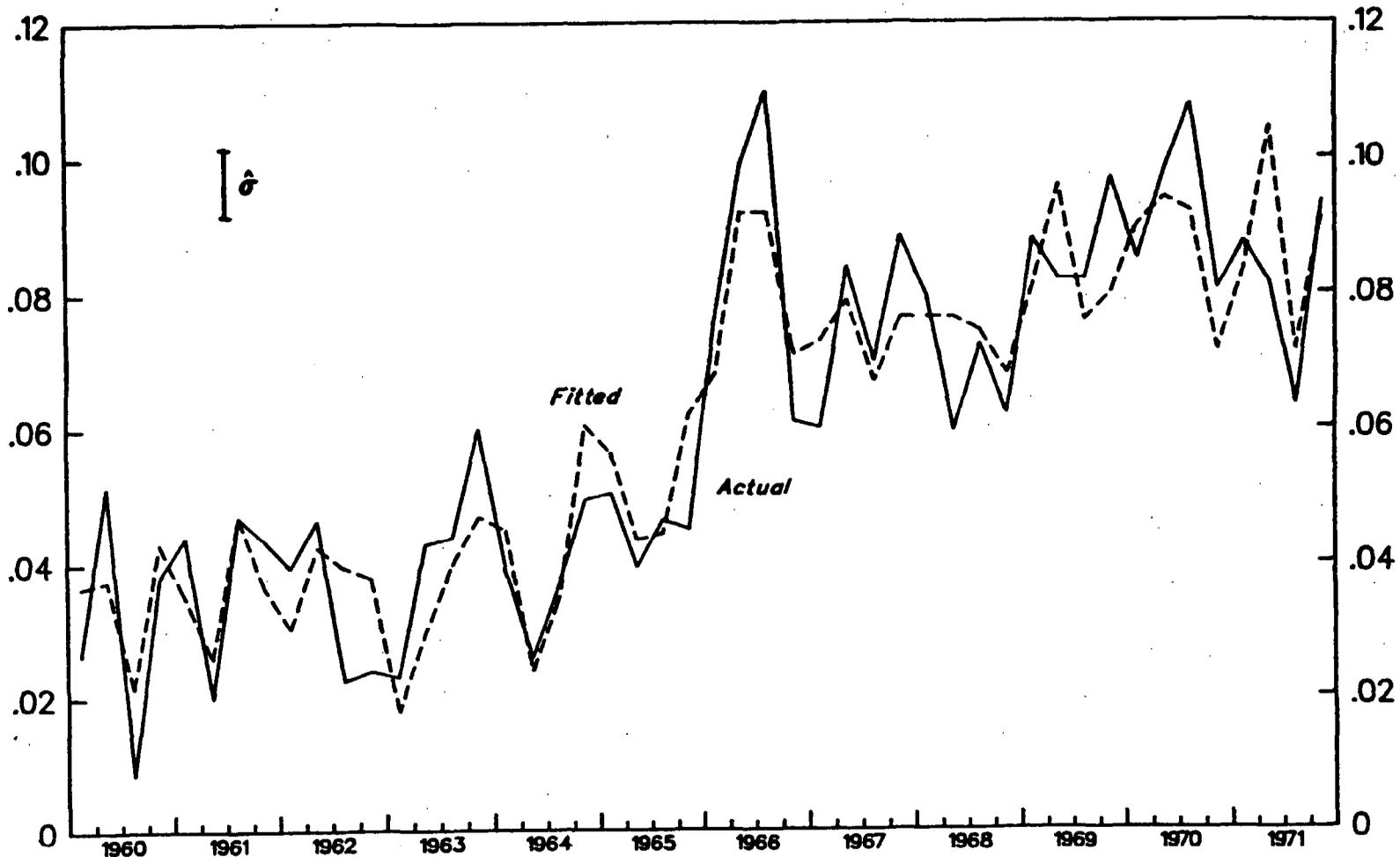
Source: Table 1, column 2. Dependent variable: $\Delta_4 bfu_t$.

by the presence of the real national income acceleration term in Column 2. Though its squared partial correlation coefficient is small, its presence improves the equation. Estimations using instrumental variables indicate that simultaneity is not an issue here, which is perhaps not surprising in view of the fact that quarterly data were used and a quarter may be too short for public debt to significantly affect real income.

The second additional variable in Column 2, BOP, denotes the quarterly national liquidity surplus scaled by BFU. The national liquidity surplus equals the total quarterly increase of the broad money supply (M2), minus domestic broad money creation. In other words, BOP represents money creation through the balance of payments. As explained above, the Dutch monetary tradition assigns an equilibrating role to the monetary influence of the balance of payments. When the balance of payments is in deficit, the orientation of the quantity-directed aspects of monetary policy normally tends to be tight, and in times of surplus the reverse tends to be the case. The presence of the national liquidity surplus in the equation indicates that in the 1960s the fiscal policymaker supported this monetary policy through the deficit financing strategy [cf. Knoester and Van Sinderen (1985)].

The addition of these two short-run policy components—though not crucial—is an improvement. The actual and fitted values of column 2 are depicted in Chart 5. This equation explains the stock of funded public debt with an estimated standard error of less than 1.1 percent of its level. [1]/

The hypothetical long-run solutions of both columns are identical. After substitution of $\Delta_4 bfu_t - \Delta_4 p_t^e = \pi$ and $\Delta(bfu-b)_{t-4} = 0$, the first column yields:

$$BFU/B = (BFU/Y)^{-0.44} \exp(-6.25\pi) \tag{4}$$

which can also be derived from the second column with $\Delta_4 \Delta_2 (y-p)_t = \Delta_4 BOP_{t-2} = 0$.

1/ This compares very favorably with the 2.5 percent which was obtained by estimating the Barro (1979) model of public debt creation with roughly the same annual Dutch data, but over an inappropriately longer period [Kremers (1983)]. The Barro model views funded public debt creation as a direct outcome of fiscal policy (i.e., the patterns of public spending and taxation) rather than as an instrument of monetary policy. For the Netherlands of the 1960s this is clearly inappropriate. For further comparison, Barro (1979) obtains a standard error of 2.2 percent for 1948-1976 with U.S. data, which Barro (1986) improves to 1.9 percent for 1951-1982.

The model embodies a hypothetical underlying long-run relation between the composition of outstanding debt liabilities and the debt/income ratio BFU_t/Y_t. 1/

Finally, short- and long-run interest rates and their lags appear not to play any role in these equations, which is in accordance with the orientation of Dutch monetary policy towards controlling quantities rather than interest rates.

This completes the formalization of the policy description by Den Dunnen (1981b) quoted above. The next step involves testing the significance of the explanatory variables from Table 1 in a model for fiscal policy, and the significance of the variables from that model in the equations of Table 1. For reasons of space and presentation, the results of this second step will be discussed only briefly. The quarterly models for public expenditure and taxation which were used for these tests can be found in Kremers (1985), and have been sketched in Section II above. These models satisfy the diagnostic criteria reported in Appendix I. F-tests reject the significance of the explanatory variables from the model for non-monetary debt in the models for public spending and taxation and vice versa. It is clear that in the 1960s the stock of non-monetary public debt did not just follow the course of the total budget deficit, and that the debt/money choice played its own systematic part in the economic policies of that decade.

Two circumstances enabled the Government to pursue this countercyclical deficit financing strategy: perceived deviations of budget variables from their long-run paths were limited, and the fixed exchange rate regime and moderateness of speculative international capital movements provided a relatively tranquil monetary environment. Owing partly to the first oil shock both circumstances changed in the 1970s, leading not only to the abandonment of the deficit financing strategy of the 1960s, but probably to the very loss of the debt/money choice as a short-run policy instrument. It will now be considered how and why the model for the 1960s breaks down in the 1970s.

To begin with, the monetary environment was transformed substantially in the early 1970s, as the international system of fixed exchange rates came under strain and speculative capital movements accompanied the transition to floating rates. This transition affected monetary policy in the very open Dutch economy, and formed the immediate cause for the breakdown of the deficit financing equations in Table 1. These fail parameter stability and specification tests (η_1 and ξ_1) for 1972-1973. In those years, the Ministry of Finance used overfunding (i.e., absorbing liquidity by issuing more non-monetary debt than required to finance the

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1/ This is equivalent to a solution relating the composition to B_t/Y_t, because $B/Y \equiv (BFU/Y)/(BFU/B)$.

deficit) to compensate the substantial capital inflows from abroad (see Appendix III and the Annual Reports of the Netherlands Bank). A change of the external environment thus prompted the Government to adapt its deficit financing behavior, but the underlying policy perspective initially remained unaffected. Budgetary disequilibrium had not yet mounted to proportions which would be seen in later years.

As seen in Section II, during the 1960s both public spending and taxation increased relative to national income. By the mid-1970s the distortive impact of high and growing taxation prompted the Government to set out to stabilize the tax burden. The open-endedness characterizing many of the spending programs which had been installed in the late 1960s made it difficult to simultaneously stabilize the spending/income ratio. The budgetary and economic consequences of the first oil shock significantly added to these difficulties, which by then became fully apparent.

The resulting rise of deficits exerted pressure on capital markets, where the Government's net borrowing share increased gradually from 28 percent of total supply in 1975 to 34 percent in 1980, and dramatically to 70 percent in 1984 [Benelux (1986, p. 38)]. The various channels through which this adversely affected economic activity in general and investment in particular are analyzed in Kremers (1986a). In addition to the adverse economic consequences, the rising recourse to the capital market confronted the Government with the prospect of a rising burden of current and future interest payments. These were the obvious origins of a temptation to monetize part of the deficits.

It was this pressing temptation which gradually reduced the Government's flexibility to employ the debt/money choice as an instrument of short-term monetary management. The evidence for the rise of budgetary pressure and the ensuing loss of policy flexibility is twofold [see also Appendix III and e.g. Zijlstra (1985)]. First, actual direct money financing (as conventionally measured in the monetary analysis of the Netherlands Bank) did indeed increase steadily from 1975 onward, both relative to debt financing (Chart 4) and relative to national income (Charts 3 and 4 combined). This threatened to endanger monetary control and culminated in an unprecedented public exchange between the Netherlands Bank and the Ministry of Finance in 1980. As a result, direct money financing by the central government fell sharply in 1981. It has remained moderate since.

The second source of evidence for the mounting pressure to monetize consisted of financial innovation on the part of the Government, which just as in the case of direct money financing sought to minimize its interest burden [Goudswaard (1984)]. This indirect method to at least partly monetize the deficit has recently been highlighted in a joint paper by Netherlands Bank Director Dr. Wellink [Wellink and Halberstadt (1985)], and concerns the placement of long-term public debt with the domestic commercial banking sector. It was first discussed by Pouw (1983) and

Goudswaard (1984) and has been termed "indirect money financing." Banks have tended to finance their increased holdings of long-term government debt by increased short-term borrowing rather than by the acquisition of additional long-term private saving or the reduction of other long-term lending. It is now generally felt that ultimately the Government should be held at least partly responsible for this indirect source of money creation. 1/ And one step further, the Government's recourse to the capital market provoked an inflow of capital from abroad, which undoubtedly formed another indirect source of money financing [1985 Budget in Dutch, p. 21]. 2/

The Government's ability to utilize budgetary instruments for short-run stabilization purposes was reduced by the rising dominance of disequilibrium feedback to control the budget and bring it back to a manageable state [see Kremers (1985)]. As far as the monetary aspect is concerned, the Dutch institutional setting could have been a relevant factor. In this setting, the Government was assumed to use its deficit financing strategy in support of monetary policy, and the Netherlands Bank does not hold a significant portfolio of long-term public debt so that it cannot directly influence Government money financing. The debt/money choice was therefore the direct responsibility of the public authority most directly subjected to political considerations.

Nevertheless, it could be questioned whether a different setting might have preserved public debt management as a short-run instrument. Even if the central bank had had a portfolio at its disposal to influence the debt/money choice, and even if the Government itself had not been allowed to finance deficits directly through money creation at all (as effectively has been the case since 1980), then the pressure of substantial budgetary disequilibrium might still have hampered a flexible short-run use of the debt management instrument. Under such circumstances, the difficulty of convincing financial markets that temporary underfunding did not signal current or anticipated monetization would have been increased. In addition, overfunding might have suggested to opponents of deficit reduction a greater leeway for larger structural deficits. In order to avoid a loss of confidence and a loss of control, governments under those conditions generally tend to refrain from stabilization through debt management in an effort to underline their determination to

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1/ Although it was repeatedly suggested that the coverage of the Netherlands Bank credit rationing should be extended to include money creation on behalf of the Government [e.g., the 1982 Budget in Dutch, p. 28], this was never implemented, and instead the principle of cooperation between the Bank and the Government was maintained.

2/ It has been argued that the average maturity of outstanding public debt has been reduced both to reduce interest costs and to attract funds from foreign investors who tend to have a preference for relatively short maturities [Goudswaard (1984)].

restore equilibrium. In periods of substantial disequilibrium, short-run stabilization considerations tend not only to be overshadowed by disequilibrium feedback but, for this reason, even to be largely neglected [cf. Wellink and Halberstadt (1985, p. 190, pt. 1)].

Because the deficit financing experience in the Netherlands after the 1960s was less homogeneous than before, the latter period could not be satisfactorily represented by a parsimonious model as in Table 1. Both the changing economic environment and the pressure from budgetary disequilibrium were contributing factors, whose respective roles have been sketched above.

Finally, as seen in Section II, rising budgetary disequilibrium affected the way that budgetary uncertainty was absorbed: in the 1970s, the role of budget buffer shifted from the deficit to public expenditure. In addition, it seems likely that both the decreased availability of the debt/money choice for short-term monetary management and the perceived risk of monetization directly added to monetary uncertainty in the late 1970s and early 1980s. Though not explicitly related, Bomhoff (1983, p. 160) finds evidence that after 1973 monetary uncertainty in the Netherlands increased and significantly contributed to the excess of Dutch over German long-term interest rates. He uses a composite empirical representation for monetary uncertainty which does not distinguish between domestic factors (e.g. the public finances) and foreign factors (e.g., speculative capital movements). Further work on this subject is required.

V. Conclusion and Perspective

On the basis of the foregoing, the following conclusions can be drawn. First, in addition to the automatic stabilization function of the total budget deficit, the financing choice between debt and money creation can follow a regular countercyclical pattern. If such a pattern persists over a considerable period of time, then it may be feasible to formalize and estimate its operating characteristics as a step toward systematic policy evaluation. Second, such short-term policy flexibility may be available if deviations of budget variables from their long-run equilibrium paths are limited and controlled. If disequilibrium rises to excessive proportions, then countercyclical policies may be overshadowed by disequilibrium feedback or even be abandoned altogether.

Both points were developed with empirical evidence on the public finances of the Netherlands. The countercyclical deficit financing strategy of the 1960s was represented by an econometric equation for non-monetary debt creation. In the 1960s, the determinants of the deficit financing choice appeared to be clearly different from those governing the pattern of the total deficit. Budgetary disequilibrium was then still limited. However, with rising disequilibrium in the second half of the 1970s the countercyclical orientation of deficit financing was abandoned. The

heterogeneity of financing policies after the 1960s, due also to a turbulent international monetary environment, makes it difficult to estimate a satisfactory econometric representation to be contrasted with that of the 1960s. Instead, heuristic evidence was brought to bear on these more recent experiences, supporting the broad conclusions of this paper.

Finally, the brief mention of some theoretical and empirical ramifications serves to put these results in a wider perspective. This paper focused on a disadvantageous consequence of budgetary disequilibria, defined as deviations of budgetary variables from their underlying long-run paths. It is a widely observed fact that excessive deviations of budgetary variables from their long-run equilibria can lead to adverse inflexibility in short- to medium-term policymaking, but this is not always fully acknowledged. 1/

As far as the theoretical literature is concerned, there are recent developments which take into account not only that the government must satisfy an intertemporal budget constraint, but also that there are limits to the degree to which single-period budgets can get out of line with long-run equilibrium. A theoretical rationale for the containment of disequilibrium in the stock of public debt has been given by Masson (1985) in a model with uncertainty. Buiter (1984), Sachs and Wyplosz (1984), and Masson (1986) have studied the economic consequences of government policies which react to reduce disequilibrium in public debt. The results on the Dutch public finances suggest that these theoretical studies need to be generalized to integrate regular patterns of public debt, spending, and taxation in a multivariate, budget-wide approach to budgetary policy analysis.

These considerations suggest the importance of budgetary disequilibrium in a systematic empirical evaluation of budgetary policy. The approach developed in Kremers (1985) operationalizes this concept in an empirical model of budgetary behavior. Building on that approach, this

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1/ "[...] in spite of a growing awareness of the problem of debt accumulation, there are still too many observers who judge fiscal deficits exclusively in terms of their immediate impact on the economy, ignoring their long-run consequences" [de Larosière (1984)]. Corden (1986, p. 162) mentions a practical example: "[Monetary contraction and fiscal expansion is a policy] mix that has been widely urged on Europeans and the Japanese as an appropriate response to the U.S. budget deficit. But fiscal expansion goes against their justified desires to reduce their own structural deficits. Hence short-term Keynesian and exchange-rate stabilization motives are in conflict with longer-term structural motives." Furthermore, von Furstenberg and Boughton (1973, pp. 21-2) suggest that a reason for unsatisfactory results from the estimation of policy reaction functions may lie in a failure to acknowledge that in practice there may be pressure to limit budgetary disequilibrium.

paper studies a channel through which budgetary disequilibrium can affect the economy in an indirect way, namely through its impact on the short-run flexibility of the deficit financing policy. The ultimate economic consequences of budgetary disequilibrium--at issue in several industrial and developing countries—remain subject of further empirical research.

The Data

This appendix contains exact source references for data which are readily available, and lists in Table 3 only those data which are not. To begin with, reconsider the government budget:

$$G_t + I_t = T_t + (BFU_t - BFU_{t-1}) + (BFL_t - BFL_{t-1}) + GR_t + UNCAT_t \qquad (I.1)$$

The main data source for these variables (quarterly, in current guilders) is: De Nederlandsche Bank, Monetaire en Financiële Jaar- en Kwartaalreeksen, 1957-1983, Amsterdam: 1985 (abbreviated as MFJK). This publication contains the most up-to-date material, and all empirical results reported use those data. However, much of the work was originally done with the equivalent data from: De Nederlandsche Bank, Quarterly Statistics, various issues. The latter is available in English, and the classification of tables is the same in both publications. The exact sources per variable in MFJK are given below. All data refer to Central Government ('Rijk'). Stocks are end-of-period.

Budget flows are measured on a cash rather than on a transactions basis. Measurement on transactions basis would record flows of goods and services, while on cash basis one records financial flows. The difference consists of temporary credit. The National Accounts are mostly on transactions basis, but even there payments of interest and tax are on cash basis. Measured data on these variables on transactions basis do not exist. Furthermore, the data on cash basis provide the desired exact connection of the budget variables and deficit financing with the monetary analysis of De Nederlandsche Bank. The sources are as follows.

G = total public expenditure, million (MFJK, Table 5.1: Row 3); minus interest payments (Table 3 below). I = interest payments on public debt, million (Table 3). T = total tax and other (mainly transitory) revenue, million (MFJK, Table 5.1: Row 1 plus Row 2); minus gas revenues (Table 3). BFU = stock of funded public debt, million (Table 3). BFL = stock of floating public debt, million (Table 3). GR = gas revenues, million (Table 3). $UNCAT$ = uncategorized items; this includes a number of relatively minor items which De Nederlandsche Bank records separately (MFJK, Table 5.1: Rows 4,5 and 6: 'Deficit of e.g., the Municipalities Fund,' 'Surplus Investment Account Fund,' and 'Special receipts and expenditures'). This variable does not play any role in the analysis; its exact numerical value can be derived as the rest term in budget constraint (I.1) above.

For 'national income' data on the Net National Product at current market prices were used (De Nederlandsche Bank, Kwartaalconfrontatie van Middelen en Bestedingen, 1957-1980, Amsterdam: 1982, which contains an explanation in English; recent updates can be found in the Bank's

Table 3.   Dutch Data, 1957:1-1982:4

	I	BFU	BFL	GR	$\Delta_4 P_t^e$
1957:1	155	11,584	4,395	0	
1957:2	106	11,536	4,773	0	
1957:3	132	11,461	4,459	0	
1957:4	141	11,606	4,020	0	
1958:1	210	11,613	4,388	0	
1958:2	115	11,510	4,764	0	
1958:3	150	11,378	4,859	0	
1958:4	99	11,651	4,471	0	
1959:1	178	11,882	4,309	0	0.00600
1959:2	98	11,694	4,583	0	0.00600
1959:3	142	12,011	4,053	0	0.00600
1959:4	112	12,114	3,788	0	0.00750
1960:1	189	12,205	3,726	0	0.00750
1960:2	95	12,307	3,837	0	0.00750
1960:3	194	12,119	3,795	0	0.00750
1960:4	121	12,589	2,970	0	0.02000
1961:1	211	12,753	2,827	0	0.02000
1961:2	95	12,550	3,309	0	0.02000
1961:3	186	12,708	3,035	0	0.02000
1961:4	136	13,154	2,682	0	0.01750
1962:1	208	13,267	2,583	0	0.01750
1962:2	128	13,149	2,993	0	0.01750
1962:3	172	12,995	2,902	0	0.01750
1962:4	125	13,473	2,893	0	0.02000
1963:1	230	13,570	2,942	0	0.02000
1963:2	124	13,720	2,951	0	0.02000
1963:3	176	13,582	2,802	0	0.02000
1963:4	128	14,301	2,370	0	0.02000
1964:1	221	14,116	2,727	0	0.02000
1964:2	155	14,088	3,092	0	0.02000
1964:3	177	14,090	2,869	0	0.02000
1964:4	165	15,027	2,374	0	0.03250
1965:1	233	14,841	2,471	0	0.03250
1965:2	213	14,650	3,454	0	0.03250
1965:3	195	14,767	3,283	0	0.03250
1965:4	180	15,712	2,731	0	0.04500
1966:1	229	16,018	2,479	12	0.04500
1966:2	269	16,167	3,603	14	0.04500
1966:3	252	16,485	3,414	15	0.04500
1966:4	174	16,706	3,343	6	0.04500
1967:1	302	17,007	3,521	37	0.04500
1967:2	239	17,585	4,686	49	0.04500
1967:3	339	17,673	4,685	52	0.04500
1967:4	189	18,245	3,849	18	0.03750

Table 3 (continued). Dutch Data, 1957-1982:4

	I	BFU	BFL	GR	$\Delta_4 P^e_t$
1968:1	369	18,413	4,428	74	0.03750
1968:2	298	18,655	6,140	98	0.03750
1968:3	329	18,996	5,750	105	0.03750
1968:4	295	19,411	4,986	37	0.03500
1969:1	400	20,097	5,212	75	0.03500
1969:2	300	20,250	7,189	88	0.03500
1969:3	391	20,624	6,583	163	0.03500
1969:4	366	21,388	5,198	39	0.03900
1970:1	489	21,886	5,477	147	0.03900
1970:2	327	22,343	6,606	125	0.03900
1970:3	458	22,979	5,516	198	0.03900
1970:4	420	23,182	4,636	59	0.04550
1971:1	571	23,888	5,020	199	0.04550
1971:2	312	24,245	7,002	157	0.04550
1971:3	563	24,490	5,829	240	0.04550
1971:4	493	25,447	4,096	66	0.06150
1972:1	677	26,064	4,298	163	0.06150
1972:2	289	26,583	5,672	180	0.06150
1972:3	508	27,168	3,552	180	0.06150
1972:4	608	27,355	1,986	144	0.07250
1973:1	688	27,868	2,164	239	0.07250
1973:2	289	28,418	4,051	201	0.07250
1973:3	573	28,923	2,530	389	0.07250
1973:4	651	29,052	-266	75	0.07750
1974:1	715	29,302	555	325	0.07750
1974:2	336	30,185	3,236	233	0.07750
1974:3	638	30,848	82	837	0.07750
1974:4	807	31,367	-1,602	414	0.08750
1975:1	793	32,701	-684	900	0.08750
1975:2	315	33,972	2,955	306	0.08750
1975:3	771	34,592	1,799	737	0.08750
1975:4	991	35,668	448	1,983	0.09000
1976:1	941	37,566	2,136	885	0.09000
1976:2	316	38,935	5,089	1,393	0.09000
1976:3	952	40,186	3,941	1,726	0.09000
1976:4	1,172	41,705	2,826	988	0.07750
1977:1	1,133	43,574	4,724	917	0.07750
1977:2	418	45,906	7,200	1,933	0.07750
1977:3	1,184	47,408	4,889	2,279	0.07750
1977:4	1,342	48,241	4,135	1,497	0.06500

Table 3 (concluded). Dutch Data, 1957:1-1982:4

	I	BFU	BFL	GR	$\Delta_4 p_t^e$
1978:1	1,404	50,753	4,900	965	0.06500
1978:2	660	53,226	8,046	1,896	0.06500
1978:3	1,286	54,180	7,553	2,255	0.06500
1978:4	1,387	55,526	5,694	1,995	0.05125
1979:1	1,571	56,894	7,331	1,094	0.05125
1979:2	853	60,835	10,918	2,007	0.05125
1979:3	1,330	62,721	10,031	1,838	0.05125
1979:4	1,693	63,871	9,904	2,305	0.05125
1980:1	1,833	66,013	12,190	1,353	0.05125
1980:2	1,230	70,416	16,478	2,879	0.05125
1980:3	1,670	73,024	16,381	2,947	0.05125
1980:4	2,158	77,117	11,760	2,838	0.06500
1981:1	2,099	80,652	17,267	1,604	0.06250
1981:2	1,889	87,135	19,009	4,659	0.06250
1981:3	2,018	89,581	19,398	4,705	0.06250
1981:4	2,907	95,735	13,597	3,415	0.06750
1982:1	2,554	100,003	19,458	2,166	0.06250
1982:2	2,862	109,015	21,338	4,740	0.06250
1982:3	2,309	115,893	17,518	4,571	0.06250
1982:4	4,050	122,058	14,559	3,877	0.06250

Note: I = interest payments, million (1957:1-1967:4: annual totals from Central Bureau of Statistics, 80 Jaren Statistiek in Tijdreeksen, The Hague: 1979, distributed over quarters using percentage indicators obtained from Ministry of Finance, The Hague; 1968:1-1982:4: quarterly data, consistent with annual above, obtained from Ministry of Finance, The Hague). BFU = funded Central Government debt, approximate accumulation of recourse to capital market, million (MFJK, Table 5.1: Row 9) (measured as quarterly stock equivalents from De Nederlandsche Bank, as in Annual Report, Table 5.4: Row 1c; minus accumulation of MFJK, Table 5.1: Row 8, with 1957:1=-1350). BFL = floating Central Government debt, approximate accumulation of recourse to money (M2) financing, million (MFJK, Table 5.1: Row 10) (measured as end-of-quarter stocks MFJK, Table 2.1a: Row 3a; minus MFJK, Table 2.1b: Row 10; minus accumulations of MFJK, Table 5.1: Rows 10c, 10e and 10f, with 1957:1=0; minus MFJK, Table 2.1c: Row 5; minus MFJK, Table 2.1e: Row 12; minus 155 for 1959:2-1974:4). GR = gas revenues, million [obtained from Ministry of Finance, the Hague, for 1968:1-1982:4; for 1966:1-1967:4 estimated from Wieleman (1982); negligible for 1957:1-1965:4]. $\Delta_4 p_t^e$ = anticipated inflation [Bomhoff (1979), p. 137; recent observations and also the data of Bomhoff are the inflation predictions by the Central Planning Bureau, Macro Economische Verkenningen, The Hague, which appears annually in September with the predictions for the next year; I have averaged those data over the latest two years].

Quarterly Statistics which has recently been renamed Quarterly Bulletin).
The NNP series is compiled from the National Accounts of the Central
Bureau of Statistics, in which there is a break in 1977. Data were cor-
rected for the break by subtracting the pre- and post-break difference
on pivot observation 1977:1 from the observations for 1977:2-1982:4. As
an alternative, one could scale the post-break period. This choice has
been checked not to affect the empirical results to any significant
extent.

The data for the price level were derived by dividing the nominal
NNP data by real NNP in 1977 prices, which can be found at the same place
as the data on nominal NNP.

The national liquidity surplus (BOP) is in MFJK, Table 4.2: Row 4.

At various points in the analysis, it is mentioned that interest rate
variables do not play a significant role. For the long-run interest rate,
the yield on long-term Central Government bonds was used (weighted average
of the latest three long-term loans: International Monetary Fund,
International Financial Statistics, Row 61; also in MFJK, Table 9). The
short-run rate is that on short-term Cash Loans to Local Authorities
(MFJK, Table 9, end-of-quarter monthly averages).

The Design Criteria of Table 1

This appendix contains a list of diagnostic statistics presented in Table 1, and briefly mentions their sources. The relevant number of degrees of freedom can be found in brackets behind the test values in the tables. The presence of two numbers indicates that the statistic can be compared against an F-distribution, while a single number suggests a χ^2-distribution. A consistent framework for these model design criteria is provided by Hendry (1986).

Autocorrelation

BP = Box-Pierce (1970) residual correlogram statistic, to be evaluated against χ^2-distribution. However, in models with lagged dependent variables, small values must be treated with caution as the statistic will be biased towards zero.

η_2 = Lagrange Multiplier test, F-form of Harvey (1981).

ξ_2 = Lagrange Multiplier test, χ^2-form of Godfrey (1978).

Heteroskedasticity

η_4 = White (1980) and Domowitz and White (1982) test, F-form.

ξ_4 = White (1980) and Domowitz and White (1982) test, χ^2-form.

ARCH = Lagrange Multiplier test for Autocorrelated Squared Residuals, χ^2-distribution, Engle (1982).

Normality Residuals

SK = Skewness.

EK = Excess Kurtosis.

NORM = χ^2-test for normality residuals, Jarque and Bera (1980).

Parameter Constancy

η_1 = Chow test.

ξ_1 = χ^2-test. As explained by Kiviet (1981), this test can be used as a general model specification test, whereas η_1 is more a measure of numerical parameter stability [see Hendry et al. (1983)].

Deficit Financing in the Annual Budget Memoranda

This appendix offers a bird's eye view of the attitude toward deficit financing strategy in Dutch Annual Budget Memoranda after 1959. The development of this attitude is in accordance with the empirical results of this paper. In the 1960s, the Budget usually mentioned the counter-cyclical role of the deficit financing method, in combination with the occasional reference to the monetary influence of the balance of payments and error-correction on the debt composition. In the course of the 1970s this view on the deficit financing method changed. The abbreviated Budgets in English around 1980 tended to either state that money financing ought to be restricted, or not mention the deficit financing issue at all. With rising budgetary disequilibrium, the full versions of the Budget in Dutch increasingly concentrated on controlling the deficit itself, acknowledging the loss of the deficit financing choice as a separate short-term policy instrument.

The 1960s approach to money financing is well formulated by Den Dunnen (1981b), as quoted in the main text. The countercyclical orientation of Dutch budgetary and deficit financing policies was first expressed by the Minister of Finance Dr. Zijlstra in the 1960 Budget. On p. 38, the countercyclical deficit financing strategy was formulated as follows: 1/

> "The more favourable cyclical development has as yet made
> itself hardly felt in the capital market. As a result the
> Government was in a position to abide by its original plan
> to appeal to that market. In this way the improvement of the
> budgetary position is ultimately finding expression in that
> the funds accumulating on the advance subscription accounts
> need not in 1959 be used for financing State expenditure;
> they are absolutely necessary, however, as an element of
> anticyclical public financing in a year of unexpected rapid
> revival of economic conditions."

In the 1961 Budget it was again remarked that "large-scale withdrawal of liquidities" was "desirable under the economic conditions prevailing in 1959" (p. 40). This policy was to be continued, as explained in the Budgets for 1961 (p. 42) and 1962 (p. 46). A transition to a more neutral stance was advocated in the Budgets for 1963 (pp. 13, 42) and 1964 (p. 49), but in the 1965 Budget this was reversed back to liquidity absorption (p. 91 of the Dutch version). Notice that these fluctuations roughly correspond to the pattern of Chart 4.

1/ All page references concern the abbreviated versions of the Annual Budget in English, unless indicated otherwise.

The first mention of disequilibrium feedback, of a form similar to that of Table 1, occurred in the 1967 Budget: "[...] it may prove desirable for the Government to attract more capital market resources with a view to the partially or wholly long-term financing of any deficit that may have remained uncovered in 1966" (p. 34).

The 1968 Budget again contained further countercyclical arguments (pp. 23 and 88 of the Dutch version), as did those for 1969 (p. 16), 1971 (p. 31) and 1972 (pp. 19 and 38). In order not to provoke excessive capital inflows from abroad, the Government in 1971 refrained from any recourse to the internationally oriented part of the capital market, having taken precautions to absorb the ensuing excess liquidity in 1972.

From 1972 onwards, the Budget assigned a separate paragraph to its monetary role. This reflected the fact that the increased volatility of the international, and therefore also of the Dutch, monetary sphere required special attention. The second of these special paragraphs, in the 1973 Budget (pp. 19-24), reiterated the Government's responsibility to place its financing policy in a monetary perspective: "In view partly of the considerable inflow of liquidity from abroad—due to some extent to the improvement in the balance of payments and the floating of sterling—policy this year will continue to be concentrated on an appreciable absorption of liquidity [...] within the limits set by international interest rates" (p. 23). This explains why the estimated policy rule of Table 1 breaks down in 1972-1973. Rather than supporting the equilibrating force of the balance of payments by reinforcing its liquidity effects, the substantial international capital movements of a speculative character, which were connected with the rapid transformation of the international monetary system, were compensated for by the Government through liquidity absorption. This was a sufficiently profound change for our equation to break down. Still, the basic philosophy underlying the deficit financing strategy remained the same. The budget was still perceived to be under sufficient control for such short-run policy flexibility, as is clear from the 1974 Budget: "Strict budgetary control is a vital prerequisite if monetary control is desired and the Government is to be able to secure a sufficient reduction in liquidity" (p. 30).

The Budgets for 1975 and beyond increasingly expressed the difficulties of monetary management in the open Dutch economy. Its unsatisfactory performance (low real growth, unemployment, collapsing investment) was at that time not generally recognized as a structural rather than a cyclical development. In view of relatively moderate inflationary pressure it was long deemed reasonable to tolerate a considerable growth of liquidity. Up to 1977 the surplus on current account seemed to offer further justification for that policy, but this argument lost ground as the current account moved into deficit in 1978. Meanwhile, the tendency of international capital movements to speculate on a strong Guilder frustrated the policymakers' objective of an outflow of capital, which was promoted in a period not only of current account surplus but also of very substantial revenues from the foreign sales of natural gas [Kremers (1986a)].

The role of budgetary policy became difficult. On the one hand, the Government was encouraged by the Netherlands Bank to "mop up" excess liquidity originating from foreign sources through recourse to the capital market in excess of its total budget deficit. On the other hand, rising budget deficits encouraged the inflow of foreign capital (1975 Budget, pp. 31-32; 1976 Budget, pp. 36-39; 1977 Budget, pp. 40-42). As described in Section II of this paper, the virtually autonomous growth of public spending increasingly became the driving force behind the public finances. This put rising pressure on the deficit and the Government's recourse to both debt and money financing. It was anticipated on pp. 36 and 38 of the 1976 Budget, and became evident in the 1977 Budget, pp. 40-42; the 1979 Budget, p. 37; the 1980 Budget, pp. 31-33; and the 1981 Budget, p. 40.

As a result of the Government's rising recourse to money financing, an unprecedented public exchange regarding this issue between the Bank and the Ministry of Finance took place in late 1980. This had an impact: from 1981 onwards direct money financing (as different from indirect money financing, see below) fell sharply, and it has remained moderate since. After 1981 the abbreviated Budgets in English do not mention this subject anymore, illustrating the loss of a short-run policy instrument which had de facto already been given up several years before. The full versions of the Budget in Dutch came to accept this situation explicitly, and emphasized the importance of getting the deficit under control (1982 Budget, pp. 28 and 39; 1984 Budget, pp. 49-50; 1985 Budget, pp. 21-24 and 56; 1986 Budget, p. 46).

Finally, this did not mean that money financing ceased altogether: as explained in the main text, the Government developed indirect ways of money financing by placing long-term debt with the commercial banks and foreign holders. These monetary effects were, nevertheless, explicitly acknowledged (Dutch versions: 1984 Budget, pp. 34-35 and 50; 1985 Budget, pp. 21-23; and 1986 Budget, p. 46).

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