The Financial Transactions Motive in the Dutch Money Demand Function

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I. Introduction

The demand for money function has been a subject of empirical research for many years now. Many authors have presented reviews of the empirical results (see *Goodhart* (1982), *Judd* and *Scadding* (1982)). Besides a number of theoretical aspects, like the microfoundation of money demand, the main innovation in the theory of demand for money is in the specification of the functional form. The *Davidson* et al. (1978) (hereafter DHSY) error correction model (ECM) has been established as the appropriate specification of the money demand function. The DHSY model links a long-term specification, which relates variables in equilibrium, with a short-term disequilibrium model. This specification allows disequilibrium in the short-run, but forces the long-run to be in equilibrium. The DHSY-model seems to be well-suited for the money demand function. It has been assumed by many of the pre-DHSY studies that adjustment to a long-run model takes place via a partial adjustment model. The specification of the final model to be estimated guarantees not automatically an equilibrium in the long-run.

Assuming a long-run equilibrium model for money demand implies an assumption on the stability of the money demand function. The long-term parameters are exactly determined by their long-run values and are not allowed to vary any longer. This assumption has a serious policy implication. The stability of the money demand function is a cornerstone of classical thought and doubted by Keynesian theory. The effectiveness of monetary policy increases with a more stable money demand function. Therefore it is important to test the exact form of the long-run money demand function. The co-integration literature is a tool in identifying long-run equilibrium processes. Once an appropriate long-term relation has been found it is easy to obtain a corresponding short-run model.

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In the discussion of the specification of the long-run money demand function two issues are prominent. The first is the choice between the transactions motive to be the only relevant long-term explanatory variable or the transactions and portfolio motives. The second issue concerns the definition of the scaling variable. Should real income be included or a combination of real income and financial wealth? In our view these issues are important for the appropriate long-term specification of the money demand function.

As an example we use the Dutch money demand function, which has been examined by a large number of studies (*Fase* and *Kuné* (1974), *Fase* and *Windsor* (1990), *van der Knoop* and *Hooijmans* (1985), *Kuipers* and *Wilpstra* (1978), *Kuipers* and *Beertje* (1988)). All studies conclude that the Dutch money demand function is stable. This seems a bit surprising if one eye-balls the ratio of money demand over net national income (liquidity ratio) in the most recent period. As is shown in Table 1 the liquidity ratio has increased by more than 16 percentage points in the last eight years. A number of explanations has been given for this development. *Van der Knoop* and *Hooijmans* (1985) take the increase in the financial transactions motive as the cause of the increase in money demand. As will be shown later on, we support this conclusion. We show that the financial transactions motive is an important determinant of the long-run money demand. *Kuipers* and *Boertje* (1988) argue that corporate profits have not been used for investment in the period and are hoarded in time deposits. Our results show some evidence for this argument in the short-run adjustment process. *Fase* and *Winder* (1990) advocate the use of the DHSY approach in estimating money demand. Although using an ECM, they underestimate money demand in the second half of the eighties. Their long-run specification, which assumes a stable ratio of real money over real income, suggests a decrease in money demand in the next years.

This study makes two arguments. First on a macro level the ECM specification has been used to explain the rather large increase in the money over income ratio. Much attention has been paid to the specification of an appropriate long-run model, where both real and financial transactions influence money demand and portfolio arguments are allowed to have a long-run impact. The second argument made in this paper concerns a disaggregation of money demand into both assets and sectors. It appears that the the sharp increase in money demand in the Netherlands is mainly due to a sharp increase in the demand for short-term time and savings deposits. A sectoral disaggregation, starting in the fourth quarter of 1982 shows that financial institutions demand relatively more money in the second half of the eighties. Our observations lead to the conclusion that the demand for money cannot

be explained by a real transaction argument only. Money is part of a portfolio and financial arguments have become more important in explaining money demand.

II. The Theory of Money Demand

In a complete *Arrow-Debreu* general equilibrium model with contingent markets for future states there is no role for money, not even as a medium of exchange. As *Blanchard* and *Fischer* (1989) point out there are three ways to introduce money demand:

- Assume a *Cash-In-Advance* constraint;
- Assume money to be an element in the *utility* function;
- *Ad hoc.*

Assuming a Cash-In-Advance constraint implies that a consumer needs to have money before buying goods. This argument has become less valid in recent times, as credit facilities have increased through the introduction of new financial instruments. The second type of money demand functions is based on assumed utility of holding assets. This approach has been criticized on the assumption that an agent obtains direct utility of holding assets. The third approach is the ad hoc specification of money demand, like the standard Keynesian money demand function.

Famous examples for money demand functions can be placed in the above mentioned categories. The *Baumol-Tobin* trips-to-the-bank model, the *Miller-Orr* corporate money demand function are based on the Cash-in-Advance assumption. The portfolio approach (see *Goodhart* (1982)) is based on the money in the utility function approach.

In this paper we derive a money demand function based on the money in the utility function approach. We show that the demand for money can be based on a current income and wealth variable transactions motive. The model is based on *Sidrauski* (1967).

Suppose we have an economy with infinite lived consumers. Population growth by rate n. Each consumer maximizes utility:

$$\max U_t = \int_t^{\infty} (\log c_s + \log m_s) \exp(-\theta(s-t))\, ds \tag{1}$$

where c and m are consumption and real money balances per capita, θ is the rate of time preference. The budget constraint is given by:

$$c + \frac{dk}{dt} + nk + \frac{dm}{dt} + m\pi + nm = w + rk \tag{2}$$

where k is the per capita capital stock, π is the rate of inflation, w is the real wage rate and r the rate of interest. If a is the sum of capital and real money balances, equation 2 can be rewritten into:

$$\frac{da}{dt} = ((r - n)a - (\pi + r)m + w - c) \tag{3}$$

Maximizing 1 given 3 with respect to c and m yields the following first order conditions (assuming that a *Ponzi*-game has been ruled out):

$$\frac{1}{c_t} = \lambda_t \tag{4}$$

$$\frac{1}{m_t} = \lambda_t(\pi + r_t) \tag{5}$$

$$\frac{d\lambda_t}{dt} = -(r_t - n - \theta)\lambda_t \tag{6}$$

$$\lim_{t \to \infty} a_t \lambda_t \exp(-\theta t) = 0 \tag{7}$$

Equations 4 and 5 imply that $c_t = (\pi + r_t)m_t$. An increase in the nominal interest rate reduces money demand compared to consumption. Equation 6 is the *Euler* equation, implying:

$$c_t = c_0 \exp\left(\int_0^t (r_v - n - \theta)dv\right) \tag{8}$$

Integrating budget constraint 2 forward in time yields the condition that the discounted sum of all future consumption equals the discounted sum of all future earnings h_0 (human wealth) and nonhuman wealth a_0. If:

$$h_0 = \int_0^\infty w_t \exp\left(-\int_0^t (r_v - n)dv\right)dt \tag{9}$$

then:

$$c_0 = \beta_0(h_0 + a_0) \tag{10}$$

So money demand is also a function of human and financial wealth:

$$m_0 = \frac{\beta_0}{\pi + r}(h_0 + a_0) \tag{11}$$

Equation 11 yields the result that an increase in wealth yields an increase in money demand, while an increase in the nominal interest rate $\pi + r$ lowers money demand.

The Keynesian money demand function is merely a short-run approximation of the intertemporal money demand function. Only current income plays a role. The Keynesian consumption function in per capita terms reads:

$$c_0^K = \beta_0 w_0 \tag{12}$$

which leads to the money demand function:

$$m_0^K = \frac{\beta_0}{\pi + r} w_0 \tag{13}$$

Suppose there are two types of individuals in an economy. One category assumes to live one-period (the Keynesian group) and one to live infinitively (the classical group). As *Campbell* and *Mankiw* (1989) show for the consumption function aggregate money demand can be represented by a weighted average of equations 11 and 13:

$$m = \zeta m_0 + (1 - \zeta) m_0^K \tag{14}$$

Through this assumption both current income and wealth enter the money demand function. The long-run elasticities have to add up to unity.

III. The Macro Money Demand Function

We take equation 14 as a starting-point and assume that money demand is based on both a real income and financial wealth transactions motive. In order to obtain an empirical attractive model we assume that real money demand $m = M/p$ depends on real income y, the nominal short-term and long-term interest rates r_s and r_l and real wealth $w = W/p$. As we assume a broad concept of money, including both currency and demand deposits (M_1) and short-term deposits and savings accounts, the short-term interest rate has been included as *own* interest rate. The long-term interest rate is the alternative interest rate (on bonds for instance). Later on, in a disaggregation of money demand into the demand for primary and secondary liquidity the short-term interest rate is assumed to be the interest rate on secondary liquidity. The form of the long-run model is assumed to be exponential:

$$m_t = \exp(c) y_t^{\alpha} r_{s,t}^{\beta} r_{l,t}^{\gamma} w_t^{\delta} \tag{15}$$

with α, β, $\delta > 0$ and $\gamma < 0$ and c representing a constant. α and δ represent the income and wealth elasticity. The wealth elasticity is believed to have become more important in the recent years. Equation 15 represents our long-run model. The exponential specification has a number of practical advantages. Parameters can be evaluated as elasticities, and as we will see hereafter, taking differences of natural logs approximates relative first differences in our short-term model. The equation to be estimated reads:

$$\log m_t = c + \alpha \log y_t + \beta \log r_{s_t} + \gamma \log r_{l_t} + \delta \log w_t + u_t \tag{16}$$

where u_t represents a disturbance term. Equation 16 represents long-run behaviour. Short-term behaviour can be represented by an Error Correction Model (ECM) if quadratic cost minimization has been assumed (see *Nickell* (1985)). In general a long-run model of the type:

$$y_t = k_1 y_{t-1} + k_2 x_t + k_3 x_{t-1} + \varepsilon_t \tag{17}$$

can be represented by its short-run equivalent:

$$\Delta y_t = (k_1 - 1) y_{t-1} + k_2 \Delta x_t + (k_3 + k_2) x_{t-1} + \varepsilon_t \tag{18}$$

which is equal to:

$$\Delta y_t = k_2 \Delta x_t - (1 - k_1)(y_{t-1} - k_4 x_{t-1}) + \varepsilon_t \tag{19}$$

where:

$$k_4 = \frac{k_3 + k_2}{1 - k_1} \tag{20}$$

Equation 19 is the final Error Correction Model (ECM). The long-run parameter is k_4, the impact parameter k_2 and the adjustment parameter $(1 - k_1)$. In general the x_t variable can be a vector. This type of modelling needs the long-run equation to be a co-integrated vector. So our short-run equivalent of equation 16 is:

$$\Delta \log m_t = \phi \Delta \log y_t + \nu \Delta \log r_{s_t} + \mu \Delta \log r_{l_t} + \lambda \Delta \log w_t - \eta ECM_{t-1} \tag{21}$$

where *ECM* represents the estimated residual term of the long-run equation 16.

Empirical implementation of equations 16 and 21 with data for the Dutch economy yields the following results. We start with the long-run money

demand function. The table below shows the results for the parameters of equation 16. The R^2 is adjusted for degrees of freedom. *DW* stands for the *Durbin-Watson* statistic. The third column represents the *t*-values of the parameter estimates. It should be noted that in a typically autocorrelated model as the example below, the significance of the parameter estimates is usually biased.

Long-run macro money demand		
α	0.78	45.06
β	0.02	1.39
γ	-0.29	10.18
δ	0.22	(-)
c	-0.31	7.30
R^2	0.98	
DW	0.35	
sample	57.II-89.I	

The long-run equation has been estimated under the restriction that the income and wealth elasticity sum up to unity. The results show that the financial transactions motive is quite prominent. Financial investors are believed to have a real and financial transactions motive. The long-term interest rate has a significant impact, even in the long-run, indicating that portfolio motives should be integrated in a long-run money demand equation.

The long-run equation has been tested on its co-integration property. *Engle* and *Yoo* (1987) show that higher-dimensional systems can be tested on their equilibrium character. For the residuals u_t from equation 16 we have estimated the model:

$$\Delta u_t = -0.19\, u_{t-1} + 0.55\, \Delta u_{t-4} \tag{22}$$

Engle and Yoo (1987) present a table of critical values for the *t*-statistic of the lagged residual in a higher order system. The *t*-statistic for the lagged dependent variable in the equation above is equal to 4.50, which is significant at the 5 per cent confidence interval, so the hypothesis of non co-integration can be rejected. This proves the money demand function to be stable. This conclusion has been found by other authors too, but on different grounds. Our innovation is the explicit modelling of long-run money demand. By that we are able to evaluate the consequences of changes in the

interest rates on long-run money demand. In case the Dutch economy was a closed economy, a stable money demand function insures effective money supply policies. As the Dutch economy is a small open economy facing a fixed exchange rate, monetary authorities cannot control the monetary aggregate any longer. Interest rate effects are more important in such a case.

The estimation results for the short-term error correction model, which corresponds with the long-run equation read:

ECM macro money demand		
ϕ	0.56	4.20
ν	0.01	1.26
μ	-0.04	1.11
λ	0.47	3.63
η	0.01	2.24
d_1	0.01	1.21
d_2	0.01	3.15
d_3	-0.03	5.69
d_4	-0.03	4.86
R^2	0.50	
DW	2.07	
sample	57.III-90.II	

The ECM-model indicates that portfolio arguments are not so prominent in the short-run. The transactions impact parameters are prominent. The speed of adjustment to the long-run equilibrium model is low. The table shows that a seasonal pattern in money demand is significant. Transactions demand for money dominates the equation. *Fase* and *Winder* (1990) have shown that the macro money demand function does not behave very well in recent years. They advocate a disaggregation of money demand. In order to obtain a clearer insight in long-run stability we disaggregate macro money demand in the next section.

IV. Disaggregation of Dutch Money Demand

In section II it has been shown that a macro demand for money function can be specified satisfactorily. The most recent observations cannot be explained by a long run money demand equation. A need for a more precise observation of money demand is felt. Therefore we will disaggregate money

demand in two ways: a sectoral disaggregation into households, firms and financial institutions and a disaggregation into M1 and time deposits. The latter type of disaggregation can be made over the whole sample period, while the former is only possible after 1982.IV. Table 1 reviews the composition of money demand in the last decades.

Table 1

Money Demand in Retrospect

Disaggregated money demand				
Assets	1957.I	1975.I	1982.IV	1990.III
- Currency	13.17	7.09	7.11	7.88
- Demand deposits	15.08	15.12	14.14	19.34
- Time deposits	12.30	16.42	15.62	26.10
Sectors				
- Households			15.00	18.16
- Firms			17.74	26.95
- Financial institutions			2.71	6.52

The table represents percentages of the relevant monetary aggregate with respect to net national income at market prices.

From table 1 it can be seen that the need for currency has diminished some 20 years ago and is now stabilized. Demand deposits have increased in the second half of the eighties. The major jump in the need for liquidity is however in the demand for time deposits. In this asset large investors see a serious portfolio alternative. The sectoral data show that the demand for liquidity by households has increased somewhat, but the major increase comes to the account of firms. The demand for money by financial institutions has doubled in about eight years.

The increase in the liquidity ratio from 36.87 in 1982.IV to 53.32 in 1990.III is mainly due to the increase in de corporate demand for time deposits. As *Kuipers* and *Boertje* (1988) argue, firms are believed to retain profits as they are not sure about the future. Profits have not been invested in real assets but in short-term financial assets. Financial institutions take money as a portfolio alternative. After the October 1987 crash demand deposits are an important safe asset.

As for our macro relation we give a consistent long-run and short-run model representation of the demand for M_1 and time deposits TD. The number of observations is enough to test for co-integration.

The estimation results for the long-run demand for real $m_1 (= M_1/p)$ is represented by:

Long-run m_1		
α	0.95	69.02
β	-0.03	2.11
γ	-0.33	13.46
δ	0.05	(-)
c	3.92	107.35
R^2	0.98	
DW	0.89	
sample	57.I-90.II	

The *Dickey-Fuller* (1979) statistic is 5.50, which exceeds the critical value listed by *Engle* and *Yoo* (1987). The equation represents a long-run equilibrium system. The real transactions motive is important, as should be expected. Both the short-term and long-term interest rate have their expected signs and demonstrate the importance of portfolio considerations in the long-run.

The estimation results for the corresponding short-run ECM are:

ECM m_1		
ϕ	0.42	3.56
ν	-0.06	8.83
μ	-0.07	1.99
λ	0.44	3.80
η	0.10	2.12
d_1	-0.02	4.42
d_2	0.06	15.82
d_3	-0.04	8.87
d_4	-0.01	1.78
R^2	0.82	
DW	2.39	
sample	57.III-90.II	

It should be noted that the long-term interest rate has been lagged one quarter. The short-run model shows that the demand for M1 is determined

by a transactions component (both real and financial), a seasonal pattern and portfolio considerations. The short-run impact of the capital market interest rate is smaller than its equivalent in the long-run.

The estimation results for the real demand for time deposits $td(= TD/p)$ depends in the long-run are:

Long-run td		
α	0.37	8.69
β	0.17	3.76
γ	-0.29	3.85
δ	0.63	(-)
c	3.23	28.41
R^2	0.93	
DW	0.22	
sample	57.I-90.II	

The *Dickey-Fuller* test statistic (for a higher order system) is 4.49, so the hypothesis of non co-integration has to be rejected. The demand for time and savings deposits depends more on wealth effects than real income arguments. Portfolio arguments are prominent, as could be expected.

The results for the corresponding ECM are:

ECM td		
ϕ	0.69	2.11
ν	0.15	6.32
μ	-0.10	0.95
λ	0.45	1.40
η	0.05	1.46
d_1	0.07	6.09
d_2	-0.03	3.30
d_3	0.01	1.09
d_4	-0.05	3.46
R^2	0.67	
DW	2.09	
sample	57.III-90.II	

In the short-run the demand for time deposits depends on short-term interest rate movements.

The sectoral disaggregation can only be made in a smaller sample (1982.IV - 1990.II). Therefore it is impossible to test for co-integration. In order to maintain the structure of our type of modelling, we use an ECM representation for the demand for money by households, firms and financial institutions.

The real demand for money by households $m_2^h (= M_2^h/p)$ has not increased that much in the eighties as the demand for money by firms and financial institutions (see Table 1). It seems that households do not respond to shocks in the financial sphere by changing their money demand. It is not surprising that we find the transactions motive only to be relevant in the long-run equation:

Long-run m_2^h		
α	0.61	10.19
δ	0.39	(-)
c	2.79	333.31
R^2	0.87	
DW	0.85	
sample	82.IV-90.II	

The results for the corresponding short-run ECM are:

ECM m_2^h		
ϕ	0.54	1.65
μ	-0.06	0.91
ξ	0.27	1.65
η	0.21	2.02
d_1	0.00	0.28
d_2	0.05	6.12
d_3	-0.04	3.17
d_4	0.00	0.07
R^2	0.75	
DW	2.08	
sample	83.II-90.II	

The parameter ξ represents the coefficient of the lagged dependent variable. These results show that the demand for money is not very sensitive for changes in interest rates. This findings are opposite to the conclusions made by *Fase* and *Winder* (1990) and *Kuipers* and *Boertje* (1988). These authors come to a long-term interest elasticity of the demand for money by households of about -0.2 (see section 4).

The real demand for money by firms $m_2^f (= M_2^f/p)$ has increased by more than 10 percentage points in the last seven years. It is commonly believed that firms are more sensitive to changes in the financial sphere than households. Our long-run equation shows that the short-term interest rate has a long-run impact on corporate money demand:

Long-run m_2^f		
α	0.39	6.83
β	0.20	4.51
δ	0.61	(-)
c	2.74	34.51
R^2	0.93	
DW	1.72	
sample	82.IV-90.III	

Firms are confronted with a strong wealth effect.

In the short-run firms are believed to hoard short-term funds if profits increase. We use the labour-income ratio as a proxy for profits. If the labour-income ratio increases profits fall, which will decrease money demand. The short-run ECM for real corporate money demand is:

ECM m_2^f		
ϕ	0.75	1.39
ν	0.13	1.92
μ	-0.16	1.37
ρ	-0.36	1.82
η	0.38	2.26
d_1	0.04	3.73
d_2	0.04	2.57
d_3	-0.03	2.48
d_4	0.00	0.11
R^2	0.73	
DW	1.95	
sample	83.II-90.III	

The parameter ϱ represents the elasticity of the variable $\Delta \log aiq_t$, where aiq represents the labour-income ratio. These results show that short-run corporate money demand depends on real income, portfolio arguments and the labour-income ratio.

The real demand for money by financial institutions $m_2^{fi}(= M_2^{fi}/p)$ has doubled in the recent period (see Table 1). Especially since the October 1987 crash the demand for liquidity has increased. Short-term time and savings deposits have become attractive alternatives for shares and bonds. Real income is not found to be important in both the long- and short-run. The long-run model is:

Long-run m_2^{fi}		
β	0.78	3.75
γ	-0.54	1.89
δ	1.00	(-)
c	1.00	2.36
R^2	0.80	
DW	0.75	
sample	82.IV-90.II	

As real income has no impact on real money demand by financial institutions, the wealth elasticity is equal to unity. Portfolio arguments are important in this long-run equation.

Short-run money demand behaviour of financial institutions is not easy to describe. Their are some important outliers (for instance the third quarter of 1983 and the first quarter of 1988 (resulting from the crash)). It seems that the sharp increase in money demand by financial institutions is the most troublesome part. This might be an explanation of the troubles we find in estimating macro money demand in the most recent quarters.

An ECM for the real money demand by financial institutions is:

ECM m_2^{fi}		
ν	0.15	1.07
η	0.06	0.47
d_1	0.03	1.57
d_2	-0.06	1.98
d_3	0.08	0.68
d_4	-0.03	0.47
R^2	0.27	
DW	2.09	
sample	83.I-90.II	

A seasonal pattern explains most of the variation in the dependent variable.

V. Summary and Conclusions

In this paper the *Hendry* approach to model long-run and short-run behaviour consistently has been applied to the Dutch money demand function. It has been shown that a proper long-run money demand equation is based on transactions and portfolio motives. The transactions argument has been based on a real and financial motive. The latter, although not new in the theoretical work on money demand, has not yet been applied in empirical money demand studies. In our study the inclusion of a financial wealth argument is proven to be successful. The *Engle* and *Yoo* (1987) co-integration test has been applied on the multivariate long-run models. Once a proper long-run model has been found, an ECM can be used to model short-run behaviour.

Estimating the Dutch macro money demand function by means of the *Hendry* approach has been found to be successful. Although the Dutch money stock has increased significantly in the last decade, the long-run model is able to give a representation. However, the fit of the model worsens at the end of the sample. Therefore a disaggregation is felt to be necessary. Two types of disaggregation have been used. First, the broad money stock has been split up into M_1 and secondary liquidity. For both assets long-run equations and corresponding ECM's are presented. Secondly, the demand for money has been disaggregated into demand for money by households, corporations and financial institutions. The sharp increase in money demand in the eighties is mainly due to the increase in money demand by corporations and financial institutions.

Table 2 gives an assessment of our long-term estimation results. Where possible a comparison with two other prominent studies of Dutch money demand has been made. Our results differ in a number of respects with the results of other studies. First, the financial transactions motive has been found important in the demand for secondary liquidity and the demand for money by firms and financial institutions in our work. Secondly, our results indicate that the demand for money by firms is more sensitive to changes in interest rates that the demand for money by households (*Kuipers* and *Boertje* suggest the opposite). Thirdly, the argument of profit hoarding by firms, as suggested by Kuipers and Boertje, has been confirmed by our estimation results. Opposite to Kuipers and Boertje we find only a short-run impact of this variable.

Our estimation results suggest that the Dutch money demand function is stable. It is shown that the wealth effect in money demand has become more prominent in the last decade. Portfolio arguments have a large impact on money demand since the October 1987 crash.

Table 2

Long-run Elasticities in Money Demand Equations

Long-term elasticities in Dutch money demand functions			
	Fase/Winder	Kuipers/Boertje	This study
Macro			
- income	1.00	0.75	0.78
- wealth	0	0.00	0.22
- short-term interest rate	0.09	0.00	0.02
- long-term interest rate	-0.11	-0.04	-0.29
M_1			
- income	1.00		0.95
- wealth	0.00		0.05
- short-term interest rate	-0.07		-0.03
- long-term interest rate	-0.15		-0.33
TD			
- income			0.37
- wealth			0.63
- short-term interest rate			0.17
- long-term interest rate			-0.29
Households			
- income	1.00	0.69	0.61
- wealth	0.00	0.00	0.39
- short-term interest rate	0.20	0.00	0.00
- long-term interest rate	-0.24	-0.18	0.00
Firms			
- income	1.00	0.99	0.39
- wealth	0.00	0.00	0.61
- short-term interest rate	0.40	0.00	0.20
- long-term interest rate	-0.47	0.00	0.00
Financial institutions			
- income			0.00
- wealth			1.00
- short-term interest rate			0.78
- long-term interest rate			-0.54

Appendix

The main source of the data is the *Quarterly Report* of De Nederlandsche Bank. The labour income ratio has been taken from *Kuipers* and *Boertje* (1988) and the *Central Economic Plan* of the Dutch Central Planning Bureau for recent observations. The sources of the other variables are (tables refer to the *Quarterly Report*):

M_1 : Table 2.1 column 33 + 34 – Table 3.1 column 15.

M_2 : Table 3.1 row 3.

TD : $M_2 - M_1$.

Y : Table 3.1 row 7.

p : Table 10 row 26.

W : Table 2.2 column 23.

r_s : Table 9.2 row 3.2 interest rate on 3 month loans to local authorities.

r_l : Table 9.2 row 4.1.2 yield on 5 to 8 years government bonds.

M_2^h : Table 2.1.3 column 20 + 21 + 22 + 23 + 29 (households) + 0.58 Table 2.1 column 31.

M_2^f : Table 2.1.3 column 20 + 21 + 22 + 23 (firms) + 0.42 Table 2.1 column 31.

M_2^{fi} : Table 2.1.3 column 20 + 21 + 22 + 23 (financial institutions).

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Summary

The Financial Transactions Motive in the Dutch Money Demand Function

In this article empirical evidence on the Dutch money demand function is shown. The importance of wealth effects on money demand both in the short- and long run is stressed. The long run money demand equations have been tested on their equilibrium properties. Corresponding short run equations have been modelled in Error Correction Models. It is shown that the macro money demand function needs a disaggregation into assets and sectoral demand functions in order to understand the recent increase in Dutch money demand.

Zusammenfassung

Das Motiv für Finanztransaktionen in der niederländischen Geldnachfragefunktion

Dieser Artikel enthält empirische Beweise in bezug auf die niederländische Geldnachfragefunktion. Betont wird die Bedeutung von Wohlstandseffekten auf die kurz- und auf die langfristige Geldnachfrage. Die Gleichungen für die langfristige Geldnachfrage sind in bezug auf ihre Gleichgewichtseigenschaften getestet worden. Die entsprechenden Gleichungen für die kurzfristige Geldnachfrage sind Bestandteil von Fehlerbeseitigungsmodellen. Es wird gezeigt, daß die makroökonomische Geldnachfragefunktion einer Disaggregierung nach Vermögenswerten und Sektornachfragefunktionen bedarf, damit die kürzlich aufgetretene Erhöhung der niederländischen Geldnachfrage verständlich wird.

Résumé

Les motifs de transactions financières dans la fonction de demande monétaire hollandaise

L'article montre l'évidence empirique de la fonction de demande monétaire hollandaise. L'importance des effets de richesse pour la demande monétaire autant à

court qu'à long terme y est soulignée. La propriété d'équilibre des équations de demande monétaire à long terme est examinée ici.

Des équations correspondantes à court terme ont été considérées dans des modèles de corrections d'erreurs. Il est montré que la fonction de demande monétaire macro-économique nécessite une différence des fonctions de demande d'actifs et de la demande sectorielle afin de comprendre l'accroissement actuel de la demande monétaire hollandaise.