Berichte

The Demand for Money in Thirteen European and Non-European Countries: A Tabular Survey

The first statistical studies on money demand were carried out at the end of the thirties by *Brown* [1938, 1939]. Since that time there have been so many empirical investigations in this field that it is hardly possible for anyone to have a complete overview. The investigations differ considerably both in theoretical specification and empirical results. Most studies emphasize the demand for money rather than the supply. The supply then is assumed to be exogenous, that is independent of the explanatory variables in the demand function. Money demand studies also differ significantly in their choice of dependent and independent variables. These differences are partly explained by the fact that authors adhere to different theories on the demand for money. The evolution of thought on this issue has been pointed out by a number of authors (see e. g. *Gilbert* [1953], *Laidler* [1969], *Teigen* [1970] and *Humphrey* [1973]. However, empirical evidence on the subject is still growing. Therefore, it may be interesting to look at a sample of reported results for different countries reported in the literature.

The table below summarizes the most important studies carried out for ten European countries, Australia, Canada and Japan. Excluded are the important contributions for the United States and the developing countries[1]. Furthermore we confined ourselves to time series analyses of the demand for money, based on quarterly data. The table lists the most important features of the reported studies.

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[1] For the developing countries the reader is referred to e. g. *Adekunle* [1968], *Silveira* [1973] or *Banerjee* [1973] Interesting summaries, particularly of studies for the United States, are given by *Frazer* [1967], *Goodhart* [1970], *Laidler* [1969], *Nieuwenburg* [1969] and *Walters* [1970]. Very interesting, not least because of its methodology, is the summary by *Feige* & Pearce [1972] and the study of *Goldfeld* [1973].

It appears that, on the whole, two definitions are used to characterize the money variables: broad money and narrow money. *Cotula* for Italy, *Crouch* for England and *Mattfeld* for Western Germany disaggregate into components, like notes and coin, demand deposits and time deposits. *Price* and also *Hacche* in their analyses for England allow for different money holders. It is interesting to note that *Teigen* in his study of Norway extends the definition of money to include unutilized credit lines[2]. At particular details, however, money definitions differ from country to country. In some studies the money stock — and the other explanatory variables — are taken in constant prices. In nearly all studies income is represented either by gross national product (GNP) or by gross domestic product (GDP). Only a few studies use other aggregates, like gross national expenditure (GNE). It should be kept in mind, however, that if one postulates a logarithmic linear relationship between real money balances and real income, this assumption implies that the price elasticity of the demand for nominal money is assumed to be equal to unity. Only *Price* for the United Kingdom, *Grandmont* for France and *Fase* & *Kuné* for the Netherlands give explicit estimates of the price elasticity. *Grandmont* attaches, as we do, great weight to equations based on an estimated price elasticity of unity. In our study for the Netherlands we found a price elasticity close to unity.

A large number of the studies take into account the possibility of short-term disequilibria, or, in other words, the possibility that the actual demand for money differs from the desired money holdings. This idea leads to a particular specification of the demand for money equations since the partial adjustment mechanism determines the underlying structure. Others introduced the concept of adaptive expectation with respect to one or more of the explanatory variables. A few authors combine both concepts, like *Villanueva* for Japan, *Laidler* & *Parkin* for England, *Grandmont* for France and *Fase* & *Kuné* for the Netherlands.

In case of a dynamic structure it is meaningful to distinguish between short-run and long-run elasticities. Where appropriate the elasticities shown in the table are long-run elasticities.

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[2] In the Netherlands, unutilized credit lines are not counted as part of the money stock. *Cramer* & *Reekers* ([1972], page 90) estimate them at Fl. 9 billion as at the end of March 1971. It is noteworthy in this respect that as early as the twenties *Holtrop* [1928] advocated the inclusion of unutilized credit lines into the money stock.

The table* shows that the income elasticities are often smaller than unity, irrespective of the money definition that has been used. Some of *Price's* estimates are exceptionally high but, in all fairness it should be noted that he presents his results with ample reservations. *Grandmont's* income elasticities are also fairly high; they approach *Friedman's* well-known estimate of 1.81 (see *Friedman* [1969], page 126), which estimate, incidentally, was also found by *Price* in one case. However, we do not believe this similarity to be very significant. Another point to be noted is that many authors find a higher income elasticity with broad money than with narrow money. For Italy a similar situation occurs with notes/coin and deposits, which, according to our conjecture, may be due to the particular tax regime which seems to favour deposits. Our own income elasticity of 0.85 for the Netherlands lies somewhere in the middle.

The interest rate elasticities vary somewhat between countries. We see that in most of the cases the interest rate elasticity is also higher with broad money than with narrow money. The interest rate variables used are rather varied and show more subtile differences than the simple distinction between long and short-term suggests.

Some authors, like *Clinton*, *Teigen* and *Villanueva* (for Belgium) test the stability of their estimates over the various sub-periods, while *Hamburger* investigates for Germany the predictive power of his demand function. Most of the results of the stability tests are satisfactory, although for Norway *Teigen* finds a tendency for the income elasticity to increase with time. Our own analyses of the stability of the demand for money in the Netherlands are in line with these findings.

Finally a few remarks on the methods used are in order. With the exception of *Leponiemi* for Finland, *Crouch* for England and *Haulman* for Canada, all authors study a single demand for money function. This procedure may introduce simultaneity biases as far as the supply of money is endogenous and dependent of the explanatory variables in the demand function. However, the results obtained by *Leponiemi*, *Crouch* and *Haulman* show only slight differences between simple least squares estimates and estimates taking into account simultaneity. Another point concerns the use of seasonally adjusted data. All authors, except *Crouch* and *Mélitz* in all but one case, take seasonal variation into account by using seasonally adjusted data or by introducing dummy variables. In our investigation of the demand for money for the Netherlands we did

* pp. 414.

not find much difference between the two methods although from a statistical point of view we believe the use of dummy variables superior to the use of mechanically adjusted data. More important, however, is that we found the regressions results change considerably if any form of seasonal adjustment of the data is omitted.

Summary of empirical studies of the demand for money (quarterly data)

country	author	period of observation	concept of money	income variable	interest rate	income-elasticity	interest-elasticity	price-elasticity[a]
Australia	*Jüttner & Tuckwell* [26]	1952: I—1972: III	broad[b])	GNP[b])	short	0,89 à 1,01	— 0,17 à — 0,31	*
			broad[b])	GNP[b])	long	0,92 à 0,97	— 0,28 à — 0,50	*
Austria	*Fürst, Schebeck & Schultz* [15]	1954: I—1966: IV	narrow	GNP	long	0,91 à 0,96	— 0,18 à — 0,36	—
			broad	GNP	long	0,92 à 1,46	— 0,18 à — 0,43	—
Belgium	IMF [24]	not reported	narrow[b])	industr. prod.[b])	short	0,85	— 0,09	*
	Villanueva [41]	1957: I—1969: IV	narrow[b])	GNP[b])	short	0,75	— 0,04	*
			narrow[b])	GNP[b])	long	0,71	— 0,15	*
			broad[b])	GNP[b])	short	1,03	— 0,04	*
			broad[b])	GNP[b])	long	0,95	— 0,04	*
Canada	*Clinton* [5]	1955: I—1970: IV	narrow[b])	GNE[b])	short	0,74 à 0,85	— 0,18 à — 0,30	*
			narrow[b])	GNE[b])	long	1,04	— 0,51	*
			broad[b])	GNE[b])	short	0,82 à 0,98	— 0,30 à — 0,66	*
			broad[b])	GNE[b])	long	0,78 à 1,20	— 0,79 à — 1,03	*
	Smith & Winder [38]	1955: I—1967: IV	narrow[b])	GNE[b])	short	0,61 à 0,64	— 0,04 à — 0,07	*
			narrow[b])	GNE[b])	long	0,51 à 0,65	— 0,07 à — 0,19	*
			broad[b])	GNE[b])	short	0,83 à 0,94	— 0,001 à — 0,05	*
			broad[b])	GNE[b])	long	0,66 à 0,92	— 0,004 à — 0,03	*
	Haulman [22]	1947: I—1968: IV	narrow	GNP	short	2,11	— 0,63	—
Germany	*Hamburger* [21]	1963: I—1970: IV	narrow	GNP	short	0,93	— 0,09	—
			narrow	GNP	long	0,98	— 0,35	—
	König [27]	1957: I—1966: IV	narrow	GNP	short	0,96 à 0,98	— 0,15 à — 0,18	—
	Mattfeldt [31]	1950: I—1967: IV	(demand-deposits)	GNP	short	1,02	— 0,14g)	—
			broad	GNP	short	0,97 à 1,09	g)	—
	Roskamp & Laumas [35]	1953: I—1965: IV	narrow	GNP	short	1,02	— 0,07	—
			broad	GNP	short	1,35	— 0,08	—
	Westphal [44]	1959: I—1967: IV	narrow	GNP	short	0,99 à 1,05	— 0,10 à — 0,12	—

England	*Crouch* [8]	1954: II—1965: II	(demand-deposits)	nat. income	long	1,02	— 0,88	—
			demand-deposits + time-deposits	nat. income	long	1,08	— 0,48	—
	Fisher [12]	1955: I—1967: II	narrow	disposable pers. income	short	0,54 à 0,56	— 0,09 à — 0,11	—
			narrow	pers. income	long	0,66 à 0,68	— 0,31 à — 0,36	—
			broad	pers. income	short	0,69 à 0,71	— 0,003 à — 0,004	—
			broad	pers. income	long	0,74	— 0,09 à — 0,12	—
	Goodhart [18]	1955: III—1969: III	narrow	GDP	short	1,25	— 1,05	—
			narrow	GDP	long	1,09	— 0,80	—
		1963: III—1969: III	broad	GDP	short	0,77 à 1,41	— 0,09 à — 0,21	—
			broad	GDP	long	1,09 à 1,55	— 0,35 à 0,51	—
	Hamburger [21]	1963: II—1971: II	narrow	GDP	short	0,77	— 0,15	—
			narrow	GDP	long	0,85	— 0,24	—
	Laidler & Parkin [29]	1956: II—1967: VI	broad[b] c)	GNP[b] c)	short	0,61 à 1,08	— 0,01 à — 0,16	—
	Price [34]	1956: I—1969: III	narrow	GDP[b]	short	— 2,38[d]	— 9,52[d]	17,33[d]
			narrow	GDP	long	0,42 à 0,84	— 0,12 à — 0,86	0,34 à 1,79
		1964: I—1970: IV	broad	GDP	short	1,00 à 2,47	— 0,03 à — 0,44	— 0,00 à 0,90
			broad	GDP	long	0,55 à 1,81	— 0,03 à — 1,46	0,06 à 2,31
			narrow[e]	GDP	long	2,29	— 0,30	0,90
			narrow[f]	industr. prod.	short	2,27	— 0,36	0,41
	Hacche [20]	1963: IV—1971: III	narrow[b]	GNE	both	0,39	— 0,08 (short) — 0,18 (long)	*
			broad[b]	GNE	short	0,45	— 0,09	*
			broad[b] e)	GNE	long	0,93	— 0,07	*
			broad[b] f)	disposible pers. income	both	0,51	— 0,07 (short) — 0,20 (long)	*
								—

country	author	period of observation	concept of money	income variable	interest rate	income-elasticity	interest-elasticity	price-elasticity[a]
Finland	*Leponiemi* [30]	1952: I—1962: I	broad	GDP	none	1,19	—	—
France	*Grandmont* [19]	1960: I—1971: IV	narrow	GDP[b]	short	1,66 à 1,84	— 0,19 à — 0,21	0,72 à 1,0
			broad		short	1,18	— 0,39	1,0
	Mélitz [32]	1959: I—1970: IV	narrow[b][c]	GDP[b] [c]	long	0,65 à 0,70	— 0,21	*
Italy	*Cotula* [6]	1958: I—1967: IV	coins	labour income	long	0,44	— 0,26	—
			deposits	brute nat. income	long: short	0,80	— 0,29	—
	Villanueva [42]	1958: I—1971: I	narrow	GNE	short	1,01	— 0,34	—
			broad	GNE	short	1,92	— 0,08	—
Netherlands	*Dierick* [9]	1951: I—1966: IV	broad	net nat. income	long	1[h]	— 0,17	1[h]
	Fase & Kuné [10]	1952: I—1971: IV	broad	GNE	long	0,80 à 0,99	— 0,16 à — 0,25	0,97 à 1,06
Norway	*Teigen* [40]	1959: I—1969: IV	broad[b]	GDP[b]	none	0,91	—	*
Switzerland	*Schelbert-Syfrig* [36]	1947: I—1963: II	narrow	net nat. product	short	0,86 à 0,90	— 0,18 à — 0,76	—

a) * means that the price elasticity of the demand for nominal money, when real income is included, implicitly unity. — b) In fixed prices. — c) Per capita. — d) This result has no serious meaning. — e) Held by private households. — f) Held by firms. — g) Statistically not different from zero. — h) Implicitly.

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M. M. G. Fase und J. B. Kuné, Amsterdam*

Zusammenfassung

Die Geldnachfrage in 13 europäischen und außereuropäischen Ländern

Die Studie gibt einen Überblick (S. 414 ff.) über die bedeutendsten Untersuchungen zur Geldnachfrage in zehn europäischen Ländern sowie in Australien, Kanada und Japan. Nicht berücksichtigt werden Beiträge über die Vereinigten Staaten und Entwicklungsländer. Außerdem haben sich die Autoren auf vierteljährliche Zeitreihenanalysen beschränkt. Die Tabelle enthält die wesentlichsten Darstellungen der erwähnten Untersuchungen.

Summary

The demand for the money in 13 European and non-European countries

This study gives a survey (pp. 414) of the most important money studies on demand for money carried out for ten European countries, Australia, Canada and Japan. Excluded are the contributions on the United States and the developping countries. Furthermore the authors confined themselves to time series analyses based on quarterly data only. The tabular survey lists the most important features of the reported studies.

Résumé

La demande monétaire dans 13 pays européens et extra-européens

L'étude fournit un aperçu (p. 414) des plus importantes recherches effectuées sur la demande monétaire dans dix pays européens ainsi qu'en Australie, au Canada et au Japon, tandis que furent négligés les Etats-Unis et les pays en voi de développement. Les auteurs se sont en outre limités à des analyses périodiques trimestrielles. Le tableau présente les principales données des recher précitées.

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* Dr. *Fase* is head and Mr. *Kuné* research associate, of the Econometric and Special Studies Section of the Domestic Research Department at De Nederlandsche Bank N. V., Amsterdam.