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## Introduction

Every empirical study rests on a theoretical framework, on a set of tentative hypotheses that the evidence is designed to test or to adumbrate. It may help the reader of the series of monographs on money that Anna J. Schwartz and I have been writing to set out explicitly the general theoretical framework that underlies them.<sup>1</sup>

That framework is the quantity theory of money—a theory that has taken many different forms and traces back to the very beginning of systematic thinking about economic matters. It has probably been “tested” with quantitative data more extensively than any other set of propositions in formal economics—unless it be the negatively sloping demand curve. Nonetheless, the quantity theory has been a continual bone of contention. Until the past three decades, it was generally supported by serious students of economics, those whom we would today term professional economists, and rejected by laymen. However, the success of the Keynesian revolution led to its rejection by perhaps most professional economists. Only recently has it experienced a revival so that it once again commands the adherence of many professional economists. Both its acceptance and its rejection have been grounded basically on judgments about empirical regularities.

### 1. The Quantity Theory: Nominal versus Real Quantity of Money

In all its versions, the quantity theory rests on a distinction between the *nominal* quantity of money and the *real* quantity of money. The nominal quantity of money is the quantity expressed in whatever units are used

NOTE: This paper is adapted from chapter 2 of a National Bureau of Economic Research monograph by Anna J. Schwartz and myself, “Monetary Trends in the U.S. and the U.K.,” which is near completion. The first five sections of this article draw heavily on Friedman (1968). I am, as always, heavily indebted to Anna Schwartz. I have also benefited from discussion of some parts of this article in a number of classes in monetary theory at the University of Chicago and a number of meetings of the Workshop in Money and Banking of the University of Chicago. H. G. Johnson read the semifinal draft and made many useful suggestions for revision.

I am grateful to the staff reading committee of the National Bureau: Irving B. Kravis, Chairman, Gary S. Becker, and Richard T. Selden, and to the reading committee of the National Bureau's Board of Directors: Otto Eckstein, Walter E. Hoadley, and James J. O'Leary.

I am also grateful to H. Irving Forman, who drew the figures, and to Joan R. Tron for seeing the manuscript through the press.

<sup>1</sup> Several reviewers of our *A Monetary History of the United States, 1867–1960* (Friedman and Schwartz 1963*b*) criticized us for not making the theoretical framework employed in that book explicit. This paper is largely a response to that criticism. See Culbertson (1964) and Meltzer (1965).

to designate money—talents, shekels, pounds, francs, lire, drachmas, dollars, and so on. The real quantity of money is the quantity expressed in terms of the volume of goods and services that the money will purchase.

There is no unique way to express the real quantity of money. One way to express it is in terms of a specified standard basket of goods and services. That is what is implicitly done when the real quantity of money is calculated by dividing the nominal quantity of money by a price index. The standard basket is then the basket the components of which are used as weights in computing the price index—generally, the basket purchased by some representative group in a base year.

A different way to express the real quantity of money is in terms of the time durations of the flows of goods and services the money could purchase. For a household, for example, the quantity of money can be expressed in terms of the number of weeks of the household's average level of consumption that it could finance with its money balances, or, alternatively, in terms of the number of weeks of its average income to which its money balances are equal. For a business enterprise, the real quantity of money it holds can be expressed in terms of the number of weeks of its average purchases, or of its average sales, or of its average expenditures on final productive services (net value added) to which its money balances are equal. For the community as a whole, the real quantity of money can be expressed in terms of the number of weeks of aggregate transactions of the community, or aggregate net output of the community, to which it is equal.

The reciprocal of any of this latter class of measures of the real quantity of money is a velocity of circulation for the corresponding unit or group of units. In every case, the calculation of the real quantity of money or of velocity is made at the set of prices prevailing at the date to which the calculation refers. These prices are the bridge between the nominal and the real quantity of money.

The quantity theory of money takes for granted that what ultimately matters to holders of money is the real quantity rather than the nominal quantity they hold and that there is a fairly definite real quantity of money that people wish to hold under any given circumstances. Suppose that the nominal quantity that people hold at a particular moment of time happens to correspond at current prices to a real quantity larger than the quantity that they wish to hold. Individuals will then seek to dispose of what they regard as their excess money balances; they will try to pay out a larger sum for the purchase of securities, goods and services, for the repayment of debts, and as gifts than they are receiving

from the corresponding sources. However, they cannot as a group succeed. One man's expenditures are another's receipts. One man can reduce his nominal money balances only by persuading someone else to increase his. The community as a whole cannot in general spend more than it receives.

The attempt to do so will nonetheless have important effects. If prices and income are free to change, the attempt to spend more will raise the volume of expenditures and receipts, expressed in nominal units, which will lead to a bidding up of prices and perhaps also to an increase in output. If prices are fixed by custom or by government edict, the attempt to spend more will either be matched by an increase in goods and services or produce "shortages" and "queues." These, in turn, will raise the effective price and are likely sooner or later to force changes in official prices.

The initial excess of nominal balances will therefore tend to be eliminated, even though there is no change in the nominal quantity of money, by either a reduction in the real quantity available to hold through price rises or an increase in the real quantity desired through output increases. And conversely for an initial deficiency of nominal balances.

It is clear from this discussion that changes in prices and nominal income can be produced either by changes in the real balances that people wish to hold or by changes in the nominal balances available for them to hold. Indeed, it is a tautology, summarized in the famous quantity equation, that all changes in nominal income can be attributed to one or the other—just as a change in the price of any good can always be attributed to a change in either demand or supply. The quantity theory is not, however, this tautology. On an analytical level, it is an analysis of the factors determining the quantity of money the community wishes to hold; on an empirical level, it is the generalization that changes in desired real balances (in the demand for money) tend to proceed slowly and gradually or to be the result of events set in train by prior changes in supply, whereas, in contrast, substantial changes in the supply of nominal balances can and frequently do occur independently of any changes in demand. The conclusion is that substantial changes in prices or nominal income are almost invariably the result of changes in the nominal supply of money.

## 2. Quantity Equations

The tautology embodied in the quantity equation is a useful device for clarifying the variables stressed in the quantity theory. The quantity