Quantity Theory of Money

Chapter · January 2008

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As noted by the Business Cycle Dating Committee of the NBER (2001), the financial press often defines a recession as two consecutive quarters of decline in real GDP. While this is true of most of the recessions identified by NBER, it is not true of all of them.

SEE ALSO *Business Cycles, Real; Divisia Monetary Index; Economic Growth; Fisher, Irving; Price Indices; Recession*

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QUANTITY THEORY OF MONEY

The quantity theory of money (QTM) refers to the proposition that changes in the quantity of money lead to, other factors remaining constant, approximately equal changes in the price level. Usually, the QTM is written as $MV = PY$, where M is the supply of money; V is the velocity of the circulation of money, that is, the average number of transactions that a unit of money performs within a specified interval of time; P is the price level; and Y is the final output. The quantity theory is derived from an accounting identity according to which the total expenditures in the economy (MV) are identical to total receipts from the sale of final goods and services (PY). This identity is transformed into a behavioral relation once V and Y are assumed as given or known variables.

The QTM dates back to sixteenth-century Europe where it was developed as a response to the influx of precious metals from the New World, and in this sense it is one of the oldest theories in economics. Nevertheless, only in the writings of the late mercantilists does one start to find theoretical statements that justify the connection between M and P. David Hume (1711–1776) argued that assuming a case of equilibrium, an expansion in M (for example, through the discovery of new gold mines) would make a group of entrepreneurs richer, and their rising demand would increase the prices of products, thereby increasing the income of another group of entrepreneurs whose demand would increase the price level even further, and so forth. These chain effects at some point die out, and their end result would be the restoration of equilibrium, albeit at a higher price level. Hume and the mercantilists did not back up their claims by developing a theory of value and distribution; for them, the QTM was explained either mechanically or through the operation of competition.

In contrast to Hume, for classical economists the QTM became a constituent component of their theory of value and distribution. Invoking Say's Law of markets, according to which output can be taken as given, and assuming that V is also given for it is determined by the customs of payments and the institutional arrangements of society, it then follows that proportional changes in M will be reflected in P and vice versa. David Ricardo (1772–1823) in particular reversed the usual causal relationship of the QTM arguing that changes in P lead to changes in M and not the other way around. The idea is that the value of gold (money) is a kind of a *numéraire* for all other prices, which means that if the quantity of money becomes more abundant because of the rise in productivity of gold mines (because of the discovery of new gold mines or technological change), it follows that the price of gold falls and, therefore, the prices of all other commodities rise. Alternatively, if total output increases, the subsequent scarcity of money raises its price above the normal level, and the excess profits in gold production lead to the expansion of supply, thereby reducing the price of gold, which returns to its normal level, and equilibrium is restored at a higher price level. Thus, the normal price of gold is what actually determines the quantity of money in circulation. Consequently, the difference between Ricardo and the mercantilists is that the arrow of causality runs from P to M and, therefore, the quantity of

money is endogenously determined—that is, it is determined within the economic system.

The quantity theory continued in the writings of the neoclassical economists, with the issue of exogeneity predominant in the work of Irving Fisher (1867–1947). The so-called Fisher's equation of exchange (1911) can be stated as follows: $MV + M'V' = PT$, where M is currency and M' is demand deposits; V and V' are the respective velocities; and T stands for total volume of transactions and not only of final goods. Another interesting development is that associated with Knut Wicksell (1851–1926), who stressed the endogenous character of the money supply, which is responsible for the variations in the price level. The advent of Keynesian economics in the 1930s rendered the QTM of minor importance, and it was used only for the determination of nominal magnitudes of real variables.

According to Keynesian analysis the quantity of money could not affect the real economy in any direct way but only indirectly through variations in the interest rate. In contrast, a characteristically different view has been expressed by economists at the University of Chicago. More specifically, Milton Friedman (1912–2006) claimed that money matters and is responsible for almost every economic phenomenon. In fact, Friedman argued that the major economic episodes in U.S. economic history—from the Great Depression of the 1930s to the inflation of 1970s—could be explained through variations in money supply. During the mid- to late 1960s the appearance of stagflation and the rejection of the usual Phillips curve were registered as a blow against Keynesian economics and facilitated the acceptance of monetarism and its establishment as a school of economic thought with significant appeal. Friedman not only showed the inadequacy of Keynesian economics to deal with stagflation but he also proposed an explanation based on the concept of the natural rate of unemployment—that an expansionary economic policy affects the economy only in the short run, while in the long run the economy returns to the natural rate of unemployment but this time with higher inflation.

Friedman and the monetarists express the QTM in terms of growth rates, which means that they consider as a given, in the beginning at least, the velocity of money circulation, and thus that the growth rate of money supply influences the growth rate of nominal output identified with the nominal gross domestic product (GDP), that is, the product of the real GDP times the general price level. Later, when Friedman introduced the notion of natural unemployment, it could be argued that in the long run, at least, the real GDP is equal to full employment GDP, which corresponds to the level of natural unemployment, and thus the growth rate of GDP is known in the long run. Consequently, in the long run the growth rate of the money supply—to the extent that it exceeds the growth rate of the real GDP—increases the growth rate of the price level, that is, the rate of inflation.

According to Keynesians the velocity of money is characterized by high volatility; consequently, changes in the supply of money can be absorbed by changes in the velocity of money with negligible effects either on output or on the price level. These arguments emphasize that the velocity of money depends on consumer and business spending impulses, which cannot be constant. A similar view is shared by economists of the neoclassical synthesis, especially in the case in which the economy is in the liquidity trap, whereby, regardless of the changes in the supply of money, the real economy is not affected at all. Changes in the supply of money are absorbed by corresponding changes in the velocity of money. Furthermore, the effect of money supply on prices may work indirectly through variations in interest rates, which in turn induce effects on aggregate demand.

The empirical evidence with respect to the effects of the money supply on the price level so far has been mixed and depends on the definitions of the money supply (narrow or broad) and the time period. As a consequence, the velocity of the narrow money supply, $V1 = GDP/M1$, for the U.S. economy has displayed a rising trend during the period 1920–1929, a falling trend during the period 1929–1946, an upward trend in the period 1947–1981, erratic behavior along a falling trend during the period 1981–1991, and an upward trend since then. The erratic behavior of the 1980s has been attributed to the deregulation of the banking industry and the appearance of new checkable accounts. Clearly, the overall movement of $V1$ is associated with the long-run upward or downward stage of the economy. The results with respect to the U.S. data prove somewhat better for the monetarist argument with regard to the velocity $V2 = GDP/M2$. A closer look at $V1$ or $V2$ in monthly or quarterly data reveals substantial fluctuations in the short run. The variability of the velocity of circulation has been attributed, among other things, to the frequency of payments, the efficiency of the banking system, the interest rate, and the expected inflation rate. From the above it follows that the causal relationship between money supply and price level—that is, the issue of exogeneity versus endogeneity—is not settled yet and, therefore, continues to attract the attention of economists. There is no doubt that the discussion will continue in the future as economists try to understand better the interrelations of monetary and real economic variables.

SEE ALSO *Economics, Keynesian; Fisher, Irving; Friedman, Milton; Hume, David; Interest Rates; Keynes, John Maynard; Mercantilism; Monetarism; Monetary Theory; Money; Money, Demand for;*

Neutrality of Money; Phillips Curve; Ricardo, David; Say's Law

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QUASI-EXPERIMENTATION

SEE *Campbell, Donald.*

QUEBECOIS MOVEMENT

The Quebecois movement of the late twentieth century was the product of long-standing strained relations between the francophone (or French Canadian) and anglophone (or English Canadian) populations of Canada. From these deep historical roots, the Quebecois movement grew into an important force shaping Canada's current social, political, and economic conditions. Although the movement has at times sought sovereignty for Quebec, recent developments suggest that such an outcome is highly unlikely.

Tensions between anglo- and francophone settlers in colonial North America mirrored those among the imperial powers of the period but took on their own character. For example, French settlers interacted more easily with Native Americans than did the British, and this relationship both affected and reflected the balance of power each European group perceived in eighteenth-century North America. In fact, the war known variously as the French and Indian War (in the United States), the Seven Years War (in Europe and English Canada), or the War of Conquest (in French Canada) had been raging in North America for two years before European powers actually declared war on one another in 1756. One decisive element of that war was the rapid and thorough defeat of French forces by the English at the Plains of Abraham, upstream from Quebec City, on September 13, 1759. That defeat led to the withdrawal of French imperial governance from Canada and set the stage for British domination. While the British did make some conciliatory gestures toward French Canadians, notably in the 1774 Quebec Act, cultural and economic competition and hostility between English and French Canadians continued unabated. In a report to the British government, Lord Durham, the governor general of British North America from 1837 to 1838, famously described the two groups as "two nations warring in the bosom of a single state." As a remedy, he suggested aggressive assimilation of French Canadians into the British system.

French Canadians balked at being anglicized and resisted repressive moves by English Canadians, such as abolition of bilingual and Catholic schools in New Brunswick and Manitoba, respectively, in the 1870s. By this time, Canada was independent from Britain, and French Canadians soon found themselves united in opposition to Ottawa's alignment with British military policy. The 1899 Boer War was particularly odious to French Canadians, who regarded it as simple British imperialism, a phenomenon they themselves had experienced as oppressive. In this political climate, French Canadians continued to experience everyday humiliations and bigotry at the hands of English Canadians, who generally regarded them as inferiors.

TWENTIETH-CENTURY DEVELOPMENTS

At the turn of the twentieth century, Prime Minister Wilfred Laurier emphasized that the Canadian confederation had been founded on the concept of "two nations." The obvious domination of one nation by the other was antithetical to the logic of confederation. When the Great Depression struck, French Canadians were much harder hit than their English counterparts, giving painful evidence of the terrible economic disadvantage under which the Quebecois labored. Crises over conscription in both world wars showed the depth of French Canadian distrust of Canadian military policy. For example, a 1942 plebiscite showed that nearly 80 percent of English Canadians supported entering World War II, while the same margin of French Canadians opposed doing so.

Arguably, the contemporary Quebecois movement began in the 1960s with the Quiet Revolution. This was a trend in French Canadian politics toward more aggressive political demands for special status within Canada and a new emphasis on the Quebec provincial government as the instrument of change. The Liberal provincial government of Jean Lesage began the process in 1960 under the slogan "*Maîtres chez nous*" ("Masters of our own house"), demanding that Ottawa recognize Quebec as having a "special status" that afforded the province economic and social powers unique in Canada. At the national level, the