



An Encyclopedia of Macroeconomics

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Net Capital Flows

Capital flows from the rest of the world to a country minus capital flows from that country to the rest of the world. A net capital outflow occurs where outflows are greater than inflows, while a net capital inflow occurs where inflows are greater than outflows.

Net Exports

Exports of goods and services minus imports of goods and services; also known as the trade balance.

See also:

Trade Balance.

Neutrality of Money

The question whether money is 'neutral' with respect to the so-called 'real' economy, in other words, whether money is a 'veil', has been one of the

recurrent themes in the economics debate over the last two-and-a-half centuries. The use of the term 'neutral', however, is of more recent origin. To all appearances it was first used by Wicksell to describe a situation where the market rate of interest is equal to the natural rate, that is the rate that would be found in a barter economy (Wicksell, 1898, p.93; 1936, p.102). Wicksell actually did not discuss neutral money but neutral interest. The idea, however, also implies neutral money in the sense that it describes a situation where money is indeed no more than a veil. Koopmans (1933 p. 228, n. 1) tells us that the term 'neutral money' was coined in 1919 by the German economist L. von Bortkiewicz and that at the end of the 1920s it more or less formed part of the standard vocabulary of Dutch monetary economists (see also Fase, 1992). It gained currency in the early 1930s through the publications of Hayek (1967) and Koopmans (1933) (see Klausinger, 1989; Patinkin and Steiger, 1989). The term 'neutral money' is, however, somewhat confusing as it has been used for different concepts:

1. the situation that money is a veil in the sense that the economy behaves as if it were a barter economy;
2. the situation of absence of disturbances from the monetary sphere, that is, maintenance of monetary equilibrium at all times;
3. neutrality in a comparative static sense, that is, the quantity theory of money;
4. superneutrality, that is the phenomenon that the 'real' economy is indifferent to the rate of inflation.

If money is a veil, the monetary economy behaves exactly like a barter economy. Relative prices of goods and services and quantities traded would not differ. Koopmans (1933, p.230) and Hayek (1967, p.130) emphasized that neutrality in this sense does not refer to real-world situations, but only serves as a kind of benchmark that helps to study the disturbances that may follow from the use of money. The barter economy they refer to is frictionless. The problem with this approach, is that, if barter is frictionless, there is no rationale for using money and the whole exercise seems futile. It is simply inconceivable that the use of money does not make a difference; that it is, in the happy phrase coined by Samuelson (1968), qualitatively neutral.

What Koopmans and Hayek and their Swedish predecessors Wicksell and Davidson in fact did was study the circumstances under which no excess supply of or demand for money would manifest itself; that is, they studied the conditions for monetary equilibrium (on Davidson, see Myrdal, 1933, pp.436–8 and Thomas, 1935). This is equivalent to Say's Equality, or Say's Law seen as an equilibrium condition. Wicksell, Davidson and Hayek saw the constancy of a term or a combination of terms from the equation

of exchange as a condition for monetary equilibrium. However, Koopmans demonstrated that this need not be the case, as it all depends on what happens in the real sector of the economy. In a stationary economy M , V , P and T of course have to remain constant for monetary equilibrium. Davidson argued that Wicksell's criterion of a constant P no longer holds in the case of productivity increases. These are tantamount to an increase in the natural rate of interest. A constant M with the price level falling, and thus a rise in the real interest rate, would be required to maintain monetary equilibrium. Davidson developed his views in a review of Wicksell (1898). Wicksell analyzed a so-called 'pure credit' economy, that is an economy without base money, where all money is created by the banks through credit creation. The banks will increase the volume of credit, and thus the volume of money, if the market rate of interest is lower than the natural rate. Thus the need for a constant M and a falling P in the case of productivity increases, according to Davidson.

Hayek did not bother about the way money is created, but simply asked himself how much money is required to maintain monetary equilibrium. He noted that changes in the degree of integration of the production process, as, for instance, when spinning and weaving are divided into two independent firms, have an impact on the demand for cash balances. Such a change implies a change in the velocity of money and any such change calls for a compensating change in the money supply to maintain Say's Equality. His criterion for the neutrality of money consequently is a constant MV (Hayek, 1967, pp. 121, 123). In this case V is defined as the income velocity of money, not the transactions velocity. Koopmans finally wondered what happens when the supply conditions of goods change. If, for instance, in an economy with three goods, A, B and C, the supply of A suffers from a bad harvest, no constancy of any item or combination of items from the equation of exchange may ensure monetary equilibrium. If the demand for good A is inelastic, its price will rise. B and C producers spend more on A and less on each other's products. Monetary equilibrium will only be maintained if A producers immediately increase their spending on B and C. Monetary equilibrium requires that MV increases, while T or y has fallen and P has increased (Koopmans, 1933, pp. 298–303; see also De Jong, 1973).

An older strand in the literature is the quantity theory. The quantity theory implies neutrality in a comparative-static sense. This is a case of what Samuelson calls 'quantitative neutrality'. In the first fully developed analysis of the quantity theory, David Hume showed how an increase in the money supply increases spending and first results in higher employment (Hume, 1955 [1752]). Prices increase only gradually and money obviously affects the real sector during the transition between one equilibrium situa-

tion and the other. In later mathematical representations of the quantity theory, however, there is a dichotomy between the real and monetary sectors of the economy, in the sense that quantities and relative prices are determined in the real sector and the price level, and hence money prices, in the monetary sector (for instance, Walras, 1965, pp. 315–24; Divisia, 1962, p. 169). The economy is represented by a general equilibrium system specifying equilibrium conditions for all markets. The dichotomy implies that demand and supply are functions of real variables only, including relative prices. If equilibrium is found at some set of relative prices, this equilibrium is not affected by any proportional change in absolute prices. While the equation system may be mathematically irreproachable in the sense that the number of unknowns equals the number of independent equations, it lacks an economic mechanism linking individual prices to the money supply.

Patinkin (1965, pp. 75, 175) showed conclusively that, in a general equilibrium model, the price level can only be determined if the excess demand functions for goods contain real money balances as an argument. In this way an economic mechanism is built in which transmits monetary impulses to the real sector: if the money supply increases, real balances grow larger. This will stimulate demand and the monetary impulse will work its way into higher prices. In more recent approaches, in particular in New Classical Economics, real effects of changes in the money supply follow from unexpected monetary shocks that are mistakenly seen at first by economic agents as real shocks (cf. Lucas, 1996). Otherwise changes in the money supply would feed quasi-immediately into higher prices, as rational economic agents would know the new equilibrium prices and, through competition, be forced to trade at those prices. The transition period from one equilibrium to another would be asymptotically approaching zero.

Patinkin gave a mathematical expression to Hume's insight that money can be neutral in the sense of the quantity theory, that is, quantitatively neutral in a comparative-static sense. A change in the money supply leads to another price level and in the new equilibrium situation quantities and relative prices may have reverted to their original values. There is no reference to a barter economy. Nonetheless, there is something inherently unsatisfactory in mathematical general equilibrium models of a monetary economy, such as Patinkin's. Price determination takes place essentially as a Walrasian tâtonnement mechanism, that is, without any friction. In other words, the transactions technology in such an economy is not different from a barter economy and the use of money does not really make a difference. It is difficult to justify the use of money in such models. Verbal expositions of the quantity theory, such as Hume's, do not suffer from this defect as they do not presuppose a tâtonnement pricing mechanism.

During the transition from one equilibrium situation to another, real variables are affected by monetary impulses and it is easy to imagine that the new equilibrium may differ from the original one. New money usually is not distributed proportionally to existing cash holders as a gift, like the dropping of bank notes from a helicopter envisaged by Friedman (1969, p.4). Money enters the economy through inflationary financed spending by the government, through a balance of payments surplus of the non-bank sector or through bank loans taken out by borrowers. If people borrow to finance consumption, that will drive up the rate of interest, but if businessmen receive net foreign payments their cash balances increase and they are likely to lend out some of the money, in the process reducing the rate of interest, as Richard Cantillon explained (Cantillon, 1964, pp.212–23). A change in the rate of interest may have lasting consequences. The structure of the economy may, for instance, change if aggregate investments increase as a result of the lower rate of interest. The same may hold for any change in the structure of relative prices and its consequent change in the structure of spending (for a meticulous analysis of the way changes in the money supply or money demand work their way through the economy, in the process changing relative prices, see also Keynes, 1971, ch. 17). In general, a number of conditions must be fulfilled for money to be fully neutral in a comparative statics analysis:

1. full price flexibility;
2. absence of money illusion, so that people do not mistake price level increases for relative price increases;
3. distribution of new money over economic agents proportional to existing money holdings;
4. absence of destabilizing price expectations, as when price increases fuel fears of further inflation and thus a scramble for inflation-proof assets such as real estate, jewellery and foreign assets;
5. no change in the ratio between base money and the total money supply, as that would imply a different relationship between bank money and total money and thus a change in the real volume of bank loans and, consequently, in the rate of interest;
6. absence of open market policies, as open market purchases, for instance, increase the money supply and the price level and thus leave the general public poorer; this may lead to higher savings and thus to a fall in the rate of interest;
7. absence of debt denominated in nominal, rather than real, terms;
8. money is fiat money, as, with full-blooded silver or gold coins, a change in the money supply and a consequent change in the price level would imply a change in the relative prices of silver or gold and all other goods and services.

Of course, neutrality in this strict sense can never be achieved in the real world. In assessments of real world developments, for instance by classical authors such as Ricardo, the criterion of neutrality therefore is used in a weaker sense; it refers to the level of output, not its composition (Humphrey, 1991). Neutrality in this sense would require that spending increases by actors who see their real wealth increase through an increase in the real value of their holdings of fixed nominal value assets (thanks to a larger than average increase in their holdings of helicopter-dropped money or through deflation) or a fall in the real value of their fixed nominal value debt (through inflation) are just offset by a fall in spending by actors who see their real wealth decrease as a result of an uneven distribution of new money and of price level changes. It goes without saying that neutrality, not only in the strict sense but also in the weaker one, is far removed from the world of Keynes's *General Theory*. With underutilization of resources the normal state of affairs, changes in the money supply can hardly fail to have an impact on real variables, unless the system is stuck in a liquidity trap.

Even if changes in the money supply were neutral, changes in the growth rate of money need not be neutral. If they are, we have superneutrality. This, of course, is a case of quantitative neutrality again. Different growth rates of the money supply are associated with different inflation rates. As long as no interest is received on money, or at least no interest rate that keeps pace with the rate of inflation, real effects on the economy are likely. For instance, people may react to a higher rate of inflation by reducing their real cash balances and investing more in other assets, such as common stock. The investment ratio increases. This phenomenon is known as the Tobin effect or the Mundell–Tobin effect, called after the pioneers of the monetary growth models featuring this trait (Mundell, 1963; Tobin, 1965). A fundamental problem with this kind of model is that it depicts a one-good economy where trade between economic agents does not play a role and a rationale for the use of money is absent. This implies that the harm inflicted by high inflation on the efficiency of the payments system is neglected (Orphanides and Solow, 1990).

In the 1930s, neutrality of money in the sense of the maintenance of monetary equilibrium was seen by the main protagonists as a desirable state of affairs, as it meant that the economic system would be free from shocks originating from the monetary sphere. Koopmans, however, showed conclusively that, in the case of shocks from the real sphere, no policy advice could follow from the norm of neutrality. The norm of monetary equilibrium loses all attractiveness if we move from a stable economy with more or less unchanging demand and supply functions, or a Davidsonian kind of steady-state growth, to the world of Schumpeter. In his epoch-making *The*

Theory of Economic Development (1961), Schumpeter argued that money creation is part and parcel of the transformation process which an economy undergoes as a result of entrepreneurial activities. Bank credit allows entrepreneurs to draw factors of production away from other applications and thus to realize innovations (*ibid.*, p. 106; Trautwein, 2000). The question of neutrality in the quantity theory sense is, however, of great practical importance for macroeconomic policy. If money is not neutral, in the weak sense that aggregate economic activity is not affected, or if transition periods between one equilibrium situation to another are long, monetary policy could conceivably play a role in fighting unemployment.

Neutrality of money in a strict sense is well-nigh impossible. It may, however, be valid in an approximate way, in the sense that aggregate production is not affected by changes in the money supply. There are strong indications that the quantity theory is not a bad approximation of reality if we look at decades rather than years. But there is little evidence that price ratios and the composition of production are unaffected. It would be hard to prove, or disprove, that they would be, if longer periods are studied where everything in an economy, in particular technology, is in a flux. Situations of hyperinflation have provided useful cases to test the validity of the quantity theory over shorter time periods, but here distribution effects are prominent and the distribution of wealth, and with it equilibrium quantities and price ratios, could hardly return to their pre-inflation values. Compared with empirical studies of the quantity theory, tests of superneutrality are thin on the ground. Support for long-run superneutrality does not appear to be very strong (for a survey of empirical research, see Bullard, 1999).

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See also:

Classical Dichotomy; Equation of Exchange; Hume, David; New Classical Economics; Quantity Theory of Money; Say's Law; Schumpeter, Joseph A.; Velocity of Circulation; Wicksell, Knut.

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New Classical Economics

The new classical approach to macroeconomics evolved out of monetarism during the 1970s and replaced it as the main rival to Keynesian economics. Although it incorporates certain elements of monetarism (such as the monetarist explanation of inflation) it should be seen as a separate school of thought from orthodox monetarism (see, for example, Hoover, 1984;