

Static Tools for Dynamic Analysis: Ludwig von Mises's Business Cycle Theory

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In the thirty-one years which have passed since the first edition of my *Theory of Money and Credit* was published no tenable argument has been raised against the validity of what is commonly called the 'Austrian' theory of the credit cycle.

(Mises, 1943: 251)

1. Introduction

This article discusses Ludwig von Mises's attempt to frame his business cycle analysis by an essentially stationary apparatus. It pays special attention to his choice to take sides with Frank Fetter ([1902]1997) and his theory of interest and highlights some unpleasant consequences for his study of monetary dynamics. The article provides a simple model to depict and clarify Mises's major shortcomings in real analysis. It is shown that in *Human Action*, his magnum opus first published in 1949, Mises has fallen far behind the frontiers of economic analysis, including major contributions of economists within or close to the Austrian tradition, like F.A. Hayek and Knut Wicksell. Of course, problems associated with the immense task of integrating money into real accumulation processes are numerous. Neither Mises's contemporaries, nor modern economists, have found satisfactory solutions. The particular significance of Mises idiosyncratic framework is due to the fact that his major prediction – any money-induced traverse necessarily reverses - ultimately depends on his barren analytical

device. This prediction proves little robust in the light of even small variations of the underlying framework.

Section 2 introduces the problem, starting with Böhm-Bawerk's initial exposition of the theory of interest. Section 3 provides a simple model of Mises's peculiar outline. Section 4 analyses the traverse as a genuine disequilibrium phenomena and the role of forced saving therein. Section 5 discusses Mises's business cycle theory. Section 6 concludes.

2. The problem

Mises's difficulty with economic dynamics roots deep, going way back to Böhm-Bawerk's original exposition of his theory of interest. There, Böhm-Bawerk poses the question of why there is interest at all, of why capital earns an 'excess value' arising from 'the fact that the sum of the products created with its help is regularly of greater value than the sum of the costs of the goods expended in the course of production' (Böhm-Bawerk, [1889]1959: 6). If, in equilibrium, the services of labor and land are paid according to their marginal product, and if capital has no productive power of its own (Böhm-Bawerk, [1889]1959: 80), the cost of producing or purchasing capital goods eat up the entire revenue generated by their use. In long-run competitive equilibrium, the value of total product should be accordingly exhausted by outlays to the original factors. Mises retains this perspective (Mises, [1949]1998: 490): the marginal value productivity of capital is introduced as a riddle.

Obviously, the formulation of the interest problem leads attention to stationary states. What Böhm-Bawerk attempts to answer are the questions of why interest is not annihilated by the accumulation of capital, why the marginal utilities of present and future consumption are not thereby equalized, and thus, why the return on capital is

positive even after the stock of capital has reached its long-run equilibrium level.

To answer the enigma of interest, Böhm-Bawerk introduces three causes for positive interest. The first cause is the ‘difference between the relation of supply and demand as it exists at one point in time and that relation as it exists at another point in time’ (Böhm-Bawerk [1889]1959: 265–6). Thus, interest is due to relative physical scarcities. Relatively abundant future goods suffer a discount, or relatively scarce present goods earn a premium. As Fisher ([1907]1997) points out, only Böhm-Bawerk’s second reason – the ‘fact’ that ‘we systematically undervalue our future wants and also the means which serve to satisfy them’ (Böhm-Bawerk [1889]1959: 268) – is able to account for a positive rate of return on capital in stationarity, putting a break upon the accumulation process before capital’s value product, the third cause, vanishes. Böhm-Bawerk believes that the first two causes ‘work cumulatively’, independent of the third (ibid.: 283-4). Also for Mises, determination and causation are analytically separate concepts.

After a first but unsuccessful attempt in 1927, Hayek attacks the Böhm-Bawerkian formulation of intertemporal choice in *Utility Theory and Interest*, published in 1936. Hayek attributes the ‘confusion’ characterizing the subsequent controversies about the proper relationship between Böhm-Bawerk’s three ingredients, especially the relation between subjective and objective data, to the original formulation of the problem. The ‘pseudo-problem’ of a positive net return on capital in equilibrium, so Hayek, roots in the improper conceptualisation of intertemporal choice. He criticizes the Böhm-Bawerkian framework for treating the utility function as primitive by resorting to the comparison of absolute marginal utilities (Hayek, 1936: 48). Marginal utilities are not simultaneously determined by subjective and objective data, including, besides

preferences, the state of technology (the book of blueprint) and the levels and structure of endowment (ibid.: 44-5).

Also in Mises's outline, marginal utilities are purely intrinsic phenomena. They are introduced independent of relative physical scarcities and are as such given data to the economic system. Indeed, even though Mises categorizes action as a choice among alternative means to a variety of ends, scarcity is introduced as an absolute. It is because any quantity of a given good 'can only produce a limited effect, some things are considered scarce and treated as means' (Mises [1949]1998: 120). Mises's ordinal measure of this 'limited effect', his utility function, is negative. He refers to 'felt uneasiness', which is to be minimized.

Utility means in this context simply this: causal relevance for the removal of felt
uneasiness.

(Mises [1949]1998: 120)

The term 'causal' is meant to exclude simultaneous determination. Marginal utilities are disproportionally attached to 'the various portions of a supply of homogenous means (diminishing marginal utility). *Each portion is valued separately*' (ibid.: italics mine). Small quantities of any given stock satisfy the most important pleasures or reduce the most unbearable pain. High quantities can additionally satisfy less urgent ends or reduce more tolerable disutility.

This, of course, affects the conceptualization of general equilibrium. Prices coordinate the excess demand relations of consumers. In an exchange economy, each consumer's excess demand relation is directly derived from the primitive utility function. Single prices are thus independent of each other, and relative prices therefore also primitive.

The only mechanism needed is the law of one price, in operation only in disequilibrium. Thus, market process theory is treated as a substitute for general equilibrium analysis. This is also true for Mises's treatment of intertemporal preferences. Indeed, it is exactly here where we find the very hawkish prediction of his business cycle theory: time preference as a primitive, directly determining optimal intertemporal allocation independent of any other economic data, is responsible for his overemphasis on consumer sovereignty and mean-reversion.

Hayek's critique highlights the consequences of such utility analysis for Böhm-Bawerk's theory of intertemporal choice, especially given the choice to assume total consumption over time to be homogenous. Thus, according to the underlying utility framework, intertemporal exchange is reduced to analysis of the law of one price. At zero rate of time preference, general equilibrium is restored on a single market for a given total quantity of homogenous supply. Because physically identical commodities at different dates are treated as perfect substitutes, the equilibrium condition is fulfilled at equal *absolute* marginal utilities of present and future consumption for each date, indicating stationary equilibrium consumption at constant prices (Hayek, 1936: 44-8).

Mises theory of interest attempts to provide reason for the fact that the law of one price fails to establish a single price and resumes to Böhm-Bawerk's second cause. The relative intertemporal price, the rate of interest, is directly imposed by the rate of time preference, the exogenous subjective rate of discount on future consumption. The 'originary' rate of interest is thus a pure value phenomenon, independent of the level and growth rate of consumption, identical with the prevailing rate of time preference. Objective data is unable to alter intertemporal equilibrium allocation. Whatever the supply of total consumption, and whatever its initial distribution in time, the long-run

equilibrium allocation is unidirectionally determined by an unexplained rate of time preference.

In stationarity, Böhm-Bawerk's first cause of interest is absent. Right because its sign is contingent on the data of the system, Mises dismisses the rate of time preference due to changing future consumption (Mises 1940: 442–4). Instead the second source, the systematic undervaluation of future consumption, is introduced as a categorical aspect of human action so that “the very act of gratifying a desire implies the gratification at the present instant is preferred to that at a later instant” (Mises [1949]1998: 481). Thus, Mises superimposes the intertemporal preference relation. In fact, however, the dominant role of a positive rate of time preference is an embarrassment to Mises's analysis (Hayek [1927]1984: 55). In marginalist analysis it is illegitimate to presume that agents categorically discount future consumption at a constant rate whatever other primitives are, as it is illegitimate to assume ad hoc that agents always prefer apples to bananas, independent of other data. As Hayek points out:

“The fact is that the assumption of identical utility curves at all successive moments states not merely the general postulate that the choice between present and future will be made in the *same* way at different moments, but implies beyond that that the choice will be made in a *particular* way. [...] It is impossible to decide on *a priori* grounds what the actual attitude of the person in any given position will be.”

(Hayek, 1936: 48, 51; his italics)

Ironically, Hayek's decisive innovation of dated commodities (Hayek [1928]1984: 73) - brought to general attention by John Hicks's *Value and Capital* (1939) and by now standard in Arrow-Debreu-type analysis - is inspired by Mises's treatment of physically

identical commodities at different locations as heterogeneous (Mises [1934]1980), which also became part of Gerald Debreu's *Theory of Value* (1959).

Growth is thus abandoned from equilibrium theory and analysed within an essentially timeless framework. Here, intertemporal allocation is discussed for a non-dated vertical two-sector model, the investment good sector representing the future. Net saving and net investment are a disequilibrium phenomena guided by pure profits (and losses). Accordingly, Mises introduces the 'evenly rotating economy' (ERE), the infinite perpetuation of a timeless economy under certainty, in which 'today does not differ from yesterday and tomorrow will not differ from today' (Mises, [1949]1998: 248, Cowen/Fink, 1985). Given stationarity, the net rate of time preference and a given initial level of subsistence fund control the gross ERE-levels of saving and investment. The subsistence fund determines the feasible set of techniques, together forming a long-run aggregate production function pointing to different feasible ERE's (If the subsistence fund is empty, nature provides the feasible set). The net rate of time preference determines the choice between feasible techniques and thus determines the golden long-run consumption level of the economy. Net saving and net investment can then be derived ex-post by subtracting the ERE-level from the initial level of subsistence (Mises [1949]1998: 487).

Mises's theory rests on a set of identities. He thus chooses a framework that allows for no more than to compare different stationary equilibria, one for each arbitrarily chosen rate of time preference. Original factors, with the usual emphasis on common labor, are called 'future goods', earning their marginal product defined in terms of present consumption. Mises is explicit: capital earns has no value productivity in ERE. The value productivity of capital has fallen victim to the law of one price.

[...] it becomes evident that it is absurd to speak of a 'rate of profit' or a 'normal rate of profit' or an 'average rate of profit'. Profit is not related to or dependent on the amount of capital employed by the entrepreneur. Capital does not 'beget' profit. Profit and loss are entirely determined by the success and failure of the entrepreneur to adjust production to the demand of the consumers. There is nothing 'normal' in profits and there can never be an 'equilibrium' with regard to them.

(Mises [1949]1998: 295)

Thus, in ERE, all net income is then computed to the non-produced factors. However, since consumption goods are part of the Austrian capital stock (free capital), the income appropriated by original factors first remains in the hand of capitalists. Very close to classical theory, ownership relations are indeed decisive in Mises's theory of distribution.

Interest is indeed introduced as a tax on non-ownership: net income to capital is viewed as a *transfer payment* that non-owners pay to owners of capital (including the total stock of consumption goods) for the *maintenance* of the given level of total net consumption (gross profits are distributed by investors). Since maintenance means 'food and shelter' for original factors during the average period of production, owners with positive time preference are categorically biased to consume the real savings necessary to sustain the even provision of services over time. Indeed, the entire initial subsistence fund is in danger. At zero interest, yet positive time preference, capitalists eat up the maintenance fund, each time consumption goods mature until the entire fund has successively depleted. To induce them not to do so, non-owners earn discounted wages at a rate given by the rate of time preference. At zero time preference, all gross income is

distributed for free (Mises [1949]1998: 481). Given the initial subsistence fund, capitalists' unidirectionally regulate the level of ERE, the bliss level of consumption. In fact, the ERE is a golden-rule economy - at least golden for those with non-productive ownership. All this turns out to be significant for Mises's business cycle theory.

3. The Model

Mises takes the size of the subsistence fund, the supply of original factors (here just labor), technological knowledge, and the utility function as given. As noted above, Mises's utility function does not monotonically transform some underlying preference preordering, but measures utility directly. Primitives are themselves hierarchical, the utility function dominating all equilibrium outcomes. Utility (U) - the negative of 'felt uneasiness' - is monotone in total consumption (C). The rate of net time preference (ρ) is defined for stationary consumption only, that is, it is a *net* rate of time preference (Böhm-Bawerk second cause). In terms of the Fisher Diagram, by means of which Hayek formulates his critique, the indifference surface is only defined for the bisecting line. Thus, Hayek rightly wants for a theory of rational intertemporal choice in the Böhm-Bawerkian framework (Hayek 1936: 44-5). Measuring the proportional increase in the 'disutility' of waiting for a given level of consumption, the utility function is linear and the net rate of time preference its gradient (figure 1).

The choice dimension, however, is 'more but later' and thus has a quantity dimension. Unlike in Fisherian theory, however, the future cannot be broken up into sub-periods, allowing for multi-period choices and the consideration of the time shape of income. Compounding is dispelled. The future is collapsed into single point in time, being 'later' only in respect to the average period of production (τ), a technological variable. Mises's

equilibrium outline sheds no light on the processes during the waiting period. The concavity of Mises's utility function has thus nothing to do with the modern, that is, Fisherian concept. Modern intertemporal utility functions are concave due to the convexity imposed on the preference preordering. Concavity indicates the increasing rate of gross time preference or marginal rate of intertemporal substitution, measuring – in addition to the net rate of time preference – the degree of resistance against postponements, depending on the level and growth rate of consumption (Böhm-Bawerk's first cause of interest as embodied with the second in the Keynes-Ramsey rule).

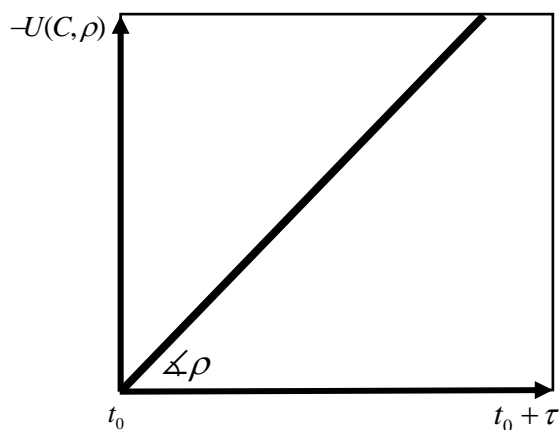


Figure 1: time preference

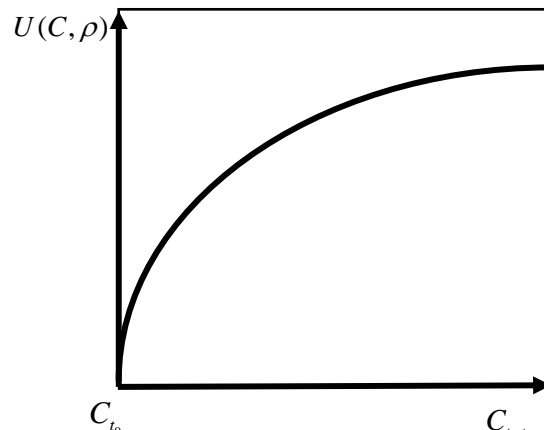


Figure 2: utility function

Mises, in contrast, introduces concavity indirectly, not as a characteristic of intertemporal choice. Indeed, by introducing disutility as an absolute cost, the utility function can only be linear. It is rather the decreasing physical productivity of waiting, a technological parameter, which diminishes the marginal utility of income at higher consumption levels (figure 2): costs increase proportionally with waiting time, but higher levels of consumption come only by more than proportional increases in the average period of production. The subsistence fund, the embodiment of aggregate waiting-capacity, becomes the limiting factor that causes increasing real costs to the

lengthening of the average period of production. The choice of the optimal period of production is directly controlled by the utility function for a given subsistence fund, inherited from the immediate past. For each level of initial subsistence (\bar{W}_{t_0}), Mises defines a utility function (Mises [1949]1998: 480-99):

$$U : C_{Bliss} = U(\bar{W}_{t_0}, \rho), \quad 0 < \rho < 1$$

$$C_{Bliss} = U(\bar{W}_{t_0}, \rho), \quad \frac{dC_{Bliss}}{d\rho} < 0, \quad \frac{d^2C_{Bliss}}{d^2\rho} > 0,$$

$$\lim_{\rho \rightarrow 0} U = -\infty; \quad \lim_{\rho \rightarrow \infty} U = 0.$$

Adopting Böhm-Bawerk's aggregate production function, Mises maps the cost-minimizing combination of a non-produced or original factor (labor) and an initial subsistence fund - measured by the average period of production (τ) - to efficient or long-run net output (C):

$$C = f(\tau), \quad \frac{dC}{d\tau} > 0; \quad \frac{d^2C}{d\tau^2} < 0.$$

The introduction of capital as a subsistence fund is attempted to homogenize and then to aggregate capital as stored-up waiting-capacity (Mises, [1934]1980: 399, Mises, [1949]1998: 483–4). Measuring aggregate capital as an average period of production, however, reduces the time dimension to a scalar in an essentially timeless framework. To substitute some average waiting time for the volume or value of capital and then to treat it *pari passu* with labor does not turn static analysis dynamic.

The underlying production processes are of a flow input – point output type. Capital goods are goods-in-process, transformed to a lower level intermediary of ‘lower’ order over time. In stationarity, all stages have to be regarded as being fully vertically integrated production process. Thus, given the perishable nature of capital (working

capital), original factors like common labor and ‘virgin soil’ (Wicksell, [1934]1977: 145) can appropriate total consumption in the ERE (Bliss, 1975: 173). Mises reacts by rejecting the value productivity of capital (Mises [1949]1998: 490). He thereby illegitimately generalizes his restrictive model.

A priori, the services and marginal products of the original factors are evenly distributed over time. Single processes are thus linear. Investors (firms) distribute gross profits to control by ownership. The feasible production set for the economy contains blueprints with divergent investment periods. Longer processes require more previously accumulated waiting-time to feed and shelter labor. In comparison, shorter and more productive processes and longer and less productive processes pose no economic problem. The former are always superior; the latter always inferior. The decision problem arises with more productive but longer processes. At margin of choice, we find the longest period of production still feasible given the subsistence fund. As indicated above, varying levels of subsistence fund then derives the production function with diminishing returns. The case of shorter but less productive process is blinded out, since it is related to the saving process and to the speed of transition (Hayek 1936, [1941]2007). Long-run or net productivity of labor, and thus the wage rate (w), is a positive function of the average period of production. The sheer number of investment opportunities guarantee continuity.

What makes Mises’s model idiosyncratic is the source of interest. Here, he follows Frank Fetter ([1902]1977) and adopts a ‘Pure Time Preference Theory of Interest’ (Kirzner). It is based on two-stage reasoning. First, as shown, all net income is assumed to be appropriated by original factors. Then, in a second step, Mises discusses the distribution of this total among owners of capital and original factors. Consumption is

distributed between the owners of the means of subsistence (C_p) and non-owners (the wage bill: C_w), who however supply a fixed quantity of original factors (\bar{L}). Even though Mises computes total consumption to original factors, the saving decision is by the capitalist. Indeed, the capitalist still seems to own the consumption goods in the ERE, to have the privilege to control something that is not hers. This obscurity results from the treatment of consumption goods as advances to labor so as to maintain the chosen bliss level of consumption constant (Wicksell's 'free capital'). Working well within the classical outline, the concept of advanced capital in conjunction with Mises's rejection of positive value productivity of capital is the root cause of Mises's idiosyncratic theory. On the one hand, competition between capitalists is assumed to exhaust net profits, while on the other, it is the capitalist, who decides what fraction of total consumption to consume (C_p). The remaining wage bill (C_w) is his gross saving (S_g):

$$Y_n \equiv C \equiv C_p + C_w \equiv C_p + S_g$$

The identity is entirely controlled by the owning classes. It is their time preference that is expressed by the fraction of total consumption advanced (Mises [1949]1998: 488):

$$\rho \equiv \frac{C_p}{C} = \frac{C - S_g}{C} = 1 - s_g .$$

Accordingly, Mises's reformulation of his apparatus in *Human Action* introduces interest as a tax on non-ownership – a transfer payment – a fact unrecognized by modern Austrian scholars, probably due to Mises's diffused exposition.

Note that with the rate of time preference, the optimality criterion directly enters the equation that determines the actual level of ERE-consumption. The 'originary rate of interest' (r) is introduced as both, a warranted rate and an actual rate. Thus, an identity

bridges the gap between preferences and outcomes:

$$r \equiv \rho$$

$$r = \frac{P_{t_0} - P_{t_0+\tau}}{P_{t_0+\tau}} = \frac{P_{t_0}}{P_{t_0+\tau}} - 1 = 1 - s_g .$$

Relative intertemporal prices do not figure as Hayekian knowledge-surrogates, signaling a simultaneous balance between preferences, technology, and endowments. Given the supply of labor, the wage rate is just a residual:

$$C \equiv rC + wL$$

$$w \equiv (1-r) \frac{C}{L} = (1-r)c$$

$$w = w(r), \quad \frac{dw}{dr} < 0 .$$

A change in the rate of net time preference is associated with net saving and treated as a disequilibrium phenomenon outside the reach of disequilibrium analysis (see below).

$$S_g = S_g(\rho), \quad \frac{dS_g}{d\rho} = \frac{S_n}{d\rho} < 0 .$$

Mises assumes Say's identity:

$$S_g \equiv I_g ; S_n \equiv I_n .$$

Investors are passive. The rate of ordinary interest suffices to determine their choice of technique:

$$\tau = \tau(r), \quad \frac{d\tau}{dr} < 0 .$$

Indeed, impressed by all these ex post identities, Mises himself formulates the 'close of his system':

Ordinary interest is not a price determined on the market by the interplay of the

demand for and the supply of capital or capital goods. Its height does not depend on the extent of this demand and supply. It is rather the rate of ordinary interest that determines both the demand for and the supply of capital or capital goods.

[...] People do not save and accumulate capital because there is interest. Interest is neither the impetus to saving nor the reward or the compensation granted for abstaining from immediate compensation. It is the ratio in the mutual valuation of present goods as against future goods.

(Mises [1949]1998: 523–4)

The equilibrium-condition asks for the equality between the actual and the bliss levels of consumption. This is trivial: since economic behaviour is introduced by a set of identities and since each of these identities contains ordinary interest or time preference as the dominating primitive, ERE exists per definition at all rates of time preference, given the initial stock of subsistence. Q.E.D.

Because of Say's Identity, the choice of technique and actual consumption is determined by the subjective premium on present consumption, the single subjective data that alone provides the optimality condition:

$$C = C(r), \quad \frac{dC}{dr} < 0$$

$$C_{Bliss} = U(\rho), \quad \frac{dC_{Bliss}}{d\rho} < 0.$$

Since $\rho \equiv r$,

$$C_{Bliss} \equiv C.$$

Within the boundaries imposed by time preference, all ERE are by definition utility maximizing. Q.E.D. Ex post identities are turned into ex ante identities. Can anyone

imagine a more barren and unpromising starting point for business cycle analysis?

4. The traverse

As shown above, Mises is well aware of the stationary nature of his real analysis. He however believes that equilibrium analysis can do no more than this.

It is [...] preposterous to maintain that the construction of the evenly rotating economy does not elucidate conditions within a changing universe and to require the economists to substitute the study of ‘dynamics’ for their alleged exclusive occupation with ‘statics’. The so-called static method is precisely the proper mental tool for the examination of change.

(Mises, [1949]1998: 248)

Not only business cycle theory, he insists, but any analysis of economic change must be embedded into the framework provided by his ‘evenly rotating economy’. Net saving becomes a source of pure profits, per definition unexpected, due to exogenous increase in the average rate of time preference. Mises defines ‘net profit’ (P_n) as the excess of aggregate pure profits (P) over aggregate losses (L), being positive only if net savings are positive, indicating a change in the rate of time preference (Mises [1949]1998: 292-3).

$$P_n \equiv P - L \equiv \frac{dS_g}{d\rho} \equiv \frac{I_n}{dr} \equiv \frac{S_n}{dr}$$

All uncertainty usually associated with windfalls, is relegated to the composition of consumption. The level of net profits is always and by necessity equal to the rate of change in the rate of ordinary interest. Over time, Mises is confident, factors combined in new processes can appropriate more and more of their contribution to long-run

equilibrium, until stationarity is finally reached and net saving and thus net profit again disappear. The economy is stable:

What happens in the short-run is precisely the first stages of the chain of successive transformations which tend to bring about the long-run effects. The long-run effect is in our case the disappearance of entrepreneurial profits and losses. The short-run effects are the preliminary stages of this process of elimination which finally, if not interrupted by a further change in data, would result in the emergence of the evenly rotating economy.

(Mises [1949]1998: 294)

Mises, very much in contrast to his Austrian companion Hayek, fails to realize the advantages of general equilibrium theory as a conceptualization of an interdependent, simultaneously determined global system. Also changes in economic data have to be grasped by such interdependence. The decision space is complete only if all primitives do equally matter in determining general equilibrium solutions. A choice-theoretic intertemporal framework is at best incomplete, if it cannot display rational answers to the optimal time shape of income.

Not a 'rational theory of saving', as developed by Wicksell ([1928]1997) and Hayek (1936) – but the law of supply and demand regulates Mises's traverse from one stationary state to another. Excess demands and price adjustments, of course, do not fit the use of ex ante identities. Mises escapes into monetary analysis and introduces the capital market. Money is a veil, yet weakening the link between time preference and the rest of his system in the case of changes in (circulating) money. But also in the absence of additions to money, net saving becomes an excess supply of capital. Net savings drive down the market rate of interest, so that the market price reflects the underlying

primitive during the traverse. The dominant capitalists thereby feed the money-price system with their preferences, signaling a change in the optimal technique.

A lower rate of interest induces an excess demand for labor in higher stages of production, the competition between entrepreneurs driving up the net income of higher-order labor. The excess demand for labor in roundabout process is matched by an excess supply of labor in stages of lower order. Reallocation is driven by the law of one price on the labor market. The rising profit of using labor in lower stages of production reduces the supply of consumption and interrupts processes with below average period of production. More and more labor moves upwards in the vertical chain of production, each time leaving interrupted processes that otherwise would have matured, yet at different points in time depending on their respective maturities. The decrease in the production of consumption goods is initiated by a decrease in the capitalists' consumption, the tax on wages falling with the rate of time preference, allowing labor to consume at the initial level over the longer period of production. The price level remains constant until the new processes ripen and total consumption is distributed to the original factors by a falling price level (minus the lower fraction consumed by the capitalist).

The investor's only job is to transform capital and to control the composition or structure of capital, not to control the growth of capital. They are entrepreneurs only with regard to the cost-minimizing combination of heterogeneous inputs, while savers determine the period of production (Mises [1949]1998: 555). They rely on the interest rate to reflect such local information. Savers, in turn, lack any detailed technological knowledge related to their choice of technique and therefore depend on the investors entrepreneurial abilities.

When coming to money's nonneutrality, Mises subscribes to the classical version of forced saving, which emphasizes the impact of disproportional additions to the supply of money on the social rate of net time preference by initiating a redistribution of wealth and income among households with different saving propensities, that is, by Cantillon-effects² (Mises, [1934] 1980: 386; Mises [1949] 1998: 545–7), with saving and investment however being always equal. This concept of forced saving must be distinguished from its post-classical version, especially prominent during the Interwar period and employed by Hayek ([1931]1935). This later version of forced saving rests on the existence of macroeconomic disequilibria, of excess aggregate expenditures, and which Keynes accordingly calls 'investment over saving' (Keynes, [1931]1978; see also Hayek 1932: 133). Here, Say's Law is an equilibrium condition.

Very much like the British monetary analysis he admires, Mises's credit market simply allows investing in other people's productive opportunities (Mises, [1949]1998: 543–4). Mises asserts to be empirically evident what his business cycle theory attempts to prove analytically, namely, 'that "forced savings" [in his sense] can reduce the "natural rate of interest" only fractionally, as compared with the reduction in the "money rate of interest" which produces the "forced savings".' (Mises [1928]2006: 112) Thus, Mises derives the business cycle from a spread between the money rate of interest and a new, lower equilibrium level of the ordinary rate, 'indirectly' reduced by a money-induced redistribution of wealth and income. Not a spread between the money rate of interest and the marginal productivity of capital is Mises's measure of macroeconomic disequilibria, but the spread between the net rate of time preference and the market rate of interest. If the money rate of interest is lowered below the reduced social rate of time preference, capital gains turn positive and investors aim at income above the warranted

level. This gap between the money and the new rate of time preference induces what Mises names the ‘direct effect’ of credit expansion, which ‘at first exerts a stronger influence than the displacement of the social distribution which occurs as a consequence of it’ (Mises, [1934]1980: 391).

5. The business cycle theory

The ‘Austrian’ tradition in business cycle theory begins with Ludwig Mises’s *Theorie des Geldes und der Umlaufsmittel* in 1912. It arises from his attempt to integrate British monetary theory into Carl Menger’s marginal utility analysis. Always threatened to sink into oblivion, yet unfading, the Austrian Business Cycle Theory originates as an isolated chapter (chapter 19 of the English edition; [1934]1980). It is a corollary of Mises’s more comprehensive endeavour to overcome the classical dichotomy. In the first edition of *Theorie des Geldes*, yet only here, Mises is explicit: ‘A theory of business cycles is not the purpose of this study’ (Mises, 1912: 433).

Mises introduces his business cycle theory as a refinement and extension of classical monetary orthodoxy. He adores the Currency School, especially David Ricardo and Samuel J. Loyd (Lord Overstone since 1850) for their analyses of monetary cycles. Triggered by the creation of inconvertible banknotes and checked by the specie-flow mechanism, the classical business cycle allegorizes money’s short-run nonneutrality. Correcting for what he considers to be the gravest analytical error of the Currency School - the exclusion of deposits from effective money supply (Mises, 1912: ix) - Mises envisions a world beyond the gold standard, where commercial and central banks can freely manipulate the money supply, unconstrained by the costs of obtaining gold. What mechanism, if any, imposes a check on monetary expansion in a closed or global

economy, in the absence of international choice and the threat of external drain? What constrains the creation of credit in excess of savings in Wicksell's Pure Credit Economy? Here, internal drains are excluded by definition and no rise in absolute prices and credit demand provides the incentive to increase interest rates (Mises, [1934]1980: 394). The supply of finance is perfectly elastic, 'the credit-issuing banks are able to extend their issues indefinitely' (ibid.: 396). Aggregate expenditure increases in excess of real output, reflecting the excess supply of credit, and deteriorates money's purchasing power.

It is only in *Theorie des Geldes* where Mises makes extensive use of Wicksell's relation between the money and the natural rate of interest.³ Wicksell states three conditions for macroeconomic equilibrium (neutrality): first, the equality between the loan rate of interest and the equilibrium rate on capital, second, the equality between saving and investment, and third, the stability of the price level (Wicksell, [1935]1978: 193, 207; Myrdal, 1933: 387). Either of the first two conditions suggests a constant level of aggregate expenditures. Obviously, for all three conditions to prevail simultaneously, the economy must be stationary. Otherwise, Wicksell's first two conditions do not coincide with the third (see Davidson 1906, Hayek [1929]1933, Hayek [1931]1935, and J. G. Koopmans 1933).

In contrast to Wicksell, however, Mises declines the study of price-level dynamics and applies Wicksell's interest rates gap to analyse the impact of money-induced income effects on relative prices. Insofar, Mises focuses on the impact of money and credit expansion on intertemporal coordination. Given stationary intertemporal preferences, money-induced excess demand for consumption goods will sooner or later reverse and annihilate the accumulative impact of any prior excess in investment spending. This

hawkish prediction of Mises's business cycle theory is placed on new ground in *Human Action*: mean-reversion becomes the outcome of the dominance Mises attributes to ownership relations. If capitalists do not voluntarily save, that is, do not advance consumption to labor so as to keep wages constant over a longer period of production and instead consume, whereas investors choose longer investment periods due to the false price of intertemporal exchange, the subsistence fund depletes before the new processes can mature. Even if total demand remains constant, somehow unaffected by increases in nominal spending, the excess demand for consumption goods turns positive, driving down the price of future goods (i.e. labor) in terms of present consumption. This implies a rise in the market rate of interest to the level predetermined by the rate of time preference. The traverse reverses to the initial level of consumption. To assert that additions to money and nominal demand can permanently increase output above its long-run equilibrium value - so the essence of Mises's cycle theory - is to assume that the increase can be maintained against public will and resistance.

Thus, supply-driven credit expansion only temporarily disconnects the money rate of interest from the rate of time preference and imposes a signal-extracting problem. Mises's investors blindly follow the ups and downs of the loan rate, systematically fooled by the banking system that, in turn, is driven by a wrong mercantilist worldview, reinforced by the fact that the general public persistently tends to fall victim to inflationist ideologies. Even in the first German edition of *Theorie des Geldes*, where Mises still allows for credit demand to exert some influence on the supply of credit, it is only by the entrepreneurs' 'call for cheap money' to circumvent the limitation imposed by thrift and their pressure on political processes that banks create excess credit.

What Mises has in mind is the pressure exerted by the sovereign and rent-seekers on the

banking system to overcome established ‘routines’ and ‘conservatism’, which is the pressure *to move first* (Mises, 1912: 435). Mises claims that ‘according to the Circulation Credit Theory [his label for the business cycle theory], it is clear that the direct stimulus which provokes the fluctuations is to be sought in the conduct of the banks.’ (Mises, [1928]2006: 120). Accordingly, the regularity of cycle is due to ideological ups and down, to the struggle of ideas, and to ‘the mania for lower interest’ (Mises, [1928]2006: 121; Mises, [1949]1998: 569) as substitutes for the waves of optimism and panic of older analysis that Mises condemns as unscientific. The only way out comes by a general understanding of Mises’s business cycle theory (Mises, [1928]2006: 123–4).

Further, it is unclear how malinvestments due to forced saving can possibly occur. As Hicks points out against Hayek’s early version of business cycle theory, all dynamic analysis is build on time-lags, on frictions in market adjustments (Hicks, 1967: 207–8). Mises refers to the money-induced distributional effects, which allow those who receive the money first to have a temporary gain at the cost of those, who receive money later. All prices, including wages, are perfectly flexible. Yet, if prices are flexible, and if all new processes begin with the employment of original factors alone, consumption demand increases in proportion to their higher nominal incomes. Investment spending initiating new processes is not associated with the purchase of capital, but with outlays to labor and land, to wages (and rents). Given the strict verticality of Mises’s production processes, any excess supply on the money market is immediately reflected by an excess demand on the labor market and, according to the prevailing rate of time preference, by an inflationary excess demand for consumption goods. Thus, overinvestment – in nominal terms – implies nominal wage hikes. In this light, Mises’s

business cycle theory depends on a price-lag, on nominal wages increasing while the prices of final outputs remain temporarily constant (the boom). Otherwise, forced saving could not drive the economy away from its trend path. But this cannot be. If, at full-employment, the circulating supply of money increases, flexible wages and prices increase together.

Mises himself is explicit that there is no time-lag between the increase of capital goods prices and the increase of consumers' goods prices. 'With the rise in wage rates the prices of consumers' goods rise too.' (Mises, [1949]1998: 550) It is indeed this initial rise of consumption-good prices that account for the boom.

The general upswing in prices spreads optimism. If only the prices of producers' goods had risen and those of consumer's goods had not been affected, the entrepreneurs would have become embarrassed. They would have had doubts concerning the soundness of their plans, as the rise in costs of production would have upset their calculations. But they are reassured by the fact that the demand for consumers' goods is intensified and makes it possible to expand sales in spite of rising prices.

(Mises [1949]1998: 550–1; see also 554)

At any rate, the *immediate* consequence of credit expansion is a rise in consumption on the part of those wage earners whose wages have risen on account of the intensified demand for labor by the expanding entrepreneurs.

(*ibid.*: 553; italics added)

Mises's claim that a more than proportional increase in the supply of money can prolong the boom is again inconsistent with his use of original factors of production (Mises, [1949]1998: 552). Even if money grows at an accelerating rate, the increase in

nominal incomes increases in proportion to the excess funds at any point in time. From the onset, consumers are equipped with additional purchasing power to defend their chosen consumption level.

Wicksell did not apply his apparatus for price-level dynamics to the analysis of business cycles. He is well aware of the fact that increases in nominal wages reduce profit, if prices remain constant, that is, if aggregate demand is fixed. In such a case, investors switch technique, favoring more capitalistic processes. As soon as the level of expenditures shifts, and this is the starting point of Mises's business cycle theory, the economy faces real-wage rigidities. As he points out in his critical review of *Theorie des Geldes* (Wicksell 1914: 147–8), and what remains equally true for all of Mises's later formulations of business cycle theory, it remains to be proven that excess credit and the loan rate below its neutral rate induce a switch in technique towards longer processes. In this case, there is nothing left of Mises's business cycle theory.

6. Concluding remarks

A most astonishing fact about Mises is that the solution to the proper relationship between the three causes of interest is right in front of him, elaborated by the most prominent of his contemporaries. For instance, the excellent general equilibrium theorist Fisher stresses the simultaneous determination of interest, treating intertemporal preference and investment opportunities *pari passu* as primitives (Fisher [1907]1997; Fisher [1930]1997). Others are even close to or within the Austrian tradition like Wicksell and Hayek. In *Zur Zinstheorie – Böhm-Bawerk's dritter Grund*, written 1926 and published *post mortem* in 1928, Wicksell refers to Böhm-Bawerk's 'cardinal error' (Bortkiewicz 1906). He correctly that during the accumulation process all three causes of interest collaborate. Very early, Wicksell insists on a 'rational theory of saving'

(Wicksell, [1893]1954). Indeed, as Boianovsky (1998: 145) points out, ‘in his suggested rule for the determination of saving Wicksell all but wrote Ramsey’s equation.’ Wicksell, like Ramsey, assumes that until stationary conditions prevail, it is the marginal productivity of capital that determines the rate of interest. Net time preference, important to determine bliss, does not bear the burden of adjustment. Over time, the return on new capital approaches the exogenous rate of net time preference until the two rates become equal and Böhm-Bawerk’s first cause evaporates (Wicksell, [1934]1977: 209).

Most importantly, Ramsey’s bliss is not the starting point of analysis, but becomes the long-run goal of optimizing individuals who do not only care about the size of equilibrium income, but also about its time shape during the transition process. As Ramsey points out, “the most remarkable feature of the [his] rule is that it is altogether independent of the production function [...], except in so far as this determines bliss, the maximum rate of utility obtainable.’ (Ramsey, 1928: 548) The dynamics of capital formation become separated from the aggregate production function which determines the long-run equilibrium level of income, given the rate of net time preference.

Mises, however, treats all attempts to improve on the underlying equilibrium framework by reaching beyond the classical long-run concept as a waste of time. It is of course true that optimal growth theory and Ramsey’s prominence are post WWII phenomena. However, Mises read extensively and surely knew the works of Wicksell, Fisher and Hayek. And yet, in subtlety and analytical depth, *Human Action* falls short of Wicksell’s *Lectures* ([1914]1934), Fisher’s *Theory of Interest* (1930), and Hayek’s introduction of intertemporal general equilibrium analysis in 1928 and his detailed exposition in *The Pure Theory of Capital* ([1941]2007). Hicks’s *Value and Capital* (1939), published ten

years before *Human Action* and partly motivated by Hayek, is neither mentioned, nor has it left any discernible impression on Mises's general outline. In siding with Frank Fetter once and continuing to do so ever after, Mises persistently declines all major contributions to our present understanding of economic growth since Böhm-Bawerk. In fact, Mises's apparatus falls behind.

Notes

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² For a more detailed account of Cantillon-effects as a building block in ABCT see Hagemann and Trautwein (1998).

³ Wicksell, however, carefully avoids applying his apparatus to the analysis of business cycles (Boianovsky 1995, Laidler 1991).

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