

IS “MALINVESTMENT” ENOUGH TO GO BUST?

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THE BUSINESS CYCLE REFERS to fairly broad changes in economic activity according to a well-identified sequence, which includes a boom, a crisis, a period of stagnation, and then a new expansion.¹ This sequence tends to repeat itself; but neither the length of the cycle, nor the intervals between cycles necessarily follows a regular time pattern. There is substantial agreement both about this definition and about the temporal irregularities. The only open question is on whether the cycle should be described in terms of proportional changes in GDP, or rather in terms of GDP deviations from a long-run trend. Following the early literature on the subject, this paper accepts the first definition.

As regards the analysis of the origins and features of the cycle,² the Austrian theory posits that cycles are characterized by generalized inefficient economic behavior induced by active monetary policies.³ That is, although the business cycle involves real variables, its

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¹Despite its widespread use, stagnation may nevertheless be a misleading concept. Depression is probably a better way to describe the final period of the cycle. See also Rothbard (1969).

²See for instance Garrison (1989, 1991) on the main features of the various business-cycle theories.

³Previous attempts to analyze the trade cycle by emphasizing monetary issues are to be found in Juglar (1862); or in Tugan-Baranovsky (1901), who investigated mismatches between savings and investment plans. The Austrian approach, on the other hand, is based on the divergence between the natural and the market interest rates. Kirzner (2001, p. 138) suggests that the foundations of the Austrian theory of the business cycle are due to Wicksell and Böhm-Bawerk, and that Mises himself in some way acknowledged it. However, Mises brought the various pieces together, thereby putting forward for the first time a complete theory of the cycle based on the interaction between real and monetary phenomena.

dynamics are started and initially driven by monetary phenomena. Both at the start, when the market rate of interest falls below the “natural” rate of interest and a boom is ignited and later on, when fundamentals eventually prevail and trigger the crisis: mismatches come to the surface, panic breaks out in the money market and past mistakes have to be reckoned with.

The first part of this article is thus devoted to a short discussion of Mises’s view on money. The central sections analyze how money management can influence economic behavior and upon which conditions the Austrian theses hold. The final sections will then address some issues in current policy making in the light of an “extended” Austrian theory of the business cycle.

MONEY PRINTING

In Mises’s view the monetary environment can be manipulated through straightforward money printing and the creation of other fiduciary means of payment (credit).⁴ The distinction between the two is important in two respects. First, there exist different consequences on inflation, which is here defined as a general increase in prices. By affecting the extent to which a monetary unit is a reliable standard, inflation plays a significant role within the Austrian theory of the business cycle. In addition, tampering with these two magnitudes—commodity money and credit money, following Mises’s terminology (1996, p. 429)—may lead to diverse economic behaviors, and thus to outcomes of a different nature in terms of business-cycle analysis.

The Austrian approach maintains that the timing and features of the price increases induced by money printing depend on the identity of the money printer and on his goals. For instance, when money printing is carried out by a government agency (including the central

⁴Following the Austrians, money is here considered as a means to carry out transactions, either immediately or later on in time; see Mises (1912; 1923; and 1996, pp. 428–34). When buying a commodity, the seller accepts monetary units as a form of payment because that unit represents purchasing power that can be taken advantage of, either shortly afterwards (cash as a better alternative to barter) or later (deferred payment). Thus, money is a means to carry out transactions if it is preserved and perceived as a reliable unit of purchasing power.

This is why ultimately a monetary regime is always a fiduciary system. The problem is of course swept under the carpet by imposing a legal tender, whereby the government forces individuals to accept a purchasing-power certificate.

bank),⁵ one has to consider the direct and indirect beneficiaries of government expenditure. If extra cash is needed to raise wages in the public sector, the price and quantities of the various goods adjust according to the way civil servants will be spending their extra balances. Relative prices will thus undergo substantial variations, as some sectors are hit earlier than others, and some adjust more rapidly than others do. Indeed, it may take months, if not years, for a money-printing policy to develop its inflationary consequences completely. Hence, during and soon after money printing has taken place, money demand can actually rise in real terms to the extent that individuals do not spend the additional cash balances immediately and all the prices do not reach their new equilibrium levels.

Expectations matter, of course. But from an Austrian viewpoint it is unlikely that agents fully realize and correctly discount the inflationary features of money printing. Understanding all the consequences of the various types of government expenditure and assessing their quantitative impact is simply impossible. More realistically, individuals are deemed to extrapolate past trends for the prices of the goods and services they are interested in, and possibly adjust their estimates according to the perceived intentions of those operating the money-printing machines. These estimates may also be augmented so as to include some demand components—say—to discount that the demand for liquidity drops (expands) as perceived inflationary policies intensify (weaken). Such educated guesses are then applied to contracts concerning deferred payments.

All this contributes to explaining the difficulties in adjusting to and fighting inflation. Data assessment may also be blurred. For instance, an unexpected, once and for all money-printing policy leads to a temporary increase in the real demand for money and an improvement in nominal and deflated GDP, since the nominal increase in purchasing power is not matched by an equi-proportional increase in the price level. As time goes by, and as long as real output stays constant, demand for money eventually falls back to its initial level—or for some time even below, if money printing is expected to continue. Prices gradually rise and possibly overshoot their final

⁵It is hardly worth pointing out that there is no such thing as an independent central bank. For whatever the goal of the central bank, its "monetary constitution" comes from some state power. That is also the reason why the governors of the central banks abstain from printing money whenever they need a little cash for their personal expenses. In fact a truly independent central bank should be able to print whatever amount is deemed appropriate and distribute it to whomever its governor or chairman likes—including himself, of course.

level, while deflated GDP statistics return to their initial values, after a possible and temporary drop below it (see appendix 1). From this viewpoint, what may be described as a cycle is in fact just a statistical illusion.

Of course, if inflation is low and prediction errors are modest, the monetary unit is considered reliable and accepted. The loss of purchasing power is tolerable and cash can be used for short-term transactions and for deferred payments, once the necessary adjustments are made.⁶

For the purpose of the present paper one can thus conclude that a monetary regime transmits real shocks through the system when the standard is bad, but not bad enough to be rejected. In particular, the standard is not rejected (1) when uncertainty about the real variables is perceived to be high, so that abandoning the current monetary standard is not thought to bring about large enough improvements; (2) when inflation is not acute; or (3) when money-printing does not take operators by surprise, so that adjustment remains feasible.⁷

To conclude, from the Austrian standpoint money printing *per se* does have some effects on statistics; but little or no impact on the real business cycle.⁸ Surely, during the monetary cycle—the definition is

⁶As a matter of fact, when paper money is used as a standard for deferred payments, both the buyer and the seller are never certain about the purchasing power of the monetary unit, even in the absence of inflation. Relative prices change all the time, as a result of technological progress; but also as a result of changes in preferences or of the appearance of new products.

⁷It may be worth pointing out that in Mises's view agents anticipate the inflationary effects of money printing (despite the fact that price increases hit industries at different times, which makes prediction impossible). And that when people become aware of the perverse effects of inflation, "undesired consequences" follow.

Such "undesired consequences" clearly apply when the system does not break down and a new standard fails to be introduced. Put differently, the unattractive features of a bad standard actually depend on what prevents the actors from switching to a better standard. The introduction of legal-tender legislation is of course a prime candidate in this respect. Hence, the real side of the Misesian economics of money-printing (as opposed to credit policy) actually raises a range of questions about the variables that prevent a bad standard from being abandoned and on the cost of abandoning it. This is why the Austrians are often tempted by free banking as a powerful institutional instrument to fight the business cycle. See for instance Mises (2002).

⁸However, Mises (1996, p. 573) rightly observes that if the new supply of money "reaches the loan market at an early stage of its inflow into the market system," then its effects are equal to those typical of credit expansion.

our own—purchasing power moves from some groups of individuals to other groups, so that important redistributive effects may take place. Repercussions on the structure of production are also to be observed, if the various groups display different tastes and different time preferences. The Austrians, however, do not believe that either phenomenon is likely to be substantial. More important, they do not accept that money-printing *per se* is going to affect the market rate of interest either, which therefore remains approximately equal to the natural rate of interest. The monetary cycle is then harmful since it pushes the relative-price structure away from relative scarcities. It may thus provoke losses of output and statistical illusions. But it does not necessarily ignite the real business cycle, unlike—say—in Friedman (1976), where inflationary phenomena induce workers to act irrationally.

ON THE ECONOMICS OF CIRCULATION CREDIT

The Monetary Side of the Austrian Cycle

In Böhm-Bawerk's (and Mises's) work, the business cycle differs from the monetary cycle because in the former case the real interest rate is altered by the banking sector when manipulating the nominal rate. This is the essence of the so-called "circulation credit theory," whereby banks supply "circulation credit" (in this case a synonym for fiduciary means of exchange), that is a means of payment accompanied by a promise to exchange them against goods or money at some future time, possibly on demand.⁹ The Austrian School develops this theoretical insight in order to demonstrate that a sustained and credible departure of the real interest rate away from the Wicksellian natural rate sets the business cycle into motion. Indeed, the cycle consists of intertemporal mismatches in the fixed-capital industry provoked by forced changes in the interest rate.

Hence, as a referee of this journal notes, "more circulation credit or more money used first on the loan market drive the business cycle."

See also Garrison (1996) for a comparison between the Monetarist and Austrian approaches.

⁹Means of payment backed by monetary units (money) actually deposited by individuals are called "commodity credit." See Mises (1928, pp. 124 and 125). More generally, commodity credit concerns a transaction where "what is surrendered consists of money and goods, disposal over which is a source of satisfaction and renunciation of which a source of dissatisfaction" (Mises 1912, p. 297). This is opposed to circulation credit, where "the granter of credit renounces for the time being the ownership of a sum of money, but this renunciation . . . results for him in no reduction in satisfaction" (ibid.).

Banks are ready to lend at an interest rate below the natural one because when issuing fiduciary means of exchange no money deposits are required. Therefore, banks are in a condition of at least temporary seigniorage. Over the period during which nobody asks to replace fiduciary means with money, any interest paid by the borrower is then a net profit (once the costs of running the fiduciary system are deducted).

Understandably, banks seek to expand circulation credit in order to maximize interest payments; the greater the trustworthiness of the issuing bodies and the more they are able to carry out price discrimination *vis-à-vis* borrowers, the greater the profits. At the same time, banks tend to limit the amount of fiduciary means of exchange outstanding in order not to undermine the credibility of these means of payment and—more generally—of the unit of account in use. Since a fiduciary system can work as long as it is a promise of future backing, too large a quantity of fiduciary means of exchange makes the promise less credible.¹⁰ This self-enforcing mechanism prevents fiduciary means from getting out of control as soon as they are introduced.

Now, given the overall picture presented above, it is clear that

- Banks gain considerably if nobody ever asks to change fiduciary means into goods or into real purchasing power: no “reverse seigniorage” occurs. Of course, this situation (full seigniorage) occurs only if the nominal demand for money increases and fiduciary means are perceived as substitute for money.
- Banks can still gain substantially (interest payments) if reverse seigniorage occurs after borrowers have had

¹⁰An important exception to this is the case when a fiduciary means of exchange is no longer credible, but the State meets demand for money by printing it and banks know in advance. In this situation banks have a clear incentive to expand fiduciary means *ad infinitum*. This helps understand the origin of the pressures toward more regulation and supervision. A central bank that issues regulation in order to prevent unlimited expansion of fiduciary means is thus an authority that implicitly announces it will save the regulated bank in case of bankruptcy.

It is also worth pointing out that under such circumstances a strict monetary policy may be either a blessing or a disgrace. It favors the banks if it generates excess money demand and thus a higher propensity to accept fiduciary means instead of money. But it could also be a kiss of death if, as a consequence of such a policy, agents no longer trust fiduciary means and rush to ask for money instead.

sufficient time to expand production and create enough goods to pay interest *and* meet the purchasing-power promise embedded in circulation credit.

- The system crashes if nominal money demand stays put and reverse seigniorage occurs before borrowers (producers) have been able to create enough real backing for the fiduciary means of exchange issued in previous periods.
- Inflation breaks out if money demand does not rise much, output growth is sluggish and reverse seigniorage does not occur (fiduciary means are accepted as a perfect substitute for money and used to buy goods). Indeed, inflation is the mechanism through which aggregate money supply in real terms is brought back to its original level (i.e., before circulation credit was created).

Mises's position within this fairly general framework is straightforward. In his view the injection of circulation credit inevitably leads to inflation. Panic and eventually reverse seigniorage follow. Bad investment decisions undertaken under the influence of easy money are exposed, and the closing down of inefficient ventures generates recession. The size of adjustment depends on the amount of fiduciary means of exchange outstanding. Since the length of the boom is assumed to be directly correlated with the amount of circulation credit, the longer the boom, the more catastrophic the crisis.

The simplicity of Mises's approach appears plausible—and indeed appealing—if three fundamental assumptions of the early-Austrian tradition hold:

(1) Banks issue circulation credit because they rule out large-scale reverse seigniorage and/or they trust that a state agency will come to the rescue and back their empty promises;

(2) Investment plans are changed, whereby resources are rerouted toward relatively bad projects ("malinvestment")¹¹;

¹¹Malinvestment means that the lower market interest rate induces producers to move from investment projects with short-run returns to schemes profitable in the longer run. Thus, after the boom has been ignited consumer goods actually tend to become scarce, as resources are moved away from building factories soon ready to produce consumer goods, toward projects that are going to generate output only in the long run. This phenomenon is also known as "forced savings." It has however been admitted that overall production can actually rise even in the short run. See Haberler (1996, pp. 40–41) and, more generally, Garrison (2002).

(3) Producers borrow and keep borrowing because they are mistakenly persuaded that they will be able to complete their revised investment projects and service their debts.

Put differently, the early-Austrian view of the business cycle refers to a situation where production is not rising (it is actually falling, since malinvestment is likely to imply some switching costs). At some stage inflation becomes substantial, agents no longer consider fiduciary means of exchange equivalent to money and reverse seigniorage occurs. Under these circumstances banks are unable to meet their promise and collapse jointly with that part of the economy trapped in malinvestment. The depth of the crisis depends on the size of the monetary overhang, which is possibly aggravated by the fall in output as more and more resources had been moved from short-run to long-run-yield investment projects. Intervention by the central authority is of course possible. But even if the central bank steps in and prints money to be exchanged for fiduciary means of exchange, the monetary overhang remains unaltered and the crisis cannot be averted. Actually, inflation rises and the crash deepens.

The End of the Boom

Mises's descriptions of the boom and of the crisis are persuasive. Still, closer scrutiny reveals a number of issues that deserve clarification and suggest a partially different kind of analysis. In particular, the following paragraphs will concentrate on two periods—the end of the boom and depression.

As regards the former, it is indeed possible that fiduciary means of exchange lead to excess money supply and thus inflation. But for inflation to go off, fiduciary means must remain in circulation. Put differently, inflation occurs if agents accept fiduciary means, reverse seigniorage does not take place, and excess aggregate money supply leads to excess demand for goods. As long as fiduciary means of exchange remain in circulation the consequences are thus similar to those generated by money printing. It is as if the printing machines were located with the commercial banks rather than with a central bank. It follows that the consequences are rather limited and associated with the ability to predict the price rise and adjust accordingly (see the previous section). At the other extreme, if money and fiduciary means of exchange are not deemed equivalent, reverse seigniorage takes place right away, even before inflation becomes substantial.

Let us however follow Mises and take an intermediate case, whereby fiduciary means of exchange are initially accepted as a substitute for money, but after a while—as sequential inflation is still underway—is returned to the banks in exchange for money. At that moment the financial system is taken by surprise. Would banks ask

producers to reimburse their debts in money, as Mises seems to suggest? Probably not, since producers do not normally finance long-term projects with short-term credit, as mentioned above. That does not mean that they anticipate a crash or a depression. But it does mean that they perceive low interest rates as an exceptional opportunity, rather than as the rule. In short, when crisis breaks out producers will presumably be protected by their contracts, which are unlikely to include clauses allowing reimbursement on demand. At that moment producers will certainly revise their investment strategies, and new projects will be selected according to the new conditions—which include a higher interest rate. However, since malinvestment is financed at the depressed interest rates, when the injection of fiduciary credit comes to an end, producers do not suffer because they already received the financial resources they needed. In other words, nothing prevents them from enjoying the benefits of the low-cost financing acquired during the boom.¹² Banks only go bust. What happens next depends on the destiny of the bad (fiduciary) money. If it is accepted again as a substitute for money, then inflation keeps following its course, as mentioned earlier. In the opposite case the theory of the business cycle turns out to be the analysis of the redistributive effects taking place when allegedly good money is suddenly perceived as bad money and loses its role as purchasing power.

From this viewpoint the early-Austrian story then argues that the boom is over when reverse seigniorage eventually takes place or is at least attempted. Although this may be a plausible description of how the boom comes to an end, it all relies on the fact that at a given moment operators lack confidence and producers get squeezed. How and when this happens remains unclear. In fact the banking crisis will hit short-run operations to a larger extent than long-run projects: Contrary to the latter, the former usually involve financing that can be reneged upon at very short notice. Curiously enough, producers who engaged in malinvestment to a greater extent are going to be those less vulnerable to the crisis. Thus, unless borrowers had wrong expectations on interest rates, or consumers' preferences have changed, or technological progress has accelerated,¹³ when the boom

¹²The next section will explain upon whose shoulders the cost of malinvestment is likely to fall.

¹³If consumers' preferences change during a boom, producers find out that they wasted money in the wrong industries, supplying products that nobody wants any more. Or that the boom generates exceptional technological progress, so that many early investors are induced to sink resources into technologies that are soon bound to be obsolete.

ends and the market interest rate goes back to its original level, producers have no reason to worry. Surely, they will not start additional malinvestment. But unless one introduces additional elements, it is hard to see why they need to close down factories or scrap capacity.

In short, the Misesian story without further qualifications does not really lead to depression, a period which indeed plays a relatively minor role in the analysis (Garrison 2002). Paradoxically, by taking the early-Austrian path one ultimately runs the risk of sliding toward Keynesian conclusions. That is, the boom is welcome whenever it offers a chance to expand production and the policy maker is relied upon in order to keep agents confident—for instance by offering a state guarantee to currency credit, as history shows.

*On the Consequences of the Interest-Rate Gap
with New Production Plans*

In order to complete the analysis of the original Misesian version of the cycle a final element deserves attention. As observed earlier, at the beginning of the cycle circulation credit provides certain short-run profits and latent long-run losses (if the central bank declines to help and reverse seigniorage occurs).

When the market rate of interest falls below the natural rate, agents observe that the reward on postponed consumption has become lower. Hence, they react by increasing immediate consumption and by reducing savings. The rise in immediate consumption reflects a lower equilibrium natural interest rate, while the fall in savings reduces the funds available for commodity credit. As for investors, it is hard to believe that when credit becomes cheaper they drop their current investment projects and engage in reshuffling (malinvestment). Instead, it is more realistic to imagine that they

- accept fiduciary credit in order to expand or reschedule production capacity or
- choose to replace commodity credit with (cheaper) circulation credit, so that their investments (and their debt) remain roughly unchanged, but servicing is cheaper.¹⁴

If producers expand their production plans at the lower market interest rate, they are *de facto* accepting fiduciary means of exchange.

¹⁴The first hypothesis actually violates Mises's assumption about mere reshuffling, but is still compatible with the aggregate-output constraint. The second possibility is indeed consistent with Mises's version, but implies that by switching from commodity to currency credit investors change the structure of their investment for the worse (malinvestment) and scrap at least part of the projects already under way.

This behavior is actually encouraged when commodity credit becomes scarce as a consequence of lower savings.

If aggregate production cannot rise—say, because factor supply is rigid—higher demand for immediate consumption makes it worthwhile for producers to use easy credit to expand output of consumption goods. Put differently, fewer resources will be set aside to enhance future production (and therefore satisfy deferred consumption) and more will be employed to expand present output. Of course, they may also commit themselves to expanding production in the long run, as long as (1) they extrapolate recent trends in current demand and thus misread a movement along an intertemporal demand locus as an outward shift of demand; and (2) they believe that the resources required to start planned accumulation will be made available in the future. By doing so, they are in fact preparing the ground for future excess capacity.¹⁵

In this light, malinvestment does reflect a situation whereby investors change their plans: in particular, medium-term investment ventures are replaced by greater output of consumer goods and by new commitments for future accumulation, with an emphasis on long-term projects. Following Menger's terminology, one may say that production concentrates on low-order and high-order goods, while leaving a possible gap in the middle. True enough, the Austrians—e.g., Hayek (1931)—do acknowledge that demand for consumption goods may rise as a result of the rise in the wage rate; and that this may lead to an increase in the prices of such goods. But whereas the Austrians assume that during the boom the *relative* price of consumer goods falls,¹⁶ we here claim that far more relevant is that producers perceive that the price of the first-order goods relative to primary inputs is increasing and creating profit opportunities.

The consequences of the interest-rate misalignment finally become apparent when consumers find out that accumulation has been falling below what would have been necessary to meet their expectations, i.e., that their consumption frontier is no longer what they had expected (see appendix 2). Put differently, when the interest

¹⁵Under normal conditions the market would have signalled the problem, for low current savings would have led to a higher interest rate, thereby discouraging producers from undertaking long-term projects. But of course, during the boom propelled by circulation credit the signal is erroneous.

¹⁶Bellofiore (1999, pp. LIV and LXXV–LXXVII) refers to Wicksell and Hawtrey (1935), and aptly points out that such an assumption is crucial, but not explained. See also Donzelli (2003), according to whom changes in relative prices are crucial in Böhm-Bawerk's and Hayek's versions of the Austrian trade cycle, but neither in Wicksell nor in Mises's.

rate declines consumers reduce their savings for they believe that this entails a relatively small sacrifice in terms of future consumption (the interest rate has fallen). But since the marginal rate of transformation remains unaffected, the production possibility frontier is constant and future production necessarily drops by a relatively large amount in order to satisfy present consumption. One can thus conclude that the injection of fiduciary means of exchange has been feasible because consumers (not producers) have been deceived. They have been led to increase their immediate consumption by underestimating the opportunity cost of their decision. Their miscalculation has been provoked by their having perceived the lower interest rate as a signal for a free lunch being made available. Under such circumstances, crisis clearly breaks out when consumers realize that there is no free lunch. At that moment either inflation or—more likely—reverse seigniorage occurs.

Once again, if one accepts that producers respond when consumers are induced to expand current demand, the notion of “mal-investment” needs to be reassessed. It no longer describes producers moving from short-run to long-run projects, but rather from capital-goods industries to consumer-goods industries, while committing themselves to long-term investment projects by extrapolating current demand trends. Unfortunately, their investment decisions today will not match tomorrow’s consumption requirements. Investors go wrong because consumers’ behavior leads them to do so. When this becomes manifest, the crisis predicted by the early Austrians breaks out.

*On the Consequences of the Interest-rate Gap
with Constant Production Plans*

The second prospect mentioned earlier refers to the possibility that investors have fixed investment plans and take advantage of circulation credit in order to reduce debt servicing. Since the rate of return on savings does not match the rate of time preference, demand for immediate consumption increases, similar to the previous case.¹⁷ If such rise in demand for immediate consumption cannot be met in the short run, the price of consumption goods rises and the excess money supply disappears. As a result, the creation of fiduciary means of exchange leads to inflation and redistribution: Holders of cash balances lose as their purchasing power falls, while banks

¹⁷It is assumed that on aggregate producers remain net borrowers of fiduciary means. This explains why Mises focuses on producers as the primary “beneficiaries” of these newly-available funds.

and producers gain (due to seigniorage and cheaper debt servicing, respectively).

The new environment can of course stabilize if no further currency credit is issued and no reverse seigniorage takes place. After the shock produced by the creation of new (fiduciary) money and the destruction of the excess money supply by inflation have taken place, the market rate of interest goes back to the original rate.¹⁸ On the other hand, if reverse seigniorage does take place, banks are asked to change fiduciary means of exchange into money. Then, the market rate of interest overshoots its initial level, as banks have to attract savings both to provide for commodity credit and to replace fiduciary means. Deflation sets in and the redistributive flows are reversed. Crisis can then break out if producers are not able to meet higher debt service, which is indeed the case under Mises's assumption of reshuffled investment plans.¹⁹ Producers are impaired to the extent that they have been weakened by malinvestment and do not have the resources to endure the inverse redistributive flows.

Preliminary Conclusions

One can thus conclude that the early-Austrian business cycle starts from the plausible Wicksellian assumption whereby banks take advantage of at least temporary seigniorage and produce a real shock by generating an interest-rate gap. The gap leads to new behavioral modes by consumers as well as by investors, ultimately ending in crisis. In particular, the crash occurs when agents find out that their new consumption plans are not consistent with the intertemporal production frontier. Then, they revert to their original consumption patterns by increasing their savings, while fearing that fiduciary means of exchange may be reneged upon by the banking system.

However it is clear that the boom—whatever that means—need not end up in a real or financial crash. From the real standpoint it all depends on the features of the possible mismatch between the structure of demand and the structure of supply when agents revert to their previous consumption patterns. Furthermore, inflation actually avoids reverse seigniorage. For instance, if the central bank comes to the rescue and injects money, inflation comes to the surface, but the financial crisis may still be averted.

¹⁸Note that this is more or less what happens within the monetary cycle. This is hardly surprising, since the creation of circulation credit has in fact been considered equivalent to money printing.

¹⁹The previous caveats on borrowing contracts apply, though.

The redistributive features depend on how the newly printed money is assigned. Following the explanation suggested in the previous paragraph, banks are in the greatest need for rescue. If money is pumped into bankers' pockets, income will be redistributed from all agents to bankers and debtors, following the economics of sequential inflation.

THE DYNAMICS OF THE BUSINESS CYCLE RECONSIDERED

A Different Version of the Austrian Boom

Finally, one is also left wondering about the actual meaning of a boom according to the early-Austrian vision. If the original Misesian approach is accepted (aggregate production remains constant), the boom is necessarily just a monetary phenomenon.²⁰ On the other hand, this puzzling terminological aspect disappears if a boom implies extended or constant production plans and a rise in current consumption (which runs against the traditional forced-savings theory, though).

A more realistic exploitation of the early-Austrian insights calls attention to other phenomena typical of a boom. One is the rise in current consumption that induces producers to transform accumulation into commitments for expanded future investment. The other is associated with the possibility of drawing new factors (labor, mining, land) into the production process. To the latter case we now devote our attention.

The main problem with the Misesian business cycle is that it is difficult to see how more resources are allocated to long-term projects,

²⁰Lower interest rates in a Misesian economy necessarily generate an increase in production (a boom) only if they lead to the employment of production factors that would have stayed idle in the evenly rotating economy. Mises (2002, p. 130) actually seems to perceive the question, but does not pursue the matter further. More generally, the first three Austrian generations perceived the boom as a period through which investment crowds out consumption (Böhm-Bawerk) or—even less plausibly—bad investment simply crowds out good investment (Mises). But it is implicitly denied that distorted factor prices change factors' behavior (Mises 2002, p. 188): "credit expansion cannot increase the supply of real goods. It merely brings about a rearrangement." See also Mises (1936, p. 29) and Garrison (1996).

In fact, and somewhat paradoxically, the boom described by Mises (and Böhm-Bawerk) looks more like a slump, for if inputs remain roughly constant and are employed less efficiently, output necessarily falls.

while excluding incentives to engage in short-term ventures.²¹ More generally, it remains hard to deny that an increase in aggregate demand for goods and services generated by low interest rates stimulates production in the short run, too; and thus also leads to an increase in demand for primary inputs. Producers are indeed willing to pay a higher unit price in order to meet present and future consumer demands. Meanwhile, input owners react to higher factor prices by expanding supply, because they are indeed offered an opportunity to enhance their purchasing power (inflation is a sequential process).²² As a result, production expands.

Once more, the above does maintain the Austrian insight, whereby the boom is sparked by monetary phenomena, leads to substantial changes in the capital structure, and generates changes in relative prices.²³ In particular, the presence of intertemporal distortions is confirmed, as agents mistakenly react to the misaligned rate of interest. But it expands the original Misesian view, whereby it claims that relative-price changes affect both investment decisions and—more generally—the markets for production factors. And that new factors are drawn into the production process by the possibility—not just the illusion—of greater remuneration.

Crash and Depression

How far will the boom go on under these conditions? Böhm-Bawerk would have said that the answer depends on when individuals no longer accept postponing consumption and force the market

²¹Lower interest rates provoke higher demand and thus higher relative prices in the consumer-goods sector, as the Misesian theory acknowledges. Of course, agents do not realize that deferred consumption might be below expectations.

²²Of course, the more agents believe that the boom is sustainable and thereby mistakenly anticipate a permanent rise in purchasing power, the more willingly they agree to increase their supply of production factors. As a side effect, they will be inclined to order goods that will be delivered at a later date, or simply let producers believe they will be ordering such goods in the future.

What is described in the text is not the only possibility, though. It may happen that consumer prices rise as producers demand more inputs, or that consumer prices rise before producers demand more inputs. In the former case, factor supply remains constant since resource owners would be getting the same real remuneration. In the latter case, factor supply would actually shrink. Once again, the real boom would never come to life, or—in the second case—it would actually turn out to be a slump.

²³This is indeed the essence of the Austrian theory of the business cycle—see Garrison (1981), quoted in Bellofiore (1999, p. XXI).

rate of interest to bounce back, in other words, until consumers start to perceive they had wrong expectations about their intertemporal consumption-possibility frontier. Mises adds that the gap persists until the banks “refrain from any further extension of credit” (Mises 1936, p. 28). Banks will stop doing so when inflation builds up and there appears a real danger that people panic. Even if that may already be too late, since “panic” is actually originated by new patterns of expenditure related to the relative-price structure.²⁴

Mises’s theory on the end of the boom and the features of the crisis needs to be qualified. History shows that agents do not usually panic unless inflation is acute and characterized by violent and surprising fluctuations. Furthermore, since the real gap opens up when savings climb back to their “natural” level, one has to investigate the dynamics of savings, rather than simply assume that savings follow investment during the boom.²⁵

Consistent with the previous paragraphs, it will be argued that the crash depends on the features of the double gap emerging after agents become aware of their mistake: the gap between effective and expected consumption²⁶ and the gap between desirable and

²⁴That is actually the core of Mises’s original contribution to the business cycle theory. For Wicksell had already clarified how the market interest rate can move away from—and actually drop below—its natural level; whereas Böhm-Bawerk had explained that this fall might ignite a boom, the length of which depends on the trade-off between two forces. The market rate of interest tends to fall because of the ongoing injection of fiduciary means of exchange, but tends to rise as forced savings are reduced. Once again, it may nevertheless be useful to recall that the thesis about forced savings is here rejected.

²⁵This differs from Garrison (1978), according to whom crisis breaks out when overinvestment is no longer compatible with reduced savings. Indeed, Garrison’s view departs from Mises’s in that the latter rules out both overinvestment and a savings gap, consistent with national-accounting identities. Garrison’s thesis also differs from what is argued in this paper, whereby crisis breaks out when consumers realize their mistaken behavior and reduce their propensity to consume.

As a whole, there is indeed some confusion about what triggers the crisis in the Austrian cycle—reserve requirements in the banking sector or adjustments in agents’ behavior. In particular, Schumpeter’s interpretation of the Austrian theory of the business cycle has some responsibility. See on this Bellofiore (1999, pp. XXI–XXIII).

²⁶If consumers had realized right from the beginning that their marginal rate of time preference is above the marginal rate of return on investment, they would have reacted relatively early. Then, credit would have been tighter and the market interest rate would have shot up. Hence, the business cycle

expected production capacity. In other words, crisis as traditionally understood breaks out only if substantial excess production capacity comes to the surface, so as to force producers to scale down their activities and possibly go out of business. The adjustment costs incurred in connection with the resources released by such producers are the essence of the slump (depression). The key to this process is provided by the factor markets.

If the injection of currency credit takes place only in period 1, and reverse seigniorage is negligible, then money wages in the various industries change following the inflationary sequence.²⁷ As time goes by, the real wage rate falls from the levels attained in the early stages of the boom. Then factor supply shrinks and production falls back. For the boom to be sustained the quantity of the fiduciary means of exchange must be increased further, possibly at an increasing rate, to offset the decline in the real factor prices. But the moment comes when the ratio of currency credit to money is high enough to make reverse seigniorage credible. Fiduciary means are no longer issued, inflation gradually dies out, and the interest rate creeps back to the initial rate, while real factor prices make their way to their natural level and resources are no longer available to the same extent as before. Production thus contracts. In short, the end of the boom leaves producers with the overextended investment projects that were triggered by low interest rates, and encouraged by misconceptions about consumers' demand.

Clearly, the characteristics of the crash (from overproduction to natural production and possibly below, due to adjustment costs) necessarily become rather complex and depend on several variables:

- how quickly and deeply agents change their consumption patterns;
- how factor supply behaves;
- how banks act once they perceive that the boom is no longer sustainable;
- how the government behaves so as prevent agents from running away from fiduciary means of exchange;

would not have been substantial and could not have lasted more than a few months.

²⁷It is worth emphasizing that from the monetarist perspective inflation leads to an illusion: factors' owners believe that higher nominal input prices reflect higher real prices. From an Austrian perspective factors' owners who experience the inflationary sequence at the beginning of the inflationary period are not fooled at all. They are definitely offered a higher remuneration.

- how much excess capacity has been created; and
- how important adjustment costs turn out to be.²⁸

As regards depression, the Austrian terminology refers to the period of time during which production is below the level associated with the natural amount of capital, i.e., with the equipment operating under long-term, natural-interest-rate conditions. In Mises's approach (1928, p. 136) noninvested savings explain depression, so that after the crash the economy allegedly suffers from undercapitalization. In particular, the early-Austrians attribute undercapitalization both to malinvestment, whereby short-run accumulation has been transformed into long-run investment projects, and to those producers who went out of business during the crash, thereby destroying the capital projects they had launched.

Still, this view raises two problems. First, if one accepts that producers are fooled by the interest-rate dynamics during the boom, and they wrongly anticipate greater aggregate demand, it is then difficult to conceive a situation whereby producers expand their production plans and yet suffer from undercapitalization after the boom is over. Indeed, an economy is usually deemed to be "depressed" because investors are hesitant about new investment ventures and fear to be over-, not undercapitalized. Second, low investment does not imply lower production (depression), but persistently low or zero growth. Thus, if Misesian economics aims at explaining depression after the crash, it must necessarily investigate the nature and magnitude of resource mobility across industries, companies, and projects. Otherwise, a post-boom economy inevitably falls back to its steady-state condition (the evenly-rotating economy).²⁹

²⁸The implicit assumption is that there exist significant transaction costs. Mises (1912) is indeed aware of the fact that capital is not perfectly mobile, but he does not dwell on the full implications of such a statement; nor does Kirzner (2001, p. 142) almost a century later. For both authors continue to perceive the boom as a reshuffling of investment projects, as if producers had gone crazy and replaced good projects with bad projects during the boom (Mises 1936, p. 29). Thus from an early-Austrian perspective the cost of the crisis equals the foregone benefits from not being able to move resources from bad to good projects. Had Mises recognized that the boom also involves an expansion in the number of projects undertaken, he would have realized that investors do not lose their money because the imperfect mobility of capital prevents them from shifting resources from bad to good projects. Instead, they get into trouble because they have sunk resources in unprofitable ventures.

²⁹As stated at the beginning of this article, the term stagnation is avoided because of its ambiguity. If by stagnation one means a situation where the

The first puzzle is actually solved by focusing on factor supply, which rises during the boom and falls back during the crisis. Depression is then indeed characterized by overcapacity, due to excessive past commitments to invest; and also by undercapacity, due to the unexpected scarcity of some essential inputs—say labor. Put differently, the early-Austrians are correct in claiming that depression is the result of scarce production capacity. Such scarcity is however generated by factors other than equipment. Malinvestment problems do arise. But rather than being associated only with temporal mismatches, technical inconveniences will also cause serious—if not more serious³⁰—trouble. In particular, given the unanticipated dynamics of factor supply, it is quite likely that investment projects undertaken during the boom contemplate—say—labor-abundant techniques, whereas the crisis is going to reveal a situation requiring labor-scarce techniques. If so, it may then happen that for a relatively long period after the boom is over, producers continue to overpay production factors other than capital, since that may still be preferable to leaving equipment idle or badly exploited. That will obviously slow down the decline in real wages and employment and make adjustment last longer (depression or stagnation).

These remarks also help answer the second question. Depression occurs in the aftermath of the post-boom crisis. In particular, the Austrian approach suggests that the origin of depression lies with what keeps entrepreneurs from adjusting to the new economic climate. Still, when the boom ends up in a crash, entrepreneurs react to their past mistakes and adjust: performance improves and thus recovery gets under way. In short, in this case it would be more appropriate to refer to “crash and (more or less gradual) recovery,” rather than to depression.

Hence, if depression applies to a situation where production remains below potential output, two nonexclusive explanations may be put forward. First, agents may discover the illusory and dangerous nature of the boom only gradually, so that the end of the boom is not a crisis, but rather similar to a soft landing. If so, the use of the word “depression” would be misleading, since it would take as a

economy is below its “natural” potential, then it is depression. If on the other hand it refers to a situation where the economy fails to grow, then this is either because the “natural” growth is zero (lack of entrepreneurship), or because the negative dynamics in factor supply offsets the effects of technological progress. In neither case does the term stagnation help to clarify the nature of the problem. Indeed, it contributes to the confusion.

³⁰Accelerating or slowing down an investment plan may be easier (less expensive) than changing the nature of the investment project.

benchmark the peak of economic activity reached during the boom, rather than its “natural” level. And one should also examine what may prevent an economic system from bouncing back—even if at a slow pace—after the crash. For although the mechanics of the slump below roundabout-production standards may be clear enough (adjustment costs), the reasons for failed recovery remain obscure. This is where the second element—institutions—comes into the picture. Institutions are indeed likely to be of great consequence, although surprisingly neglected by much of the early-Austrian literature on the trade cycle.³¹

POLICIES

Mises clearly considers the business cycle detrimental to economic activity. Resources are wasted as bad investment projects are pursued and then reshuffled again in order to adjust to fundamentals. Mises does not believe that the business cycle can be eliminated. Nevertheless, he feels that experience and greater awareness about the damages provoked by the cycle may help agents’ ability to monitor and anticipate misbehavior by the banking sector. To that purpose, he favors a qualified version of free banking, which in his view is equivalent to some kind of constitutional prohibition for the state authorities to print money in order to save bad banks during a crisis. And he is also willing to accept regulation as a way to discipline the banking sector (2002, pp. 151, 175)³², although he recommends that governments abstain from supplementing expansionary policies with wage-rate legislation (rigidities) and protectionism.

³¹Mises’s view on free banking actually goes in this direction. Banks that are excessive in issuing fiduciary means of exchange and/or lend it to bad investors are going to be punished by the market. That would limit the cycle, since fiduciary means issued by a bad bank would not be accepted in the first place. They could never become a substitute to money and they could not contribute to distorting relative prices. Mises is right, of course; but while he emphasizes the institutional element at the beginning of the cycle, he is not equally assertive when dealing with depression (failed recovery) and the way the phenomena are related.

³²Instead, Mises believes that cooperation and ultimately collusion would nullify the benefits of competition on an international scale. This explains why the early-Austrians by and large neglected to differentiate between open-economy and closed-economy versions of the business cycle. To be precise, the difference is not really between open and closed economies, but rather between monetary systems based on *fiat* money and gold.

By pursuing this last insight it is here maintained that banks are not the only culprits and perhaps not even the main culprits. Indeed, Mises is perhaps too hasty in accusing government intervention of merely expanding the money supply in order to save banks on the verge of bankruptcy (1931, p. 204). For policy making can ignite the boom independent of the banking sector and can aggravate its aftermath—crisis and depression—in many ways other than money printing to replace fiduciary means.

In accordance with the interpretation put forward in these pages, the real world shows that booms are usually characterized by an expansion in both consumption and investment. Employment of new resources is an essential component of the trade cycle. Understandably, when the boom is over and real factor prices decline, their owners tend to react and defend their newly-acquired rents.³³ This applies to members of both concentrated interest groups (who provide intermediate consumption goods) and dispersed groups with voting powers (labor). Hence, pressure to transform a competitive surplus into a rent rises and might lead to legislation favoring wage-rate and labor market regulation, barriers to entry in selected industries, privileges to the incumbents. As a result, crisis leaves producers with relatively high factor prices. They will then react either by asking for subsidies and appropriate rescue programs, or by filing for bankruptcy and possibly starting anew. The latter option will of course be more appealing, the more difficult is the struggle with the new legislation given an old production structure.

Put differently, during "normal" crises producers suffer from overinvestment. They tend to adjust by reducing accumulation so that a new equilibrium is obtained, whereby real input prices decline. Both equipment and output fall back to their roundabout-production levels and compositions. Of course, that is not necessarily inconsistent with a relatively soft landing. However, if the government intervenes by stopping factor prices from declining, producers have greater incentives to leave equipment idle and file for bankruptcy.

³³As mentioned earlier, the owners of inputs are indifferent between supplying or not supplying resources only at the margin. Infra-marginal suppliers are enjoying a quasi-rent, which changes directly with remuneration. Thus, a fall in the real wage rate leaves the marginal worker indifferent (staying idle provides roughly the same amount of satisfaction as working for the previous wage rate), but not for those who are willing to keep working for a lower real wage rate.

See also Cochran and Call (2001), who draw attention to the role played by price rigidities during the crisis.

Sooner or later these entrepreneurs may engage in new, more capital-intensive projects, which would enhance the productivity of other factors. Under these circumstances one would thus expect a cycle characterized by a boom and a magnified crisis *cum* regulation. The chances for a speedy come-back from the crash will then depend on the barriers to exit and to entry, as well as to the complementarity between the desired (say—labor saving) equipment and the available labor force. The lower the quality of the existing human resources, the lesser the chances for recovery, and the greater the temptation for entrepreneurs to look for rents (privileges) or to move elsewhere—to areas featuring less stringent regulation and/or better human capital. Should this be the case, the crash might easily become depression, as net rent-seeking efforts intensify and domestic investment falls significantly or even becomes negative.

This view also helps explain why a nonmonetary boom may also end up in stagnation and possibly depression. Suppose that a cluster of technological breakthroughs leads to a wave of (*ex post*) unjustified optimism about future growth.³⁴ As a result, when euphoria evaporates and plans are scaled down, factor demand drops. If the government accommodates pressure by factors' owners (or, more generally, it tries to exploit a latent demand for rents), the crisis is sharpened and recovery is replaced by depression. Ultimately, an otherwise normal change in business conditions is transformed into a cycle.

All the above is not quite what the early-Austrians had in mind when dealing with the trade cycle. It is however fully consistent with the overall Austrian approach to economics, whereby growth is driven by individual behavior (which is subject to mistakes) and hindered by government interference. In particular, the role attributed to the dynamics of factor supply makes clear that a business cycle can be set into motion even without deceptive monetary policies. Indeed, all policies that develop their effects over an extended period and affect distinct groups of agents in different ways over time may start a business cycle. Its consequences depend on how the authorities react once the illusion is over and agents struggle to maintain the

³⁴For instance, entrepreneurs and investors may underestimate transaction costs, or resistance by the “losers” in the competitive process, or rent-seeking pressures; or they may mistake the speed or width of a technological advance.

See also Cochran and Call (2001) and Cochran, Call, and Glahe (2003) for different ways to integrate real and credit cycles—as well as sustainable and unsustainable growth—within an expanded version of the Austrian business cycle.

benefits enjoyed earlier, or just to avoid the cost of adjustment, including those related to malinvestment.

The early-Austrian solutions to avoid the trade cycle were straightforward. The illusion of the boom can be nullified by free banking, so as to discourage commercial banks from creating currency credit, which is at the origin of the interest-rate gap. Of course, Mises's goal was to stop any central authority from stepping in, printing new money and making sure it would be accepted as legal tender, so as to avoid reverse seigniorage. For the essence of free banking is not to provide a monetary instrument with a sound backing, but rather a monetary unit ultimately backed by the assets of the shareholders of the issuing authority.³⁵

As regards the aftermath of the boom, the early Austrian School argues that the best policy is to abstain from any anticyclical program, and allow the market interest rate to go back to its normal level without further pushing agents to take the wrong course—malinvestment.

The extended version suggested in the previous pages maintains however that free banking or a gold standard are not enough to stop a boom from taking off. As recalled earlier, there are other ways by which bad rational decisions can be provoked, either by a central authority or by interest groups that will be credibly backed by central authorities in the future. Furthermore, from a static viewpoint, moderate money printing³⁶ is not necessarily worse than reverse seigniorage. More importantly, one should make sure that policy-making remains modest (or absent) during the crash, when demand for political services is going to be greater. The obvious conclusion is thus that one should take advantage of the boom to enhance free-market rules, and make it expensive to renege upon them later. If

³⁵Of course, the fundamental weakness of a free banking system as it is advocated today is that a central authority would ultimately emerge as the winning competitor in any country with a relatively strong government. For such authority would be backed by a monopoly on violence, and thus by the power to tax and force people to accept a given unit, even when some have other preferences.

³⁶The term moderate refers to a substantial enough issue of new money, so that a soft landing becomes feasible; but not large enough to seriously undermine the credibility of the currency and provoke a change of the unit of account (dollarization). Money printing remains of course a serious problem from a dynamic perspective, for this policy surely acts as a powerful incentive for rent-seeking groups to disrupt the economy, enjoy the benefits of mistaken behaviors and avoid most of the cost.

anything, international organizations should then forget about providing supra-national rules to govern the market and smooth its alleged excesses, and rather act in order to de-legitimate national policies. History shows that freedom to move and to choose (institutional competition) is the best guarantee against stagnation and depression.

CONCLUDING REMARKS

As recently recalled by Oppers (2003) the Austrian theory of the business cycle has been marginalized by the Keynesian revolution and the New Deal. There are empirical, ideological and theoretical explanations for this. From a factual viewpoint, the Austrian approach has failed to provide a convincing explanation of the trade cycle at a time when the creation of currency credit is no longer a secret and may actually be controlled with relative ease, for instance, by means of globalized capital markets, which have created a system dominated by competing currencies (issued by central banks, rather than by commercial banks). In other words, during the post-war period the Austrian emphasis on the banking sector as the main actor behind the business cycle has not been very persuasive. Although monetary policies have not always been predictable in a long-run perspective, financial markets have produced a wide range of instruments that can protect operators from bad expectations and unreliable actors. Indeed, it has become increasingly difficult for any banker to influence the real market interest rate by the creation of substantial quantities of fiduciary means of exchange. More sensibly, in the past decades central bankers have tried to follow the market, while commercial banking has tried to guess about future market conditions. At most, some have tried to “beat” the money market. Not many believe they can steer it any longer, unless for a very short period of time. In short, although the early-Austrian would not have denied that policy-making on the real side could explain parts of the business cycle, their emphasis on the monetary side was surely a breakthrough at least in the first part of the twentieth century, but perhaps a liability in more recent times.

From an ideological viewpoint, focusing on the banking sector as the main actor of the business cycle and advocating some kind of restraint imposed from a supposedly benign authority has not helped. Instead, it has led to advocating a stronger role for an independent central bank and ultimately enhancing tighter cartel-like agreements within the banking sector under the guarantee and the protection of the central bank. Of course, this is almost the opposite of what Mises would have liked to see. Still, by focusing on banks’

misbehavior and providing only half-hearted support to free-banking solutions, rather than stressing the role of regulated capital markets and legal-tender legislation, Mises's theory has offered little resistance to escalating supervisory bodies.

Finally, the early-Austrian version is not immune from some critical ambiguities. For instance, by keeping aggregate supply constant Mises's cycle turns out to be an inflationary problem with constant—if not declining—production and bad investment plans. Of course, one cannot deny that stagflation does occur. But this is hardly what one typically characterizes as a boom. For a real boom to come into being one needs expanded production, possibly of both consumer and capital goods. This is possible only if new resources are drawn into the production process and output expands. Still, such possibility is ruled out by the early-Austrian assumptions. In addition, three other more specific issues are likely to remain without a satisfactory answer. First, if the real problems of the business cycle are linked to what has been here defined as the interest-rate gap, and if both aggregate supply and investment remain constant, then consumption also must be constant. Yet this contrasts with what the (Austrian) theory of intertemporal consumption suggests, whereby if the current rate of time preference is higher (lower) than the market interest rate, then consumption increases (falls). Second, according to Mises's approach a crisis goes off when investors find out that their time horizon is wrong. Still, since that time horizon was based on (too generous) credit conditions, that actually means that banks—rather than producers—get into trouble. This is not necessarily a flaw in the early-Austrian story. Nevertheless, such a story would probably be more persuasive were it presented as a banking cycle, rather than as a general business cycle. For a banking/financial cycle to become a business cycle one needs to spell out the connections between the real and the financial sector—the transmission mechanism—in greater detail than the early-Austrians did, and distinguish the overall changes in economic activity from "mere" redistribution. Finally, although the early-Austrians were persuasive when emphasizing the role of capital during the boom, they were less so when tackling the crisis. There is no doubt that a period of expansion is usually accompanied by a higher propensity to undertake risky projects, possibly with longer time horizons, and that decisions along such lines may cost dearly during the crisis. Still, according to the early-Austrian view one should expect excess supply of high-order goods and excess demand of low order goods. One may overlook the fact that this prediction is simply not consistent with the real world. But from a theoretical perspective one does not understand why long-run projects cannot be accelerated. More generally, the way the notion of low- and high-order goods is applied seems to be questionable.

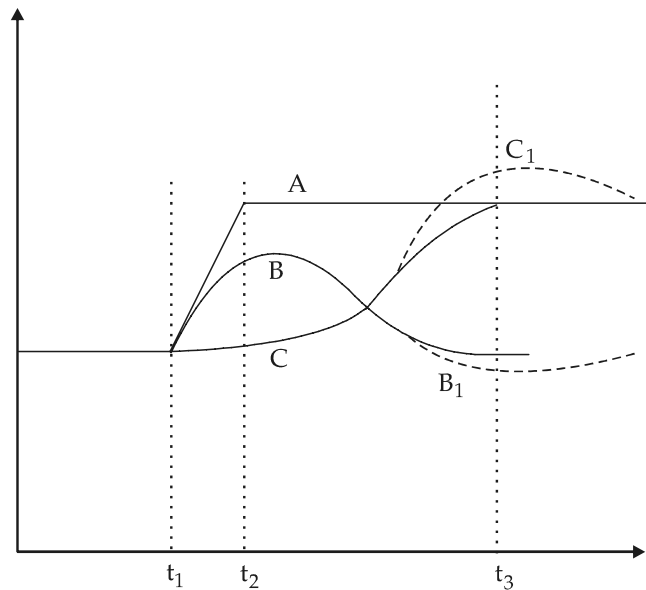
Despite the doubts that may cloud part of the conclusions drawn from early-Austrian theorizing, the Misesian foundations—sequential inflation and the role of the interest-rate gap—remain sound and promising. In particular, it has been suggested here that the chances for a revival of the Austrian insights depend on the ability to expand Mises's theory to include the economics of the factor markets as well as of rent-creation. This does not present major difficulties from a methodological viewpoint, since both the Austrian theory of inflation and the Austrian emphasis on the economics of institutions are already in place and can provide the necessary guidelines. Surely, it opens up new research agendas for the future.

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APPENDIX 1

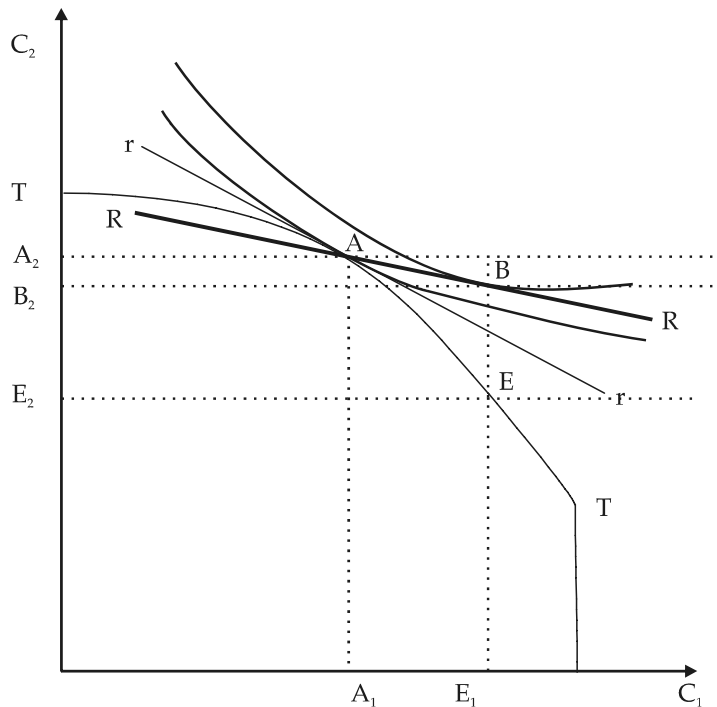


Given constant output in real terms, curve A describes the dynamics of the monetary shock, which starts at time t_1 and is sustained until t_2 . Curve B refers to the dynamics of real demand for money after the money supply starts to increase, while C describes the dynamics of the price level. Due to sequential inflation, money demand rises, excess demand for goods grows fairly slowly and prices are thus prevented from adjusting to the new monetary conditions immediately.

As the inflationary process follows its course, demand for real money falls back and prices reach their new level (see t_3). As mentioned in the text, if agents believe that money supply is bound to increase further, demand for real money balances may undershoot its final level, as described in B_1 . If so, excess demand for goods will not vanish at t_3 and the price level will overshoot its long-run level (see C_1).

If real income is constant, nominal income will follow the same dynamic as prices (C or C_1).

APPENDIX 2



The graph above describes the world Mises has in mind when describing the trade cycle. In particular, preferences, technology and production factors are constant. That explains why the indifference curve maps as well as the position and shape of the production-possibility frontier remain constant throughout the cycle.³⁷

Axes C_1 and C_2 describe the quantity of consumption goods available at time 1 and at time 2 in a closed economy. Point A is the initial situation, where the market interest rate is equal to the natural interest rate, and A_1 and A_2 denote consumption at time 1 and time 2, respectively. TT is the production-possibility frontier, the slope of which is the marginal rate of transformation.

As agents observe the market rate of interest fall (from rr to RR), they see they can improve their well being by moving the intertemporal consumption distribution from (A_1, A_2) to $B(E_1, B_2)$. This means

³⁷Should new factors be drawn into the production process, the transformation curve would shift outward and probably change its shape, too (the marginal rate of transformation).

that they are induced to increase current consumption (from A_1 to E_1), since they believe that this entails a relatively small sacrifice in terms of deferred consumption (A_2 - B_2), which is worth the effort, given the relatively high rate of preference typical of A.

However, since nothing happened from the technological viewpoint, the marginal rate of transformation has remained constant. In fact in order to satisfy higher current consumption, deferred consumption shrinks from A_2 to E_2 , rather than just to B_2 , as consumers mistakenly believed.

Therefore, the boom comes to an end in period 2, when consumers realise that their plans were assuming a level of intertemporal welfare that has turned out to be incompatible with the production-possibility frontier. As they find that their behavior corresponds to E (E_1, E_2), they realize that their marginal rate of intertemporal substitution is lower than the marginal rate of transformation. As a result, they reduce consumption and raise their savings.