

Overconsumption and Forced Saving in the Mises-Hayek Theory of the Business Cycle

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The business cycle theory developed during the interwar period by Ludwig von Mises and Friedrich A. Hayek is a theory of the unsustainable boom. Responding to cheap-credit policies of the central bank, the economy can find itself on a growth path that is inconsistent with the underlying economic realities.¹ Internal tensions in the market forces that guide consumption and investment decisions eventually precipitate a bust.

This understanding of the market process that takes the economy through boom and bust has come piecemeal and in a leapfrog progression in the writings of Mises and Hayek. Mises first gave the theory its Austrian identity in his *Theory of Money and Credit* ([1912] 1953, 357–66). Clearly, the theory emerges as a combination of the interest-rate dynamics introduced by Swedish economist Knut Wicksell ([1898]

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1. The earliest expositions of the theory focused on alternative originating causes. Following Lord Overstone (and Knut Wicksell), Mises (1978, 135) believed that it was some “outside stimulus” (such as technological change) rather than credit creation that initiated the boom; Hayek ([1928] 1975, 143–48) believed that in a setting where bank credit is elastically supplied, most any real change could initiate a boom. Accordingly, he concluded that the cyclical process “*must* always recur under the existing credit organization, and that it thus represents a tendency inherent in the economic system, and is in the fullest sense of the word an *endogenous* theory” (emphasis in original). His most comprehensive analysis (Hayek [1935] 1967, 54), however, focused on “the case most frequently to be encountered in practice: the case of an increase of money in the form of credits granted to producers.”

History of Political Economy 36:2 © 2004 by Duke University Press.

1962) and the Austrian capital theory outlined by Carl Menger ([1971] 1981) and developed by Eugen von Böhm-Bawerk ([1884] 1959). (The divergence of the market rate of interest from the natural rate causes a misallocation of resources among the temporally sequenced stages of production.) The “internal tensions,” which become most pronounced at the upper turning point of the cycle, manifest themselves in Mises’s original account as “counter-movements” in the prices of consumption goods relative to the prices of production goods. These relative prices fall during the boom but eventually rise, provoking corresponding counter-movements of resources and marking the economy’s transition from boom to bust.

In the mid-1920s, Hayek applied Mises’s theory to the policy-driven boom in the United States. But having been persuaded by Gottfried Haberler that Mises’s initial casting of the theory was too sketchy to serve this purpose, Hayek (1984, 27–28) added a footnote of more than five hundred words to set out his own version of Mises’s theory.² The counter-movements in Hayek’s account take the form of movements in the demand for raw materials in the early stages of production. When the rate of interest is artificially low, this demand is strengthened, but because of ultimate resource constraints and pressing demands elsewhere, it must eventually decline.

A key analytical stepping stone in the development of the Austrian theory came with Hayek’s 1931 lectures at the London School of Economics and his introduction of a graphical device for depicting the effects of a change in the rate of interest on the intertemporal allocation of resources. The Hayekian triangle depicted in figure 1 keeps track of the relationship between (1) the economy’s consumable output and (2) the time dimension of the production process from which that output emerges. This relationship is not fixed by technological considerations but rather can vary with changes in intertemporal preferences. Variation can also be induced—although not to the benefit of the economy’s long-run macroeconomic health—by the central bank.

In its simplest application, the two legs of this right triangle measure consumption and the corresponding production time (reckoned in the number of stages of production) for an economy that has achieved an intertemporal equilibrium. A primitive instance of this intertemporal

2. The article in which the note appears, “The Monetary Policy of the United States after the Recovery from the 1920 Crisis” (in Hayek 1984), is an extract from a longer work first published in German in 1925.

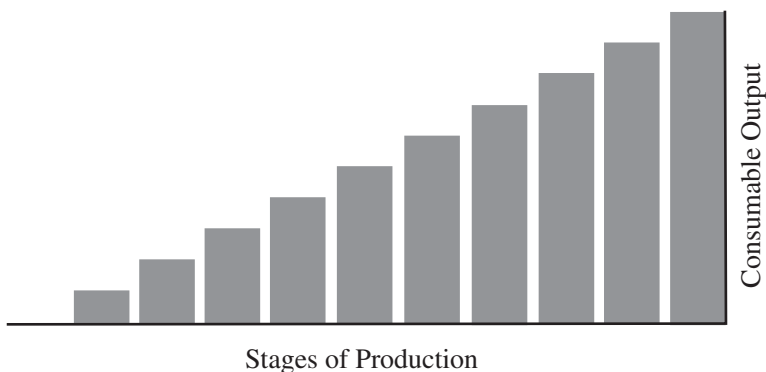


Figure 1 The Hayekian Triangle

equilibrium and of potential changes in it can be illustrated by a Robinson Crusoe who for some time is content to sustain himself by catching fish with the aid of little or no fishing equipment. A greater output of fish is possible but only if Crusoe is willing to take time away from fishing in order to fashion a net and possibly a boat. Consumable output would have to fall while the production process is being enhanced. Once the new, more capital-intensive (and more time-consuming) process is completed, however, the level of output would rise above its initial level. The new intertemporal equilibrium can be depicted by a Hayekian triangle with a longer consumption leg, representing more fish, and a longer production-time leg, representing the increase in the time spent maintaining the new production process.

The Hayekian triangle is intended to apply generally to the macroeconomy, a setting in which the decisions to forgo current consumables in order to be able to enjoy greater levels of consumption later and the decisions to alter the production process are made by different groups of individuals. The saving decisions of the first group affect the investment decisions of the second group through movements in the interest rate. A decision on the part of income earners to save more depresses the rate of interest. And with a lower interest rate, investment rises. This much follows straightforwardly from the pre-Keynesian loanable-funds theory, a theory relied upon in much of Mises's and Hayek's theorizing. Unique to the Austrian theory is the accompanying change in the intertemporal pattern of investments. A saving-induced lowering of the interest rate favors investments in the relatively early stages of production. Further,

incentives to shift resources from late-stage activities to early-stage activities are reinforced by a pronounced derived-demand effect operating in the late stages: Reduced demand for current consumables, that is, for output of the final stage of production, translates into reduced demands for resources used in stages in close temporal proximity to the final stage.

During the capital restructuring, the macroeconomy is depicted by a Hayekian triangle whose consumption leg is shortened and whose production-time leg is lengthened. The ultimate effect of the increased investment—and, importantly, the altered pattern of investment activities—is to shift consumable output forward in time. It is through just such adjustments in the face of reduced current consumption demand and a lower interest rate that the market economy, according to the Austrians, is able to bring investment decisions in line with the changed intertemporal preferences. Accordingly, policy actions by the central bank can distort the adjustment process, “forcing” behavior that is at odds with intertemporal preferences.

Forced Saving or Overconsumption?

The boom-bust cycle, in the Austrian view, is an instance in which the interest rate is lowered by a centrally directed credit expansion rather than by a change in intertemporal preferences. In Wicksellian terms, the market rate is pushed below the natural rate. The policy-induced lowering of the interest rate causes the economy to react in important respects *as if* the additional investment funds had been made available by voluntary saving. Hence, the corresponding increase in investment in the early stages of production gets labeled with the opposing term *forced saving*: Resources are allocated (at least in the initial phases of the boom) in accordance with greater saving even though the saving implied by such an allocation is not at all voluntary—and even though saving in the more literal sense of abstaining from consumption has not increased at all. The term *forced saving* used in this way signals a conflict between consumers and producers and hints strongly that there will be trouble ahead. But the very fact that it is intertemporal markets that are thrown into disequilibrium means that time must elapse before the market process that allocates resources intertemporally turns conflict into crisis. Hayek's *Prices and Production* ([1935] 1967), which is the print version of his 1931 LSE lectures, details the sequence of boom and bust with the aid of this particular notion of forced saving.

In Mises's subsequent exposition in *Human Action* (1966), forced saving takes on a substantially different meaning. Mises articulates a theory of boom and bust that is largely compatible with Hayek's formulation but not obviously so. The essential problem of the credit-induced boom is repeatedly summarized by Mises (1966, 432, 470, 563, 564, 565, 467, 569, 575) with variations of the phrase *malinvestment and overconsumption*. The aspect of the problem identified by the first term of this phrase is recognized and emphasized by Hayek. The misallocation of resources—too many resources committed to the early stages of production—is the malinvestment. But what about the “overconsumption”? Can a macroeconomy experience forced saving and overconsumption at the same time or, at least, during the same boom? On the surface it would seem that the two terms are virtual antonyms.³ A sorting out of their various meanings and applications to the different phases of the boom-bust sequence, however, can almost fully resolve the seeming contradiction and in the process produce a more thorough understanding of the Mises-Hayek theory of the business cycle.

The notion that the boom is characterized by overconsumption also follows straightforwardly from the loanable-funds theory. The market for loanable funds—or, more inclusively, for investable resources—is equilibrated by movements in the interest rate, broadly conceived. An increase in saving would be depicted by a rightward shift in the supply of loanable funds. The market would take the economy down along the demand for loanable funds to a new equilibrium at which the interest rate is lower and both saving and investment are greater.

While creating similar incentives for the business community, a credit expansion in the absence of an increase in saving would have ultimate consequences that are fundamentally different. With this policy-induced change in market conditions, the apparent rightward shift of the supply curve represents an increase in *credit* in the absence of an increase in *saving*. Saving is simply *augmented* by credit creation. Nonetheless, the rate of interest would fall and the business community would be enticed, at least initially and to some extent, to undertake greater investments and would tend to allocate the credit-financed resources to the early stages of production. But since *saving*, as still represented by the *unaugmented*

3. The use here of the adjective *forced* and the prefix *over* reflects common usage in the literature. The doctrinal issues could be sharpened by contrasting *forced saving* with the analogous *forced consumption* or *overconsumption* with the analogous *oversaving*.

supply curve, has not changed, the lower rate of interest means that the amount saved actually decreases.

Only in the extreme and unlikely case of a perfectly inelastic supply of loanable funds would there be no decrease in saving. With an upward sloping supply, credit expansion causes the volume of saving to decrease—which is to say, it causes consumption to increase. This increase in consumption associated with a policy-induced decrease in the rate of interest is justifiably labeled by Mises as *overconsumption*. Workers and other factor owners receiving increased incomes as a result of credit expansion will be induced to consume more than is implied by their pre-expansion intertemporal choices.

There is an easy—although only partial—reconciliation between Mises's and Hayek's contrasting formulations. It comes from our recognition that Hayek's *forced saving*, rather than being the antonym of *overconsumption*, is actually a synonym for *malinvestment*. With unduly favorable credit conditions, the business community is investing *as if* saving has increased when in fact saving has decreased. There is no contradiction here between Mises and Hayek but rather a contradiction recognized by both in the market forces associated with a credit-driven boom. It is this contradiction, in fact, that lies at the root of the boom's unsustainability. A fuller resolution of the differences between Mises and Hayek requires a closer look at *forced saving* and *overconsumption* as used by each.

Forced Saving: A Problem or a (Partial) Solution?

In his 1932 “Note on the Development of ‘Forced Saving,’” Hayek ([1939] 1975, 183–97) traced this concept from Jeremy Bentham and Henry Thornton through John Stuart Mill, Léon Walras, Knut Wicksell, and, although without so saying, to himself. According to Fritz Machlup ([1943] 1963, 217), Joseph Schumpeter once considered the term “an extremely happy expression” [?!], but later saw it as a “misleading phrase” which “it is better to avoid.” Machlup himself identified some thirty-four different meanings of *forced saving*. John Maynard Keynes found a use for the concept in his *Treatise on Money* (1930, 1:171), but in his *General Theory* ([1936] 1964, 79–81) he found the term virtually meaningless. There is no need to recount these many meanings and contrasting assessments here. Our concerns are relatively narrow ones, focusing largely on

Hayek's use of the term (despite his own dissatisfaction with it) and on Mises's alternative uses.

Sometime between Hayek's survey of the term's use and Machlup's probing of economic semantics, the economics profession learned the importance of maintaining the distinction between *saving* and *investment*. The words stand for two different activities such that saving and investment, in conditions of disequilibrium, can be of different magnitudes. This is a lesson that was learned or relearned while grappling with Keynes's *General Theory*, a book in which saving and investment are but two perspectives on the same magnitude and in which difficulties arise when saving is not equal to investment.

The problem with Hayek's *forced saving*, then, is that it presents itself syntactically as a kind of saving while referring contextually to a pattern of investment. Hayek himself was certainly alive to this point even as early as his *Monetary Theory and the Trade Cycle*. In a chapter titled "Unsettled Problems in Trade Cycle Theory," Hayek ([1928] 1975, 220) referred to the term as a "rather unfortunate expression." He preferred the phrase *artificially induced capital accumulation*. In his subsequent "Note on the Development," Hayek ([1939] 1975, 197) mentions Keynes's avoidance of the term in his *Treatise on Money*: "Keynes . . . rejects this terminology [*forced saving*] and prefers to speak simply of investment being in excess of saving; and there is much to be said in favor of this." But despite Hayek's and others' dissatisfaction with using the term to refer to a pattern of investment rather than a kind of saving, forced saving (both the concept and the term) has come to be considered the sine qua non of Austrian business cycle theory and particularly of Hayek's rendition of that theory.

In his most mature discussion of the boom-bust sequence, Mises (1966, esp. 548–65 and 571–78) uses the term *forced saving* a dozen or more times, but he associates with it a meaning quite different from the one intended by Hayek. Ironically, the meaning adopted by Mises is similar to that assumed by Piero Sraffa (1932), Hayek's harshest critic. Credit expansion redistributes wealth away from workers, who tend to have low saving preferences, and toward entrepreneurs and capitalists, who tend to have high saving preferences. With wealth redistributed in this way, the total amount of saving may be greater than before and the corresponding *natural* rate of interest may be lower than before. Mises refers to this extra increment of saving as "forced saving" without explicitly recognizing that his use of the term is fundamentally different

from Hayek's. This forced saving can support an extra increment of investment. But could considerations of wealth redistribution cause saving to be as great as it would have been had the economic expansion been initiated by a change in saving preferences rather than credit creation? Sraffa (1932, 47–48) seems to think it would; at least, he charges Hayek with failing to prove that it wouldn't. Mises (1966, 549) argues in summary terms that it wouldn't.

So, unlike Hayek's *forced saving*, the term in Mises's argument (as in Sraffa's) actually refers to a particular instance of saving rather than to a pattern of investment that is at odds with saving preferences. Mises differs from Sraffa, however, on the issue of the magnitude of such saving in comparison to the saving actually needed to see the policy-induced investments through to completion. Mises points out that it isn't necessarily true that such saving will be a positive amount, let alone a sufficient amount. The effect on total saving of a redistribution of wealth depends upon the particular pattern of the redistribution relative to the particular saving preferences of those who lost or gained wealth in the process.

Further, the overconsumption, which Mises takes to be a characteristic of the boom, virtually guarantees that the net change in saving, if positive at all, is far short of sufficient. According to the summary statement offered by Mises (1966, 575), "It is very questionable whether forced saving can achieve more than to counterbalance a part of the capital consumption generated during the boom." Hayek ([1928] 1975, 226) was aware early on that the term was sometimes understood as a (partial) solution to the problem (a source of saving) rather than as the problem itself (an unsustainable pattern of investment): "*It is probably more proper to regard forced saving as the cause of economic crises than to expect it to restore a balanced structure of production*" (emphasis in original).

Overconsumption and Then Forced Saving

In a few instances, Mises uses *forced saving* in a way that is wholly unrelated to the redistribution of wealth that may accompany a credit-driven boom. In these instances, the term refers to an increase in saving near the end of the boom. Consumer goods have been in high demand during the boom but are now increasingly in short supply because so many resources have been committed to production processes that are yet to yield any consumable output. The prices of consumer goods are bid up, which, according to Mises (1966, 556), "brings about the

tendency toward forced saving.” Reinforcing this tendency is the movement in the rate of interest during this same phase of the cycle (558). Entrepreneurs who are trying to secure additional—but increasingly scarce—resources to see their projects through to completion are bidding up interest rates, a circumstance that provides an incentive for would-be consumers to save instead.⁴

Used in this way, the concept of forced saving is wholly conformable with the concept of overconsumption. The two terms taken together suggest a pattern of consumption and saving that characterizes the boom-bust cycle. As the boom begins, consumption demand is high relative to the pre-expansion level. Incomes earned by workers and other factors in the early stages of production are being spent on consumer goods. To the extent that this high consumption demand is met with increased allocations to the late stages of production, resources are being *doubly* misallocated. Considerations of derived demand and of time discount are sending resources in opposite directions.

The Hayekian triangle is being pulled at both ends against the middle. Production activities in the middle stages, which have been effectively raided because of high demands in both the early and late stages, eventually reach maturity—but with yields of consumer goods that are deficient with respect to both the boom phase and the pre-expansion economy. It is at this point that consumption falls, as it must, and saving increases. Framing the concept of forced saving in this way is not suggested by Hayek (who, as we will see, denied overconsumption) but is implicit in Mises. Interestingly, the notion of the production process being pulled at both ends against the middle is clearly set out by Richard Strigl as understood by Fritz Machlup.⁵ According to Strigl ([1934] 2000, 131),

4. Without referencing the Austrians, Milton Friedman (Brimelow 1982, 6) has explained at least one instance of high interest rates on the eve of the bust in terms of “distress borrowing” by the business community.

5. For the references to both Strigl and Machlup, I am indebted to Richard Ebeling, who presented a paper titled “Fritz Machlup and His Early Writings: A Summary and Appreciation” at the Southern Economic Association meetings in New Orleans in November 2002. Ebeling demonstrates on the basis of a 1933 handwritten Machlup lecture on file at the Hoover Institution that Machlup was fully aware of the differences between Hayek and Strigl on the issue of overconsumption. (Machlup’s understanding of Strigl is based on a conference paper that predated Strigl’s book.) Ebeling also notes the match between Strigl’s accounting of the credit-induced distortions of the production process in his *Capital and Production* ([1934] 2000, 130–31) and my own graphical representation in *Time and Money* (Garrison 2001, 69).

A prerequisite of any production using roundabout methods is, of course, the corresponding supply of consumer goods which can serve to support the originary factors of production. Here [in the case of credit expansion] we are confronted on the one hand with an expanded provision of consumer goods, and on the other, with a lengthening of the roundabout production methods. Both of these movements work together in such a way that the expansion in provisions occurs at the expense of the supply of capital. . . . the consumption of capital only makes an expanded supply possible temporarily, but as a result of this consumption of capital, a continuous provision will not be possible to the same extent. At the same time, lengthening the roundabout methods of production requires that a perpetual supply from the previous stock of capital lasts in order to be able to bridge the time span until the end of the lengthened roundabout production process. In a simple formula: Expanding the production of consumer goods by consuming capital will further increase the difficulties which must result from lengthening the roundabout methods of production.

In a 1933 lecture at Columbia University (see footnote 5), Machlup recast Strigl's formulation with an explicit reference to the stages of production that make up the Hayekian triangle:

The additional credit causes an increased demand on the market for consumer goods without a substantial delay. The output of consumer goods is elastic, indeed, and simultaneous expansion of production in the construction goods industry and in the consumption goods industry takes place. We see at the same time symptoms of a lengthened and of a shortened production period, a swelling at both ends of the production structure at the expense of some middle parts of the stage system.

The subsequent maturing of those middle stages is coincident with—and virtually synonymous with—forced saving. But neither Sraffa nor anyone else claims that *this* increase in saving could be sufficient to accommodate the increased demands by the business community. Funds—and resources—needed to complete the projects initiated during the boom are simply not available. This is the essence of the internal conflict in the market process set in motion by credit expansion. Just as overconsumption eventually begets forced saving, malinvestment eventually begets liquidation. Using the two pairs of terms in this way maintains the

distinction between saving and investment while emphasizing the essential nature and temporal characteristics of the boom-bust cycle.

Overconsumption, then, is not a denial of forced saving in the Hayekian sense but rather a compounding of the problem identified with that term. That is, the market conditions during the boom are even more untenable—less sustainable—than if saving were merely involuntary or than if saving had simply not increased. The problem created by forced saving (read: malinvestment) is compounded by a simultaneous decrease in saving (read: overconsumption). Mises ([1912] 1953, 362) was aware of this compounding of effects even in his earliest exposition, when he tended to think in terms of the classical economists' subsistence fund:

A time must necessarily come when the means of subsistence available for consumption are all used up although the capital goods employed in production have not yet been transformed into consumption goods. This time must come *all the more quickly* inasmuch as the fall in the rate of interest weakens the motive for saving and slows up the rate of capital accumulation. (emphasis added)

Almost inexplicably, Hayek himself never gives play to the overconsumption that accompanies credit expansion or even acknowledges the possibility of it.⁶ In connection with his discussion of Arthur Spiethoff's analysis,⁷ Hayek ([1939] 1975, 172) refers to the scarcity of circulating capital that characterizes the end of the boom as "relative overconsumption." The *relative* appended here suggests that consumption is excessive only in comparison with the level consistent with the actual completion of the investment projects initiated during the boom. This term does not allow for consumption in excess of its pre-expansion level.

For Hayek ([1928] 1975, 218–19), overconsumption seems to be ruled out by the very concept of forced saving: "This phenomenon, we are to understand, consists of an increase in capital creation at the cost of consumption, through the granting of additional credit, *without*

6. We can imagine, however, that in light of the trouble Hayek had in defending the idea of forced saving (i.e., malinvestment) to his English audience in 1931 (Robinson 1972), he would not have been eager to add that overconsumption was occurring at the same time.

7. Spiethoff's analysis gets attention in Hayek's stocktaking article, "The Present State and Immediate Prospects of the Study of Industrial Fluctuations," originally published in German in the 1933 *Festschrift für Arthur Spiethoff* and included in translation in Hayek [1939] 1975, 171–82.

voluntary action on the part of individuals who forgo consumption, and without their deriving any immediate benefit.” (Hayek offered this statement as the “usual presentation,” objecting to it only because it supposedly works through a change in the overall value of money rather than through a change in relative prices.) In *Prices and Production*, Hayek ([1935] 1967, 88) denied even the possibility of overconsumption in the sense later emphasized by Mises. His discussion of the situation created by a cheap-credit investment boom is to the point: “As things are, for some time, society as a whole will have to put up with an involuntary reduction of consumption.”⁸ Hayek does allow for an increase in consumer demand and for this increase having significant price effects, but he allows for no positive quantity effects in the early phases of the boom. It is as if the supply of consumption goods were in fact perfectly inelastic. He even allows for the increase in incomes of workers and other factor owners and for the resulting increases in consumption demands to drive the price of consumer goods still higher. Hayek ([1935] 1967, 89) insists, however, that during the boom, “these decisions [i.e., increased consumption demand] will not change the amount of consumers’ goods immediately available.”

If we were to lay stress on the word *immediately*, we could take Hayek to be making the simple and obvious point that these goods do not and cannot simply pop into existence; all production activities take time; resources have to be reallocated. Hayek’s own emphasis, however, makes it clear that his meaning is something different. For him, the *eventual* increased consumption characterizes the *end* of the boom. Using italics, he makes the “fundamental point” that the increase in consumer demand means “*a new and reversed change of proportion between the demand for consumers’ goods and the demand for producers’ goods in favour of the former.*” In summary terms we can say that Hayek sees the boom-bust cycle as forced saving, which is *eventually countered* by intensified consumption demand; Mises sees the boom as malinvestment, which is *immediately compounded* by overconsumption. We now understand that Hayek’s *forced saving* and Mises’s *malinvestment* are the same thing. But how do we understand the contrast of views about the corresponding pattern of consumption?

8. Maintaining consistency with this and similar statements, Bruce Caldwell (1995, 16) builds into the definition of *forced saving* the actual forgoing of consumption: “[Consumers] are *forced* to consume less than they desire; Hayek accordingly attached the term ‘forced saving’ to this phenomenon.”

At this point there seems to be no room for reconciling the two views. We must ask instead: Which is more consistent with our understanding of the market forces set in motion by credit expansion? Several considerations suggest that Mises's view is the more consistent and the more plausible of the two.

First, for Hayek's view to be correct, there must be an accounting of the time lag between the increased allocation of resources toward the early stages and the subsequent reallocation in the direction of late stages. Why wouldn't workers and other factor owners in the early stages spend their higher incomes on consumer goods almost immediately? And why wouldn't entrepreneurs respond to the increased demand so that there would be not only a price effect but also a quantity effect? These are the questions posed by John Hicks (1967) in his critique of Hayek's version of the theory. Hicks could find no basis for such a lag and thus concluded that the counter-movement of resources would set in almost immediately. The Hayekian business cycle would end just about as soon as it began.⁹ Comparing Hayek with Mises (or Hayek with Strigl), we see that there is an alternative answer: While there is no lag between earning money (in the early stages) and spending it (on consumables), there is scope for both malinvestment and overconsumption to take place at once. Thinking strictly in terms of the Hayekian triangle, we can envision a pattern of reallocation in which both early and late stages get increased allocations at the expense of middle stages. This understanding of the market process set into motion by credit expansion helps dramatize the notion that malinvestment and overconsumption are compounding problems. And even beyond this two-way distortion of the intertemporal pattern of resource allocation, there is scope for temporary, that is, unsustainable, increases in production all around. Both capital and labor can be employed more intensely than is possible on a sustainable basis. Routine maintenance of machinery can be postponed, and the machinery can be kept running more hours per day or more days per week than usual. A greater proportion of the population can be drawn into the labor force, some workers can work overtime, and

9. Although without reference to Hicks's criticism, Tyler Cowen (1997, 97) reintroduces the lag problem in terms of the first-, second-, and third-round recipients of newly created funds. Once the new money has passed through the hands of commercial banks, business borrowers, and factor owners, these factor owners spend it in accordance with unchanged saving/consumption preferences. Thus, the Austrian theory, according to Cowen, fails to explain how the boom persists beyond the spending of these third-round recipients of the new money.

others can postpone retirement. These considerations allow for the production of both investment goods and consumption goods to increase simultaneously but, of course, not on a sustainable basis.

Second, Hayek may have allowed the “rather unfortunate expression,” *forced saving*, to mislead him into the belief that income earners, like it or not, were actually saving. What else could he mean when he wrote, as quoted above, that “for some time, society as a whole will have to put up with an involuntary reduction of consumption”? To the extent that such reductions actually occurred, the resources would in fact be available to continue the credit-driven investment activities, and the subsequent crisis would be less severe. The problem is precisely that people *do not* forgo current consumption. The telling point, as recognized by Mises, is that the incentives they actually face are pushing in exactly the opposite direction.

Third, even a casual understanding of economic conditions created by credit expansion warns against arguing that people are somehow forced to save while the economy becomes more capital intensive. The Roaring Twenties, (and, later, the Bullish Eighties and the Dot-Com Nineties) were years of high consumption. And the high consumption—the overconsumption—is driven by the same set of incentives that drives the malinvestment. Further, we should recognize that it’s the “good times” (read: high consumption) associated with artificial booms that make credit expansions so attractive to elected officials and policymakers. Policies that actually did force people to reduce consumption would not likely be included in any incumbent candidate’s reelection strategy.

All of these reasons for questioning Hayek’s view of the pattern of consumption during the boom-bust cycle are also reasons for accepting Mises’s view: Credit expansion gives rise to malinvestment (aka “forced saving”) and, at the same time, overconsumption. On the eve of the bust, market conditions change such that income earners actually do curtail consumption and save instead. This forgoing of consumption, which more than offsets the earlier overconsumption, is a necessary part of the market process that takes the economy back to a sustainable growth path.¹⁰

10. Hayek never recognized that the element of overconsumption was critical in responding effectively to the criticisms offered by Sraffa and (later) by John Hicks. Instead of allowing for overconsumption, Hayek ([1969] 1978) offered his mound-of-honey analogy to support the notion of a substantial lag between the increased investment spending and the subsequent increase in consumption. (Pouring money into the economy is like pouring honey into a vat: Where the honey hits the surface, a mound forms and persists as long as the pouring continues.

The case can be made for reserving the term *forced saving* to refer to this eventual eve-of-the-bust curtailment of consumption. The discussion and graphics¹¹ in the following section make just such a use of the term. The analytical coherence of the story that can be told with the aid of forced saving so conceived (together with the overconsumption that precedes it) lends credence to our treatment of these and related terms in the Mises-Hayek theory.

Overconsumption and Forced Saving by the Numbers

A change in actual saving behavior has effects that can be represented by changes in consumption and in investment, the latter being facilitated by the saving. The direction of change, which is suggested by a straightforward application of loanable-funds theory, can be depicted with the aid of a production possibilities frontier (PPF) showing sustainable combinations of consumption (on the vertical axis) and investment (on the horizontal axis).¹² An increase in saving allows for an increase in investment *by curtailing consumption*; the economy moves clockwise along the PPF. A decrease in saving allows for an increase in consumption *by curtailing investment*; the economy moves counterclockwise along the PPF.

Analogously, where the new money is injected into the economy, misallocations occur and persist as long as the injections are continued.) Understandably, Hicks found the analogy unhelpful. Taking account of overconsumption would also have been critical in Hayek's offering a coherent view of boom and bust that could compare favorably with the view offered by Keynes. If it was even dimly perceived that there was a problem here with his own formulation, the lack of a ready solution could very plausibly be a part of the answer to the question, asked by Bruce Caldwell (1998), "Why didn't Hayek review Keynes's *General Theory*?" Such an answer is not included in—but is not at odds with—the "partial answer" offered by Susan Howson (2001).

11. The graphical portrayal is adapted from Garrison 2001, a book in which doctrinal issues, such as the ones addressed here, are downplayed.

12. The PPF of figure 2 shows combinations of consumption and investment that are sustainable, implying that combinations *beyond* the frontier are unsustainable. Conventional presentations of this graphical device label the area outside the frontier "unattainable." Certainly, for points very far outside it, this adjective is appropriate. But many of those same expositions identify the frontier itself as entailing the "full employment" of labor and other resources. For macroeconomic applications, then, "unattainable" should be understood as "unsustainable." An economy with an unemployment rate temporarily below the so-called natural rate is producing an output that lies beyond the frontier. Similarly, an economy in which capital equipment is being pressed beyond its normal limits is producing an output that lies beyond the frontier. This is only to say that for the PPF to be useful, the frontier has to depict the macroeconomically relevant limits to production and not some physical or absolute limit.

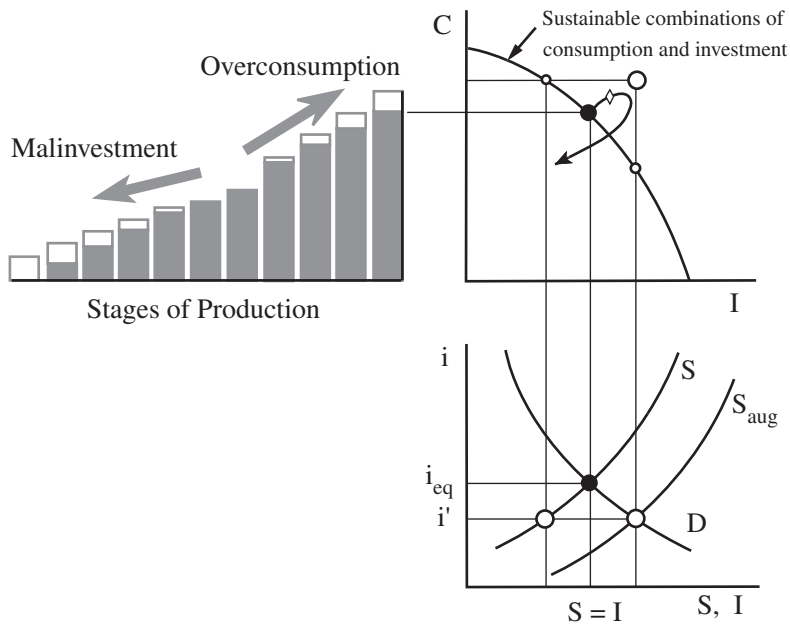


Figure 2 The Dynamics of Credit Expansion

The initial effects of credit expansion can be conceived as a hybrid of the effects of (1) an increase in saving and (2) a decrease in saving. Credit expansion increases both investment and consumption *without there being any corresponding curtailment*. In effect, it combines the positive aspects of the opposing preference changes but eliminates (or, rather, postpones) the negative aspects. Figure 2 depicts a macroeconomy in terms of the PPF, the corresponding supply and demand for loanable funds, and the Hayekian triangle. The solid points represent a fully employed economy with a market-clearing rate of interest, such that saving is equal to investment. Credit expansion is depicted by the augmented supply of loanable funds. With S_{aug} in play, the rate of interest falls from i_{eq} toward i' , motivating savers to save less and investors to invest more (as shown by the two hollow points in the loanable-funds diagram).¹³ The decreased saving translates into the PPF diagram as increased consumption. Thus, conflicting forces in the loanable-funds

13. Had the expansion been financed by increased saving rather than by credit expansion, the economy would have moved along the PPF to the small hollow point.

market correspond to forces in the PPF diagram that are inconsistent with the economy remaining on its frontier. Market forces are pushing the economy neither clockwise nor counterclockwise along the PPF but rather are pushing in a direction nearly orthogonal to the frontier. The levels of consumption and investment consistent with the two hollow points in the loanable-funds diagram correspond to the hollow point that lies beyond the PPF. The very nature of this hybrid effect helps to explain why credit expansion has such strong political appeal.

To allow for market forces that are pushing toward some point beyond the frontier during a credit expansion is to recognize that there will actually be some movement—some quantity adjustments—in that direction. New money is being lent to the business community and spent on investment projects. Closely on the heels of this effect, workers and other factor owners are earning greater incomes and spending them to a larger extent than before on consumption goods. In the early phase of the expansion, it doesn't much matter that it is the business community that gets the new money first. There is no significant lag between the earning and the spending. It all happens, according to John Hicks (1967, 208), within a "Robertsonian week." Resources are reallocated on the basis of conflicting market signals.

The low interest rate that accompanies the boom phase of a credit expansion directs resources to the early stages of production. But at the same time, the increased demand for consumption goods is accompanied by an increased (derived) demand for resources in the very late stages. Resources are pulled in that direction, too. For a time both kinds of policy-induced misallocations can occur, as depicted as a double distortion of the Hayekian triangle. The misallocation of resources (both malinvestment and overconsumption) shown in figure 2 corresponds to the economy that has reached the hollow diamond point along the adjustment path that extends beyond the PPF. The Hayekian triangle shows resources being allocated away from middle stages of production in both directions. This movement would translate into Strigl's account of the unsustainable boom as increased consumption and increased long-term capital creation, both made possible, in part, by the undermaintenance of existing capital. John Cochran (2001, 19) has introduced the memorable term *dueling production structures* to refer to this conflicted pattern of resource allocation.

While the Hayekian triangle of figure 2 gives us a snapshot of one point in the adjustment path, figure 3 allows us to track the adjustment

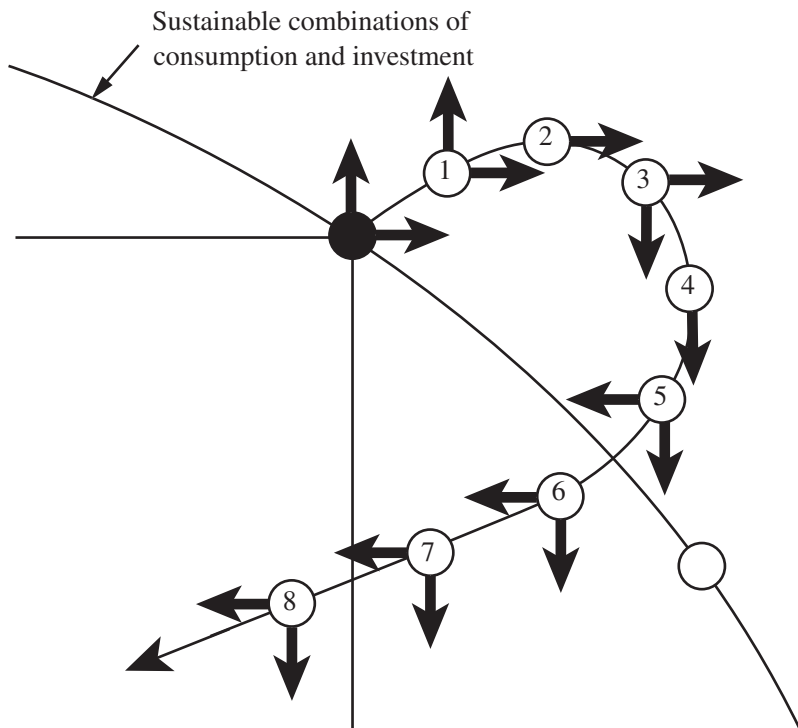


Figure 3 Boom and Bust by the Numbers

by the numbers. The hollow diamond point in figure 2 translates in figure 3 as point 1, where the economy is experiencing both overconsumption and overinvestment.

Not far beyond the PPF the limits imposed by scarcity become increasingly binding, but the low rate of interest continues to favor investment over consumption. At this point it does matter that the investment community gets the new money first.¹⁴ Resources continue to be bid into the early stages, while production processes that were in their middle stages at the beginning of the expansion—and from which resources were being misallocated at point 1—now begin to yield a declining volume of consumables. Overconsumption, measured by the vertical displacement from the initial equilibrium, reaches its maximum at point 2.

14. The dynamics of a transfer expansion, during which the money goes first to consumers, would entail a rotation in the direction of consumption. See Garrison 2001, 76.

At point 3 forced saving in the sense most conformable with overconsumption sets in.¹⁵ Projects that were in their middle stages at the outset of the expansion are now reaching maturity. Earlier misallocations have reduced the supply of consumables now available, and at the same time, interest rates have risen (the rise not shown in figure 2) in the face of distress borrowing by the business community. The boom is faltering; the consumers are under duress. Overinvestment reaches its maximum level at point 4, where the continued investment in early stages of production can be accommodated only by drawing resources from the late and final stages of production.¹⁶ With forced saving continuing at point 5, liquidation has begun. Amid bankruptcies and other, less dramatic reorientations of businesses, resources can now be allocated away from early stages of production and toward the late stages.

Under favorable institutional arrangements, the reallocation of resources that follows the bust can bring business decisions back into conformity with actual consumer preferences. In circumstances of the intertemporal disequilibrium created during the boom, the needed liquidation will undoubtedly take the economy inside the PPF. But in the absence of systemic perversities, market forces will move the economy back in the direction of the initial equilibrium.

History suggests that there is clearly a danger, especially in the face of ill-conceived policy actions by the monetary and fiscal authorities and counterproductive measures of the regulatory authorities, that the recovery phase will be preempted by spiraling downward into deep depression. Points 6, 7, and 8 show the economy moving to successively lower levels of both consumption and investment despite its already having fallen below the PPF. This is the aspect of the downturn that concerned Keynes in his *General Theory*—which is why he couldn't find application for the concept of forced saving in that book. Hayek ([1939] 1975, 176; 1975, 44) recognized that the downturn can feed on itself, but he labeled this possible development a “secondary deflation” or “secondary depression” to distinguish it from the more direct implications of an artificially low rate of interest.

15. It may be helpful in some applications to distinguish between forced saving relative to the maximum overconsumption and forced saving relative to the pre-expansion level.

16. It should be noted that if, at this point in the cycle, the central bank aggressively keeps the interest rate low, the faltering demand for investment goods may be offset by an increased demand for consumer durables, complicating the adjustment path in ways not allowed for in figures 2 and 3.

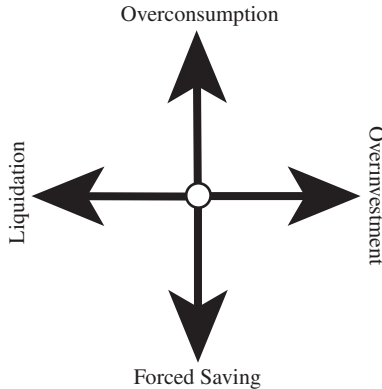


Figure 4 Four-Way Labeling Scheme

The discussion of figure 3 adopts a labeling scheme that conforms reasonably well with the use of terms in the literature. Figure 4 shows and labels the possible four-way movements during the course of the boom-bust cycle. The accompanying table indicates the nature of the actual movements at points 1 through 5; movements at points 6 through 8 are summarily labeled “secondary depression.”

Two further points of clarification are warranted. First, the directions of movement indicated by the arrows have their most straightforward interpretation in the context of a no-growth economy. In a growing economy, in which the PPF is shifting outward, the arrows represent movements relative to trend. Hence, a decrease in consumption may be only a decrease in consumption’s growth rate. Second, the real losses suffered as a result of resource misallocations during boom-bust cycles will prevent the economy from fully recovering to the initial equilibrium. That is, as a result of the cyclical episode, the PPF itself will shift inward—or, allowing for ongoing growth, it will shift outward at a slower rate.

The pattern of movement represented in figure 3 is consistent with the incentives and constraints associated with the business cycle as broadly understood by the Austrian economists. Setting out the dynamics in this way also helps to resolve terminological and substantive differences within the Austrian school and to show why the term *forced*

Table 1 Boom and Bust by the Numbers

Points on Path	Vertical Movement	Horizontal Movement
1	Overconsumption	Overinvestment
2	————	Overinvestment
3	Forced saving	Overinvestment
4	Forced saving	————
5	Forced saving	Liquidation
6	Secondary depression	Secondary depression
7	Secondary depression	Secondary depression
8	Secondary depression	Secondary depression

saving has been an obstacle to understanding both within and outside that school.

Mises v. Hayek, Again

The most significant difference between Hayek's and Mises's understanding of the issues lies in Hayek's taking an increase in consumption to be a *reversal* of the market process set in motion by credit expansion. This aspect of Hayek's exposition readily translates into an alternative PPF accounting of the process: The economy is forced clockwise *along* the frontier. (If this is what Hayek had in mind, his "forced saving" really is a forced reduction in consumption.) Then, when income earners begin spending on consumer goods, the market forces are reversed, and the economy moves counterclockwise back toward its original intertemporal equilibrium. Continued attempts by the central bank to keep the economy rotating clockwise along the frontier will, sooner or later, throw it off the frontier in the direction of depression. This reckoning is consistent with many passages in *Prices and Production* and related writings.¹⁷

17. This Hayekian understanding is incorporated in Garrison 1995, where overconsumption plays no role in the account of boom and bust. The allowance for movements beyond the frontier (both overconsumption and overinvestment) in Garrison 2001 constitutes a critical difference between these two expositions, the 2001 exposition having the greater logical integrity. Machlup, as reported by Ebeling (2002, 8), offers an account of Hayek's formulation and recognizes, in effect, that the expansion and subsequent contraction are represented by movements *along* the PPF: "Hayek holds that additional credit will increase the demand for capital goods

There are two basic problems with depicting the effects of credit expansion as a movement along the PPF. First, it denies without good reason that a general overproduction is one of the effects. It treats the constraints on the economy's overall output as if they were absolute physical constraints. Second, it exposes the theory to the sort of criticism issued by John Hicks. The basis for—and the duration of—the lag between the initial movements *along* the frontier and the subsequent counter-movements are left as unsolved mysteries. And in the absence of a lag, the policy-induced boom is nipped in the bud by market forces. As it turns out, the two problems are very much interrelated, and they have the same solution, namely, allowing for movements *beyond* the PPF. That is, while there is little or no lag between earning money in the early stages of production and spending it on consumables, there is some scope for earning and spending beyond the PPF, that is, for the (temporary) expansion of output beyond the sustainable level. This understanding is more consistent with Mises's *overconsumption and malinvestment* than with Hayek's *forced saving*.

There remains, however, an inconsistency in Mises's characterization of the boom. Mises allows for—and even emphasizes—overconsumption but does not allow for—and even denies—overinvestment. By *overconsumption*, Mises can't mean a counterclockwise rotation along the PPF. This movement would be contradictory to his understanding of malinvestment. Nor is the term intended to mean “*relative overconsumption*” in the sense suggested by Hayek or merely a *tendency* toward overconsumption but one that does not materialize as actual quantity adjustments. He must mean an actual (but temporary) movement beyond the frontier in the direction of consumption. Consider, for instance, that overconsumption “squanders capital and impairs the future state of want-satisfaction” (Mises 1966, 432). Also, “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 displayed by the expanding entrepreneurs” (556). “As, apart from forced saving [which occurs later in the process in accordance with figure 3], the boom itself does not result in a restriction but rather in an

and that the production of production goods will be enlarged at the expense of the production of consumer goods. Only in a later step [will] the inserted credit, converted into income of the employed factors, . . . increase the demand for consumption goods, rendering unprofitable the enlarged construction goods industries.” Machlup considered Strigl's formulation superior to Hayek's in this regard.

increase in consumption” (559). And again, “the boom affects also the consumers’ goods industries. They too invest more and expand their production capacity” (560).

If entrepreneurs in both the early stages and in the late stages are investing more and expanding their production capacity, how can there be no overinvestment? As already argued, some of the resources are drawn from the middle stages. (This is the aspect of the policy-induced misallocations that, in due course, necessitates forced saving in excess of the prior overconsumption.) But it would be difficult—and unnecessary—to argue that *all* of the misallocated resources must have such origins. There is some scope for a more general overinvestment. The employment of labor beyond the level that can be sustained indefinitely allows for the expansion of productive capacity in almost all stages of production. In the absence of this overinvestment and abstracting from ongoing growth, the Austrian theory would have output levels in middle stages actually falling—and falling enough to accommodate expansions in both early and late stages. But with the possibility of overinvestment taken into account, the theory can allow for the output level in most stages to be rising—but rising more rapidly in the early and late stages in comparison to the middle stages. This combination of absolute and relative effects makes the theory more plausible and squares the theory with our understanding of the PPF.¹⁸

Mises (1966, 559), however, was insistent that malinvestment and not overinvestment was the *essential* feature of the boom. He attributed the common misperception of the matter to faulty observation.

The observer notices only the malinvestments which are visible and fails to notice that these establishments are malinvestments *only* because of the fact that other plants—those required for the production of complementary factors of production and those required for the production of consumers’ goods more urgently demanded by the public—are lacking. (emphasis added)

The second *only* in this passage is unwarranted. The resources are coming *only partly* from later stages; they are also coming from the increased use of labor and capital equipment beyond the levels associated with

18. Although more plausible and more consistent with Mises’s emphasis on overconsumption, this understanding suggests that Mises’s original account of the “counter-movements,” which features in summary fashion the prices of consumption goods relative to the prices of production goods, is inadequate. (I owe this observation to Ivo Sarjanovic.)

full employment. Notice, too, that whereas this passage seems almost to deny overconsumption, consistency would demand that Mises issue a similar statement to the effect that the observed overconsumption is achieved *only* by the withdrawal of resources from the earlier stages of production. Mises (1966, 560) illustrates the essential malinvestment with a parable in which both overinvestment and overconsumption are ruled out by construction. During an artificial boom,

the whole entrepreneurial class is, as it were, in a position of a master-builder whose task it is to erect a building out of a limited [i.e., fixed] supply of building materials. If this man overestimates the quantity of the available supply, he drafts a plan for the execution of which the means at his disposal are not sufficient. He oversized the groundwork and the foundations and only discovers later in the progress of the construction that he lacks the material needed for the completion of the structure. It is obvious that our master-builder's fault was not overinvestment, but an inappropriate employment of the means at his disposal.

Mises's parable is a memorable one for its vivid illustration of a point that is wholly ignored outside the Austrian school. But it does not demonstrate the absence of overinvestment any more than it demonstrates the absence of overconsumption. And since Mises had affirmed—even emphasized—the problem of overconsumption in a less restrictive setting than is created for his master builder, he should have no reason to deny the problem of overinvestment. What he should deny, of course, is that overinvestment is the *whole* problem.

As understood in the context of a macroeconomy, it would seem that while malinvestment is unique to the Austrian theory, both malinvestment and overinvestment (along with overconsumption) are essential to it. Malinvestment without overinvestment would allow the counter-movements to set in early, undoing the damage before much damage is done. Overinvestment (along with overconsumption) without malinvestment would allow the economy to experience a temporarily high growth rate, moving first beyond and then back to the PPF but without there being any intertemporal misallocations requiring painful adjustments that can send the economy inside the frontier. Only with both prefixes (*mal-* and *over-*) in play do we have (1) a problem of intertemporal misallocation and (2) time for that problem to fester before the internal conflict of market forces eventually turns boom into bust.

Reconciling within and beyond the Austrian Theories

In describing the ill-fated growth path depicted in figure 3, *overconsumption* and *forced saving* are cognates. The market forces set in motion by credit expansion cause income earners first to consume more than they otherwise would have and then to consume less than they otherwise could have. This use of the terms squares fully with Mises's use of *overconsumption* and with several instances of his use of *forced saving*. The corresponding *overinvestment*, although denied by Mises, is consistent with a full understanding of the nature of the credit-driven boom.

Hayek's use of *forced saving*, as Schumpeter suggested, is better avoided, if only because what is called saving is actually investment. Still, his usage is broadly in line with the meaning that corresponds with the downward movement of the economy's adjustment path as depicted in figure 3. Narrow and broad understandings are captured in a summary treatment of the issues in Garrison 2002, 66:

On the eve of the bust, distress borrowing allows some producers to finish their projects and minimize their losses. In this phase, the high interest rates bolstered by distress borrowing cause people to curtail their consumption and to save instead. The resources thus freed up constitute an explicit form of "forced saving"—a term used more broadly by Hayek to characterize all the boom-related commitments of resources that are at odds with consumers' time preferences.

The view that economic booms were characterized by overinvestment was commonly held when the Austrian theory was being developed. This view is still clearly evident in today's mainstream macroeconomics. Monetary expansion sends the economy up an upward-sloping short-run aggregate supply curve. Or, alternatively, the economy moves up along a downward-sloping short-run Phillips curve. (The effects of monetary expansion could be similarly expressed in the context of New Classicism or New Keynesianism.) In these reckonings, overproduction relative to the output levels associated with the corresponding long-run aggregate-supply and Phillips curves is the essence of the boom. And owing to the underlying structure of this mainstream theorizing, namely, the high level of aggregation adopted, there is no accounting for malinvestment or for forced saving in any of the relevant senses without fundamentally recasting the theory.

The opportunity for reconciliation is quite different from the Austrian point of view. The movements of the mainstream aggregates are both plausible and consistent with casual observation. There is little to be gained in denying these movements and insisting that the boom is characterized exclusively by misallocations within the output aggregate rather than misallocations accompanied by a temporary bloating of the aggregates themselves. In fact, as this paper has argued, a productive reconciliation lies in the direction of incorporating just such movements of aggregate output into the Austrian theory. With these movements (overconsumption as well as overinvestment) taken into account, the Austrian theory encompasses mainstream theory and observations while at the same time enhancing its own internal logic.

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