Abstract: This paper concerns itself primarily with the question of what makes the boom unsustainable in Austria business cycle theory. This question has been posed before and answers typically take one of two forms. First, the boom may be predicated on the belief that more resources exist than reality provides. Some resource constraint becomes binding, which puts a halt to an undue economic expansion. Alternatively, the boom may be fostered by increasing rates of inflation by the monetary authority. The calculational chaos caused by ever escalating rates of inflation leads ultimately to an economic collapse. In this paper we bolster the former argument. In particular we point out shortcomings of previous elaborations of the macroeconomic resource constraint. We conclude with a refinement to the concept of the “subsistence fund”, first introduced by Eugen Böhm-Bawerk to explain a basic precondition of economic expansion, but dropped by later Austrian-school economists as a constraint on the boom phase during the business cycle.
The Subsistence Fund as a Macroeconomic Resource Constraint

1. Introduction

What happens during the boom that brings the good times to an end? Phrased alternatively, what is it about some economic expansions that makes them unsustainable, while others progress indefinitely without significant setbacks? This paper answers these questions by focusing on the real resource constraint that limits the absolute magnitude of investments that can be undertaken at any period of time, and also organizes the structuring of these investments into sustainable or unsustainable patterns.

The basics of Austrian business cycle theory (ABCT) trace their roots back to this question of the sustainability of economic expansion. In its most simple form, there is a natural (or pure) rate of interest that equilibrates two markets simultaneously. First, it assures that savings or its analogue, reduced consumption, equals investment. Any increase in consumption directs present resources to that end, and thus makes fewer available for investment (and ultimately, future consumption). The role of the interest rate in balancing present against future consumption demands is not unique to the Austrian-school, and is widely accepted by all major schools of economic thought.

The unique Austrian-school contribution to the macroeconomic significance of the interest rate is that it signals sustainable patterns of the time structure of production. Decreases in the natural rate of interest signal to investors that consumers have deferred their consumption demands until a later date, which can be interpreted best as a decrease in present consumption and a corresponding increasing in future consumption. This increase in future consumption can only be met by producers if they invest accordingly to provide for the necessary economic growth. However, this investment will necessarily be in the form of more capital-intensive or more
roundabout projects. This fact was one of the great contributions of Eugen von Böhm-Bawerk (1930) as he showed that since waiting has a cost due to our preference to consume sooner rather than later, any longer-dated but ultimately more productive investment would only be undertaken once the shorter-dated projects had been exhausted. Thus, as the natural rate of interest falls, investors alter the temporal pattern of investments to more roundabout ends, with the ultimate goal of increasing the capital intensity of the production structure to result in a greater amount of output at some future date.¹

Things go wrong when the money rate of interest on the market for loanable funds does not correspond with this pure rate of interest. The pure rate of interest, borrowed from the Swedish economist Knut Wicksell (1962: 102), is the rate that would obtain if all resources were lent or borrowed in real terms. While once upon a time a primitive economy may have existed with an intertemporal market in such terms, the monetary economy uses saved monetary income to the same end. The use of money as the basis for the loans market is problematic as it creates a “loose joint” of sorts whereby the magnitude of loanable funds can be inconsistent with the amount of unconsumed income (Hayek 1941: 408). This comes either from the fractional-reserve banking system issuing loans against its deposit base (“fiduciary media” according to Mises (1953: chap. 2)), or from the central bank increasing the monetary base in a bid to reduce the market rate of interest. In either case the result is a divergence between the natural and market rates of interest, with the latter trending lower than the former.²

¹ Confusion abounds surrounding what qualifies a production process as roundabout. Modern Austrian-school economists tend to equate the concept with a temporally lengthened period of production, a definition Bohm-Bawerk denied emphatically (1830: 82; 1959: chap. 1 and esp. 2fn11 and 84fn8); see also Hayek (1941: 73-74) and Rothbard (2004: 543). Howden (forthcoming; 2016b) shows roundabout production methods to be those relying on a greater degree of capital intensity or a more durable capital stock, and Howden (2016a) contrasts this definition with 15 other elucidations of the concept of roundaboutness.

² Horwitz (2000: 77) explores some implications of the natural rate trending higher than the market rate of interest, though this case is arguably less interesting for business cycle theory.
This divergence between the two rates of interest breeds instability as the two equilibrating roles of the natural rate of interest are upset. Though somewhat paradoxical to the uninitiated, it is this two-fold disequilibration that creates the boom phase of the business cycle. The bust phase, by contrast and as we shall see, is the natural (and healthy) consequence of the market re-equilibrating the production structure back to a sustainable footing.

The unsustainable adjustments made during the boom phase are binary, and mirror the two role equilibrating roles of the natural rate of interest. On the one hand, “overconsumption” implies that an unsustainable amount of present consumption occurs relative to the amount of investment. On the other hand malinvestment drives investment into roundabout production methods that will not mature in a manner consistent with savings and consumption preferences.

Superficially one can treat overconsumption as the increase in consumption that must accompany a reduction in the market interest rate which is not caused by the decrease in consumption that would be necessary in the absence of credit or fiduciary media creation (as in Garrison 2004). This outcome is undoubtedly true, though the essence of overconsumption can be refined further. Hayek, in an appendix added to his second edition of *Prices and Production*, saw overconsumption as the outcome of the need for greater degrees of real savings (unconsumed resources) to be directed to capital maintenance as the boom progresses (Hayek 2008: 320-321). This is necessary as the reduction of the market rate of interest has enticed an increased amount of capital investment which is of a non-permanent nature and thus in need of a depreciation allowance. Over the boom phase, “too much” consumption occurs relative to the eventual need for real savings to be re-invested to stave off capital consumption in the form of a depreciated capital stock. Mises attributes overconsumption, on the other hand, to the distortion of monetary calculation during the inflationary boom that causes an overestimation of income and wealth
(Mises 1998: 546-547). Initially in the boom additional or cheaper credit allows for the increase in consumption, and as the business cycle progresses a drawdown in cash balances feeds the cycle (Salerno 2012: 20). The wealth effect that accompanies this over-estimation of income leads to an inducement to consume with the expectation that capital maintenance can be covered by the enhanced wealth position of the market.³

The unsustainable skewing of the temporal ordering of capital is variously referred to as “forced saving” (Mises 1998: 555-556) or “malinvestment” (Hayek 1935).⁴ For Mises the disruption comes from the actual increase in savings that results from the credit expansion reallocating savings from laborers, who generally have high time preferences, to capitalist-entrepreneurs with lower time preferences. Hayek’s use of malinvestment describes a pattern of investment inconsistent with underlying time preferences. The result is the same in both cases – investments are made in channels that will not mature into consumable output until a date inconsistent with savers’ preferences. As it were, the date when the fruits of investment become realizable will be later than the date at which savers thought they could increase consumption based on their prior investment plans.

This summary of the two aspects of ABCT is necessary to the extent that it outlines what the theory suggests the source of disequilibration during the boom, but not necessarily what is problematic about it. In other words, attention is afforded to the shifts during the boom that differentiate the capital structure and consumption-savings patterns from both the sustainable boom and the bust phase of the business cycle without delving into too-much detail about the

³ Compare with Rothbard (2004: 993-994). Both Mises and Rothbard denied that the interest rate was an inducement to save, but rather that it was the outcome of the valuation of future relative to present satisfactions endowed by a good (Mises 1998: 525; Rothbard 2004: 377-378).
⁴ Garrison (2004) distinguishes between Mises’s and Hayek’s use of forced saving and malinvestment and provides a good primer on this aspect of ABCT.
question of “why” these shifts must necessarily reverse. Various explanations have been given for why the boom is unsustainable, and these are where the present paper starts in a bid to increase our understanding of why a seemingly healthy boom must necessarily turn to bust.

In section 2 we overview the historical origin of the resource constraint in ABCT. Although delving into the history of the concept may seem unwarranted in a theory-focused paper, it is necessary to the extent that modern Austrian-school economists invoke resource constraints that were applicable under different economic conditions, and which are inconsistent with later refinements to the resource constraint. Sections 3, 4, and 5 compare, contrast and critically assess the resource constraint as used by the third-generation Austrian-school economists, mainly Mises, Hayek and Strigl. Section 5 contains also sundry comments by more modern ABCT theorists as to what they think the resource constraint is. In section 6 we reintroduce the subsistence fund concept as a key aspect of why the Austria business cycle must turn from boom to bust. We offer also some qualitative comments on the factors that determine the subsistence fund, with section 7 concluding.

2. From Wages to Subsistence Fund

Writing at a time when agriculture was still the primary line of production, British classical economists formulated the idea that there is a real constraint in the present period on future output. Workers had to subsist on the output of the past while their new crop matured into consumable output. This simple fact provides the simple and “self-evident” core of the wages fund theory (Senior 1854: 153): namely, that there are competing uses for output and one of them is to provide the means of subsistence for the workers during the period which a production
process matures. Such reasoning culminated in Jevons’s (1884: 221) sunspot theory of the business cycle, whereby solar activity influenced whether a harvest would be plentiful or deficient, and thus whether workers would have ample means of sustenance to get them through the subsequent cycle.

It was this self-evident truth, channeled through Jevons (1911) that led Böhm-Bawerk (1930) to revisit the topic. However, he did so by challenging the prevailing wages fund orthodoxy in two areas. First, the idea that the fund would need to sustain a production process of a fixed duration (i.e., one year) and second, the general disregard for the fact that the output from any one period was not necessarily consumable, but could be an input for another production process (i.e., circulating capital). From these brief criticisms Böhm-Bawerk bolstered the concept and integrated it into his simple growth model.

Böhm-Bawerk’s growth model centered on two points. Production processes that are more roundabout will by necessity be more productive than shorter processes since equally productive but more direct process will be employed first (Böhm-Bawerk 1930: 20). Since these more productive production processes imply that a longer period must pass until they mature into consumable output, a fund of pre-saved resources must be sufficiently large to sustain workers until this final output is produced (Böhm-Bawerk 1930: 400). Similar to the doctrine of the wages fund, Böhm-Bawerk saw the necessity of a fund to provide for workers until the final product is complete, and this final good must be consumable in order to replenish those exhausted during the production process.\(^5\)

\(^5\) Schumpeter (2006: 606fn29) puts forward that Bohm-Bawerk’s work on the subsistence fund is the outcome of taking Ricardo’s capital theory and mixing it with a correct theory of value. Although Ricardo’s thoughts on the matter are isolated to fragments, Schumpeter views his capital theory as leading logically to all physical capital being subsumed into more general subsistence fund.
Besides setting the wages fund doctrine within a more general theory of growth, Böhm-Bawerk dismissed the term “wages” as an adjective and renamed the general concept the “subsistence fund”. The reason for the shift was the connotations associated with the term “wages”, which seemed to suggest that resources were only necessary to sustain workers. Of course, capitalists and landowners would also be foregoing remuneration during the longer production process and the fund would also need to sustain them until final consumable output was complete (Böhm-Bawerk 1930: 70). Thus the more inclusive “subsistence fund” was chosen to allude to the fact that the issue was not about the class of contributor to the production process, but rather that some remuneration was necessary for any of the involved parties involved in the more roundabout production processes.6

One problem faced early on by Böhm-Bawerk was in identifying what resources constrained the production process. Unlike his classical predecessors, Böhm-Bawerk did not limit his subsistence fund to a stock of consumer goods (as was the case with the wages fund) but instead reckoned it as the sum of the wealth of the economic community (Böhm-Bawerk 1930: 321). All wealth exists as either consumer goods in the present, or higher order goods that will one day yield consumer goods (i.e., circulating and durable capital). Furthermore, the flow of consumer goods stemming from the higher orders of capital also implies that the resource constraint must be conceived as a flow instead of a stock variable. Synchronous production processes will continually drain from and augment the means of subsistence. Thus not only does the fund exist as a stock at any one moment, but also as a flow contingent on this stock. As a metaphor for the

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6 This refinement of the wages fund doctrine was appealing to neo-classical economists, and variants and elaborations to Bohm-Bawerk’s subsistence fund can be found in Taussig (1896), Wicksell (1936), Pantaleoni (1898), and later Mises (1953), Strigl (2000), Dorp (1937) and Euken (1954).
resource constraint limiting growth the subsistence fund, as Böhm-Bawerk formulated it, was admirable. But moving it past the metaphor stage proved cumbersome.

3. Mises and the Macroeconomic Resource Constraint

Mises’s (1953) initial formulation of his ABCT is consistent with the basic analogy of Jevons’s sunspot cycle, but predicates it not on poor harvests but on Böhm-Bawer’s subsistence fund. The cause of the decline in the subsistence fund is to be found in unsustainable changes to the structure of production. The maximum rate of sustainable economic growth occurs, for Mises (1953: 360), when:

[t]he period of production which is thus defined [is] of such a length that exactly the whole available subsistence fund is necessary on the one hand and sufficient on the other for paying the wages of the labourers throughout the duration of the productive process. For if it were shorter, all the workers could no longer be provided for throughout its whole course, and the consequence would be an urgent offer of the unemployed economic factors which could not fail to bring about a transformation of the existing arrangement.

This role of saved resources as a limit to economic expansion mirrors Böhm-Bawerk’s use, and echoes the general thrust of the wages fund doctrine. For Mises, the boom-bust cycle occurs when entrepreneurs are fooled into think that the subsistence fund has increased. With investor expectations uncoupled from reality, entrepreneurs partake in more roundabout production processes. As the average period of production is lengthened, some means of subsistence will be necessary to see workers (and also landowners and capitalists, though Mises does not focus on
through to the day when their investment matures into consumable output that can once again continue to sustain them. Since the initiation of the more roundabout production process is based on erroneous expectations,

[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…. The means of subsistence will prove insufficient to maintain the labourers during the whole period of the process of production that has been entered upon. Since production and consumption are continuous, so that every day new processes of production are started upon and others completed, this situation does not imperil human existence by suddenly manifesting itself as a complete lack of consumption goods; it is merely expressed in a reduction of the quantity of goods available for consumption and a consequent restriction of consumption. The market prices of consumption goods rise and those of production goods fall. (Mises 1953: 362)

The outcome of this necessary adjustment is, for Mises, twofold. On the one hand consumers must increase their savings so that previously undertaken investments can be completed (lest an additional drop in output compound the problem further in the future). Alternatively, as consumers reassert their preference for present goods and draw down their savings, the price of consumer goods must decline relative to capital goods. This binary nature of the adjustment process is alluded to in Hayek (2008: 268) and explicated further in Bresciani-Turroni (1936) and Bagus and Howden (2010: 66-69).

Mises’s use of the subsistence fund in his first attempt at ABCT was not without its difficulties. He provides no reason as to why the subsistence fund must prove insufficient to support the erroneous pattern of investments. As a conjecture he states that a day of reckoning will come, but
does not substantiate the point further. More troubling is the outward appearance of this day of reckoning – that consumer goods prices must rise relative to those of capital goods. In its full form, ABCT requires both overconsumption and malinvested resources to make a resource constraint become binding. It is difficult to understand why the price of goods that were consumed in excess during the boom (consumer goods) must rise relative to those that were not purchased in excess but merely misallocated. In other words, since one cannot speak of ABCT as an “overinvestment” theory of the business cycle, one cannot claim that the over-demanded resource found in consumer goods must rise relative to the resource which was not over-demanded during the boom.

Mises made use of variants of the subsistence fund until 1936, though not in an entirely consistent way. In 1931 he comments that “roundabout methods of production can be adopted only so far as the means of subsistence exist to maintain the workers during the entire period of the expanded process” (Mises 2006: 110). However, on the same page Mises claims that the supply of capital goods is the limiting factor on the “opportunities for production”.

Terminological differences aside, it is clear that Mises here sees some resource constraint as relevant for the sustainability of the economic expansion (Braun 2014: 213). In this admittedly short note, Mises refers ambiguously also to the availability of “resources” as constraining the boom (1931: 162). This passage marks the last time that he would refer to a real constraint as limiting the expansion phase of the boom-bust cycle.

By 1936, Mises stopped referring to the means of subsistence as the limiting factor in the boom. In its place he notes that,

the material means of production and the labor available have not increased; all that has increased is the quantity of the fiduciary media that can play the same role as money in
the circulation of goods. The means of production and labor that have been diverted to the new enterprises have had to be taken away from other enterprises. Society is not sufficiently rich to permit the creation of new enterprises without taking anything away from other enterprises. As long as the expansion of credit is continued this will not be noticed, but this extension cannot be pushed indefinitely. (Mises 1996: 29, emphases added)

Here Mises is clear that it is the means of production, e.g., circulating capital and the originary factors of production, which limits the boom. Furthermore, it is not a real resource constraint leading the cessation of the boom, but rather the fact that the credit expansion will necessarily come to an end.\(^7\)

By 1949, Mises scuttled not only the subsistence fund as a resource constraint but also shifted the focus away from consumer goods as having any relationship with the business cycle beyond the phenomenon of overconsumption (Braun 2012: 201).\(^8\) Mises asserts that Böhm-Bawerk’s use of the “supply of subsistence” is easily misinterpreted and suggests an objective constraint that is difficult to reconcile with reality (1949: 484-485). He doubts that such a constraint can be

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\(^7\) Mises refers to the case where credit expansion continues unabated as the “crack-up boom” (1949: 427). Escalating rates of inflation impair economic calculation sufficiently to bring the boom to a close. While some booms end in a hyper-inflationary spiral (ad Mises had the recent memory of the German, Austrian and Hungarian episodes during the inter-war period) as an empirical tendency the vast majority of booms fizzle out in some other manner. It is this empirical tendency that Tullock (1987) alludes to when he questions why the forces in ABCT must half the boom without escalating rates of inflation. Although Rothbard (2004: 1018-1021) devotes a whole section to this topic, his final answer is that a flight to real values will put an end to the hyperinflationary episode eventually. Salerno (1989) provides a similar answer, though relies on the monetary authority reducing the rate of monetary expansion before hyperinflation sets in, e.g., the Volcker Fed in the late 1970s which gave a proximal impetus to the recession of 1980-82. Neither of these replies really get to the point of why, exactly, the boom must draw to a close without either hyperinflation or the monetary authority putting a halt to its inflationary policies.

\(^8\) One passage does refer to the subsistence fund as the pre-saved stock of consumer goods used to satisfy the wants of those involved in the longer production process, and also asserts that the quantity of consumer goods must be accumulated prior to embarking on a longer period of production (Mises 1949: 488). This isolated passage notwithstanding, Mises does not integrate this thought any further into his more detailed comments on the business cycle.
identified in any objective manner, since the resources necessary for a given project “is valued by men, and their subjective judgments decide whether or not it is sufficient” (Mises 1949: 485).

In a bid to keep the general idea of a resource constraint relevant, even one determined subjectively by the demands of individuals involved in the production process, Mises derives a chain of reasoning whereby pre-saved consumer goods (i.e., the subsistence fund, but not in as many words) are converted into intermediary products that later mature into consumer goods (1949: 488). What constrains the production process is not the consumer gods per se, but an adequate amount of higher-order goods necessary to complete the previously undertaken investments. Consequently, capital goods become the relevant resource constraint.

Although his argumentation sounds quite similar to the resource constraint in Mises (1953), the object of his resource constraint changes. When commenting on the reason why entrepreneurs are led to err en masse, Mises states that “the drop in interest rates falsifies the businessman’s calculation. Although the amount of capital goods available did not increase, the calculation employs figures that would be utilizable only if such an increase had taken place” (1949: 550, emphasis added). This point is expanded on some pages later:

   A further expansion of production is possible only if the amount of capital goods is increased by additional saving, i.e., by surpluses produced and not consumed. The characteristic mark of the credit expansion boom is that such additional capital goods have not been made available. The capital goods required for the expansion of business activities must be withdrawn from other lines of production. (Mises 1949: 554)

The limiting factor here is capital goods, in distinction to his earlier presentations that stressed scarce consumer goods. One could see this as an adoption of Böhm-Bawerk’s more general definition of the subsistence fund that includes the aggregate wealth of the economy, i.e.,
consumer and capital goods. However, it is not that Mises stressed capital goods more than consumer goods, but that consumer goods now play no role. As he comments on the outcome of the boom phase, entrepreneurs “embark upon an expansion of investment on a scale for which the capital goods available do not suffice. Their projects are unrealizable on account of the insufficient supply of capital goods. They must fail sooner or later” (Mises 1949: 556, emphasis added).

Mises’s new view on the resource constraint is most apparent in his master-builder analogy (1949: 557). Here Mises argues that the whole entrepreneurial class acts as a master-builder who overestimates the quantity of bricks available and begins building more foundations than will be possible to complete. Only after completing partially some of the buildings does he realize that the intermediary goods, i.e., bricks, are in short supply.

Mises’s formulation of the resource constraint as the scarcity of capital goods in Human Action fares no better than his previous solutions. Represented as they are as the produced means of production, should capital goods become scarce their price would rise to clear the market. Furthermore, a deficiency of inputs at any one stage would cause profits to decline as the price of the scarce inputs rose, but the stage that produces this scarce good would now realize a relative increase in profitability. No general economic downturn would result but rather stage-specific profit levels would be altered, with some stages performing worse than others (Braun and Howden forthcoming). Finally, as Mises’s constraint becomes binding we should see a lack of higher order goods on the eve of the bust. Instead this transition phase is marked by a general glut of such goods with no willing buyer, which is what necessitates their downward price adjustment (Braun 2014: 216).
4. Hayek on the Macroeconomic Resource Constraint

Hayek’s first full-length foray into the business cycle debates offered a different explanation for why the boom must turn to bust. Whether a given period of production is sustainable depends on the relationship between expenditures on producer relative to consumer goods (Hayek 2008: 237). He illustrates this sustainability aspect by first constructing an equilibrium production structure where nominal expenditure is set at 120 units, with 80 directed to productive spending and 40 on final consumable output. He then assumes that entrepreneurs are given 40 additional units of money which are not freed up by a reduction in consumption expenditures. If the entrepreneurs spend all 40 units on productive activities, the ratio of expenditures on producer to consumer goods increases to 120:40 (from 80:40 originally). The result is a longer production process, which Hayek claims is unsustainable as it cannot be maintained. He gives two reasons why this is so.

In the first reason he argues that the shift in productive activities away from final consumable output will cause the prices of consumer goods to rise. These prices will normalize once the new investments mature into an increased amount of consumer goods, but in the meantime “society as a whole will have to put up with an involuntary reduction of consumption” (Hayek 2008: 268). This argument has an obvious analogue to the subsistence fund argument to the extent that in both cases the boom turns to bust as consumer goods become relatively scarce, and that their prices will rise to signal and alleviate this scarcity. However Hayek’s argument by itself is deficient in that it does not explain why a general economic downturn should occur, but rather why consumers’ plans will be disrupted in specific markets. One could make the argument that production expenditures will become unsustainable if aggregate expenditures on consumer goods increase. However this is not a point that Hayek makes, nor is it possible as he begins his
example with a fixed volume of expenditures and then augments this volume by directing it exclusively to producer goods. Consumption expenditures can only increase, according to Hayek (2008: 243), “if consumers’ money receipts should rise” an outcome that cannot happen in his example.

Hayek’s second argument as to why the new expenditure ratio cannot be maintained is the outcome of the increase in incomes to the factor owners at the higher stages of production where the new money stream is directed (Hayek 2008: 268). As these incomes increase, consumer goods prices will follow suit as an income effect directs increased expenditures to final output. As the expenditure stream is redirected a greater proportion of expenditures is directed to consumer goods and less to producer goods. The result is a return to a less roundabout production structure and a corresponding economic setback as this adjustment takes place.

This argument provides no better a solution than the first. Hayek here does not explain why the additional income in the hands of producers triggers an economic adjustment that is more painful in the case where the income is financed by credit expansion than when it is backed by real savings.

Hayek’s macroeconomic constraint is almost always nominal in nature, and usually the result of an unsustainable pattern of expenditures. His later comments on the subsistence fund illustrate the difficulties he had in relying on such a seemingly fluid resource constraint.

In Hayek (1936: 511), he defines the subsistence fund as a stock of capital goods that will create a stream of consumer goods at a future date, though he laments the use of the term “fund” to describe a phenomenon with “no single uniquely defined period of time.” Similarly, Hayek (1975: 150-151) defines the subsistence fund “some amount of money” representative of “free
capital” which is available to produce consumer goods. In this way the subsistence fund is not of interest to Hayek since the scarcity of capital is dependent not on a pre-saved (or even continuously-saved) fund, but rather on the distribution of demand between consumer goods and capital goods (1975: 151). In his last foray into business cycle theory, Hayek devotes a whole chapter to “Capital and the Subsistence Fund” (1941: chap. 7). The chapter distills to a defense of his new view on capital as a stock of non-permanent resources and not the produced means of production. Since comments on the subsistence fund are so limited in the chapter, one gets the impression that the subsistence fund is necessary because of this non-permanent nature of capital which necessitates continual investment to maintain its stream of services. When Hayek does get around to defining the subsistence fund, he refers to it “not [as] a stock of actual means of subsistence, but only a stock of resources which can be turned in the means of subsistence, i.e. into consumers’ goods” (1941: 85). Again, in dealing with higher order goods as a resource constraint, Hayek does not answer the question of why a general economic downturn should result, instead of downturns in the relevant sectors offset by expansionary phases in the sectors producing the needed intermediate goods.

5. Other Austrian-school Views on the Macroeconomic Resource Constraint

The last economist to attempt to salvage the subsistence fund and to elevate it beyond the status of metaphor was Strigl (2000). However, instead of building directly from Böhm-Bawerk he returns to Jevons’s (1911) discussion of the role of circulating capital in the production process. Although Böhm-Bawerk set off from of Jevons’s comments on the matter when building his own theory. Strigl’s return to Jevons represented a major departure from this aspect of Böhm-Bawerk’s capital theory. After all, Jevons’s argued that it was the “ordinary sustenance” required
to support works during their employment that represented the “true form of capital” (Jevons 1911: 243), something that Böhm-Bawerk denied explicitly (Böhm-Bawerk 1930: 42). For Jevons “free” or “uninvested capital” are the resources available in the form of “food” for workers and “maintenance” for invested resources necessary for a production process to mature into the form of free capital once again (1911: 242).

Strigl latched on to this idea and integrated the main point made by Jevons with the terminology and growth theory formulated by Böhm-Bawerk. By renaming Jevons’s “free capital” as the subsistence fund, Strigl deviated from Böhm-Bawerk’s use of the term, instead identifying it more narrowly as a sum of consumer goods. However, since consumer goods are produced anew each day it was difficult to see how exactly a continually renewed fund could constrain an ongoing production process.

The self-evident core of the wages fund and even the more general definitions of the subsistence fund were easy to apply to agrarian or primitive economies without reservation. However, applying the concept to monetary economies proved troublesome and the increasingly financialized economy of the 20th century revealed the difficulty in pinning down the real resource constraint operating on the macroeconomy.

While reviewing the debates over business cycles during the 1930s, Bernhard (1943) lamented that the idea of the “scarcity of capital” was a moving target. At times, Austrian-school economists (primarily Hayek) used the term to describe a real magnitude of capital. At other times the scarcity of capital was alluded to as the scarcity of money, or even a decline in the volume of money circulating.9 These disparate ways to reckon the macroeconomic resource

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9 Hayek was not alone in stressing a lack of money as the resource constraint becoming binding. Mises (1931: 112) summarizes the feeling amongst the entrepreneurial class as one where “[t]hey find that ‘money’ is scarce.”
constraint signed the tension that economists had in translating the subsistence fund - a simple and favorably viewed concept when applied to primitive barter-type economies – to something with a monetary value that could be increased at will by the monetary authorities at least in nominal terms, and depending on the speed of the price-adjustment process, for a short while in real terms also. Consequently the subsistence fund lost relevance in its role as a surrogate for the constraint limiting macroeconomic expansion.

Later attempts to at least discuss the subsistence fund in general terms gave not only disparate definitions of the concept, but also placed different emphases on its role in economic growth or decay. Lewin (2011: 74) does not deal explicitly with ABCT but discusses tangentially the subsistence fund in a broader overview of notions of capital and economic growth to classical economists. Here Lewin defines the subsistence fund as the sum of capital $K$ given a fixed production technique. He alludes to Böhm-Bawerk’s use of a similar conception, and his refinement of the link between the subsistence fund, economic growth and wages by adding a time dimension. Defining the subsistence fund as the sum of capital goods does not create a resource constraint, however, since even if capital were in short supply it could just be produced in greater quantities. Lewin also bifurcates on the topic as he recognizes that the time structure of production requires resources to “sustain the labor necessary at each moment in time” (2011: 75), but provides only a tenuous link between this requirement and the subsistence fund represented, as it were, by the stock of capital by stating that capital stock has alternative uses and that it provides an income stream in the form of a return. It is difficult to see how, e.g., a factory can provide the alternative use of nourishing the workers during a lengthy production process, and it is unclear to what degree or even why the return on capital could provide a sufficient income stream for these workers to procure their own means of subsistence.
Horwitz (2000: 43) finds the concept of the subsistence fund troubling as it leads one to think of capital as a homogeneous entity, with the obvious drawbacks. In contrast, Sechrest (2006) thinks the subsistence fund is a necessary component of ABCT, but then goes on to define it in money terms and thus falls prey to the same problem as Hayek’s (1935) emphasis on nominal expenditures. Garrison (2001: 36) reckons Böhm-Bawerk’s use of the subsistence funds as being too narrowly defined and prefers to think of loanable funds in general as representing the limit to resources that can be invested.

The lone modern Austrian-school economist to give attention to the subsistence fund, without mentioning it explicitly, is Huerta de Soto (2006: 350). He does so by claiming that “a sustainable lengthening of the productive structure is only possible if the necessary prior saving has taken place in the form of a drop in the final demand for consumer goods. This drop permits the different productive agents to sustain themselves using the unsold consumer goods and services while the new processes introduced reach completion and their more productive result begins to reach the market in the form of consumer goods.” This is analogous to the view Mises (1953: 400) took early on regarding the relationship between investment sustainability and consumption goods, though which he later abandoned to focus on circulating capital.

Despite scattered attention to the concept of the subsistence fund, no one has identified what specific resources are to be included in it. As such, the concept has not been elevated beyond the status of metaphor (Braun and Howden forthcoming). This is unfortunate since the basic message of the subsistence fund – that resources are scarce and that something must sustain workers until longer-dated investments mature – is easily understood in simple examples, e.g., Robinson Crusoe saving berries to sustain him as he redirects his labor to investment (Rothbard
2004: 47-70) or in Mises’s master-builder example. However, these examples do not take place in the monetary economy, which is where the problems of the business cycle are most apparent.

6. The Subsistence Fund in the Monetary Economy

Some introductory comments of the general nature of the resource constraint in business cycle theory are necessary before delving into more specific concerns. One defining characteristic of the business cycle is the appearance of boom-bust phases that are general in nature. They are not the ebb and flow of specific industries, but rather the broad swings across the whole of the economy.

Since we are dealing with an economy-wide phenomenon, the nature of the causes of the business cycle must be found in something that either links all elements of the economy, or is a factor shared in common by all elements within the economy. In dealing with the causes of the boom, Garrison (1984: 200) comments that “[t]ime is the medium of action; money is the medium of exchange.” The time market represents the intersection of both of these media. The price determined on it – the market rate of interest – is thus a factor that can cause wide-reaching effects if skewed unduly.

Likewise, if one changes the object of focus to the mechanism that forces the unsustainable boom into bust, it must be a factor common to all production processes. Such a factor could not be the supply of fixed nor circulating capital, since deficiencies in either of these inputs will create problems in specific industries reliant on them while simultaneously igniting a boom in those sectors that produce or service them. With this caveat in mind, one can see the appeal of
the subsistence fund in defining the macroeconomic constraint since all economic agents rely on the means of subsistence to satisfy their wants.

Under steady-state conditions there will be no need for a subsistence fund since the sustainability of the production structure will already be provided for. Under such a scenario aggregate savings will be equal to the total depreciation of the capital stock. One way to think of the decline in consumption this savings relies on is by way of real unconsumed consumer goods. Such a viewpoint is valid under some conditions, e.g., Robinson Crusoe needing to sustain himself while he devotes time to maintaining his capital stock. However, in the monetary economy all that is needed is saved income to purchase the necessary capital goods to maintain the capital structure of consumer goods to provide sustenance. The income expended on these goods will be transmitted back to capitalists, laborers and landowners in the form of a return on capital, wages and rent. With these returns, individuals of all three groups can purchase their own consumer goods and in that way, will sustain themselves. Of course, the aggregate expenditures on consumer goods by these three groups will be equal to the portion of aggregate income that was not saved, i.e., was consumed.

From this we see that the subsistence fund cannot be synonymous with unconsumed consumer goods (if one wishes to conceptualize the problem in real terms). Nor is it analogous to gross monetary savings. We can also see that the subsistence fund is necessary only in conditions of disequilibrium, which in macroeconomic terms implies that its role is apparent only under conditions of economic growth or decay.

Assume an increase in savings beyond the rate necessary to just maintain the depreciation of the capital stock. The investment created by this “excess” savings will be channeled into either a capital expenditure which is integrated into the structure of production at a higher stage, or by
reallocating labor to a different stage at a higher wage rate, or by introducing new labor to the production structure.

The problem with reallocating labor to a different stage is that the period of time between when labor services are provided and when those services will yield their final output will now be changed. We will first deal with the case where labor is shifted to an earlier stage and thus prolongs the period until its services will mature into output. In this case, one may think that the subsistence fund must be increased in order to sustain the worker until his efforts yield a return. However, provided that the worker was re-allocated within the structure of production at the same wage rate, no change to the subsistence fund will be necessary. The decline in wages paid at, e.g., the final stage of production, will be transferred back to the earlier stage where he is now employed. Thus under the condition of full-employment at an equilibrium wage, a reallocation of labor will not necessitate any change in the means available to sustain the worker until his work matures.

A new worker brought into the structure of production (e.g., through an expansion of the labor force or a decrease in the rate of unemployment) will not see a compensating drop in wages paid at any other stage. As such, the new worker will increase the total stock of output when his efforts mature, and this output will translate into income to be used to procure consumer goods at that future point. What is needed is a supply of savings for the duration of the new worker’s services. This supply of savings will necessarily come in the form of unconsumed income “lent”, as it were, to the worker today and which will be “repaid” when his efforts mature.

Note that the supply of savings necessary to sustain the new worker will be in excess of those savings necessary to maintain the capital stock. Thus it cannot be that the total supply of savings is analogous to nor necessary for the subsistence fund. All that is necessary is a sum of savings
for the duration of the labor investment. This amount will be in addition to the savings directed to capital maintenance.

The situation is somewhat more complicated in the case of capital, instead of labor investment. In this situation the savings made in excess of the rate of capital depreciation has been invested in capital directed to some higher stage of production. Similar to labor, this capital investment will yield its output at only some later date. In the meantime, the capitalist will require a payment – a return on capital – to sustain him until the completion of the finished good. In this way, savings invested into capital require a subsistence fund for reasons roughly analogous to those involving labor. However, the capital investment only requires its return to be “lent” to it from the subsistence fund, with the eventual “repayment” at the capital’s duration when it has paid for its services through the production of final output. “Duration” here is used in the finance sense of the period of time before an investment’s yield pays for its initial purchase.

Complicating the capital investment is the need for an allowance for depreciation. The increase in the capital stock will also increase the requirement for savings to be routed to maintain it. Similar to the steady-state defined previous, this increase in savings will not be required as part of the subsistence fund, nor should it be considered a part of it. Consequently, while any capital investment will require an ongoing increase to the rate of savings to maintain it, this is an issue separate of the subsistence fund. In sum, the only payment that the capital investment requires is a return on capital until such a point that the investment has paid for itself, i.e., its duration.
The subsistence fund is necessary to provide for additional labor or capital investments until such a time that their services mature into consumable output. The corollary to this is more interesting for the case of business cycle theory: additional labor or capital investments can only be undertaken if a sufficiently large subsistence fund is available to provide for them until they mature. Note that this fund does not need to be saved in advance since the requirements of both labor and capital are periodic in nature. Added to this is the fact that the income generated from any investment will be time-dependent, thus implying that only a flow of income must be set aside for the subsistence fund during any one period.

The subsistence fund will increase if: 1) consumption falls, 2) the depreciation allowance on the existing capital stock decreases, i.e., capital becomes more durable, 3) the wage rate on the newly employed labor is lower than that prevailing in the existing stock of labor, or 4) the lower is the required rate of return on capital. Consequently, a sustainable increase in investment will need to be met with any combination of the previous four methods to increase the subsistence fund.

Looking at the problem from the other direction, one can see that the subsistence fund must be increased if 1) the durability of new (and existing) capital is lower, so that a greater amount of savings is diverted to capital maintenance, 2) the required return on capital is higher, 3) the higher is the wage required by the new labor investments, or 4) the longer the duration of the new investments. This later condition implies that longer-dated investments will require a greater subsistence fund since they will not mature until a date further in the future. Duration is related negatively to the coupon on the investment, or in this example, its marginal product revenue.

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10 To the extent that one cannot make a “new” land investment we can exclude landowners from the analysis. One might be led to think that improvements to land would qualify, but even in that case the relevant investment would be capital- or labor-intensive in nature.
Thus the subsistence fund must also be increased as: 5a) the productivity of the new investment decreases. Duration is also a product of the interest rate with higher interest rates implying longer durations. Therefore, the subsistence fund must increase as 5b) the prevailing rate of interest increases.

7. Conclusion

Despite claiming to have a theory of the unsustainable boom, Austrian-school economists give a myriad of mutually inconsistent and often inapplicable reasons as to why the expansionary phase of the business cycle must turn to bust. Starting from the intuitive need of a pool of saved resources to fund investment in simple Crusoe-type scenarios, Austrian-school economists start out by relying on an inconvertible truth. Since more roundabout projects will not mature into consumable output until a future date, a supply of savings will be necessary to provide the means of sustenance to the invested resources during the interim.

Notwithstanding this simple truth, the concept of the subsistence fund – a supply of saved goods – introduced by Eugen von Böhm-Bawerk and integrated into Austrian business cycle theory by Ludwig von Mises – has gone through several variations and was all but purged from economic theory by the late 1930s. In its place were skewed expectations and the threat of hyperinflation working against the boom’s continual expansion.

In this paper we have outlined the deficiencies of the common reasons Austrian-school economists have provided for why the boom is unsustainable and sows the seeds of its own demise. We have demonstrated also that the original rendition of the subsistence fund, either as saved consumer goods or as saved resources in general, is too broad for the specific purpose that
the subsistence fund serves. Specifically, this role is to sustain newly invested resources, either in
the form of labor or capital investments, until such a time that their services mature into
consumable output that provides for its owner (i.e., the laborer or the capitalist). Finally, we have
defined the primary factors that determine the size of the subsistence fund, as well as those
conditions pertaining to an investment that would require an enlarged subsistence fund in order
to be sustainable.

References


