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A Discussion of the Main Tenets of Austrian Business Cycle Theory[#]

Samy Metrah[*]

Introduction

One of the very few positive effects of a crisis having occurred[1] has been the renewed interest of academics and researchers in theories, the focus of which is to provide the analytical framework and tools that might be, in turn, used to explain and to, at least partly, mitigate the consequences of a negative part of business cycle. Austrian business cycle (ABC henceforth) theory is such a theoretical framework, which postulates that the true reason for recurring existence of business cycles lies in the manipulation with the money supply by a monetary authority; be it a central bank or any other (monetary) institution. Its foundation was laid in *Theory of Money and Credit* (1912) by Ludwig von Mises, which F. A. Hayek elaborated in more detail later on in his *Prices and Production* (1935). Having existed for quite some time by now, ABC theory has been neglected in mainstream economics and some non-Austrian authors point out, in the light of the recent crisis, that it may prove fruitful to incorporate some of ABC theory´s analytical tools into mainstream economics (Frait et al., 2011). Similarly, Dobrescu et al. (2012) concludes that even though the research in business cycles has shown progress, "*it has had little impact on economic policies to stop recessions*" (pp. 243).

The failure of having incorporated Austrian framework may be, to some degree, attributed to heterogeneity of ways, in which Austrian

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[1] We are referring to the crisis the beginning of which was marked by the worldwide market collapse in autumn 2008 and which, in time, developed into the European debt crisis.

authors interpret ABC theory itself.[2] This may be illustrated well on the discussion that occurred among authors Tullock (1987, 1989) and Wagner (1999) on the one hand, and Salerno (1989) and Block (2001) on the other. The former assesses ABC theory´s usability in explaining business cycles critically, while the latter opposes the critique partly using praxeological framework, which Caplan (1999) refuted entirely. The incorporation of praxeology may be the source of the confusion that non-Austrian authors meet with while trying to assess ABC theory.

The interest in ABC theory has also resulted in research that tries to (dis)prove Austrian framework empirically. The most notable among these are Keeler (2001), who concludes, that increases in the money supply trigger business cycles; similarly, Mulligan (2002) confirms the working mechanism in reallocation of resources that is in line with ABC theory; furthermore, the same author (2006) using the vector error-correction model presents "*evidence of cointegration between real consumable output and the cumulative interest rate term spread*" (p. 90).[3] Less amiable results in respect to ABC theory provides Young (2005) who, using a simple model derived from a partial adjustment model of firm behaviour, tests whether allocation mechanism proposed by Hayek is actually in effect in U.S. economy. The results suggest that the effects of monetary policy as described by Austrian framework on job reallocation are modest at best (pp. 281). In a reaction to Young´s findings, Murphy et al. (2009) retested the same model Young had used and found parameter estimates that lead to exact opposite conclusions (pp. 77); furthermore, they provide arguments (pp. 78-84) to support their belief that the model "*was never a proper test of ABC [theory] in the first place*" (pp. 84). Resulting discussion between Young (2010) and Murphy et al. (2012) only illustrates that the definitive empirical confirmation or refutation of ABC theory is yet to be reached.

Having summarized recent research in ABC theory, we may turn our attention to the main aim of this paper. As we shall argue in the following sections, it is, at least theoretically, possible to refute some of the implicitly assumed assumptions, on which ABC theory is founded. Partly, our argumentation will be based on and be continuation of the

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[2] For methodological differences among individual Austrian authors, see White (1977).

[3] The term spread was used as a proxy of real rate of interest, which was computed as the ten-year constant maturity rate minus the three-month secondary-market rate (pp. 78).

discussion between Hummel (1979)[4] and his critics Barnett and Block (2008). We shall argue that assumed coordination between consumers and producers, which is, the case in which the time preference of consumers and investment plans of producers would be in unison, does not guarantee that the structure of production will be in equilibrium, even in an economy with a constant money supply, i.e. an economy with one hundred per cent reserve banking.[5] We might show that there may be real factors that might prevent the structure of production from being in equilibrium even though the time preference of consumers might have been in unison, in some point in time, with investment plans of producers. Finally, we shall argue the Hayek´s condition, which states that increases in the money supply have to increase at "*a constantly increasing rate*" (Hayek 1935 [2008], pp. 319-320) does not hold if one should take into account the technological progress.

The structure of the paper is as follows. The second section provides a brief overview of ABC theory following Hayek´s interpretation (Hayek 1935 [2008]). The third section deals with the problem of stability of consumers´ time preference that may not be assured. Possible real factors disturbing coordination between consumers and producers is the subject of the fourth section. The fifth section deals with changed condition for an increasing stock of capital once technical progress has been taken into account. The final section concludes our critical analysis.

1. A brief overview of Austrian Business Cycle Theory

Pretty much the entire Hayekian mechanism of reallocation of recourses, be it natural recourses or (original) factors of production in general, may be illustrated using the famous Hayekian triangle. Fig. 1

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[4] One can but wonder how it might have been possible for the reply to have taken such a long time if one should consider the gravity of arguments levied against ABC theory by Hummel (1979).

[5] Bagus et al. (2013) provides up-to-date arguments against the fractional reserve banking from the legal point of view.

represents such a triangle, albeit a bit altered;[6] it will not impair our exposition.[7]

Fig. 1: The Structure of Production
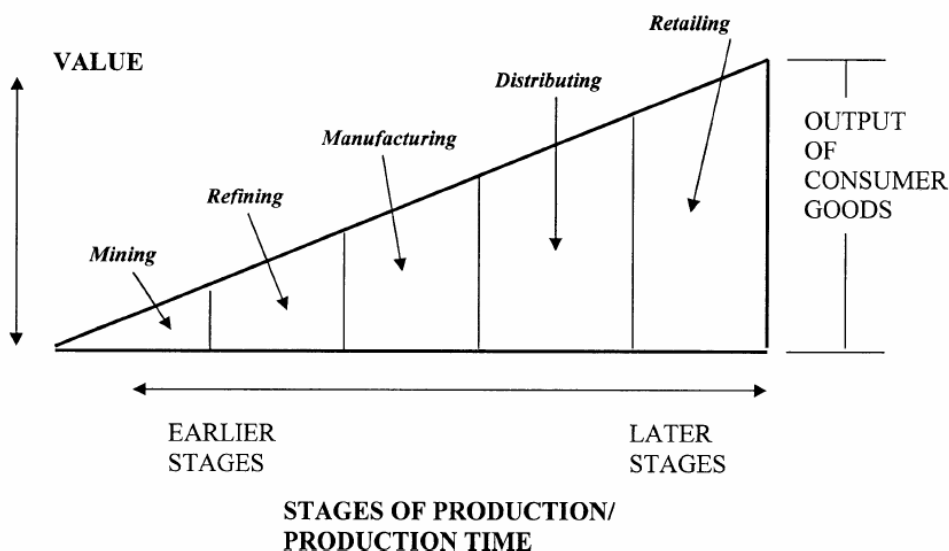
Source: Young (2005, pp. 276).

The triangle itself depicts the successive stages of production of any one good. It follows that higher order goods are manufactured in earlier stages of production; the earlier (higher) the stage of production the more time will be necessary for the goods to be ripe for a final consummation. That is, as the structure of production "lengthens", or using Austrian terminology, as the production processes get more roundabout, i.e. more productive, more time is needed for the higher order goods to be actually transformed into the first order goods, i.e. *consumers´ goods*. Any and all existing goods that are not consumers´ goods will be designated as *producers´ goods*; this also includes *original means of production*, i.e. land and labour. Furthermore, Hayek also distinguishes *factors of*

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[6] For an original depiction of the triangle, see Hayek (1935 [2008], pp. 228); for a numerical representation, see Hayek (1931 [2008], pp. 158-159).

[7] Due to editorial constrains, the following exposition will be highly compressed; we welcome interested readers to consult Hayek (1933 [2008], 1935 [2008]) for original ABC theory framework; for a more recent interpretation see Skousen (2007).

production and *intermediate products*. The latter being all the goods that are used by original means of production in manufacturing process, while the former being a sum of original means of production and of capital (Hayek 1935 [2008], pp. 226-227).

The structure of production will be in equilibrium if time preference of consumers, i.e. the willingness to forgo a present consumption, be exactly the same as the investment plans of producers to lengthen their production processes, i.e. the producers´ willingness as a whole to increase the roundaboutness of production process. In this state of affairs, there are no reallocations of resources or of factors of production, for the profit margin in every production stage in the structure of production is the same. Additionally, the time it takes for goods to be finished exactly matches consumers´ (un)willingness to forgo a part of their present consumption (Hayek 1935 [2008], pp. 228-237). As we shall see later on, the (un)willingness to wait for the consumers´ goods will play a crucial part in our argument.[8] We should mention that our consumers and producers are in an economy with one hundred per cent reserve banking.

Let us now presume that consumers have decided to cut their present consumption so that more resources may be freed up to be used by producers in their investment plans. As we are in an economy with a constant money supply, the only available funding to producers are savings of consumers. After consumers´ having cut their expenditures on current consumption, the time preference lowers in response, thus forcing the market rate of interest to a relatively lower level.[9] The dynamics that follow have two effects in an economy. Firstly, the result of consumers´ having cut their spending on the current consumption is that producers who are relatively closer to a production stage, in which goods are finalised, will be struck with diminished returns from the sale of their first order goods; for the prices of consumers´ goods are forced to a relatively lower level as a result of decreased demand for the final goods.[10] As we move to higher stages of production, the effect of diminished returns will also diminish. The result being that production of goods in higher stages of production will still be profitable, albeit to a

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[8] More specifically, it will be the stability of this willingness that we shall question.

[9] Actually, market rate of interest should closely reflect time preference.

[10] The decrease in the prices of consumers´ goods is of a relatively higher degree than the decrease in the prices of producers´ goods.

smaller degree than that one, which has been before consumers lowered their consumption (Hayek 1935 [2008], pp. 238-241).

Secondly, the lowered rate of interest will alter the profitability of investment plans in higher stages of production making investments that have been seen as unprofitable so far profitable. The structure of production lengthens as producers employ more capital-intensive production methods. The overall roundaboutness of production increases, thus increasing also the time needed for the goods to be finished. New, higher stages of production are created in response to the lowered rate of interest. To a certain degree there may be an effect of substituting labour with capital; nevertheless, as producers relatively closer to final consumption of consumers´ goods will scale down their operations in response to a lowered demand, freed factors of production, be it original means of production or intermediate goods, will begin relocating to higher stages where the profitability of their employment is still high enough. The relocation will cease to be in effect once the profit margins of all stages of production have settled to the same level eliminating relatively higher profitability of employment of more of factors of production in higher stages (Hayek 1935 [2008], pp. 258-264).

After structure of production having reached equilibrium at higher degree of roundaboutness, the increased supply of goods that have resulted from employing more productive processes will force the prices of consumers´ goods to a relatively lower level than the one, which prevailed before consumers have lowered their consumption, thus, in turn, increasing the purchasing power of money. To summarize, the effect of lowered demand for consumers´ goods results in:

[1] a lowered rate of interest;

[2] prolonged, more productive structure of production with new production stages

[3] that utilizes more capital-intensive production methods increasing the supply of consumers´ goods

[4] resulting in more time needed for the goods to be ripe for consummation

[5] but increasing the purchasing power of money.

The exact opposite will happen if consumers increase their demand for the first order goods.
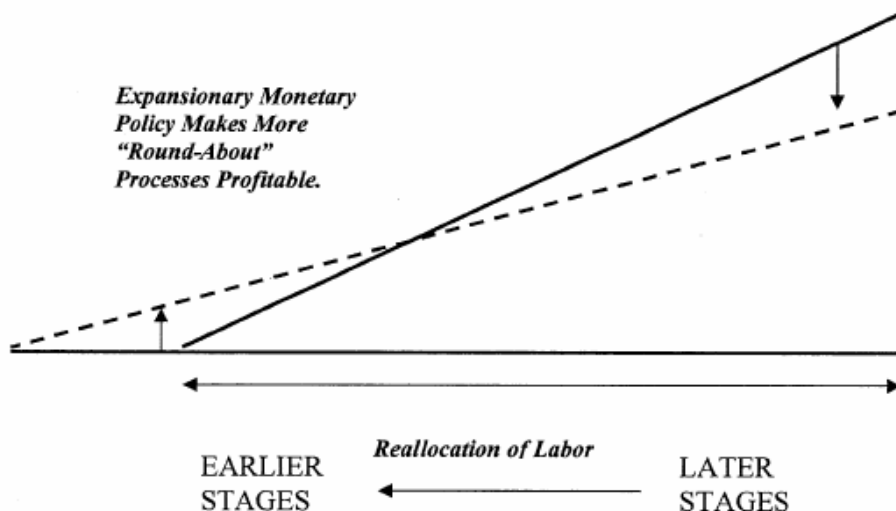
If the initial condition of invariant money supply is dropped, which is, a system of the hundred per cent reserve banking, the similar effects to the aforementioned ones will have the same influence on the structure of production but without their resulting in equilibrium. Specifically, if a central bank increases the money supply in an economy, or banks increase their willingness to lend funds, it is probable that the rate of interest may lower as a result. Producers, acting as if the time preference of consumers had lowered, start increasing roundaboutness of their production methods, for the available funds that may be used to finance investment plans have increased. The effect will be amplified if the cost of financing, i.e. the rate of interest, has been lowered also.

However, as the time preference of consumers has not lowered, their demand of final goods has remained the same. As the profit margin of producers relatively closer to final consumption also remains the same, they are unwilling to let currently employed factors of production go. In order that producers in higher stages of production may incentivize factors of production (original means of production) to work for them, they have got to bid up remunerations the factors of production currently enjoy. The result of having prolonged production processes diminishes the supply of consumable goods, consequently the prices of the goods rise.

The investments into deepening structure of production can go on as long as the supply of new loanable funds keeps rising. The remuneration of original means of production having risen, it is probable that they may increase their demand of final goods; therefore, prices of the goods may rise even faster (relatively to the prices of producers´ goods). Once banks have ceased lending any further, be it on the regulatory grounds or negative information, producers that have not been able to finish their investments in time find out they have not got enough means to finance their unfinished investments. The structure of production shrinks to its original, pre-monetary expansion state; the recession has struck. The still-present shortage of goods drives the prices up pressuring consumers to forced savings, which is, to force them to forgo part of their current consumption, for the purchasing power of money has decreased (Hayek 1935 [2008], pp. 267-275).

**Fig. 2: Effects of monetary expansion (lowered time preference)
on the structure of production**

*Expansionary Monetary
Policy Makes More
"Round-About"
Processes Profitable.*

Reallocation of Labor

EARLIER
STAGES

LATER
STAGES

Source: Young (2005, pp. 227).

Fig. 2 depicts the effect of lowered time preference and of monetary expansion by the banking sector. We should note that both effects are the same as far as the structure of production is concerned; however, while the former leads to a lasting equilibrium, the latter only artificially and temporarily deepens the structure of production. It is also worth pointing out that as the structure of production gains higher stages, the absolute value of goods in each stage diminishes.

Fig. 3: Effects of monetary restriction (higher time preference) on the structure of production

Contractionary Monetary Policy Makes Less "Round-About" Processes Profitable.

Reallocation of Labor

EARLIER STAGES

LATER STAGES
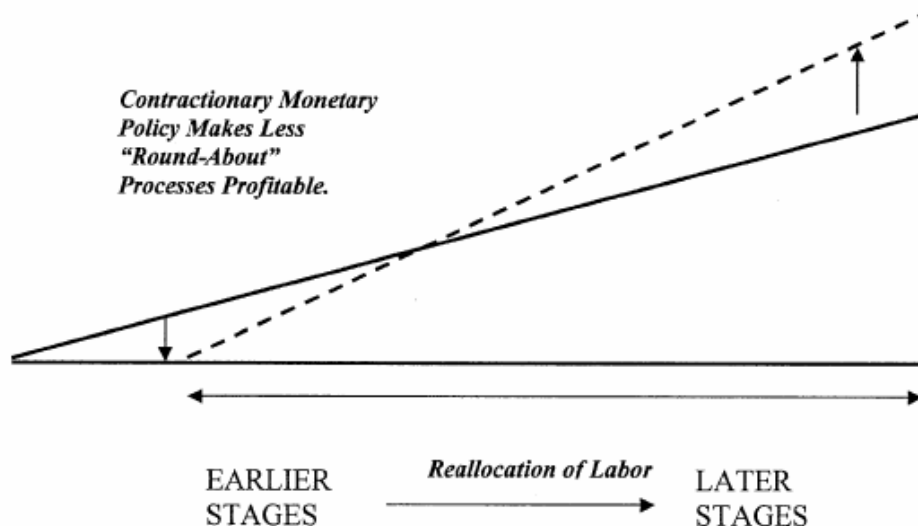
Source: Young (2005, pp. 277).

Contrarily, as shown in Fig. 3, if a central bank (banking sector as a whole) accedes to monetary restriction or if time preference has risen, the structure of production shrinks, for it is unprofitable to keep producing in farthest production stages. The value of (producers') goods in each stage increases in response, for the factors of production relocate from higher to lower stages. As Hayek (1935 [2008], pp. 271-272) points out the time needed for the freed factors of production to be absorbed in stages relatively closer to final consummation may be significant, for producers across the structure of production are unwilling to scale up their operations as a recession has hit.

As can be seen from the Hayekian exposition above, according to ABC theory, it is the "artificial" monetary expansion that is responsible for recurring existence of recessions. However, as we shall see in the next section, constant money supply does not, in itself, guarantee the neutrality of money, the fact of which Hayek was aware of very well (1935 [2008], pp. 294-297), namely the problem of change of velocity of

money and the ratio of cash on money supply, but the fact, which is very often omitted by contemporary ABC authors.[11]

2. The problem of stability of consumers´ time preference

ABC theory presumes that an economy with the hundred per cent reserve banking will ensure that coordination between consumers and producers cannot be disturbed, thus guaranteeing a state of equilibrium of structure of production. But what, if anything, makes sure that the time during which consumers decide to forgo part of their current consumption, i.e. to lower their time preference, will be *exactly* the same as the time producers need to finish successfully their investments into prolonging the structure of production? The only plausible condition is that consumers´ decisions be invariant for relatively long periods of time. This condition might be passable in an economy that utilizes relatively low amounts of capital for production but not in an economy with high capital-intensive production methods, let alone in contemporary economies, in which investments may span over several years.

Naturally, ABC theory assumes correctly that consumers will deposit their savings into time-deposits, from which withdrawal cannot be without incurring losses. There are also savings, the use of which is motivated as a form of contingency against unexpected expenses. But even if we accepted the condition that notice period of time-deposits exactly matches the producers´ time of investments, there would be no guarantee whatsoever that goods produced by a new, prolonged structure would be on the market in the time consumers expect them to be. Even so, the losses incurred on withdrawing would have to be significant enough to prevent consumers from withdrawing any funds at all. In such a scenario banks would be forced to dedicate some of the available funds, given to them by consumers (depositors), to insure themselves against unexpected withdrawals, thus diminishing the amount of savings (deposits), which may be lent. Then, it is highly unlikely that consumers would be willing to deposit their savings into such time-deposits unless banks offered high enough rate of interest to offset high cost of withdrawal. In that case, is it sound to expect the market rate of interest to match the time preference of consumers? In order that consumers may be willing to deposit their saving to long-term time-deposits, banks would have to offer a term premium but that will, in turn, increase their

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[11] The rare exception being Selgin (1999, pp. 716-717).

interest expanses forcing them to ask for a higher premium on loans. Proposed transmission mechanism of allocation of savings to producers may not be as straightforward as ABC authors might want us to believe.

If we take for granted that allocation mechanism does, somehow, work as proposed, our problems with assumptions of ABC theory are far from being settled. The lowering of time preference tacitly presumes that consumers reduce their demand in unison as if they were one. However, more realistic is the case of only partial decrease of consumers´ demand, that is, only part of the collective might have decreased their demand, there is no guarantee of the rest having followed suit. Effectively, ABC theory holds a complete coordination among consumers. This may hardly ever be the case. More interesting, however, are the possible consequences of implementing the propositions of ABC theory, i.e. hundred per cent reserve banking. Developed contemporary economies are characterized by utilizing highly capital-intensive production methods and further investments require relatively high amounts of funds to finance and time to actually be productive. If the supply of available loanable funds were limited only by a degree how large a part of consumers lower their time preference for long enough, our current capital stock and advanced technological means of production would be non-existent. True, this is not a theoretical rebuke *per se*, for it is in line with ABC theory. However, as much as the consistency of any theory is important, no less important are the possible consequences of adoption of its propositions.

3. Possible real factors preventing the structure of production from being in equilibrium

In the previous section we argued that only passable solution preventing consumers from reverting their decisions to reduce their current and near future consumption may be high withdrawal costs of time-deposits, however, this might, then, distort the causal link between time preference and the market rate of interest, increasing the costs of financing producers´ investment plans. If the condition has not been fulfilled, there is no failsafe against the change in time preference. Similarly, Hummel (1979) raises the question whether fluctuations in time preference, i.e. in the rate of savings, might not cause cyclical fluctuations in output as the monetary expansion does. He concludes that coordination failure resulting from (unexpected) change in time preference is as much real as in the case of the monetary expansion; in

other words, cyclical fluctuations in aggregate output may result from volatility in the rate of savings as much as from the monetary expansion itself (pp. 41). In this respect, it seems that time preference should be completely invariant, for every coordination failure results in malinvestments, thus distorting the structure of production. In their response to the criticism, Barnett and Block (2008) argue that producers are able to anticipate changes in consumers´ time preference, unlike the case of monetary expansion, and "*certainly, they will [be able to anticipate the changes] if this pattern long endures*" (pp. 61). Thus, confirming, in our opinion, raised objections to this issue.

It may be objected that consumption is fairly stable but again it is relatively variable if one consider the "need" for stability of time preference in ABC theory. Then, again, every coordination failure disrupts the structure of production. This fact will be even more important if one takes into account the role of supplies in ABC theory – they are being used by producers to bridge the time period between decreased or interrupted production stemming from investments and the moment when the first goods produced by new production methods reach the market. We must remind the readers that we still operate in an economy with hundred per cent reserve banking. Then, every abstention from consumption has got the money part in the form of decreased sales receipts and the "real" part being the unsold first order goods. If goods on stock run out sooner, for any reason, than new goods are available to be sold, producers have no way of compensating for non-existent receipts but to decrease the amount of employed factors of production. Of course, there still exists the possibility of the willingness of factors of production to "accept" producers´ failing to pay out wages and rents temporarily. However, then factors of production will be forced to withdraw their savings from their deposits. If they do so, using their contingency savings, this will, in turn, diminish the banking sector ability to provide emergency loans to producers. In acute phases of recession, this scenario might stretch banking reserves to their limits and increases the risk of a banking crisis coming into existence. Keeping our arguments in mind, it seems that time preference does need to be completely invariant for relatively long periods of time.

Now, we may turn our attention to the main subject of this part of the paper; namely to the possible real factors that might disrupt the state of equilibrium of the structure of production. Let us assume that the consumers´ willingness to forgo part of their current consumption exactly matches the time producers need to undergo their investments and to

bring them operational. What will happen if producers incur problems while installing their new production methods? It is rather unimportant what kind of problems producers might have met. What is quite significant are possible consequences, for now the time needed for implementing new investments is longer than the consumers´ willingness to forgo consumption has been. As more consumers try to increase their demand for consumption goods, the prices of goods on stock will keep rising. If producers have made a larger stock of goods, it is probable that higher demand may be satisfied enough at the cost of higher prices. But there will come a moment when producers´ stocks will run dry and if they, somehow, have not accumulated enough funds to bridge this period, they will be forced to lay off some of thus far employed factors of production. This scenario is similar to the one that we have discussed above, but this time the disturbance is caused on the supply side of economy. The pressure on the banking sector, however, may be greater in this case, for rising prices of consumers´ goods, i.e. decreasing purchasing power of money, will force consumers to turn on their savings in (time) deposits to offset higher expenses of acquiring first order goods. It is, then, likely that banking reserves might have run out sooner than in the scenario above. As far as the central bank is concerned, the latter case puts a lot more (hypothetical) pressure on its function as a lender of last resort. This, naturally, begs the question whether the central bank may even be able to perform such a function in a hundred per cent reserve banking system. Nevertheless, the solution of this hypothetical scenario is far from being trivial.

So far our arguments have provided possible criticism of the notion of the structure of production being in equilibrium if consumers´ time preference is in unison with producers´ investment plans. To illustrate[12] possible disturbing real factors that may be in effect in contemporary economies, we may do so as well while refuting arguments provided by Barnett and Block (2008). They distinguish two different effects that influence actual "form" of the structure of production. The former illustrates the case when time preference stay stable after having been changed (by consumers), the latter being the case when time preference shifted in a stabilizing way after a monetary authority had performed monetary expansion. The attributes for the former are following:

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[12] For Austrian author, it seems, are very fond of "illustrating" when it comes to the criticism of ABC theory, see Murphy et al. (2009).

[1] the output expansion is not self-reversing,

[2] the actions of producers and (consumers´) preferences are not discoordinated,

[3] resources are not misallocated,

[4] and, finally, structure of production is not distorted.[13]

"*That is, there are no entrepreneurial mistakes, save for ever-present random errors*" (pp. 63).

If we presume that authors mean by "*ever-present random errors*" random variables, which are independent and identically distributed then our aforementioned arguments still hold, for the definition of the structure of production itself as defined by ABC theory excludes that random variables may be independent and identically distributed.

The probability that producers may meet unexpected problems while prolonging the structure of production will be different for individual industries, for not all the industries are equally capital-intensive; for example, investment in production of microprocessors will be relatively more problematic, and logically there will be a higher probability of complications occurring, than, say, investments in production of guitars in a small family company.[14] It may be argued that producers correct their future plans and make necessary adjustments to prevent any, thus far known, problems as they gain more experience. However, new, so far unknown complications may arise as the technological progress goes forward, but in the latter case producers are not able to employ their experience. It may be said that the ergodic axiom does not hold. Thus, identical probability distribution of random variables, i.e. of incurring problems, is not fulfilled.

Independency does not hold due to the form of cotemporary economies. If the first order goods producer´s supplier has incurred problems in employing new investments in production methods, it is probable that there may be delays in the delivery of his merchandises and

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[13] Authors abstract from random, minor, self correcting errors made by entrepreneurs (producers) in the latter three points (Barnett and Block 2008, pp. 63, footnote 9).

[14] The production of microprocessors is an excellent example; no matter how effective and bug-free current production method may be, the transition to a smaller, more effective method is almost always connected with problems and postponement of release date of new microprocessors.

services. Then, the producer of consumers´ goods cannot deliver his goods on the market in expected time. Problems with employing new investment in higher stages of production then result in problems in production stages relatively closer to final consumption. Our argument is even more important if we take into account that orders and deliveries of intermediate goods in cotemporary economies are scheduled for exact dates and any failures to deliver in time are subject to money penalties. Any unexpected cost must be, then, met by the producer´s available funds diminishing the amount that may be invested. In time of expansion producers try to minimize the amount of stock they hold, for they try to free funds that may be employed in a more profitable way, thus they employ just-in-time deliveries. This may aggravate costs of suppliers´ not having been able to deliver. The situation will even be graver if problems with production stemming from new investments are incurred in the production of highly specific, "tailored" goods, the substitution of which is not possible by the client. Then, problems in higher stages of production will be positively correlated with problems in production stages relatively closer to final consumption. In contemporary organization of production not only will the probabilities of incurring problems while employing investments be dependent but probability distributions will be different for individual industries.

Let us return to the four aforementioned points. First, it cannot be said whether expansion may be self-reversing. Second assumption does not hold, for consumers´ time preference may not be coordinated with the producers´ investment plans during the entire time of transition to a longer, more roundabout structure of production. As the second assumption is not fulfilled, the third and fourth does not hold either, i.e. resources may be misallocated and the structure of production may be distorted without any "artificial" increase in supply of money by a monetary authority having occurred.

4. The condition for an increasing capital stock

So far, we have dealt with complications concerning some of weak parts of assumptions in ABC theory. In the following part, we shall address the Hayek´s condition for an increasing capital stock in an economy with the fractional reserve banking system. Namely, that the *steady* rate of credit (monetary) expansion is not sufficient to furnish enough funds to increase the capital stock of an economy. As the capital stock increases, it requires continuously more funds on the part of

producers just to maintain their structure of production. This is a logical conclusion, for, as production means increase in numbers as well as in (net) worth, it is getting increasingly expensive just to replace the existing machinery, the productive life of which has run out. He, then, argues, in order that the capital stock may increase; the credit expansion would have to be increased at *"a constantly increasing rate"* (Hayek 1935 [2008], pp. 319-320; original italics). Once the central bank (banking sector as a whole) is not able to maintain such a highly expansionary monetary policy, the structure of production will revert to its original, pre-credit expansionary state (pp. 320-321). Naturally, the structure of production may not need to revert completely, for (forced) savings or foreign finance may provide a part of necessary funds to maintain at least a part of the new prolonged structure. Nevertheless, a painful, reverting process will occur.

Interestingly, Hayek (1935 [2008]) completely abstracts from technological progress when referring to a roundabout process of production (p. 226, 256, 271). To prevent any possible misunderstandings as to what exactly is meant by increasing roundaboutness; precisely, "*the increase of output made possible by a transition to more capitalistic methods of production, or, what is the same thing, by organizing so that, at any given moment, the available resources are employed for the satisfaction of the needs of a future more distant than before*" (pp. 226). In other words, the structure of production gets more productive using more capital-intensive production;[15] productivity of means of production themselves does not change.

Once the condition of non-existing technological progress has been dropped, aforementioned dynamics change. In the former case, the reason for, eventually, increasing prices and resulting existence of forced savings, the existence of which goes on consumers´ expense is stemming from the fact of producers´ being unable to increase their productivity as fast as the supply of money is increasing. However, in the latter scenario, once technological progress, i.e. the case when production methods "themselves" are getting more productive, has been put in equation, producers are able, at least partly, that is, to keep pace with the monetary expansion. More specifically, in the latter case, the ratio of real output and the amount of necessary funds, needed to finance it, will rise. Then,

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[15] This definition follows the expository model of Robinson Crusoe, see Böhm-Bawerk (1891, pp. 100-105).

the monetary expansion does not have to increase at an increasing rate, for producers are able to compensate for a longer structure of production by increased output that is being allowed by the application of technological progress, i.e. the longer time it takes for goods to reach the market stemming from the prolonged structure of production is being shortened by increased productivity. In other words, for the same amount of funds (loans) producers are being able to supply more goods.

Conclusion

ABC theory states that "artificial" monetary expansion by central banks is the cause of the recurring existence of business cycles. If the hundred per cent reserve banking had been adopted, past and future business cycles would have been a thing of the past, at least, ABC theory postulates. However, as we have tried to illustrate in this paper, initial ABC assumptions may not hold in contemporary economies. Coordination failures between consumers and producers might still occur, for the almost complete stability of consumers´ time preference would be required to prevent any misallocation of resources. Furthermore, as we have shown, there may exist real disturbances in economies that might prevent from coordination even if time preference were invariant. These disturbances cannot be solved by a simple solution, for they are inherently connected with the contemporary economic system we live in. We do not deny that excessive monetary expansions may not be a part of the cause of business cycles, but we remain highly sceptical of the notion that central banks or fractional reserve banking systems are the *sole* elements that are to be blamed for recurring existence of business cycles.

References

Bagus, P. – Howden, D. – Block, W (2013): *Deposits, Loans, and Banking: Clarifying the Debate.* American Journal of Economics and Sociology [on-line]. 2013, vol. 72, no. 3, pp. 627-644, [on-line], [cited 15th October 2014]. DOI: 10.1111/ajes.12023, <http://doi.wiley.com /10.1111/ajes.12023>

Barnett, W. II, - Block, W. (2008): *On Hummel on Austrian Business Cycle Theory.* Reason Papers. 2008, pp. 59-90.

Block, W. (2001): *Yes, We have no Chaff: A Reply to Wagner's "Austrian Cycle Theory: Saving the Wheat while Discarding the Chaff".* The Quarterly Journal of Austrian Economics. 2001, vol. 4, no. 1, pp. 63-73.

Böhm-Bawerk, E. (1891): *The Positive Theory of Capital*, New York, G. E. Stechert and Co., 1891. <http://mises.org/books/positivetheory.pdf>

Caplan, B. (1999): *The Austrian Search for Realistic Foundations.* Southerns Economic Journal. 1999, vol. 65, no. 4, pp. 823-838.

Hayek, F. A. (1935): *Prices and Production.* New York: Augustus M. Kelley.

Hayek, F. A. (2008): *Monetary Theory and the Trade Cycle.* In: Prices and production and other works: F. A. Hayek on money, the business cycle, and the gold standard. New York. Ludwig von Mises Institute, 1933, pp. 1-130.

Hayek, F. A. (2008): *Prices and Production.* In: Prices and production and other works: F. A. Hayek on money, the business cycle, and the gold standard. New York. Ludwig von Mises Institute, 1935, pp. 189-330.

Hayek, F. A. (2008): *The "Paradox" of Saving.* In: Prices and production and other works: F. A. Hayek on money, the business cycle, and the gold standard. New York. Ludwig von Mises Institute, 1931, pp. 131-188.

Hummel, J. R. (1979): *Problems with Austrian Business Cycle Theory.* Reason Papers, vol. 1979, no. 5, pp. 41-53.

Keeler, J. P. (2001): *Empirical Evidence on the Austrian Business Cycle Theory*. The Review of Austrian Economics [on-line]. 2001, vol. 14, no. 4, pp. 331-351, [cited 15th October 2014]. <http://link.springer.com/ 10.1023/A:1011937230775>

Mises, L. (1953): *The Theory of Money and Credit* [on-line]. New Haven: Yale University Press, 1953. <http://www.mises.org/ books/tmc.pdf>

Mulligan, R. F. (2002): *A Hayekian analysis of the term structure of production*. The Quarterly Journal of Austrian Economics [on-line]. 2002, vol. 5, no. 2, pp. 17-33 [cited 15th October 2014]. <http://link.springer.com/10.1007/s12113-002-1010-y>

Mulligan, R.t F. (2006): *An empirical examination of Austrian business cycle theory.* The Quarterly Journal of Austrian Economics [on-line]. 2006, vol. 9, no. 2, pp. 69-93, [cite 15th October]. <http://link.springer.com/10.1007/s12113-006-1009-x>

Murphy, R. P. − Barnett, W. II. − Block, W. E. (2012): *Romanian Economic and Busi ness Review*. Romanian Economic and Business Review [on-line], 2012, vol. 7, no. 3, pp. 7-20, [cited 15th October 2014]. < http://www.rebe.rau.ro/REBE%207%203.pdf>

Salerno, J. T. (1989): *Comment on Tullock's 'Why Austrians Are Wrong about Depressions'.* Review of Austrian Economics, 1989, vol. 3, no. 1, pp. 141-145.

Selgin, G. (1999): *Hayek versus Keynes on How the Price Level Ought to Behave.* History of Political Economy, 1999, vol. 31, no. 4.

Skousen, M. (2007): *The Structure of Production.* New York: New York University Press, 2007, vol. XXXIX, no. 2, pp. 865.

Murphy, R. P. - Barnet, W. II. - Block, W. E. (2009): *Testing Austrian business cycle theory?* A rejoinder to Andrew Young. Journal of business and economic perspectives, 2009, vol. 2, no. 35, pp. 73-86.

Tullock, G. (1989): *Reply to Comment by Joseph T. Salerno.* Review of Austrian Economics, vol. 3, no. 1, pp. 147-149.

Tullock, G. (1989): *Why the Austrians Are Wrong about Depressions.* Review of Austrian Economics, vol. 3, no. 2, pp. 73-78.

Wagner, R. E. (1999): *Austrian Cycle Theory: Saving the Wheat while Discarding the Chaff.* Review of Austrian Economics, vol. 12, no. 1, pp. 65-80.

White, L. (1977): *The Methodology of the Austrian School Economists.* [on-line]. 1977 < http://mises.org/pdf/methfinb.pdf>

Young, A. T. (2011): *Illustrating the importance of Austrian business cycle theory: A reply to Murphy, Barnett, and Block;* A call for quantitative study. The Review of Austrian Economics [on-line], 2011, vol. 24, no. 1, pp. 19-28 [cited 15th October 2014]. <http://link.springer.com/10.1007/s11138-010-0126-0>

Young, A. T. (2005): *Reallocating labor to initiate changes in capital structures: Hayek revisited.* Economics Letters [on-line]. 2005, vol. 89, no. 3, pp. 275-282 [cited 15th October 2014]. <http://linkinghub.elsevier.com/retrieve/piiS0165176505002211>

A Discussion of the Main Tenets of Austrian Business Cycle Theory

ABSTRACT

The aim of this paper is to critically assess Austrian Business Cycle (ABC) theory. Its foundation was laid in *Theory of Money and Credit* (1912) by Ludwig von Mises, which F. A. Hayek elaborated in more detail later on in his *Prices and Production* (1935). We argue that assumed coordination between consumers and producers, that is, the case, in which the time preference of consumers and investment plans of producers would be in unison, does not guarantee that the structure of production will be in equilibrium; even in an economy with a constant money supply, i.e. an economy with one hundred per cent reserve banking. We show there may be real factors that might prevent the structure of production from being in equilibrium even though the time preference of consumers might have been in unison, in some point in time, with investment plans of producers. Finally, we shall argue the Hayek´s condition, which states that increases in the money supply have to increase at "*a constantly increasing rate",* does not hold if one should take into account the technological progress.