Entrepreneurial Error Does Not Equal Market Failure

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1 May 2018

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Abstract: Barnett and Block (forthcoming) claim that Bagus and Howden (2012b) support indirectly the concept of market failure. In this paper we show that maturity mismatching in an unhampered market may imply entrepreneurial error but cannot be considered a market failure. We demonstrate why fractional-reserve banking leads to business cycles even if there is no central bank and why maturity mismatching does not *per se* lead to clusters of errors in a free market. Finally, we assure that, in contrast to the examples provided by Barnett and Block, maturity mismatching does not imply the creation of two incompatible contracts due to the fungible nature of money.

Entrepreneurial Error does not equal Market Failure

1. Introduction

The paper forms part of a fruitful debate on the ethics of banking, specifically the act of maturity mismatching (also known as borrowing short and lending long). The debate started with Barnett and Block[1] (2009a, 2009b) who claimed that maturity mismatching *per se* constituted an unethical practice. Bagus and Howden[2] (2009) replied that the practice in and of itself would be risky but legitimate as the legal obligations of each contract can be fulfilled. In their rejoinder BB (2011) claimed that BH´s distinction between loan and deposit contracts is not clear due to problem of maturity continuum and the distinction between present and future goods. BH (2012b) clarified these issues which led BB (forthcoming) to believe that they had found inconsistencies in BH´s final formulation by argueing that BH´s case relies on a "market failure", which is inconsistent with their general approach. BB make the following propositions:

1. BH stand in the tradition of the Austrian school of economics and do not subscribe to the neoclassical concept of "market failure."
2. BH maintain also that maturity mismatching is ethical and permissible on a free market.
3. BH argue that maturity mismatching on a free market leads to a business cycle, i.e., constitutes a market failure.

Consequently BH should be troubled as they find a practice ethical that causes market failure or, at least, creates severe distortions in the economy. If BB's propositions were true they would have shown an important inconsistency in BH´s position. In this article we will show

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[1] BB henceforth.
[2] BH henceforth.

that BB are misled with their third claim. The arguments brought forth by BB induce us to explore some new theoretical issues on the differences between maturity mismatching in a free market and fractional-reserve banking. A positive externality of our ethical debate on maturity mismatching consists in new theoretical insights on maturity mismatching and credit expansion in general. Dispite disagreeing with BB, we are especially grateful that they have pushed us into this unchartered territory.

In section 2 we will correct BB´s interpretation of BH´s position on maturity mismatching. In section 3 we will show that maturity mismatching does not necessarily lead to a business cycle in an unhampered economy but, instead, is an important welfare enhancing method to channel short-term savings into longer-duration wealth creating investment projects. In section 4, we analyze why credit expansion by a fractional-reserve banking system has distortionary effects on the time structure of production and maturity mismatching does not entail these effects in a free market. In section 5, we address the concrete analogies of BB offered to show that maturity mismatching is an illegitimate practice and offer a counter example. Section 6 concludes.

2. Individual error and market failure

BB (forthcoming) maintain that BH claim that maturity mismatching will cause a business cycle. BB do not clarify whether they mean that maturity mismatching necessarily or only possibly causes a business cylce, but claim that:

> [BH] acknowledge that BSLL [borrowing short lending long] will cause an ABC, but
> do not see that as a market failure. Their error, we claim, is that they overlook the fact
> that they are logically required to acknowledge that their position entails embracing

the doctrine of market failure, and that this is incompatible with their support for

Austrian economics. Their maintaining that BSLL should be legal results from their

failure to see the market failure aspect, or else they get themselves in the position of

holding that BSLL is a market failure, but that, even as such, such contracts should be

legal.

BB's subsequent argument hinges on the argument that BH defend that maturity mismatching

will cause an Austrian business cycle in a free market. This claim is false. Bagus (2010, p.2,

emphasis added, as cited in Barnett and Block forthcoming) writes: "In this article it is argued

that a 100 percent reserve system can still bring about artificial booms by maturity

mismatching *if* there is a central bank or government support and guarantees for the banking

system." Furthermore, in footnote 2 of the same article Bagus writes: "[...] the 100% reserve

requirement is not sufficient to prevent business cycles if other government interventions into

the financial system remain intact." The conditional clause indicates that business cycles can

be caused by maturity mismatching if undertaken in excess, an outcome promoted by

government interference in the economy, e.g., through a lender of last resort (e.g., central

bank or Treasury), bank guarantees or other support to the banking system. These situations

all diverge from the free market base scenario.[3]

In other words, BH have argued consistently that maturity mismatching may lead to a boom-

bust cycle when fostered by government intervention, but will not on a free market.

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[3] We quote here from Bagus (2010) because it makes use of the same reasoning as all of BH's work on the ethicality and legality of maturity transformation and fractional-reserve banking. Other articles we have written on the topic (e.g., Bagus and Howden 2013; forthcoming, Bagus *et al*. 2015) only implicitly reject this outcome by not referring to it. Instead, our focus has always (and exclusively) been on maturity transformation in the unhampered market. Howden and Gabriel (2015) discuss the role of the interest rate in halting excessive maturity mismnatching in the unhampered economy. We do treat maturity transformation as a damaging economic force when fostered by governmental gurantees in Bagus and Howden (2010a), though that article only tangentially deals with the core issue of the present debate, namely, how ethical, legal or economically beneficial fractional-reserve banking is.

Regarding maturity mismatching on a free market BH (2010, p. 73) summarize their position thusly:

> A financial intermediary might borrow short and lend long by continually rolling over their borrowings, relying on the correct anticipation of the future availability of savings for success. In a free market there is no general reason why one would systematically under- or overestimate the future availability of savings, and thus, the possibility to roll over loans (Bagus, 2010).

BH (2010, p. 74) further insist: that "[if] not faced with perverse incentives, there is no reason for entrepreneurs to overestimate systematically the future amount of savings." In conclusion:

> On the free market, there will always be maturity mismatching to some extent as entrepreneurs try to anticipate future savings availability. Arbitrageurs earn a profit by shouldering the risk of mismatching and arbitraging between terms.
> Excessive maturity mismatching discoordinates the term structure of savings and the term structure of investments (the time structure of individual savings and investment plans). Three phenomena foster excessive (i.e., nonsustainable) maturity mismatching: credit expansion, the existence of a lender of last resort and government bailout guarantees. Excessive mismatching caused by government interventions leads to an unsustainable misalignment of the term structures of savings and investments. As a result, financial institutions unsustainably borrow short and lend long. (Bagus and Howden 2010, p. 81)

Thus, BH distinguish between free-market maturity mismatching and excessive maturity mismatching fostered by government intervention.[4] The former does not cause Austrian business cycles; the latter does. As the latter is made "excessive" by government intervention we do not face a "market failure" but rather a government failure.

Maturity mismatching is a risky activity because the intermediary may not be able to service their short-term debt obligations. The intermediary may expect to renew the debt or find another lender or source of income, but this expectation may be proven erroneous. As BH (2010, p. 74) put it:

> There is, however, the possibility of *individual* entrepreneurial error. Entrepreneurs might overestimate the availability of future savings. They may not be able to roll over their debt, revealing the malinvestment that stems from the overestimation of the resource availability. They will have engaged in an investment project without securing in full the funds necessary for its completion,

Individual errors by intermediaries that engage in maturity mismatching in a an unhampered economy occur owing to the uncertain nature of their future oriented expectations. Entrepreneurs may err, e.g., overestimate the availability of future savings or the willingness of economic agents to abstain from consumption in the future. Where there is freedom of choice and free will, there exists the possibility of error.[5] Individual error is part and parcel of human action. Individual error does *not* imply a market failure.

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[4] BH assessed the case of excessive maturity mismatching as a cause of Iceland´s recent crisis, identifying it as a result of government liquidity and solvency guarantees (Bagus and Howden 2011, chap. 2).

[5] A free market with the possibility of profits with no losses is akin to the bliss of heaven with no threat of hell.

The logical possibility exists that entrepreneurs err collectively concerning the amount of future savings, in the same way that they could err collectively regarding what products consumers will buy tomorrow and start producing, e.g., outdated car phones, or t-shirts in last season's colors *en masse*. Yet, there is no reason to believe that entrepreneurs will err collectively and systematically in the same direction in a free market. In other words, the opportunity for profit should make entrenpreneurial errors uncorrelated. Clusters of errors are a charasteristic of an intervention hampered economy (Hülsmann 1998; Rothbard 2000), not of a free market. Thus, while a financial intermediary engaging in maturity mismatching in a free market may individually err, there is no reason why all such intermediaries should err systematically. While individual error may cause detrimental effects specific to the company, e.g., for employees of the entrepreneur, this is distinct from an economy or industry wide market failure.[6]

3. Maturity mismatching does not lead to a business cycle in the unhampered economy

To state the trivial, production takes time. Workers employed in any production process must be sustained over the period during which their efforts mature into consumable output. Real savings are necessary in order to sustain the owners of the factors of production. While some savings must be procured before any investment project begins, some saving may also occur during the production time supplying goods and services to the owners of the factors of

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[6] BH (2009, 399) write: "However, while the practice (BSLL) is not illicit per se, it is greatly assisted and developed through the presence of a fractional-reserve banking system, and can sometimes breed detrimental effects." BB (forthcoming) cite this sentence and comment: "The point is, if BSLL can sometimes breed detrimental effects´ [fn omitted] and it should be allowed by law as these authors contend, then it constitutes a market failure, an implication with which, we contend, BH will be, or at least should be, uncomfortable." Actually, BH are not uncomfortable in the least. First, we state clearly and many times that maturity mismatching, i.e., BSLL, is greatly assisted by fractional-reserve banking which we (like BB) do not consider a free-market practice. Second, we defend a free market that allows for individual errors, which by definition always have detrimental effects, at least for the actor and potentially also third parties. However, these detrimental effects of individual error do not constitute market failure which is the widespread and correlated nature of individual errors.

production.[7] Entrepreneurs estimate the availability of real savings, not only in the present but also those that will become available over the course of their investment's duration.

By anticipating the flow of future savings correctly, longer and more ambitious investment projects can be undertaken in the present than by solely relying on the savings secured before the projects starts. If entrepreneurs were to take into account only the available real savings in the present, i.e., the available stock of resources, they would forgo wealth enhancing investment projects by way of possible longer-dated (and thus more productive) investments. This is the core of the theory of economic development laid out by Böhm-Bawerk (1930: 82), and later extended in Mises (1949: 259-64).

By way of example, imagine Robinson Crusoe and Friday stranded on a desert island. Robinson and Friday can fish with their bare hands and each catch ten fish per day. Friday wants to engage in the production of a capital good that increases his fishing productivity (e.g., a sharpened stick). He estimates that it will take him ten days to locate and sharpen a suitable stick, during which time his fish production will decline to only one fish per day. He further forecasts that the sharpened stick will double his fish production. Friday has no savings, but Robinson has 100 fish saved[8] and offers a loan to Friday for five days, after which the loan must be repaid with an extra five fish as interest. Friday does not expect to be able to repay the loan at maturity, but is convinced that Robinson will renew the loan after 5 days, so he takes it. Five days later he pays the five fish interest payment and convinces Robinson to renew the loan for another five days. In this example, one can see that without mismatching matures of the loan and the investment project, Friday could not have

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[7] Traditional analysis of the savings requirement for long-dated investments focuses on the concept of the subsistence fund, both in its stock form available before the investment is undertaken and in its flow form as the ongoing product of simultaneous investments. On the subsistence fund see Strigl (2001) and Braun (2014).
[8] The perishability of fish is a constraint in this example that we abstract from this point for simplicity. In any case, money is a perfectly non-perishable savings tool and is the primary means of saving employed today.

undertaken his project. He would not have started as he had not secured the necessary savings, which were necessarily of a different maturity than his investment, to complete the project.[9] Thanks to maturity mismatching, the correct estimate of future savings coupled with a low future time preference rate (of Robinson) to produce a capital good (the sharpened stick) was built. Society is wealthier thanks to maturity mismatching.

Not only does maturity mismatching not necessarily lead to a distortion in the structure of production, it may also be welfare enhancing. When the social rate of time preference or aggregate real savings, are constant, maturity mismatching allows for increased intertemporal coordination.[10]

Consider the following example, updated for the modern monetary economy. A bank borrows for one year from *A* to invest in a project that takes two years to mature. After the first year *A* is paid back his loan and increases consumption. Now person *B* takes on the role of the saver, abstains from consumption, and gives a one-year loan to the bank. The bank can now successfully complete the financing of the project. The structure of production has become more capital intensive. During production time, there has been no change in social time preference rates. The only change has been to the composition of savers, with *A* originally providing savings and *B* later completing the task. *A* increased consumption after the first year, while *B* did the opposite and thus neutralized the aggregate effect on real saving. Entrepreneurs may anticipate correctly the evolution of the social rate of time preference and aggregate savings, and as such the availability of short-term savings necessary to roll over

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[9] We say "necessarily different" here as the duration of the loan is known *ex ante*, but the duration of investment is only revealed *ex post facto*. Since the expected investment maturity cannot be known in the present with any degree of certainty, whether the maturity of the loan and the investment it funds are matched can never be known at the initiation of an investment project, and would only potentially be revealed at the project's completion.
[10] Davidson (2014) maintains similarly that maturity mismatching does not cause distortions in a free market. We claim, *a fortiori*, that maturity mismatching is not only neutral but may also be welfare enhancing.

their loans. (Or at least, we cannot rule out *a priori* that at least some entrepreneurs will correctly estminate these variables.) There is no necessary intertemporal disccordination.

Indeed, as Davidson (2014) in a critique of Block and Barnett reminds us, the starting point of ABCT is a constant social time preference rate. Credit expansion causes a structure of production to be dissonant with the constant social time preference rate. A constant social time preference rate implies in our above example that when A increases consumption, someone (in our case B) will decrease consumption and take on the role of the saver.

> Consider, next, an economy where only the social time preference is assumed to be constant. The time preferences of individual actors can change, but gross saving is constant over time, as in the ERE. While the composition of the investment vehicles in which these savings are held need not remain the same, the renewal or replacement of those of finite duration with others of equal value—but not necessarily the same duration—must take place, this being the necessary implication of the quantity of gross saving being maintained. With regard to production, some processes are ongoing, others are newly initiated, and yet others are terminated, but gross saving and investment continue to equal each other in quantity—that is, in money value—as capitalist-entrepreneurs freely compete with one another to supply present money, and original factor owners freely compete to demand it. (Davidson 2014, p. 77)

Davidson (2014) argues that the effect on interest rates occurring under fractional-reserve-type credit expansion cannot occur under maturity mismatching because with constant social time preference the time dimension of gross saving and investment in the market as a whole continue indefinitely. And unlike credit expansion, the quantities of gross saving and investment remain equal to each other over time, ceteris paribus. Therefore market interest

rates continue to reflect the actual social time preference and no Austrian business cycle is created.

Davidson (2014, p. 72) contends that the error of Block and Barnett originates from their example in which they analyze the effects of maturity mismatching on saving and investment in a very restrictive situation (one one-time saver and two borrowers), as though the market economy does not exist. In such a situation of a one-time saver where savings fall to zero when his savings end, the time dimension of his savings becomes crucial and maturity mismatching extending the time dimension leads to a distortion.

4. Why maturity mismatching may be beneficial but unbacked credit expansion is not

If maturity mismatching in an unhampered economydoes not systematically cause recurring business cycles, would credit expansion by a fractional-reserve banking system also be harmless in an unhampered economy? If there is an amount of maturity mismatching that is beneficial in the unhampered economy, can there not also be an amount of credit expansion that could be beneficial, too? Furthermore, if this was the case, would credit expansion only become harmful if excessive and fostered by government interventions such as bailout guarantees or the institution of a central bank, but be perfectly fine if undertaken by a voluntarily structured fractional-reserve banking system?

First, one of the ethical questions at stake is is whether fractional-reserve banking can be legitimate in a free society.[11] Our answer is that fractional-reserve banking is based on invalid contracts that would not be upheld in a free society. The existence of fractional-reserve banking presupposes a government granted legal privilege that permits banks to operate with

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[11] Block and Davidson (2011) maintain that the ethics of fractional-reserve banking is more a fundamental and important issue than its economic consequences.

invalid contracts. This legal privilege is notably the case today as other depositories of fungible goods (e.g., grain silos or oil mills) are not allowed to operate with fractional reserves (Williams 1984; Huerta de Soto 2009: 125, 129), or the law turns a blind eye to banks not abiding by the law as is the case in Germany (Köhler 2013: 916, 918). (Bagus *et al.* 2015 give a further elaboration of the ways that banks are legally privileged.)

Second, credit expansion unbacked by real savings in a fractional-reserve banking system is fundamentally different from maturity mismatching. When a financial intermediary borrows short and lends long, he may be successful in his endeavor and the structure of production is sustainable.

In contrast, when a bank creates new monetary substitutes in the form of deposits and lends them out (i.e., creates fiduciary media), there will be a problem *ceteris paribus* (most importantly with constant time preference rates). When a bank expands credit against deposits, there has been no increase in real savings. No one abstained from consumption thus releasing resources for a new investment project. Interest rates are reduced artificially below the level they would otherwise have had attained.[12] Entrepreneurs invest as if real savings had increased and consumers funded these investments by way of reducing their present consumption. We are faced here with a clear case of intertemporal discoordination that forms the nub and kernel of Austrian Business Cycle Theory (which Barnett and Block are intimately familiar with, and advocates of). The structure of production becomes unsustainable when the social rate of time preference does not change favorably towards additional savings. The shifting of, or additions to investments may only become sustainable

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[12] Davidson (2014, 86) refers to another important difference between credit expansion and maturity mismatching. While credit expansion artificially lowers interest rates, thus inducing entrepreneurial error, in the unhampered market maturity mismatching´s effect on interest rates is to raise short-term and reduce long-term rates. Maturity mismatching flattens the yield curve to a level more in line with overall uncertainty and the availability of savings.

if the social rate of time preference rates decreases in the future, i.e., there is an increase in real savings driven by consumers curtailing consumption (as in Bagus and Howden 2010: 67).

We will now contrast this with the example from section 3 which shows that maturity mismatching can lead to a more capital intensive and sustainable production structure with the effects of credit expansion. It is possible to imagine an (albeit unlikely) scenario where credit expansion does *not* distort the structure of production. This is the case if after a credit expansion social time preference changes favorably to such an extent that the structure of production is sustainable and there is no a bust.

Imagine that a bank creates $1,000 of new money substitutes and makes a loan to entrepreneur *E* for one year. *E* invests in a project with a maturity of 10 years. *E* uses the $1,000 loan to pay his workers at the end of year one. Assume that workers save their income completely and loan the $1,000 to *E* with a maturity of nine years, and *E* uses the money to pay down his bank loan. The additional money supply declines as bank credit contracts. As the workers restrain their consumption (by saving all of their income), the investment is backed by real savings.

However, if workers only spend part of the money newly created by credit expansion, a relative rise in consumer goods´prices will occur, which will in turn foster intertemporal discoordination. As states Hayek (1976, p. 378):

> [S]o long as any part of the additional income thus [by credit expansion] created is
> spent on consumers´goods (i.e. unless all of it is saved), the prices of consumers´goods
> must rise permanently in relation to those of various kinds of input. And this, as will

by now be evident, cannot be lastingly without effect on the relative prices of the
various kinds of input and on the methods of production that will appear profitable.

The projects initially financed by credit expansion are sustainable only if *all* of the newly
created $1,000 is saved. The investments are backed by real savings: workers abstain from
consumption for nine years representative of a decrease in the social rate of time preference.
In distinction, explanations of Austrian business cycles normally start from assuming a
constant social rate of time preference and analyze the effects of credit expansion unbacked
by real savings only later on.

Relax the key assumption in our example and consider what happens if the workers do not
save all of their additional income of $1,000 dollars at the end of year one. If they spend even
a small portion of their new income, consumer goods' prices will rise relative to capital
goods' prices, the exact occurrence that instigates the Austrain business cycle.[13]

Credit expanding banks may try to anticipate the willingness of workers to save the additional
income in a manner similar to how the financial intermediary engaging in maturity
mismatching tries to anticipate the future availability of short-term savings. Yet there are
important differences between a financial intermediary anticipating the availability of future
short-term savings and a credit expanding bank that speculates on an increase in real savings.

While the intermediary can successfully engage in maturity mismatching with constant social
time preference rates (as in the example in section 3), the fractional-reserve bank has to

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[13] In our example when the entrepreneur pays down his bank loan, credit contracts and the bank increases its
reserve ratio. In practice, when a bank loan is paid down, banks often use the additional reserves to grant another
loan. In other words, even though workers save all of the $1,000 and the entrepreneur pays down his bank loan,
there may be an artificial boom when the bank grants a further loan to another entrepreneur.

assume that there is a sudden decrease in time preference rates when it expands credit. In addition, the bank must be able to know if the savings by workers are real or just created *ex nihilo* by credit expansion of another bank.[14] Furthermore, once the one-year loan in our example is repaid, the bank must abstain from expanding credit again which in practice is quite unlikely as it entails a sacrifice of profits relative to those banks that do expand credit (as in Carilli and Dempster 2001 and Huerta de Soto 2009: 667). In fact, profits of fractional-reserve banks may increase considerably by not following this rule but by cooperating during the boom by expanding credit at the same rhythm as other banks.[15] In contrast, in the case of a financial intermediary and maturity mismatching, no cooperation is of help in improving profits when future short-term savings have been anticipated incorrectly.

5. Why maturity mismatching is ethical and the underlying contracts compatible

BB (forthcoming) restate their view on maturity mismatching by claiming that the financial intermediary does not have a title to lend money long term if it has only a short-term debt obligation. In doing so they make an important concession: namely, that the short-term borrower must not return the same specific money to the lender, but just the fungible equivalent. Thus, the borrower is even entitled to destroy the borrowed money if he fulfills his contract by returning the equivalent sum at the end of the term:

> If B borrows $100 for one year from A, B may not lend that $100 to C for *two* years. Why not? Because B does not have title to that $100 for two years; rather, B has title to the $100 for only one year. Yes, B may *burn* it (that is, the $100 over which he has

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[14] Howden (2010) shows that the further one is to the source of the initial credit expansion, the lesser will be the knowledge of whether a loan is back by real savings or credit expansion. Investments made without this knowledge will be more fragile as they have a reduced understanding of the true resource constraint limiting their investments in both magnitude and duration.

[15] This was, after all, one of the primary forces that drove the fractional-reserve free banking industry in America to demand the imposition of the Federal Reserve (Bagus and Howden 2012a: sect. 3; Howden 2014).

legitimate control for one year) if he wants to do so, as long as he has another $100 by the time this year is up, so as to be able to repay A. (Barnett and Block forthcoming)

It is hard to understand why *B* has the right to burn the $100, but not the right to lend it for two years. The obligation in his contract with *A* is to return any $100 after one year. The fulfillment of this obligation is compatible with burning the specific $100 bill – as BB acknowledge – as well as lending the specific $100 bill for two years to *C*.

If BB argue that it is legitimate for *B* to burn the $100 bill, why is it not legitimate to lend it for 1,000 years to *C*, or to lend it to an astronaut to take on a one way mission to Mars? In all cases, the specific $100 bill is basically "lost" as concerns human action on Earth. This does not take away that *B* can fulfill his loan payment to *A* at the end of the year by means of an alternative $100. Furthermore, it matters not whether this $100 is procured from *B*'s existing savings or is borrowed anew on the loans market so long as *A* has his contract fulfilled.

BH (2012b) argued that while maturity mismatching would be a legitimate practice for fungible goods, it is illegitimate for specific goods. If *B* borrows $100 for one year from *A*, he may lend $100 to *C* for ten years. It is a risky, but not fraudulent practice. In contrast, if *B* borrows a specific good such as a Picasso painting for one year from *A*, he is not allowed to lend it for ten years to *C*. From this distinction, BB (forthcoming) attempt an interesting *reductio ad absurdum* by stating:

> [I]f B lends out A's Picasso to C for 10 years, having the rights to it for only one year, it is *still* possible for B to come out of this morass alright. B can go to C at the end of the year and ask C for the picture back even though the latter has the rights to it for nine more years.

Therefore, BB believe that BH should also maintain that maturity mismatching in case of the Picasso painting would be just risky but not fraudulent. BB are certainly correct that *B could* deliver the painting back if he could convince *C* to return it earlier. The decisive difference between this case of maturity mismatching with that of fungible goods is that the latter has no conflict at the moment when *B* lends to *C*. When *B* borrows money short from *A* to lend money long to *C*, these two contracts are compatible and can be fulfilled *ab initio*. In contrast, when *B* borrows the Picasso painting for a short term from *A* to lend long term to *C*, these two loan contracts are not compatible at that moment. They cannot be fulfilled at the same time. The motive of A is to lend the Picasso for one year to B, and B´s motive to lend the Picasso for ten years to C. The motives are incompatible. [16] Under contract law, this contract would be void *ab initio* as it is impossible, an outcome that at least one of BB has endorsed in the past as an argument against fractional-reserve banking (Bagus *et al.* 2013).

An alternative way to look at the ethicality of monetary maturity mismatching is through the lenses of title-transfer theory of contract (Davidson 2015). While mainstream contract theory focuses on the expectations of the contracting parties and argues that there is an exchange of promises, the title-transfer theory regards a contract as an exchange of titles on property.[17] Maturity mismatching does not involve any duplication of property titles (Davidson 2015). When A lends B $ 100 for 1 year, B receives the title of the money and A receives the title to a claim on $100 within one year (i.e. a bill of exchange). A full exchange of the title to the

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[16] Even though the contract is void (i.e. no court would enforce it) the parties can still dissolve the contract mutually and agree to another, valid contract (i.e., debt renegotiation). For instance, B could convince C to give him the Picasso back after one year.

[17] Already Lysander Spooner criticized the contract theory based on promises. See also Barnett (1986, 1992) for problems associated with a contract theory relying on promises. On the title transfer theory of contract see Evers (1977) and Rothbard (1982). For a recent overview see Kinsella (2003).

money takes place.[18] When B transfers the money and its full title to C, B receives the title to a different claim, for instance, to a claim on $100 within two years.

Let us apply the title transfer theory of contract on the proposed example of the Picasso. In the case of the painting, the lender´s claim is naturally not represented by a bill of exchange, which is evidence only of an obligation on the part of the debtor to payee. But the "loan" of something like a Picasso creates a fundamentally different kind of arrangement; in effect, a zero-fee lease contract, where the use of the property is transferred, but not its ownership, and therefore the "lender's" (or leaser´s) "claim" is to the title itself.[19] B cannot lend the Picasso for 10 years to C, because he does not receive the ownership but only the right to use it for one year. B does not own the full title to the Picasso. He cannot burn the Picasso as he could do with a money loan. And he does not hold the right to lend it for 10 years.

Finally, BH (2012b) made the analogy of an individual borrowing short (for 20 years) in order to invest in building a house that lasts 50 years (with the mortgage being paid down after 20 years out of savings of the houseowner or being renewed by a new lender). BH did not regard this common practice as criminal and argued that following BB´s logic, one had to regard such mortgage financing as criminal. BB (forthcoming) respond by changing the example slightly. If money is borrowed for one year, in order to finance a house that takes ten years to build, BB find this ethically unproblematic. (We agree: the practice is risky but not fraudulent.) How can BB maintain that borrowing money short to lend it long is fraudulent, but borrowing money short to invest it long (in a house) is not fraudulent? For them

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[18] As Davidson (2015, p. 8) puts it: "There is no half-way measure in the case of money. Because of money's very nature, money's title cannot be divided into different kinds of ownership privileges in the way of an easement or a rental contract. Consequently, there can only be one right associated with it: Full unrestricted ownership."
[19] Davidson (2015) shows that Block and Barnett´s confusion arises because those authors fail to recognize that the English language employs two very different meanings for each of the terms "loan" and "claim."

(forthcoming) the difference consists in the fact that: "The house that takes ten years to build will presumably be able to be sold at the end of one year, even though it is not yet completed." But the same is true for any money loan invested.[20] If *B* borrows for one year from *A* to lend for 10 years to *C*, at the end of the first year, *B* may be able to sell the loan contract with *C* to *D* in order to pay *A*. Thus, our analogy holds and if BB consider borrowing short to invest long in a building project to be legitimate, they must also consider maturity mismatching as legitimate.[21]

6. Conclusion

The concept of "market failure" is serious business, and is not to be dealt with lightly. We have shown that a specific maturity mismatching in an unhampered market may constitute an entrepreneurial error but it does not systematically trigger business cycles. Block and Barnett would have to consider entrepreneurial error as market failure if they wanted to maintain their position. We doubt they do. There is nothing wrong with entrepreneurial error, in fact, if anything economists and ethicists should consider them as the necessary evil they are.

Entrepreneurs make plans in the present based on expectations of the future. Commonly the relevant expectations are thought of in terms of satisfying a future consumer demand, e.g., what color t-shirt will be popular next summer, will fuel efficiency or power be more demanded in automobiles, etc. In this paper we have stressed two points.

The first is that expectations must also focus on the future availability of real savings. The nub and kernel of economic growth theory is that longer-dated investments are more

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[20] Indeed, it is nonsensible to speak of savings without making reference to the investment that embodies them (Braun 2014: chap. 19).

[21] More generally, the ethicality of maturity mismatching does not depend on the loan being self-liquidating loan (or a real bill) or not.

productive than shorter-dated ones. To take an extreme view on it, the technology that we enjoy today has only been made possible by previous investments. It is trivial to point out that these advances would never have been undertaken if their savings had to be made available both in terms of magnitude and duration at the point when these investments began. (The average period of production, a requisite datum if one wants to match the duration of savings with that of investement, is undefineable (Knight 1935).) Maturity transformation is an economic action that allows longer-dated investments to be undertaken today and fully funded only later by new savings. On grounds of economic efficiency, to advocate for the banishment of maturity transformation is to demand the world to take a giant economic step backwards. We doubt this is what Barnett or Block advocate.

However, economic considerations alone are not sufficient to ethically legitimize an action. The question at stake boils down to one of property rights and obligations. Specifically, does a borrower have an obligation to not do anything with a borrowed good beyond the contracted duration of use and availability the loan gives him. Standard contract law and traditional (and *a priori*) legal principles give two cases for dealing with this question.

The borrower is barred from using specific goods for a maturity longer than that contracted for. The reasons are two-fold. On the one hand, the contact is impossible to fulfill *ab initio*. If *A* borrows a painting from *B* for one year and lends it to *C* for two years, there is no assured way for *B* to make good on his contract to *A*. The reason why this contract cannot necessarily be honored comes from the second reason it is invalid: there is no meeting of the minds. The loan's purpose is to make use of the lent good over its maturity. Some might say that *B* could always borrow the painting back from *C* at the end of year one, but this would not be in accord with the reason why *C* borrowed the painting for two years. Specific goods borrowed must be used within their contractual maturity.

The same reasoning does not apply to fungible goods. Since the only criterion that matters for these goods is that an equal quantity and quality of good is returned at the contract's maturity (i.e., a tantundem), there is always the possibility for a borrower to obtain additional units to repay the original loan. Maturity matching is an irrelevant requirement for fungible loans.

In their response, Barnett and Block (forthcoming) do not deal with the distinction between specific and fungible goods, and thus give a bevy of examples that confuse the two. This is unfortunate because it makes their analysis mostly inapplicable to the current debate at hand. There is a beneficial side effect, however. Barnett and Block are far from the only authors who neglect the important distinction between specific and fungible goods (see also Evans 2014: 354 or Yeager 2010: 188 for similar cases). This response has allowed us to expand and strengthen our original case and thus we conclude with a summary of the position we have held since Bagus and Howden (2009). Maturity mismatching, or borrowing short and lending long, is an ethical and economically beneficial activity provided that it is not assisted artificially (e.g., with deposit insurance, bail out guarantees, etc.). Important caveats are that the borrowed good is fungible and that the loan is actually a loan (i.e., has a maturity) which is notably not the case with the bulk of loans intermediated by the fractional-reserve banking system. Separating banks into deposit taking and loan intermediating divisions would not only reduce economic distortions but would allow for ethically legitimate practices to be promoted (such as maturity transformation) while ending those that are illitimate (such as fractional-reserve banking).

References

Bagus, Philipp. 2010. "Austrian business cycle theory: are 100 percent reserves sufficient to prevent a business cycle?" *Libertarian Papers*, Vol. 2, No. 2.

Bagus, Philipp and David Howden. 2009. "The Legitimacy of Loan Maturity Mismatching: A Risky, but not Fraudulent, Undertaking." *Journal of Business Ethics* 90, no. 3: 399–406.

Bagus, Philipp and David Howden. 2010. "The Term Structure of Savings, the Yield Curve, and Maturity Mismatching," *The Quarterly Journal of Austrian Economics*, Vol. 13, No. 3, pp. 64-85.

Bagus, Philipp, and David Howden. 2011. *Deep Freeze: Iceland's Economic Collapse.* Auburn, AL: Ludwig von Mises Institute.

Bagus, Philipp and David Howden . 2012a. Still Unanswered Quibbles with Fractional Reserve Free Banking. *Review of Austrian Economics* Vol. 25, No. 2, pp. 159-71.

Bagus, Philipp and David Howden. 2012b. "The Continuing Continuum Problem of Deposits and Loans," *The Journal of Business Ethics*; Vol. 106, No. 3, pp. 295-300.

Bagus, Philipp and David Howden. 2013. Some Ethical Dilemmas with Modern Banking. *Business Ethics: A European Review* Vol. 22, No. 3, pp. 235-45.

Bagus, Philipp and David Howden. forthcoming. The Economic and Legal Significance of 'Full' Deposit Availability. *European Journal of Law and Economics*.

Bagus, Philipp, David Howden, and Walter E. Block. 2013. Deposits, Loans and Banking: Clarifying the Debate. *The American Journal of Economics and Sociology* Vol. 72, No. 3, pp. 627-44.

Bagus, Philipp, David Howden, and Amadeus Gabriel. 2015. Oil and water do not mix, or: aliud est credere, aliud deponere. *Journal of Business Ethics* Vol. 128, No. 1, pp. 197-206.

Barnett, Randy. 1986. "A Consent Theory of Contract." *Cornell Law Review*. 1986: pp. 1022-1033

Barnett, Randy. 1992. "Some Problems With Contract as Promise." *Cornell Law Review*. 1992: pp. 1022- 1033

Barnett, William II and Walter E. Block. 2009a. "Time deposits, dimensions and fraud," *Journal of Business Ethics*; Vol. 88, No. 4, September, pp. 711-716.

Barnett, William, and Walter E. Block. 2009b. "Crash and Carry: Financial Intermediaries, the Intertemporal Carry Trade, and Austrian Business Cycles." *Etica y Politica / Ethics and Politics* 11, no. 1: 455-469

Barnett, William II and Walter E. Block. 2011. "Rejoinder to Bagus and Howden on Borrowing Short and Lending Long" *Journal of Business Ethics*. Vol. 100, No. 2, pp. 229-238, May.

Barnett, William II and Walter E. Block. Forthcoming. "Maturity Mismatching and ´Market Failure´" *Journal of Business Ethics*.

Block, Walter and Laura Davidson. 2011. "The Case Against Fiduciary Media: Ethics is the Key," *Journal of Business Ethics*, Vol. 98, No. 3, pp. 505-511.

Böhm-Bawerk, Eugen von.1930. The Positive Theory of Capital.New York: G.E. Stechert.

Braun, Eduard. 2014. *Finance Behind the Veil of Money: An Essay on the Economics of Capital, Interest, and the Financial Market.* Liberty.me.

Carilli, A. M., and G. M. Dempster. 2001. Expectations in Austrian Business Cycle Theory: An Application of the Prisoner's Dilemma. *The Review of Austrian Economics*, Vol. 14, No. 4, pp. 319-330

Davidson, Laura. 2014. "The Economic Consequences of Loan Maturity Mismatching in the Unhampered Economy," *The Quarterly Journal of Austrian Economics*, Vol. 17, No. 1 pp. 67-91 .

Davidson, Laura. 2015. "Ethical Differences Between Loan Maturity Mismatching and Fractional Reserve Banking: A Natural Law Approach," *Journal of Business Ethics*, Vol. 131, No. 1, pp. 9-18.

Evans, Anthony J. 2014. In Defence of 'Demand' Deposits: Contractual Solutions to the Barnett and Block, and Bagus and Howden Debate. *Journal of Business Ethics* Vol. 124, pp. 351-64.

Evers, Williamson. 1977. "Toward a Reformulation of the Law of Contracts." *Journal of Libertarian Studies* Vol. 1, No. 1: pp. 3-13.

Hayek, Friedrich A. von. [1941] 1976. *The Pure Theory of Capital,* London: Routledge and Kegan Paul.

Howden, David. 2010. Knowledge Shifts and the Business Cycle: When Boom Turns to Bust. *Review of Austrian Economics* Vol. 23, No. 2, pp. 165-182.

Howden, David. 2014. "A Pre-History of the Federal Reserve", in *The Fed at One Hundred: A Critical Review of the Federal Reserve System*, (*ed.*) David Howden and Joseph T. Salerno, pp. 9 – 21. London and New York: Springer.

Howden, David, and Amadeus Gabriel. 2015. The Interest Rate Break on Maturity Transformation. *Journal of Economic Issues* 49(4): 1100-1111.

Huerta de Soto, Jesús. 2009. *Money, Bank Credit and Economics Cycles*. Auburn, Ala.: Ludwig von Mises Institute.

Hülsmann, Jorg Guido 1996. "Free Banking and the Free Bankers." The Review of Austrian Economics Vol. 9, No. 1: pp. 3-53.

Hülsmann, Jörg Guido. 1998. Toward a General Theory of Error Cycles. *The Quarterly Journal of Austrian Economics*, Vol.1, No.4, pp. 1-23.

Kinsella, Stephan. 2003. "A Libertarian Theory of Contract: Title Transfer, Binding Promises, and Inalienability." *Journal of Libertarian Studies* Vol. 17, No. 2: pp. 11-37.

Knight, Frank. H. 1935. Professor Hayek and the Theory of Investment. *The Economic Journal*, *45*(177), 77–94.

Köhler, M. 2013. Humes Dilemma – oder: Was ist Geld? ´Geldschöpfung der Banken als Vermögensrechtsverletzung, in *Grundlagen und Dogmatik des gesamten Strafrechtssystems*. Festschrift für Wolfgang Frisch zum 70. Geburtstag, hrsg. von G. Freund, U. Murmann, R. Bloy and W. Perron, Berlin: Duncker & Humblot, pp. 878-923.

Mises, Ludwig von. 1998 [1949]. *Human Action: The Scholar´s Edition*. Auburn, Ala.: The Ludwig von Mises Institute.

Rothbard, Murray. N. 1982. *The Ethics of Liberty*. New York University Press. New York, NY

Rothbard, Murray N. 2000. *America´s Great Depression*. Auburn, Ala.: Ludwig von Mises Institute.

Spooner, Lysander. 1971. [1846]. *Poverty: Its illegal Causes*. In Charles Shively, ed. *The Collected Works* of Lysander Spooner, Vol. 5, Weston, Mass: M & S Press.)

Strigl, Richard von. 2001. *Capital and Production*. Auburn, Ala.: Ludwig von Mises Institute.

Williams, J. C. 1984. Fractional reserve banking in grain. *Journal of Money Credit and Banking* Vol. 16, No. 4, pp. 488–496.

Yeager, Leland B. 2010. Bank Reserves: A Dispute over Words and Classification. *Review of Austrian Economics* Vol. 23, pp. 183-91.