

WHAT IS INFLATION? CLARIFYING AND JUSTIFYING ROTHBARD'S DEFINITION

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ABSTRACT: Austrian economists have debated issues of monetary theory and inflation extensively, but there is still no agreement on the definition of inflation. Mises (1953, 240) defined inflation as an increase in the supply of money not offset by an increase in the demand for money, leading to a fall in the purchasing power of money (PPM). Rothbard (2009, 990) defined it as an increase of fiduciary media, explicitly excluding increases in the stock of specie. This article will argue that Rothbard's definition is the most suitable for economic discourse and analysis and can be generalized to any market-selected money. By consistently applying the method of counterfactual reasoning (Hülsmann 2003), it is shown that the processes of money creation lead to very different outcomes depending on the conditions of money production. The term "inflation" is therefore best reserved for money production in the form of bank credit expansion or fiat money creation. These phenomena are external to the market, and the

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process of redistribution they bring about runs counter to the structure of income and wealth that would have emerged in their absence.

The term “inflation” has a long history in economics, during which it has had three general meanings: Originally, in the mid-1800s, it signified an increase in the money supply, or in currency in circulation not backed by metallic money. Then the emphasis changed slightly so that the term signified an increase in the money supply, or an increase not offset by an increase in demand for money, leading to a general rise in prices. Finally, after the Keynesian revolution, it came to signify a rise in the price level (Bryan 1997).

Austrian economists and monetarists (Friedman 1968) have insisted on viewing inflation as a monetary phenomenon, pointing out that only changes in the money supply can lead to a general increase in prices. Mises was emphatic in pointing out the deleterious consequences of the terminological change consequent upon the Keynesian revolution:

First of all there is no longer any term available to signify what inflation used to signify. It is impossible to fight a policy you cannot name. Statesmen and writers no longer have the opportunity of resorting to a terminology accepted and understood by the public when they want to question the expediency of issuing huge amounts of additional money. They must enter into a detailed analysis and description of this policy with full particulars and minute accounts whenever they want to refer to it, and they must repeat this bothersome procedure in every sentence in which they deal with the subject. As this policy has no name, it becomes self-understood and a matter of fact. It goes on luxuriantly. (Mises 1998, 420)

Throughout his work, Mises consistently championed the second definition of inflation: inflation is an increase in the money supply, or an increase not offset by a simultaneous increase in the demand for money (Mises 1953, 240). Most later economists in the Austrian school have followed this definition and focused on elaborating the theory of the Cantillon effect (Cantillon 2010)—that is, the analysis of how the inflow of new money alters and distorts the data of the market.

One exception is Murray Rothbard. In his *Man, Economy, and State*, Rothbard (2009, 990) defines inflation in such a way as to explicitly exclude changes in the gold stock: “The process of issuing pseudo

warehouse receipts, or more exactly, the process of issuing money beyond an increase in the stock of specie, may be called inflation." In a footnote he briefly justifies this exclusion of variations in the gold supply on the grounds that these do not constitute an intervention in the free market, and that they do not lead to the business cycle. Rothbard later expands the second point a bit more, arguing that an increase in the supply of gold that enters the credit market cannot lead to a business cycle, since it simply reflects a change in voluntary savings (Rothbard 2000, 34).

This article will argue that Rothbard's definition is the most suitable for economic discourse and analysis. Gold can be understood as a market-produced money, so his definition of inflation can be generalized to mean any increase in the money supply beyond the quantity of money produced in the free market. This definition is not entirely new, as Hülsmann (2008, 85) defines inflation as "an extension of the nominal quantity of any medium of exchange beyond the quantity that would have been produced on the free market." In a later work, he qualifies the same as "forced" or "coerced" inflation (Hülsmann 2014, 151). Hülsmann, however, focuses more on the issue of inflation as a violation of property rights, on its consequences for income distribution and the general culture, and on its impact on the financial system. The basic economic difference between market-produced increases in the money supply and inflation is only implicitly addressed in his work.

The article will argue on purely descriptive economic grounds that there is a fundamental distinction between increases in the supply of a market-produced money and increases in the supply of money not subject to the market—namely, the creation of fiat money and fiduciary media.¹ The fundamental difference is that in the first case, money production is costly and in the second case, money is created *ex nihilo*, costlessly. This distinction also leads to fundamentally different consequences for the economy. While the inflow of new commodity money can be described in terms of the Cantillon effect, for instance, the changes in prices are in this case not distortive but simply the consequences of consumer demand

¹ Mises (2011, 191) pointed out the similarity between the two cases: "Circulation credit is . . . creation of credit out of nothing. It is tantamount to the creation of fiat money, to undisguised, manifest inflation."

and the data of the market. By consistently employing the method of counterfactual reasoning (Hülsmann 2003), the article will clearly spell out that an increase in the supply of commodity money is in essence and effect no different from the production of other goods in an unhampered market economy. The article will therefore conclude that the impact on the economy of costlessly produced fiduciary media and fiat money is categorically different from that of an increase in the supply of commodity money, and that this justifies restricting the term “inflation” to its original meaning as refined by Rothbard and this article: an increase in the money supply beyond the stock of market-produced money.

The only other attempt at a similar analysis is Barnett and Block (2004; 2012). However, this analysis proceeds on fundamentally different lines. Barnett and Block (2004, 47, 49) argue that increasing the money supply can increase welfare, as it allows for additional transactions that would otherwise have been too costly. This line of reasoning is mistaken, since there is nothing to preclude the same transactions from taking place at lower nominal prices. While Barnett and Block are correct that an increase in the supply of market-produced money has positive welfare effects, the explanation for this must be found elsewhere.

ROTHBARD’S DEFINITION GENERALIZED

Rothbard (2009) postponed his definition and full analysis of inflation until the end of *Man, Economy, and State*; it is included with other incursions into the unhampered market economy in chapter 12, “The Economics of Violent Intervention in the Market.” For Rothbard, inflation can only occur by violation of property rights, but this ethical/legal aspect of inflation is not the only reason Rothbard explicitly distinguishes between an increase in specie and inflationary interventions via fractional-reserve banking or fiat. The two processes also bring about different economic outcomes. Both an increase in specie and an expansion of fiduciary media are nonneutral and result in increasing prices, but only the latter is truly inflationary, generating business cycles and other distortionary redistributions.

Rothbard (2009, 990) defines inflation as “the process of issuing pseudo warehouse receipts or, more exactly, *the process of issuing*

money beyond any increase in the stock of specie" (emphasis in original). He clarifies this definition in a footnote:

Inflation, in this work, is explicitly defined to exclude increases in the stock of specie. While these increases have such similar effects as raising the prices of goods, they also differ sharply in other effects: (a) simple increases in specie do not constitute an intervention in the free market, penalizing one group and subsidizing another; and (b) they do not lead to the processes of the business cycle. (990n106)

Rothbard has employed counterfactual reasoning in his definition of inflation by stipulating that the term refers only to new issues of money *beyond* a potential increase in the stock of specie. This can easily be generalized to any money selected by market participants, not just gold.² Rothbard's definition also applies to fiat money inflation, not just fiduciary media, even though Rothbard focused on fiduciary media in the passage that contains his definition of inflation. Both of these generalizations are more explicit in his definition of inflation in *America's Great Depression*: "Inflation is not precisely the increase in total money supply; it is the increase in money supply *not consisting in*, i.e., not covered by, an increase in gold, the standard commodity money" (Rothbard, 2000, 94; emphasis in original). Thus, inflation is an increase in the money supply beyond any increase in the stock of the market-chosen commodity money. This means that both new issues of fiduciary media and new issues of government fiat money count as inflation, whereas increases in the stock of gold or any other market-selected money do not.

Thus, by definition, no inflation can occur in an unhampered market economy, but this does not mean that the definition is too narrow, since the two processes of money production (new issues of fiduciary media or fiat money versus the production of gold coins) are essentially different. An increase in gold production under a 100 percent gold standard has its own effects, but an increase in

² Rothbard (2009, 192) notes that "economic analysis is not concerned about which commodities are chosen as media of exchange." He lists various goods that have been used as money throughout history but then settles on gold and silver as the go-to example in his text due to the fact that they have been the most widely used money for centuries. Following Rothbard, this article discusses the nature of free-market commodity money in terms of gold and gold mining.

fiduciary media is categorically different and has categorically different effects; this difference justifies terminological separation. “Inflation” properly refers to the latter case: monetary intervention that increases the supply of money beyond the supply that would have existed absent the intervention.

Moreover, Rothbard did not invent this definition. It is the original meaning of the word, held by the British currency school in the mid-nineteenth century and by late-nineteenth-century American monetary theorists like Francis A. Walker (Salerno 1999). Hazlitt (1960, 1) noted that the *American College Dictionary’s* first definition of inflation was “undue expansion or increase of the currency of a country, esp. by the issuing of paper money not redeemable in specie.” Therefore, Rothbard’s definition is not peculiar to him or to Rothbardian Austrian economists.³

MISES’S DEFINITION AND THE CANTILLON EFFECT

Ludwig von Mises operated with a more general notion of inflation than Rothbard. His clearest definition of inflation occurs in the second edition of *The Theory of Money and Credit* from 1924:

In theoretical investigation there is only one meaning that can rationally be attached to the expression inflation: an increase in the quantity of money (in the broader sense of the term, so as to include fiduciary media as well), that is not offset by a corresponding increase in the need for money (again in the broader sense of the term), so that a fall in the objective exchange value of money must occur. (Mises 1953, 240)

Mises himself found this definition cumbersome despite its precision, as it too easily engendered confusion, since the term “inflation” in his day was more frequently used in popular writings to denote large falls in the value of money (Mises 1953, 240). In later works, Mises eschewed the focus on demand for money when discussing inflation (Mises 1998, 419–21, 545–47), and already in his

³ Our intent in this article is not simply to launch a war over words; it is to point to an important distinction between free-market and privileged money production. It is probably futile to attempt to convert the world to our definition of inflation—we will be content if people accept the distinction. We can then qualify the term “inflation” with “coerced” or “interventionist” to make our meaning clear.

discussion of the ideology of inflationism in *The Theory of Money and Credit* (Mises 1953, 219ff.), it is clear that to Mises, increases in the supply of money are the core issue. Through counterfactual reasoning, it becomes clear that an increase in the money supply will lead to higher prices than would otherwise be the case. Mises (2012, chap. 11) was crystal clear on this point, saying in 1918: “The fact that an increase in the supply of money (also known as *inflation*) must necessarily lead to a decline in the value of the currency has long been taught by economic theory, and also has been confirmed over and over again by historical experience.”

The essential difference from Rothbard’s definition is that Mises defines *any* increase in the money supply as inflationary, whereas Rothbard excludes the supply of specie or, more generally, of market-provided money. Intuitively, it seems that Mises has a better case: when he lays out the effect an inflow of new money has on incomes and on the distribution of wealth in society, it is clear that any inflow of money will have such consequences (Mises 1953, 208–9):

Let us, for instance, suppose that a new gold mine is opened in an isolated state. The supplementary quantity of gold that streams from it into commerce goes at first to the owners of the mine and then by turns to those who have dealings with them. If we schematically divide the whole community into four groups, the mine owners, the producers of luxury goods, the remaining producers, and the agriculturalists, the first two groups will be able to enjoy the benefits resulting from the reduction in the value of money, the former of them to a greater extent than the latter. But even as soon as we reach the third group, the situation is altered. The profit obtained by this group as a result of the increased demands of the first two will already be offset to some extent by the rise in the prices of luxury goods which will have experienced the full effect of the depreciation by the time it begins to affect other goods. Finally for the fourth group, the whole process will result in nothing but loss. The farmers will have to pay dearer for all industrial products before they are compensated by the increased prices of agricultural products.

Since this redistribution is the most important consequence of an increase in the money supply, and since it happens no matter how money is provided—whether by government fiat money production or by the competitive supply of commodity money—according to Mises there is no essential difference between increases in the

money supply under different institutional conditions. Mises (1953, 209) states the point explicitly:

There is no difference between the effects on the distribution of income and wealth that are evoked by the fact that variations in the objective exchange value of money do not affect different goods and services at the same time and in the same degree, whether the case is that of metallic money or that of fiat or credit money.

The inflation rate may be higher under a fiat standard, and the redistribution may tend to favor banks and the financial system when banks issue fiduciary media, but these are simply historical facts and not due to a fundamental distinction in the nature of money production. Mises was certainly aware of the importance of the direction of inflow of new money, as one of his great achievements was explaining how the production structure is distorted in the business cycle due to an inflow of new money into the credit system. This has lately been dubbed the “Mises effect” (Baeriswyl 2015) to distinguish it from the general Cantillon effect. Yet Mises thought that this effect could be triggered under any conditions of money production and therefore would not rule out the possibility of business cycles under a pure commodity standard. This question will be addressed in the section “The Business Cycle.”

Richard Cantillon (2010) was the first economist to describe the uneven effect of new money entering the economy, and it was later named after him. Cantillon’s description of the process supports the Misesian viewpoint. When describing the effects of money production, Cantillon (2010, 148–49) uses the example of gold mining, not banking or paper money:

If the increase of hard money comes from gold and silver mines within the state, the owner of these mines, the entrepreneurs, the smelters, refiners, and all the other workers will increase their expenses in proportion to their profits. Their households will consume more meat, wine, or beer than before. . . . All this increased expenditure on meat, wine, wool, etc., necessarily reduces the share of the other inhabitants in the state who do not participate at first in the wealth of the mines in question. The bargaining process of the market, with the demand for meat, wine, wool, etc., being stronger than usual, will not fail to increase their prices. . . . Those who will suffer from these higher prices and increased consumption will be, first of all, the property owners,

during the term of their leases, then their domestic servants and all the workmen or fixed wage earners who support their families on a salary.

Here too is a lucid description of how any inflow of new money changes the pattern of production and consumption in the economy: the first receivers benefit, and those whose incomes rise later (or not at all) lose out. Cantillon describes the effect named after him under conditions of a pure commodity standard, supporting Mises's view that any increase in the money supply is inflationary. Indeed, most economists dealing with issues of inflation who recognize that it is a monetary phenomenon have used a notion of inflation similar to Mises's. Virtually no one has accepted Rothbard's conception of it.

Nevertheless, there is a fundamental distinction between the effects of a change in the money supply arising from fiat or bank money inflation and the effects from an increase under conditions of free production of money. This distinction goes beyond the simply accidental differences in the rate of inflation or the likely direction of the Cantillon effect. Rather, it follows from the essential difference between a free-market monetary order and a monetary system unrestrained by the discipline of the market, whether new money is supplied in the form of bank money or of government fiat money production. Both forms are inherently inflationary in a way that a free monetary order is not. That is, the distortive effects on the economy from increases in the money supply only occur when money production is removed from the market. Mises (2011, 19) himself, writing in 1923, seems to have implicitly recognized this: "Gold is the standard money primarily because an increase or decrease in the available quantity is independent of the orders issued by political authorities. The distinctive feature of the gold standard is that it makes changes in the quantity of money dependent on the profitability of gold production."

MONEY PRODUCTION IN THE MARKET

Austrian economists have developed the economic theory of a pure gold standard to a great degree of perfection (see Salerno 2010a; White 1999, chap. 2, 26–52). Essentially, gold miners and minters purchase the factors of production required to mine, refine, and certify gold into bullion and coins when they anticipate

that the amount of gold money produced will exceed the costs of production. Some gold ore in the intermediate stages is directed toward nonmonetary uses in industry or consumption as jewelry, for example, but this does not significantly alter the analysis. The gold used for industrial or decorative purposes does not enter the money supply, but the gold producers must anticipate at least as much profit from selling gold for those purposes as they expect from certifying it for monetary purposes. These nonmonetary ends for gold can be disregarded, as there is no question that the profitable production of gold for these purposes is socially beneficial. The question to be considered is whether an increase in gold *money* production is socially beneficial or socially wasteful.⁴

Mises and Rothbard, building on key insights of the classical economists in the tradition of Turgot, Say, and the British currency school (Salerno 2010b; Rothbard 1995, 227ff.), conclude that there is no social benefit to increases in the money supply, including from gold money production under a pure gold standard. Rothbard repeats the point in many of his works, including in *The Mystery of Banking* (2008, 45; emphasis in original):

Since money only performs an exchange function, we can assert with the Ricardians and with Ludwig von Mises that any supply of money will be equally optimal with any other. In short, *it doesn't matter* what the money supply may be; every M will be just as good as any other for performing its cash balance exchange function.

And in *Man, Economy, and State*, Rothbard (2009, 814) similarly claims that the only reason gold production is socially beneficial is due to its nonmonetary uses: “An increase in gold is socially useful (i.e., beneficial to some without demonstrably injuring others) only to the extent that it makes possible an increase in the nonmonetary, direct use of gold.”

In a progressing economy, the demand for money will steadily increase, as the increase in output constitutes an addition to the exchange demand for money (Rothbard 2009, 755–62; Salerno

⁴ In the present analysis, no distinction is made between gold money production that originated in the ground and that achieved by melting nonmonetary gold to refine it (if needed) and certify it as coins. Both involve costly production and are therefore governed by the same profitability considerations.

2010c). Concurrently, it is reasonable to expect that the technology associated with mining and minting gold will improve, increasing the productivity of gold money production. These tendencies will encourage the production of additional gold money.⁵ How can the fact that a healthy, growing economy would have a steady increase in the production of gold money be reconciled with Mises and Rothbard's conclusion that these costly additions to the money supply are of no social benefit? Is the inevitable conclusion that even a healthy, growing economy wastes resources on money production?

Barnett and Block (2004) correctly note that the logical implication of the alleged uselessness of new gold money is that an unhampered market economy with a gold standard would waste resources on money production, and that this would have to be considered a market failure. Barnett and Block defend the gold standard by finding social benefit in additional transactions that are made possible by an increase in gold money production. They do not explain, however, why these transactions could not occur at lower prices. That is, if an increase in demand for money is not met by an increase in the supply of money, a new monetary equilibrium is reached as market participants temporarily increase their labor supply (or otherwise sell goods and services) and restrict purchases, which results in a lower price level and a higher PPM. No new money is required to facilitate these transactions in the transition from one PPM to another. Therefore, the social benefit of expanded gold production must be found elsewhere.

One difficulty with claiming the existence or nonexistence of a social benefit to money production is the inherent indeterminacy of gains and losses as market participants unevenly and unpredictably spend and hold the new money, causing an unevenness in changes in prices and incomes. Mises (1953, 209) explains that the income and distribution effects of an increase in gold production are the same as those of an increase in fiat money or fiduciary media, in that some people benefit at the expense of others. Who benefits and

⁵ At the same time, however, there may be countervailing tendencies like more efficient clearing mechanisms that would decrease the demand for money. Nevertheless, Rothbard (2009, 817) concludes that a progressing economy would most likely feature an increasing PPM as the increasing stock of goods outpaces an increasing money supply.

who loses is indeterminate, however: “Which persons, groups, and classes fare better in this, and which worse, depends on the actual data of each individual case, without knowledge of which we are not in a position to form a judgment” (210).

Here Rothbard’s (1956, 250) concept of demonstrated preference and his version of the unanimity rule, both of which he explains in his “Toward a Reconstruction of Utility and Welfare Economics” can be employed:

Let us now consider exchanges on the free market. Such an exchange is voluntarily undertaken by both parties. Therefore, the very fact that an exchange takes place demonstrates that both parties benefit (or more strictly, expect to benefit) from the exchange. The fact that both parties chose the exchange demonstrates that they both benefit. The free market is the name for the array of all the voluntary exchanges that take place in the world. Since every exchange demonstrates a unanimity of benefit for both parties concerned, we must conclude that the free market benefits all its participants. In other words, welfare economics can make the statement that the free market increases social utility, while still keeping to the framework of the Unanimity Rule.

Mises was correct to say that one cannot determine *ex ante* who will benefit and who will lose as a result of the uneven price changes after an increase in the money supply. But the implication of Rothbard’s reconstruction of welfare economics is that an increase in gold production (if profitable) is socially beneficial because each exchange in the process—from paying miners to spending the new gold coins—is voluntary and therefore mutually beneficial. There is no way for the supposed “losers,” who pay higher prices before their incomes increase, to demonstrate their dissatisfaction in the same way that a victim of a robbery would protest the robbery.⁶ The same analysis seems to apply to the use of fiat money as well, but this is not really the case. Since fiat money is costless to produce, any enduring fiat money system rests on interventions that make money creation a coercive monopoly and cartel of the government and the banking system; otherwise, the system would come to a speedy, hyperinflationary end. Replacing a free market in money

⁶ The reader is reminded that ethical considerations are not involved in defining inflation. This example of a victim of a robbery is used only to show that one situation does not include an objective loss of welfare and the other does.

involves coercive, welfare-reducing acts: suspension of cash withdrawals, confiscation of the commodity money, passage of legal tender laws, and monopolization of note issue. Acts of exchange in a fiat money system are always coercively restrained and therefore involve a welfare loss.⁷

Rothbard (1956, 251) continues his discussion of welfare economics by commenting on the integrated nature of production and distribution in the unhampered market economy:

On the free market, however, there is no such thing as a separate "distribution." A man's monetary assets have been acquired precisely because his or his ancestors' services have been purchased by others on the free market. There is no distributional process apart from the production and exchange processes of the market; hence the very concept of "distribution" becomes meaningless on the free market. Since "distribution" is simply the result of the free exchange process, and since this process benefits all participants in the market and increases social utility, it follows directly that the "distributional" results of the free market also increase social utility.

The authors' position is that this conclusion applies to gold money production as well. Since the newly mined gold is not counterfeit and really is the item demanded by its first buyer and every buyer afterwards, the resulting distribution of incomes and wealth is a socially beneficial arrangement. This is analogous to all other kinds of profitable production, in which the entrepreneur successfully converts lower-valued factors of production into higher-valued consumer goods. The entrepreneur profits as a result, and this represents a new distribution of income and wealth. Moreover, the incomes of competitors may decrease, and others may see a decrease in income or wealth as well.⁸ These changes in distribution, despite the fact that one can casually call some "winners" and others "losers," are socially beneficial; in the same way, the new distribution brought about by an increase in gold production is socially beneficial. In both cases, a new distribution of incomes and wealth results from successful entrepreneurial action. The only difference is that in

⁷ We are indebted to an anonymous reviewer for this point.

⁸ Consider the case of a homeowner whose house decreases in value due to an entrepreneur's decision to produce more houses in the same area.

the case of gold mining, this new distribution takes the form of an increase in the nominal income and wealth of the successful market actors without necessarily reducing the nominal income and wealth of other market actors. In other words, aggregate nominal income and wealth increase as part of the process.

This reasoning also applies to increases in the supply of money independent of changes in the demand for money. Suppose a new invention increases the productivity of gold mining. Setting out from an equilibrium position where the demand for money is stable and all new gold is used for nonmonetary purposes, the introduction of this new invention will lead to an expansion of the money supply. However, this expansion follows, albeit more indirectly, from consumer demand. The production of any commodity is constrained by the law of cost, which states that factors of production will be allocated to any production process only as long as they are not expected to earn a higher discounted marginal revenue product in some alternative process (Böhm-Bawerk 1959, vol. 3, chap. 10; 2002; Mises 1998, 260–64, 336–47; Rothbard 2009, 343, 588). This is also true in the case of an increase in gold-mining productivity: given the data of the market, an expansion of the money supply reflects the optimal use of resources, as profits are above the opportunity costs of production, indicating indirectly that this use of resources conforms to the desires of consumers.

The same does not apply to an expansion of fiduciary media or to fiat money inflation. In these cases, the money creation process is costless and not subject to the same conditions as commodity money production. It is really outside the market, not subject to profit and loss, and therefore it cannot be said that the resulting distribution of incomes reflects entrepreneurial success in satisfying consumer demand. Inflation is an arbitrary, one-sided act that increases the wealth of the first spender. From the inflator's perspective, it is a mere accident that the other early receivers of the new money also gain from the inflation.⁹ The resulting distribution of incomes and wealth from an inflationary intervention can appropriately be referred to as a distorted distribution because it was instigated by an event outside the market.¹⁰

⁹ Unless, of course, the early receivers are complicit in the inflation.

¹⁰ Note that none of the analysis above requires an ethical framework within which to judge the acts and consequences of gold miners, counterfeiters, or bankers.

Finally, this investigation of the social benefits of money production must consider the origins of money. Menger (2009) and Mises (1953) explained how money originates within the market: it is freely chosen by market participants and remains in use through the continued voluntary choices of market participants. These choices are informed by each individual's expectation of the good's marketability and the good's other characteristics, like durability, divisibility, portability, etc. In the case of gold, it is chosen as a medium of exchange by market participants who are fully aware that new gold will continue to be mined and shaped into coins, at least partly counteracting the tendency toward a rise in the value of each coin and potentially diluting the value of all existing coins. The gold standard is an "evolved institution," in contrast to a "designed institution" like a paper fiat standard (Garrison 1985), which means that its selection by market participants involves forgoing other potential moneys that have other characteristics, including, possibly, a fixed supply. Garrison (1985, 76) notes that the concept of opportunity cost applies to monetary institutions: "Ultimately, the cost of any action, commodity, or institution is the alternative action, commodity, or institution forgone. . . . The cost of one institution is forgoing some other institution; the cost of the gold standard is forgoing a paper standard; the cost of sound money is forgoing unsound money." All of the relevant characteristics of a potential money, including the possibility of changes in its total stock, are taken into account by market participants when they begin and continue to use the commodity as money.

It might look as if this argument contradicts the key insight that any quantity of money can fulfill the social function of money and is therefore optimal. However, this is not so. Our argument concerns the changing economy, where the data of the market is in constant flux. It is true that a given quantity of the money commodity will always be adequate to its task, since price changes can (and will, if the quantity is frozen) adjust the PPM to changes in the demand for money. As Hülsmann (2000) notes, "The supply of money does

Our investigation depends on the purely descriptive distinction between costly and costless money production. We invite the reader to reflect on how long a costlessly produced money would last in the absence of any privileges to the issuer of that money.

not have to be adjusted to the demand of money. Unlike all other commodities, money itself constantly adjusts to the conditions of the market.” But it is also true that adjustments of the money relation to the changing conditions of the market could, at least partially, take the form of increases or decreases in the money supply, as the monetary disequilibrium theorists claim (Yeager 1997). However, no a priori judgment can be made as to whether it is somehow superior if the adjustment only takes the form of price changes.

In short, the optimal amount of money is, at any given time, the real amount of money—that is, the nominal quantity times the PPM.¹¹ In the changing economy, the real demand for money is constantly changing, and the real stock of money consequently changes too, either through changes in the PPM or through additions to or subtractions from the stock of the money commodity. So long as money production is subject to the discipline of the market, there is no reason to suppose that a change in the quantity of the money commodity is somehow wasteful or inferior to a change in the PPM.¹²

THE BUSINESS CYCLE

This argument helps in understanding an important difference between Mises and Rothbard when it comes to business cycle theory. Mises (1998, 571) argued that it would be wrong to relegate business cycle theory to the field of interventionism, for although it is a historical fact that business cycles were caused by intervention and banking policy, the process of credit expansion still belongs to the theory of the pure market economy since it is just one instance of how the money supply relates to the rate

¹¹ The real amount of money cannot be expressed as a quantity, since the PPM is not simply the reverse of the “price level.” It is the reverse of the whole array of money prices. However, it is acceptable as a shorthand expression.

¹² Cf. Garrison (1985): “The final result [of the adjustment process] is that the increased demand for money is accommodated in part by an actual decline in prices and in part by an increased quantity of the monetary commodity. The relative size of the two accommodating factors depends upon the supply conditions in the gold-mining industry.” Mutatis mutandis, the same is true for a fall in the demand for money: the adjustment in this case proceeds partly through rising prices and partly through a fall in the quantity of the money commodity, as nonmonetary uses of gold are now more profitable and gold is exported.

of interest. A pure commodity standard could also engender the process of the business cycle:

Everything that has been asserted with regard to credit expansion is equally valid with regard to the effects of any increase in the supply of money proper as far as this additional supply reaches the loan market at an early stage of its inflow into the market system. If the additional quantity of money increases the quantity of money offered for loans at a time when commodity prices and wage rates have not yet been completely adjusted to the change in the money relation, the effects are no different from those of a credit expansion. (Mises 1998, 571)

Rothbard denied this conclusion and insisted that analysis of the business cycle belonged to the theory of interventionism. As stated above, Rothbard (2009) first defined inflation as “the process of issuing money beyond an increase in the stock of specie” (990) and argued further on that credit expansion is just one kind of inflation (991ff.). Since it is a systematic violation of property rights and the freedom of contract, credit expansion and inflation in general are clearly examples of intervention and will not take place in the free market. This might look like a normative judgment, but this discussion has shown that it is not: inflation is the creation of money at no cost; the issuer does not give anything up in exchange. If everyone were free to engage in costless money creation, the money supply would quickly increase beyond all bounds and the money would lose all value. Inflation can therefore persist for any extended period of time only if money creation is somehow privileged or monopolized.

In *America's Great Depression*, Rothbard (2000, 34–36) set out his positive argument for why gold production, even when the new gold enters the credit market early on, does not trigger a business cycle. Rothbard's elegant statement there goes to the heart of the matter: “One crucial distinction between a credit expansion and entry of new gold onto the loan market is that bank credit expansion distorts the market's reflection of the pattern of voluntary time preferences; the gold inflow embodies changes in the structure of voluntary time preferences” (35).

As shown above, the money supply increases on the free market only when money creation is the use of resources most valued by the public. The new money enters the economy when it comes

into the possession of the gold-mining entrepreneurs. Its progress through the economy from then on depends on how they spend it, which in turn depends on their value scales. They might spend most of the new money on consumption, or their savings-consumption ratio reflects the average social rate of time preference. But it is also quite conceivable that they have a lower rate of time preference and will save and invest a greater proportion of their profits. Yet this does not mean that the interest rate and credit structure of the economy is falsified—it means that more resources are voluntarily made available for investment than previously, since the successful entrepreneurs decide to save more of their income.

This process is no different in the case of gold-mining entrepreneurs than it is in the case of other successful entrepreneurs in other sectors of the economy. If a steel manufacturer or tech entrepreneur is successful and earns profits and decides to reinvest them, so that the social savings-consumption ratio changes, this too means that investment increases and time preferences fall from what they would otherwise have been. Since the money-producing entrepreneurs, restrained by the law of costs as shown in the previous section, simply fulfill the wishes of consumers, their incomes and how they spend them do not entail a falsification of prices, of income distribution, or of the interest rate. Hence, the cluster of entrepreneurial errors essential to the business cycle (Hülsmann 1998) does not follow from the inflow of new money into the credit market.

What happens in later rounds of spending, when later recipients spend the new money? The laborers, landowners, and capitalists whose incomes increase due to the rise in investment spending have not changed their time preference, and their decisions to save and consume will tend to set in motion a reversion of the savings-consumption ratio and interest rate back to its original level before the inflow of new money.¹³ However, it is not strictly accurate to call these movements a reversion to the status quo ante. Only on the assumption that the savings made available by gold miners replace other capitalists' savings 1:1 will there be such a complete reversion, but this would be assuming a perfectly elastic supply of savings at the given interest rate—hardly a realistic assumption. The supply of real savings will therefore most likely increase even if the market

¹³ We owe this point to an anonymous referee.

rate of interest remains stable. Entrepreneurs are therefore not in error when they expand investment and lengthen the structure of production. If, on the other hand, the assumption is that the supply of savings is perfectly elastic, then it is hard to see how the inflow of money from gold mines could ever give the appearance of an increase in savings: other capitalists would tend to divest as soon as the gold miners invested, as any fall in the rate of interest would induce them to consume more and save less. This is an extreme case and completely unrealistic: it is much more likely that the inflow of gold will constitute an increase in real savings and that this increase will cause some fluctuations, as consumption spending will again rise (but not to the old proportion) when the new money flows to the laborers and their incomes increase.¹⁴

Now, if the entrepreneurs assume that the whole amount of savings initially made available by the gold miners is available to them for investment in lengthening the structure of production, then Mises's argument follows and an unsustainable boom results—but then every increase of savings due to successful low-time-preference entrepreneurs would result in an unsustainable boom. But why assume that the extra savings will all be invested in an unsustainable lengthening of the structure? More realistically, investment in all the stages of production will increase, including in the lower stages. While some lengthening will occur, this investment is not erroneous, since, as shown above, real savings have increased. Entrepreneurs may still invest in what will turn out to be unprofitable lines of production, but the expansion of the structure of production itself does not constitute the cluster of errors specific to the business cycle.

¹⁴ Rothbard (2009, chap. 6) argues that as nominal income rises, more of the marginal income will be saved and invested. If this were true, then it would strengthen the argument of this article. However, this argument cannot be accepted for two reasons: First, Rothbard's argument does not follow as a matter of pure catallactic theory: it is just as possible that people consume most of their extra income (cf. Block, Barnett, and Salerno 2006). Second, in the present case there would be a kind of money illusion, since there has only been a change in the supply of money, not in real income: therefore, if one claims that the laborers will tend to save most of their additional income, one is really saying that their savings-consumption ratio has changed, i.e., that their time preferences have changed. One has thus assumed away the problem by claiming that a rise in savings on the part of gold miners induces a fall in time preferences on the part of laborers.

This does not mean that Mises was wrong to say that business cycle theory and the relationship between the interest rate and the money supply go beyond issues of bank credit expansion. The creation of money proper can falsify the interest rate and cause the mirage of a greater availability of savings for investment than is really the case—but only in the case of fiat money,¹⁵ not in the case of a market-produced commodity money. If the flow of new fiat money is directed into the credit market, this does not reflect the social rate of time preference but rather the policy objectives of the monetary authority. Hence, the Mises effect of money production under a 100-percent-reserve fiat standard are no different from those under a fractional-reserve standard (Baeriswyl 2015)—both stand in sharp contradiction to a free-market commodity money standard.

The clearest way to see the essential similarity between bank money (fiduciary media) and fiat money in this regard is to focus on their similar conditions of production. In both cases, money is created out of nothing, at no cost (Dempsey, 1948, 197–201), or at a marginal cost of zero.¹⁶ The increase in money available for investment under these conditions does not reflect an abstention from consumption and an increase in capital, and therefore induces entrepreneurial error and the business cycle. Similarly, credit expansion does not necessarily trigger intertemporal discoordination and a business cycle. If the new fiduciary media go directly to consumers, then the inflation is no different from when the government increases the supply of fiat money and distributes it to consumers through Friedmanite helicopter drops (Mises 1998, 568; Rothbard 2011). The creation of fiduciary media and the creation of fiat money (meaning here money proper or in the narrow sense) are thus similar in their effects: both can induce an unsustainable boom via the Mises effect if the flow of money enters the credit or producer market first; and both can cause “simple” price inflation if the money flows first to consumption. Historically, the creation of fiat money has mainly

¹⁵ Other interventions can also cause the same effect—for instance debasement of a metallic currency. Such debasement is unlikely to affect the credit market first, however. To the extent that Spanish importation of silver from the New World was a forcible intervention, the “price revolution” of the sixteenth and seventeenth centuries must also be considered inflationary in the sense of the present article.

¹⁶ Again, other interventions, such as debasement, that increase the money supply lead to similar outcomes.

been connected with financing governments and thus with simple inflation, while fiduciary media have mainly been used to finance production, but these are merely contingent historical facts. Both can be used for either purpose and cause either kind of inflation.

CONCLUSION

The argument of the classical economists needs to be modified: while it is true that any quantity of money can do all the work money can do, an increase in the supply of money called forth by a change in the data of the market is still socially beneficial. When money is supplied by the market, increasing its supply will satisfy consumer wishes and improve welfare, even if there are no benefits in the form of nonmonetary uses of the increase in gold. A change in demand for money or in the productivity of gold mining can be accommodated by a change in the quantity of money or a change in the PPM—neither change is inferior to the other in terms of social welfare. Likewise, an increase in the free-market supply of money does not trigger the Mises effect and lead to intertemporal distortions. The Mises effect is absent under free-market conditions, and the Cantillon effect, if it can be called that in this situation, reflects the allocation of incomes consumers deem optimal. When money production is costless and the money supply increases beyond what the increase of the free-market money supply would have been, it is the other way around: the business cycle is caused, and the Cantillon effect reflects a redistribution not in accordance with consumer desires. It therefore makes sense on scientific grounds to accept Rothbard's position and return to the original definition of the term "inflation" as the one that most accurately captures economic reality—that is, to clearly distinguish between an increase in the stock of market-produced money and an increase in the supply of money beyond the stock of the market-produced money. Inflation is always and everywhere an interventionist phenomenon.

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