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Monetary Equilibrium and Price Stickiness:

Causes, Consequences and Remedies

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Abstract: We reassess monetary equilibrium theory by focusing on its foundation – price stickiness – and answer several ancillary questions. Prices are sticky at times. Contra monetary equilibrium theorists, this is not a reason to advocate an issuance of fiduciary media to counteract the effects of a sluggish price adjustment process. Issuances of fiduciary media will breed negative effects, primarily via wealth redistributions, faulty interest rate signals and exacerbated business cycles. Allowing the price level to adjust to maintain monetary equilibrium provides for fewer detrimental effects than adjusting the supply of credit.

JEL classification: E52, E58

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Introduction

Free bankers and central bankers share one thing in common: they both endorse a flexible money supply based on the issuance of fiduciary media. In contrast to central bankers we commend free bankers for their work deconstructing the monopoly of money issuance at the whims of a central bank. In this paper we critically assess the common claim advanced by free bankers that allowing the banking system to expand credit through the issuance of fiduciary media is the optimal path to maintaining monetary equilibrium.[1]

Free bankers commonly present price stickiness as an important reason why fractional reserves are necessary to prevent business cycles.[2] Money lacks a central market and its value is determined only piecemeal through the myriad of individual transactions. A "sluggish" reaction to real shocks may consequently occur. If the price level cannot adjust instantaneously, as free bankers suggest, an alteration to the supply of money is advocated to avoid detrimental repercussions.

Several salient concerns have been overlooked to date. Redistribution effects from the issuance of fiduciary media will benefit any banking system's preferred clients at the expense of others. Allowing for a flexible money supply disrupts the cost adjustment process that aligns factor prices with the values attached to their finished goods. Finally, a changing money supply complicates economic calculation as it is not longer sufficient to forecast supply-demand

[1] Throughout this paper we use the term "free banker" to group together those who view price stickiness (or a sluggish adjustment of prices to monetary shocks) as a rationale for the issuance of fiduciary media. We do not intend to include "free bankers" who support fractional reserve free banking on ethical, legal or banking sector profitability grounds. Examples of the former group of free bankers can be found in Roger Garrison (1989), Steven Horwitz (1992, 1996, 2000, 2006), George Selgin (1988, 1994), and especially Leland B. Yeager (1997).

[2] We will overlook for the moment the critical question concerning sticky prices posed by Shah (1997: 42): "Sticky compared to what?"

imbalances in only the goods market: now entrepreneurs will also have to assess the money market.

The case for a fractional reserve banking system to mitigate price rigidities is not only unclear, but many of the results of unduly increasing its supply are detrimental, resulting in economic volatility, frustrated entrepreneurial plans and negative redistribution effects.

Price rigidities: Where do they come from?

Leland Yeager (1997) provides the most thorough and well-articulated explanation of price stickiness. Prices exhibit a degree of stickiness due to their reckoning in money. A price is just a historical exchange relationship. Prices result from a relationship that exchanges *a* good to receive *a* sum of money. It follows that: "Unlike other things, money has no single, definite price of its own that can adjust to clear a market of its own; instead, its market value is the reciprocal average of the prices of all other things. This ´price´ tends to be sticky for reasons almost inherent in the very concept of money" (Yeager 1968: 103-104, see also Yeager 1981: 53).

In contrast to any unhampered goods market that continually clears as supply and demand tend to equilibrate through the price formation process, money is hampered from instantaneously clearing. Unlike the wheat market, whose price is centrally determined and clears its quantity effortlessly, money has no centralized market. The demand to hold money *may* not instantaneously match the available supply as prices tend to have an adjustment process that requires some time before the money market clears.

Price stickiness is not a sign of "imperfection" in the market, but rather a reality of the decentralized nature of the money market (Dan Birch *et al* 1982: 170). The decentralized nature of the money market means that while prices will eventually align goods with the reduced money supply, this process will not be achieved "quickly or painlessly" (Roger Garrison 1989: 6): the prices of production factors will rise above market-clearing levels.[3]

Selgin (1990: 144) focuses on a different source of price rigidity. Long-term contracts entered into and not subject to some form of indexation will be unable to adjust accordingly. For example, bonds sold today will pay out different future real cash flows as deflation or inflation occurs. Unless this contractual obligation is indexed for inflation, the payout (or income stream) will remain rigidly in place, unchanged by altering market demands.[4]

While the concept of price stickiness seems straightforward, there is some ambiguity as to what it actually implies. Is it an obstruction to the price system from adjusting, as in Yeager and Tuerck (1966: 202)? Or is it a natural consequence of a decentralized price system for money, as in Yeager (1968: 103-104; 1981: 53)? Price flexibility is generally seen as a good thing – an aid to the equilibration process. Paradoxically, abolishing all price stickiness would not dispel, according to some free bankers, all problems associated with price stickiness in a decentralized market: "Great volatility of the price level would undercut the rationale of money itself and could even aggravate miscoordination, as through expectations and debt burdens. An economy beset by monetary disturbances faces a catch-22: It is damned whether or not it exhibits great flexibility of wages and prices" (Greenfield and Yeager 1989: 409-410, cited references

[3] Stickiness does not imply that prices are set without heed to supply and demand conditions. Rather, stickiness arises as prices are set individually and require some passage of time to achieve new equilibria after a monetary disturbance (Robert Greenfield and Yeager 1989: 408).

[4] This only applies in cases where the bond is not resold and the yield to maturity allowed to change along with changes in prevailing market interest rates.

omitted). While some degree of price stickiness is a desirable property of money prices, we cannot define an optimal stickiness, or a lack thereof.

The concept of sticky prices is often used in works defending fractional reserve banking (Steven Horwitz 1992, 1996, 2000, 2006; George Selgin 1988, 1994). As prices fail to adjust perfectly and instantaneously to real preference or demand changes, an elastic money supply is recommended to mitigate the distorting effects of this "sluggish" adjustment process.

As people increase savings by holding greater cash balances, a decline in spending results. Production is negatively affected if prices do not adjust downward quickly enough to compensate for this reduced demand to spend money. An increase in the money supply, in this case, could theoretically offset the increased demand for cash holdings and mitigate the production slow-down, or so goes the usual free banking rationale for an elastic money supply. Changes in the velocity part of the infamous equation of exchange are offset with alterations of the money component. "M" increases thanks to the credit expansion of the fractional reserve banking system when "V" decreases (Selgin 1994: 1457).

Hayek (1933: 176) makes a similar argument in regards to the recalculation during the Great Depression. Rigid prices and wages magnified, in Hayek's view, the unemployment crisis and accompanying deflation that engulfed the American economy. Stabilizing nominal income by increasing the money supply in light of slowing velocity was indeed called for during the Great Depression by Hayek's theoretical monetary policy norm (White 2008). Hayek later came to believe that an ineffective price mechanism during the 1930s worsened the secondary contraction. Increasing the money supply to counteract wage rigidity could have aided the price mechanism in allocating resources (Hayek 1975: 7).

By advocating a change in the price level through a flexible money supply, free bankers are implicitly stating that one price level is more optimal than another.[5] Free bankers walk the thin line between less than optimal and too much price stickiness. Adjusting the money supply through a fractional reserve banking system´s fiduciary facilities is the preferred method they use to ensure prices are "aided" in adjusting to money-side changes.

Fiduciary media complicates the anticipation of the demand for money

The demand for money is relatively stable or slowly evolving in most circumstances. This facilitates entrepreneurs as they forecast its future demand. The free banker's proposal against changes in the demand for money actually makes the demand for money more volatile and difficult to forecast.

When a fractional reserve banking system expands credit without an increase in real savings an artificial boom may result (Garrison (2001) and Jesús Huerta de Soto (2009) provide the most comprehensive overviews of this process).A base interest rate permeating throughout the economy intertemporally coordinates economic activity along the time structure of production. This interest rate – the product of consumers' willingness to abstain from consumption until a later date and lend their money in the present – sends two signals to producers. The first is the *amount* of goods that they wish to consume (this is signaled via the *quantity* of savings available to invest). The second is the temporal length of the production structure (signaled through the resultant interest rate). A longer production process will only be undertaken if it is expected to

[5] Alternatively stated, they deem stable output as preferable to stable prices. Although there are some plausible explanations as to why this may be true for the majority of individuals (see, for example, Solow 1979), we cannot impose this judgment on market participants.

yield a greater output than a shorter process. An economy at any moment in time lacks resources to have an infinitely long productive structure, i.e., it must sacrifice some output for timeliness; the interest rate informs producers just how long their productive endeavors should be.

Any money expansion unbacked by an increase in real savings – even one made in response to an increased demand for money and consistent with what free bankers recommend – will result in discoordinating activity.[6] Interest rates are lowered artificially and more and longer investment projects are undertaken than can be completed with the real savings of society. Eventually the boom turns to bust when it becomes obvious that the successful completion of all projects is not possible.

This misallocation of resources arises for several additional reasons. Jörg Guido Hülsmann (1998) points to the "cluster of errors" that entrepreneurs will make as they are given a faulty price signal (i.e., through an artificial interest rate). As their judgment is impaired there is an increasing probability that they will err in their efforts.

David Howden (2010) treats the misallocations of capital as being inter-sectoral – higher relative profits in the financial sector due to their position as the initial receivers of increased credit entices entrepreneurs to shift their efforts to the "new" financial economy and away from the "old" production economy. A neglected productive economy eventually falls into disrepair, and with it, the financial sector loses its original *raison d'être*.

[6] Even with constant proportions of consumption and investment expenditures the demand for money can increase. Actors may simply abstain from consumption and investment in the same proportions in order to increase their real cash balances. Alternatively, individuals may increase their cash balances by disinvesting – increasing the proportion of consumption to investment expenditure – as accompanies an increase in time preference. Consumer goods' prices increase relative to capital goods' prices leading to a shorter structure of production.

During the boom, when prices tend to rise, individuals tend to reduce their real cash balances. As optimism develops, expenditures increase with corresponding reductions in cash balances (Bagus 2007; 2008). Thus, during the boom real cash balances are artificially lowered. In contrast, during the recession perceived uncertainty tends to rise. Optimism fades, unemployment may become a possibility and a more pessimistic outlook spreads. Individuals tend to try to increase their real cash balances as a result.

Through all of these reasons the volatility of the demand for money will increase under a changing credit supply. Entrepreneurs have the more *slowly evolving* demand for money disrupted via an influx of fiduciary media. As the credit injection alters their natural state of affairs, entrepreneurs must change their forecasts concerning not only the availability of investable funds, but also the type of investments that they will undertake with them. These two facets leave them more prone to entrepreneurial error than lacking the monetary expansion.

There is another reason why the demand for money proper will become more volatile under fractional reserve banking. In the recession, bank assets lose value as loans turn bad and security prices fall. Bank capital is reduced and insolvency threatens. During this period, individuals in a fractional reserve free banking system tend to lose confidence in the banking system and withdraw their deposits. Over the course of a business cycle triggered by the credit expansion of a fractional reserve banking system, the demand to hold cash balances becomes unstable and more difficult to forecast. Thus, the remedy against disturbances caused by changes in the demand for money actually causes the demand for money to become more volatile.[7]

[7] Indeed, the increased volatility in the demand for money under the issuance, or even potential issuance, of fiduciary media arises for many of the same reasons discussed in Robert Barro (1982). While Barro focuses on unanchored inflation expectations under fiat central banking regimes as compared to the relatively rigid Bretton

The role of anticipation in the market process

A constant money supply combined with an increased demand for money will induce prices to fall. This deflationary process is not disruptive at all if both input and output prices fall.[8] In fact, input prices might fall even faster than selling prices. This depends on the degree of entrepreneurial anticipation and forecasting ability.

There is a misplaced belief that input costs adjust only after output prices. Yeager and Tuerck (1966: 201-202) give an example of a clothing company. There may be no frictions inhibiting the company from reallocating its resources to other clothing lines as price changes occur. However, the discrepancy between output prices and input costs will result in "a lack of exploited opportunities." Even though output prices may adjust instantaneously, the lag between this adjustment and that of costs will imply that production may be reduced due to general unprofitability until the monetary disequilibrium is eliminated. "Cost-price interrelations make it difficult to adjust prices downward without some assurance that costs will adjust downward too" (Yeager 1981: 53).

The sluggishness of cost adjustments may result in lost transactions. In one example, Yeager (1986) theorizes of a homeowner who may desire his lawn mowed by a local teenager. However, due to high lawnmower prices and rental rates over which neither party has control over, the homeowner and teenager will not settle on a price. The collective action problem that develops

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Woods era, much of the amplification of inflationary expectations of the current demand for money also exists under a free banking system issuing fiduciary media.

[8] Philipp Bagus (2006) critiques the common error that price deflation necessarily hampers business conditions. On the compatibility of deflationary expectations and full employment, see William Hutt (1995: 398). Andrew Atkeson and Patrick Kehoe (2004) sample 17 countries and 100 years of data to find only one sample point of a link between deflation and recession – America's Great Depression.

has neither party able to make a deal due to input costs that are too high, and largely out of their control.

It is difficult to say whether this problem has an easy or identifiable solution. My own failure to buy a cellular telephone in 1985 was also due to factors beyond my and the cellular phone manufacturers control – input prices were too high relative to the value that I would place on the output. While few would argue that the introduction of the cellular phone created an output gap that could be solved with higher values on the output good, the lawn mowing example is essentially the same argument.[9]

These arguments that output prices need adjusting to align with input costs is a mechanistic interpretation of Carl Menger's (1976: 114-174) imputation theory of value. Values are derived, or imputed, from goods of the lower orders (i.e., those closer to consumption) to those of the higher orders (i.e., those further from consumption). The corollary is that costs to produce lower order goods are just the prices of higher order goods. From this, however, it does not follow that the prices of higher order goods (costs of lower order goods) will adjust only *after* prices change in the lower orders. The entrepreneurial role focuses, after all, on estimating and anticipating these future changes.

Fractional reserve bankers are misled when they maintain that there is a necessary time lag between the fall in the consumer goods' prices and the decrease of factor prices due to an

[9] Much New Keynesian monetary policy rests on the same prescription. Mankiw (1985) points to the externalities of changing prices. A firm that lowers its prices first will be raising the real incomes of consumers. This increase in real income allows consumers to increase purchases, but these new purchases may not be from the same firm that first lowered its price. As a result, the first-moving firm is reckoned to not receive the full benefit of their price adjustment. What New Keynesians (like Mankiw) and monetary equilibrium theorists overlook is that the firm that lowers its price first will only do so if it thinks it is the best alternative. A firm that lowers its prices will only do so in the expectation of increasing profits (if the good's demand is elastic) or to prevent greater losses. Moreover, it is true that lowering prices can have positive externality on other companies. Yet, the existence of a positive externality does not rule out an action. In addition, being the first to lower prices provides an important first mover advantage: higher priced competitors will lose market share.

increase in the demand for money (see Garrison (1989: 6), Greenfield and Yeager (1989: 408), Yeager (1981: 53), and Yeager and Tuerck (1966: 201-202) support this adjustment lag). In fact, the causal process is the reverse. Factor prices fall before consumer goods' prices. Entrepreneurs are representatives of the consumer desires of the future and successful to the extent that they anticipate these desires correctly. Entrepreneurs must, can and *do* anticipate changes in the demand for money.

Free bankers might respond that even though entrepreneurs try to anticipate the future prices of their products and may anticipate an increase in the demand for money and bid less for the factors of production, the owner of the factors of production might not be willing to sell at lower prices. Factor prices would be sticky. However, the owners of the factors of production are also anticipating future prices. There is no systematic reason why the owners of the factors of production would be less able forecasters of the future demand for money and future prices than producing entrepreneurs. When the owners of input factors anticipate an increase in the purchasing power of money and they want to maintain the same real income as before, they are enticed to sell at lower prices.

In this anticipation of future input costs there is no systematic reason why entrepreneurs would continually err in forecasting these future output prices. Yeager (1981, 1986) describes the collective action problem of the who-goes-first problem to changing input costs as having no inherent solution to reduce output prices. Within a rational expectations framework we can note that entrepreneurs who fail to reduce their selling prices for the factors of production will see sales relatively decrease to those that do. As they are pushed out of the market (through either

reduced market share or outright bankruptcy), the tendency exists for those entrepreneurs who correctly foresaw the shift in output prices and adjusted their own prices accordingly.[10]

Of course, there may always be entrepreneurs, or factor owners, that commit errors leading to losses. [11] Free bankers do not explain why there would be more errors when only the demand for money changes and less errors when the demand for money changes *and* credit expansion and contraction must be anticipated as well.

Prices and Knowledge

Do entrepreneurs infer knowledge from prices (Hayek 1945)? Or is knowledge transmitted along the structure of production through changing quantities supplied and demanded (Hülsmann 1997)? Monetary disequilibrists charge that prices give entrepreneurs *false* signals that are not truthfully representing the underlying demand for money.

[10] One astute referee notes a conflict between the argument we make here for why rational expectations causes entrepreneurs to adjust their costs downward due to monetary shocks, but does not cause entrepreneurs to refrain from utilizing fresh credit for production decisions under a fractional-reserve banking system. In fact these two arguments are of the same coin. Carilli and Dempster (2001), Huerta de Soto (2009) and Howden (2010) show that an Austrian business cycle will result under credit expansion due to a prisoner's dilemma. Whether or not it is profitable in the long run to utilize fresh credit, the threat of a loss of market share to those who to utilize it entices entrepreneurs to partake in the credit expansion. A similar dilemma comes forth when an increase in the demand to hold cash balances occurs. Although entrepreneurs that reduce their selling prices first may suffer a negative externality of sacrificed profit relative to those that do not reduce their prices (as in Mankiw 1985), in the long run these same entrepreneurs that fail to lower their prices will be forced to exit the market. As their prices will be above those of their competitors, they will lose market share accordingly. Alternatively, if no firm currently in the market reduces its selling price an influx of competition seeking the higher relative profits in that specific good's market will occur, thus forcing downward price pressure on the existing competitors.

[11] We assume that entrepreneurs tend to be successful in estimating consumer valuations. If they were not then supply and demand would never tend to coordinate. Factor prices failing to adjust to consumer price changes in advance would result in net losses at the higher stages of production. Even in the case where entrepreneurs were unsuccessful in forecasting a decrease in final consumer goods' prices and bid factor prices down accordingly, the ensuing losses would eventually *force* these input prices down.

What if money´s price is indeed "falsely" signaling its underlying supply-demand conditions? In this case a flexible credit supply can offset these price disparities to ensure that production is not hindered by a relative over or under-valuation of money caused by monetary disturbances.

Lagging cost adjustments to changes in consumer prices may be compensated accordingly by changing the money supply. Yeager (1968: 225) discusses the "who-goes-first problem" when dealing with cost adjustments, noting:

> One cannot consistently both suppose that the price system is a communication mechanism – a device for mobilizing and coordinating knowledge dispersed in millions of separate minds – and also suppose that people *already* have the knowledge that the system is working to convey. Businessmen do not have a quick and easy shortcut to the results of the market process. They do not have it even when the market's performance is badly impaired. Money-supply numbers are far from everything they need to know for their business decisions.

This succinct passage highlights the exact problem that entrepreneurs face. More precisely, it highlights that problem that entrepreneurs in the higher orders of production face: how is information of consumer preferences communicated temporally along different stages to coordinate production?

Free bankers assume, implicitly, that money's purchasing power supplies information concerning its value along the productive structure. That is to say, as "sluggish" supply/demand conditions on a decentralized money market hinder changes in money's purchasing power, entrepreneurs are given "false" signals concerning the true demand for goods. Output suffers as a result.

Hülsmann (1997) takes a different spin on this communicative role. Prices *cannot* relay the information that entrepreneurs require as it is necessarily past information that is contained in prices. A paradoxical result occurs whereby if prices actually did signal a profit opportunity, entrepreneurs would have already exploited this opportunity in order to form these prices. As an alternative, entrepreneurs rely and act upon their judgment of the future state of affairs. They signal this through changing quantities of goods supplied or demanded, not through their prices.

What are the implications? Free bankers assume that the signal that entrepreneurs receive through money´s purchasing power is incorrect. Adjustments to this purchasing power, through quantity changes in the money supply, offset this faulty signal and move the economy closer to equilibrium. The change in quantities bought or sold by entrepreneurs of distinct stages of production is viewed as an unfortunate consequence of a defective signaling system via the price mechanism.

As a result, changes in the supply of fiduciary media are advocated in order to prohibit the quantity adjustments from affecting different stages of production. It is, however, exactly these quantity adjustments that entrepreneurs use to signal their intentions and perceived profit opportunities, direct resources and hence, affect the price level.

Assume that one individual increases his cash holdings. Less money is dedicated toward consumption and more is saved. The specific price level of the good(s) that the individual foregoes consuming declines, placing downward pressure on the general price level. How is this to be signaled to the producers at the higher orders of production? Free bankers implicitly assume that this occurs through the price system, and that the system's "sluggish" behavior

causes discoordinating effects. As input costs may not adjust downward to reflect the new selling prices, production shrinks accordingly.

What we see occurring on the markets, however, is not entrepreneurs at the lower stages offering lower prices to entrepreneurs at the higher stages, not initially at least. The initial signal, and that one which we are most concerned with, occurs through a reduced demand for goods produced in the higher stages of production. As consumer demand decreases, entrepreneurs directly concerned with meeting their needs curtail production, and consequently purchase fewer inputs from higher order entrepreneurs. This essential signal to entrepreneurs that a change has occurred in consumer demand requires an alteration to production plans.

An error in prescription follows from the faulty assumption that the price system is the primary conveyor of knowledge throughout the productive structure and not the quantities supplied and demanded by entrepreneurial judgment. If the quantity of money is altered to increase or decrease money´s purchasing power with the explicit goal that changes in quantities produced will be altered, a crucial signal is lost. Higher order entrepreneurs are inhibited from receiving vital information concerning consumer demand and changes in it. The productive structure becomes discoordinated as the shift in consumer demands is not reflected by changes in production.

Realizing the difference between the first-person and third-person perspectives makes this distinction between different types of shocks and what resultant price level to adjust mostly moot (Shah 1997). Indeed, these are interesting questions for the theorist but of little importance for the entrepreneur. Blinder *et al.* (1998: 7) argue that most of the prominent theories of price stickiness rely on variables that are either "unobservable in principle or unobservable in

practice." If the actual source of the supposedly problematic stickiness is not easily discerned, and is not a variable that entrepreneurs are actually concerned with in their decision-making, then policy-makers face a significant identification problem in targeting a price-level to adjust in response to these sticky prices.

Profit and loss due to forecasting errors

What about long-term contracts as a form of price stickiness? When a factory is rented for 5 years, money loaned for 3 years or a work contract signed for 1 year, the prices are "fixed" during this period. Even if entrepreneurs forecast a change in the demand for money during the contract's duration, the price may not adjust until its contract's expiration. Again, this view assumes a very shortsighted entrepreneur. When (long-term) contracts are made, both parties have expectations regarding how the demand for money and money´s purchasing power will evolve during the contract's duration. For example, if the demand for money is expected to increase during the contract's duration, then a lower nominal price might be agreed upon. When a contracting party errs about the future purchasing power of money they suffer entrepreneurial losses. The party that correctly anticipates changes (to purchasing power or otherwise) during the time of the contract and negotiates accordingly will reap entrepreneurial profits. As one of the contracting parties loses and the other party gains, price stickiness cannot be a general social problem but only a specific one for the party that committed the error (Hülsmann 2003b: 75). Sticky prices, in this case, would not cause blanket loses for all market participants, but would instead harm only those that misestimated the extent of the stickiness and the effects thereof.

Contractually fixed prices (including interest rates) cannot be viewed as sticky in the same sense as is normally associated with the word (Hutt 1979: 144). Fixed costs concern the division of the value of output. Gains or losses incurred as a result of fixed costs not aligning with their final selling prices as foreseen are an element of speculative gain for one party, and a speculative loss to the other. These prices can, and do, readjust at any given moment, their past fixity notwithstanding.

Parties may err about the future purchasing power of money, not only when it increases but also if it decreases or remains constant. Increasing the money supply will not reduce this forecast error. For example, a worker might expect that the purchasing power of money will fall and demand a higher compensating nominal wage. If he errs and the purchasing power of money falls more than he expected he suffers an entrepreneurial loss. The anticipation and corresponding profits and losses are not specific to an increase in the demand for money.

Moreover, even long-term contracts are not fully sticky but may be renegotiated as the parties see fit.[12] As Hutt (1979, 232fn) points out: "[P]eriodic adjustments through recontract (as idleness threatens) can meet that situation [i.e., when wage rates are maintained even though product prices have fallen].… It is when the unions insist upon the adherence to any such "contracts" that they condemn many of their members to unemployment and throw the system out of coordination."

Beside institutional barriers to renegotiations, there may be other psychological barriers to price adjustments. For example, for psychological reasons workers may not want to accept a fall in nominal wages. Efficiency wage theories aim to demonstrate why profit-maximizing firms may

[12] Dubai World's 2009 debt restructuring presents one recent example of both debtors and creditors agreeing to alter the established terms of a contract.

not lower wages when necessary to combat negative morale shocks. Firms may prefer layoffs to wage reductions, as the former are viewed as less detrimental to worker morale. Wage stickiness for existing workers becomes an issue of a sunk cost, while new hires exhibit considerably more flexibility in their acceptable wage. Even in these instances, there are instruments to overcome this psychological barrier.

Peter van Maanen (2004) provides two instruments to maintain real wages when nominal wages are constant and output prices fall. Workers might work longer hours for the same nominal wage. Firms could request for more intensive use of their employees' work time, by cutting back on coffee breaks, for example (Shah 1997: 43). Alternatively, bonus payments provide some flexibility and may be reduced or increased. Assuming psychological reasons why workers do not want nominal wages to fall, entrepreneurs will search for additional instruments to reduce real wages effectively. Employers are not limited to only one margin – the wage margin – when trying to change real input costs. This discovery process is frustrated and blocked when an inflationary monetary system increases nominal wages.

Wage stickiness is not independent from the institutional setting (Hülsmann 2003a: 48). In an inflationary system where workers are accustomed to experiencing prolonged periods of price increases there will be more resistance to nominal wage reductions than in a 100 percent gold standard where workers experience a continuous decline or constancy in the price level.

Preferred idleness and reservation demand

There is the possibility that the demand for money is expected to increase but factor owners do not want to sell at lower prices.[13] This is the case of preferred idleness (Hutt 1977), which results in output declines.

Preferred idleness is not something specific to increases in the demand for money. Factor owners may prefer idleness to production when the demand for money increases, decreases or remains the same. This preference may stem from a variety of motives, such as pride, cultural reasons, or self-esteem, among other reasons.[14]

Alternatively, Rotemberg (1982) suggests that firms do not change prices as frequently as is necessary to maintain monetary equilibrium because consumers do not desire erratic price changes. Some degree of preferred idleness will result, but because of preferences for price stability and not directly because of a fleeting monetary disequilibrium.

Preferred idleness may also be the result of factor owners searching for higher prospective prices. In other words, prices might not fall immediately in response to an increase in the demand for money because factor owners prefer to search for buyers willing to pay still higher prices for the factors of production. Value-free economics cannot deem preferred idleness as suboptimal because output falls. In the same way, we cannot negatively judge a worker who decides to increase his leisure and work only part-time.

An interesting case is what Hutt calls "irrational preferred idleness" (1977: 133). Hutt refers here to the possibility that workers are more concerned with the nominal wage rate than about real wage rates. Out of dignity, prestige, or opposition towards "capitalist exploitation" workers are

[13] Political interventions can also influence this preference (Hülsmann 2003b, 75).
[14] Although not directly related to the demand to hold money, preferred idleness is interest rate sensitive. As interest rates increase, the foregone profit opportunity of holding unsold goods increases. Low interest rates correspondingly offer little opportunity cost to entice entrepreneurs to offer their goods for sale at prevailing prices.

not willing to take lower nominal wage rates even if it would *not* imply a reduction of their real wage (*ibid*: 139). This motive does not change the fact that these workers "prefer idleness to work at that rate and they take it" (*ibid*: 138). Idleness and sticky wages are the result of the valuations of workers on the free market.[15]

One reason why sellers may prefer idleness is the cost of changing the price itself. This kind of "stickiness" in prices is not troublesome as it falls into a band of "optimal stickiness" (Joseph T. Salerno 2009). Restaurants, the typical example of firms exhibiting "menu" costs, can (and do) instantaneously change prices via daily specials, happy hours, free drinks, starters included with meals, or any number of price-altering techniques that do not rely on costly price adjustments.

It is true that there are always costs involved in adjusting prices. These adjustment or price setting costs are like any other cost of production. They serve to bring a good or service to the attention of the potential consumer or buyer. There is nothing special about them that would justify or necessitate an increase in fiduciary media. Indeed, in a survey of the literature on nominal rigidities, Mulligan (2006: 325) finds the evidence for menu costs to be largely underwhelming (Mulligan 2006: 325). Shah (1997: 43-47) points out that there can be no consensus as to how often price adjustments *should* occur, or how efficient the resultant markets based on these adjustments could be.

Similar to preferred idleness, Rothbard (1962: 137) discusses the "reservation demand" of a good. This is the supply of a good that an individual would rather keep off the market and in his personal holdings. Reservation demands do not exist in an absolute sense, but instead rely on the

[15] Another question would be if workers could and should be deceived by increasing the money supply. It is questionable that they could be deceived continuously about their real wage. It is certainly paternalistic to try to deceive the worker to induce him to work through changes in his real wage rate in the same way that it is paternalistic to change his preferences in regard to gambling, drinking, holidays, etc (Hutt 1977: 141).

prices offered. An individual may prefer to not adjust his price accordingly as he has a reservation demand to hold a stock of a good until a predetermined price is reached. If the price does meet the predetermined price, the individual would now sell the good and enable the price to adjust.

While there is nothing inherently objectionable with treating the price adjustment process in terms of the costs and benefits, the calculus of cost and benefits is not a substitute for entrepreneurial alertness (Garrison 1995). The important point is not the costs of adjusting input costs to their output prices, for this is a basic and omnipresent economic function. The key is to not inhibit entrepreneurs from making the appropriate cost adjustments before the costs are realized. Increasing fiduciary media in the face of necessary input cost adjustments only masks the problem that entrepreneurs face, and pushes it back an additional step. For even if costs were fully aligned through a flexible money supply, income effects would almost assuredly guarantee that quantities would not be in equilibrium. Substituting a cost-benefit analysis for entrepreneurial alertness only shifts the problem to another level.[16]

Higher than expected price setting costs, as well as higher than expected marketing or energy costs, are results of an entrepreneurial forecasting error. When the adjustment costs are higher than the benefits expected from the adjustment, prices will not change. There are no grounds to intervene and increase the money supply if market participants deem costs (price setting or otherwise) too high in relation to the expected benefits. Thus, prices may exhibit some degree of stickiness in their adjustment process. As long as this adjustment lag is not caused by interventions to the pricing process, there is no significant issue at stake.

[16] One question that could be asked of free bankers at this point is by what measure the costs of increasing the money supply are to be balanced against the benefits of halting a decrease in production through maintained output prices.

Aggregate analyses lead to erroneous conclusions

The price of money – its purchasing power – may be expressed in terms of any good or service exchanged on the market. This does not imply, as free bankers argue, that when an individual's demand for money changes *all* prices are required to change in a painful process marked by price stickiness. This argument relies on an unnecessary aggregation of the demand for money.[17]

The demand to hold cash balances is determined individually. When an individual increases his demand for money he abstains from buying or increases his sales of goods and services, affecting their specific prices. Only an aggregate macroeconomic approach creates a need to change the general price level in response to a change in the demand for money due to problems resulting from these general price level changes. Yet, in the market process, individual prices adjust in response to changes in the demand for money of the individual market participants without any mystery.

Free bankers fail to address the question of how increasing available credit will equilibrate the *specific* prices. Just as price changes from supply and demand shifts happen piecemeal, price changes resulting from the issuance of fiduciary media will likewise affect only specific prices. With no way to know which prices will become "unstuck" the effectiveness of pursuing such a policy is debatable.

[17] As Selgin (1998: 4) cautions in the introduction to his *The Theory of Free Banking*: "Throughout the study emphasis is placed on the distinctive, *macroeconomic* implications of free banking. Its microeconomic consequences, though not unimportant, are less controversial." While the *consequences* of an aggregate approach to monetary disequilibrium may be uncontroversial, it is clear that the results stemming from the approach advocated to *counter* such disequilibria are decidedly less so.

Selgin (1990: 268) and Yeager (1990) note that a further cause of unevenness of price adjustments during a monetary disequilibrium is that its presence may not be felt in all markets at once. Assuming for the sake of the argument that this "feeling" is of any relevance for the coordination of individual markets, these authors fail to note that the same effect will occur if a flexible money supply is altered to compensate for these monetary disequilibria. Compensating monetary injections do not affect all markets at once but rather first in a particular market before spreading through the rest of the economy.

Cantillon effects ensure that any augmented credit supply aimed at reducing or eliminating monetary disequilibria in certain areas will not be felt evenly or equally in all markets. Some prices may increase which were not causing the original disequilibrium; other prices which were troublesome may be wholly unaffected by this process. Further problems arise even if we assume that the monetary disequilibrium analysis is valid. As different prices are affected, specific monetary disequilibria may not be alleviated.

Let us imagine that both prices *A* and *B* are downward sticky. Price *A* "needs" to fall because of an increase in the demand for money but is sticky: a surplus is the result. Price *B* is sticky but has no reason to change because relative demand for it has simultaneously increased with the increased demand for money. Now, credit is expanded and directed towards good *B*, causing its price to increase. Good *A*'s price will still need to fall in price to be sold. Disequilibrium will still persist regardless of the use of credit to counter sticky prices.

A price level decline caused by monetary factors, i.e., an increased demand to hold cash balances depressing the general price level, does not occur homogeneously across all goods. To offset fully any monetary disequilibrium the money supply needs to be increased or decreased at the

exact same time as at the source of the issue. For example, an increase in the demand to hold cash today would require an offsetting increase in the money supply today. This is complicated in practice. The money supply changes only incrementally, not as an automatic adjustment to changes in the demand to hold money but rather through changes in its perception. As a result, changes in the money supply rely on notice by the banking sector via specific reserve levels, with subsequent general adjustments to the issuance of fiduciary media.

Hayek (1933) advocated stabilizing nominal spending to ward off a secondary contraction. Such a situation occurs when both prices and wages were generally too high. However the problem on the eve of the bust is, as Garrison (2000: 7) makes clear, not one of all prices being generally too high but of the pattern of prices being inconsistent with consumers' demands. Altering the *general* price level will do little to rectify these *relative* price misallocations.

More important, if obvious, is the reality that the new issuance of money will not necessarily be made to those who have increased their cash balances. Free bankers fail to address how price stickiness caused by a decentralized, or piecemeal money market can be cured by a centrally increased money supply. While prices are assumed to be unable or slow to adjust because of decentralized decision-making, centralized or exogenous changes in the money supply are not assumed to suffer the same fate. In any case, if the general price level is the one free bankers reckon to be stuck, "unsticking" it via a credit injection will either not change the situation much, or will change it for the worse. If a credit injection affects the general price level, then the relative prices from before and after the credit increase may remain unchanged. This would be a case of monetary neutrality. If monetary neutrality does not hold then we will get Cantillon

effects, in which case it is anyone's guess which goods will see their prices unstuck and which the new credit will not affect.[18]

Assuming that a general price level must be adjusted, there are two further difficulties that arise. First, the essential question of *what* price level is in need of adjustment is difficult to answer. Second, the issue as to whether the price level is actually in need of adjustment or only *perceived* to be so is of critical importance.

Selgin (1990: 143) reckons that we should turn to the general consumer price index to answer the former question.[19] At the same time, free bankers do recognize that if a helping hand is desired to aid the price adjustment process, it should only be offered to those prices that are *maladjusted* with regards to monetary disturbances. There may be many items in any price index that adjust unencumbered by monetary disequilibria: commodities, for example. Selling on well-organized and liquid exchanges, few could argue that there is any significant degree of injurious price stickiness inherent in them. Focusing on a broad-based index – the CPI in this case, although any index would prove to be too broad for the stated process – shields bankers or entrepreneurs from the complexities of the price adjustment process.

While the CPI may be one such general price level that could be used to adjust, it is doubtful that this will achieve the goal of making the "stuck" prices "unstuck." Not all goods are purchased with money – a great number are consistently purchased with credit. The prices of goods bought with credit do not directly affect the demand for money (Ball and Mankiw 1994). Consequently,

[18] Ball and Mankiw (1994: 137) make a similar point regarding monetary policy shocks to real versus nominal variables.

[19] Yeager (1956) largely brushes aside the question of what price level to adjust. While his reliance on the fact that a clear change on the value of money would be evident by "*any* reasonable indicator", there can be no doubt that an equilibrium or disequilibrium situation was persisting. While this may be true for high rates of price inflation, or extreme situations of monetary disequilibrium, the more mundane state of affairs has mild price inflation and relatively little monetary disequilibrium. In these cases the question as to what price level to adjust takes on increased significance.

adjusting a broad-based price index that includes both those prices that are normally credit-based *and* those that are normally cash-based will not necessarily unstick the necessary prices. Typically only those goods that are purchased with money are considered sticky (empirical evidence and experience largely bears this true). Adjusting the credit supply through fiduciary media may not achieve the desired goal of unsticking money prices.

An increase in fiduciary media is unnecessary and self-defeating

In light of a constant money supply, any increase in cash balances will place downward pressure on prices. As individuals are seeking to increase their real cash balances, this involves a relatively and increasingly small amount of nominal holdings due to a decline in the general price level (Mises 1949: 402, 421). When the demand for money increases, its purchasing power is bid up and real cash balances automatically increase, thereby satisfying the demand for an increase in real cash holdings. It is not necessary to increase the supply of money to satisfy the increase in demand for real cash balances. An elastic supply of fiduciary media frustrates this very process (Hülsmann 2003a: 50), by placing upward pressure on the price level (in the case on the goods purchased with the increased money supply). Real cash balances are inhibited from rising, causing individuals to compensate by increasing the rate of increase in their nominal cash balances. What starts as a relatively innocuous process may potentially spiral out of control as individuals require ever-increasing nominal amounts of money to achieve the real cash balance they desire. While increasing real cash balances can be achieved naturally and automatically via price adjustments, free bankers posit it advantageous to impose this change exogenously by

altering the money supply. Changes in *real* cash balances are substituted for changes in *nominal* cash balances.

Moreover, any increase in the money supply results in a redistribution of wealth. Assume that one individual increases his cash balances, and that in an offsetting transaction the banking system increases credit. Be this individual the receiver of the fresh credit or not, a redistribution occurs. The net result of the credit increase is an increase in the general price level. Even if the general price level is maintained, the relative positions of the "hoarder" before and after the transaction are very different. Initially, individuals increased their nominal cash holdings to increase the real value of their cash balances. Not only has this been disrupted by a compensating money issuance placing downward pressure on this balance, there is also a loss of wealth as their cash savings is now of a reduced purchasing power compared to earlier. Additionally, the price level of goods which the cash balance aims to purchase – those future goods that will be purchased at an unknown future date with the accumulated savings – will be of a higher price than otherwise.

Meanwhile, some receiver of the increased money supply is afforded the opportunity to purchase goods at a lower price than would have been the case without the increase in the demand for real cash holdings. As one individual – the saver – has decided to reduce his level of spending (be it by abstention from consumption or disinvestment), specific goods that he would have otherwise purchased will decline in price (i.e., a good-specific price deflation results). If the receiver of the increased money supply was to purchase goods in the same pattern that the hoarder had renunciated, at least one of the free bankers´ goals would be satisfied: specific price levels would be maintained in light of changes occurring not from shifts in real demands, but from monetary

disturbances. It is more likely that the receiver of the increased credit will purchase a different good, not fulfilling this process perfectly.

Calculation and fiduciary media

Finally, we may consider whether changes in the quantity of fiduciary media are a complicating factor entrepreneurial calculation.

Free bankers argue that flexibility in low-powered money through changes in reserves will more optimally account for purchasing power discrepancies caused by shifts in the demand to hold cash balances. We do not argue for a constant money supply, but rather that flexibility occurs in the quantity of high-powered money (i.e., money proper). In a free market, high-powered money would expand according to the general profit rate prevailing in an economy.

These are two radically different prescriptions, which, not surprisingly, stem from two radically different analyses. Having gauged the reasons for and effects of a flexible low-powered money supply, we now look at how this affects entrepreneurial calculation.

Is it more important that money´s value be stable than sticky? After all, "[s]tickiness in the value of money is poor responsiveness to forces trying to change it; stability is steadiness through avoidance of forces trying to change it" (Yeager 1956: 17). Two words with similar connotations have vastly different meanings. Stable money is responsive to real shocks affecting its value, while at the same time not overreacting to such shocks. Flexible reserve requirements, so the story goes, allow for just enough responsiveness in the money supply to give money this stability.

Alterations in the money supply can be likened to a flexible commodity standard (Kevin Dowd 1983: 143). Monetary authorities in the past allowed changes in the value of gold (or whatever commodity standard prevailed at the time) which affected the value of the monetary unit. One particular problem that prevailed, and still prevails, is that devaluations shatter confidence in the currency and introduce a new risk to foreign-exchange transactions.

We may generalize this insight somewhat. For it is not only entrepreneurs faced with foreign exchange risk that are given difficulties via changes in money´s value: *all* entrepreneurs see their forecasting frustrated via this process.

Entrepreneurs must now calculate along additional margins. First, the overriding goal of correctly forecasting consumer demand for a product remains instrumental *taking into account* changes in the demand for money. Now, however, there is an additional forecast required – changes in the quantity of fiduciary media. Difficulties from this introduced complication are recognized by both fractional reserve free bankers (Dowd 1993: 268; Horwitz 2000; Roger Koppl 2002) and 100 percent reservists (Bagus 2008; Howden 2010) alike. Monetary disequilibrium may be exacerbated as attention is diverted away from satisfying consumer wants to focusing on the actions of a monetary authority or a fractional reserve free banking system.

Conclusion

Birch *et al* (1982: 171) reckon that: "[M]onetary disequilibrium is not easy for ordinary economic agents to diagnose. It does not show up as any specific frustration of buyers or sellers.… This very diffusion renders the correction of monetary disequilibrium sluggish." Is it

really? Does it matter? Is there a better alternative? These are the questions we have answered in this paper: At times; Not really, and; No.

Price adjustments may be sluggish at times. This should not be confused with a prohibition keeping prices from adjusting. Some prices may not be changed immediately on the free market in response to demand shifts. On this matter we can find much agreement between the free bankers and the 100 percent reservists. On the implications and prescriptions we find ourselves at odds.

Prices for goods traded on well-organized markets see their prices adjust almost instantaneously to shifting supply/demand conditions. Other prices may have, for a myriad of reasons, a structural stickiness causing adjustments to take longer. In any case, entrepreneurs can, and do (as it is their very task) anticipate price changes and act accordingly. Price stickiness is not a necessary problem assuming forward-looking entrepreneurs. Free bankers ignore the essence of entrepreneurship when they prescribe fractional reserves to cure sticky prices.

Moreover, when factor owners are not willing to change their prices immediately, it is their very own preference. Preferred idleness may be the cause and there is no reason to intervene.

While free bankers suggest a flexible money supply through the issuance of fiduciary media to counter such stickiness, we suggest a different approach. Several salient effects occur when the money supply is altered that seem to be largely excluded from free banking analysis.

Inevitable wealth redistributions will occur whenever the money supply is adjusted. Individuals who transact – either lending or borrowing– lacking knowledge of the degree to which the money supply is altered will find themselves at a distinct disadvantage. Although these groups are the most evident example of a negative wealth redistribution through price inflation or

deflation, there is an even more crucial group affected – the money savers themselves. Individuals pursue saving money, that is to say, they increase their real cash balances, so that they may consume more in the future. As they save in monetary units that are devalued through inflation, they are less able to purchase an increased amount of goods in the future. Savers are harmed at the expense of spenders.[20]

The argument that sluggish cost adjustments require an inflationary policy also fails to pass muster. Menger´s imputation theory of value demonstrates that higher order goods are assigned value through imputation from the lower orders. The costs of inputs for lower order goods are merely the prices of higher order goods. Most importantly, the very task of entrepreneurs is to forecast future prices of their products and bid for their factors of production accordingly. In other words, factor prices move in response to an expected change in the demand for money before consumer goods' prices. Free bankers deem it better to frustrate this process by allowing a flexible money supply to allow consumer goods´ prices to increase when input costs "fail" to adjust downward.

Last, we looked at complications arising in entrepreneurial calculation with a flexible money supply. Several free bankers recognize the difficulties that arise when a central monetary authority adjusts the money supply. Resources are wasted as entrepreneurs must now focus attention not solely on consumer wants but also on monetary policy. It remains to be seen how entrepreneurs will deal any better with a monetary policy enacted piecemeal by a multitude of independent banks instead of one implemented through a centralized authority.

[20] An atmosphere of price stability would still harm savers. The absolute level of price inflation or deflation is inconsequential. What matters is the level that prevails compared to what would have happened in the absence of fiduciary media issuance. For a similar point, see Mises (1943).

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