

Written Testimony by

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## Production of Money on the Market

In a seminal article published in 1920, Ludwig von Mises demonstrated that there is only one test of whether or not production of something conveys a benefit on society at large.<sup>1</sup> It must be shown that resources have greater value when used to produce a good to satisfy the preferences of some people than when they are used to produce a different good to satisfy the preferences of other people. Production left to the market satisfies the profit and loss test of socially beneficial production. For Tim Cook to obtain computer chips, glass screens, labor and other resources to produce iPads, he must bid them away from other entrepreneurs who would have used them to produce other goods. By incurring the costs of production, Apple Inc. compensates the owners of resources for the value of the other goods they could have produced to satisfy a different group of consumers. Apple then uses the resources to produce iPads, which consumers of its products value more highly as demonstrated by their generating enough revenue for Apple Inc. to more than cover its costs.

The profit and loss test applies to all production in the market, including mining gold and minting coins. A gold mining company will produce when the revenues from the sale of its output exceed the costs of buying its inputs. The company moves labor, mining equipment, land, and other resources away from uses consumers find less valuable into gold mining, which consumers find more valuable. A minting company will produce when the revenues from the sale of its service in certifying gold exceed the costs of buying its inputs. The company moves labor, minting equipment, land, and other resources away from uses consumers find less valuable into minting coins, which consumers find more valuable.

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<sup>1</sup> This is an implication of Mises's famous argument that central planners cannot economize the use of resources in society. See Ludwig von Mises, *Economic Calculation in the Socialist Commonwealth* (Auburn, Ala.: Mises Institute, 1990 [1920]) and Mises, *Human Action*, scholar's edition (Auburn, Ala.: Mises Institute, 1998 [1949]), pp. 685-711.

Like the production of all other goods, production of money left to the market is regulated by profit and loss. Additional money is produced when demand for money increases or demand for other goods produced by the same resources decreases. If the demand for money increased, the value of gold coins would rise. Minting companies would increase production to capture the profit. As they increased the supply of certification service, its price would decline and as they increased their demands for resources to certify gold, resources prices would rise and the profit would dissipate. If demand for other goods declined, input prices would fall. Minting companies would increase production to capture the profit and, by doing so, eliminate profit from further production. In this way production of money in the market is socially optimal.<sup>2</sup>

The profit and loss test also applies to the production of money certificates in the market.<sup>3</sup> Money certificates are titles of ownership to money issued by banks that serve as money substitutes. People may find convenience and safety in using checking account balances instead of commodity money when making trades. Banks will produce and maintain checking accounts for customers if they are willing to pay fees to banks that generate revenues sufficient to cover the costs of managing the accounts. If the demand for checking accounts increased, then banks would expand them to capture the profit. As they increased their supply of checking account services, the fees would decline. And as they increased their demand for the resources to manage checking accounts, their prices would rise. As a consequence, profit would dissipate and additional production would cease at the socially optimal point.

The profit and loss test also applies to financial intermediation. Banks perform a middleman function in credit markets by borrowing from savers and lending to investors. They

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<sup>2</sup> Mises wrote that making money production conform to profitability and not politics, “is not a defect of the gold standard; it is its main excellence,” *Human Action*, p. 471.

<sup>3</sup> On bank production of money certificates and credit intermediation, see Jesús Huerta de Soto, *Money, Bank Credit, and Economic Cycles*, trans. Melinda Stroup (Auburn, Ala.: Mises Institute, 2006 [1998]), pp. 1-36.

provide the services of pooling the savings, checking the credit worthiness of investors, and bearing the risk of loan defaults. If customers of banks find these services valuable, they will be willing to accept lower interest rates for lending to banks than investors will be willing to pay banks to borrow. Banks will provide financial intermediation services, if the revenues earned from the interest rate differential are large enough to cover the costs of producing the services. If demand for these services increases, banks will increase production of them. Their increased demand to borrow from savers and supply to investors will reduce the interest rate differential. Their increased demand for the resources will raise their prices. Profit will dissipate and additional production will cease at the socially optimal point.

By subjecting all production, including that of money and banking, to the test of profit and loss, the market renders an integrated system of production that economizes the use of all resources for society at large.

## Monetary Inflation and Credit Expansion

An elastic currency breaks the integration of production on the market by being an element foreign to the test of profit and loss. An elastic currency has two characteristics: a central bank empowered to issue fiat paper money and commercial banks empowered to issue fiduciary media.<sup>4</sup> The production of fiat paper money cannot be regulated by profit and loss. It is always profitable to produce more. In 2011, the average cost of the 5.8 billion Federal Reserve Notes produced was \$0.091.<sup>5</sup> So a profit of around \$4.90 is made by printing and spending a \$5 bill. If the Fed continued order the printing of FRNs as long as it was profitable, then eventually prices of inputs would rise so that it cost more than \$5 to print a \$5 bill. Then the Fed could order the printing of \$50 bills instead and so on indefinitely as we have witnessed in hyperinflations

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<sup>4</sup> On elastic currency, see Murray Rothbard, *The Case against the Fed* (Auburn, Ala.: Mises Institute, 1994).

<sup>5</sup> Bureau of Engraving and Printing. ([moneyfactory.gov/uscurrency/annualproductionfigures.html](http://moneyfactory.gov/uscurrency/annualproductionfigures.html)). April 27, 2012.

like Zimbabwe's. To avoid destruction in hyperinflation, production of fiat paper money must be regulated by policy, by a rule that is arbitrary with respect to economizing production for society at large.

The production of fiduciary media cannot be regulated by profit and loss.<sup>6</sup> Fiduciary media are redemption claims for money which are fractionally backed by a reserve of money. Banks issue fiduciary media by creating loans. For example, a customer applies at his local bank for an auto loan of \$25,000. If the bank agrees to extend the loan, it just writes a \$25,000 balance into the customer's checking account. The loan generates interest revenue for the bank while the cost of issuing fiduciary media is nominal. It is always profitable for the bank to create another loan by issuing fiduciary media. If a bank issues more fiduciary media by creating credit as long as it is profitable, it will become illiquid and insolvent and end in collapse. To avoid such destruction, a bank must regulate its issue of fiduciary media via credit creation by policy, by a rule that is arbitrary with respect to economizing production for society at large.

Advocates of an elastic currency realize that its production cannot even be subjected to, let alone pass, the profit and loss test. As F.A. Hayek wrote, "There is no justification in history for the existing position of a government monopoly of issuing money. It has never been proposed on the ground that government will give us better money than anybody else could."<sup>7</sup> Advocates of an elastic currency merely assert that it can achieve a desirable outcome that a system of commodity money and money certificates cannot. There are three such claims for an elastic currency. First that it can keep the price level stable. Second, that it can prevent price deflation. And third, that it can accelerate economic growth.

## Maintaining Price Stability

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<sup>6</sup> On fiduciary issue and credit creation, see Murray Rothbard, *The Mystery of Banking* (Auburn, Ala.: Mises Institute, 2008 [1983]).

<sup>7</sup> F.A. Hayek, *Denationalization of Money*, 2<sup>nd</sup> edition (London: Institute of Economic Affairs, 1978 [1974]), p. 7.

There is no social benefit from keeping the price level stable. The alleged benefit is that price stability prevents wealth transfers between creditors and debtors and between workers and capitalists. But such transfers assume that entrepreneurs fail to anticipate changes in money's purchasing power. Entrepreneurs can earn profits and avoid losses by anticipating these changes just as well as changes in prices of other goods. If they anticipate rising prices for goods overall, then they will increase their demands for resources today bidding up wages today. Likewise, lenders will insist on higher interest rates today. An elastic currency adds another dimension of uncertainty to changes in money's purchasing power. It makes the task of entrepreneurs more, not less, difficult. In extreme cases, an elastic currency can result in wildly unstable prices that paralyze entrepreneurial decision making and destroy production on the market. Being regulated by profit, production of commodity money responds only to changes in people's demands. If money demand rises, the resulting increase in money's purchasing power would bring forth more production of money and moderate falling prices. The modest price deflation over time in a market economy is integral part of its economizing production.

Moreover, in practice the advocates of price stability aim at price inflation of around two percent per year. But, if entrepreneurs can adjust their expectation to cope with a two percent per year price inflation in an elastic currency system, then certainly they can properly anticipate and deal with a two percent per year price deflation under a commodity money system.<sup>8</sup>

Finally, two of the periods of most rapid economic growth in U.S. history were from 1820-1850 and 1865-1900. In each of these periods, the purchasing power of the dollar roughly doubled.<sup>9</sup>

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<sup>8</sup> The annualize rate of increase in the purchasing power of the dollar from 1815-1850 was 2.24 percent and from 1865-1900 was 1.75 percent.

<sup>9</sup> Murray Rothbard, *A History of Money and Banking in the United States* (Auburn, Ala.: Mises Institute, 2002), pp. 42-179.

## Preventing Price Deflation

There is no social benefit from preventing price deflation. There are two claims to the contrary. The first alleged benefit is that if prices begin to fall, then people form expectations that they will fall further and they put off spending today which pushes prices down even further which re-enforces deflationary expectations. The collapse of spending discourages production and employment. But, the downward spiral of prices is merely the logical implication of assumptions about expectations within formal economic models. If you assume that the agents operating in an economic model suffer from expectations that are self-reinforcing, then the model will produce a downward spiral. But, people in the real world can only obtain the services of goods by buying them. They choose at some point, to buy a good even if they expect its price to fall further. This happens every day in markets for consumer electronics as people buy tablet computers, cell phones, and so on knowing that prices will be lower and quality higher in the future.

Because there is demand for goods and hence prices, whether people expect prices to increase, decrease, or stay the same, speculation earns profit and avoids loss by accurately anticipating the level of future prices. If people anticipate a significantly lower price for a good in the future and withhold their demands for it today, the price quickly falls to the level they anticipated and then they buy the good. Speculation moves prices before they would move without speculation, but not further than they would move without it. This happens every day in financial markets as speculators move prices up and down without generating upward or downward spirals.

The second alleged benefit is that price deflation pushes down output prices but input prices are sticky; therefore, profits evaporate and entrepreneurs cut production and fire workers.

But entrepreneurs choose the degree of price stickiness that their customers and employees prefer. In many cases consumers prefer prices of goods to remain more stable from day to day or hour to hour or minute to minute instead of fluctuating with every increase and decrease in demands. In other cases, buyers prefer complete flexibility in prices. Entrepreneurs can earn profits and avoid losses by catering to these preferences. In many cases, workers prefer to have their wages set over a period agreed upon with the entrepreneurs instead of having them move daily or hourly with the movements in demand for the goods they help produce. In cases where workers desire more flexibility in their compensation, an entrepreneur will make stock in the enterprise part of their compensation. When circumstances change, it is in everyone's interest to modify the normal arrangements. Entrepreneurs offer deep discounts of their goods when demand permanently falls. They renegotiate contracts with workers and other input suppliers when losses accumulate. In this way, the degree of price stickiness in markets can be changed to avoid adverse effects.

Moreover, entrepreneurs earn profits and avoid losses by anticipating these changes. If they anticipate falling prices of their outputs, they will reduce their demands for inputs today pushing their prices down. When output and input prices fall together, profit and production are maintained. The symmetric process occurs during price inflation. If entrepreneurs anticipate higher output prices, they will increase their demands for inputs today pushing their prices up. As a result, output and input prices move up together and profit and production are maintained.

Even if the prices of inputs entrepreneurs buy remain sticky downward, the effect on their profit and production is cushioned by the decline in the value of the assets they own. The market value of their assets adjusts downward with the decline in the prices of their outputs as investors reduce their demands to hold claims to these assets in financial markets. A decline in the value of

their assets restores the profitability of production. Entrepreneurs with superior foresight in anticipating declines in the prices of their output will invest sufficient equity in their enterprises to cushion the blow and provide time for adjustments in the prices of their inputs.

UCLA economist, Andrew Atkinson, and Minneapolis Federal Reserve Bank economist, Patrick Kehoe, in a 2004 *American Economic Review* article, have shown that there is no correlation between deflation and depression.<sup>10</sup> Looking at the evidence across 17 countries over more than 100 years, they concluded, “A broad historical look finds more periods of deflation with reasonable growth than with depression, and many more periods of depression with inflation than with deflation. Overall, the data show virtually no link between deflation and depression.”<sup>11</sup> Even for the Great Depression, they find that while all 16 countries for which there were data experienced deflation only 8 of them had a depression. And the relationship between deflation and depression was not statistically significant. For all other periods, beginning in 1820 for some countries, 65 of 73 deflation episodes had no depression and 21 of 29 depressions had no deflation. They wrote, “In a broader historical context, beyond the Great Depression, the notion that deflation and depression are linked virtually disappears.”<sup>12</sup> When all periods are put together, they found that “a 1-percentage-point drop in inflation is associated with a drop in the average real growth rate of just 0.08 of a percentage point, say, from 3.08 to 3.00.”<sup>13</sup> Finally, when they break the data into Pre-WW II and Post-WW II, they find a stronger correlation between deflation and depression for the early period, but a correlation between inflation and depression in the later period.

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<sup>10</sup> Andrew Atkinson and Patrick Kehoe, “Deflation and Depression: Is There an Empirical Link,” *American Economic Review Papers and Proceedings* 94 (May 2004): 99-103. They define deflation “as a negative average inflation rate” and depression “as a negative average real output growth rate.” Ibid., p. 99.

<sup>11</sup> Ibid., p. 102.

<sup>12</sup> Ibid., p. 101.

<sup>13</sup> Ibid., p. 102.

## Stimulating Economic Growth

There is no social benefit from attempting to accelerate economic growth. The alleged benefit is that monetary inflation through credit expansion builds-up the capital structure of the economy more fully than otherwise. Monetary inflation and credit expansion generate the boom-bust cycle, however, not economic growth.<sup>14</sup> The capital structure of the economy is the stages of production from extraction of raw materials to the production of intermediate capital goods to the production of consumer goods. Iron is mined out of the ground, then steel is made, then fenders for an automobile, then the automobile is assembled. In a market economy, not only is each production process justified by passing the profit and loss test, but the entire capital structure satisfies people's inter-temporal, or time, preferences. The degree to which they desire to postpone their current consumption by saving and investing to build up capital capacity across the capital structure in order to enjoy more and better consumer goods in the future is satisfied in the market. If people intensely desire present consumption over future consumption, then the premium they place on the present, that is, the interest rate, will be high and the amount of their saving and investing will be small and their consumption will be large. Only a small number of investment projects will be profitable; therefore, the capital structure will not be built up extensively. If people lower their time preferences, then the interest rate will fall and they will save and invest more and consume less in the present. With more resources at their command, entrepreneurs will build up the capital structure more extensively. The greater productivity of the expanded capital structure results in the production of more and better consumer goods. This is the process of economic growth. And, as with other aspects of production in a market economy, people get the amount of economic growth that they prefer.

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<sup>14</sup> On the boom-bust cycle, see Mises, *Human Action*, pp. 535-583; de Soto, *Money, Bank Credit, and Economic Cycles*, pp. 265-395; F.A. Hayek, *Prices and Production and Other Works* (Auburn, Ala.: Mises Institute, 2008 [1931]); and Murray Rothbard, *America's Great Depression* (Auburn, Ala.: Mises Institute, 2000 [1963]).

Credit expansion suppresses interest rates below the levels determined by people's time preferences and increases funds for investment beyond the amount determined by people's preferences for saving. When the borrowers spend the additional money, they bid up the prices of the goods they are buying. Prices of houses and cars, for example, are pushed up by the additional demand of consumers made possible by credit creation. Prices of producer goods are also bid up by the additional demand of entrepreneurs made possible by credit creation. Prices for auto factories, lumber mills, are pushed up and the capital goods across the capital structure used to produce goods in the expanding areas, iron mines, timber lands, and so on. Monetary inflation through credit expansion makes it possible for borrowers to demand more assets without lenders reducing demands for other goods. Therefore, rising asset prices increase the profitability of their production while the profitability of other goods need not decline. Not enough resources are released from the production of other goods to complete all of the projects made profitable by the credit expansion. With a market monetary system, the proper amount of resources are made available because an increase in the supply of credit can only be brought about by people saving more and consuming less. The additional investment projects made profitable by the increase in saving are balanced by the projects no longer profitable because of the reduced consumption. But with an elastic currency system, the build-up of capital capacity and other investment projects financed with created credit do not wind up satisfying people's time preferences. The build-up of the capital structure during the boom is unsustainable. It ends in the liquidation of the build-up in the bust.

What brings the boom to an end is the re-establishment of people's time preferences and preferences for saving. People do this through the disbursement of their incomes. The credit created during the boom is spent by the borrowers to buy goods, houses, factories, etc. The

entrepreneurs who produce these goods then receive the new money as revenues for selling the goods. They pay producers to buy the resources used to produce the goods. The new money is then income for the producers. People disburse their income to satisfy their preferences, including their time preferences. They prefer to save only a fraction of their incomes. Although the entire amount of the new money issued starts out increasing the supply of credit, only a fraction of it winds up as supply of credit. Monetary inflation and credit expansion runs counter to people's time preferences and market economies operate to satisfy people's preferences.

Another factor working against the sustainability of the boom is that the further credit expansion extends the riskier the projects and the less credit worthy the borrowers become. As financial intermediaries, banks economize credit, lending to the highest return, most secure projects and the highest interest rate, most credit-worthy borrowers. Additional credit must be extended to lower return, less secure projects and lower interest rate, less credit-worthy borrowers. If monetary inflation and credit expansion go on far enough, investors refuse to accept the additional risk and sell out of the lines of production expanded during the boom. Since the prices of assets in the more sound projects have been bid up along with the prices of projects in the less sound projects, investors in the more sound projects will also lose wealth if they continue to hold their investments.

Once people restore interest rates and asset prices to the levels that reflect their preferences, the particular lines of production in which mal-investments have been made in building-up the capital structure during the boom are revealed. The bust consists of reconfiguring the malformed capital structure to best satisfy people's preferences. Mal-invested assets must be sold to entrepreneurs in lines of production that will prove to be profitable. Labor must be re-allocated away from boom lines into production supported by people's preferences. As with all

production decisions, these can be made in the most economizing fashion by entrepreneurs earning profits from their superior foresight in satisfying preferences and suffering losses for their inferior foresight.

An elastic currency is the cause of financial crises and economic downturns. Supplant it with a market system of commodity money and money certificates and there would be no crises and downturns. The residual business fluctuations would not justify government intervention to solve the social problems associated with crises and downturns.

As the monetary system has become more elastic in American history, booms and busts have worsened. George Selgin, William Lastrapes, and Lawrence White conclude, in their 2010 *Cato Working Paper*, that recent research demonstrates that the Fed has not lived up to its original promise.

Selgin, Lastrapes, and White summarize their findings on the performance of the Fed in these words: “Drawing on a wide range of recent empirical research, we find the following: (1) The Fed’s full history (1914 to present) has been characterized by more rather than fewer symptoms of monetary and macroeconomic instability than the decades leading to the Fed’s establishment. (2) While the Fed’s performance has undoubtedly improved since World War II, even its postwar performance has not clearly surpassed that of its undoubtedly flawed predecessor, the National Banking system, before World War I. (3) Some proposed alternative arrangements might plausibly do better than the Fed as presently constituted. We conclude that the need for a systematic exploration of alternatives to the established monetary system is as pressing today as it was a century ago.”<sup>15</sup>

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<sup>15</sup> George Selgin, William Lastrapes, Lawrence White, “Has the Fed Been a Failure?,” *Cato Working Paper* Dec. 2010, p. 1.

I concur with their conclusion. Economic theory and historical evidence demonstrate that a central bank confers no benefit on society at large. The Fed should be abolished and a market monetary system of commodity money and money certificates should be established.

## Monetary Reform

The goal of monetary reform is to make money production subject to the profit and loss test of socially beneficial production. Money production must become an integral part of the market economy. There may be several viable paths of transition to a system of market production of money, but any such path must take account of Carl Menger's famous demonstration that an item can only arise as money consistently with what people are actually using as the most widely traded good.<sup>16</sup> After the transition, a monetary system integrated into the market economy could begin.<sup>17</sup>

Federal Reserve Notes are money in the American economy. Thus, the most direct way to establish a market monetary system is to reestablish FRN as redemption claims for commodity money. The most widely-recognized commodity money today is gold coins. The primary step in monetary reform, then, is to turn FRNs into 100-percent-reserve redemption claims for gold coins.

The other step along this path to a market monetary system is to establish a 100 percent reserve of money against bank issued fiduciary media. The Fed's tripling of its balance sheet in response to the crisis of 2008 makes this part of the transition easier. Banks now hold reserves against their checkable deposits in excess of 100 percent. In early April, banks held \$1,587 billion in total reserves against \$1,204 billion in total checkable deposits. Fifty billion dollars of

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<sup>16</sup> Carl Menger, "On the Origin of Money," *Economic Journal* 2 (1892): 239–55; Peter G. Klein and George A. Selgin, "Menger's Theory of Money: Some Experimental Evidence," in John Smithin, ed., *What Is Money?* (London: Routledge, 2000), pp. 217–34.

<sup>17</sup> On such monetary reform, see Rothbard, *Mystery of Banking*, pp. 247-268; Salerno, *Money, Sound and Unsound*, pp. 333-363; and de Soto, *Money, Bank Credit, and Economic Cycles*, pp. 736-745.

their total reserves consisted of vault cash and \$1,537 billion reserve balances in accounts with the Fed. Therefore, banks would need to build their cash reserves up to 100 percent of their checkable deposits of \$1,204 by redeeming \$1,154 billion of their reserve balances at the Fed for cash. The Fed could acquire the cash needed by selling some of the more than \$2 trillion in assets it built up on its balance sheet during the crisis or by printing more FRNs or some combination of the two. Whatever the total value of FRNs was at the point where checkable deposits are 100 percent backed by a reserve of cash, the redemption value of all FRNs could be set by calculating the ratio of FRN to the gold holdings of the Fed. If no change in the stock of FRNs outstanding was necessary to accomplish the transition, then the calculation would be as follows. The Fed is showing on its balance sheet of April 18, \$11.041 billion in gold holding. Valued at \$42.22 per ounce, this is 261.5 million ounces of gold. On the same balance sheet, the Fed shows \$1,100,160 million in currency in circulation. Thus, the redemption ratio would be \$4,207 per ounce of gold. The actual calculation, however, could only be done after an audit of the Fed and the process of establishing a 100 percent cash reserve, described above, were completed.<sup>18</sup>

Once this transition was accomplished, the government should permit private production of money and money certificates according to the general laws of commerce. Mining and minting companies would produce commodity money that people made profitable by their demands. To earn profit, entrepreneurs would produce coins from the metals, in the weights, and with the designs people preferred. They would keep their costs down and invest and innovate when people's demands made it profitable. Scholars have chronicled many historical episodes of private production of coins. Recently, George Selgin, in his book *Good Money*, has recounted the

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<sup>18</sup> Data from Federal Reserve Statistic Releases: H.3 Aggregate Reserves of Depository Institutions; H.6 Money Stock Measures; and H.4.1 Factors Affecting Reserve Balances. April 19, 2012.

production of private coinage in England in the late 18<sup>th</sup> and early 19<sup>th</sup> centuries. As he shows, private coinage thrived until the British government outlawed it in 1821.<sup>19</sup>

Banks, too, should be put under the general laws of commerce including those relating to warehousing money by holding a 100 percent reserve of money against their money substitutes. Banks would earn profit by producing the amounts and types of money substitutes that satisfied people's demands. To earn profit, they would keep their costs down and invest and innovate when people's demands made it profitable. The operation of 100 percent reserve banking is described in Jesús Huerta de Soto's book, *Money, Banking, and Economic Cycles*. As he documents, money warehouse banks thrived in Amsterdam for over a hundred years in the 17<sup>th</sup> and 18<sup>th</sup> centuries.<sup>20</sup>

## Conclusion

No one can describe today the configuration of commodity money and money certificates that entrepreneurs would bring about if permitted to operate private enterprises in their production any more than one could have predicted in 1900 the development of the 21<sup>st</sup> century automobile industry or predicted in 1950 the 21<sup>st</sup> century consumer electronics industry. What we do know is that their production would be regulated by profit and loss and therefore, would result in the satisfaction of people's preferences. The monetary inflation and credit expansion of our elastic currency system would be eliminated and with it the booms and busts that have plagued our history.

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<sup>19</sup> George Selgin, *Good Money: Birmingham Button Makers, the Royal Mint, and the Beginnings of Modern Coinage, 1775-1821* (Ann Arbor: University of Michigan Press, 2008).

<sup>20</sup> De Soto, *Money, Bank Credit, and Economic Cycles*, pp. 37-114.