Reserve commodity bonds and property tax

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Abstract: Paper [1] proposes a commodity-based monetary pricing method to explain economic crises and introduces the use of reserve commodity bonds as a mechanism to address economic crises. In this paper, we provide additional details about reserve commodity bonds and further analyze how, in a society where reserve commodity bonds are used to stabilize the value of money, the depreciation of reserve commodities determines the amount of property tax.

Keywords: economic crisis, reserve commodity bonds, property tax.

1. Problem formulation

1.1 Pricing methods for monetary commodities

The paper [1] proposes a method of pricing goods based on monetary factors to explain economic crises. The specific content is as follows.

The initial stage of the economy. In the initial stage of economic development (e.g., post-war reconstruction), individuals create goods through labor, and these goods are exchanged using money. This establishes a balanced relationship between production and consumption.

Emergence of the problem. As the economy develops, goods are produced in increasing quantities, and workers accumulate significant amounts of money. However, the pricing of goods is not based on the total amount of money and goods in the economy but rather on the limited amount of circulating money relative to the total supply of goods. This results in a shortage of circulating money (relative to the total goods), leading to deflation (a decline in the prices of goods).

Consequences of deflation. When goods' prices fall excessively, producers are unable to cover their production costs, causing production to stagnate. This occurs despite there being no objective issues with resources, technology, or other production factors. The problem arises due to flaws in the pricing mechanism, making continued production unfeasible.

Triggering conditions. Economic crises are often triggered by the bursting of economic bubbles. After such a collapse, a large number of individuals incur losses, consumer demand declines, and circulating money decreases. The shortage of circulating money further drives down goods prices, causing producers to suffer losses and eventually halting production.

Fundamental problem. The root cause of the crisis lies in the pricing mechanism. Specifically, production costs exceed the selling price of goods under the constraints of limited circulating money, rather than being caused by a lack of objective material conditions.

1.2 Reserve commodity bonds

The paper [1] proposes an economic policy tool to address deflationary economic crises, with the following details.

Based on the reasons behind the pricing of monetary goods, economic crises are marked by a shortage of circulating money and a surplus of goods in the market, resulting in deflation. If all money and goods are used in the pricing mechanism, the prices of goods remain unchanged. One response to this situation is to channel idle money into purchasing goods, ensuring that all money and goods participate in the pricing process.

The paper introduces a mechanism called "Reserve Commodity Bonds" to achieve this objective. Reserve Commodity Bonds are bonds issued based on actual reserves of goods. Their basic function is similar to government bonds, but their value is backed by physical commodities (such as energy, food, and precious metals) rather than solely relying on government credit. The primary characteristics of Reserve Commodity Bonds are as follows. Commodity pegging. The value of the bonds is tied to a predetermined basket of reserve commodities (such as oil, gold, and food). Bondholders can choose to redeem the bonds at maturity either in currency or in goods. Fixed Returns. The bonds offer fixed returns similar to government bonds (e.g., an annual interest rate of 2%-3%) as compensation for wealthy individuals holding the bonds. Value Preservation. Due to the underlying value of the reserve commodities, the bonds provide a risk-hedging asset allocation option for wealthy individuals during periods of inflation or economic crises. Flexibility. Bondholders can freely trade the bonds on secondary markets, thereby meeting liquidity needs.

1.3 Problem formulation

We provide more details about reserve commodity bonds and then discuss how the depreciation of reserve commodities determines the amount of property tax in a society where reserve commodity bonds are used to stabilize the value of currency.

2. Details of reserve commodity bonds

2.1 Changes in demand and economic crisis

Keynesianism holds that a decline in aggregate demand is the primary cause of economic crises. A reduction in aggregate demand leads to an oversupply of goods in the economy, resulting in the amount of circulating currency exceeding the quantity of goods. This imbalance causes a decline in the prices of goods. Consequently, the prices of goods produced by labor fall below their production costs, leading to stagnation in production.

In the pricing mechanism of monetary goods, greater emphasis is placed on the role of pricing mechanisms in causing economic crises. When external factors lead to changes in aggregate demand—particularly a decrease in aggregate demand—this results in an oversupply of goods and a drop in prices. Theoretically, regardless of how aggregate demand fluctuates (e.g., from zero to a very high level), the total amount of money and the total amount of goods should correspond one-to-one. In this framework, the prices of goods should remain stable. Whether an individual exchanges goods for money or money for goods, they should not perceive a loss in value. However, this theory relies on several critical assumptions: (1) all currency must participate in the pricing of goods, (2) all currency must be used to purchase goods rather than being withheld or saved, or (3) any surplus goods beyond the circulating currency must be fixed and withdrawn from the market.

Therefore, the method of reserve commodity bonds involves the government borrowing all the idle currency in the economy and using it to purchase surplus goods. The purchased goods are then fixed and withdrawn from the market. By aligning the amount of circulating currency with the quantity of goods in the market, the prices of goods can return to equilibrium.

The money used by the government to purchase goods must come from idle currency within the economy, not newly issued currency. This is because the total amount of money and goods already correspond one-to-one. If the government increases the money supply, it will inevitably lead to a devaluation of currency. Although market reactions may be slow, this would result in greater inflation after the economic crisis subsides.

The government's approach is to borrow currency from the wealthy and use it to purchase surplus goods, then fix and withdraw those goods from circulation. This process can involve issuing reserve commodity bonds but does not necessarily require it. If bonds are issued, the government borrows money from the wealthy and provides them with bonds in return. If bonds are not issued, the government borrows money and provides the wealthy with promissory notes.

2.2 Can the government borrow the deposited currency

In the design of commodity reserve bonds, a critical premise is whether the government can borrow the large amount of idle money stored within society and use it to purchase substantial quantities of commodities. Below, we analyze whether the government can obtain these funds and propose different approaches to achieve this.

First, during an economic crisis or a period of deflation, people tend to save more. The government has two primary methods to borrow money from the public: one is by issuing government bonds (borrowing directly from the public), and the other is by borrowing from banks. Since deflation increases people's propensity to save, both of these methods make it relatively easier for the government to access idle funds. Alternatively, the government can obtain stored money by selling commodity reserve bonds, using the proceeds to purchase commodities.

Let us assume a scenario where wealthy individuals hoard their money at home or restrict banks from lending money to the government. In such cases, the government typically cannot print money directly and must rely on borrowing idle funds from society to purchase commodities. This constraint may prevent the government from acquiring sufficient commodities. Under such circumstances, the government can adopt a gradual and limited money-printing strategy to purchase commodities available in the market. If wealthy individuals continue to hoard money, it will inevitably lead to the depreciation of the currency. Consequently, the wealthy will be incentivized to either convert their money into commodities or lend it to the government.

2.3 Deflation and prisoner's dilemma

During deflation, as long as commodity prices are falling, a government with ultra-long-term investment capacity has the opportunity to engage in arbitrage by buying low and selling high. The reason why wealthy individuals are hesitant to purchase commodities in the early stages of deflation is due to insufficient personal credit. They fear that prices will fall too much, making it impossible for them to hold onto the commodities over the ultra-long term, forcing them to sell at a loss. However, this concern does not apply to the government. Therefore, deflation resembles a prisoner's dilemma: although everyone recognizes the better strategy (arbitrage through buying low and selling high), no one dares to act on it.

2.4 Currency value remains unchanged

By issuing reserve commodity bonds, the government can precisely regulate the amount of circulating currency and the quantity of goods in the market, ensuring that the prices of goods remain stable in the long term. In this scenario, for society as a whole, there would effectively be no inflation or deflation. The only issue that might arise would be an unequal distribution of goods produced by workers — the wealthy receive more, while laborers receive less. However, for everyone, the amount of goods they possess would gradually increase over time. From the perspective of society as a whole, this would mean that everyone continues to produce goods, while the wealthy store a large portion of these goods, or the government stores them instead. Since the purchasing power of money could remain roughly constant, money would merely serve as a stable medium of exchange. Ultimately, what individuals possess would be goods, with the wealthy owning a greater share of goods and ordinary people owning less.

3. Reserve commodity losses and property taxes

3.1 Banana commodity society

Let us assume a hypothetical society where there is only one type of commodity: bananas. Everyone in this society both produces and consumes bananas, and there is no currency in circulation. In this scenario, the wealthy individuals are allocated a larger quantity of bananas for various reasons, while ordinary people receive fewer bananas. The wealthy store their surplus bananas. Assuming that the shelf life of a banana is 10 days, storing bananas results in a daily loss of 1/10 of the stored amount. For example, if a wealthy individual stores one banana, they lose 1/10 of a banana per day. If they store 10,000 bananas, they lose 1,000 bananas daily. If the number of bananas allocated to the wealthy on a daily basis is fewer than 1,000, their total stockpile of bananas will cease to grow. Due to the deterioration of stored bananas, the total wealth of each individual—or the entire society—is subject to an upper limit. This limit arises because the loss incurred from storage effectively caps the accumulation of surplus wealth.

3.2 Banana currency society

Let us assume a society where there is only one type of commodity: bananas. Everyone in this society produces and consumes bananas, but the exchange of bananas must be conducted using currency. The government issues an amount of currency equivalent to the quantity of bananas available. Due to the continuous production of bananas, the quantity of bananas in the market increases over time, potentially leading to deflation. In order to stabilize the price of bananas, the government adopts a mechanism involving reserve commodity bonds. Specifically, the government borrows money from the market to purchase the surplus bananas, ensuring that the quantity of currency in circulation matches the quantity of bananas available.

At this point, the surplus bananas purchased by the government are stored as reserves. Any spoilage or loss of these bananas is borne entirely by the government. Wealthy individuals, on the other hand, who purchase government bonds, can convert those bonds back into currency without incurring any losses. Thus, the losses from the spoilage of bananas effectively become a liability for the government. These liabilities must eventually be recovered through taxation, specifically targeting wealth holders (the wealthy), because the spoilage of bananas should, in principle, have been borne by the wealthy but has instead been transferred to the government. The amount of banana spoilage essentially represents the minimum level of property tax that the government must collect.

If the government attempts to cover these losses by printing money and distributing it to ordinary citizens, it would undermine the long-term stability of the currency’s value. Alternatively, if the government taxes ordinary citizens directly in the form of bananas, it could exacerbate income inequality. Therefore, the spoilage costs associated with storing surplus bananas must be evenly distributed among wealth holders, as these costs inherently belong to them.

3.3 Commodity currency society

We believe that the composition of a commodity's price is as follows: the minimum value of a commodity's price, or its price relative to other commodities, is the cost price, because no one would produce the commodity if its price were lower than this threshold. The upper limit of a commodity's price is determined by its scarcity.

In the real world, there are many commodities, not just bananas. The government ensures that the amount of circulating currency in the market aligns with the quantity of goods by issuing commodity-backed bonds, thereby maintaining the long-term stability of the currency's value. When the government stores goods, it is inevitably inclined to store commodities that are easy to preserve for extended periods, such as oil and steel. Therefore, we need to consider how the prices of goods in the market, or the relative prices of different goods, will change. Since the government does not stockpile bananas, the price of bananas will remain slightly above their cost price. If bananas become scarce, their price will rise; if there is an oversupply of bananas, their price will drop, discouraging further production. The price of bananas is thus adjusted by the market.

For reserve commodities such as oil and steel, due to the government's large-scale purchasing (though at reasonable prices, only triggered by deflation), their prices will be slightly higher than their cost prices. This creates a societal dynamic where, for goods not purchased by the government, production continues only until there is enough for use, after which no further production occurs. Conversely, for reserve commodities purchased by the government, society produces them in large quantities. The extensive production of reserve commodities occupies nearly all available labor, leaving little to no labor for the production of other goods. As a result, the quantity of other goods will not be excessive.

Under such circumstances, the total quantity of goods available to everyone in society gradually increases. However, the wealthy acquire much more, while ordinary people acquire less. Once ordinary individuals possess enough goods to meet their needs, they lose the incentive to work. Naturally, the overall production of goods will then reach a state of equilibrium.

4. Stagflation and economic crisis

4.1 Explanation of stagflation

The paper [1] argues that stagflation is a unique economic problem distinct from inflation and deflation. This issue is caused by disruptions in certain stages of the production process (e.g., production bottlenecks due to oil shortages). The inflation and economic stagnation observed during such periods are merely adjustments to the normal price levels and economic growth rates corresponding to the disrupted production circumstances. In response, the government should aim to eliminate the underlying causes of the production bottlenecks. If, due to objective factors, it is impossible to address these disruptions, the resulting price levels and economic growth rates should be considered the "normal" state of development under such conditions. Subsequently, efforts should focus on managing inflation or deflation within this adjusted framework.

4.2 The opposite situation of stagflation

Stagflation arises when a certain stage in the production process of goods encounters an obstruction, causing the prices of all goods to return to the corresponding pricing levels under the conditions of such a bottleneck (manifested as inflation). Similarly, the rate of economic growth also adjusts to the level corresponding to this obstruction (manifested as a slowdown in economic growth).

If the obstruction in the production process is due to objective reasons and cannot be resolved, this process is typically accompanied by a significant transfer of social wealth. This is because, prior to the obstruction, the prices of all goods were determined based on an unobstructed production process. However, with the obstruction in place, the prices of goods adjust to a different equilibrium level.

Moreover, we posit that there may exist a situation opposite to stagflation. This situation is characterized by deflation and an acceleration of economic growth. It often occurs when a certain stage in the production process experiences a significant improvement in efficiency (such as through technological advancements), enabling the production of large quantities of goods at lower costs, thus leading to deflation. If the government employs tools such as reserve commodity bonds to regulate the market appropriately, deflation can be mitigated while simultaneously promoting rapid economic growth.

REFERENCES

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