

# The Black Hole of Logistics Costs of Digitizing Commodity Money

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## Abstract

From the point of view of modern logistics, the key functions of money are the store of value and low logistics (circulation and warehouse) cost. Although commodity money (such as gold and silver) has the advantages of a wealth store, its disadvantage is the high logistics cost. We proved that there is not such honest money from the perspective of logistics costs, which is both the store of value like precious metal and without logistics costs in circulation like digital currency. The reason hidden in the back of the depreciation of banknotes is the black hole of storage charge of the anchor overtime after digitizing commodity money. Accordingly, it is not difficult to infer the inevitable collapse of the Bretton woods system. Therefore, we introduce a brand-new currency named **honest devalued stable-coin** and built a attenuation model of intrinsic value of the honest money based on the change mechanism of storage cost of anchor assets, like gold, which will lay the theoretical foundation for a stable monetary system.

## 1. Motivations and Research Questions

Without sound money, there is no protection for savings and property, nor capital accumulation, nor long-term investment, nor entrepreneurship, nor social advance. Although it has long been the dream of economists to stabilize the buying power of the monetary units, the goal we have honest money always broken since the central bank depreciate the currency without limit (Ebeling, 2015).

The reason hidden in the back of the depreciation is the black hole of storage charge of anchor over time. The contributions of this paper can be summarized as follows:

- We proved that there is not such honest money from the perspective of logistics costs, which is both the store of value like precious metal and without logistics costs in circulation like digital currency.
- A brand-new currency named honest devalued stable-coin is introduced.
- An attenuation model of intrinsic value of the honest money based on the change mechanism of storage cost of anchor assets is built.

## 2. The evolution of money from logistics cost

In the process of monetary evolution, human beings always tend to choose money with lower logistics cost. The logistics cost of money in various historical periods are shown in Fig.1. Among them, cattle and sheep are the representative of barter, and shells are the representative of the primitive commodity money.

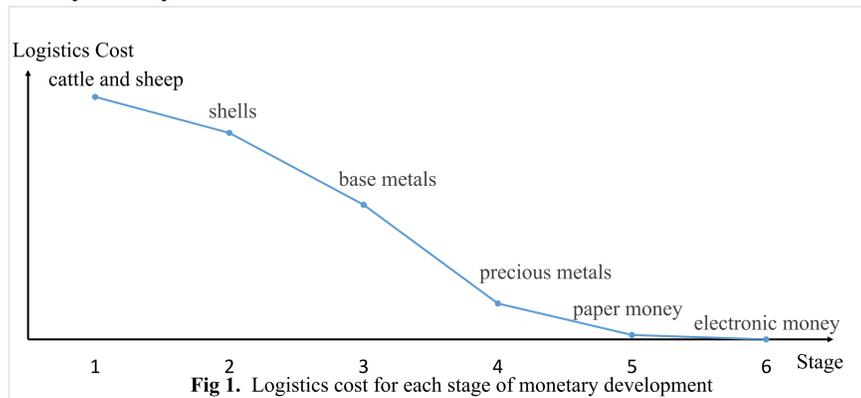


Fig 1. Logistics cost for each stage of monetary development

## 3. To design a new currency of stable value

As a technology framework to design a currency of stable value from the perspective of logistics cost, the design approach of future new money should satisfy the following constraints: (1) it has almost no logistics cost including transportation or carrying cost in circulation and safekeeping cost in storage; (2) It has no weight loss in circulation; (3) It has the function of storing wealth; (4) Hoarding of money can be avoided which will not result in a shortage of market liquidity; (5) It contains the property of scarcity resource, such as precious metal money (commodity money), and over-issue is not easy.

The above characteristics of the new currency actually are a combination of physical money and credit currency. According to these analyses, the best design approach for future money is the digitization of physical money.

## 4. Inventory cost of mortgage assets were intentionally hidden in the process of signifying commodity money

As an honest money with the function of a store of wealth must be a commodity money, and any bank note will enter a devaluation channel if they can't redeem on demand in gold or other assets of anchor. In order not to reduce the monetary function of a store of wealth, only to restore the goldsmith as the warehouse night watchman. In this way, we will put the logistics cost of commodity money back into people's sight from the disappearing black hole. And this cost would be clearly reflected on the bank notes or certificates of anchor goods.

## 5. The paradox of the existence of a currency of "stable value"

Up to now, there is no strict definition of stablecoins. Here, we will define a stablecoin as one kind of certificate that can be converted into mortgage assets at any time. It can be considered as a currency of "stable value". For any currency anchored by 100% commodities, as long as it does not have a timestamp and its face value does not devalue over time, then the currency cannot become a stablecoin or as a currency of "stable value".

## 6. An honest currency of "stable devalued" model based on "gold" standard

We have proven that an absolute currency of stable value is impossible to become a reality, except for commodity money. Although the logistical costs of digital currency and banknotes can be negligible, they hardly fulfill the function of money as a store of value. While commodity money such as precious metals can store wealth, the logistical costs of circulation are too high. Taking the advantages of both, we innovatively design an honest currency of "stable devalued", a brand-new currency named honest devalued stable-coin (we will also refer to it as stable devalued currency or SDC) and build an attenuation model of intrinsic value of the honest money based on storage cost of anchor assets. Obviously, an SDC issuer must adopt full reserve system, and the anchor of the SDC should be some physical commodities rather than a credit currency.

## 7. Conclusions

Strictly speaking, for any currency anchored by 100% commodities, as long as it does not have a timestamp and its face value does not devalue over time, then the currency cannot become a stablecoin or as a currency of "stable value". Although commodity money itself, such as precious metal money, has its inherent basic value, a major drawback of physical money is high logistics costs in circulation. When representative money comes into use, such as silver certificate issued by private financial institutions in China or two hundred years ago, in theory, the logistics cost reduces to nearly zero. However, this is based on the assumption that banks, as the third-party logistics, provide customers with physical currency custody and exchange it for physical goods without compensation. In fact, we cannot assume that free storage always exists. Hence, financial institutions that keep anchor goods of representative money generally lack the integrity owned by third-party logistics companies. They would inevitably appropriate anchor goods for other uses or set up obstacles to conversion, such as inconvertibility, to gain profits and pay storage fees. In history, the cost of safekeeping anchor goods is basically realized through the risk transfer of lending, while credit money transfers its risks through the devaluation. Therefore, there is no absolute stablecoin whose value does not decay in proportion to time.

Due to the progress of technology and the cost of access to resources in the fall, it is difficult to try to stabilize the buying absolutely power of a monetary units. One of the feasible ways to build an honest money system is to symbolize commodity money as a certificate which can redeem mortgage assets on demand. A difficult problem to solve is how to pay issuer who is as the warehouse night watchman the safekeeping fee. How fast is a rational rate for devaluation of denomination of certificate, which is an acceptable solution to both the issuer and holders of certificate?

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