

# Research on Offshore Resonance Management Mechanism of "Shadow Currency"

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## ABSTRACT

Driven by financial innovation, "shadow banking" has gained vigorous development opportunities, and "shadow currency" mainly comes from "shadow banking". The expansion of financial business, especially offshore financial business, is constantly stimulated by "shadow banking", and the "shadow currency" created by "shadow banking" is gradually affecting the global financial market. "Shadow currency" resonates among different offshore financial markets, which has a great impact on the stability of the financial system. In this context, the study of "shadow currency" offshore resonance management mechanism has become one of the important topics of financial development. This paper expounds the concepts of "shadow currency", "shadow banking" and offshore finance, analyzes their characteristics and existing relations, and studies the specific performance of "shadow currency" offshore resonance management mechanism, hoping to provide reference for promoting China's financial development to a certain extent.

**Keywords:** *Financial innovation, "Shadow banking", "Shadow currency", Offshore financial market, Resonance management mechanism.*

## 1. INTRODUCTION

With the rapid development of economy, international trade and international financial activities are becoming more and more frequent, and international financial transactions are getting rid of the control and bondage of national financial laws and regulations. Offshore financial market breaks through the restriction that the international financial center must first be the distribution center of domestic credit funds. As offshore financial transactions are conducted between non-residents in the country where the market is located, the currencies used in the transactions include "shadow currency" in addition to all freely convertible currencies. The research on money mainly includes Marx's and Robinson's views on money and credit, and "shadow currency" is a typical credit currency.

John F Jon (2002) thinks that "shadow currency" is a domestic or international accounting unit, which has the function similar to traditional currency and has the function of replacing traditional currency, so it is difficult to be supervised by the central bank. Cai Wenxia (2015) believes that the influence of "shadow banking" on money supply has a long-term effect, and "shadow banking" increases the liquidity of money, which will lead to the amount of money exceeding the expected target of money issuers. Jiao Gaole and Yan Mingyi (2016) analyzed the bank-trust cooperative wealth management products, and pointed out that "shadow banking" has the function of credit expansion, which can change the traditional process of money creation, and the issuance of wealth management products will have an impact on the money supply. "Shadow banking" plays a decisive

role in the creation of "shadow currency". For example, the voucher of securitized products becomes a kind of "currency", which can be exchanged in the financial market. Offshore trading activities are not regulated by the laws and regulations of the financial system of the country where the market is located and the currency issuing country, showing a relatively free state. In different offshore financial markets, "shadow currency" has resonance phenomenon because it is difficult to regulate and has certain relevance in the "shadow banking" system. This paper studies the resonance performance of "shadow currency" in offshore financial markets, hoping to provide reference for promoting China's financial development to a certain extent.

## 2. RELATED DEFINITIONS

The relevant concepts involved in this research include: "shadow currency", "shadow banking", "offshore financial market", and the specific analysis is as follows.

### 2.1 "Shadow Currency"

"Shadow money" belongs to the money supply created by the "shadow banking" system, which circulates in the capital market, so as to realize the transaction between financial assets, create wealth effect, create asset inflation, change wealth distribution, and influence the flow of industrial capital and the allocation of resources in the whole society. "Shadow currency" has three basic characteristics: first, "shadow currency" has a certain circulation area, and in a specific range, it has basically the same function as legal tender. Second, "shadow banking" is the issuer of "shadow currency", and the credit of "shadow currency" comes from "shadow banking". Third, "shadow currency" and legal tender have a fixed exchange relationship, and the invisibility of "shadow currency" and the degree of exchange between legal tender show a normal correlation, that is, they can be freely exchanged.

### 2.2 "Shadow Banking"

"Shadow banking" is an institution that is not restricted by traditional banking supervision and has the ability to create "shadow currency" and accepts "shadow currency" as a means of payment.

The Financial Stability Regulatory Commission (FSOC, 2011) of the United States described "shadow banking" from three levels: First, "shadow

banking" is another credit intermediary existing outside traditional banks. Second, "shadow banking" is an institution with greater synergy risk and credit risk, which has higher risks and benefits than traditional banks. Third, "shadow banking" undertakes some functional responsibilities such as liquidity conversion and term cross-allocation. It can be seen that "shadow banking" is highly complex and needs to be analyzed as a whole. "Shadow banking" includes non-bank financial institutions, as well as markets, tools and methods that can play financial functions. In essence, "shadow banking" has the function of lending, which should be included in the scope of banking supervision.

According to the current situation of financial market development, "shadow banking" can be divided into four categories: the first is the peer-to-peer lending, third-party payment and other institutions with bank lending functions. The second is the guarantee companies, small loan companies, and other intermediaries that finance between traditional financial institutions and customers. The third is the bank-trust cooperation, credit asset transfer and other forms of off-balance-sheet credit business with banks as the medium. The fourth is the private funds that provide services through entrusted financial management and equity investment.

### 2.3 Offshore Financial Market

Offshore financial market refers to the international financial market, which mainly provides overseas currency lending services for non-residents.

Offshore financial market has developed on the basis of traditional international financial market, and has broken through many restrictions such as transaction subject, transaction scope, transaction object, policies and regulations of the host country, etc. It has the following four main characteristics: First, the business activities are less regulated by laws and regulations, with simple procedures, low tax or exemption, and high efficiency. Second, the offshore financial market consists of a global international banking network that operates overseas currency business. Third, the borrowing currency in offshore financial market is foreign currency, and borrowers can freely choose the type of currency. Fourthly, the interest rate of offshore financial market is mainly based on London Interbank Offered Rate (LIBOR).

Offshore financial market has five main functions: promoting the development of economic globalization, providing funds for economic development, regulating the balance of payments of various countries, promoting the internationalization of financial industry, and guiding international capital flows.

### **3. THE GENERATION CHANNEL OF "SHADOW CURRENCY" IN OFFSHORE FINANCIAL MARKET**

Offshore finance mainly involves various financial transactions or financing outside the currency issuing countries, while offshore financial market is the product of global economic integration and financial liberalization, and it is a place of international financial operation with practical significance. The "shadow currency" generated from the offshore financial market mainly comes from the following three channels.

#### ***3.1 Channels of Traditional Financial Products Securitization***

By using the risk isolation function of traditional financial product securitization institutions, we can learn from all kinds of assets held by them, such as credit loans, mortgage loans, secured loans and so on. And choose assets with better credit rating, better cash flow expectation and higher standardization as the foundation or guarantee, and match them in a targeted way through credit creation and credit enhancement, and reassemble and package the assets into unitized and shared securities for sale to investors.

#### ***3.2 Fund Investment and Financing Channels***

Through market-oriented financial forms such as risk hedge funds, money market funds and private equity funds, financial intermediation activities are carried out between traditional financial institutions and customers. Fund investment is an indirect way of securities investment, in which fund management companies issue fund shares and pool investors' funds, and commercial banks that meet the qualification requirements act as fund custodians. Fund companies manage and use funds, engage in foreign investment in bonds, stocks, futures, options and other financial instruments, and share risks and benefits.

#### ***3.3 Third Party Financing Channel***

Third-party financing platform refers to a financing channel which is independent of financing demand side and financing supply side and provides valuable market information and value-added services to promote transaction completion and improve transaction efficiency. Such as margin trading and securities lending business conducted by brokers and market makers, and overnight repurchase on behalf of payment. In reality, financing demanders include individuals and enterprises with capital demand, while financing suppliers include bank credit institutions providing indirect financing and securities financial institutions providing direct financing.

### **4. THE PERFORMANCE OF "SHADOW CURRENCY" OFFSHORE RESONANCE MECHANISM**

In order to better understand the performance of the offshore resonance mechanism of shadow currency, this paper will elaborate from three aspects: the offshore correlation analysis of shadow currency, the offshore entropy change law of shadow currency and the offshore resonance principle of shadow currency.

#### ***4.1 An Analysis of the Off Shore Association of "Shadow Currency"***

The leakage rate and reserve deduction rate of "shadow banking" are the key variables that act on the money multiplier and then determine the supply of "shadow money". Because the changes of these two factors are implied in the scale changes of "shadow banking", they can be explained by the scale of "shadow banking". In addition, in different offshore financial markets, there is an inevitable relationship between "shadow currency" and the underlying financial assets, which can be understood through the process of creating "shadow currency".

Table 1. Process of "shadow currency" creation

Rounds	Commercial bank deposits	Statutory reserve	Excess reserve	Commercial bank loans	Leakage of "shadow banking"	"shadow banking" loan
1	B	$B(1-v)r$	$B(1-v)e$	$B(1-v)(1-r-e)$	Bv	$Bv(1-a)$
2	$Bq$	$Bq(1-v)r$	$Bq(1-v)e$	$Bq(1-v)(1-r-e)$	$Bqv$	$Bqv(1-a)$
3	$Bq[2]$	$Bq[2](1-v)r$	$Bq[2](1-v)e$	$Bq[2](1-v)(1-r-e)$	$Bq[2]v$	$Bq[2]v(1-a)$
...	...	...	...	...	...	...
n	$Bq[n-1]$	$Bq[n-1](1-v)r$	$Bq[n-1](1-v)e$	$Bq[n-1](1-v)(1-r-e)$	$Bq[n-1]v$	$Bq[n-1]v(1-a)$
Total	$B/(1-q)$	$B(1-v)r/(1-q)$	$B(1-v)e/(1-q)$	$B(1-v)(1-r-e)/(1-q)$	$Bv/(1-q)$	$Bv(1-a)/(1-q)$

(Note: [2] is "2nd power"; [n-1] is "n-1 power")

From "Table 1", the creation process of "shadow money" can be seen: " $q=(1-v)(1-re)+v(1-a)$ ", then "money supply  $M=B/(1-q)=B/(r+v(ar)+e(1-v))$ ". From a comparative static analysis, the higher the legal deposit reserve ratio  $r$  of commercial banks, the smaller the money supply  $M$ , and vice versa. The higher the excess deposit reserve ratio  $e$  of commercial banks, the smaller the money supply  $M$ , and vice versa. The higher the reserve deduction rate of "shadow banking", the smaller the money supply  $M$ , and vice versa. If  $r+e>a$ , when the sum of the legal deposit reserve ratio  $r$  and the excess deposit reserve ratio  $e$  of the commercial bank is greater than the reserve deduction rate  $a$  of the "shadow bank", the "shadow bank" leakage rate  $v$  increases, Will increase the money supply  $M$ , and vice versa. If  $r+e<a$ , when the sum of the legal deposit reserve ratio  $r$  of the commercial bank and the excess deposit reserve ratio  $e$  is less than the reserve deduction rate  $a$  of the "shadow bank", the "shadow bank" leakage rate  $v$  increases, Will make the money supply  $M$  decrease, and vice versa. If  $r+e=a$ , when the sum of the commercial bank's legal deposit reserve ratio  $r$  and the excess deposit reserve ratio  $e$  is equal to the "shadow bank" reserve deduction rate  $a$ , the change in the "shadow bank" leakage rate  $v$  The money supply  $M$  has no effect.

According to the above analysis, the process of creating "shadow money" offshore through "shadow banking" depends on the real money generated by commercial banks and the changes in their purchasing power. Therefore, there is a close relationship between "shadow money" and real money. The increase or decrease of "shadow money" keeps a synchronous relationship with the increase or decrease of the value of its

corresponding basic financial assets (real money), which has resonance performance.

#### 4.2 The Offshore "Entropy Change" Law of "Shadow Currency"

The structure, functions, risks and functions of "shadow banking" are closely related to money supply. "Shadow banking" can change the liquidity of financial market, stimulate the expectation of money quantity and price, and thus influence the effectiveness of monetary policy. "Shadow currency" has the law of "entropy change" in offshore financial market. If "shadow currency" is defined as  $SM_2$ (Shadow  $M_2$ ), it includes all bond assets used for mortgage financing in repurchase market. Simply put, bonds are money. If there is no sub-mortgage, the multiplier of "shadow currency" is 1, and the number of sub-mortgages is the multiplier of "shadow currency". Therefore, the composition of the effective total money supply  $m$  can be modified as:  $M=SM_2+M_2$ , that is,  $M="shadow money"+M_2$ . As shown in "Figure 1", the offshore entropy change law of "shadow currency" shows, "shadow currency" will "increase entropy" as the value of basic financial assets rises, and vice versa, "decrease entropy" will appear.

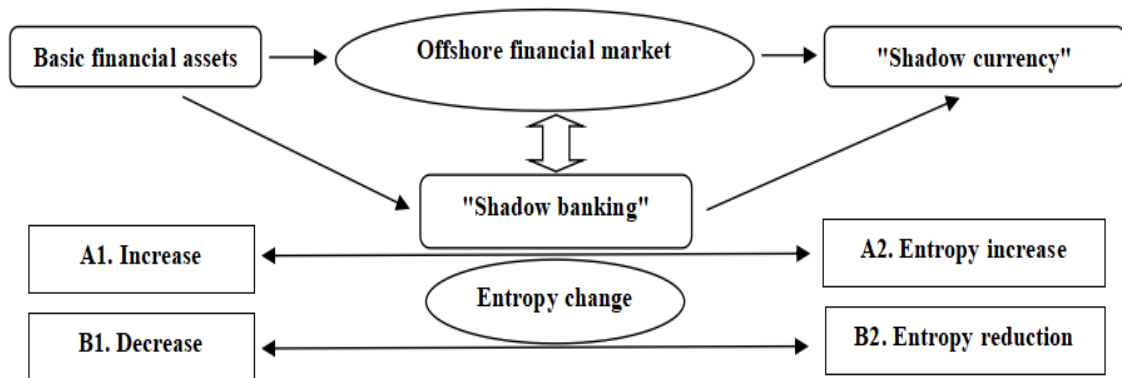


Figure 1 The law of "shadow currency" offshore "entropy change".

### 4.3 Offshore Resonance Principle of "Shadow Currency"

In the process of offshore creation and flow, "shadow currency" resonates with the change of the value of basic financial assets. Referring to the "square root law", the premise is assumed: the income and expenditure of the subject have regularity, continuity and uniformity; Interest-earning assets adopt the security form of short-term government bonds; The interval and quantity of each bond sale are equal. It can be seen that the offshore resonance principle of "shadow currency" has the following four aspects:

First, "shadow currency" indirectly affects interest rate  $I$  by changing money demand, thus reducing the effectiveness of interest rate transmission channels. The main body's transactional currency demand is directly related to the cost of holding cash. The total cost of holding cash includes transaction cost and opportunity cost, which is expressed as follows:  $F(C) = bT/C + C \cdot i/2$ . Among them,  $T$  represents the total expected transaction expenditure in the future,  $C$  represents the cash amount of each exchange,  $B$  represents the unit handling fee for buying and selling securities,  $I$  represents the market interest rate, and  $M$  represents the cash balance. After derivation, when  $C = (2bT/i)^{1/2}$ , the total cost of holding cash  $F(C)$  is the smallest, then the best cash holding  $M = C/2 = (bT/2i)^{1/2}$ . This shows that the subject's transactional currency demand unit transaction fee  $b$  is directly proportional to the total expected future transaction expenditure  $T^{1/2}$ , and is inversely proportional to the bond interest rate  $i^{1/2}$ .

Second, "shadow currency" has played a substitute role for the main body's transactional cash demand, especially the electronic currency and virtual currency issued by non-banks, which

provides convenience for frequent micropayments, thus reducing the unit transaction cost  $b$ . And the function of its cash management tool also reduces the total expected transaction expenditure  $t$  of the subject in the future. Therefore, "shadow currency" reduces the monetary demand of the subject to a certain extent. According to the balance theory of money supply and demand, this will lead to the decline of interest rate level  $I$ , thus affecting the transmission mechanism of monetary policy interest rate.

Third, "shadow money" directly creates extra money supply. Some types of "shadow currency", such as non-bank electronic currency and virtual currency, are prepaid, and the "deposit" that users once store in the "shadow currency" issuer will not be used up immediately. This makes the "shadow currency" issuers use less real currency than the amount stored by users as reserves to meet the average expenditure of users, which means that the "shadow currency" issuers can create 100% "shadow currency" with less than 100% traditional currency. This part of the "shadow money" which is more than the real money reserve constitutes the money supply beyond the statistical scope of the central bank.

Fourthly, the "shadow currency" has offshore resonance expansion, and its principle is shown in "Figure 2".

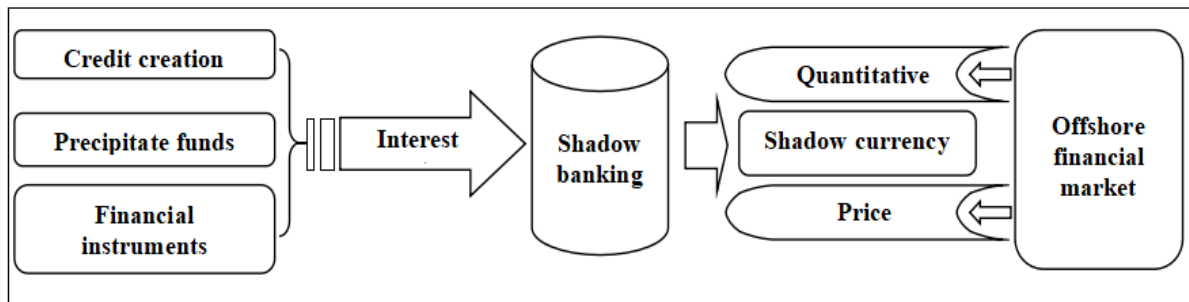


Figure 2 Principle of offshore resonance expansion.

First of all, the money supply is expanded through credit creation, and "shadow banking" is used to play its financing function to create "generalized liquidity". The issuers of virtual currency gather a large amount of information flow on their payment platforms, and take micro-credit and other means to achieve credit creation, which simultaneously expands the "shadow currency". Secondly, by reusing deposited funds, the money supply is increased, and issuers using virtual currency obtain a large amount of deposits, so that they can provide cash management services such as wealth management and sales of wealth management products, thus making the accumulated funds in the monetary system return to the monetary creation system again, thus expanding the scale of "shadow currency". Finally, the payment function of financial instruments created by "shadow banking" is expanded, which gradually produces stronger monetary attributes. If digital cryptocurrency is widely used and circulated, it will directly promote the offshore resonance expansion of "shadow currency".

## 5. CONCLUSION

"Shadow currency" has a certain impact on the financial market, and at the same time it challenges the monetary policy of the central bank and the main position of credit creation of commercial banks. Through the research and analysis of the basic concepts and related performance of "shadow currency", "shadow banking" and offshore financial market, combined with the production channel of "shadow currency" in offshore financial market, this paper starts from the offshore correlation analysis of "shadow currency", the offshore "entropy change" law of "shadow currency", and the offshore resonance principle of "shadow currency" This paper expounds the offshore resonance mechanism of "shadow currency", hoping to provide reference suggestions for the steady development of China's financial market.

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