

HOW UNDERGROUND FINANCING IMPACTS MACROECONOMIC MOVEMENTS IN CHINA¹

Li Jianjun²

Abstract: This paper looks at the scale of underground financing and analyzes its impact upon macroeconomic movements. After measuring the sizes of net underground financial investment, net flow of cross-border underground funds, underground money, underground loan, we judge the impact of these different underground financial indexes on economic equilibrium, growth and economic efficiency. Finally, we find a reasonable scale of underground financing and draw the conclusion that underground financing impacts and counteraction should be considered by government economic regulatory departments in setting macroeconomic policies.

Key words: Underground Financing, Scale Measurement, Macroeconomic Movements

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²Central University of Finance and Economics School of Finance, China.

Li Jianjun, a professor in Monetary Economics at the Central University of Finance and Economics, Beijing 100081 China . As a visiting research scholar in informal finance in the Department of Political Science at the Johns Hopkins University from Oct.1 2006 through Sep.30 2007, Baltimore, 21218 MD.

Email: ljilsh@gmail.com

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1. INTRODUCTION

Underground finance encompasses financing activities and corresponding financial organizations, markets, and mechanisms, that are formed without protection from financial supervisors, that are not permitted by the monetary authorities, that are unseen by the statistical system, and that do not carry licenses from the Industrial and Commercial Management Bureau.

Underground financing's mostly unseen character forces scholars to estimate its magnitude by comparing different points of view and different measured approaches. The earlier scholars (Akerlof, George 1970; Feige, Edgar 1989) developed some approaches to measure the size of underground economy. We know that the financing volume can be observed from gross indexes and net indexes, or from direct financing size and indirect financing size. What each index means can only be understood after all the indexes are defined clearly. In this paper, the net flow of funds in the underground sector, the net flow of funds across borders, the money volume in the underground sector and the scale of underground loans will be measured using different methods.

The impacts of underground financing on economic movement may appear on many sides of the macro-economy. In this paper, the extent of macroeconomic equilibrium, economic growth and economic efficiency impacted by underground financing are estimated, and corresponding conclusions are drawn.

2. THE VOLUME OF UNDERGROUND FINANCING MEASURED IN DIFFERENT WAYS

This paper is based on macroeconomic analysis and macro-policy implications, so it is suitable to choose the scale indexes of underground finance from a wide financial category. The scale of underground finance includes not only the scale of loans, but also the scale of money and flow of funds.

2.1 Net Flow of Underground Funds

We hypothesize that there is an underground sector outside the five sectors divided by the System of National Accounts (SNA) and Financial Statistics. The results of all economic and financial activities in the underground sector form the net flow of funds, which is equal to the net flow of funds in the formal sector in quantity, but the directions of the two flows are opposite to each other. Therefore, the approach to the flow of funds analysis is one key way to study the net flow volume of underground funds.

In principle, the net flow of funds in the formal sector should be zero, but in fact, the number of net flow of funds changed to a large degree over a number of years since the China National Statistical Bureau and the People's Bank of China began compiling the Flow of Funds Table in 1992. The official statistical departments simply categorize this data as statistical errors and omissions. The changing nature, over the years, of the category of statistical errors indicates that there exists a hidden economic sector in the National Economic System, and this hidden sector impacts the formal sector's flow of funds by absorbing or contributing funds. On the relationship between formal and underground sectors, there is an elaborate description (Prabhu Ghate 1992, p.125).

In the formal sector, the flow of funds includes source and utilization categories which have a gross flow of funds. The difference between source and utilization is the net flow of funds in this sector. We cannot know the aggregate volumes of source and utilization respectively in the underground sector because underground activities are hidden and difficult to observe. But we can know its net flow of funds by the flow of funds analytical approach. The net flow of funds shows the sector's funds position, net

absorbing or net contributing. We can call the underground sector's net flow of funds as "Net Underground Financial Investment", which is in line with the name of the net flow of funds in the formal sector.³

2.2 Net Flow of Cross-border Underground Funds

The formal sector is made up of the domestic component and the rest of the world component. Funds currently flow between the underground sector and the formal sector. The net flow of cross-border underground funds could be measured by analyzing the balance of payments (BOPs). The balance of payments is a sheet that shows the flow of funds between domestic areas and the rest of the world. The debit side of BOPs contains items of funds utilization, while the credit side contains items of funds sourcing.

The net flow of cross-border funds could be observed from the errors and omissions item of the BOPs, which is a net number showing whether net flow of funds moved into or out of the border. But the errors and omissions number cannot disclose the total net flow of cross-border funds. Rather, the balance of currency and deposits under the capital and financial account can be used as the basis for estimating the flow of cross-border funds. The other part of the net flow cross-border funds can be measured by calculating the difference between foreign currency deposits in banks and the balance of money and deposit items of BOPs.

The net flow of cross-border underground funds is a net balance between the inflow and outflow of funds. It shows the result of foreign transactions between the underground sector and the foreign sector. Under the current technical approaches, we cannot measure the balance of transactions in debits and credits, respectively. The net balance is the same as the errors and omissions of BOPs. The net flow of cross-border funds and the net financial investment in the underground sector are the same kind of indexes in character, and the former is included in the latter in quantity.

2.3 Underground Money Volume

Underground money is a gross index, a construct similar to the M2 index within financial statistics. Underground money circles between formal financial institutions and underground organizations most of the time, except when used in the underground sector in cash form. Some deposits that are absorbed by underground financial organizations are from underground economic income, while some Small and Medium Enterprises' loans from underground financial organizations may be transferred into formal institutions' deposits. Therefore the basis of measuring the volume of underground money is not the money circulating in the underground sector, but rather the volume of money servicing underground economic and financial activities. Underground money invokes a wider notion of money.

Underground money is the scale of money absorbed by underground economic and financial activities, which means that the money in the financial statistical account managed by the Monetary Authority or the Central Bank does not equal the money servicing formal economic and financial activities. Part of M2 money, including cash outside the formal financial system and deposits in formal institutions, is absorbed by the underground sector.

2.4 The Volume of Underground Loans

The volume of underground loans can be measured on the basis of estimates of the underground economy's size and the assumption that underground loans have a stable relationship with underground economic development. Underground loans are usually short-term loans. This means that the underground loan adds volume in a certain period. Underground loans do not have an assured

³ The name is Net Financial Investment.

relationship with underground money. The volume of underground money is a balance at a point in time, but the size of underground loans is an additional number within a particular period. The volume of underground loans is the amount of indirect financing in the underground finance sector.

3. THE PRIMARY ESTIMATION OF UNDERGROUND FINANCING VOLUME IN CHINA

The underground financing volume was obtained in different indexes by using some estimation approaches. In Figure 1, the columns show the rate between different underground financing volumes and Gross Domestic Product (GDP).

3.1 Estimate of Net Flow of Underground Funds Volume

From Figure 1, we can see that the extent of change of net underground financial investment is large in different years. Before 2001, the index is negative, which means the underground sector was in a net funds absorbing position. The situation changed then, as China began a flourishing new business cycle in 2001, spurred on by positive market news, such as China's accession to the World Trade Organization (WTO), Beijing's successful bid to host the 2008 Olympic Games, and so on. With the Chinese economy developing very rapidly, private fixed investment was active, more and more foreign investment went into China, and private Small and Medium Enterprises' demand for financing grew stronger. In this context, underground sector funds were absorbed by formal economic activities and became a complement to formal financing. In 2003, net underground financial investment increased to a large extent not only from the physical transactions but also from a great increase in financial transactions. The number grew from RMB 60 billion to RMB 100 billion in 2001 and went from RMB 600 billion to RMB 800 billion in 2003; in addition, the rate of underground financial investment to GDP changed from 1% to 6.9% in the same period.

From 2001 to 2003, the net flow of funds went from the underground sector into the domestic formal sector because the net funds from the rest of the world also poured into the domestic sector. The quantity of funds that moved out of the underground sector amounted to RMB 20.6 billion in 2001, RMB 133.4 billion in 2002 and RMB 88.1 billion in 2003. Comparing the results of net underground financial investment and net underground flow of funds cross-border, we found that underground funds mainly came from the domestic sector and a smaller number came from the foreign sector. This situation appeared to be correlated to the capital control policy in China.

The changing nature of the estimated number can be explained reasonably by China's economic development and economic and financial system reform. To what degree was the estimated number credible? We are inclined to use the wider number that included statistical errors. If the number excluded statistical errors (the rate between statistical errors and GDP is about 2% to 3%), the net underground financial investment would take up 3% of GDP and the absolute number would be RMB 350 billion. In fact, statistical errors come into being not just because of statistical issues, but mainly because of underground economic and financial activities. On the whole, it is credible that in 2003 the net underground financial investment volume was between RMB 500 billion to RMB 700 billion, and the net flow of cross-border funds was USD \$10 billion.

3.2 Volume of Underground Money

Underground money is the part of the money supply (M2) absorbed by the underground sector. We can use a Non-Growth Factors Absorption Analysis to estimate the volume of underground money. This approach can be expressed by stating that the volume of underground money is equal to the result calculated by M2 after we deduct money absorbed by economic growth, money absorbed by the new

monetization process of the economy, and money absorbed by securities market. Money absorbed by normal economic growth could be measured through a regression model based on the relationship between GDP growth and the money supply. The money absorbed by new monetization could be estimated by the proposition that the economic monetization rate was subjected to the urbanization rate (Yi, Gang, 1991, pp75-95). The amount of money absorbed by the securities market can be obtained from the China Securities Regulation Commission.

The results show that the volume of underground money was approximately between RMB 340 million and RMB 1.6 billion, and was a percentage of GDP between 0.21% and 0.79% in 1979. That number is unthinkable because it is too small to see except as a reasonable statistical error. In 1990, the economy of China was declining and the underground money scale grew dramatically from RMB 47.7 billion to RMB 57.9 billion and the proportion of GDP changed from 2.57% to 3.12%. During the Asian Financial Crisis (1997-1999) and the period in which the pressure for RMB appreciation increased heavily (2002-2003), the volume of underground money expanded, and the number changed from RMB 820 billion to RMB 920 billion, while the proportion of GDP changed from 7.7% to 8.8%. The results imply that the volume of underground money increased during the periods that the formal economy was declining and financial speculation activities were inactive.

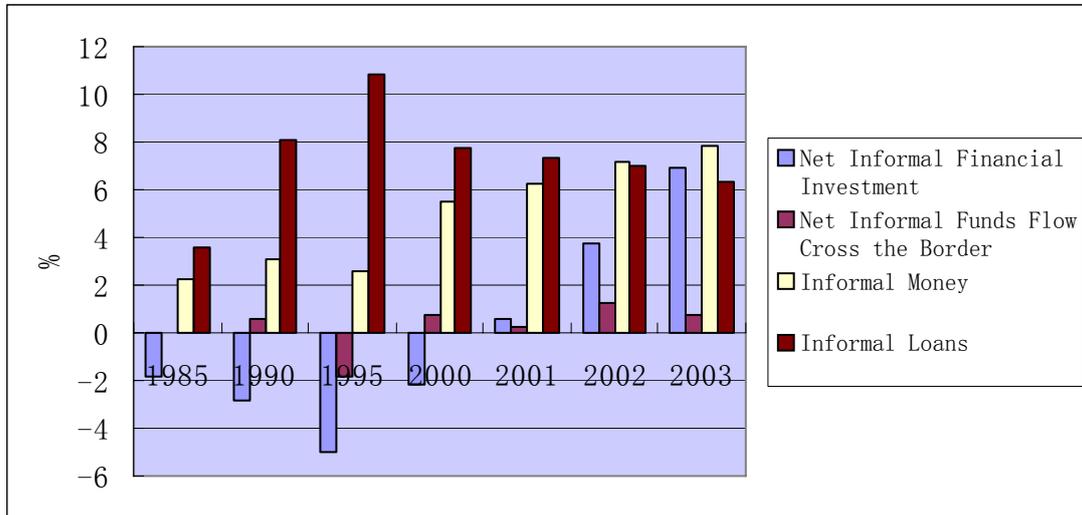


Figure 1 Rates between different underground finance volumes and GDP

3.3 Underground Loan Volume and Survey Results

The size of the underground economy is the basis of estimation for the volume of underground loans. After measuring the volume of the underground economy, we can estimate the volume of underground loans by assuming that the scale between underground loans and the underground economy could be substituted by the scale between formal loans and the formal economy. We can use the volume of the underground economy multiplied by the rate between formal loans and formal economy. The scale of the underground economy can be measured by taking the difference between expenditure and income in the households sector. The extent to which real expenditure exceeds the nominal income in households is the volume of the underground economy.

The results show that the volume of underground loans was about RMB 700 billion in 2001 and was RMB 746.2 billion in 2003. This number can be confirmed by our survey conducted at the beginning of 2004. Through the survey, we obtained the volume of underground loans, which changed from RMB 741 billion to RMB 816 billion in 2003 (see Table 5.1). Because the survey approach was only suitable for obtaining current data, we designed the questionnaire based on the situation in 2003. Our survey areas included twenty-two provinces in China, which included very active underground financing provinces,

such as Zhejiang, Fujian and Guangdong. With consideration for the sampling distribution, we chose the survey provinces from three regions: Eastern, Central and Western. We believe that the estimate of the volume of underground loans as RMB 750 billion in 2003 is credible.

Table 1 Comparison of Different Underground Financing Volumes

Unit: Billions of RMB Yuan

	Index	1985	1990	1995	2000	2001	2002	2003
1	Net Underground	-16.7	-52.8	-294.2	-194.9	58.9	392.8	808.5
	Financial Investment	-17	-37.8	-145.4	-96.4	99.1	328.3	656
2	Net Flow of Cross-Border Underground Funds	NA	10.2	-108.1	65.4	20.7	133.5	88.2
3	Underground Money	20.3	57.9	149.4	490.1	607	755.1	914
		12.9	47.7	178.1	516.1	610	714	821.7
4	Underground Loans	322.7	1505.1	6317.6	6894.5	7172.7	7397.5	7462.4
Underground Loans by Survey in 2004		NA	NA	NA	NA	NA	NA	7405 8164

Source: Calculated by the author based on *China Statistical Yearbook 2004* and *China Financial Yearbook 1986-2004* and the Survey in 2004.

4. HOW UNDERGROUND FINANCING IMPACTS MACROECONOMIC MOVEMENTS

The core of the macro-economy is equilibrium. How to keep the macro-economy moving in equilibrium is the basic goal for every government. Economic equilibrium is not a static balance, but an equilibrium situation with a certain growth. And the growth should be based on economic efficiency. Therefore, growth, equilibrium and efficiency are the main goals for every government in the economic development process.

4.1 Impacts of Underground Finance on the Equilibrium between Savings and Capital Formation

Fixed asset investment is one of the most important driving powers to economic growth. In fact, the core notion of investment is capital formation, which makes up the concept of economic growth. After capital formation, production is the key process in creating value and driving economic growth.

The net flow of funds and its flow direction in every sector can reflect the funds position in its sector. It is the result of the savings surplus or deficit indicated by the net flow of funds, measured from physical transactions. The funds position of the financial transaction account should equal the funds position of the physical transaction account. Every sector's flow of funds impacts the equilibrium between savings and capital formation. Net financial investment of the underground sector may increase or reduce the available funds in other economic sectors and cause the disequilibrium between savings and capital formation.

Why do we need to estimate the direct effects that underground finance has upon the deviation between savings and capital formation? We need to look at this impact because the deviation affects economic growth, and a negative deviation may aggravate business depression, while a positive deviation may push the economy into a situation of economic overheating. The equilibrium between savings and capital formation is the key factor in maintaining economic equilibrium, especially for China's investment-driven growth model. Therefore, it is very important to hold steady the equilibrium between savings and capital formation to stabilize economic growth.

4.2 Impacts of Underground Finance on the External Economic Equilibrium

The nominal variable of external economic equilibrium can be substituted by the exchange rate, which may reflect the country's balance of payments (BOPs). Some items in the BOP are usually seen as the real variables of external economic equilibrium, such as the trade balance, current balance, capital balance and total balance. In our opinion, the real variable of external economic equilibrium that should be used is the scale of change in foreign reserve assets to the balance of autonomous transactions in BOPs. A country's foreign reserve assets include official assets, as well as foreign money and non-native currency deposits held by households, enterprises and other units. Autonomous transactions include goods and services trade, income and profit transfers, current transfers, the capital account, direct investment, securities investment, trade credits and loans. If the net change of foreign reserve assets does not equal the balance of autonomous transactions, the external economic situation cannot be in a real equilibrium.

The flow of cross-border funds impacts both the exchange rate and the BOP's real equilibrium. Under the fixed exchange rate system, the nominal rate is inclined to appear as a deviation from the real rate, and the rate may be over-evaluated or over-devaluated. If this situation is understood by arbitrageurs and speculators, underground funds will flow across borders and intensify the rate's deviation in the short term, placing greater pressure on the monetary authority to adjust the exchange rate policy. The balance of currency and deposits in BOPs may be different to some extent with the change in non-native currency deposits observed in the banking system. This may enlarge the volume of errors and omissions, because the cross-border flow of underground funds cannot be seen by the BOPs statistics. The volume of underground funds flowing cross borders causes the BOPs to lose authenticity in equilibrium; for example, when underground funds move out of the country, the autonomous transactions balance may not appear as a deficit but as a large decrease in foreign reserves.

4.3 Impacts of Underground Financing on Monetary Equilibrium

There is an interactive relationship between monetary equilibrium and economic equilibrium. It is helpful for the government to reach its goal of economic equilibrium in order to maintain monetary equilibrium. Economic equilibrium is a situation in which economic movement progresses closely toward its potential production point or equilibrium production point. Monetary equilibrium occurs when the real money supply equals the money demand of the potential production point. The goal of monetary equilibrium is a key step in stabilizing prices and maintaining a real continuous growth.

The greater the volume of underground money, the lower the credibility of monetary equilibrium will be. The impact of underground money upon monetary equilibrium is to decrease the money supporting the formal economy by changing the real money supply and to prevent the money supply from reaching the equilibrium point. Underground money may cause the nominal money supply to overreach the equilibrium point and to push the monetary authorities to control the speed of monetary growth. The real money supply cannot meet the needs of economic growth, which would force the economy to depress the nominal money supply on a high level. Another extreme situation may occur when underground money moves from the unseen sector into the open sector and invalidates tight monetary policy. For example, since 2004, the Chinese government began to prevent bank loans from flowing into some heated industrial projects, but private investors borrowed money from underground financial organizations, which weakened the macroeconomic regulation effects to a certain extent.

4.4 Impacts of Underground Finance on Growth, Output Gap and Economic Efficiency

We know that growth, output gap, and efficiency are connected in an interactive relationship, which means that the growth rate determines the size of the output gap and the extent of efficiency directly.

Underground financial activities impact economic growth by increasing or reducing the money supply absorbed by the open economy. The results are that the growth rate moves faster or slower than the ideal growth level (near the potential production point), the output gap enlarges, and efficiency changes accordingly. We should choose the suitable indexes of underground finance to estimate their impact upon economic movement after testing them through a certain economic model, because different indexes have different economic scopes of acting.

5. MACROECONOMIC EFFECTS OF UNDERGROUND FINANCING IN CHINA

Table2 shows the effects of different underground financial indexes from different macroeconomic aspects. We can judge the impact of underground finance on macroeconomic movement in China.

5.1 Impacts on the Equilibrium between Savings and Capital Formation

From 1978 to 2003, the effect of the net underground financial investment on the deviation between national savings and capital formation can be described as that which would occur if the rate between underground financial investment and national savings increased by 1%. This would cause the deviation between national savings and capital formation to grow from 0.4% to 0.53%. If the underground financial investment moved out of the unseen sector, the deviation between national savings and capital formation would be positive, because the underground flow of funds would increase the money supply in the open economic sector, and the situation in which fixed asset investment exceeded savings would appear and overheat the economy. On the other hand, if the net underground financial investment moved in the unseen sector, the deviation between national savings and capital formation would be negative, and a situation of capital surplus and economic depression would arise. Underground financial investment reflects the result of the disposition of flow of funds in formal sectors. If the underground sector absorbed too many funds, this situation of money circling outside the banking and national savings to be lost in the unseen sector would bring more difficulties to macro-regulation, and fixed investment could not be controlled as the economy overheated. Another result might be that the growth target could not be realized because the capability of investment in the public sector was weakened in order to control government expenditures.

5.2 Impacts on External Economic Equilibrium

The impact of the net flow of cross-border underground funds on the deviation between the nominal exchange rate and real exchange rate will appear in the next term rate changes. The estimated result shows that if the scale between the underground flow of cross-border funds and the trade balance increased by 1%, the deviation between the nominal exchange rate and the real exchange rate would change 0.65% in the next period from 1986 to 2002. If the underground funds moved into China, the RMB nominal rate would be devaluated greatly, and the pressure of appreciation would become stronger in the next period. On the contrary, if underground funds moved out of China, the nominal rate would be overvalued and the pressure of depreciation would become stronger in the next period. We found that the funds that moved across borders impact exchange rate stability and may push financial markets into an unstable situation, as the volume of flows grows bigger and bigger.

The impact of the net flow of cross-border funds on the deviation between foreign reserve assets and autonomous transactions of BOPs could be expressed as approximately a 47.7% positive deviation and 34.9% negative deviation. That is to say, if we judge whether the BOP were in balance or not, the credibility of the conclusion would be reduced from 30% to 50%.

5.3 Impact of Underground Money on Monetary Equilibrium

Underground money impacts monetary equilibrium to some extent. The result of our estimation shows that if the scale between underground money and M2 were raised 1%, monetary equilibrium would deviate by 1.1% or 1.2%. We know that the index of M2 is one of the important variables observed by the Central Bank in making economic regulation policies. Only by maintaining the money supply at its equilibrium level can macroeconomic goals be reached. The stable growth, full employment, pricing stability and balance of payments may move into a harmonious situation. It would be difficult for the monetary authorities to judge the economic movement and money supply situation if the underground money scale changed dramatically. Because the real money supply supporting the open economy might be reduced and economic movement may move slowly while the money supply grows quickly, regulatory policies may be ineffective. Therefore, underground money must be considered by the Central Bank when it is making and carrying out monetary policies.

5.4 Impacts of Underground Money on Growth, Output Gap and Economic Efficiency

In all underground financial scale indexes, underground money is the variable most sensitive to economic growth, output gap, and economic efficiency. Underground money as a gross underground financing index impacts economic movement directly. The quantitative relationship between economic growth and underground money is such that if the scale between underground money and M2 were raised 1% above its reasonable level of 3.225%, the growth rate would decrease by 3%, the negative gap of output would enlarge by 1.69% and the efficiency index IROC would decrease 14%. The net effects of underground finance on the macro-economy would be negative.

Table 2 The Impacts of Underground Finance on Macroeconomic Movements

Variables	Impact objects	Degree of impact	Implications
Net underground financial investment	Deviation between savings and capital formation	0.4-0.53	As the rate between the net underground financial investment and national savings goes up 1%, the deviation between national savings and capital formation will grow 0.4% to 0.53%.
Net flow of cross-border underground funds	Deviation of exchange rate in next term	0.65	If the scale between the net flow of cross-border underground funds and the trade balance is raised 1%, the deviation between the nominal exchange rate and the real exchange rate would change 0.65% in the next period
	Deviation between foreign reserve assets and autonomous transactions of BOPs	Positive deviation : 0.477 Negative deviation : 0.349	About 47.7% of positive deviation and -34.9% were caused by flows of cross-border underground funds
Underground money	Monetary equilibrium	1.1-1.2	If the scale between underground money and M2 were raised by 1%, monetary equilibrium would appear as a 1.1 or 1.2% deviation
Underground money	Economic growth (GDP)	-2.938 -3.006	The growth rate would go down 3% if the scale between underground money and M2 is raised 1% above its reasonable level of 3.225%.
Underground money	Gap of output	-1.687 -1.692	The negative gap of output would grow 1.69% if the scale between underground money and M2 were raised 1% above its reasonable level of 3.225%.
Underground money	Economic efficiency (IOCR)	-13.847 -14.00	The efficiency index IROC would go down 14% if the scale between underground money and M2 were raised 1% above its reasonable level of 3.225%.

Source: Calculated by the author.

From January to March 2004, we performed a national survey on the impacts of underground financing in 19 provinces of China and invented an index to capture the effects of if underground finance on the macro-economy (Li Jianjun 2005 p151). The number of the index is -3.28, which means that underground finance had a small, negative impact on economic activity. From a regional point of view, the index decreases from the eastern to the western provinces in turn (see Table 3). The results of the survey correspond to the conclusions drawn from the metric models.

Table 3 Index of the Macroeconomic Impact of Underground Finance

	Index of 19 National Province	Index of 8 Eastern Provinces	Index of 5 Central Provinces	Index of 6 Western Provinces
Index	-3.28	2.58	-4.14	-10.23

6. CONCLUSION

We believe that there is a reasonable volume of underground financing which does not impact economic movement directly. Through empirical research, we found that the extent of this impact is from 0.4 to 0.53 between the flow of underground funds and the economic equilibrium index, but we cannot judge its soundness because the net flow of funds is not connected with the real flow of funds. The net flow of funds may be small if both the credit and the debit funds are large.

But the gross underground financial indexes impact economic movement directly. For example, the economic impact coefficients of underground money upon monetary equilibrium, growth, output gap and economic efficiency exceed 1, which means that the macro-economy would be in an unstable situation if the scale between underground money and M2 went past its reasonable level. The result that stems from the economic sensitivity analysis approach is that the effects of underground finance on economic movement will be neutral only if the scale between underground money and M2 is less than 3.2%. According to this rule of thumb, the reasonable scale of underground money should have been RMB 701.5 billion in 2003, but we measured the number as ranging from RMB 820 billion to RMB 920 billion. This also proves that underground finance in China has a negative impact upon macroeconomic movement.

To sum up, underground finance impacts macroeconomic equilibrium, growth, and efficiency to different extents. This impact and counteraction should be considered by governmental departments of economic regulation when making macroeconomic policies.

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