Interest theory

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Introduction:

In this paper I will put forward my own interest theory. I will discuss the factors that could influence the real interest rate. I will discuss the relationship between the interest, money supply and money demand.

1. Background

The theories that discuss about the interest have been developed by many economists. The original interest theory is the equilibrium interest theory, then it was modified by Keynes in the *The general theory of employment, interest and money* [1]. In side this paper, I will put forward my own interest theory, of course I will absorb some of their thoughts, but I will organize them in my own way. Here I need to clarify, during my discussion, I mainly focus on the interest so I will ignore the inflation rate, so during my discussion, the inflation rate will stay the same and is always 0.

2. Components related to the concept interest

As the interest is related to the activity that goes around the money loan, so in the supply direction, there are people or organization that lend money, they have extra money or they want to earn the interest; in the demand direction, there are people or organization that borrow money, they are in urgent use of money but they lack money, so they have to borrow money.

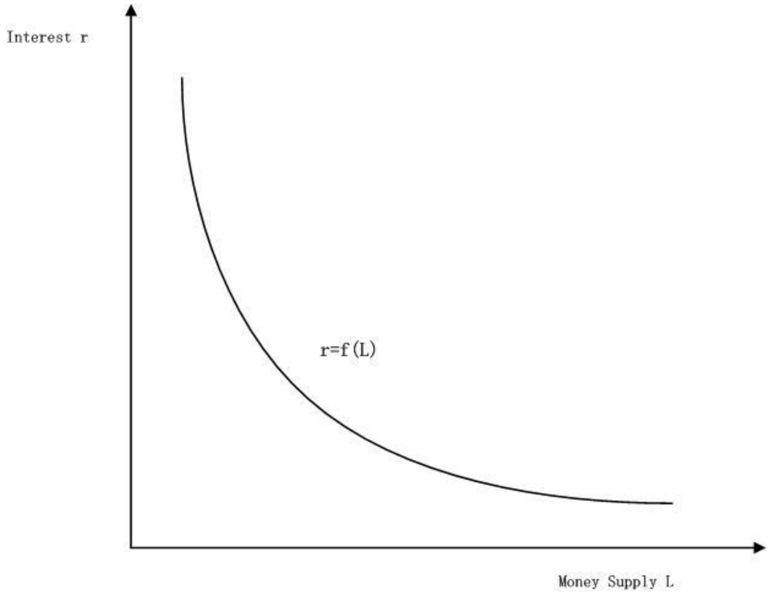
In the conventional theory, many economists claim that the interest is related to the money supply of the country. I think it is related to the money supply, but the effect is not directly happened. So as I think, we should first ignore that and discuss the money borrower and money lender, which directly have effect on the interest. Besides, we can ignore the bank, this organization is important to the modern economy system, but because I want to explore the essence of the money, we had better ignore it.

3. Money supply and money demand

As we all know, if few people wants to lend money, the interest will be high; if more people want to lend money and they have more money to lend, then we know the interest is low. So we have that interest(r)=f(L), L are the amount of all money people in the market would love to lend. What I want to clarify here is that the L is not determined by the national income, maybe it is true that when national income goes higher, L may become higher, but it is not always the case as there are many other factors that can also affect the variable L. Here we mainly focus on variable that has direct effect on the interest.

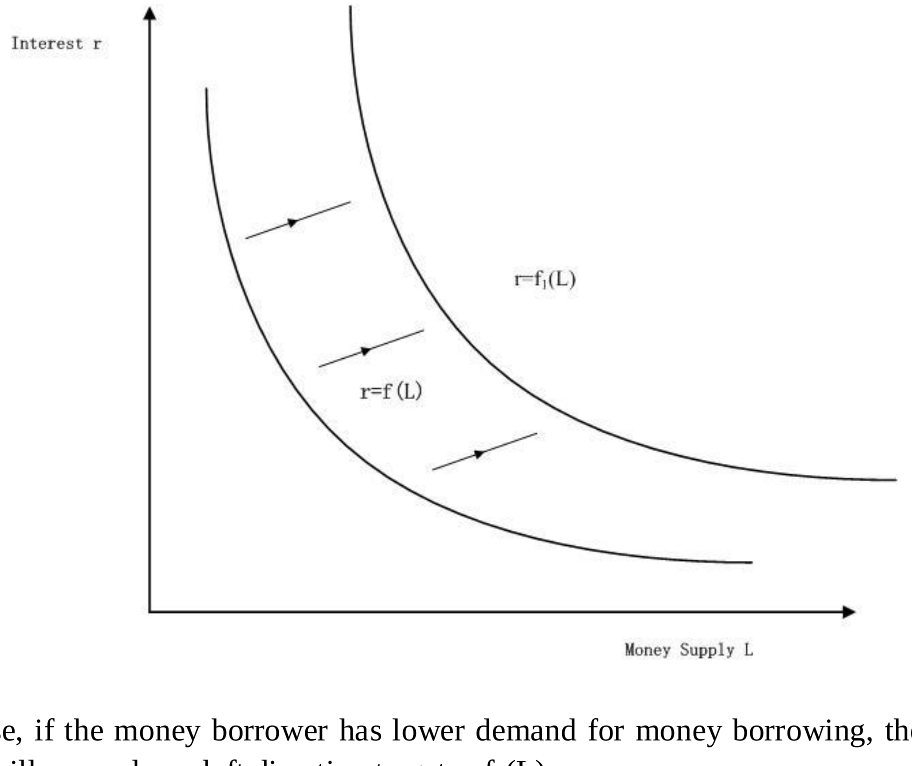
As the r-L relationship is the decreasing function, we have the following picture:

Figure 1. interest-Money supply relationship



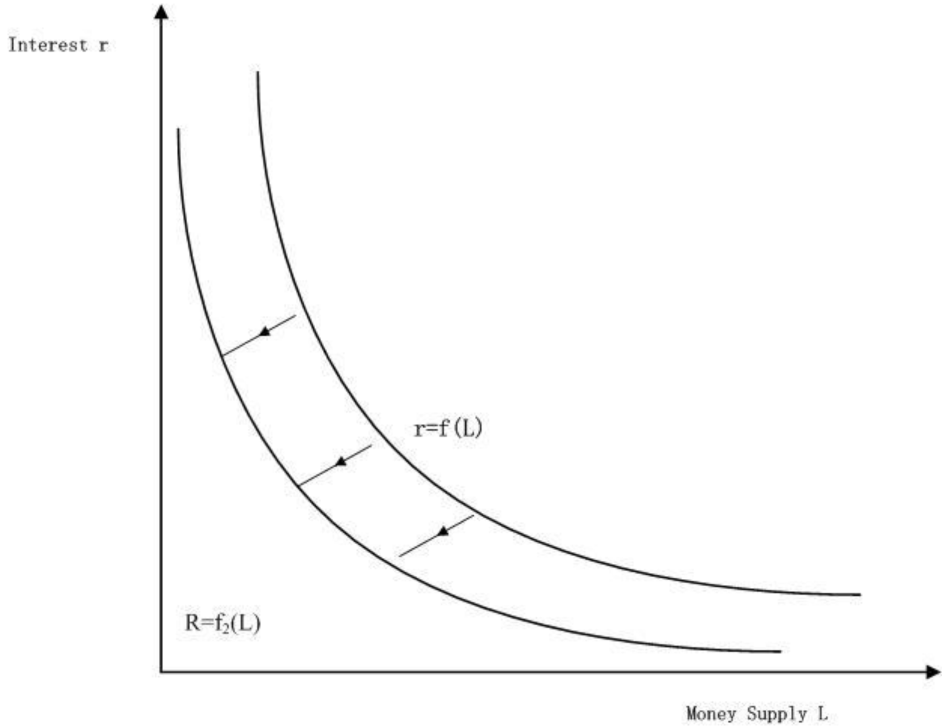
What is the influence from the money borrower? If the money borrower has higher demand for money, then we have $r=f_1(L)$, toward the same money supply, the interest will go higher.

Figure 2. RL moving right



Likewise, if the money borrower has lower demand for money borrowing, the curve $r=f(L)$ will move down left direction to get $r=f_2(L)$.

Figure 3. RL moving left



4. Real money borrow amount

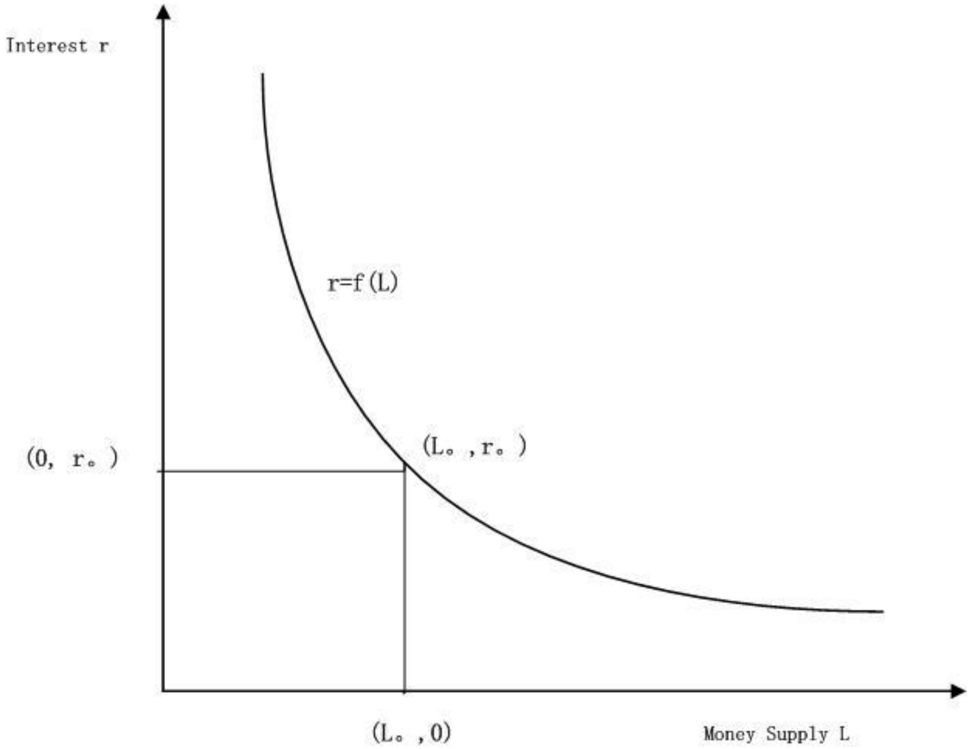
We will know that if borrow side has high demand than the money supply, then the real amount of money that will be borrowed will be determined by the supply side; if borrow side has lower money quantity demanded than the money lender, the borrow side will determine the real amount of money that will be borrowed.

So the lower side will determine the real amount of money that will be borrowed.

5. Baseline for money lending

People or organization wants to borrow money is because they want to earn from the interest, if the interest is too low, then there will be less people who would love to lend money under the low interest, they will put the money in other usages such as investment or consumption. So we know that there will be a baseline value for interest. Under this value, money supplier would not love to lend money. In the real world, it is apparent that different lender have different standard for the baseline interest value, but to simplify our discussion, we will assume that in our discussion, everyone has the same baseline interest value that is $r_{\circ}$. I will mark it in the following figure:

Figure 4. Baseline interest r。

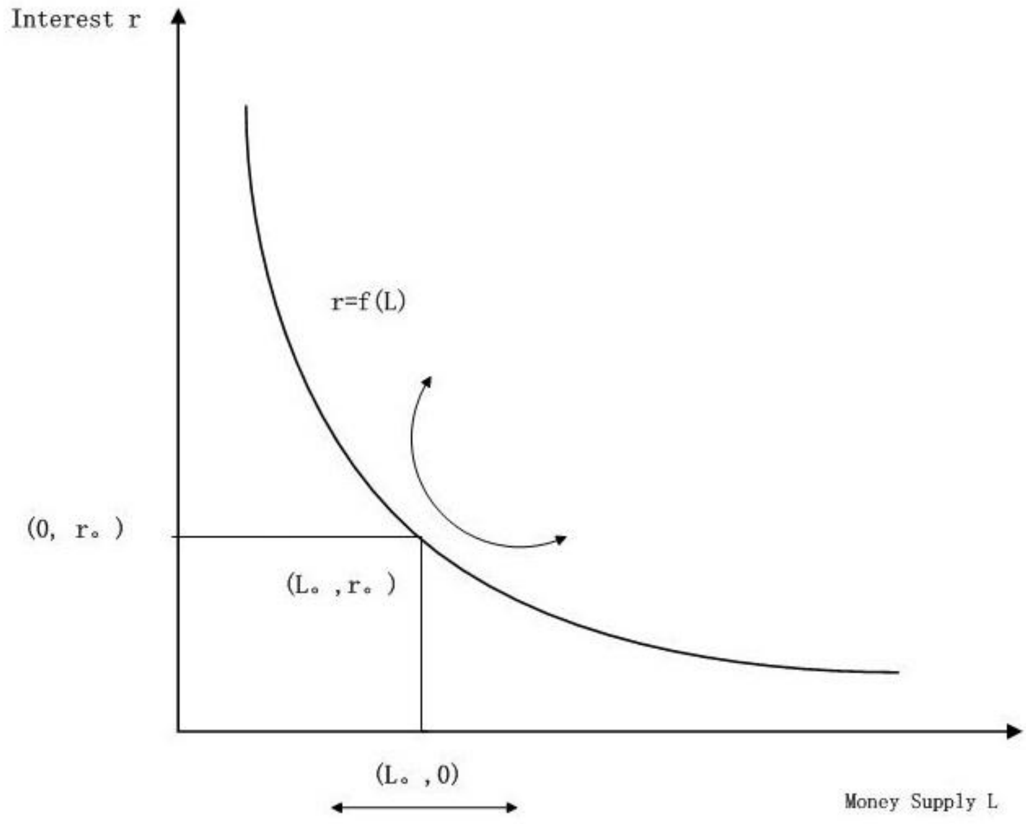


From our previous discussion, we know that if the interest is below the baseline r。, there are nearly no people want to lend money if they have any other way to use money.

Considering the fact that the people who lend money in the market they want to earn money, they are self-interestedly (This is the basic assumption of modern economy).
If borrowers' demand for money is M (M>0) and it is a constant value during our discussion, ceteris paribus. We have that the point in the curve will move like this:

1) The initial amount of money that could be loaned is 0. We could conclude that the market has a high interest, then the people who have extra money will devoted themselves into this lending business, so the number of lenders in this market will increase.
2) The number of lenders is increasing, during the process, the interest for money borrowing is decreasing.
3) After the amount of money that could be lent in one moment is above L。, we have that the average interest is below r。, the interest is very low for lenders to get enough profit. So they will put their money in other usage. The supply quantity will go down.
4) Then the amount of money that could lent in one moment will decrease to some value below L。.
5) When the quantity decreases to some vey low value, the interest will become high again. This business becomes attracting. Then people who has extra money will devoted themselves into this industry.

Figure 5. The interest fluctuation process



The conclusion is that the amount of money that could be lent at the same time will fluctuate along the horizontal axis near point (L。, 0). Then we can infer that the interest will fluctuate along the vertical axis (0, r。).

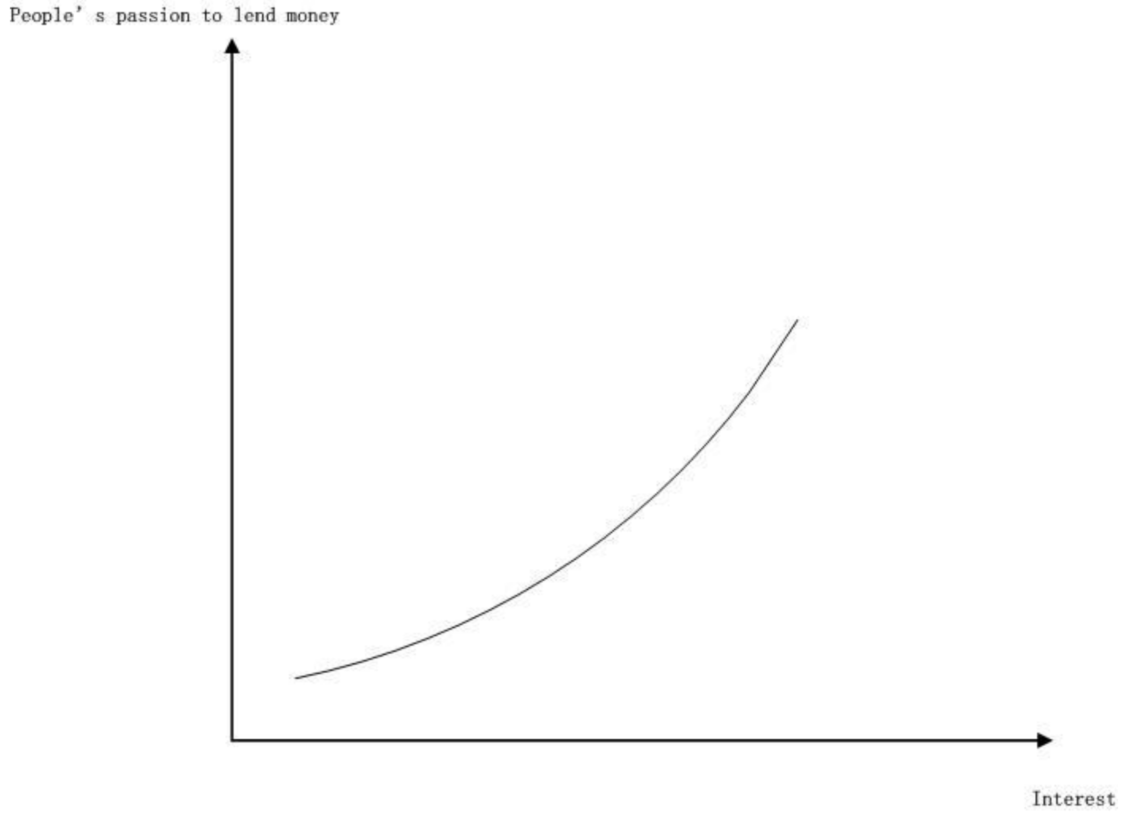
To clarify, the (L。, r。) is not the equilibrium point. The lender will not stop at N。. If the increase of the amount of money supply is too rapid, the supply quantity will easily exceed this value L。. If the supply quantity stops at this value, as this is the baseline for people, some people will leave and use their money in other area, so the amount of money that could be lent will decrease.

Why there would be the **liquidity trap**?
So the interest will not be too low, this could explain the liquidity trap. The interest is easily go up but difficult to go too low is because if the interest is too low, the people don't have interest in lending money and the amount of money that could be lent will become low then the interest will go up again. Even if the government increases the money supply, if the interest is too low, people who have spare cash won't have motivation in lending the money, they will store their extra cash and use them in other way. So the point won't move along right in the curve in the Figure above, the interest could not go down.

6. Other issues

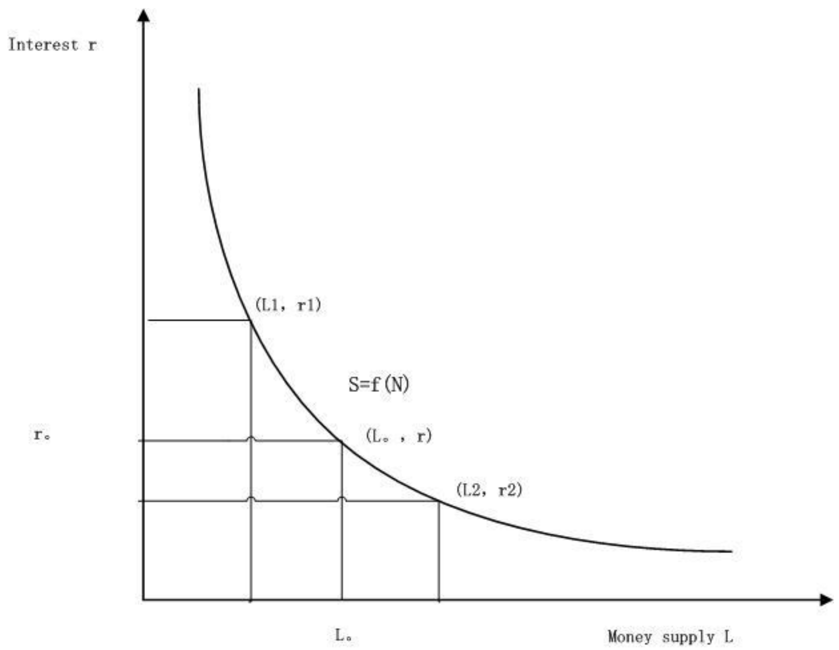
Because interest can be determined by the government or bank. What would happen if they determine the interest directly?

Figure 6. People’s passion toward different interest rate



From the upper graph, we could know that if the interest is very high, people will have a high passion to devoted themselves to this lending money, and vice versa.

Figure 7. Different interest



So we could know that, if the interest is determined by the government at value r1, from the upper figure we see r1 is a very high interest, then people will have a high passion to lend money, there will be more money supply.

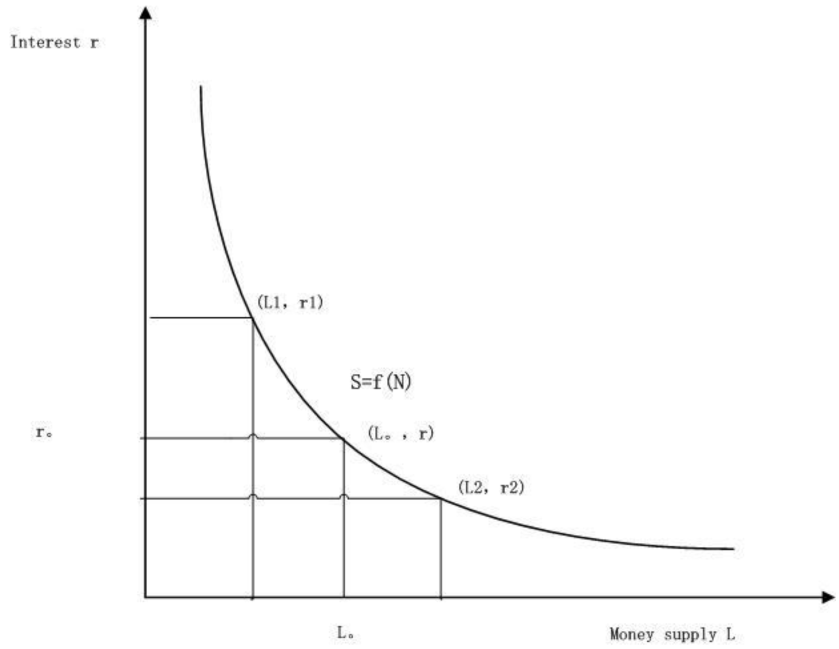
If the interest is determined by the company at value r2, from the upper figure we could know that it is a very low value. Then people will use their money in other ways, nobody would love to lend their money to other people.

7. Bank and interest

Bank is a special kind financial organization. It borrows money from the public and lend money to people who are in urgent demand of money. Here I will analyze how the market will respond if the bank choosing different interest value.

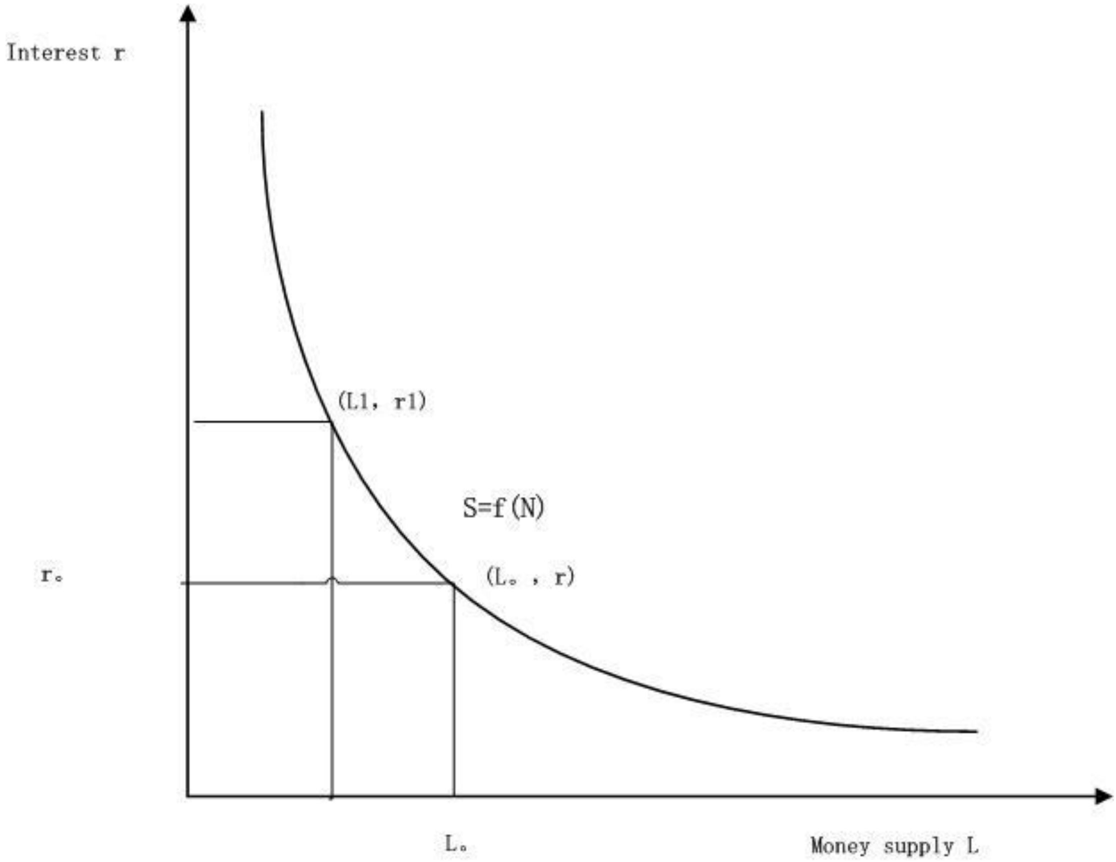
a) If the bank chooses high interest rate r1.

Figure 8. Different interest



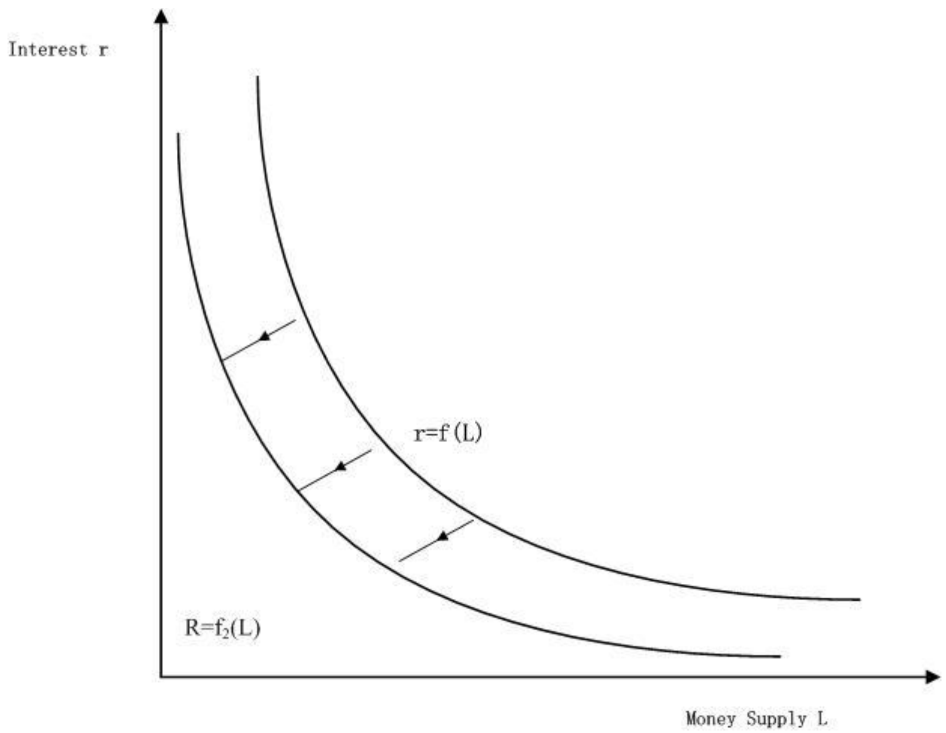
When bank borrows money from the public, it is the money borrower. When it chooses the higher interest rate, we have the following graph. Because the interest is high, so the money supply is very high, so more money will stored in the bank.

Figure 9. Bank with high interest rate



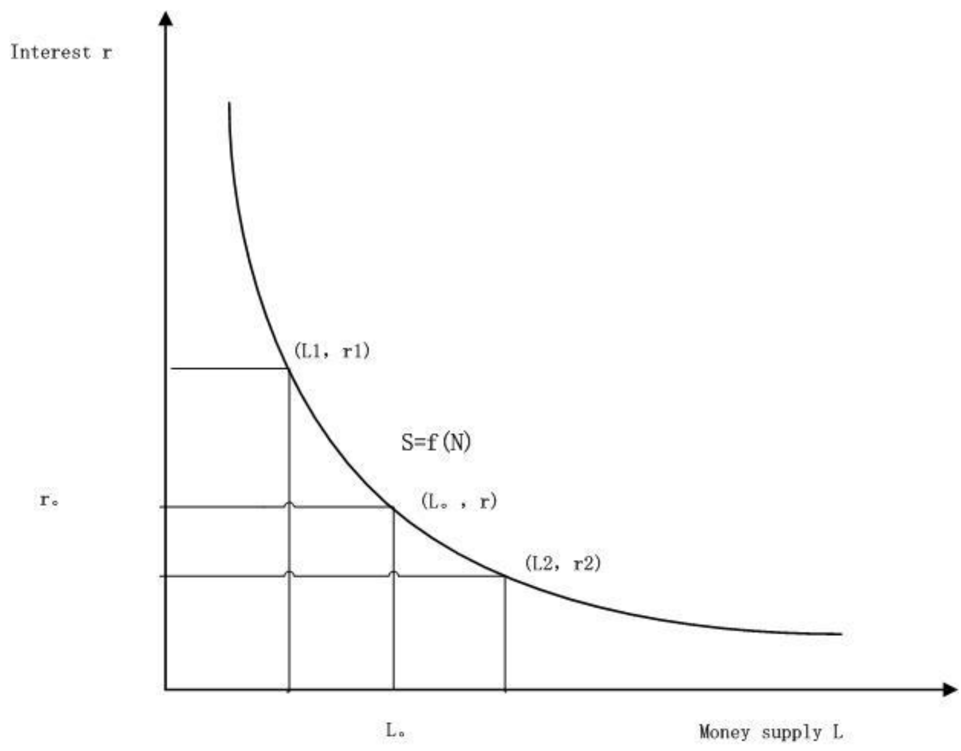
Toward the other side, when banks lend money to other organization who lacks money, we have that because the interest is too high, less people can afford it, so we have the demand curve will move down leftward. So the public can borrow less money from the bank. So the bank holds more money and the market has less money. It is very easy to have a deflation.

Figure 10. Bank with high interest rate



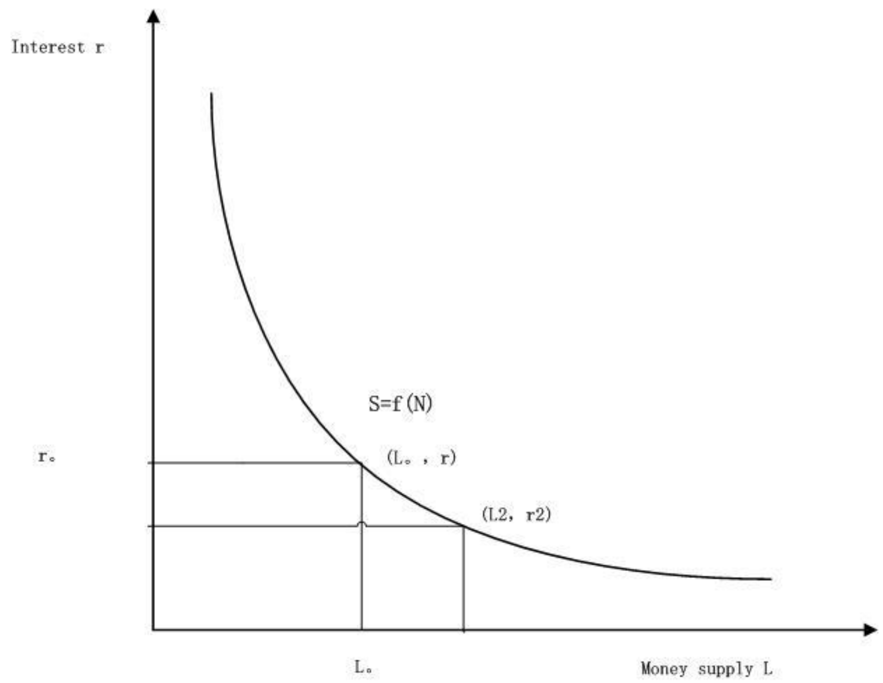
b) If the bank chooses low interest rate r2.

Figure 11. Bank with low interest rate



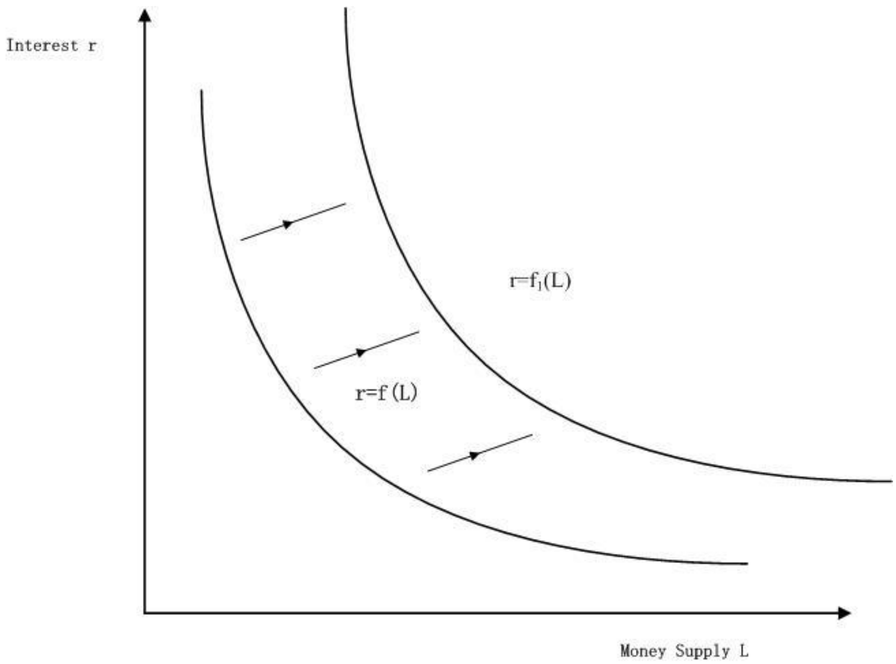
When bank borrows money from the public, it is the money borrower. When it chooses the lower interest rate, we have the following graph. Because the interest is low, so the money supply is very low, so more money will stored in people's hand.

Figure 12. Bank with high interest rate



Toward the other side, when banks lend money to other organization who lacks money, we have that because the interest is too low, more people can afford it, so we have the demand curve may move up rightward. So the public can borrow more money from the bank. So the bank holds less money and the market has more money. It is very likely to have a inflation.

Figure 13. Bank with low interest rate



[1] The general theory of employment, interest and money　Keynes