Keynes and Friedman on the Credit Market

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Ⅰ. Introduction

We may introduce one of the most interesting discussions of modern monetary economics : the relation between the money theory writers were interested in using theory to justify the empirical facts illustrated by A. H. Gibson in Banker's Magazine, June 1923 and November 1926[1]. Prices and nominal interest rates tend to move together over time. How they went about the justification of the Gibson paradox will be the subject of this paper. We will show that they both constructed a model of the credit market or the market for loanable funds. Using the concept of the supply and demand for credit, both writers justified an increase in the nominal interest rate as caused by an increase in the excess demand and a decrease in this interest rate as caused by a decrease in the excess demand for credit.

This fact has not been noticed so far because of the credit which each writer is discussing. It appears that Keynes' credit market model is based on his real output market model with savings

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1) Keynes never explicitly stated why the Gibson relation should be regarded as a paradox. It certainly has nothing to do with Friedman's view of money policy and interest rate variation. I speculate that it is related to the absence of a significant lag between price level and nominal interest rate movement.

identified as the supply and investment as the demand for credit. It appears that Friedman's credit market model is based on his concept of the money market with money supply related to, but not identical with, the supply of credit and money demand related to the demand for credit. So, at first blush, it appears that Keynes' and Friedman's credit market models are quite different. But we will show that a careful comparison of the arguments in the loanable fund functions will turn up some interesting similarities between them.

Ⅱ. The Keynes Credit Market Model

Many of Keynes' writings emphasized how fluctuations in the economy caused changed in welfare. He was trying to discover what caused these fluctuations so economic welfare could be maximized. keynes called the pattern of movements observed by economists : the credit cycle. This description emphasized the role of credit in causing general business fluctuation. Keynes' model of the credit market was submerged in his income-expenditure model and has not so far received much attention. One thing that is clear is that Keynes' model of fluctuations in the credit market discussed disequilibrium in the relation between investment and saving and did not place much importance on the influence of the money market.

A problem of consistency exists in describing keynes' model of the credit market which was discussed in Treatise on Money. Both volume, described the effect on the credit market of a slump in the economy. But volume 1 described the nominal interest rate to rise and volume 2, chapter 30, section 8(the last section), described it to fall. The former model was expressed in more detail, but both arguments illustrated the nature of Keynes' model and should be discussed here. Furthermore, the predictive results of the latter model were used by Keynes to justify the Gibson Paradox, that prices and nominal interest rates fell together during a slump. The latter model may also by directly compared to Friedman's credit market model, which rationalized the Gibson Paradox during an expansion in the economy when prices and nominal interest rose in the relatively short period.

Keynes discussion of nominal interest rates during the credit cycle was related to his opinion that both unexpected changes in nominal income and in nominal interest rates affected investment

and savings. This was much different from the short run income-expenditure model of the General Theory, as exhibited in acro textbooks, in which the price level was assumed constant and inventories were assumed to adjust during the cycle. Besides discussing only real variables, this General Theory model of the output market did not focus on the interest rate as the critical variable for prediction. It therefore, did not focus on the mechanism of credit, lending and borrowing. It also emphasized the personal sectors demand for goods and deemphasized what happens to the business sector when income varies. Considering the business sector brings in the mechanism of financial market, which is thereby included in Keynes credit market model.

Let us look more closely at both parts of Keynes credit market model. The supply of loanable funds(S_{LF}) is based on the savings functions. The supply of loanable funds is a subset of total savings, the part of savings that is sensitive to nominal interest rate variations. Furthermore, if we compare the prediction of nominal interest rates rising during a slump in Treatise, volume 1 with the prediction of them falling during a slump in Treatise, volume 2, we will see that : S_{LF} = S_{LF} (i_M, y_M) ; $S'_{LF}(y_M)>0$ and $S'_{LF}(i_M)>0$, with the former relation emphasized in volume 1 and the latter emphasized in volume 2(i_M, y_M) = nominal interest and nominal income). y_M will also be justified as a proxy for unexpected profit variations.

Let us first rationalize the prediction of rising nominal interest rates during a slump which is included in volume 1. The supply of loanable funds (S_{LF}) function was described by Keynes in Chapters 17 and 18. Both these chapters were related to changes in equilibrium. They were comparative statics analysis meant to describe the credit cycle. The former used the money supply and the latter chapter used investment as the primary independent variable. Chapter 18 especially made it clear that Keynes regarded the supply of loanable funds (S_{LF}) function as a positive function of y_M is his short run analysis of the credit cycle. The downward phase(slump) of the credit cycle was characterized by falling prices and previous “windfall profit” were turned into “windfall losses”. This caused the oneset of “bear views” in the financial markets which reduced the supply of money for the industrial circulation.

We submit that the supply of money for the industrial circulation described in this quote is the supply of loanable funds. Also, the oneset of windfall losses may be regarded as a reduction in unexpected profits accompanied by a reduction in nominal income as deflation simultaneously occurs. The reduction in nominal income causes the supply of loanable funds to fall and the nominal interest rate during a business slump which Keynes is discussing is illustrated in figure

1. The interest rate rises from i_1 to i_2 while S_{LF} shifts leftward, the demand for loanable funds(D_{LF}) is static, and nominal income falls from y_1 to y_2. The discussion of S_{LF} in Treatise, volume 2, chapter 30, focused on the positive relation between the nominal interest rate and total saving. Since Keynes was attempting to rationalize the Gibson Paradox(P, i_M move in the same direction), it was important that saving responded positively to change in the nominal interest rate. Furthermore, the strong direct relation between y_M and the supply of loanable funds was deemphasized, so that when income fell, the nominal interest rate would not rise.

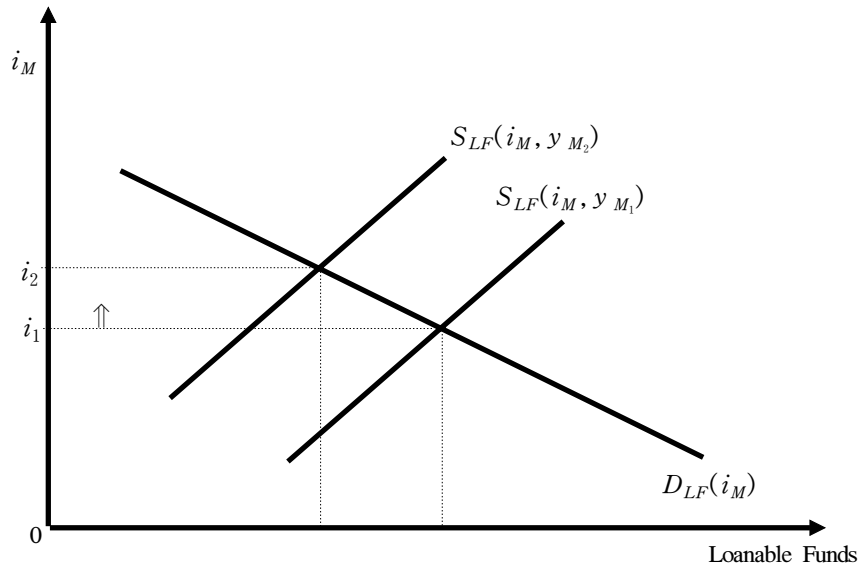

Figure 1 : Keynes' Credit Market Model of an slump (Treatise, volume 1)

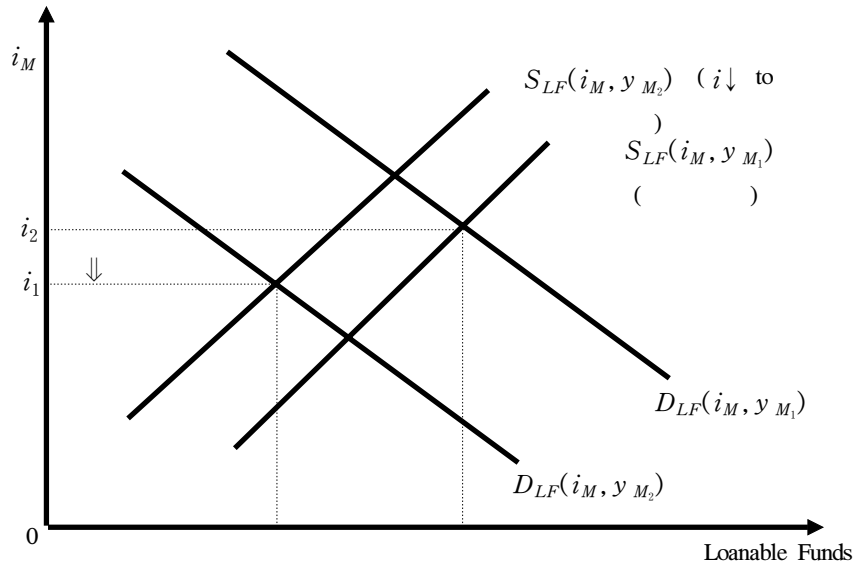

Figure 2 : Keyne's Credit Market Model of a Slump(Treatise volume 2)

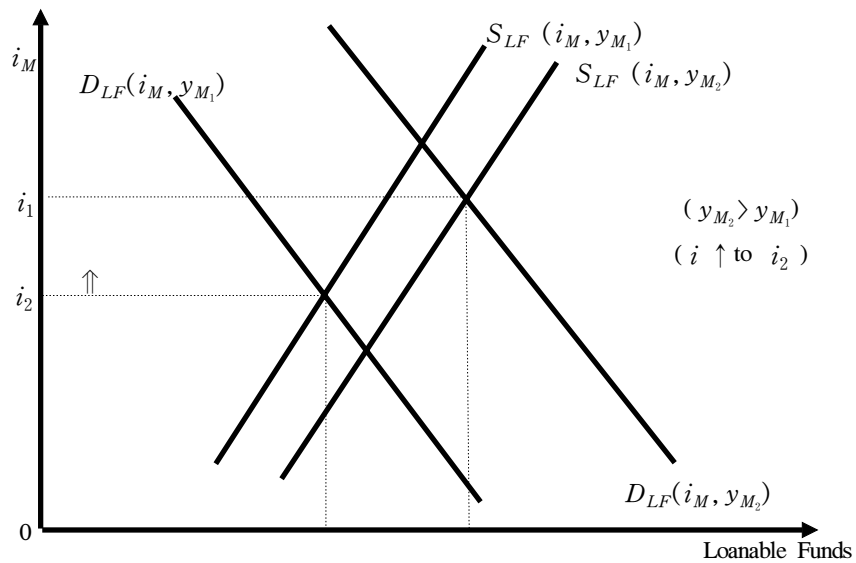

Figure 3 : Friedman's Credit Market Model of an Expansion

Keynes used the following analysis to justify the Gibson Paradox. The natural rate of interest is the rate at which savings and investment are exactly balanced. Furthermore, the market rate of interest(the actual nominal yield) is very sticky in relation to the natural rate of interest. So, for a slump in the credit cycle, investment falls in relation to savings and the downwardly sticky market interest rate causes temporary over-saving. This leads to excess aggregate supply and to a general deflation during the downward movement of the business cycle. Since the market rate of interest moves in the same direction as the natural rate of interest but always lags behind it, the price level and the interest rate will continue to fall together. Keynes dismissed the influence of money over prices and interest rates by stating that the money authorities have, in effect, neutralized the money supply as an independent variable for a significantly long period.

We have here what appears to be a simple investment saving equilibrium with the interest rate as the primary independent variable. But, something unusual has been added. The price level is clearly an endogenous variable. Furthermore, the nominal, not the real interest rate is being examined. We don't have the standard Keynes investment function, $I = I(i_R)$, where i_R = real interest rate. The investment function has been transformed into the demand for loanable funds function : $D_{LF} = D_{LF}(i_M, y_M)$

The demand for loanable funds(D_{LF}) function which Keynes' utilized in the Treatise on Money, Volume 1, credit market model, emphasized a weak negative relation between i_M and D_{LF} and a weak positive relation between y_M and D_{LF}. The analysis of investment in Keynes's Treatise on Money was, therefore, quite a bit different from the analysis of the General Theory in which the real interest rate had a strong negative effect on real investment demand, for which loanable funds were generated.

Keynes wanted to make certain in volume 1 of Treatise on Money that i_M was predicted to rise during a recession in the economy. If (i_M, D_{LF}) had a strong negative relation, the D_{LF} curve in figure 1 would be much flatter and when y_M fell, i_M would not rise very much during credit slump. Keynes was trying to emphasized the evils of deflations in chapter 18. One these evils was that it caused the nominal interest rate to rise and the real interest rate to rise even more, since the price level was falling. Therefore, a strong negative relation between D_{LF} and i_M might compromise this conclusion.

Treatise on Money, volume 2, chapter 30, was attempting to justify Gibson Paradox. During a slump, the influence of y_M on D_{LF} was implied[2] to be significantly positive while the influence

of y_M on S_{LF}, while positive, was not very strong. Figure 2 illustrates these points, plus the added implication of a weak relation between i_M and D_{LF}. The demand for loanable funds(D_{LF}) function would shift leftward when y_M fell and the net effect on i_M would be a reduction during a period of profit deflation. This is illustrated in figure 2. If (i_M, D_{LF}) had a strong negative relation, the flatter D_{LF} curve shifting leftward would not reduce i_M so much, and the net effect of y_M falling may be to raise i_M, as in figure 1. The Gibson Paradox would then not a be justified.

Ⅲ. The Friedman Credit Market Model

Friedman's Credit market model was highlighted in some of his discussions of money policy issues undertaken in the late 1960's. He was not necessarily interested in relating his analysis to phases of the credit cycle as was Keynes, but both writers focused on the relation between changes in the credit market and nominal interest rate movements in the short period. Friedman's American Economic Association presidential address(December 1969), his paper presented at the 1968 conference savings of the U.S. Savings and Loan League, and W.E.Gibson's (Friedman's Thesis student) 1970 paper, all discuss the rationalization of the empirical result that changes in the rate of growth of the money stock vary directly with changes in the nominal(and possibly even real) interest rate. When the rate of growth of the money supply increases, interest rates will rise within a 6-9 month period and vice-versa. The explanation for short run rising nominal interest rates depends on a rising excess demand for loanable funds (credit).

Friedman's the supply of loanable funds(S_{LF}) function is an extension of his money supply function. Bank credit comes from bank lending which simultaneously expands the money supply. Yet, only a portion of the money supply is sued for lending. The money supply is also not totally determined by the monetary authority and the private banking system. It is not totally exogenous ; but at least partly determined by the level of trade or nominal income produced in the economy.

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2) The world "implied" is used because the D_{LF} function is never explicitly formulated by Keynes. If the influence of y_M on D_{LF} is not significant by positive, on can't infer the existence of Gibson Paradox.

For example, in a 1958 article Friedman states that for the business cycle : "The character of our monetary and banking system means that an expansion of income contributes to expansion in the money stock....." "..... changes in the money stock are a consequence as well as a cause of changes in income and price."

Because the money supply is somewhat endogenous with respect to changes nominal income, so is S_{LF}. But, the relationship, although positive, as it is for the Keynesian S_{LF} function, is considerably weaker. Friedman has never emphasized it, and sometimes even denied it, in later articles. Furthermore, there is no evidence in Friedman's writings that changes in the interest rate will cause $S_{LF}(i_M, y_M)$ to vary predictably in the curve in the short period. The Friedman $S_{LF} = S_{LF}(i_M, y_M)$ curve in the short run is steeper than the S_{LF} curves drawn for the Keynesian credit market model in figure 1 and 2. Furthermore, when nominal income changes, these would be a relatively smaller shift in the given S_{LF} curve for the Friedman credit market model. Thus, if nominal income was increasing as a result of an increase in the percent rate of growth of the money supply, new loanable funds would not be rapidly placed in the credit market and there would be very little short run pressure for nominal interest rates to fall, even if the D_{LF} function were static.

The demand for loanable funds(D_{LF}) function was not static, it was a strong positive function of changes in nominal income for Friedman's credit market model : $D_{LF} = D_{LF}(y_M)$. This relationship was interesting because it was the most difficult to clearly identify. There was no explicitly constructed D_{LF} function in Friedman's writings. There was a liquidity preference curve[3], however, and there was an asset or precautionary motive to hold money[4] which seems to back it up. This liquidity preference curve(LPC) should be identified with the D_{LF} function.

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3) Asset demand for money is discussed in the conclusion when it is mentioned the transaction and speculative motives for holding money have little influence on money demand over the short period or the long period. But, *"The asset or precautionary motive is in a different states." ".....motivations and variables linked with asset are the most fruitful category to explore ..... the most fruitful approach is to regard money as one of a sequence of assets....."*

4) Friedman believes that nominal interest rates have a weak relation to money demand : ".....*(a) [interest rates] appear to be less important as a determinant of measured velocity than the ratio of measured to permanent income ; and (b)that the interest elasticity is not very high." "there is no aggrement whether short term or long term interest rates are more closely related to the quantity of money demand ..... almost all estimates, even for long rates, show an inelastic response....."*

It would shift significantly to the right in figure 3 when y_M rises with expansionary money policy and the steeply drawn SLF curves would move rightward much more slowly, causing i_M to rise.

The demand for loanable funds function was not regarded as a strong function of the nominal interest rate in Friedman's credit market. To see this result, we must regard D_{LF} as part of the liquidity preference curve which was part of Friedman's credit market. To see this result, we must regard the demand for loanable funds function as part of the liquidity preference curve which was part of Friedman's money demand analysis. There are discussions in the writings of the monetarist and of Friedman himself regarding the stability of the money demand function. This stability refers to two things : lack of variation in money demand over time, focusing on velocity ; lack of responsiveness of money demand ever in the short period with respect to certain potential independent variables. One of these is the nominal interest rate. Since variations in short term nominal interest rates have such a weak effect on money demand and since Friedman's D_{LF} curve is derived from his analysis of money demand, we have drawn the D_{LF} curve in figure 3 to be nearly vertical : $D_{LF} = D_{LF}(y_M)$, almost only. If the interest rate had a stronger influence on money demand, the D_{LF} function would be flatter in Figure 3 and when it shifted to the right along with S_{LF}, there would be less likelihood that the interest rate would rise when yM increased.

Friedman described the liquidity preference curve, what all have identified with the demand for loanable funds function, to shift to the right as part of an income effect. Yet, he did not simply mean an increase in nominal transaction demand for money. He was focusing on an increase in the excess demand for credit(not money) as a cause of rising nominal interest rates. Credit demand increasing was related to the projected use by business of new funds for multiplier, not on predicted interest rate changes. Perhaps this is why Keynes neglected the relation between y_M and D_{LF} in his General Theory, prefering instead his Treatise on Money, volume 2, analysis of Gibson Paradox to remain the definitive word.

Ⅳ. Summary

Both Keynes and Friedman constructed a short run credit market model which was separate from their mainstream analysis. Keynes' credit market model was quite a bit different from the income-expenditure model of the General Theory both because it included price variations in the short period and because the nominal interest rate(not employment) was the main variable on which predictions were to be focused. Friedman's credit market model was based on a model of the money market. But, the supply of credit, derived from the supply of money was a partly endogenous function of nominal income. The demand for credit was loosely based on the demand for money(the asset demand), but it was called the liquidity preference curve(LPC), and it had a strong positive relation to changes in nominal income so that changes in the nominal interest rate would be pro rather than counter cyclical. The speculative demand for money had little or no application to Friedman's credit market model.

Both economists utilized their credit market models to make predictions on the course of nominal interest rates during the credit cycle. They were both attempting to justify the Gibson Paradox for which prices and interest rates move in the same direction as movements in the circle. Keynes was discussing a slump and Friedman an expansion. For both these models, the demand and supply of nominal loanable funds helped to determine the nominal interest rate, so that when the excess demand for loanable funds increased, so did the interest rate. For both these models, in addition, the demand function is much more sensitive to variations in nominal income than to short run variations in the interest rate. Keynes' model, the supply function was much more sensitive to variations in the interest rate than to variations in nominal income, expansion during a time of income increases. This enlarging demand for potential investment funds may be regarded as part of the asset or possibly the precautionary demand for money. It would not necessarily lead to lower velocity, and future increases in income would be a strong possibility. This is what occured when the demand for loanable funds function increasing caused excess demand in Friedman's credit market model.

Part of the Keynesian credit market model also had a strong positive relation between y_M and D_{LF}. D_{LF} was directly related to investment demand, without the intervention of the money demand function(the liquidity preference curve) which was part of Friedman's analysis. The Keynesian credit market focused on investment and saving and neglected to money market.

Keynes had two alternate models of a slump in the credit cycle, as exhibited in Figure 1 and 2. The credit market analysis in Figure 1 summarized the argument in Treatise on Money, volume. It concludes that nominal interest rates would rise because D_{LF} is relatively static compared to S_{LF} when y_M falls. The analysis in Figure 2 summarized the argument in Treatise on Money, volume 2. It concludes that interest would fall because D_{LF} is significantly directly related to falling y_M, justifying the Gibson Paradox. The Friedman analysis indirectly related D_{LF} to investment demand, through the intervention of the money demand function(the liquidity preference curve). The Keynesian analysis directly identified D_{LF} with investment demand without utilizing the money demand function. Keynes was inconsistent regarding the relation which existed between y_M and D_{LF}, however. The Keynesian analysis of D_{LF} was inferior to the Friedman analysis because it neglected the money market, but superior because it considered the implication of both i_M and y_M as endogenous.

Keynes' theory of investment was stated with an interesting variation in Treatise on Money, volume 2, compared to its General Theory treatment. Income induced changes in investment would be regarded as a strongly competing alternative to the income hypothesis on consumption with regard to explaining variations in the nominal interest rate. Keynes' income-expenditure model in the General Theory focused on changes in employment through the income while in the Friedman model, short run changes in the interest rate were caused mainly by the shifting demand function when income increased. In fact, any absolute interest elasticity attached to Friedman's demand for loanable funds function was overwhelmed by its responsiveness to variations in nominal income(see, Figures 2 and 3).

Keynes was inconsistent in describing nominal interest rates to rise during a recession in Treatise on Money, volume 1 while also describing them to fall during a recession while justifying the Gibson Paradox in Treatise on Money, volume 2. The key element in the former description compared with the latter was that the demand for loanable funds was not regarded as sensitive to variations in nominal income(see, Figure 1). This analysis was more in line with the income-expenditure model of the General Theory, than was the discussion in volume 2. Income induced variations in investment were a strong implication of the latter. Such a theory of investment was not emphasized in the General Theory.

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<국문초록>

신용시장에 관한 케인즈와 프리만의 견해

최 길 현

케인즈와 프리드만은 자신들의 주된 분석과는 달리 단기 신용시장 모형을 구축했다. 케인즈의 신용시장 모형은 일반이론의 수입-지출 모형과 달리 아주 다르다. 왜냐하면 그것은 단기에 물가 변화를 고려하고 있고 예측하고자 하는 주요 변수로 명목이자율을 삼고 있기 때문이다. 프리드만의 신용 시장 모형은 화폐 시장 모형에 근거를 두고 있다. 그러나 화폐 공급에서 유래한 신용 공급은 부분적으로 명목 소득에 대한 내생 함수이다. 신용 수요는 화폐 수요에서 유래한 것으로, 유동성 선호 곡선이라고 하고, 명목이자율이 명목 소득을 변화시키는 강한 양(+)의 관계를 가지므로 역순환(counter cyclical)적이라기 보다는 오히려 순순환적(pro cyclical)이라고 할 수 있다. 투기적 화폐 수요는 프리드만의 신용시장 모형에는 거의 적용되지 않거나 전혀 적용되지 않는다.

두 경제학자는 자신들의 신용시장 모형을 신용이 순환하는 동안에 명목 이자율의 경로를 예측하는데 이용했다. 그들은 물가와 이자율이 경기의 움직임과 같은 방향으로 움직인다는 Gibson의 역설을 정당화시키려고 했다. 케인즈는 불황기를, 프리드만은 호황기를 논의의 대상으로 삼고 있었다. 이들 두 모형에 의하면, 명목 대부수요와 공급은 명목 이자율을 결정하므로, 대부에 대한 초과수요가 증가하면 이자율도 상승한다. 게다가 이 두 모형에 의하면, 수요 함수는 이자율의 단기 변화 보다 명목 소득의 변화에 훨씬 더 민감하게 반응한다고 한다. 케인즈 모형에서, 소득이 증가하는 기간인 호황기에 공급함수는 명목소득의 변화보다는 이자율의 변화에 훨씬 더 민감하게 반응한다. 이러한 잠재적 투자에 대한 수요 확대는 자산의 일부나 혹은 예비적 화폐 수요로 간주될 수 있다. 그러나 그것이 반드시 회전속도를 더 늦춘다고 할 수는 없고, 다만 미래 소득이 증가 할 때, 그 가능성이 높아진다는 것이다. 이는 프리드만의 신용시장 모형에서는 대부 수요의 증가가 초과수요를 발생시킨다는 것이다.