



**The Northern Trust Company**  
**Economic Research Department**  
**Positive Economic Commentary**

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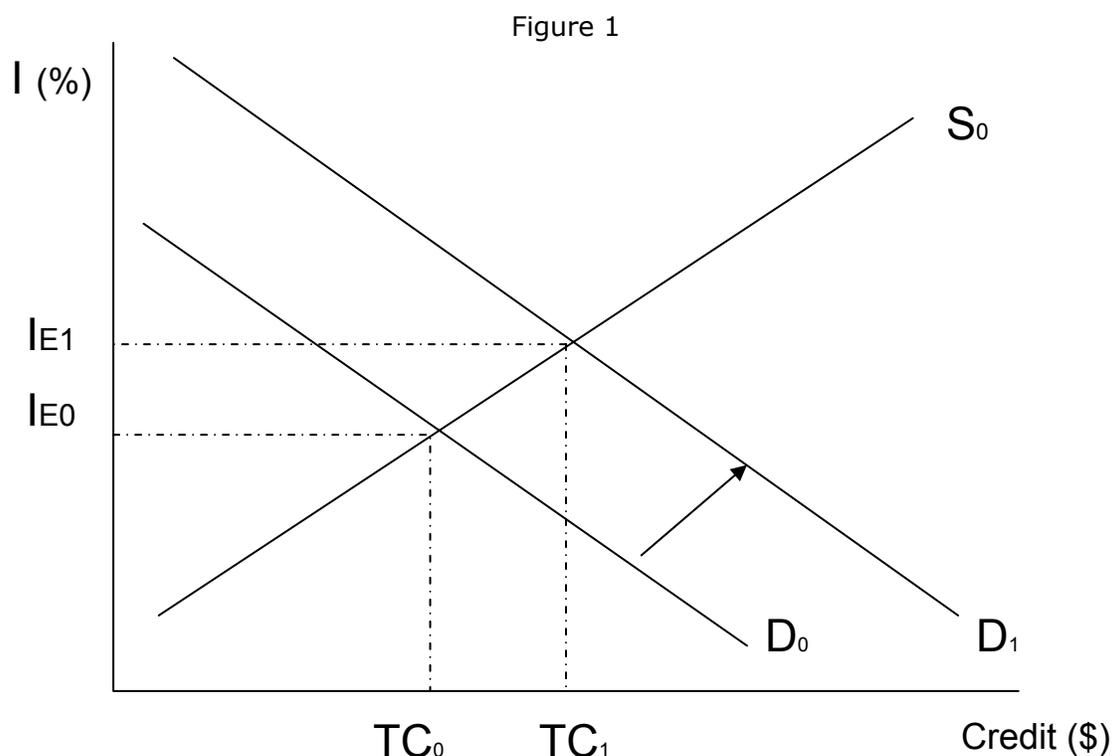
***Greenspan's Uncertainty Principle: Premise Accepted, Conclusion Rejected***

On August 29, 2003, Fed Chairman Greenspan made a presentation entitled "Monetary Policy under Uncertainty" to a symposium sponsored by the Federal Reserve Bank of Kansas City. Greenspan stated that the problem for the Fed "is not the complexity of ... [its] models but the far greater complexity of a world economy whose underlying linkages appear to be in a continual state of flux." In this statement, Greenspan acknowledged the major tenet of Austrian-school economics. That is, the actions of humans cannot be predicted with any accuracy. (This does not necessarily assume *irrational* behavior on the part of humans. Although there can be rational reasons for people to change their desired tradeoffs between current and future consumption, this does not imply that these changes can be predicted.) Based on this premise, Greenspan concluded that Fed monetary policy would be more successful in maximizing the economic utility of Americans if the FOMC operated with discretion rather than according to some rule. This aspiring Austrian-school economist would respectfully disagree. Because of the "complexity of a world economy whose underlying linkages appear to be in a continual state of flux," a **discretionary monetary policy guarantees inferior economic outcomes compared to a rules-based monetary policy.**

Let me explain. Greenspan's premise of uncertainty implies that the *equilibrium interest rate* (or equilibrium structure of interest rates) is in a constant state of flux. I define the equilibrium rate of interest as the rate level that equates the quantity of credit demanded in the economy with the quantity of credit offered by entities other than the central bank. Of course, if there were no central bank, then market forces would guarantee that the interest rate would always be at its equilibrium level (or moving quickly toward that equilibrium level) just as market forces guarantee that the price of copper is at its equilibrium level. Central banks, through their creation of credit, interfere with the market mechanisms that would otherwise produce the equilibrium rate of interest. In the presence of a central bank, then, what is needed is a monetary policy *rule* that *guarantees* the *least* interference in allowing the credit market to "discover" or move toward its equilibrium rate of interest. Such a monetary policy rule would imply some constant amount of central bank-created credit (or, in a dynamic sense, some constant rate of growth in central bank-created credit). For example, if the demand for credit were to increase (that is, at any given level of the interest rate, a greater quantity of credit were demanded), then, all else the same, the level of the equilibrium interest rate would rise. The *actual* level of the interest rate would rise toward the new higher *equilibrium* level *if* the central bank kept the amount of its created credit constant. If, however, the central bank were pegging the interest rate, then the increased demand for credit would result in the central bank accommodating this increased demand by its creation of additional credit. The movement of the actual interest rate toward

its new higher equilibrium level would be frustrated by the central bank. Even if the central bank somehow divined that the level of the equilibrium interest rate had risen, it would only be by blind luck that a discretionary movement by the central bank in the actual interest rate toward the new equilibrium level would reproduce the automatic movement by market forces. Why waste resources to try to reproduce something by discretion that is "free" in "nature"?

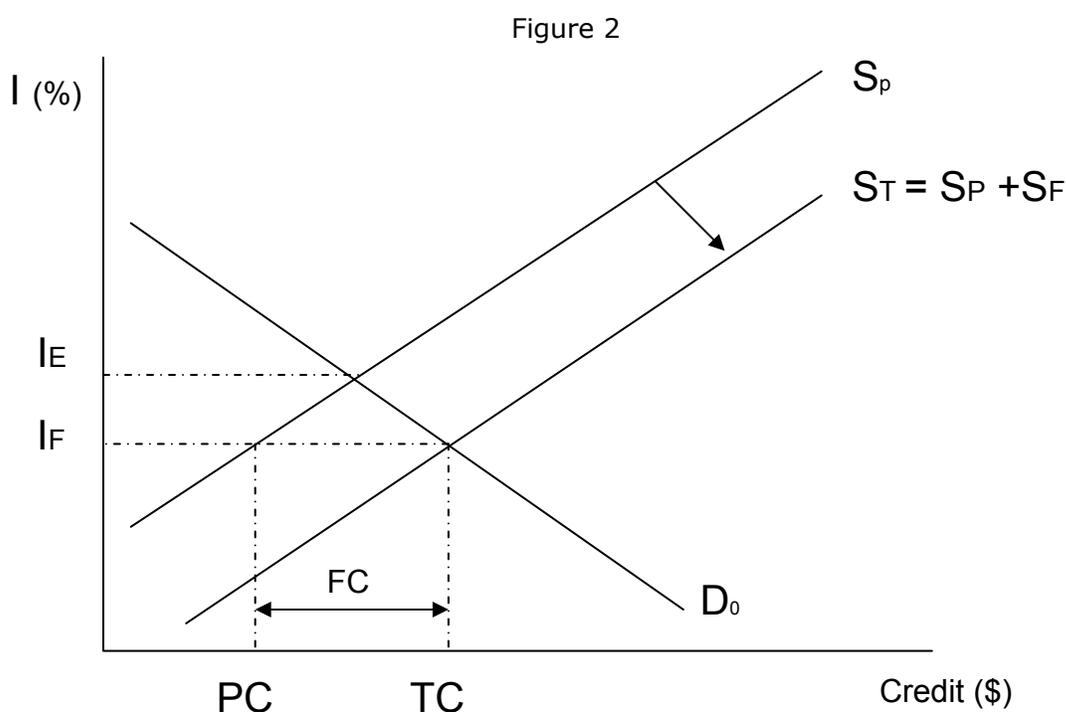
Let's put the prose into pictures, specifically credit supply and demand diagrams. Figure 1 shows the supply and demand for credit in a nirvanian state – that is, in the absence of a central bank. Interest rates,  $I$ , are measured along the vertical axis in percent terms. The quantity of credit,  $C$ , is measured along the horizontal axis in dollar terms. The demand for credit, which includes both private and government (ugh!) credit demand, is represented by  $D$ -curves. The  $D$ -curves slope downward and to the right because at lower interest rates, more investment projects become profitable and, thus, a greater quantity of credit is demanded by the private sector. The supply of credit offered by non-Fed entities is represented by the  $S$ -curve. The  $S$ -curve slopes upward and to the right because at higher interest rates, entities are willing to forgo more current spending and, thus, supply more credit. Where the demand curve,  $D_0$ , and supply curve  $S_0$ , intersect determines the level of the equilibrium interest rate,  $I_{E0}$ . And at that intersection, the equilibrium total quantity of credit extended is  $TC_0$ .



Suppose that entrepreneurs get excited about some new technology and now demand more credit in order to invest in it. This is represented in Figure 1 by a rightward shift in the demand-for-credit curve from  $D_0$  to  $D_1$ . Assuming nothing has occurred to shift the supply of credit curve, the interest rate will move up toward its new equilibrium level of  $I_{E1}$ , which is

determined by the intersection of  $D_1$  and  $S_0$ . The new larger equilibrium quantity of credit will be  $TC_1$ .

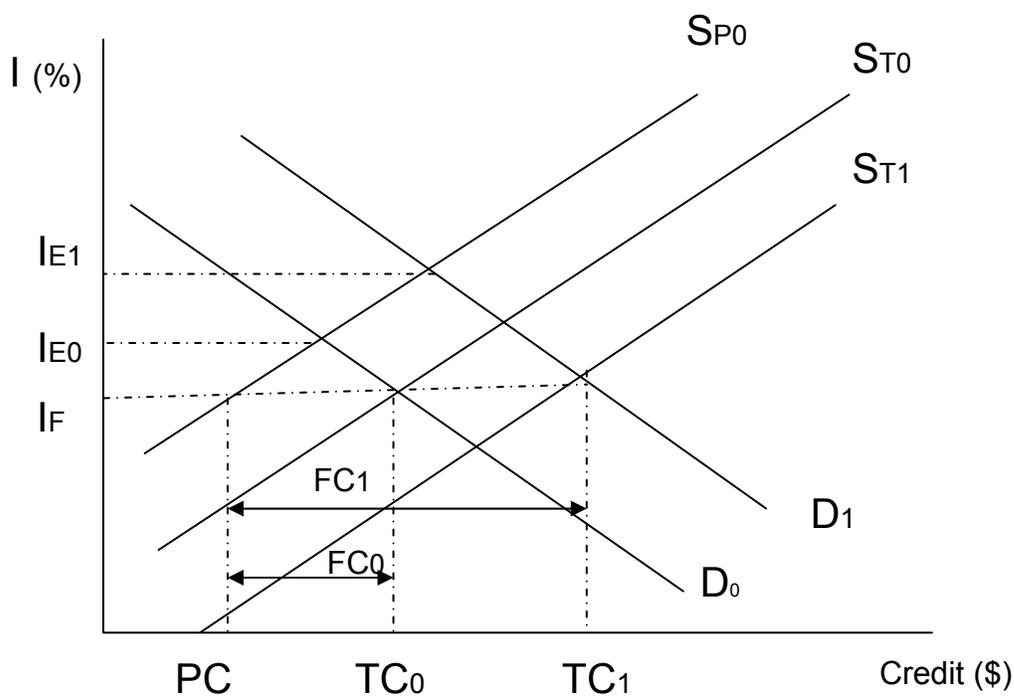
Now, let's introduce the Fed in Figure 2. This causes a parallel shift out in the supply of credit from  $S_p$ , which represents the supply of credit offered by the private sector, to  $S_T$ , which represents the augmentation of privately-supplied credit with Fed-created credit (that is, Bernanke's printing press). The equilibrium interest rate in Figure 2,  $I_E$ , is determined by the intersection of credit-demand curve,  $D$ , and the *private*-credit-supply curve,  $S_p$ . But with the Fed supplying credit, the *actual* interest rate,  $I_F$  ("F" for Fed-determined interest rate), is defined by the intersection of demand curve  $D$  and *total* supply curve,  $S_T$ . The actual interest rate,  $I_F$ , is lower than the equilibrium interest rate,  $I_E$ . At the lower actual interest rate,  $I_F$ , the quantity of credit extended is  $TC$ . Notice that at the actual interest rate,  $I_F$ , the private sector is willing to supply a quantity of credit  $PC$ , which is less than the quantity of credit demanded,  $TC$ . The excess demand for credit is accommodated by the Fed by the amount  $FC$  ( $TC$  minus  $PC$ ).



With the Fed in existence, let's see what happens when entrepreneurs once again get excited about some new investment opportunities, thereby increasing their demand for credit. (By the way, it could be the government increasing its demand for credit rather than entrepreneurs.) In Figure 3, this is represented by a rightward shift in the credit-demand curve from  $D_0$  to  $D_1$ . Assuming nothing has changed with regard to the private sector's willingness to supply credit, the private-sector credit supply curve remains at  $SP_0$ . With the increased demand for credit, the new *equilibrium* interest rate rises from  $I_{E0}$  to  $I_{E1}$ . Assuming that the Fed does not know that entrepreneurs' demand for credit has increased, it maintains its target interest rate at  $I_F$ , thereby **creating an even larger gap between the equilibrium interest rate and the actual Fed-determined interest rate**. This results in the total quantity of credit extended rising from  $TC_0$  to  $TC_1$ , as determined by the intersection of  $D_1$  and  $ST_1$ . The amount of credit supplied by the private sector remains at

PC. This implies that **the Fed has created the additional credit to accommodate the increased credit demand**. Fed-created credit rises from  $FC_0$  to  $FC_1$ .

Figure 3



Suppose that rather than determining an interest rate by discretion, the Fed were to follow a rule – the rule being that the Fed kept *constant* the amount of credit it created (or kept constant the growth in the credit it created). I’m going to spare you another supply-demand diagram illustrating this. (You can draw it yourself and send it to me for extra credit.) But if I were to present the diagram, it would show that the gap between the actual Fed-determined interest rate and the new higher equilibrium interest rate would *not* widen as it did in Figure 3. Rather, by keeping constant the amount of credit the Fed created, the actual interest rate would *automatically* move up toward the new higher equilibrium rate. Thus, in a world where the supply-demand relationship is in a constant state of flux, with this monetary-policy rule replacing discretion, the actual interest rate would automatically be moving in the direction of a new equilibrium interest rate without a widening gap between the two. Of course, if the Fed were to adopt such a rule, the markets would not hang on every word uttered by Fed officials. Come to think of it, if the Fed were to adopt such a rule, why would even need Fed officials?

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