PRICE DETERMINATION AND STABILIZATION UNDER FREE BANKING SYSTEM[*]

Süleyman DEĞİRMEN[**]

In the past the long run objective of monetary policy was a balanced budget, but more recently it has focussed on price stability. Price level stabilization had many proponents during the 1920s and 1930s and continues to have advocates today. The central banks of the US, New Zealand, Germany, and others espoused it during the last two decades. Price level determination and hence stabilization are important issues for economies since they determine the expectations of policy makers and individuals. Price level stability implies a steady inflation rate; it is similar to zero inflation but it differs in that price level stability returns the price level to its initial level while zero inflation implies offsetting a rise in prices and aims to stop future price rises. Price level stability is the better objective for monetary policy since private individuals desire a stable and predictable monetary environment to engage in business transactions. Therefore, the price level will be more predictable under a stable price objective than under zero inflation one. This also brings long run price stability, because of a stable monetary policy. The paper covers several classical views of price level stability and stabilization: how price level is theoretically and historically determined and stabilized under free banking and central banking regimes, as well. Consequently, empirical evidence concerning the price level stability under free banking is mixed.

1. Introduction

In the past, the long run objective of monetary policy was a balanced budget, but more recently it has focused on price stability. Price level stabilization had many proponents during 1920s and 1930s and continues to have advocates today. The central banks of the US, New Zealand, Germany, and others have espoused it during the last two decades. Thus, monetary policy should be consistent with some long-run objective, which has general support from the public (Mints, 1970).

Price level determination and therefore, its stabilization are important for an economy since they determine the decisions of policy makers and individuals. Price level stability implies a steady inflation rate (i.e., an inflation rate that is roughly the same each year); it is similar to zero inflation. They differ in that under the former, the price level is brought down to the initial level, while under the latter the objective is to offset the initial rise in prices and aims to stop prices from rising in the future. Therefore, prices will be more predictable under a stable price objective than under zero inflation. Price level stability is thus the better objective for monetary policy since individuals desire a stable and predictable monetary environment to conduct business transactions.

The price level provides a guideline and is relevant in several schools of thought on monetary policy. Advocates of price level stabilization include: the American Quantity Theorists, Irving Fisher, Lloyd Mints, Henry Simon; the Cambridge economist Pigou; and others including R.Hall, Gootfried Haberler, and R.G. Hawtney. In addition to, the Quantity Theory of Money, (hereafter QTM), this paper covers Neoclassical, Monetarist and free banking approaches to price level determination and stabilization. Neoclassicals, Monetarists, and advocates of the QTM defend central banking system and admit that the money supply is (exogenously) determined by the central bank. For the last group, the price level is that which makes the purchasing power of the money supply equal to the desired level of real balances (Woodford, 1995).

In contrast, some advocates of free banking hold that the price level is not determined by the behavior of the money supply but instead through changes in productivity, the price index, fiscal policy, etc. In addition to Friedman, Bordo and Schwartz (1995) express doubts about the price level stability under free banking and about the success of a self-regulated banking system. Bordo and Schwartz believe that price stability should be achieved through Milton Friedman's frozen money growth rule, operated by central bank lending or open market operations. In Broaddus's (1993) study, the introduction óf the Federal Reverse (hereafter FED) brought price stability, especially after the introduction of the Bretton Woods system. In other words, he rejects the feasibility of free banking and defends central banking as it has provided price level stability.

However, Selgin and Goodhart defend price level stability arguing that free banking systems have performed better than any modern fiat standard. Selgin comments on Bordo and Schwartz view about price level stability, and notices that most free banking systems were anchored to gold standards. As Bordo himself observed, while the gold standard appears to have allowed considerable short run price fluctuations, it has

produced much greater long run price stability than any modern fiat standard (Selgin, 1995).

To understand why, consider the following figure reproduced from Skousen (1997):
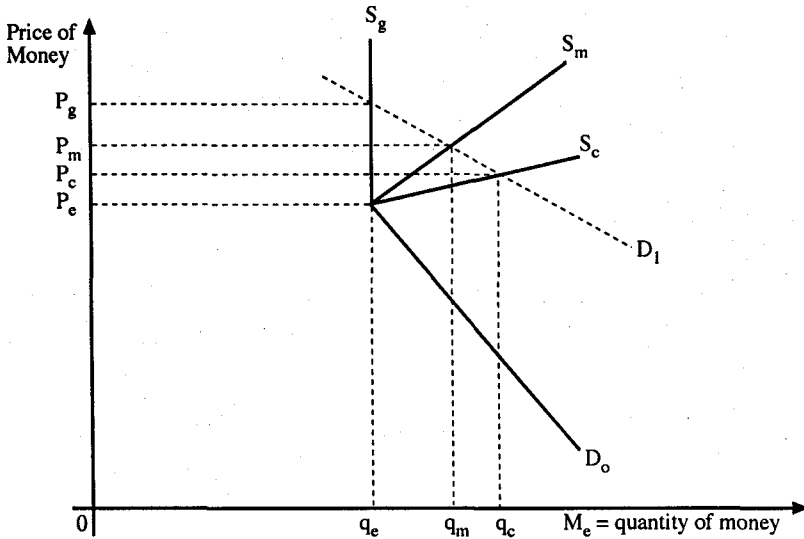

Figure 1: *P is price of money or represents the array of goods and sources and services that money will buy; M_e is quantity of money; S_g = if government outlaw any additional production of money; S_m = if money industry is monopolized; S_c = if competitive supply function, which is a free banking case.*

If money demand increases, from D_o to D_1, it will increase the output of commodity money from q_e to q_c. If the money industry is monopolized it will produce less than the competitive amount. However, the price of money will be higher to the detriment of society, since $P_m > P_c$.

Regarding the above-mentioned points, and given that some of the major central banks have chosen price level stability as a goal, it would be interesting to contrast price level stability under central and free banking. Furthermore, it would be beneficial to contrast price level determination under central and free banking. To do this, the paper addresses four issues. First, it discusses the relevance of free banking and central banking, including the issue of price level determination and stabilization. Second, it addresses the differences among free banking advocates concerning price level determination and stabilization. Third, it provides some empirical evidence concerning both banking systems. Last one has concluding remarks.

2. Relevances of the Free Banking and Central Banking

2.1. Central Banking

In past decades, controversies regarding the conduct of monetary policy centered on the debate: whether rules or discretion yielded better economic outcomes. The cost in terms of the tradeoff between unemployment and income levels, resulting from price level stabilization, differs according to whether the monetary authority follows rules or engages in discretionary policy.

Barro and Gordon (1983) give detailed information about which policy performs better in terms of the trade-off between the level of unemployment and income. Identifying the costs of inflation is crucial. They conclude that the best policy is an 'enforcement rule[1], saying that "[t]he rules that can apply in equilibrium are those that have enough enforcement the motivate the policy maker to abide by them the expectation mechanism (p.110)."

Milton Friedman and other monetarists claim that discretionary (or activist) policy objectives, through the use of monetary "tools," bring harm to the economy. In the past, discretionary FED policy caused major instability, and a high price level in the US economy. White (1989) notes that the typical rule commonly suggested by US monetarists is that the FED be duty-bound to manipulate the monetary base so that some particular monetary aggregate conforms to a fixed growth rate of k percent, where k is a predetermined magnitude chosen for its consistency with price stability or some other goal. Thus a constant growth rate of base money is supposed to bring price stability under central banking.

Monetarists hold that the monetary aggregate must be pegged to the monetary base—M1, M2, and M3—because there is a linear link between the growth rate of the price level and nominal income. Under central banking, a constant growth rate of the monetary aggregate is supposed to be linearly related to the price level and nominal income. In fact, there are deviations from the rule, since financial innovations destabilize income velocity, and make it difficult to define monetary aggregates. A broader aggregate is more difficult to control and thereby makes price control less likely. Adoption of a k percent money growth rule is typically advocated on the basis of past monetary systems and confidence in the estimates.

One objection to monetarist claims is that changes in the long run trend of velocity of the chosen monetary aggregate are unforeseeable. Therefore, there is a distinction

---

[1] "Generally, a credible rule comes with some enforcement power that at least balances the temptation to cheat. We consider here only the enforcement that arises from the potential loss of regulation and credibility. [...] the cost of cheating today involves the increase in inflationary expectations for the future." For further information, see Barro and Gordon (1983).

between the short run variability of the money multiplier, the relationship between a monetary target variable, and the monetary base that the authority can directly manipulate.

A simple way to enhance the predictability of velocity and the money multiplier is to tighten the reins over bank regulation in order to restrict financial innovation. White (1989) thinks that strict regulations on reserve requirements and an increase in the FED's bureaucratic response strengthens its control over money stock. On the other hand, Friedman believes that "there should be an independent authority [that] manifests that the fixed monetary rule is a device for enhancing economic liberty" (White, 1984 p.243). He suggests that monetary stability provides price stability.

Thus, rigid specific monetary rules may be inconsistent with deregulation of the banking system. Laissez faire advocates would deem a policy that restricts the banking industry's ability to serve consumers in order to render monetary policy more affective, to be perverse (White, 1989).

1.2. Free Banking[2]

Free banking advocates hold that both discretion and rule based central bank policies create hazards for the economy and that freeing the monetary system entirely from bureaucratic control would certainly do more good for the economy. The distinguishing characteristics of free banking, where there are many issuing banks and no government sponsored central bank, is to have bank notes fully convertible into some form of outside money such as gold or silver. A permanently frozen stock of irredeemable government currency could conceivably serve as the money base for free banking system. Free banking means deregulating inside money, by allowing banks to issue their own notes, and by allowing outside money to freely circulate. The free banking solution to the dilemma[3] takes note issuance out of the hands of a central authority and turns such decisions over to private banks.

---

[2] "At least since Adam Smith's Wealth of Nations (1776), economists have periodically debated the consequences of applying the principle of laissez faire to money. Never entirely extinguished, the debate seems to be rekindled at roughly 50-year intervals. In the late 1820s to early 1940s the advocates of "free banking" argued with some success that the monetary system would be improved by freeing entry for banks of issue, and by ending the privileges of the Bank of England and the Second Bank of United States. In the 1880s and 1890s there was a modest revival of laissez faire monetary thought in Great Britain, and in the discussions over remedies for the shortcoming of the regulated note-issue of the National Banking System in the United States. In late 1920s and 1930s a still more modest revival occurred. Today we are in the midst of a large-scale resurgence of interest, dating from the mid-1970s, in competitive institutions for the supplying of money. For the first time since the 1840s a significant number of leading theoretical economists is among the proponents of monetary laissez faire." White, L.H., (1989), What kind of monetary institutions would a Free Market deliver? Cato Journal, Vol.9, No.2, (Fall), pp. 367-403.

In recent years, a number of economists have reinterpreted the history of free banking. White, Nataf, Rolnick, Weber, Rockoff, and others have found that free banking systems were inherently or qualified stable. White defines free banking to be a system in which the government does not regulate; the public decides how much real balances to hold and in their attempts to make any adjustments they will affect the purchasing power of money. In this sense, it is not the banking sector that determines the currency stock but the public. The currency stock is the total amount of specie and notes held by the public. It affects the purchasing power of money, the inverse of the price level. Base money is defined as the total amount of specie in the economy held either by the public or by banks as reserves. This means that monetary policy has little or no effect on price level determination and stability.

In free banking systems, each bank issues an optimal quantity of notes which compete with the notes of other banks. The economy's aggregate money supply, which is simply the sum of the notes issued by each bank, is kept in check by the actions of each individual bank as it maximizes profit by avoiding excessive issuance of notes[4]. A free banking system with competing note[5] issuers clearly differs from a central banking system[6]. Under free banking one bank's note issue expansion is checked by another bank's note redemption, but in central banking system this does not work since central banks have a monopoly in note issuance.

White (1984) notes that the difference between multiple and centralized note issue under a specie standard is "an over-issue note of central banking system since an excess supply of central banking money impinges on aggregate spending behavior and on prices with a long and variable lag, corrective process will take a while" (p.19). Therefore, long adjustment lags influence aggregate demand and the price level.

By freezing the monetary base, the behavior of the money supply will depend entirely on the behavior of the money multiplier, the ratio of bank issued money to bank reserves. Determination of the reserve ratio under free banking and central banking systems is what determines the price level. One potential advantage of letting banks

---

[4] Historically speaking, free banking systems have not been prone to over issue or suspend convertibility of their bank notes. Furthermore, banks were not prone to hold large amounts of excess reserves nor were they deficient so that bank runs were not an endemic problem. Thus, there is no clear need for a lender of last resort.

[5] White (1999) says that this is the key element. He cites that Vera Smith who says that in a central banking system monopoly note issue requires there to be a lender of last resort, a commercial bank regulator, a banker's bank, and a monetary policy agency. If you get rid of monopoly issue you get rid of all the rest.

[6] In an unregulated banking system any sort of outside money can be used provided that the quantity of outside money is not controlled by a government monetary authority. Government plays no active role regarding the quantity of money issued inside or outside the banking industry.

issue notes, without a statutory reserve requirement, is that the banks could then accommodate changes in the public's desired currency deposit ratio simply by changing the mix of their note and deposit liabilities (White, 1994).

There are two reasons why a bank needs to hold base money: 1) to meet customers' net deposits of base money, and 2) to satisfy interbank clearings. Since under free banking the public holds no base money, the sole determinant of equilibrium base money is the standard deviation—i.e. the volatility—of interbank clearings. The advantage of this is that shifts in the desired currency/deposit ratio do not affect the equilibrium quantity of money and thus do not affect bank credit.

To see this, note that under free banking the stock of base money, B, is equal to the stock of banks reserves, R, while the money stock, M, is equal to the stock of bank deposits, D, plus the quantity of non-base bank notes held by the public, N, or:

(1) $B=R$

(2) $M=D+N$

Equilibrium requires that actual reserves equal desired reserves, or $R=r(D+N)$, where $r=R/M$ is the desired reserve ratio. Furthermore, $M/B = 1/r$ shows the independence of the money multiplier, M/B, from the public's desired currency-deposit ratio, C/D. In other words, the money stock is independent of C/D.

On the other hand, under central banking all currency takes the form of base money. Thus,

(3) $B=R+C$ and $M=D+C$, where C stands for public holding of base money.

(4) $R=r(D)$ shows that commercial bank liabilities do not include bank notes; and $c=C/D$ denotes the public's desired currency-deposit ratio.

(5) Thus, $M/B=(1+c)/(r+c)$ = money multiplier.

Unlike the free banking money multiplier, $M/B=1/r$, if B is constant, then changes in currency deposit ratio alters the equilibrium quantity of money. Optimal reserve holdings will be determined by equating the marginal cost of doing so, the foregone interest, with the marginal benefit, the value of the reduced probability of default on clearing obligations, at a positive level of reserves. This also depends on shifts in the velocity, V_t, which is proportional to the inverse of money demand.

If there is a change in overall money demand, or if the public reduces its expenditures, so that there is not simply a shift in the desired currency deposit ratio, this will lead to changes in the total value of purchases, and change the amount of total bank clearings. In this situation, banks will have more reserves than desired equilibrium reserves. In time, social income will increase and banks will decrease their reserves until the new influx of money has raised income back to the level justifying total existing

reserves. In short, under free banking, reserve requirements, r, fluctuate to stabilize nominal income, MV_t.

3. Price Level Stabilization and Determination Under The Different Cases

Selgin's (1994a, 1995)[7] studies show that free-banking regimes provide price stability. He covers the different cases of price stability under a productivity norm, the gold standard, and a rule-bound fiat system, while Woodford (1995) obtains price level determinacy through fiscal policy.

3.1. With Fiscal Theory (Woodford)

Woodford (1995) shows that price level determinacy can be obtained without control of any monetary aggregates. While standard free banking regimes are thought to imply a loss of price level control, it can still be obtained if one interprets the price level to be that which makes the real value of nominally denominated government liabilities equal to the value of expected government budget surpluses—i.e. fiscal theory.

He first considers how the price level is determined when the money supply is exogenous, as assumed by the QTM. He defines desired real balances to be a decreasing function of the expected rate of inflation, or $M_t/P_t = f[P_{t+1}/P_t]$. The exogenously specified sequence of money supplies alone determines the equilibrium price level. He also shows how fiscal policy affects the price level in the QTM. In this situation, the price level will be independent of either current or future money supplies (Woodford, 1995).

The mechanism works despite the fact that an announcement of a monetary injection at time (t) has no immediate effect upon the price level. This does not imply that there will be no future effects upon the price level as a result of the effect of money policy upon the size of total government liabilities. This effect on the price level occurs because monetary and fiscal policies are inseparable as they both work through the government's budget constraint. In short, monetary policy affects the price level only because of its effect upon the government's future interest payments and hence, upon the growth of government liabilities. For example, if the money supply decreases and interest rates rise, then it causes total government liabilities to grow faster and results in a higher eventual price level as debt is monetized. This explanation is inconsistent with the conventional QTM view.

Woodford thinks the conventional QTM requires the assumption of a perfect foresight equilibrium, and that even this does not suffice to determine the price level

---

[7] Both studies exhibit that free banking under both rule-bound fiat regime and gold standard brings price stability.

because for this regime there is a unique perfect foresight equilibrium path for the price level. However, equilibrium also depends on the specification of fiscal variables. As a result, it might simply be that central banks never allow the money supply to get too far out of line with the general level of the prices, while the path of the price level is determined essentially by fiscal factors. In endogenous money regimes, the expected future path of the government budget determines the price level while the money supply necessarily grows at the same rate as the price level.

Woodford takes up the case of free banking in which private intermediaries engage in the unrestricted creation of government fiat substitutes. To demonstrate the equilibrium, he sets up the following model. A representative agent is said to maximize the following intertemporal utility function.

(6) Max S B_t u $[C_t, (M_t+D_t)/P]$[8], where B_t and C_t are supply of government bonds and consumption, respectively. D_t indicates the nominal value at the end of period t of household's deposit with an intermediary, which deposits are the money substitutes.

(7) Competition between intermediaries with free entry requires that in equilibrium, $R^d = (1-r) R^b_t$, where, R^d_t is the interest rate paid for deposits, and R^b_t is interest rate determined in bond market.

(8) $B^h_t + (1-r$[9]

$D = B_t$, where B^h_t is household bond holding and B_t denotes supply of government bonds and $(1-r)$ shows just fraction.

(9) Goods market equilibrium requires that $C_t + g_t + r (D_t/P_t) = y_t$.

Equilibrium in the money market also requires that $M^d_t = M^s_t$, thus:

(10) $(M_t+D_t)/P_t = L (C_t, D_t)$, where D_t, interest rate differential, $[(R^b_t - \max \{R^m_t, R^d_t\})/R^b_t]$.

To get the result we need the following:

(11) If $R^m_t \geq R^d_t$, the public would rather hold money; otherwise, they hold deposits.

(12) If $D_t £ r$, the public would rather hold money; otherwise, they hold deposits.

(13) $g_t = z_t + Dt M_t$, where z_t indicates exogenous non-negative shocks; M_t is the real value of government monetary liabilities.

(14) The government financing constraint is

$P_t.g_t = T_1 + (M_t - M_{t-1}R^m_{t-1}) + (B_t - B_{t-1}R^b_{t-1}))$, where T_1 is the tax revenue of government.

---

[8]   Representative agent aims to maximize his intertemporal utility function.

[9]   If r=o, it means there is a costless intermediation.

As a result, fiscal variables and the rate of interest paid on government money determines the equilibrium path of the price level. There is no reason to regulate financial intermediaries' decisions to create money or to hold reserves in order to preserve a well-defined demand for the monetary base and allow control of the price level. However, this does not imply that an unrestricted supply of private money substitutes will not bring price level stability.

Woodford concludes that unless government purchases are used to change the trend growth rate of the net supply of goods available for private consumption, the trend rate of inflation will be independent of government policy. This means that absent any government sanctioned monopoly on money creation, laissez faire monetary arrangements will be non inflationary.[10] He believes that by allowing a competitive supply of money substitutes to exist, the price level will be determinate.

3.2. Three Cases (Selgin)
3.2.1. Under Gold Standard

Selgin and White (1994) provide an example of free banking under the gold standard. Let x_i be a random variable with mean zero and variance equal to s that represent the impact of transaction i on bank j's total reserves. Define x as the sum of all transactions it would be $x\sim(0,s)=Sx_i$. Bank j's optimal reserves are denoted by $R_j=bs=bsx_iT^{1/2}$, where $b=p/r$: p is the perdollar-adjustment cost of reserve holding and T is transactions. If each transaction is $ P, instead of $ 1, then $R_j= Pbsx_iT^{1/2}$. The required condition to satisfy monetary equilibrium is given by the equation of exchange, $MV_t=PT$, where M=D+bank notes; T= transactions, V_t= transaction velocity of money; P=price level. Substituting in the quantity equation yields $R_j=bsx_i(MV_t/T)T^{1/2}$ which simplifies to $R_j=bsx_i(MV_t)T^{-1/2}$. If the transaction velocity of money and hence the public's real demand for money and b are constant, any increases in money entails a proportionate increase in the bank's demand for reserves.[11]

In addition, under free banking, income flows tend to be stabilized. To show this, substitute y=k.T and $V_y=kV_t$ into the above, where k is the quantity of real income per monetary transaction, and y and V_y are real income and the income velocity of money, respectively. Thus the optimal amount of reserves to be held is $R_j=bsx_i (MV_y)y^{-1/2}k^{-1/2}$,

---

[10] Hayek also accepts this idea and thinks that "Legal tender creators uncertainty due to government's force people to accept in fulfillment of a contract something they never intended when they made the contract" (Hayek, 1976, p.32).

[11] Selgin and White also give example: "how clearing system develops to use an interest earning asset rather than base money for interbank settlements; how this system works under a commodity and fiat standard" (White, 1994, pp.1724-25).

indicating that for a given value of y, k, and R, a change in V_y will produce an opposite and offsetting change in the money supply to preserve an equilibrium between the supply and demand for reserves. Therefore, nominal income (MV_y) has to be constant. For example if V_y decreases as a result of a decline in the flow of notes through the clearing system and hence, a reduction in the precautionary reserve demands prompts an offsetting increase in the money multiplier, M/B, and thereby in the money stock. However, decreases in the money stock do not create deflationary pressure unlike under central banking where it tends to be deflationary. Under free banking, market forces compel banks to issue more money when, at a given price level, more of it is demanded by the public, thereby stabilizing nominal aggregate demand, that is, inside money (White, 1994).

3.2.2. Under a Rule-Bound Fiat System

In another study Selgin[12], shows that under a rule-bound fiat system[13], where MV= Py and y= jN, for 0 < j <1 and where j represents the proportion of real income transactions to total transactions, the equation of exchange can be rewritten as MV=PjN. This enables him to derive the relationship between the nominal demand for bank reserves, that is, nominal clearing transactions, PN, and the money stock. The public can influence the demand for bank reserves by altering the volume of transactions arising from a given money stock—that is, by altering the velocity of money (Selgin, 1994b). Thus, the solutions for the price level and money stock [in terms of R, V, y, q (reserve holdings where marginal cost equal marginal benefit), b, and j] are as follows: [with assumption of constancy of R, q, b] the first equation shows that P level is invariant to changes in velocity, i.e., to changes in demand for money relative to income.

$$P^* = R/yq[jy/2(b-1)]$$

The second equation shows that money supply adjusts inversely to changes in velocity.[14]

[12] "Free Banking and Monetary Control," The Economic Journal, 104, (November 1994), pp.1449-1459.

[13] "Experience with pure fiat monies since the end of Bretton Woods system, together with the quantity theory of the purchasing power of money suggests that a noncommodity outside money can, in fact, be sustained" . . ."Accordingly a number of recent laissez faire monetary theorists, begging with Klein (1974) and Hayek (1970), have contemplated competition in the supply of distinguishable noncommodity outside monies. Others particularly Timberlake (1981, 1986), Friedman (1984), and Selgin (1988), have proposed free banking on a frozen base of fiat dollars" (White, 1989, p.368)

[14] If the effects of ceteris paribus changes in each of constancy of R, b, q, the result will be that if R increases, it will create increase in the money stock and increase price level, with no change in the equilibrium reserve ratio, R/M; if q increases, it will create proportional decrease in money supply and in reserves; if b increases, it will lead to decrease in s but decrease in price level, money supply and real income.

$$M^*=R/Vq[jy/2(b-1)]$$

The main results of Selgin and White's model are that (i) the money multiplier, M/B, is independent of changes in currency deposit ratio or income velocity of money, assuming that j, q, y, b are constant. This means that the banking system automatically accommodates changes in velocity with offsetting changes in the money supply; and (ii) if real output grows, free banking systems still offset the changes in velocity. Both the money supply and nominal income, Y, will be positively related to real output, y. Therefore, the price level decreases. These results suggest that under free banking in a growing economy with a frozen money base, there is a tradeoff between constancy of nominal income, and constancy of the price level, regardless of velocity and currency demand.

Yeager (1990) states that "The price level, the purchasing power of money, is determined by the interaction between the demand to hold money and the quantity in existence. And the quantity consists mostly of inside money" (p.p. 102-3). The demand for base money is, however, not only a demand for currency, but also a derived demand for it as reserves against the deposited money. Given the ratio of total money-to-the monetary base, if real demand for the total money stock is greater, including, inside money, then real demand for base money will be greater too. Given the (nominal) quantity of base money, this will lower the price level and vice versa. Thus, institutions and factors affect this ratio, and so the quantity of "non-money base" affects the price level.

3.2.3. Under Productivity Based Approach

Selgin (1997) discusses the connection between price stability and productivity. He considers a constant price level regarding a general increase in productivity—a form of nominal GDP targeting. If the income velocity of money, V_y, is constant, real income increases in response to productivity gains. Then, unit costs of production fall, and the money supply must rise to hold the price level constant. The effect of a change in productivity on prices and on the nominal supply of inside money depends on the influence that increased real output has on the demand for real money balances.

When productivity rises, effective demand exceeds nominal demand; when productivity falls, nominal demand exceeds effective demand (given a stable price level). A policy of maintaining a stable price level will be inconsistent with Say's Law (Selgin, 1992). Selgin (1997) covers the free banking alternative under a productivity norm and defends deregulation of banks and other private monetary institutions. Free banking generates a relatively stable relationship between the incidence of aggregate

spending, the central bank's desire to control, and the quantity of the central bank's base money. Selgin assumes that private currencies replace government currencies in the hands of the public and that banks are free from all statutory reserve requirements. Banks in this system still need to keep reserves of government base money to settle daily inter-bank clearings. Thus, free banking, by fixing the quantity of base money circulating among banks, and tends to automatically stabilize nominal income [thus price level]. Stabilization of nominal income means stability of price level and stability of real income, too.

Hence, free banking systems tend to accommodate changes in the demand for inside money with equal changes in its supply. An increase in the demand for inside money balances results in banks' discovering that their reserve holdings have increased beyond the optimal amount such that banks are encouraged to expand their issues of inside money. Selgin also considers the case of a decrease in the demand for inside money. In this situation, clearinghouses default due to contractions in their balance sheets, and the price level and nominal income will fluctuate. Prices, under free banking, change on account of changes in the conditions of real output (such as, technical improvements that lead to an increase in the capital output ratio or increases productivity). No countervailing adjustment in the supply of inside money will occur. The nominal supply of inside money will adjust only in response to any change in spending associated with the real balance effect so that movements in the price level are sustained. This, however, is automatic and painless in the sense that they come in response to changes in per unit costs and therefore maintain constant nominal revenues for producers.

Free banking systems provide an ideal monetary equilibrium by maintaining constant the supply of inside money multiplied by its income velocity of circulation. Hence, there is no deflation or inflation. However, as Selgin (1988) points out, this will not prevent price level changes resulting from changes in productivity.

4. Empirical Evidence

For a wide-ranging series of historical case studies: Australia, Canada, Colombia, France, Ireland, Scotland, Switzerland, and the US, Kevin Dowd suggests "that free banking is not inflationary, that it does not promote banking instability, and that currency issues is not a natural monopoly." [...] "Most historical reference has been to a narrow range of experiences, notably that of Scotland and the US" (Shelia, May 1993, p.743).

The Scottish experience provides the most relevant example of how an almost unregulated banking system functions, characterized by unregulated inside money and outside money free of central bank control. In Scotland, we observed that under free

banking conditions: (i) bad bank notes did not drive out good notes; and (ii) counterfeiting did not pose a major problem. The free banking system, thus, has unregulated issue of transferable bank notes and an unmanipulated supply of bank cash (White, 1984). Friedman (1960), on the other hand, argues against the success of the Scottish free banking experience because of the tendency for banks to over-issue notes. In response, White (1984) says that in fact, Scottish banks had no incentive to periodically over-issue. The only general suspension of specie payments during the period between 1797 and 1821 followed the government-sanctioned suspension by the Bank of England and thus, was not a local over issue.

Rolnick and Weber (1983) show that in the US experience the large number of free banking failures occurred as a result of prohibitions against branch banking, and bond deposit requirements. Rockoff mentions similar reasons and situations, for the Wild Cat banking experience between 1837 and 1861, saying that an American state 'free banking' regime was thus "a far cry from pure laissez faire" (Selgin and White, 1994, p.1719). As witnessed in Scotland, unregulated banks in the US chose to hold precautionary reserves to meet unexpected shortfalls.

According to Schuler (1992), free banking was successful because that is what enabled the gold standard to persist prior to World War I. Selgin notes that free banks were flexible and responded quickly to changes in their reserves, while central banks, as holders of base money for whole banking system, tended not to lose reserves quickly enough to offset over-issues. These fluctuations influence changes in the price level.

MacCallum (1989) reveals that Schuler uses the data of the consumer price index, CPI, and wholesale price index, WPI, for the US, Germany, Belgium, France and England from 1776 to 1985, including Gold Standard and post WWII period. Schuler claims that since free banking systems were inherently convertible regimes long run stability was greater than it has been under central banking system which have gradually moved from convertible regimes toward inconvertable ones. He notices that if we look at historical trends in price indexes, it confirms that long run price stability was greater under free banking for Belgium, UK, France, Germany, and the US.

· Toma (1982) shows that prior to 1914, there was no overall trend in the price level, but that during wartime the CPI increased significantly. Since the creation of the FED in the US there has been an unmistakable and almost continuous, upward trend in prices. He thinks that this is a result of political pressure, since the FED increased the money supply perhaps as a result of an inflationary bias. In addition Vera Smith (1990) studies the chronological development of banking systems in England, Scotland, France, the US, and Germany, and mentions that "Once central banks were firmly established, [...]

their room for maneuver was initially limited by the obligation to redeem its notes and deposits on demand for specie, but this constraint on its freedom to do as it wished [...] was eventually suppressed by the political authorities so they could squeeze more resources out of the banking system. Convertible money thus gave way to fiat money, and relatively stable price [level] gave way to inflation" (Dowd, Winter 1991, p.843).

Selgin (1988) and Woodford (1995) state that under free banking, monetary policy will be more stable and thus price level determination and stability will be more reasonable than what the QTM predicts. Sargent-Wallace (1982) accept that free banking or the Real Bills doctrine of banking would lead to a Pareto optimal allocation of reserves, however they admit that this model leads to possible price instability and monetary disequilibrium. They, however, disregard those in a world of perfect foresight, because they assume that price instability and money disequilibrium will not create any undesirable welfare consequences. They conclude that a free banking or the Real Bills doctrine to money is better than the QTM view.

In contrast, Friedman (1960) in assuming that fractional reserve free banking would be unstable argued that the resource costs of restoring a 100% reserve backed specie standard would be prohibitively expensive at around 2.5% of GNP annually. Friedman's major point is that although there is a connection between monetary movements and the price level, the exact relationship is difficult to define, making it an unreliable objective to guide day-to-day activities. While this is a criticism of free banking theory, in standard free banking models, the quantity of money is strongly related, even in short run to the velocity of money, goods production costs, bank reserves, the price of specie, and interest rates. Therefore, the connection between prices and money is more robust under free banking than under central banking (Sechrest, 1993).

In Broaddus's (1993) study, the FED brought price stability in the period of the US banking system especially after Bretton Woods system. In other words, Broaddus rejects the feasibility of free banking and defends central banking as it provides price level stability. Kahn (1996) considers the results of some recent empirical studies under the central banking system, which include those by Donald Brash (New Zealand), Jacob Frenkel (Israel), Josef Tosovsky (the Czech Republic), Domingo Cavallo (Argentina). Kahn admits that these countries have made good progress toward price level stability. He also mentions the study of Donald Kohn that the US economy has performed superior since 1980s, and "[...] long-run discipline on monetary policy [...] focuses on an independent central bank on reducing inflation over the long run, so as to eventually reach price stability-as specified in the Federal Reserve Act (Kahn, 1996, pp. 56-58). The

other drawback to free banking regimes is the difficulty associated with determining whether price changes result from supply or demand shocks. This means that money, as a nominal variable, cannot guarantee by itself a predictable split between real and nominal variables (Prachowny, 1985).

5. Concluding Remarks

The paper has reviewed recent historical and theoretical studies on price level determination and stabilization under free banking and central banking regimes. As the theoretical implications of price level stability under free banking are mixed, some economists intend to ignore it and instead focus on how to generate stability under central banking. Empirical evidence revealed some pros and cons for price level stability in free banking systems, concerning central banking system.

The paper just focused on the different views within the Classical view regarding the efficiency of free and central banking systems in generating price level determination and stabilization. Inclusion of other mainstream views, such as the New Keynesian and Post-Keynesian views, and of other relevant factors such as inflation expectations, transparency of bank operations, and lags between monetary policy actions and their effects on the economy will give a more broad view on the topic of price level stability and determination.

As a result, the debate boils down to one of rules versus discretion, and to price level stabilization [and determination], and freedom from intervention. The important question that remains to be answered is whether policy makers will abandon the present monetary system and embrace free banking, or whether there is an essential role of free banking in reforming the present monetary system (Selgin, 1985). These are potential topics for future papers. I will consider the Turkish case of price level determination and stabilization in a forthcoming study. These studies will likely provide more theoretical implications and empirical evidence for the price level determination and stability, and what strategies should be adopted to achieve, determine and maintain price level stability for an economy. We may have difficulties as Vera Smith (1990) thought that "[I]t is unlikely that the choice [between free banking and central banking] can ever again become a practical one" (Dowd, Winter 1991, p.844). Thus, the goal of future studies should address this choice among regimes.

References

Bordo, Michael D. and Robert Gordon. (1983). Rules, Discretion and Regulation in a Model of Monetary Policy. *Journal of Monetary Economics, 12*, (July), 101-121.

Bordo, Michael D. and Anna Schwartz. (1995). The Performance and Stability of Banking System under "Self Regulation": Theory and Evidence. *Cato Journal, 14*(3), (Winter), 453-479.

Broaddus, Jr. J. Alfred. (1993). Central Banking: Then and now. *Federal Reserve Bank of Richmond Economic Review*, (September), 1-6.

Dowd, Kevin. (1991). [Review of Book *The Rationale of Central Bank and Free Banking Alternative*]. *Cato Journal, 10* (3), (Winter), 843-844.

Friedman, Milton. (1960). *A Program for Monetary Stability*. New York: Fordham Uni. Press.

————, ————. (1962). *Should There be an Independent Authority*. (in Ed.) Leland Yeager. In Search of a Monetary Constitution. Mass.: Harvard University Press.

Hayek, F. A. (1976). *Denationalization of Money*. Sussex: Goron Pro-Print Co. Ltd.

Kahn, George A. (1996). Achieving Price Stability: A Summary of the Bank's 1996 Symposium. *Federal Reserve Bank of Kansas City Economic Review*, (Fourth Quarter), 52-59.

McCallum, Bennet. (1989). *Monetary Economics: Theory and Policy*. N.Y.: Cambridge Uni. Press.

Mints, Lloyd W. (1970). *A History of Banking Theory: In Great Britain and the US*. Chicago: University of Chicago Press.

Prochowny, M.F.J.. (1985). *Money in the Macroeconomics*. N.Y.: Cambridge Uni. Press.

Rolnick, Arthur J. and Weber, Warron E. (1983). New Evidence on the Free Banking Era. *AER*, (December), 1080-91.

Sargent, Thomas, and Neil Wallace. (1982). The Real-Bills Doctrine versus the Quantity Theory: A Reconsideration. *The Journal of Political Economy, 90* (6), (December), 1212-1230.

Schuler, Kurt. (1992). *The World History of Free Banking*. (in Ed). Kevin Dowd. The experience of Free Banking. N.Y.: Routledge.

Sechrest, Larry J. (1993). *Free Banking: Theory, History, and a Laissez Faire Model*. Connecticut: Quorum Books.

Selgin, George. (1985). The Case for Free Banking: Then and Now. *Policy Analysis* [On-line], *60*, (October), pp. 1-10.

————, ————. (1988). Theory of Free Banking: Money Supply Under Competitive Note Issue. Totowa, N.J.: Rowman & Littlefield.

————, ————. (1992). Monetary equilibrium and the productivity norm of price level policy. *Cato Journal, 10*, (Spring-Summer), 265-287.

————, ————. (1994a). Free Banking and Monetary Control. *The Economic Journal, 104*, (November), 1449-1459.

————, ————. and Lawrence White. (1994b). How would the invisible hand handle money? *Journal of Economic Literature, XXXII*, (December), 1718-1749.

————, ————. (1995). Bank Self-Regulation: Comment on Bordo and Schwartz *Cato Journal, 14*, (Winter), 481-492.

————, ————. (1997). *Less Than Zero: Case for a Falling Price Level in a Growing Economy*. London: IEA.

Shelia, Dow C. (1993). [Review of Book *The Experience of Free Banking*]. *The Economical Journal*, (May), 743-744.

Skousen, Mark. (1997). *Economics of a Pure Gold Standard*. N.Y.: The Foundation for Economic Education, Inc.

Toma, Mark. (1982). Inflationary Bias of the FED System; A Bureaucratic Perspective. *Journal of Monetary Economics, 10*, 163-190.

White, Lawrence. (1984). *Free Banking in Britain: Theory, Experience and Debate, 1800-1845*. N.Y.: Cambridge University.

————, ————. (1989). *Competition and Currency*. N.Y.: New York Uni. Press.

————, ————. (1989). What Kinds of Monetary Institutions Would a Free Market Deliver? *Cato Journal, 9* (21), (Fall), 367-91.

————, ————. (1999). *The Theory of Monetary Institutions*. Malden, Mass.: Blackwell

Woodford, Michael. (1995). Price level determinacy without control of a monetary aggregate. *NBER Working Paper*, No.5204, (August).

Yeager, Leland B. (1990). *Monetary Stabilization Trough Currency Alone*, (in Eds.) W.S. Haraf, and P. Cagan. Monetary Policy for a Changing Financial Environment. Washington D.C.: The AEI Press.

YAZARLARA DUYURU

1) Dergiye gönderilen yazılar, başka bir yerde yayımlanmamış veya yayınlanmak üzere gönderilmemiş olmalıdır. Metinler bilgisayar ortamında bir disket ile beraer A4 kağıdının bir yüzüne çift aralıkla yazılmış üç kopya halinde teslim edilmelidir. Disket ile birlikte kullanılan yazılım programı, bilgisayar ismi ve dosya ismi gönderilmelidir. Teknik nedenlerden ötürü, daktilo ile yazılmış metinleri kabul edemiyoruz. Yayın kurulunca kabul edilmeyen yazılar iade edilmez.

2) Yazıyla birlikte, İngilizce başlık ve en çok 15 satırlık İngilizce bir özet teslim edilmelidir.

3) Tablo ve şekillere numara verilmeli, başlıklar tablo ve şekillerin üzerinde yer almalı kaynaklar ise tablonun altına yazılmalıdır. Denklemlerin sıra numarası parantez içinde, sayfanın sağ tarafında gösterilmelidir.

4) Kaynaklara yapılan göndermeler dipnotlar yerine, metin içinde açılan ayraçlarla belirtilmelidir. Ayrıca içindeki bilgiler sırasıyla şöyle olmalıdır. Yazar(lar)ın soyadı, kaynağın yılı, sayfa numaraları: Örneğin:

... tesbit edilmiştir (Atkinson, 1983; 77-28).

... Sayer (1998a: 43-72; 1986b: 666-695) belirtilmelidir.

Metinde gönderme yapılan bütün kaynaklar, Kaynakça başlığı altına ayrı bir sayfada, alfabetik sıraya göre gösterilmelidir. Kaynakçada uyulması gereken biçim kurallarına aşağıdaki örnek verilmiştir.

KİTAPLAR

Förlster, S. (1991), *The Art of Encouraging Invention: A New Approach to Goverment Innoation and Economic Review,* California Press.

MAKALELER

Baumol, W. J. (1986), "Productivity Growth, Convergence and Welfare: What the Long Run Data Show", *American Economic Rewiew,* 76, 1072-82.

DERLEMELER

Hall, P.H. (1986), "The Theory and Pratice of Innovation Policy: An Overview", P. Hall (der), *Technology, Innovvation and Economic Policy içinde,* Oxford: Philip Alan, 1-34.

5) Belirtilen kurallara uymayan yazılar, gerekli düzeltmelerin yapılması için geri gönderilebilir. Yazının yayınlanması halinde derginin 3 kopyası yazara ücretsiz gönderilecektir.

6) Yazarların, makaleleri ile birlikte, yazışma adresi, telefon ve faks bilgilerini de içeren notu göndermeleri gereklidir.

7) Sosyal Bilimler alanına katkı sağlayacağı düşünülenler dışında, tercüme eserler kabul edilmemektedir.

8) Teknik kısıtlamalar nedeniyle, makalelerin en fazla 15-20 sayfa olması gerekmektedir.