THE INSTITUTIONALIZATION OF DEFLATIONARY MONETARY POLICY

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INTRODUCTION

The theory of the natural rate now dominates the economic counsels of the Federal Reserve. Though theoretically contested and empirically unsubstantiated, this theory has provided the necessary pretext for implementing deflationary monetary policy. This paper argues that there is now an emerging second stage agenda that seeks to institutionalize this policy through the creation of an independent central bank. The claim is that this would improve macroeconomic performance by eliminating the putative inflationary bias of democratically controlled central banks. However, independent central banks have a deflationary bias because central bankers tend to be drawn from the ranks of commercial bankers who identify with financial capital, and have a mild preference for deflation. The reality is that central bank independence entrenches the interests of financial capital, and institutionalizes deflation.

Making this argument involves a complicated train of thought that involves showing (i) how new classical theory has been used to justify deflationary policy, (ii) that deflationary

policy furthers the economic interests of Wall Street and financial capital, and (iii) that new classical recommendations for the creation of an independent central bank represent a means of institutionalizing deflationary policy bias. Such an analysis reveals that not only is economic policy making a "contested terrain", but so too is economic theory since it serves to "rationalize" the direction of economic policy.

THE ORIGINS OF DEFLATIONARY POLICY BIAS

Evidence regarding the dominance of zero-inflation policy is now abundantly available. For instance, E. Gerald Corrigan, the former president of the influential Federal Reserve Bank of New York, writes in the 1992 Annual report:

"(E)ven today, with the outlook for inflation seeming to be so benign, we must remain vigilant and we must staunchly resist those voices that would suggest that a "little more" inflation may not be all that bad, especially if it brings a lot more growth.... The battle against inflation is never over and the very minute that a society declares victory in that battle is likely to be the very minute that the seeds of the next round of inflation are sown, with all of their painful and inevitable consequences for the future.... (M)onetary policy and the effort to control inflation rightly stand at the center of the trilogy (of central banking activities and responsibilities)."

This dominance of deflationary bias within the counsels of the Federal Reserve is the result of the theoretical counter-revolution associated with new classical macroeconomics. Whereas, the economics profession used to view inflation as a lubricant that potentially helped the process of labor market and wage adjustment (Tobin, 1972), new classical macroeconomics has accomplished an intellectual transformation that has rendered inflation as an unmitigated bad with no palliative effect on unemployment. Today, it is the assumptions and policy prescriptions of this new paradigm that provide the rationale for the Federal Reserve's pursuit of deflationary monetary policy.

How did this transformation come about? Beginning in the late 1960's, and continuing through the 1970's, U.S. inflation began to worsen. This worsening was the result of a combination of events, including excessive demand pressure from the Vietnam war mobilization, social conflict that spilled over into conflict over income distribution, the 1972 world commodity price boom caused by the global economic boom, a decline in the trend rate of U.S. productivity growth, and three successive oil price shocks in 1973, 1976, and 1979. However, rather than supplementing existing inflation theory with a multi-causal theory of inflation, the economics profession adopted a novel mono-causal theory known as the natural rate of unemployment.

The argument behind natural rate theory is that if unemployment falls below the natural rate, inflation will increase and accelerate as long as unemployment remains below the natural rate.[1] Since ever higher and accelerating rates of inflation are unacceptable, the policy message from natural rate theory is clear: the unemployment rate should not be allowed to fall below its natural rate. Consequently, macroeconomic policy is rigidly bound by an inflation constraint.

The intellectual arguments for the natural rate hypothesis have been bolstered by its rhetorical adoption of the "natural" metaphor, which implies that anything other than the natural

rate is "unnatural". If the natural rate were identified with rates of 1 or 2% unemployment, adoption of the theory would be of little significance. However, once the natural rate is defined as 6 - 7% unemployment, its adoption implies significantly higher unemployment with huge and unnecessary social and economic costs.

Worse than that, by adopting the language of free markets and perfectly competitive equilibrium, natural rate theory subtly entraps policy makers into the belief that the actual rate is the natural rate. Thus, as macroeconomic performance has faltered over the last two decades, this has led to the notion of a rising natural rate. In the face of persistently rising unemployment, policy makers have been enjoined to do nothing, since actual unemployment represents the natural working of the free market, and trying to reduce unemployment would only contribute to higher inflation.

Introduced by Edmund Phelps (1967) and Milton Friedman (1968), the theory of the natural rate was initially confined to *laissez-faire* academic economists and conservative think-tanks. Since then, it has spread into the highest counsels of economic policy making. This spread is captured in the Economic Report of the President, a document which is drafted each year by the President's Council of Economic Advisers.[2] In 1970, the report declared 3.8% unemployment as the definition of full-employment, and used 3.8% unemployment as the basis for

computing the economy's maximum "potential output". In the 1979 Economic Report the official definition of full-employment was revised to 5.1% (1979, p.72-74). By 1983, the triumph of natural rate theory was so complete, that the new term "inflation threshold unemployment rate" (1983, p,37) was introduced, and this new inflation threshold unemployment rate was declared to "probably lie(s) between 6 and 7 percent" (1983, p.37).

The shift towards natural rate policy is vividly captured in figure 1 which shows the actual real three month treasury bill interest rate. This is an interest rate over which the Federal Reserve has significant control, and figure 1 shows how it has dramatically increased in the period after 1974. The average rate for the period 1954 - 1974 was 1.17%, while the average rate for the period 1975 - 1993 was 3.39%. With hindsight, the decision of the Burns' Fed in 1974 to combat the inflation effects of the first oil shock with tight monetary policy can be seen as marking the inauguration of natural rate policy.[3] The real economic effects of this turn in policy are captured in figure 2, which tracks the annual average rate of unemployment over the period 1951 - 1993. Once again there is a sharp break in 1974. While the average rate of unemployment was 4.65% for the period 1951 - 1974, it was 6.97% for the period 1975 - 1993.

The theory of the natural rate now dominates the mainstream of the economics profession, and since the counsels of the Federal Reserve are exclusively drawn from the mainstream, such thinking also dominates the Federal Reserve. The intellectual capture of the economics profession and the Federal Reserve explains how anti-inflation policy has come to be the officially sanctioned credo of monetary policy. Perhaps what is most surprising is that this intellectual revolution has been accomplished

despite the lack of persuasive evidence. Thus, econometric work on the effects of anticipated and unanticipated monetary policy consistently reveals that systematic anticipated monetary policy impacts output and unemployment (Mishkin, 1982). Moreover, this work has been explicitly conducted on the theoretical grounds defined by new classical macroeconomics, and using the empirical methodology developed by new classical macroeconomists.

At the same time there exist well articulated theoretical models explaining why inflation may lessen unemployment (Tobin, 1972: Palley, 1994a), and the predictions of these models regarding the existence of a trade-off between inflation and unemployment seem to be repeatedly confirmed in well-specified models of wage inflation (Gordon, 1988: Rissman, 1993: Palley, 1994b). Figures 3 - 5 show scatter plots with accompanying regression lines of the relationship between annual average unemployment and wholesale inflation for the U.S. economy in the periods 1954-69, 1970-83, and 1984-93. In all three periods, including the economically turbulent 1970's, the regression line is negatively sloped, and the coefficient on unemployment is statistically significant at the 5% level in the first and last periods.[4] The fact that a Phillips relation is detectable in such rudimentary data analysis suggests that the academic and policy-making ascendancy of new classical macroeconomics is unjustified on positivist grounds, and that the real explanation is political and sociological in character.

THE POLITICAL ECONOMY OF DEFLATIONARY POLICY BIAS

Whereas the theory of the natural rate has provided the "nominal" justification for the implementation of deflationary monetary policy, understanding the "reality" of deflationary policy requires the adoption of a political economy perspective. Traditional neo-Keynesian economics

eschewed such an approach to policy questions, and instead adopted the idealized construct of the benevolent policy maker who always acted in the public interest. Thus, in the literature on optimal monetary policy initiated by Poole (1970), the Federal Reserve's policy objective function is identified with a social welfare function that fully represents a uniquely defined national interest. New classical macroeconomics has attacked this view, and instead represents the Federal Reserve as following its own private interest, which is different from that of the public interest. However, the public interest is still presented as a single unified interest, so that the Federal Reserve is cast as the villain undermining national welfare. In particular, when placed in natural rate representations of the economy, the Federal Reserve has an interest in generating positive inflation surprises that fool workers into supplying more labor than they would in a perfect information environment.

While new classicals have attacked the earlier neo-Keynesian view of a benevolent public policy-maker on the grounds of bureaucratic failure, new structuralist Keynesians (Epstein, 1992) have attacked the concept of a benevolent public policy maker on grounds of political economy. However, rather than seeing an opposition between the preferences of the policy maker and a monolithic public interest, new structuralists see an absence of a unified public interest. Instead, different economic interests compete for control of the policy authority, so that the preferences of the policy maker are constituted by the political environment, and primarily reflect the preferences of the group that currently has political dominance. This approach to macro policy has been labelled the "contested terrain" approach. An early statement of this point of view was provided by Boddy and Crotty (1975), and it has been more fully articulated in Bowles and Gintis (1982). The traditional construction of this conflict has been in terms of labor and

capital, but Epstein (1992) has refined it by distinguishing between labor, industrial capital, and financial capital. This distinction between industrial and financial capital adds a significant dimension that is important for understanding the turn to deflationary policy.

The above description of the economy's competing political interests can be incorporated into a simple macroeconomic model of policy making. The formal equations of the model are presented in the appendix, but the underlying economic interpretation is as follows. The Federal Reserve can be viewed as maximizing a social welfare function that is a weighted combination of labor's, industrial capital's, and financial capital's welfare functions. The Fed's choice variable is the rate of nominal demand growth, and this choice is made subject to the constraint of a long-run Phillips curve that is negatively sloped in inflation - unemployment space.

The theoretical rationale for a long-run Phillips curve is presented in Palley (1994a). The argument is that in a multi-sector economy, faster nominal demand growth raises inflation but also reduces aggregate unemployment. This is because wages in sectors with unemployment are less than fully adjusted for inflation. Consequently, faster nominal demand growth contributes to an increase in real demand growth in depressed sectors, and this raises employment in such sectors. However, it also generates inflation in sectors with full employment.

The details of the model are illustrated in figure (6). The upper panel shows the long-run Phillips curve, while the lower panel shows the welfare functions for each group. Lower rates of unemployment increase labor's welfare by increasing the availability of jobs, reducing the insecurity of unemployment, and by raising real wages. This latter effect arises because labor is in a position to bargain for more. Industrial capital's welfare is maximized at U_I^* which corresponds to the rate of unemployment at which

industrial profits are maximized. When $U > U_I^*$, demand conditions are depressed and profits are reduced: when $U < U_I^*$, though demand conditions are robust, so too are labor market conditions and this serves to reduce profits. Lastly, financial capital's welfare is maximized at U_F^* which is above U_I because financial capital strongly dislikes inflation. When $U < U_F^*$, this entails higher inflation which erodes the real value of financial liabilities to financial capital's detriment. When $U > U_F^*$, demand and employment conditions conditions are depressed, and this gives rise to an increased rate of default, the costs of which outweigh the benefit of lower inflation.

Rather than having its own separate set of preferences, the Federal Reserve's preferences represent the outcome of the political process. If industrial capital had monopoly political power the Fed would seek to maximize industrial capital's well-being, and it would select a rate of nominal demand growth associated with an unemployment rate of U_I^*: if financial capital had monopoly political power, the Fed would target an unemployment rate of U_F^*. In practice no group has complete control over the Fed, so that the Fed's policy preferences represent a weighting of each group's preferences.[5] In this case, shifts of political power away from labor toward industrial and financial capital produce policy outcomes targeted toward lower inflation and higher unemployment. Moreover, the greater the relative power of financial capital, the greater the extent of deflationary policy. In this light, the current triumph of deflationary policy within the counsels of the Federal Reserve can be interpreted as a reflection of the political triumph of financial capital in the wider political process.

The fact that financial capital has a stronger interest in low inflation and high unemployment than does industrial capital, means that these two interest groups can part ways, leaving open the possibility of an alliance

between labor and industrial capital. Indeed, this consideration helps explain why a number of industrial capitalists supported President Clinton in the 1992 election.[6] It also explains why the Confederation of British Industry has at times been a less than enthusiastic supporter of hard-line Conservative Party economic policy.

Lastly, though providing an understanding of who benefits and who loses from deflationary policy, the analysis leaves unanswered the important question of why Wall Street and financial capital have triumphed politically. Answering this question pushes the analysis beyond the domain of the purely economic. A complex of socio-political factors has promoted a drift toward conservative politics, and financial capital has been able to piggy-back on this shift so that its economic agenda has been advanced under the cloak of a conservative social agenda. Cutural politics have therefore been used to obfuscate the politics of macroeconomic policy. In addition, the economics profession has played an important role in financial capital's victory, through its promulgation of natural rate theory. This has encouraged a fatalistic attitude toward unemployment, and in doing so has promoted a false consciousness under which inflation - unemployment outcomes are deemed beyond the control of policy, and therefore outside the realm of political influence. Lastly and speculatively, there may exist deep structural forces that promote the interests of financial capital as the process of industrialization matures.

CENTRAL BANK INDEPENDENCE AND THE INSTITUTIONALIZATION OF DEFLATIONARY POLICY BIAS

Viewed from the above new structuralist perspective, natural rate theory with its accompanying notion of a binding inflation constraint, has served as a Trojan horse in the capture of the counsels of economic policy.

The reality behind this shift in policy is that it has served to advance the interests of financial and industrial capital at the expense of labor.

The adoption of natural rate policies may be viewed as the initial triumph of conservative political economy. At this stage there is now an emerging new agenda that seeks to permanently institutionalize this development. The key proposal in this new agenda is that the Federal Reserve be transformed into an independent central bank that is free from accountability to and control by elected politicians.

From a new structuralist perspective central bank independence is easily understood in black and white terms of who will control the bank, and who will determine its policy stance. Independence of the central bank is therefore an explicitly political question. If the bank is controlled by labor, its preferences will be tilted toward lower unemployment and higher inflation; if it is controlled by financial capital the reverse holds.

Whereas a new structuralist perspective sees the issue of central bank independence as political, new classical theory has sought to present it as an institutional innovation that would improve macroeconomic performance. Questions of political economy related to the capture of monetary policy by particular economic interests are effectively denied. The new classical argument against democratically controlled central banks is that they are subject to a temptation to engage in strategic monetary policy, and to use monetary surprises as a means of raising output (Barro and Gordon, 1983). Consequently, the public comes to anticipate the central bank's inflationary tendencies, which results in a sub-optimal outcome with higher inflation than first-best policy would choose. The core assumption behind this description is that the central bank has its own private interests which are different from those of the public, and this leads it to prefer a higher rate of inflation than that desired by the public. Thus, the public is presented as

having a unified set of preferences so that there is no political conflict, and it is the rogue central bank that fails to pursue the public interest.[7]

This characterization of the inflation problem can be traced back to the theory of bureaucratic and governmental failure developed by such economists Niskanen (1971) and Tullock (1965). This theory was initially used as an argument against government interventions to remedy microeconomic market failures related to externalities and public goods: now, it is being invoked to argue against macroeconomic policy interventions to manage the macroeconomy.

Those favoring an independent central bank argue that independence would solve this bureaucratic incentive problem. However, as is formally shown below, this claim is false since an independent central bank would still have discretionary power over monetary policy, and would continue to be guided by the preferences of its senior officers. To the extent that these officers have their own special interests, they will be guided by them. Thus, the creation of an independent central bank simply replaces one incentive problem with another. In general, central bankers tend to be drawn from the ranks of private bankers, and they therefore represent financial interests which view inflation as an unmitigated bad and prefer a deflationary bias in policy. Democratically controlled central banks constantly struggle against this bankers' bias: the granting of central bank independence would institutionalize it.

This argument deconstructing the new classical case for central bank independence can be readily formalized within a standard new classical model by allowing political control to affect the central bank's preferences.[8] In particular, central bank preferences concerning inflation are likely to systematically differ according to who has control. If financial capital controls the central bank, deflation is likely to be viewed as a good since

it adds to the well-being of financial interests by increasing the real value of existing financial debts. Conversely, when labor controls the central bank, inflation is likely to be viewed as a good since it reduces the real value of existing financial debts, and labor tends to be a net financial debtor.

These effects can be captured in the following new classical model in which the monetary authority minimizes a loss function subject to a Lucas (1973) supply function. The inclusion of a Lucas supply function means that the model embodies natural rate theory, but despite this control of the central bank still matters for the equilibrium through its affect on central bank preferences. Formally, the monetary authority's program is as follows

$$\underset{p}{\text{Min}}\ L = a[y - y^{\wedge}]^2/2 + bp^2/2 + ep$$

subject to (1a) $y = y^{*} + c[p - p^{e}]$ $\qquad a, b, c, e > 0$

where p = actual inflation

p^{e} = the public's expected inflation

y = actual output

$y^{\wedge}$ = monetary authority's target output

y^{*} = natural output

Equation (1) is the monetary authority's loss function, while equation (1a) is the Lucas (1973) supply function. The actual rate of inflation is the monetary authority's choice variable. The sole change from the standard new classical specification is the inclusion of the term "ep" in the objective function which serves to capture different preferences toward inflation. Substituting (1a) into (1), differentiating with respect to p, and solving yields the independent central bank's reaction function

$$p = \{ac\{[y^{\wedge} - y^{*}] + cp^{e}\} - e\}/[ac^2 + b]$$

$$= p(p^{e}, y^{\wedge}, e)$$

Equation (2) determines the monetary authority's optimal choice of inflation as a function of the public's expected inflation rate, and the authority's target output level and attitude toward inflation.

Actual output and inflation are then determined by

(3a) $y = y^{*} + c[p - p^{e}]$

(3b) $p = \{ac\{[y^{\wedge} - y^{*}] + cp^{e} - e\}/[ac^{2} + b]$

Equation (3a) is the Lucas supply function, while (3b) determines the rate of inflation given the monetary authority's rule. Solving (3a) and (3b) yields expected inflation of

(4) $p^{e} = p$

The determination of general equilibrium involves the joint solution of equations (2) and (4), where these equations represent the reaction functions of the monetary authority and public respectively. This equilibrium is given by

(5) $p^{*} = \{ac[y^{\wedge} - y^{*}] - e\}/b$

Its determination is illustrated in figure (7), which shows the intersection of the two reaction functions.

The actual equilibrium rate of inflation is therefore influenced by the parameter "e", and this parameter bears a political interpretation in terms of who controls the central bank. If $e > 0$, this implies finance controls the Fed so that inflation is a "bad" while deflation is be a "good": if $e < 0$, then labor controls the Fed, and inflation is a good while deflation is a bad. Lastly, though deflation is a good to financial capital, the pursuit of deflation is limited by the term $bp^{2}/2$ which reduces well-being. The logic here is that increased deflation causes bankruptcies and defaults which reduce the well-being of financial interests.[9]

In the event that an independent central bank is controlled by financial interests this shifts the monetary authority's reaction function

downward. If the intersection with the public's reaction function occurs in the negative quadrant, this gives rise to an equilibrium with deflation. If labor controls the central bank, then the monetary authority's reaction function is shifted up, giving rise to an equilibrium with higher inflation.

In the above model, the inclusion of a Lucas supply function means that the central bank cannot affect the equilibrium level of output. However, the critical message is that political control of the central bank still matters for equilibrium inflation, and this reveals that the new classical case for an independent central bank is internally flawed even when assessed on strictly new classical grounds. The political concerns that are explicitly visible from a new structuralist perspective, also apply in a new classical world, and the claim that central bank independence would improve macroeconomic performance cannot be substantiated. Despite this, many mainstream economists have willingly embraced the idea of central bank independence, without regard to the anti-democratic implications that follow from placing the single most powerful economic institution outside of public control.

INDEPENDENCE VS. DEMOCRATIC CONTROL VS. OPTIMAL CONTRACTS

In the above analysis central bank independence was viewed as an issue in political economy, with the central bank being a contested terrain. This contrasts with new classical models which assume that there is a unified public interest that is frustrated by a rogue central bank with a preference for inflation surprises. For new classicals, central bank independence is then advanced as an institutional innovation that can improve macroeconomic performance by eliminating inflationary bias. In a political economy model without a unified public interest, central bank preferences represent the endogenous outcome of the political process. Consequently, creating an

independent central bank is tantamount to removing monetary policy from the realm of democratic control, and institutionalizing deflationary bias because central bankers tend to be drawn from the ranks of private bankers who favor financial interests.

A recent paper by Walsh (1995) argues for the use of optimal contracts to govern central bank behavior. Once again it is assumed that there is a unified public interest which is confronted by a rogue central bank. This situation corresponds to a principal-agent problem, and can therefore be remedied by design of an optimal contract embodying appropriate incentives. This solution could be implemented either by writing performance contracts for the directors of the central bank, or by abolishing the central bank and contracting out its functions to a private banking firm that is paid on a performance basis. "Contracting" rather than "independence" therefore becomes the putative solution to the rogue central bank problem.

However, recognizing the fractured nature of the public's interest means that the terms of the contracting arrangement have to be varied with every shift of political power, or else one set of preferences becomes institutionalized through the contract. In this case, the system would correspond to "discretionary contracted central banking", an arrangement that is almost akin to the current system of "discretionary democratically controlled central banking" based on discretionary appointments. In effect, if the public's political interest is fractured rather than unified, central banking must always have a discretionary component if it is to remain democratic. If democratically elected politicians are to have maximum control, this would suggest a system in which central bankers are appointed at the pleasure of politicians, thereby avoiding the possibility of having a rogue central bank with a particular point of view for even a single contract period. Applied to the U.S., it suggests that the Federal Reserve should be

reformed such that the chairman's term is co-terminous with that of the President, and similar considerations apply to the terms of Federal Reserve governors. This is the opposite of new classical policy recommendations which have sought to distance monetary policy from democratic control.

CONCLUSION

Over the last twenty years, the economics of disinflation has come to dominate the economic counsels of the Federal Reserve. The proximate vehicle for this policy revolution has been the natural rate hypothesis, which maintains that monetary policy is handcuffed by a binding inflation constraint that becomes operative at a threshold unemployment rate of between 6 and 7 percent. Though theoretically contested and empirically unsubstantiated, the theory of the natural rate has been adopted by the Federal Reserve and has provided the necessary pretext for implementing deflationary policies favored by financial interests.

The conservative agenda is now embarked on a second stage that seeks to permanently institutionalize these policies through the creation of an independent central bank. The argument is that such an arrangement would improve macroeconomic performance by getting rid of the putative bias of democratically controlled central banks toward inflation. However, the reality is that creation of an independent central bank fails to solve the incentive problem associated with central bank behavior because an independent central bank remains guided by its own preferences.

This argument reinforces the significance of political economy considerations for the analysis of central bank behavior. In a new classical model, control of the central bank by different economic interests results in different inflation outcomes but has no effect on the equilibrium real output. In a new structuralist model, allocation of control affects both the

equilibrium rate of inflation and the level of output. With regard to particulars, the paper suggests that creation of an independent central bank will likely generate a deflationary bias in policy because central bankers tend to be drawn from the ranks of commercial bankers, and these agents represent the interests of financial capital which may have a mild preference for deflation. This theoretical claim appears to be supported by empirical research (Summers and Alessina, 1993).

Appendix I

The regression equations associated with figures 3, 4, and 5 are:

	C	Unemployment	Adj.R^2	S.E.	D.W
1954-69	0.058	-0.009	0.42	0.01	1.80
	(4.32)	(-3.46)			
1970-83	0.160	-0.013	0.10	0.05	0.80
	(2.90)	(-1.59)			
1984-93	0.149	-0.021	0.47	0.02	1.71
	(3.33)	(-2.99)			

Figures in parentheses are t-statistics.

Appendix II

This appendix provides a formal new structuralist model of the political economy of monetary policy. The Fed's program is given by

$$\underset{g_D}{\text{Max}}\ V = aV_W + bV_I + cV_F \qquad a + b + c = 1,\ 0 < a < 1,\ 0 < b < 1$$

subject to

$$V_W = V(U) \tag{A.1a}$$
$$V_I = V(U) \tag{A.1b}$$
$$V_F = V(U, p) \tag{A.1c}$$
$$p = g_D - g_y \tag{A.1d}$$
$$U = H(g_D) \qquad H' < 0 \tag{A.1e}$$

where V = Federal Reserve's welfare function
V_W = labor's welfare function
V_I = industrial capital's welfare function
V_F = financial capital's welfare function
g_D = rate of nominal demand growth
p = rate of inflation
U = rate of unemployment
g_y = rate of productivity growth

Equation (A.1) is the Federal Reserve's welfare function, and the parameters "a", "b", and "c" capture the relative influence that labor, industrial capital, and financial capital have over monetary policy. Equations (A.1a) - (A.1c) describe the welfare functions of labor, industrial capital, and financial capital defined over unemployment and inflation. These functions are discussed in greater detail below. Equation (A.1d) determines the rate of inflation as the difference between the rates nominal demand growth and productivity growth, while equation (A.1e) has the rate of unemployment as a negative function of the rate of nominal demand growth.

Combining (A.1d) and (A.1e), and using the implicit function theorem, yields a conventional Phillips curve equation given by

$$p = H^{-1}(U) - g_y \tag{A.2}$$

where $dp/dU < 0$. Substituting (A.1a) - (A.1e) in (A.1) yields

$$\underset{g_D}{\text{Max}}\ V = aV_W(H(g_D)) + bV_I(H(g_D)) + cV_F(H(g_D),\ g_D - g_y) = aV_W(g_D) + bV_I(g_D) + cV_F(g_D) \tag{A.3}$$

Each group's well-being is affected by the rate of nominal demand growth which uniquely determines the point of equilibrium on the Phillips curve given by (A.2). Workers are assumed to have diminishing marginal utility, and derive increased benefit from lower unemployment so that $V_W/\ g_D > 0$. When unemployment is high, industrial capital benefits from lower unemployment because this increases the robustness of goods market conditions and raises profitability. However, once unemployment falls below a critical level given by U_I^*, profitability begins to fall since workers are able to force up real wages. This implies the $V_I/\ g_D \gtrless 0$ if $U \lessgtr U_I^*$. Lastly, financial capital also initially benefits from higher unemployment

because this lowers inflation which preserves the value of financial assets. However, above a critical level of unemployment given by U_F^*, financial capital is harmed by rising default rates caused by deflation. This implies that $V_F / g_D \gtrless 0$ if $U \gtrless U_F^*$. Moreover it is assumed that $U_I^* < U_F^*$ so that the financial capital's welfare maximizing rate of unemployment is higher than that of industrial capital.

Given this description of each groups preferences, there exists an interior solution to the program given by (A.3) that satisfies the following first-order condition

(A.4) $dV/dg_D = aV_W' + bV_I' + cV_F' = 0$

The position on the long-run Phillips curve determined by this first order condition depends on the relative magnitudes of "a", "b", and "c". Higher values of "c" correspond to greater influence over monetary policy by financial capital, and this results in higher unemployment. The reverse holds for higher values of "a".

Notes

1. In later versions of natural rate theory that include rational expectations, there is no trade-off at all. Systematic monetary policy can't lower the rate of unemployment, and any attempts to do so just produce higher inflation (Lucas, 1973).

2. This section detailing the spread of natural rate theory within the Economic Report of the President is drawn from Gordon (1987).

3. Figure 1 also makes clear that the rise in real interest rates preceeded the emergence of the twin deficit problem, and this casts serious doubt on the new classical "consumption binge" and neo-Keynesian "government deficit" explanations of this phenomenon.

4. The actual regression equations are reported in the appendix.

5. There is also a bureaucratic element to the Fed's policy preferences which derives from the beliefs of the senior policy economists and policy makers.

6. Leading industrial capitalists supporting Clinton included John Scully, then CEO of Apple Computer, and the late Michael Walsh, then CEO of Tenneco.

7. This view of central banking underlies the emerging literature that treats central banking as a principal-agent problem: the principal (the public) has its own unified objective function, while the agent (the central bank) has a different one (Walsh, 1995).

8. This section of the paper is drawn from Palley (1994c).

9. In equation (6) the independent central bank derives positive utility from the absolute level of deflation. If only surprise deflation matters, then the central bank's welfare function is given by

$$\underset{p}{\text{Min}}\ L = a[y - \hat{y}]^2/2 + bp^2/2 + e[p - p^e]$$

This produces a reaction function that is identical to (7).

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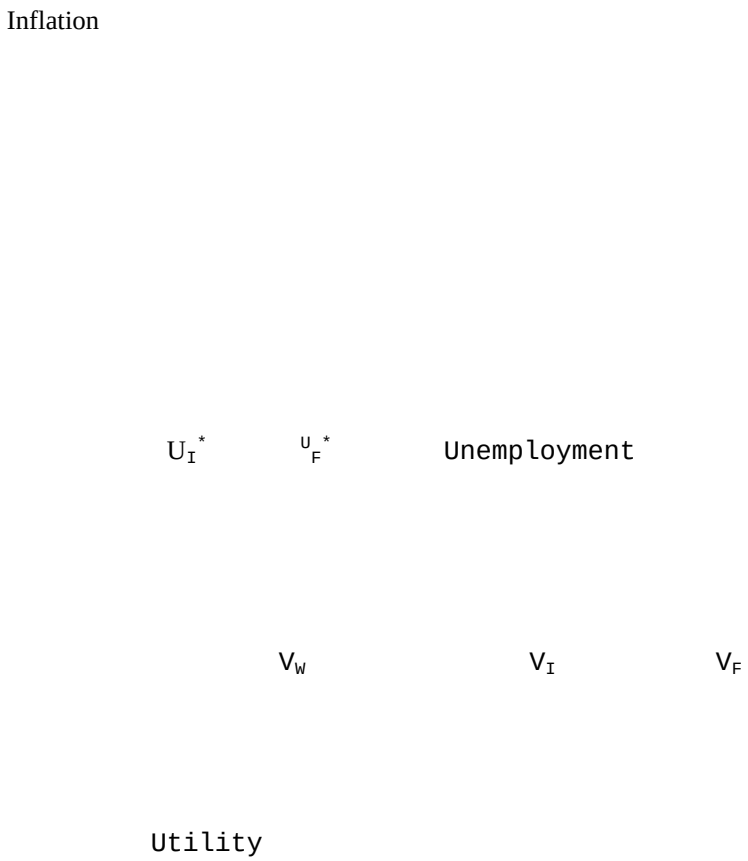

Figure 6 The Phillips curve, and the relationship between unemployment and the utility of labor (V_W), industrial capital (V_I), and financial capital (V_F).

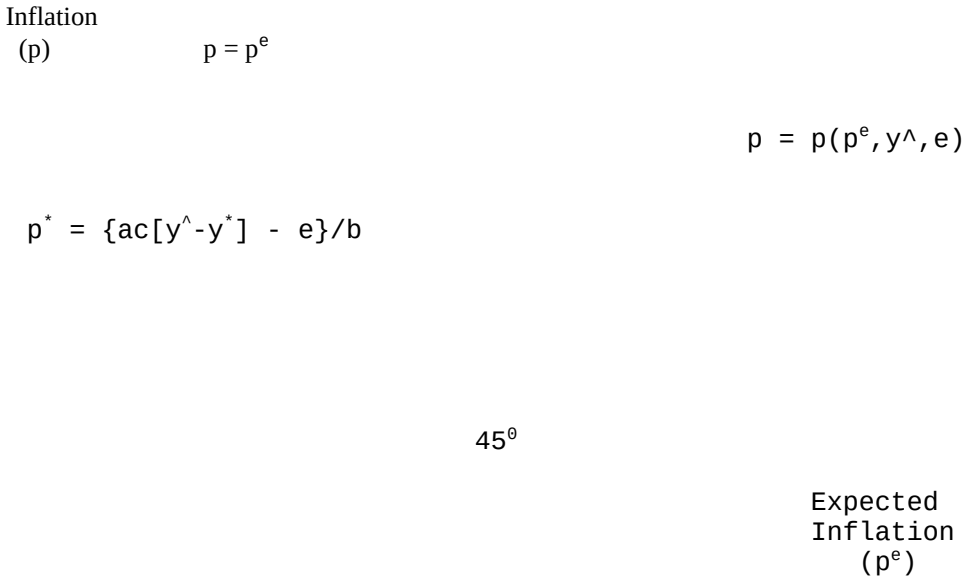

Figure 7 The determination of equilibrium inflation in a model of central bank independence with control by financial interests.