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POLICIES: A PRELIMINARY INVESTIGATION

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March, 1978

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"...let us be done with the fiction that "independence" [of the Fed] is somehow or other a bastion against inflation. Let us put the responsibility for the rate of monetary growth--and therewith the subsequent inflation--squarely and openly on the Administration and Congress...let the Congress require the Fed to achieve specified rates of monetary growth within specified ranges of tolerance." Milton Friedman, Newsweek, 3 October 1977, p. 84.

"It is part of our scheme of things to conduct government in [a] zig-zag fashion,... . The broad policy of government is moderately well suited to this treatment, but monetary policy is not. It is too technical for popular discussion on the one side; and in its application, continuity and a considerable measure of stability are much more essential to it than to general government." (a) "We want, in fact, a doctor to prescribe the medicine of inflation. We want a man or body of men who understand currency matters whose job it is to see that the rule is carried out. They must be independent of Governments, and only to be shifted by both Houses of Parliament." (b) L. F. Giblin, (a) Evidence to the Australian Royal Commission on Banking, August 1936, in Bartley (1960, p. 57); (b) Letter to John Smith No. 7 The Herald, Melbourne, 27 November 1930.

"And as for being as 'safe as the Bank of England'...it is unsafe that these powers [i.e., of monetary policy] should rest in hands other than those of responsible Government, answerable to Members of this House." George Brown, M.P., House of Commons debate on the Third Reading of the Bank of England Act, 19 December 1945, Hansard, vol. 417, p. 1402.

I. Introduction

This paper presents a preliminary investigation of the relationship (if any) across countries between the broad characteristics of monetary policies and the laws which establish and delimit the powers of central banks. The study is empirical and deals with the experience of twelve industrial countries (Australia, Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom and the United States) during the postwar years (1951-1975). In the next section (II), we describe the central bank statutes of the twelve countries, focussing on three areas; (i) legislated objectives of central bank policy, (ii) the relationship between central bank and central government in the formulation of monetary policy, and (iii) the procedures for appointing central bank directors. On the basis of this description, we classify the twelve central banks according to their legislated objectives and their degree of independence from central government. In Section III we describe monetary policies, focussing on three features of policy; (i) the degree of inflation as measured by exchange rate movements; (ii) the variability of policy as measured by a variety of measures of dispersion of monetary growth rates and (iii) the responsiveness of policy to nominal and real domestic targets and external targets, as measured by various policy reaction function studies conducted by others. In Section IV, we search for associations between central bank 'types' and the characteristics of monetary policy established in Sections II and III.

Our main conclusions are easily summarized and are as follows. First, there is weak evidence that a legislated objective of the single-minded pursuit of price stability is associated with the achievement of a lower average rate of inflation than in comparable cases where no such objective is legislated. Secondly, there is strong evidence that central banks which are independent of central governments both in policy-making and in the appointment of directors

deliver a low rate of inflation but not necessarily low variability of monetary policy. Further, in this case, monetary policy appears to be used primarily as an anti-inflation weapon and does not appear to be actively used to stabilize real output and employment. Thirdly, monetary policies do not appear to differ significantly as between "independent" central banks and government-dominated central banks where the "independent" central bank has a directorate entirely appointed by government.

How robust these conclusions will be to extending the number of countries studied, or using alternative measures of the characteristics of monetary policy, or, more importantly, to systematically controlling for other informal rules and procedures as well as the broader constitutional and intellectual environment in which monetary policy is made, only further work can reveal.

II. Central Bank Laws

Central bank Laws and related legislation differ in a large number of important respects. A much more detailed classification and analysis could be undertaken than that presented here. However, we focus on those limited aspects of central bank Laws which, based on existing economic analyses, have some a priori interest and importance. The small but growing "political economy" literature on monetary policy (see, e.g., Gordon (1975) and Nordhaus (1975) suggests that policies will differ depending on whether the policy-making agent is a short-lived democratically elected government or longer lived autonomous central bank. One feature of potential importance therefore concerns the relationship between the central bank and its major policy-making organs on the one hand and central government on the other. There are two subsidiary matters which need to

be examined; first the relationship between the policy-making organs of the central bank and those of the central government in terms of day-to-day governmental supervision and control: and secondly, the role of central government in the appointment of members of the central banks' policy-making organs. In addition to examining these aspects of central bank Law, we also felt it interesting to examine the legislated objectives (if any) of the central banks. We present each of these in turn, beginning with an examination of the declared objectives.

1. Declared Objectives of Central Bank Policy

Six of the central banks in the group that we are studying (Belgium, France, Italy, Sweden, the United Kingdom and the United States) have no explicitly declared general policy objectives. Three of the remaining six central banks, whilst having an explicit clause on objectives in their statutes, are not sufficiently precise to distinguish them from the above cases. The objective of the West German central bank is set out in Article 3 of the Law Concerning the Deutsche Bundesbank, 1957, and states that, "The Deutsche Bundesbank, making use of the powers in the fields of monetary policy conferred upon it under this Law, shall regulate the note and coin circulation and the supply of credit to the economy with the aim of safeguarding the currency and shall ensure appropriate payments through banks within the country as well as

to and from foreign countries." (Aufricht, 1967, p. 252) The phrase "safeguarding the currency" could perhaps be interpreted as meaning achieving stable prices. It could equally well, however, simply mean the avoidance of inflation on such a scale that the currency ceased to be used as the means of payment. Article 1 of the Bank of Japan Law sets out that central bank's objective as, "...the regulation of the currency, the control and facilitation of credit and finance and the maintenance and fostering of the credit system pursuant to the national policy in order that the general economic activities of the nation might adequately be enhanced." (Aufricht, 1961, p. 425) The case of Switzerland is similar. Article 2(1) of the National Bank Law of 1953 sets out the broad objective for the Swiss National Bank as being, "to regulate the country's monetary circulation, facilitate payments transactions, and implement a credit and monetary policy serving the general interests of the country. It shall advise the federal authorities in monetary matters." (Aufricht, 1967, p. 705) In all three cases, there is no explicit statement concerning price stability or any other concrete objective.

In contrast to the above, Australia, Canada and the Netherlands all have very explicit objectives. Those for Australia and Canada are virtually identical and embrace the pursuit of both price and foreign exchange rate stability as well as high and stable employment and real economic activity. In the case of Australia, the Reserve Bank Act of 1959 does not specify an overall basic objective for the Reserve Bank as such, but Article 10(2) specifies the functions of the Reserve Bank Board in such a way that they take on the characteristics of a basic statement of objectives for the Bank as a whole. This Article states the duties of the Board as being, "within the limits of its powers, to ensure that the monetary and banking policy of the Bank is directed to the greatest advantage of the people of Australia and that the powers...are exercised

in such a manner as, in the opinion of the Board, will best contribute to-- (a) the stability of the currency of Australia; (b) the maintenance of full employment in Australia; and (c) the economic prosperity and welfare of the people of Australia." (Aufrecht, 1961, p. 55) Subclause (a) in the above quotation is ambiguous on the matter of the appropriate criterion for "stability of the currency of Australia" which could refer to stability of the foreign exchange rate or of internal purchasing power or both. Whatever the precise interpretation of the commitment to a stable currency, it is clear that it is only one of three objectives each apparently of equal importance. Discounting the third objective as being too general to have content, it is clear that the first two objectives will not always be compatible with each other. Hence it is only possible to characterize the aims of the Reserve Bank as that of pursuing some objective function which includes both price stability and full employment.

In the case of Canada the objectives are set out in the preamble to the Bank of Canada Act of 1934 which establishes "a central bank in Canada to regulate credit and currency in the best interests of the economic life of the nation, to control and protect the external value of the national monetary unit and to mitigate by its influence fluctuations in the general level of production, trade, prices and employment, so far as may be possible within the scope of monetary action, and generally to promote the economic and financial welfare of the Dominion;..." (Aufrecht, 1961, p. 89) This broad objective is similar to that of Australia but here, both internal and external stability are explicitly referred to.

The objective of the Netherlands Bank is much narrower and more precise. It is specified in Article 9(1) of the Netherlands Bank Act of 1948 as being "to regulate the value of the Netherlands' currency in such a manner as shall

be most conducive to the country's welfare and in that connection to stabilize the said value so far as possible." (Aufricht, 1967, p. 466) This is one of the clearest statements of the objective of central bank policy. There is no mention of an obligation to pursue vaguely defined macroeconomic objectives of general virtue but a simple commitment requiring the Bank to pursue price stability.

2. The Relationship Between the Central Bank and Central Government in the Making of Monetary Policy

The central banks of Australia, Belgium, France, Italy, Japan, the Netherlands, Sweden, and the United Kingdom are subservient to their central governments in the formulation and conduct of monetary policy: those of Germany, Switzerland and the United States have varying measures of independence from central government: that of Canada, underwent an important change in status, vis-à-vis the government in 1967 and, prior to that date was largely independent of government but since then has had its legislated powers diminished. We examine first those banks which are subservient to their governments.

The final authority for the conduct of monetary policy in Australia is the Federal Treasurer. The Bank Board is required to inform the government of its monetary and banking policy and, in the event of a difference of opinion between the government and the Board, the Treasurer and the Board are charged with the "endeavour to reach agreement." Failing an agreement, the Bank Board must furnish the Treasurer with a statement in relation to the disputed matter. The Treasurer may then submit a recommendation to the Governor-General (the head of state) who, acting with the advice of the Federal Executive Council, determines the policy to be adopted by the Bank. The Treasurer then has to inform the Bank of the policy so determined and that the government accepts

responsibility for the policy. The Bank Board is then required to adopt the policy. Further, the Treasurer must lay before Parliament a copy of the relevant order determining policy and a statement by the government on the matter in respect of which the difference of opinion arose. (Reserve Bank Act, 1959, 11(1) through 11(7)) (Aufrecht, 1961, pp. 55, 56) Thus, the federal government is unambiguously in charge of monetary policy, but, at the expense of having to take any dispute between the Bank Board and the government into the public arena. The Banking Act of 1959 (Section 50) strengthens the power of the Federal Treasurer even more by requiring the Reserve Bank to obtain approval of the Federal Treasurer prior to making regulations concerning the control of interest rates, and discounts. (Aufrecht, 1961, p. 49)

Article 29 of the Organic Law of the National Bank, 1939, makes it clear that the National Bank of Belgium has virtually no authority. That article states "The Minister of Finance shall have the right to control all the Bank's operations. He may oppose the execution of any measure which would be contrary to the law, the bylaws or the interests of the state. This control shall be entrusted to a government commissioner." Article 30 goes on to define the position of the government commissioner, which is to "supervise all the Bank's operations,...[to] suspend and report to the Minister of Finance any decisions that would be contrary to the law, the bylaws or the interests of the state. If the Minister of Finance has not given any instructions within eight days of the act of suspension, the decision may be put into effect." (Aufrecht, 1964, p. 65) In the Belgian case then it is clear that the Bank is merely an agent which carries out the government's monetary policies.

The relationship between the Bank of France and the French government cannot be estimated by only examining the Codified Statutes of the Bank for

monetary policy in France involves three agencies, the Bank of France, the National Credit Council and the Banking Control Commission. "Of this trio, the National Credit Council, set up in 1945, is the policy making arm of authority." (Wilson, 1961, p. 34) The Law of December 2, 1945 (Article 13) states the composition and authority of the National Credit Council and its position vis-à-vis that of the Bank of France. (Aufrecht, 1967, p. 205) The Bank's role is mainly executive. Even in this largely executive role, the Bank is closely supervised by the government through the presence of two Auditors who are high-ranking government officials (Codified Statutes, Article 45) on the General Council of the Bank, which in addition consists of the Governor, two Deputy-Governors, and twelve Councillors. The Auditors have well-defined powers and the presence of at least one is required for the General Council to be quorate (Codified Statutes, Article 58). (Aufrecht, 1967, pp. 179, 181)

The Statute of the Bank of Italy provides only an implicit statement of the relationship between the Bank and the government. The Board of Directors is charged with the general administration of the Bank (Article 20) but nowhere does the Act establish the powers of the Board of Directors in monetary policy matters. Indeed, it is clear from Article 25, which sets out the powers of the Governor, that the Bank is largely subservient to the government. That article states that the Governor, "shall make proposals to the Minister of the Treasury concerning changes in the discount rates and in the interest rate on advances." (Aufrecht, 1967, pp. 427, 429) The clear implication is that monetary policy is proposed by the Bank, approved (or otherwise) by the government through the Ministry of the Treasury and executed by the Bank.

Monetary policy in Japan is made by the Policy Board in the Bank of Japan (Article 13-2) which has wide powers in the areas of deciding basic policies for the operation of business of the Bank, fixing and changing rates

of discount, changing the qualifications of bills to be discounted, fixing, changing and abolishing maximum rates of interest, reserve rates, and controls over loans, etc. (Aufrecht, 1961, p. 427) However, the Bank is closely supervised by the government. (Chapter VI, Articles 42-47, Bank of Japan Law, Aufrecht, 1961, pp. 434-435) This supervision takes the form of the "competent Minister" being able, "if deemed particularly necessary for the attainment of the object of the Bank of Japan [to] order the Bank to undertake any necessary business or order alterations in the bylaws as well as other necessary actions." (Article 43) Further, two of the members of the Bank of Japan Policy Board are high-ranking government officials, one representing the Ministry of Finance and one the Economic Planning Agency. (Article 13-4) Thus it is clear that the Bank of Japan is simply an agency which carries out monetary policies determined by the government.

The constitutional position of the Netherlands' Bank is one which places it in clear subservience to the wishes of the government. Article 26(1) makes this clear, stating that, "In cases in which our Minister deems it necessary for the purpose of coordinating the government's monetary and financial policy and the policy of the Bank, he will give the governing board after the Bank Council has been heard, the directions required for the attaining of that object." (Aufrecht, 1967, p. 471) Thus the Netherlands' Bank is not an independent central bank but an agency for carrying out the monetary policy of the central government.

The powers of the Central Bank in Sweden, the Riksbank, and the relationship between the Riksbank and the central government are not well-defined in the Sveriges Riksbank Act of 1934. That Act contains no statements concerning the formation of monetary policy. Interpreting this situation is made easier by virtue of the fact that in the 1960s, several Acts pertaining to monetary policy were passed; the Liquidity and Cash Ratio Act of 1962, the Investment

Ratio Act of 1962 and the Interest Rate Control Act of 1962, all of which gave the Riksbank powers to implement credit control policies in various areas. (Aufrecht, 1967, pp. 637, 677) They also make it clear however, that basically the government makes monetary policy decisions and brings in the appropriate legislation for their implementation as required.

The constitutional position of the Bank of England vis-à-vis the United Kingdom government is set out in paragraph 4, subparagraph 1, of the Bank of England Act of 1946 which reads, "The Treasury may from time to time give such directions to the Bank as after consultation with the Governor of the Bank they think necessary in the public interest." (Aufrecht, 1961, p. 186) It is this paragraph which enabled the Radcliffe Committee (Committee on the Working of the Monetary System, Cmnd. 827, 1959) to talk about "the authorities" as a single unified monetary authority meaning the Treasury and the Bank of England working in unison.

We now turn to those central banks which have some measure of independence from their central governments. Article 6 of the Deutsche Bundesbank Law, 1957, states in subsection 1 that, "The central bank council shall determine the monetary and credit policies of the Bank." (Aufrecht, 1967, p. 252) The Bank's relationship to the federal government is explicitly stated in Article 12 as, "The Deutsche Bundesbank shall be obliged insofar as is consistent with its functions to support the general economic policy of the federal government. In the exercise of the powers conferred on it under this Law it shall not be subject to instructions from the Federal Government." (Aufrecht, 1967, p. 255) Article 13 requires the Bundesbank to "advise" the Federal Government on matters in the field of monetary policy and subsection 2 of Article 13 permits "members of the Federal Government...[to take part in the deliberations of the Central Bank Council]. They shall have no vote but may

make motions. At their request the taking of a decision shall be deferred but for not more than two weeks." (Aufricht, 1967, p. 255) It seems clear from this that the Deutsche Bundesbank is an independent central bank.

The highest managing executive authority in the Swiss National Bank is the Directorate. The policy of the Bank however is made by the Bank Council which receives recommendations and proposals from the Directorate and an intermediate level Bank Committee. The relationship between the Swiss National Bank (and its executive agencies) and the Federal (Confederal) Government is explicitly set out in Article 63 of the National Bank Law of 1953. (Aufricht, 1967, p. 721) This clearly delimits the role of the Confederation to supervision of and approval of such matters as the size of the Bank's capital, the denominations of bank notes, the share of profits between Cantons. Thus the Swiss National Bank appears to be genuinely independent of government in the conduct of its monetary policy.

In the Federal Reserve Act of 1913 and in the Banking Act of 1935 there is no provision for instructions to be issued to the Federal Reserve Board by the federal government of the United States. The Board of Governors of the Federal Reserve System with their statutory Federal Open Market Committee and other agencies are the ultimate decision makers concerning monetary policy. Thus the government has no control over the day-to-day policy matters of the Federal Reserve System.

Finally we consider Canada, the only case in our sample where a change in legislation affected the legislated independence of a central bank. Up to 1967, the Bank of Canada appears to have been an independent central bank in the sense that there was no provision for day-to-day government intervention and involvement in the formulation and execution of monetary policy. The Governor of the Bank and the Board (and the Governor having certain veto powers) were

responsible for the conduct of monetary policy (Section 18 of the Act). (Aufrecht, 1961, p. 93) Thus, up to the Coyne affair, Canada had an independent central bank operating under a set of rigid rules concerning the actions which it could take. The Bank Act of 1967 made a major change in the Canadian arrangements. Section 14 of the revised statute (Bank Act, 1967 from Revised Statutes of Canada, 1970, vol. 1) says that, "The Minister [i.e., Finance Minister] and the Governor shall consult regularly on monetary policy and on its relation to general economic policy (paragraph 14(1))," and, in paragraph 14(2), "If, notwithstanding the consultations provided for in subsection (1) there should emerge a difference of opinion between the Minister and the Bank concerning the monetary policy to be followed, the Minister may, after consultation with the Governor in Council, give to the Governor a written directive concerning monetary policy, in specified terms, and the Bank shall comply with such directive." This major change in legislation clearly gives the government ultimate authority in monetary policy matters, but, only after pursuing prespecified procedures in the event of a dispute.

3. The Appointment of Central Bank Policy Directorates

Even though we have established that three of the central banks that we are examining are independent of central government in the formulation of their monetary policy, it is still possible that central governments can exercise leverage via their control over the appointment of Directors. In general, central banks which have some provision for Directors to be appointed independently of government and also where appointments enjoy a lengthy period of tenure there may be a reduction in the leverage which governments can exercise on central bank policy. In all the cases in which the government is responsible for the formulation of monetary policy (Australia, Belgium, Canada, France, Italy, Japan, the Netherlands, Sweden, the United Kingdom and

the United States) the government also is fully in control of all appointments to the central bank Directorate. The following is a brief account of the regulations concerning the central bank Directorates and appointment and tenure terms of Governors and Directors for these ten central banks.

In the case of Australia, the Board of Governors of the Reserve Bank consists of the Governor, Deputy-Governor (both appointed for seven years and eligible for re-appointment), seven other members (appointed for five years and renewable) and as an ex officio member, the Secretary of the Treasury. The Governor, Deputy-Governor and other seven members of the Board are appointed by the Governor General (i.e., the executive branch of the Australian Federal Government). (Aufricht, 1961, p. 8) In the case of Belgium, the Board of Directors of the Bank consists of the Governor, together with three to six others. All are appointed by the Crown (the executive branch of government), the Governor for five years and the Directors for six years (all renewable). In addition to the Board of Directors there is a Council of Regency (the principal policy-making body in the Bank of Belgium) which comprises the Board of Directors plus ten Regents elected by a general meeting of the shareholders, for three years (renewable). (Aufricht, 1967, p. 63) Although this may appear to give the Bank of Belgium some independence in the appointment of its principal policy-making body, it must be noted that the principal shareholder of the Bank of Belgium is the government (50%) and the remaining shares are held by various statutory authorities under the indirect control of the government, hence, the appointment of Directors and Regents is effectively in the hands of the central government. The Board of Directors of the Bank of Canada, which consists of the Governor, Deputy-Governor, twelve Directors and the deputy Minister of Finance, constitutes the general management of the Bank. The Governor and Deputy-Governor are appointed by the

Directors with the approval of the Governor General in council for seven years (renewable). The twelve Directors are appointed by the Minister of Finance with the approval of the Governor General in council for three years (renewable). The deputy Minister of Finance is an ex officio member.

(Revised Statutes of Canada) The General Council of the Bank of France consists of the Governor, two Deputy-Governors, twelve Councillors and two Auditors. The Governor and two Deputy-Governors are appointed by the Council of Ministers for four years and may be re-elected. Of the twelve Councillors, one is elected by secret ballot of the staff of the Bank of France, seven are appointed by the Minister of Finance. These Councillors have a four-year term (renewable). The remaining four are ex officio Councillors and are the general managers of various state credit agencies and institutions. The Auditors are appointed by the Minister of Finance from among high-ranking government officials, that is, high-ranking public servants. (Aufrecht, 1967, p. 179) Board of Directors of the Bank of Italy consists of the Governor and thirteen Directors, one for each office of the Bank. The Directors are appointed by general meetings of shareholders and the Governor is appointed by the Board of Directors. All appointments are for three-year terms (renewable). (Aufrecht, 1967, p. 425) Thus it appears that the appointment of the Board of Directors of the Bank of Italy is independent of the central government. However, Article 19 requires that all appointments and dismissals must be approved by decree of the President of the Republic on the proposal of the President of the Council of Ministers in agreement with the Ministry of Treasury, the Council of Ministers having been heard. (Aufrecht, 1967, p. 426) Further, although the appointments are made by elections of shareholders, the vast majority of shareholdings in the Bank of Italy are held directly or indirectly by the central government. The Policy Board of the Bank of Japan

consists of seven members--the Governor, appointed by the Cabinet for five years and renewable, two non-voting members ex officio as representatives of the Ministry of Finance and of the Economic Planning Agency and four appointments each for four years (renewable) appointed by the Cabinet with the consent of both Houses, one with knowledge of local banking, one with knowledge of large city banking, one with knowledge of commerce and industry and one with knowledge of agriculture. (Aufrecht, 1961, p. 428) Thus all the positions on the Policy Board of the Bank of Japan are direct government appointments. The governing board of the Netherlands central bank consists of a President, Secretary and three to five other Directors. These appointments are for seven years (renewable) and are all made by the government. (Aufrecht, 1967, p. 470) The Bank of Sweden is managed by a Directorate consisting of seven Directors each appointed by the King in Council (i.e., the government) for three years (renewable). (Aufrecht, 1967, p. 668) The Governor, Deputy-Governor and sixteen Directors of the Bank of England are all appointed by the Crown; the Governor and Deputy-Governor each for five years and the Directors for four years; all eligible for re-election. (Aufrecht, 1961, p. 186) The Federal Reserve System is managed by the Board of Governors of the Federal Reserve System which is composed of seven members, each appointed by the President with the advice and consent of the Senate for terms of fourteen years. Federal Reserve Act, 1913, Section 10, as modified by the Banking Act of 1935, August 23, 1935, Section 203(b), "In selecting the members of the Board not more than one of whom shall be selected from any one Federal Reserve district the President shall have due regard to a fair representation of the financial, agricultural, industrial and commercial interests and geographical divisions of the country." (Krooss and Samuelson, vol. 4, p. 2449) Thus, although the Governors of the Federal Reserve System are political appointees, their appointments run for a period

spanning the life of more than three political administrations and, therefore, the Board enjoys a greater measure of independence than do those whose appointments are more closely conterminous with those of governments/administrations.

It is clear then that in all these cases the government has full power in the matter of the appointment of Governors and Directors of the Bank. The only matter of interest that provides for cross-country variability concerns the length of the appointments which ranges from as little as three years (Canada, Italy, Sweden) to as long as fourteen years for ordinary Board members though not for Chairmen in the case of the United States.

The cases of Germany and Switzerland are somewhat different from the above. In the German case, the Central Bank Council of the Deutsche Bundesbank is composed of a President, a Vice-President and up to eight other members, all appointed by the President of the Federal Republic for eight years (renewable); the eleven presidents of Land Central Banks appointed by the President of the Federal Republic on proposals of the Bundesrat, the proposals to be made on the recommendation of the authority competent under the Land legislation and after consulting with the Central Bank Council. The appointments of the President, Vice-President and other members of the Directorate by the President of the Federal Republic are made on the proposal of the Federal Government. (Aufricht, 1967, p. 253) It is clear that to a large degree the Central Bank Council of the Deutsche Bundesbank is a self-perpetuating oligarchy. The Central Bank Council itself has an opportunity to comment on and offer advice on the appointment of more than one-half of its members (the presidents of the Land Central Banks). (Aufricht, 1967, p. 254) The federal government has a direct input into the appointment of not more than ten members of that Council (a minority). Thus there is to a large degree an

element of independence from central government even in the composition of and appointment of the Central Bank Council. It is also noteworthy that the term of office of the President, Vice-President and other members of the Directorate is uncommonly long (eight years). The Directorate of the Swiss National Bank, known as the Bank Committee, is elected by and from the Bank Council. The latter consists of forty members, fifteen elected by a general meeting of shareholders and twenty-five elected by the Federal Council (the executive branch of the Swiss Federal Government). There is no specified upper limit on the size of the Bank Committee, but each of its members is elected for a period of four years. (Aufrecht, 1967, p. 715) Thus the appointment of the Directorate of the Swiss National Bank is decentralized and diffused. None of the members of the Bank Committee is directly appointed by the Swiss government. It is true that the Bank Council which appoints the Directorate is itself elected by a procedure which gives a five-eighths weight to the federal government and only a three-eighths weight to the general meeting of Bank shareholders. Thus, whilst the power position of the federal government is not diminished to that of a minority position, it is nevertheless diluted in comparison with all the other central banks that we are considering here (with the exception of Germany).

4. Central Bank Laws: Summary and Classification

The above discussion concerning central bank objectives, authority for monetary policy making, and role of government in the appointment of the bank directorate is brought together and summarized in Table 1. It is clear from this table that there are a very large number of alternative combinations of the various attributes of central bank laws which we have singled out for consideration. We have three alternative possibilities under "legislated objectives"--the single-minded pursuit of price stability, the more generalized

TABLE 1

Central Bank Laws: Summary

Country	Legislated Objective	Final Authority	Government Officials on Board	Proportion of Directorate Appointed by Government	Number of Directors	Term of Directors	Term of Governor/Chairman
(see note below)	(a)	(b)	(c)	(d)	(e)	(f)	(f)
The Netherlands	p	g	0	1	5-7	7	7
Australia	p-u	g	1	1	10	5	7
Belgium	-	g	0	1	14-17	6	5
Canada	p-u	b (1967-) g (1967+)	1	1	15	3	7
France	-	g	2	14/15	15	4	4
Italy	-	g	0	1	14	3	3
Japan	-	g	2	1	7	4	4
Sweden	-	g	0	1	7	3	3
United Kingdom	-	g	0	1	18	4	5
United States	-	b	0	1	7	14 (N)	4
Germany	-	b	0	10/21	21	-	8
Switzerland	-	b	0	5/8 (indirect)	-	4 (N)	4 (N)

Notes: (a) p-u = price level & general macroeconomic stability

p = price stability

- = non-specified

(b) b = Bank; g = government

(c) number of ministers (or their representatives) who sit on Bank Directorate

(d) number represents proportion of directors appointed directly or indirectly by the government

(e), (f) years (N = not eligible for re-election)

pursuit of both price stability and other macro objectives and finally cases in which there is no specified objective. There are two possibilities concerning authority for monetary policy making--either the government or the bank board. Then there are cases where the government has representation on the bank board and those where the government has no direct membership of the board. Next there are cases where the government is responsible for appointing all or most of the bank directors and those where the government appoints some smaller fraction of them. Finally the terms of office of the Directors and Governor or Chairman vary considerably. Ignoring this last matter, there are twenty-four alternative combinations of the first four attributes. With only twelve banks being examined, we have, on the basis of these classifications, twelve entirely different central banks. It seems desirable therefore to perform some further aggregation. The first is to reduce the "legislated objectives" category from three to two with those central banks that have a directive to pursue both price stability and other general macroeconomic objectives as being in the same category as those central banks which have no explicitly legislated objective. Next we aggregate over the matter of the ultimate authority for the conduct of monetary policy. Here we produce another dichotomy between those banks which are responsible through their own board for the conduct of monetary policy and those which are distinctly subservient to or closely supervised by government. A central bank is considered as having final authority for its monetary policy actions if and only if the following characteristics are satisfied: first, the bank board is the final authority for monetary policy making; secondly, no government officials sit on the bank board. This alternative aggregation based on two objectives; two ultimate authorities for monetary policy; and two procedures for appointing the Bank Directorate yields eight potential classes, four of which are empty. Thus we have a fourfold

classification of central banks, indicated by the four groups in Table 1. We shall focus on this fourfold classification in searching for any significant differences between policy and in attempting to identify the effects (if any) of central bank legislation on the nature and conduct of monetary policy.

III. Monetary Policies

Just as we ruthlessly simplified the laws of central banks in order to focus on a limited number of more important aspects, so also in our analysis of monetary policy we abstract and simplify. Specifically, we focus on three features of monetary policy. First, its relative inflationary/deflationary stance; secondly, its variability and thirdly, the proximate variables to which it reacts. Since we are dealing with cross-country rather than time-series data, we are not concerned with the temporal evolution of policy and look simply at summary statistics which provide a basis for a comparison across countries for the whole postwar period. A key feature of much of the postwar history is that it was characterized by fixed exchange rates. From the beginning of the postwar era through to the early 1970s rates were fixed. Thereafter exchange rates have been flexible. It may be felt therefore that we cannot adequately aggregate over time and over different exchange rate regimes. However, in the interests of both simplicity and sharpening our focus on the issues of central concern, we do aggregate over both the fixed and flexible exchange rate periods in characterizing the average quality of monetary policy pursued.

We rank the degree of inflation embodied in a country's monetary policy by the average rate of change of its foreign exchange rate treating the US dollar as the numeraire. This procedure is not without problems but, it seems the cleanest available way of ranking the countries' average inflationary tendencies. Movements in exchange rates, even though initially resisted and in most cases

arising from de/revaluations or managed floats, do nevertheless reflect underlying international differences in the degree of firmness or slackness of monetary policies. Countries which are pursuing deflationary policies relative to those in the rest of the world will experience appreciating currencies and, the greater the deviation from world average inflation the greater the degree of exchange rate appreciation.

Next consider the variability of monetary policy. What is of ultimate interest of course is the variability of inflation and real output and employment. However these are variables which are not even potentially under the direct control of the monetary authorities and therefore could not be used to characterize the variability of policy. Most central banks (see Hodgman (1974)) use interest rates as their proximate instruments of policy. Then the behavior of interest rates ought to be used to judge the stability of monetary policy, stable interest rates being identified with stable policy. This would however produce a misleading view. First, nominal interest rates ought to vary in order to reflect variations in the anticipated rate of inflation. Therefore any unwillingness of the central bank to allow interest rates to move in line with variations in the inflation rate would have to be interpreted as a source of variability rather than a source of constancy in policy. This suggests that perhaps we should look at real rates of interest and their variability. However, even this is an exercise of limited value since there are many factors which lead to variations in equilibrium real rates of interest all of which would have to be controlled for before one could use the observed variability of the real rate of interest as an indicator of the variability of monetary policy. Even though interest rates are the proximate instruments of monetary policy, they are typically manipulated with a view to achieving a particular behavior for the growth rate of various monetary aggregates. It is variations in aggregates such as these that we

regard as providing some indication of the variability of monetary policy. Ideally we would like to compute a variety of measures of policy variability based on various definitions of money. In this paper we present four measures based on the money supply and money base data published in International Financial Statistics. We compute the coefficients of variation and the standard deviations for both the rate of growth of the money supply and the rate of growth of the monetary base, together with the rank of each country. The degree of inflation and the variability of monetary policy are summarized in Table 2.

We now turn to a consideration of the policy reaction function literature and attempt to assess the main macroeconomic targets to which monetary policy responds. Studies are available to us covering ten of the twelve countries, the two missing being the Netherlands and Switzerland. Details of the policy reaction function studies are summarized in tabular form in the Appendix and Table 3. The way to read Table 3 is as follows: an algebraic sign (+,-) indicates the sign of the response of monetary policy (+) for expansion and (-) for contraction to a positive change in the variable at the head of each column. A zero indicates that at least one of the studies reviewed did search for the effect of the variable in question but found no significant response. The sign (..) indicates that the effect of that variable has not been searched for in any of the studies reviewed. Individual reaction function studies differ in the monetary policy variables which they have sought to explain, the list of explanatory variables employed, the dynamic structure of the responses searched for, as well of course as the time periods studied. Further they differ in the precise definitions of the various explanatory variables used. In general, if any one study has found a significant effect, we have recorded that as indicating a significant response in Table 3. There were no conflicts of findings but some studies have found insignificance

TABLE 2
Average Inflation and Variation of Monetary Policy (1951-1975)
Grouped According to Central Bank Type

Final Authority/ Appointment of Directors	Country	Percent Exchange Rate Change	Annual Money Supply Growth		Annual Money Base Growth	
			Standard Deviation	Coefficient of Variation	Standard Deviation	Coefficient of Variation
Government/ Government	The Netherlands	33.44 (3)*	4.62 (7)	55.1 (6)	3.99 (3)	61.67 (2)
	Australia	16.96 (7)	6.22 (11)	107.8 (12)	10.78 (11)	144.12 (12)
	Belgium	26.43 (4)	1.75 (1)	47.5 (5)	3.67 (2)	81.19 (6)
	Canada	3.39 (8)	5.49 (10)	89.4 (10)	5.26 (5)	76.23 (5)
	France	-22.47 (11)	4.02 (4)	36.7 (3)	8.69 (10)	115.10 (11)
	Italy	- 4.45 (10)	4.17 (5)	29.1 (1)	12.40 (12)	86.11 (7)
	Japan	17.81 (6)	7.43 (12)	41.5 (4)	7.78 (9)	48.47 (1)
	Sweden	19.74 (5)	4.27 (6)	60.2 (8)	6.89 (7)	106.33 (9)
	United Kingdom	-26.05 (12)	4.82 (9)	103.4 (11)	7.60 (8)	109.67 (10)
	Bank/ Government	United States	0.00 (9) (numeraire)	2.15 (2)	55.4 (7)	3.23 (1)	91.24 (8)
Bank/ Government and Others	Germany	41.35 (1)	3.20 (3)	33.6 (2)	6.79 (6)	75.70 (4)
	Switzerland	40.97 (2)	4.65 (8)	65.5 (9)	4.80 (4)	69.46 (3)

* Rank is given in brackets.

Source: International Financial Statistics, vol. XXIX, no. 5, May 1976.

TABLE 3

Policy Reactions Grouped According
to Central Bank Law

Final Authority/ Appointment of Directors	Country	Expansionary Monetary Policy (+)/Contractionary Monetary Policy (-) in Response to:			
		Fiscal Deficit 0	Real Output fall/ Unemployment rise	Inflation Rise	External Deficit
Government/ Government	Australia	..	+	-	-
	Belgium	..	+	-	-
	Canada	+	+	+	-
	France	0	0	0	0
	Italy	0	+	0	0
	Japan	+	-	0	-
	Sweden	0	-	0	0
	United Kingdom	0	+	-	-
Bank/ Government	United States	+	+	-	0
Bank/ Government and Others	Germany	-	0	0	-

Source: Tables in Appendix.

Code: .. indicates that the variable was not included in study
+ indicates a positive significant coefficient
- indicates a negative significant coefficient
0 indicates an insignificant coefficient
Significance is at the 10% level or better.

where others have found significance. The only matter which could give rise to confusion and to which attention is drawn, is that some of the signs recorded in the Appendix are opposite to those recorded in Table 3. The reason for this is that the signs as recorded in the Appendix related to the dependent variable used in the relevant regression whilst those recorded in Table 3 refer to the effects of the various macroeconomic targets on the direction of monetary policy change. Thus, for example, if a study has used an interest rate as a dependent variable, a policy response which leads to a lowering (-) of the interest rate is the equivalent of one which leads to a rising (+) of the money supply growth rate.

With the above remarks in mind, Table 3 can be examined to reveal the following major patterns. Only in the case of Canada, Japan and the United States do we find a systematic monetary expansion in response to an increase in the fiscal deficit. Germany alone contracts the money supply. Six of the ten countries (Australia, Belgium, Canada, Italy, the United Kingdom, the United States) operate a standard counter-cyclical monetary policy engaging in monetary expansion as real output falls (or unemployment rises) and monetary contraction as the economy moves into a real boom. Only Japan and Sweden operate in a perverse manner, accentuating the real cycle. Two countries (France and Germany) ignore completely the movements of real economic activity in adjusting the stance of monetary policy instruments. Four countries (Australia, Belgium, the United Kingdom and the United States) respond to a rise in the inflation rate with a tightening of monetary policy. In this respect Canada seems to display a perverse reaction. The remaining five countries (France, Germany, Italy, Japan and Sweden) apparently ignore movements in the inflation rate in adjusting their monetary policy. Changes in the external deficit have a significant effect on money supply growth in Australia, Belgium, Canada, Germany, Japan and the United Kingdom and no

effect in the other five countries. These response patterns to external deficits indicate that reserve changes are either not sterilized at all or only partially sterilized.

This completes our characterization of monetary policies and we now turn to an examination of the relationship between those policies and central bank types summarized in Part II.

IV. Relationships Between Central Bank Laws and Monetary Policies

Our classification of central bank types has two dimensions, the first concerning whether there exists a legislated objective concerning price stability or not and the second concerning the independence of the central bank both from government intervention in monetary policy-making and from government influence on the appointment of the bank directorate. On the matter of the legislation of a price stability objective, we can only perform a weak test since only one country, the Netherlands, is in that category. It would be desirable to compare policies of central banks which differ from that in the Netherlands only in the degree of independence in order to get a powerful test on the role of legislating price stability as an objective. However, weak though the test is, we compare the performance of monetary policy in the Netherlands with that in the other countries in the same "independence" category. We find that the Netherlands has the lowest average inflation rate in that group. We do not unfortunately have a reaction function analysis for the Netherlands to examine its responses to inflation and other macro-economic variables. However it is clear that on the limited data available and on the basis of this admittedly weak test, we can say there is a positive association between the legislation of a price stability objective and the achievement of a relatively non-inflationary monetary policy.

Most of the variability in central bank types that we observe concerns the degree of independence of the central bank from government. First we

examine the relationship, if any, between independence and the average inflationary record. We use Table 2 as the basis for a comparison. We have classified central banks by the threefold classification depending on responsibility for monetary policy (final authority) and ultimate authority in the appointment of the directorate. In the third category in which the bank makes policy and there is some element of independence from government in the appointments of Directors, we see that both countries (Germany and Switzerland) appear to rank 1 and 2 on the anti-inflationary monetary policy criterion. In the two other categories, where the bank is independent in the making of monetary policy but in which the government appoints all the Directors and in the case where the government is involved in all aspects of bank policy making, we see no significant break in the rankings. The "independent" central bank, the United States, appears very low down in the ranking and those central banks which are fully dependent on the government range from third through to the twelfth rank. Thus it appears that, in terms of average inflation rates, the critical characteristic of independence is not independence from government in the making of monetary policy but independence in the monetary policy area combined with some diffusion of power concerning the appointment of bank Directors.

Secondly, consider the relationship between independence and the variability of policy. Table 2 contains the relevant information for making this comparison. It appears that there is no association between any of the categories of central bank constitution and the four measures of variability of policy presented. The only country with a similar ranking on all four measures of variability is Australia and its variability is high. All other countries have different ranks across the four measures. For example, the United States and Belgium have the lowest variability on two of the measures and middle rank

on the other two; Japan and Italy have high variability on two and middle rank on the other two; Switzerland and the Netherlands have fairly low variability on two of the measures and above middle rank variability on the other two. Within each type of central bank classification for any one of the variability measures there is no obvious grouping of ranks. It appears then that as far as achieving low variability of monetary policy is concerned, there is nothing in the way in which central bank laws are written that leads to low variance outcomes. This is perhaps not surprising in view of the large potential for individual Governor/Director preferences and personal strengths and weaknesses to influence policy in a genuinely independent bank (see Friedman (1962)).

Our examination of the relationship between independence and policy reactions can only be conducted for ten countries. Table 3 summarizes the relevant information here, again classified by the three classes of central bank independence. There is apparently a distinct difference between the first and third categories. The German central bank which is independent in both respects, does not apparently expand money supply growth in response to increased unemployment nor does it react directly to inflation. It does however react to counter expansion and fiscal deficit and it permits external deficits to have some partial effect on the rate of money supply growth. In the first category, the totally subservient central banks, there is a strong tendency for monetary policy to react to unemployment and also in two cases to financing fiscal deficits. The only cases in which we do not observe a standard counter-cyclical Keynesian monetary policy reaction to unemployment is that of France, Japan and Sweden. France makes no response whilst that of Japan and Sweden is perverse. In the case of Sweden this response is significant only at the 10% level. Japan's perverse response to unemployment is, however, coupled with a strong tendency to finance fiscal deficit. In the case of Australia, Belgium and the United Kingdom, there is a counter-inflationary

monetary policy reaction and that it has to be noted is, in each case, accompanied by an anti-unemployment response in the opposite direction. Thus there seems to be a clear distinction between the types of policy reactions emerging from the genuinely independent German central bank and the totally dependent central banks of Australia, Belgium, Canada, Italy, Japan, Sweden and the United Kingdom. The central bank of France, at least on the basis of the reaction function study available to us, seems to respond to none of these variables. The intermediate category containing the United States, is less distinctly different from the other two. The United States clearly belongs in the same category as the subservient central banks having exactly the same pattern of response as that of Australia, Belgium and the United Kingdom, by reacting in a counter-cyclical manner to unemployment and in a counter-inflationary fashion, and like Canada and Japan, helping to finance government deficits. The evidence from the two extremes suggests that the fully independent central bank pursues anti-inflationary policies to the exclusion of concern for macroeconomic stability more broadly defined whilst those which are pursuing monetary policies dictated by their governments are much more concerned in the formulation of those policies with broader macroeconomic objectives and in particular with real output and employment fluctuations.

REFERENCES

- Aufrecht, H., Central Banking Legislation, The International Monetary Fund, Washington, D.C., 1961.
- _____, Central Banking Legislation, Volume II: Europe, The International Monetary Fund, Washington, D.C., 1967.
- Barro, R. J., "Unanticipated Money, Output and the Price Level in the United States," Rochester University, mimeo, July 1977.
- Bartley, T. J., "Giblin and the Commonwealth Bank," in Giblin, The Scholar and The Man, D. Copland (ed.), Melbourne, Cheshire, 1960.
- Fisher, D., "The Instruments of Monetary Policy and Generalized Trade-off Function for Britain, 1955-1968," Manchester School, vol. 38, 1970, pp. 209-222.
- Friedman, M., "Should There be an Independent Monetary Authority," in In Search of a Monetary Constitution, L. B. Yeager (ed.), Harvard University Press, Cambridge, 1962, pp. 219-243.
- Friedman, M. and A. J. Schwartz, A Monetary History of the United States 1867-1960, National Bureau of Economic Research, New York, Princeton University Press, 1963.
- Gordon, R. J., "The Demand for and Supply of Inflation," Journal of Law and Economics, vol. XVIII, December 1965, pp. 807-836.
- _____, "World Inflation and the Sources of Monetary Accommodation: A Study of Eight Countries," Brookings Papers on Economic Activity, 1977 (in press).
- Havrilesky, T., "A Test of Monetary Policy Action," Journal of Political Economy, vol. 75, June 1967, pp. 299-304.
- Hodgman, D. R., National Monetary Policies and International Monetary Cooperation, Little, Brown, Boston, 1974.

- Jonson, P. D., "Stabilization Policy in Australia: An Objective Analysis," Manchester School, September 1974, pp. 259-276.
- Krooss, H. E. and P. A. Samuelson, Documentary History of Banking and Currency in the U.S.A., vol. 4, McGraw-Hill, New York, 1969.
- Lewis, M. K., "Targets, Indicators and the Insider Lag of Australian Monetary Policy," mimeo.
- Nobay, A. R., "A Model of the United Kingdom Monetary Authorities' Behaviour 1959-1969," in Issues in Monetary Economics, H. G. Johnson and A. R. Nobay (eds.), Oxford University Press, 1974.
- Nordhaus, W., "The Political Business Cycle," Review of Economic Studies, vol. XLII (2), April 1975, pp. 169-190.
- Parkin, M., "World Inflation, International Relative Prices and Monetary Equilibrium Under Fixed Exchange Rates," Ch. 13 in Robert Z. Aliber (ed.), The Political Economy of Monetary Reform, Macmillan, London, 1977.
- Pissarides, C. A., "A Model of British Macroeconomic Policy, 1955-69," Manchester School, vol. 40, 1972, pp. 245-259.
- Reuber, G. L., "The Objectives of Canadian Monetary Policy, 1949-61 Empirical 'Trade-offs' and the Reaction Function of the Authorities," Journal of Political Economy, vol. 72, April 1964, pp. 109-132.
- Villanueva, D. P., "Statistical Analysis of Discount Rate Policy in Belgium, 1957-68," European Economic Review, 1972, pp. 199-208.
- Wilson, J. S. G., "France," in Banking in Western Europe, R. S. Sayers (ed.), Oxford, 1962.
- Wogin, G., "Rational Expectations and the Natural Rate of Unemployment Hypothesis," Carleton Economic Papers, no. 77-08, Carleton University, Ottawa, 1976.
- Wood, J. H., "A Model of Federal Reserve Behaviour," in G. Horwich (ed.), Monetary Process and Policy: A Symposium 1967.

Yeager, L. B. (ed.), In Search of a Monetary Constitution, Harvard University Press, Cambridge, 1962.

Committee on the Working of the Monetary System: Report Cmnd 827, H.M.S.O., London, 1959.

Revised Statutes of Canada, 1970, vol. 1, Ottawa, 1970.

APPENDIX

Policy Reaction Functions

Study	Period	Dependent Variable	Fiscal Deficit	Real Output fall/ Unemployment rise	Inflation	External Deficit
<u>AUSTRALIA</u> Jonson, P. D., 1974 p. 268	1959(3) to 1971(4)	Bond Rate Aggregate Statutory Deposit Ratio	:: ::	** -** -	0 0	** + 0
Lewis, M. K., Table 2	1956 to 1970 (qtly)	Index of Monetary Policy Intentions	::	** +	* -	** -
<u>BELGIUM</u> Villanueva, D. P., 1972, p. 20	1957(2) to 1968(4)	Discount Rate	::	** -	** +	** +
<u>CANADA</u> Gordon, R. J., 1977, p. 50	1958(3) to 1973(1)	Money Supply Growth	0	0	0	0
Reuber, G. L., 1964, p. 123	1949 to 1961 (qtly)	Money Supply Growth Nominal Net Cash re- serves	:: ::	** +	** +	** ..
Wogin, G., 1976, p. 6	1926 to 1972 (qtly)	Real Money Supply Money Supply Growth	:: ** +	** +	0 ..	** ..
<u>FRANCE</u> Gordon, R. J., 1977, p. 50	1958(3) to 1973(1)	Money Supply Growth	0	0	0	0
<u>GERMANY</u> Gordon, R. J., 1977, p. 50	1958(3) to 1973(1)	Money Supply Growth	* -	0	0	** -

APPENDIX (cont'd.)

Study	Period	Dependent Variable	Fiscal Deficit	Real Output fall/ Unemployment rise	Inflation	External Deficit
ITALY						
Gordon, R. J., 1977, P. 50	1958(3) to 1973(1)	Money Supply Growth	0	+	0	0
JAPAN						
Gordon, R. J., 1977, P. 50	1958(3) to 1973(1)	Money Supply Growth	** +	** -	0	** -
SWEDEN						
Gordon, R. J., 1977, P. 50	1958(3) to 1973(1)	Money Supply Growth	0	*	0	0
UNITED KINGDOM						
Fisher, D., 1970, P. 214	1951() to 1964(4)	Bank Rate Special Deposits	.. ..	** - ** -	** + ** +	** + 0
Gordon, R. J., 1977, P. 50	1958(3) to 1973(1)	Money Supply Growth	0	** +	0	** -
Nobay, A. R., 1974, PP. 318-9	1959 to 1969	Bank of England's Security Portfolio	..	** +	..	** -
		Special Deposits	..	** -	..	** -
		Authorities' De- sired Bank Advances	..	** -	..	..
		Bank Rate	..	..	..	** -
		Bank Rate	..	** -	** +	** +
Pissarides, C. A., 1972, P. 251	1955(4) to 1968(4)	Bank Rate	..	..	..	** +
UNITED STATES OF AMERICA						
Barro, R. J., 1977, P. 3	1941 to 1976 (yrly)	Money Supply Growth	** +	** +	0	0

APPENDIX (cont'd.)

Study	Period	Dependent Variable	Fiscal Deficit	Real Output fall/ Unemployment rise	Inflation	External Deficit
UNITED STATES OF AMERICA Gordon, R. J., 1977, p. 50	1958(3) to 1973(1)	Money Supply Growth	0	0	0	0
Havrilesky, T., 1967, p. 302	1952 to 1965 (qtly)	Total Reserves, ad- justed for legal reserve requirement changes	..	** +	** -	0
Wood, J. H., 1967, p. 153	1952 to 1963 (qtly)	Quantity of govern- ment securities held by Federal Reserve	** +	** +	** -	0

Code: .. indicates that the variable was not tested
+ indicates a positive significant coefficient
- indicates a negative significant coefficient
** indicates significant at 5% level
* indicates significant at 10% level
0 indicates an insignificant coefficient