Volume Title: Balance-of-Payments Adjustment Policies: Japan, Germany, and the Netherlands

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Volume Publisher: NBER

Volume ISBN: 0-87014-492-8

Volume URL: http://www.nber.org/books/mich68-1

Publication Date: 1968

Chapter Title: Approach, Concepts, and Methods

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Chapter URL: http://www.nber.org/chapters/c0847

Chapter pages in book: (p. 5 - 33)

2

APPROACH, CONCEPTS, AND METHODS

1. Coverage of the Study: Countries and Period

The criteria used for selection of countries for observation are dictated by the purposes of the over-all study. They must be large countries in terms of size of international transactions: if implications for the international monetary system as a whole are to be drawn, it is obviously more practical to concentrate on countries whose impact on this system is large. Preferably, the countries should also resemble the United States in structure and circumstances. For these reasons, the study is planned to cover the major trading, industrial countries commonly known as the "Group of Ten." (For reasons which will be explained later, however, one member of the group—Canada—will be excluded.)

The countries which will eventually be covered conduct, in their aggregate, an overwhelming share of world trade and other international transactions, own an overwhelming share of the world's capital, hold most of the world's international liquidity, and produce most of the world's income. Conclusions which are valid for these countries as an aggregate are thus applicable, by and large, to the international monetary system as a whole.

The period selected is that following World War II. The experience of earlier periods is not entirely irrelevant, but of less immediate application to current issues and to problems which are likely to be faced in the near future.[1] The earlier postwar years of 1945–49 were

[1] The experience of earlier periods has been investigated in two well-known studies whose methods are similar in essence to the one adopted here, although confined primarily to observations of a single policy variable. The interwar period was the topic of Ragnar Nurkse's classic study, *International Currency Experience* (League of Nations, 1944), where this method of investigation was followed in Chapter IV. The prewar period was studied in Arthur I. Bloomfield, *Monetary Policy under the Gold Standard: 1880–1914* (Federal Reserve Bank of New York, 1959), particularly Chapter V. These studies will be referred to later.

excluded too, on similar grounds. Circumstances in those years were definitely unique; although one cannot safely predict that they may not recur, it seems quite evident that such repetition is not likely in the near future, so that any conclusions derived from the experience of those years is bound to be of lesser importance for current economic problems. The study thus starts with the year 1950 and ends with the latest date for which information was available at the time of its collection, which would usually be the end of 1965 or the beginning of 1966.[2]

2. *The General Approach*

As indicated above, the study will seek to identify the policies followed in various countries at times of imbalances of payments. It will try to find what policy measures were commonly taken in such times, and whether these could be expected to lead to balance-of-payments adjustment. The study will hence attempt to establish probable relationships between the position of the balance of payments and the policies undertaken: it will try to reveal the principles followed by studying the actual behavior. The analysis will be of a statistical nature.

It should be emphasized that the analysis is confined to the search for causal associations in one direction: changes in the target variable are the cause and changes in policy variables are the effect. Although the study does *not* address itself primarily to the effect of policy measures on the target, indirectly the findings may provide at least some indication of the measure of success of the policies followed. Knowing the typical policy patterns of governments, and comparing them with the balance-of-payments experiences of the respective countries, may provide some clues about the effects of policies on the balance of payments. The international comparisons which will follow the studies of individual countries may thus make some contribution toward this end.

When a consistent relationship between the movement of a policy variable and imbalances of payments is established, this finding will be tentatively interpreted as an indication of a causal relationship. That

[2] In a few instances, later data have been added to the study without being consistently incorporated into the analysis.

is, if a policy instrument reacts consistently to balance-of-payments disturbances by moving in a certain direction, it will be assumed that this is not a coincidence but that the reaction was causally related to the disturbance, and is, therefore, conscious behavior on the part of policy designers. An attempt will usually be made, in such a case, to give a possible explanation for their conduct; that is, to see what model, or analytical structure, could be expected to yield this pattern of action. The models could, of course, be different for different countries—and in each country, for different periods or different governments. The study will thus not try to "impose" one model upon all situations; nor will it try to assess the theoretical credibility of any model which may be revealed. The purpose will be to establish what policy makers may have wished and anticipated, rather than to evaluate whether their actions were well-founded.

More generally, this study does *not* aim to pass judgment on the actions of governments of the countries under investigation—either on the targets they have been pursuing or on the means selected to achieve them. True, in some final analysis, such a judgment must be made. Studying past experience in order to improve future performance necessarily implies pointing out favorable and beneficial patterns of behavior and setting them off from those which lead away from the desirable goals. The present study, however, is viewed only as a preliminary, necessary step in such an assessment; it is concerned only with the attempt to find out what the policies actually were, rather than with the subsequent question of which of these policies were "good," or "bad"—and why. This definition of the subject matter of the study probably cannot be overemphasized, particularly because the analytical method may lead the unwary reader in the opposite direction. The constant attempt to search for a positive relationship between balance-of-payments disturbances and policy actions may easily create the impression that the existence of such a relationship is regarded favorably, while the lack of it is scorned. It should therefore be repeated that no such normative judgment is intended in the present study.

The study's emphasis throughout will be on the relationship between policy instruments and the balance of payments. In addition, however, a few other major economic targets will be observed. This will serve two functions. One is to make certain that a consistent as-

sociation between imbalances of payments and a certain policy variable could not be attributed to the impact of another target variable. To cite an obvious example: If the balance-of-payments surplus is positively correlated with the rate of unemployment, measures taken to relieve either unemployment or excess demand for labor, when investigated in isolation, would be erroneously interpreted as being intended for the sake of balance-of-payments equilibrium. The other purpose of observing competing target variables is to find out whether the absence of a consistent relationship between the imbalances of payments and a given policy instrument could be due to the employment of this policy instrument in the service of an alternative policy target.

It should be understood, however, that these are only auxiliary observations, not on a par—in the present study—with the direct investigation of the relationship between policy instruments and balance-of-payments disturbances. In other words, this study is not a general investigation of trade-offs among targets or of the over-all allocation of policy instruments. It is designed specifically to observe reactions to imbalances of payments; other policy targets are admitted only as a means of ascertaining, and possibly explaining, the existence of certain reactions or their absence.

3. The Analytical Method

The basic information on which the analysis will rest consists of quarterly data (adjusted for seasonal variations, where these are found). Quarters have been selected, rather than months, for a number of reasons. Some data, mainly in the fiscal sphere but also on the balance of payments, are usually available quarterly but rarely on a monthly basis. Even when monthly data are available, their use and manipulation would be highly cumbersome. Moreover, an important consideration is the presumption that monthly data may reflect a strong element of chance, erratic variations, whereas the aggregation of data into quarters helps in smoothing out these random fluctuations.

While the quarter is the basic unit for data compilation, the study of interrelationships among variables *within* each quarter could hardly be of great significance. The quarter is an arbitrary dissection of

the continuum of time. Changes in policy variables could easily be due to movements of the policy targets in the previous quarter, or even in still earlier periods. If these movements should change direction often from one quarter to another, observations of relationships would be very likely to yield misleading results.

In recent years, a few attempts have been made to construct a "reaction function" for various policy instruments by regression analysis, using forms of distributed lags to take account of the problem just cited.[3] While an approach along these lines is conceivable, the extremely large measure of experimentation which would have been required for each country, among other things, would make this a much too ambitious undertaking for the present study. It would, by its character, also have one major drawback for the study's purposes: it would cram the information about policy reactions into a single measure, without distinctions among chronological periods or between periods of upward and downward disturbances in the balance of payments.

Moreover, the explicit intention of the present study is to provide *qualitative,* rather than quantitative, inferences about policy reactions. Thus, for instance, the investigation will seek to learn whether the discount rate is raised or lowered (or not changed at all) at times of balance-of-payments deficits, rather than how much it changes in response to a deficit of a given size.

As a device for suggesting hypotheses about policy reactions, subperiods of imbalances of payments are first distinguished. The unit of observation for a study of policy reactions to balance-of-payments dis-

[3] See G. L. Reuber, "The Objectives of Canadian Monetary Policy, 1949–61: Empirical 'Trade-offs' and the Reaction Function of the Authorities," *Journal of Political Economy,* April 1964, pp. 109–132; and William G. Dewald and Harry G. Johnson, "An Objective Analysis of the Objectives of American Monetary Policy, 1952–61," in Deane Carson (ed.), *Banking and Monetary Studies,* Homewood, Ill., 1963, pp. 171–189. A study devoted specifically to the length of the time lags which are involved in policy reactions (as well as the lags between the taking of policy measures and their impact upon the economy) is Albert Ando, E. Cary Brown, Robert M. Solow, and John Kareken, "Lags in Fiscal and Monetary Policy," in *Stabilization Policies,* Commission on Money and Credit, Englewood Cliffs, N.J., 1963, pp. 1–163. Interesting information about the time lags in policy reactions is contained in another recent study, reflecting opinions about policy processes in approximately the same countries which are investigated in the present study. See E. S. Kirschen *et al., Economic Policy in Our Time,* Amsterdam, 1964, particularly Tables X.2 to X.5, pp. 274–276.

turbances is the time period during which the balance of payments is continuously in deficit, or continuously in surplus. The term "continuously" should be interpreted in a liberal way: a divergence in the direction of movement which occurs for a rather short time should not be regarded as starting a new period, but as a random discrepancy which may be disregarded. Needless to say, any such dissection of time into periods involves some element of arbitrariness in determining precisely the points at which each period starts and terminates, but this element will most often be rather slight.

The statistical investigation starts, then, with the observation of relationships among movements of policy and target indicators within each period. Had these periods been of very short duration, this procedure would hardly have been justified, for the same reasons that apply to observations of individual quarters: the movement of policy variables in any period is as likely to be a reaction to movements of target variables in earlier periods as to developments of the current one. Usually, however, the units of observation are considerably longer. Periods defined in the way suggested here normally last from two quarters to a number of years.

It may be assumed that when periods are of that length, policies within each period are normally a reaction to developments within the period rather than earlier. If this assumption is valid, an observation of concurrent changes in target and instrument variables would, indeed, reveal causal effects of target changes on policies. It must be recognized, however, that this is an assumption which, while probably reasonable, is supported more by casual observations, statements of policy makers, and general beliefs than by any firm analysis. Moreover, the procedure adopted here would be justified only if it could be assumed that policy measures do not have a great enough immediate impact on the target to reverse the direction of change which originally gave rise to the policy action: if this is not so, associations of changes in target and policy variables are more likely to reveal the effects of policies on targets than those of targets on policies. In other words, this procedure requires that the "inside lag" (or "recognition lag") be materially shorter than the "outside lag." There can, of course, be no assurance that this assumption is generally valid; and it must be recognized that whenever it does not hold true, the outcome of the

present procedure may be doubtful. A related, somewhat similar, problem will be discussed later in this chapter.[4]

Where balance-of-payments disturbances follow a pattern approximating cyclical movements, this method of establishing relationships among variables will be complemented by the reference cycle analysis developed for the study of business cycles.[5] In this case, the turning points in the balance of payments will serve as the "reference

[4] The time-lag problem is touched upon in the aforementioned studies of Nurkse and Bloomfield. Both used annual data (and the year as a unit of observation) to analyze the relationship between two variables: the central bank's domestic assets and its foreign assets. Thus Nurkse wrote: "Our observations relate to yearly intervals. It is possible that domestic assets may be adjusted in the same direction as changes in international assets, not immediately, but with a lag of more than a year, in which case the year-to-year figures might conceal a process of adjustment taking place on the traditional lines. A lag in the process of adjustment is, after all, natural. Suppose an expansion of domestic credit gets under way in some country; the central bank's domestic assets increase while its international reserve is likely to fall, thus 'offsetting' part at least of the rise in domestic assets. It may be only after some time—say two or three years—that the central bank is 'pulled up short' by the fall in its international reserve and that it may feel obliged to start contracting its domestic assets; and this contraction, again, may go on for two or three years and is likely to be accompanied by a return flow of gold and exchange reserves. In both the expansion and the contraction phase, domestic and international assets may thus move in opposite directions from year to year, and yet the 'rules of the game' may operate, albeit with a lag." (*International Currency Experience,* pp. 68–70.)

Similarly, Bloomfield said: "The period of a year that is the basis of our comparison is essentially an arbitrary one that may conceivably conceal the fact that domestic assets *did* move more frequently in the same direction with international assets than in the opposite direction, but with a lag of more than one year." *Monetary Policy,* p. 50.

Nurkse and Bloomfield were worried by the possibility that central banks reacted with a lag of a few years. From all available evidence, this does not seem to be a matter of grave concern. Normally, central banks would probably react within a fairly short time—certainly, it could be expected, less than a year. If they do not, this would be an indication not of a slow machinery of response but of an intentional policy, which should by no means be described as following some "rules" with a time lag. Nurkse himself appears to suggest as much, in the sentence just following those quoted: "It is not always easy to draw the line between such delayed adjustment and deliberate neutralization with a view to avoiding adjustment." (*International Currency Experience,* p. 70.)

A much more important reason for the inadequacy of the use of annual data would seem to me to be that a period as long as a whole year is most likely to contain movements in opposite directions (in each variable) rather than a uniform movement, and the averaging of these movements must detract seriously from the validity of the investigation. Observations based on annual averages and on the year as a unit of investigation are thus likely to be of a limited significance. The only case in which this is less important is where the dominant movements took the form of rather long cycles, with a considerable number of years within each stretch of the cycle.

[5] See Arthur F. Burns and Wesley C. Mitchell, *Measuring Business Cycles,* New York, National Bureau of Economic Research, 1947, particularly Chapter 2.

dates." In principle, this method should yield essentially the same conclusions as that of observing subperiods of disturbances, since each such subperiod will be approximately—although not precisely—a phase of the reference cycle. This additional method of investigation may help in revealing the degree of consistency of each relationship. It may also uncover typical time lags between disturbances and reactions, when such typical lags exist.

Conclusions derived from these observations would, to repeat, be tentative. If an instrument (or policy) variable appears to move consistently in the direction required for balance-of-payments adjustment, it will be necessary to test whether this association may not be due to the consistent association of balance-of-payments fluctuations with the movements of another target variable, with which the changes of the instrument variable on hand are genuinely associated. Also, when instrument variables are seen not to move consistently with the balance of payments, or even to move consistently in a direction opposite to the requirements for balance-of-payments adjustment, this will require explanation. A few complementary methods of investigation will be used to deal with these problems. Thus the possibility of an association of the movements of an instrument variable with those of an alternative target variable will be examined by looking at the latter during periods of a uniform movement of the former. This may also be done through the reference cycle analysis in two ways: first, by taking as reference dates the turning points in the movements of the policy *instrument* and examining movements of alternative target variables during these cycles; second, by determining reference dates according to turning points in the movement of a *target* variable and observing the movements of instrument variables along these cycles.

Isolating periods in which the latter targets and balance-of-payments equilibrium called for opposite policies would, of course, make it easier to distinguish reactions to balance-of-payments disturbances from responses to changes in other targets. Unfortunately—for this purpose, but not for policy makers!—the number of such episodes of clear conflict has been rather small in the countries represented in the present report. Although the small number of such cases observed prevents a formal separate investigation of these episodes, special attention will usually be drawn to them.

The combined use of all these methods should yield answers to

the following questions: Which policy instruments were used for balance-of-payments adjustment? Which were not, or were even manipulated in an opposite way to balance-of-payments requirements? Why were the latter not used for balance-of-payments purposes; that is, what other policy targets might have prevented the use of these instruments for balance-of-payments requirements? The analysis should also be able to show consistent differences among chronological periods in each country; or consistent differences—if they exist—between periods in which a correction of downward disturbances is called for and periods in which upward disturbances had to be corrected.

By the nature of the study, the relationships revealed cannot usually be completely and definitely established. The number of observations in each country—recalling that the unit of observation is a period of more or less monotonic disturbances—is necessarily small. It may typically be not more than ten or twelve, and very often be considerably less. The conventional methods of verifying the significance of apparent relationships would thus be of very little help in the present instance.[6] Statements of conclusions must, then, involve an element of judgment, and findings would have to be treated as plausible implications of the evidence rather than as unchallengeable truths. But that is, in varying degree, the nature of any empirical proposition.

A further elaboration of a few details in the techniques of analysis, and a description of various shorthand symbols, will be found in the chapter devoted to the experience of Japan (Chapter 3). The reader is advised to refer to the study of Japan as, in part, an extension of the present exposition of methods.

4. *Adjustment Policies: Individual Variables and Policy Patterns*

In examining the policy reactions to imbalances of payments, a judgment must be made as to whether a given change in a policy variable is "adjusting"—that is, whether it has the nature of working toward relieving the imbalance—or, on the contrary, "disadjusting." This judgment has to be made on two different levels.

First, it may be asked whether the change in the policy variable, *in*

[6] This refers also to the test of "indexes of conformity," which is used in cyclical analysis. See the warning, *ibid.*, pp. 183–185.

and by itself, has an impact in an adjusting direction: if it does it will be termed "adjusting." Thus, when there is a downward disturbance any change which tends to reduce aggregate demand or lower prices is an "adjusting" change; this would include an increase of the discount rate, an increase of minimum-reserve ratios, a decline of central or commercial bank credit, and so on. Terming such a change "adjusting" does not necessarily imply that the entire process of which this change is a part will have an adjusting effect. For instance, the discount rate may be raised, but demand for commercial bank credit may increase too, swelling credit volume and thus augmenting the balance-of-payments disturbances; however, without the change in the discount rate, the deterioration would have been even stronger, and this is, therefore, an "adjusting" change in the discount rate.

Second, the pattern of behavior of the whole array of instruments combined must be evaluated. Within this framework, what was termed an "adjusting" change before may not be and vice versa. In other words, when the over-all pattern is examined, attention is focused on the magnitude of some crucial variable. If this variable changes in an adjusting direction, the policy pattern as a whole is adjusting. A change in another variable which was found to be disadjusting when examined in isolation may still be consistent with the adjusting change in the crucial variable. To cite a simple example: Suppose the crucial variable is deemed to be money supply; this variable could change in an adjusting direction even though credit supply—which is only one of the factors which create money—changes in a disadjusting direction. The disadjusting nature of the movements of credit supply, *when judged by themselves,* may then still be consistent with the adjusting nature of the monetary policy. Judging the pattern as a whole would thus require focusing attention on the "crucial" variable or variables. This, indeed, whether explicitly or implicitly, has always been the way adjustment policies have been analyzed.

It may be worthwhile to discuss one particular pattern at some length due to its historical importance and its potential for analysis: this is the model which came to be known as the "rules of the game" of the gold standard. The books of Ragnar Nurkse and Arthur I. Bloomfield, which are often quoted and referred to in the present study, assume a certain definition of these "rules" in their examination of the degree of adherence of central banks to the gold-standard

"rules of the game." The definition was provided by Nurkse; Bloomfield seems to have followed it as a matter of convenience and for the purpose of comparability, although he does not appear to regard it as an exclusive definition.[7] Nurkse defined the "rules of the game" in the following way:

> Whenever gold flowed in, the central bank was expected to increase the national currency supply not only through the purchase of that gold but also through the acquisition of additional domestic assets, and similarly, when gold flowed out, the central bank was supposed to contract its domestic assets also. In this way the influence of gold movements on the domestic credit base was to be magnified, and magnified in accordance with the central bank's reserve ratio.[8]

The "crucial" policy variable is, by this definition, the magnitude of the central-bank's domestic assets. Only a few would be likely to accept this definition in the extreme form in which it appears here. The last sentence implies that the "rules" require central banks to maintain a constant reserve ratio, i.e., of their foreign assets to their liabilities (this would also imply a constant ratio of the central bank's foreign assets to its domestic assets). While central banks were very often—particularly before 1914—legally required to maintain reserve ratios in one form or another, these were merely *minimum* requirements. Central banks were not bound by law to treat these ratios as maximum ratios as well, and there are no indications that they regarded a stable (rather than a minimum) reserve ratio as a guideline for their policy. Apparently, Nurkse himself did not consider this part of his definition essential, since there is no mention of the banks' reserve ratios in his empirical examination of the behavior of central banks.

But even deleting the last sentence from the quotation in question, this definition does not seem to be very useful. Three grounds may be offered to justify a definition of the "rules": (a) that this definition was used explicitly by central bankers, or was commonly accepted during the period under consideration; (b) that the definition, while not being used in an explicit way, was implied by other principles which

[7] "The concept of the rules of the game, which, incidentally, was first developed in the *post*-1914 literature—indeed, as far as I know, the term itself was first used by Keynes in the early twenties—admits of several possible interpretations and has been used in several senses." (Bloomfield, *Monetary Policy*, p. 47.)

[8] Nurkse, *International Currency Experience*, p. 66.

are known (or believed) to have been followed by policy makers; or (c) that the definition is empirically found to have served as a guideline for policy actions during the relevant period.

Let us now examine the definition in question on these grounds. It does not seem to be justified by the first criterion: the evidence offered by eminent students of the classical gold-standard period suggests that central bankers did not explicitly use such a definition, nor was it commonly accepted or understood by them. On the last ground, Nurkse's definition would have to be rejected on the basis of his own evidence as well as that of Bloomfield. Nurkse himself found that the "rules" were not actually followed in policy making in the interwar years and Bloomfield found that they were not followed in the "classical" period either. We are left, thus, with the second ground. On this ground the definition in question should again be rejected, and an alternative definition could be formed along the following lines.

The accepted principle of central banking during the classical gold-standard era was, presumably, the maintenance of a stable international financial system; that is, a system free from (major) shifts in foreign exchange rates and any form of state interference in the conduct of international transactions. Such a system cannot be viable if countries lose all their gold and foreign exchange reserves. Any movement of reserves from one country to the other would thus have to be checked before the losing country's reserves are depleted. According to the theory of the day this was to be accomplished by two factors: (1) the "price-specie-flow" mechanism; and (2) the effect of interest rate variations on international short-term capital movements. The proper functioning of the latter factor would require the manipulation of discount rates (or open-market operations) in an adjusting direction. The operation of the former mechanism would require that the reserve-losing country experience a downward movement of its money supply, and the gaining country an upward movement. In Nurkse's words: "The gold standard, or indeed any system of stable exchange rates, is a system in which the quantity of money in each country is determined primarily by the balance of payments." [9] It is an open question, however, how much the money supply should change in each country. The more it changes, the faster the adjust-

[9] Nurkse, *International Currency Experience*, p. 67.

ment process will be. But certainly no one would expect this rule to require a rapid approach of the money supply to zero in the losing country, and to infinity in its partner. Even the most orthodox holders of the view that money is but a "veil" were probably aware of the difficulties created by changes in money supply, at least beyond a certain point or pace. There must be, therefore, some "proper" change (or rate of change) of the money supply. And there is no reason to suppose that this "proper" magnitude is necessarily proportionate to the change in foreign exchange reserves. Moreover, where foreign exchange reserves are considerable in relation to money supply, it may well be that a change of a given proportion in these reserves will in itself, by its direct effect, change money supply more than the central bank may deem proper for the necessary adjustment. In this situation, the central bank may act to offset part of this direct effect without feeling that it in any way violates some "rules of the game." The implication for the discount rate, however, is still clear. Since the end result for the reserve-losing country should be some fall of the quantity of money, interest rates must rise. Raising the discount rate serves this purpose and is particularly efficient where (as in the classical case of Britain) other interest rates traditionally follow discount rate movements directly and immediately.

If this view is accepted, the "crucial" variables become money supply and the discount rate, rather than domestic assets of the central bank. In the light of these remarks, it may be rewarding to examine the issue of "automatic stabilization," to which Nurkse paid much attention. He commented:

> Whenever an inverse correlation is observed between a central bank's international and domestic assets, it may be quite wrong to interpret it as a deliberate act of neutralization on the part of that bank. It may well be due to the bank's inaction rather than to its action. An inflow of gold, for instance, tends to result in increased liquidity on the domestic money market, which in turn may naturally lead the market to repay some of its indebtedness to the central bank. The balance-sheet of the bank will show an increase in gold and a decrease in domestic discounts and advances, and so the gold movement will have been neutralized at least in part, even though the bank may have been completely passive. Similarly, an outflow of gold, tending to reduce the funds available to the market, may be partly offset by an increase in borrowing from the central bank on the market's initiative. Even to prevent domestic assets from changing in this way whenever gold flows in or out, would require

definite action by the central bank either through changes in the terms of its lending or through sales or purchases of securities designed to offset the automatic responses in the market's indebtedness to the bank. To make domestic assets change in a manner *parallel* to changes in the international reserve would obviously demand a still greater degree of activity on the part of the central bank. Failing such action, "automatic neutralization" may tend to be the rule rather than the exception.[10]

According to the interpretation of the "rules of the game" previously suggested, it no longer follows that the "rules" not only require the central bank to act to offset this tendency of the commercial banks but even to effect "a still greater degree of activity." In certain instances, where the direct decline in the economy's liquidity due to the fall of foreign exchange reserves is regarded as too small for the proper functioning of the price-specie-flow mechanism, such activity would indeed be required. In other instances, the "rules" may induce the central bank to offset only part of the "automatic neutralization." In still other cases, no offsetting by the central bank may be required at all. Moreover, if the direct decline of money supply is deemed larger than "proper," the central bank may even be directed by the "rules" to encourage some creation of money from domestic sources; that is, the central bank may be called upon not only not to offset the "automatic neutralization" of commercial banks, but even to act on its own initiative in the same direction, so that an expansion of commercial bank credit would *partly* offset the effect of the fall of foreign exchange reserves on money supply.

It is thus clear that, following this interpretation of the "rules of the game," the attempt to examine compliance with the "rules" by observing correlations of movements of domestic and foreign assets of the central bank would have to be abandoned. When foreign assets fall, the "rules"—according to this interpretation—would generally accept either an increase or a decline of the central bank's domestic assets. All that the "rules" require is that the quantity of money decrease in the reserve-losing country and interest rates rise; and vice versa in the gaining country.[11]

[10] *Ibid.*, p. 70.

[11] For comments along roughly the same lines see R. Triffin, "National Central Banking and the International Economy," *Review of Economic Studies*, No. 36, 1946–47, pp. 53–75, particularly pp. 54–58.

The classical "rules of the game" have been discussed here in some detail mainly because the mode of behavior prescribed by them may still be expected to play a large role in policy making of central banks. But it is, of course, entirely possible that other models serve as a guide for policy. Thus, it is possible that the government may regard just the discount rate, or just money supply as a crucial variable, and not both. It may even disregard both, and attach crucial importance to the availability of credit; or it may pay little attention altogether to purely monetary variables and rely primarily on manipulation of the government's excess demand. While the present study does not intend to discuss the merits of such alternative models—either on a priori grounds or on the basis of the experience investigated—it will consider what model, or what variable, assumed to be crucial, could explain any consistent pattern of reactions which may be revealed.

The investigation of each individual country will thus consist of a discussion on two levels. First, each policy variable will be examined separately to see if, by itself, it reveals any consistent adjusting behavior, or the opposite. Then, by way of summary and interpretation, the observations of individual instruments will be combined to see whether they imply any typical pattern of reactions, and whether this pattern may be expected, in accordance with any reasonable model, to be of an adjusting nature. These discussions of individual countries will be preceded in each case by a section which will indicate, on the basis of prior information, what the major instruments used in the country are and the specific attributes of each instrument in that country, where this seems necessary for an understanding of the policy mechanism.

5. Selection of Policy Instruments

The selection of policy instruments, or variables, for observation will depend on the circumstances of each country. Differences in structure, law, and tradition lead to the use of different instruments in different countries. Here, statements of policy makers and of other analysts may be helpful as guidelines for experimentation. If, for instance, the magnitude of "secondary liquidity" is claimed to be of concern to the central bank of a certain country, this magnitude may be investigated

in the study of that country; in another country this variable would be ignored, but the yield of government debt instruments might be studied; and so on.

In addition to having been judged, from prior information, to offer some promise of relevance, policy instruments will have to meet two criteria to be included in a systematic study. First, they must be subject to at least rough quantification. This requirement rules out certain policy instruments which are used for balance-of-payments adjustment. Direct control of imports is an important example: although these restrictions (and their relaxation) have often been used to affect the balance of payments, a quantitative measure of this variable is hard to come by, and this instrument will be ignored. This is true also of tariff duties: the size of individual duties can usually be verified, but calculations of "average" tariff levels are rare and of doubtful validity.

The other criterion which policy instruments must meet to be included is that of continuous and systematic use. Since the purpose of the study is to reveal a pattern—or even a change in pattern over time—policies which belong to just one episode must be omitted even if they can be quantified. Thus, for instance, if measures such as intervention in the forward exchange market or taxing capital movements were applied for a very few years of the total period, they cannot be the subject of a study of a general policy pattern.

It will be clear, then, that the present study by no means purports to describe and analyze the full array of instruments and measures used for balance-of-payments adjustment. It will attempt a systematic analysis only of policy instruments whose size can be measured and which have been used frequently, rather than in single episodes. In fact, as has been stated earlier, this means the major monetary and fiscal instruments which are intended primarily to affect aggregate demand. The present study is thus confined to analyzing the use of financial policies for balance-of-payments adjustment.[12] During most of the period studied, however, these policies were probably the most

[12] To use the terminology recommended by Machlup, the study covers, by and large, the instruments used for "real adjustment," to the exclusion of instruments used for "compensatory corrections." See Fritz Machlup, "Adjustment in International Payments," in Baldwin *et al., Trade, Growth, and the Balance of Payments* (Essays in Honor of Gottfried Haberler), Amsterdam, 1965, pp. 185–213.

important instruments used for balance-of-payments adjustment in the countries in question.

A few instruments are common to most of the countries under investigation. These include the following: the discount rate, reserve-ratio requirements, open-market operations, central bank lending to the commercial banks, central bank lending to the government, central bank total domestic claims, commercial bank lending to the public, the money supply, government revenues, government expenditures, and the government's budgetary balance. Most of these variables require no comment; but some may deserve a few words of explanation.

Central Bank Lending to the Government.[18] This magnitude is calculated on a *net* basis; that is, it represents the size of the net indebtedness (either positive or negative) of the government to the central bank—derived by subtracting government deposits at the central bank from its borrowing from the bank. Central bank credit to the government increases the amount of liquidity in the economy only when it is net lending. Suppose the government is granted a loan from the bank but does not make any use of the receipts of its borrowing. This would be reflected in an increase in the government's deposits at the central bank equivalent in size to the loan. The loan does not affect the economy's liquidity at all; and this fact would be truly reflected in the size of the government's net indebtedness to the central bank, which would remain unchanged. To cite another example: the economy's liquidity would be affected in exactly the same way whether the government finances a given amount of spending by a loan from the central bank or by drawing upon existing deposits at the central bank. Again, the government's net indebtedness to the bank would be increased in exactly the same amount by these two alternative methods. These examples demonstrate the general point that the contribution of the government's transactions to the liquidity of the banking system should be measured not by the gross term but by the amount of *net* central bank lending to the government.

[18] When used in a general way, the term "government" will refer, in this study, to all official policy-making agencies; specifically, it will include the central bank. But in discussions of the central bank vs. the "government," the latter should obviously be interpreted in a narrower way—excluding the monetary authorities.

Purchases of government securities by the central bank in the open market would increase the amount of the government's gross and net indebtedness to the bank, while sales in the open market would reduce it. The effect on commercial bank liquidity is, indeed, identical whether the central bank purchases a newly issued government bond direct from the government—provided the latter spends the proceeds—or whether the bank buys in the market an existing government bond. Where the central bank is in effect committed to buy government securities from commercial banks, on given terms—as, for instance, in the U.S. before the "accord" of 1951—there may indeed be little meaning in separating the effect of open-market operations from that of direct transactions between the central bank and the government. In other instances—the U.S. since the early 1950's is probably a classic example—open-market operations are clearly decided upon at the discretion of the central bank and are used as an important instrument of monetary policy. In these instances, open-market operations would be recognized as a separate variable, while changes in the government's net indebtedness to the central bank would exclude variations in the amount of government paper at the central bank which are due to open-market operations.

Central Bank Total Domestic Claims. Changes in this variable are usually primarily a combination of changes in three other variables which are recorded separately: central bank lending to the commercial banks; central bank lending to the government; and open-market operations. But they may also reflect other components, such as central bank lending to the public (other than commercial banks). It should also be noticed that, in line with the previous argument, central bank lending to the government appears in this total on a *net* basis. The "total" of domestic claims is thus a hybrid in which some components are gross while one is net.[14]

[14] As was mentioned in the preceding section, Nurkse and Bloomfield attached primary importance to this variable of the central bank's total domestic claims in their studies. They took into account gross, rather than net, claims of the central bank on the government. The gap between the gross and net magnitudes may not have been of major importance frequently; but at least in one instance, for France in the late 1920's, it must have been significant according to Nurkse's own evidence. Nurkse noted, on this occasion: "To the extent that neutralization occurred through the growth of government deposits at the central bank, it cannot, of course, be observed from a mere comparison of the Bank's international and domestic assets." (*International Currency Experience,* p. 77.)

The Government's Revenues, Expenditures, and Budgetary Balance. In the fiscal sphere, the major policy tool which one might expect to be employed for purposes of balance-of-payments adjustment is probably an over-all (surplus or deficit) balance of the budget. This may best be discussed in terms of the government's "excess demand" for goods and services.[15] An increase in the government's excess demand—whether an increase in a deficit, a reduction of a surplus, or a shift from a surplus to a deficit—is a contribution to the economy's aggregate demand, and thus an inflationary measure; and a reduction of excess demand is the opposite. The investigation will thus examine not the position of the government's balance (i.e., whether it is a surplus or a deficit) but the *direction of change* in the balance from one period to the other.

It may also be interesting to look separately at the changes in government revenues and government expenditures. If the government does manipulate its excess demand in reaction to balance-of-payments disturbances, this observation may show which tool is used for that purpose; that is, whether it is mainly revenues which are changed or expenditures, or possibly the two in opposite directions or different proportions.

In a statistical study of this type, it is inevitably the *ex post* realized movements of each policy variable which are taken into account. These movements may, however, differ from the *ex ante* changes—the realized movement is not necessarily identical with the one intended by the policy maker. This difficulty almost certainly increases in importance with the complexity of the process by which the policy variable in question is brought into play.

Monetary variables differ as to the directness with which they can be manipulated by the monetary authority. On the one hand, such variables include instruments which are controlled directly and precisely by the authority, like the discount rate, minimum-reserve requirements, or open-market operations. On the other hand, they in-

[15] The "excess demand" is the excess of the government's expenditures on goods and services over those of its revenues which reduce the public's disposable income. In effect, the expenditures include very often loans to other organizations (whether private or nationalized), the case for whose inclusion as an element in the government's "excess demand" is not clear. Also, the data actually used refer to cash budgets, while the use of accrual budgets—had they been available—might be argued to be more appropriate.

clude a variable such as money supply, which is affected by the monetary authority only through a complex and long drawn out chain of reactions. It is continuously affected by exogenous, autonomous changes, not all of which are immediately taken into account. In between are variables such as components of the central bank's assets, or the supply of credit, which are at various stages of remove from the direct action of the monetary authority. It may be debated at what stage a variable is too little affected to be an "instrument" in monetary policy.[16] The advantage of examining variables at different levels, as in the present study, is that it makes possible an analysis, as has been explained in the preceding section, which is not tied in advance to the investigation of one specific model.

This problem may be even more relevant for budgetary policies: the identification of realized, *ex post* magnitudes with *ex ante* policies might well be questioned. Thus a realized reduction in the govern-

[16] Challenged by a similar problem of determining what could be instruments of monetary policy, Kareken and Solow stopped somewhat earlier on this road. They argue: "It is not true, except in some irrelevant long-run sense, to say that the Federal Reserve controls either M [money supply] or its rate of change. What the Federal Reserve can do is buy and sell in the open market, set reserve requirements, and set the discount rate. A little less directly . . . we may say that the authorities control the effective primary reserves of the commercial banks . . . and at one further remove we may say that the measure of monetary policy is the power of the banking system to carry earning assets. This is what the monetary authorities do. They do not move a pointer on a dial marked M or even ΔM." (John Kareken and Robert M. Solow, "Lags in Monetary Policy," Part I of "Lags in Fiscal and Monetary Policy," *Stabilization Policies*, pp. 17–18.)

Later, however, the authors state: "Why stop, though, with the assumptions (or attributions of knowledge) so far suggested? Why stop, that is, with Max E [maximum earning assets of commercial banks] as the instrument variable? Why not continue making assumptions until the ultimate policy variables, the price level, the rate of unemployment, etc., emerge as the instrument variables of the Federal Reserve? Above it was suggested that the System can be regarded as knowing how the direct determinants of total member bank reserves are themselves determined, and as being able to predict future values of the arguments of these functions which it does not set. But then why not assume in addition that the System knows member banks' demand for excess reserves, in which case it can be regarded as setting actual as well as maximum earning assets. And with a few more assumptions, the system can be regarded as setting the price level.

"Evidently, there is no basis in logic for stopping at one point rather than another—for making certain assumptions rather than others . . ." (*Ibid.*, p. 81).

Indeed, with no basis in logic, the definition of instruments or the "assumptions" we make may change from time to time and from one country to another. As stated in the text, an advantage of always considering instruments on various "levels" is that it imposes fewer restrictions, by an investigator, on the assumed mode of behavior of the policy maker.

ment's excess demand in this investigation represents a contractive policy, and a realized increase, an expansionary policy. It may be argued that this is a particularly dubious procedure in this sphere; that, for instance, when the government undertakes an expansionary policy—say, by reducing tax rates without changing expenditures—the ensuing expansion may lead to a budgetary surplus through its effect on the amount of tax revenues. Identifying a budgetary surplus with a contractive policy would be entirely misleading in this instance.

Such a contradiction between intended and realized budgetary balance—due merely to induced changes rather than to autonomous changes in exogenous variables—would not be possible under the "textbook" assumptions of multiplier analysis. Specifically, it would not be possible when *ex ante* investment is held constant, or even assumed to be a function of income. Under different assumptions, however, this contradiction is conceivable. It could be produced, for instance, by an "acceleration principle," or by assuming investment to be a function of *tax rates,* whether in general or certain corporate tax rates.

Ideally, the anticipated budgetary balance should have been used rather than the realized balance. However, this cannot be achieved in practice. At best, estimates of this magnitude are available for a fiscal year as a whole; even then, they do not necessarily reflect fully the anticipations of policy makers. Estimates of planned budgets would be of only little use for the purpose of this study. It is hoped that the adoption of budgetary performance as a substitute for expected budgetary magnitudes will not bias the results seriously. This hope may be justified when the periods of observation are not unduly long—say, not more than a year or a year and a half. Within short periods, changes induced by measures taken during the period may be expected to be slight in comparison with the primary changes. Thus, the danger that realized magnitudes will give indications contrary to those of intended policies is probably small when the period is short. When partial, circumstantial evidence on the government's intentions is available, this information will be indicated.

Unlike the monetary area, the study of fiscal policy is confined here to the "ultimate" variables. It considers the government's over-all balance in its budget; one step below, it observes the two components of the budget—revenues and expenditures. But there it stops. It does not

analyze the means by which each of these components is, in turn, affected—means which could well be considered policy variables in their own right. This treatment of the fiscal area results from the practical limitations of the investigation. It is easy to tell how the discount rate or the minimum-reserve ratio were changed during a given period. It would be immensely more difficult to say how the "tax rate" changed. This "tax rate" is some weighted average of a myriad of individual tax rates, many of which may move in opposite directions in a given period and certainly in different proportions. Even the study of entire categories of these rates, e.g., excise duties or income taxes, would be extremely complicated. A component such as the personal income tax would in itself raise serious problems: it is a whole structure, not all parts of which may move always in the same direction. In a study of the present scope, any attempt to observe such "partial" variables in a systematic manner must be abandoned.

It may seem odd that the foreign exchange rate, which is presumably a major policy instrument among balance-of-payments adjustment policies, is not mentioned among the policy variables in this study. The reason for this is, of course, quite simple: in the countries and during the period under investigation, changes in foreign exchange rates were almost entirely absent. These changes were confined to a few episodes in France and one each in Germany and the Netherlands and offer no basis for systematic analysis. The present study is thus defined beforehand, in practice, as an investigation of balance-of-payments adjustment policies under fixed exchange rates.

The important exception to this pattern in the Group of Ten is Canada, which had a fluctuating rate during most of the period. Although the study of Canada promises to be of considerable interest in its own right, Canada's deviation from the general pattern makes it less useful as an ingredient in international comparisons and a study of international policy patterns. For this reason, Canada has been excluded from the present study.

6. Identification of Balance-of-Payments Disturbances

Since the study's purpose is to identify and examine the reactions of governments to balance-of-payments disturbances through their policy measures, the variable or variables which would be required,

ideally, to indicate disturbances are those which serve this purpose in the decision making process of the government concerned. The lack, however, of direct information about these "ideal" variables makes it necessary to substitute the researcher's judgment for that of the government concerned and to experiment with alternative variables. Since circumstances vary from one country to another, there should be no attempt to determine a single exclusive principle for identifying disturbances in all the countries studied. Where no particular special circumstances are apparent, however, it would be a good rule to stick as closely as possible to commonly accepted principles of identifying disturbances, since these are likely to be adhered to by the government concerned. It should be obvious from these remarks that it may be necessary to experiment with more than one definition or principle, even in the case of a single country.

The variable which appears to be the simplest, most easily observed, and most frequently available, is the country's external reserves. An upward movement of these reserves would indicate an upward disturbance, or a "surplus"; while a downward movement would be a downward disturbance, or a "deficit." The category selected to represent this variable is that of gross official reserves. The definition of this series usually includes holdings of gold and of foreign exchange by the central bank or government plus the net IMF position.

Holdings of foreign exchange by commercial banks, on the other hand, are probably not usually counted by the government as part of the reserves for the purpose on hand. Before the era of convertibility, banks in most countries were normally allowed to hold abroad only necessary working balances. In later years, commercial banks have presumably been guided by their own initiative and considerations in determining the amount of their foreign exchange holdings. They do not act as agents of the central authorities; their holdings (and indebtedness), and changes in them, are thus presumably disregarded in the government's identification of imbalances of payments.[17] Yet when commercial bank holdings are substantial, it may be worthwhile to experiment with including them in the country's reserves, for the purpose of determining episodes of balance-of-payments disturbances. In

[17] This approach is similar to that taken for the United States by the Bernstein Committee. See Report of the Review Committee, *Balance of Payments Statistics of the United States: A Review and Appraisal*, Washington, D.C., 1965, Chapter 9.

the countries covered by the present report, this inclusion seemed, usually, to affect the analysis very little.

Another series which has been experimented with is that of balance-of-payments surpluses and deficits as defined by the Balance-of-Payments Division of the International Monetary Fund.[18] It covers the period from 1958 onward, and uses the "official settlements" concept: "A surplus or deficit is defined as the balance of all transactions other than 'official settlements' (i.e., excluding changes in official gold and foreign exchange assets, in net IMF positions, and in liabilities to foreign monetary authorities, and adjusted for advance repayments of foreign debt by governments). The over-all surplus or deficit so defined is equal to the basic balance, unrecorded transactions, and all movements of short-term capital, excluding only those that constitute official settlements." [19] This definition thus includes not only changes in a country's reserves but also changes in its liabilities to foreign monetary authorities and advance repayments of foreign debt by governments. The two series usually demonstate a very high degree of agreement in direction of imbalances, and most often also in their intensity, during the period covered by the two (that is, from 1958 onward).

In some cases, it may be advisable to experiment with still other variables. For instance, a government may view only an imbalance of the current account as a "disturbance," while disregarding movements on capital account. If this is suspected, the representation of disturbances by deficits or surpluses on current account may be rewarding.

Still another variable which may have to be taken into account is the *level* of reserves. A situation may occur where the government wishes to see a change in reserves—an accumulation or, probably much less often, a reduction. The government would not then consider any change in reserves as a "disturbance" but any discrepancy between the desired level of reserves and their actual level; or, in other words, a change not commensurate with the change desired by the government. The determination of a "desired level" is, of course, not an easy task. When the level of reserves has been constant over the long run, it may be assumed that a shortfall of reserves below this level could be considered a downward disturbance even when reserves

[18] This information was kindly provided by the Division.
[19] *International Monetary Fund,* 1965 Annual Report, p. 66.

are rising (from a particularly low level), and vice versa. When reserves domonstrate a long-term movement, some form of determining their trend would be required, and the assumption that the "trend level" is the desired one may be attempted.

Most of the experiments that could be made will probably not be required. Two guidelines will help to indicate the need for experimentation: first, an explicit statement of policy makers, or of other analysts, that a certain variable is used to measure balance-of-payments disturbances—in which case the variable in question would merit an investigation; second, a lack of definite conclusions when the simple variable of foreign exchange reserve holdings is analyzed.

The problem arising from the substitution of *ex post* for *ex ante* magnitudes, which has been pointed out in the discussion of policy variables, is just as relevant to the definition of targets in general, and to the specific target of balance-of-payments equilibrium. The study investigates relationships among *realized* movements of variables. *Anticipations,* on the other hand, are entirely absent from this examination. In the government's "reaction function," manipulations of policy variables will in effect be related to the present stock and the anticipated, future flow of each magnitude that represents a target variable. Past flows enter into the function only as a factor which affects these two. The statistical investigations can, in principle, take account of present stocks; this will indeed be done as has just been mentioned: the level of foreign exchange reserves will be introduced whenever it seems to be a promising addition to the analysis. Anticipations, on the other hand, are replaced by the statistically observable flows which, in relation to each point of time in which a policy measure is undertaken, have either taken place in the past or will have been realized in effect in the future. This is certainly not a perfect substitute, but it is probably the best available. A conceivable alternative would be to construct each government's "anticipation function," and derive from it anticipated values for the target variables. This procedure might possibly be attempted, but it is certainly not feasible in this study.

If it is found that the government does not react to "disturbances" in the balance of payments in a way which would adjust them, this could be the result of either of two factors. First, the government may refrain from an adjustment policy because the policy would have, in

the government's judgment, an undesirable impact on other targets. And second, the government may be indifferent to the so-called disturbance or may even actually welcome it. The double meaning of the term "disturbance" should therefore be clarified. As used in this study, "disturbance" does not necessarily indicate that the government so regarded the development in question. The attempt to achieve a certain level of reserves, which has just been mentioned, is an important illustration of this point. If a level of reserves higher than the existing one is considered a target, then not an accumulation of reserves but its absence would be regarded, by the government, as a "disturbance." It should therefore be emphasized that the use of this term does *not* necessarily imply an expression of the government's view: on the contrary, one of the outcomes of the study could be, to identify what the government actually considered a disturbance by examining the government's policies. Yet, it is just as important to keep in mind that the study is intended to draw inferences for the international monetary system as a whole. For the latter, the accumulation of reserves by one country may be a "disturbance" even if it is not so regarded by that country. And it is, therefore, imperative to learn how that country reacted to such "disturbances."

7. *Alternative Policy Targets*

Policy targets may be of various kinds and shades, but most of them could certainly not be identified without intensive study. It would obviously not be feasible to try to secure information about all of these targets; and for the present purpose such an attempt would probably be unrewarding even if it were feasible. As explained earlier, other target variables were introduced in this study mainly to determine whether a policy pattern which appears to be a reaction to imbalances of payments can be explained instead by their movements. While the number of such explanations could be very large, it seems that the observation of a few "global" targets which are generally considered to share with the balance of payments a claim on some of the same policy instruments would go a considerable way toward satisfying the requirements of such an examination. These targets are maintenance of price stability, maintenance of full employment, and the achievement of a high, steady rate of growth.

The observation of the first two targets is relatively simple. The indexes of consumer prices and of wholesale prices appear to be used most often as indicators of movements of the general price level. Usually, although not always, these two indexes will yield similar results, particularly as far as substantial price movements are concerned. This is also true about measurements of unemployment. Although series such as registered unemployment and the number of unemployed projected from labor force surveys may differ significantly when absolute levels are concerned, indicated directions and intensities of changes will be largely similar.

The statistical representation of the target of the rate of growth is more complicated. This is, by its nature, a longer-term target. A measurement of developments during a given period will inevitably reveal the effect of (1) changes in the economy's productive resources and the productivity of these resources—which is, presumably, what the target of "growth" refers to—and (2) the rate of utilization of existing capacity, in which the rate of employment, considered as a separate target, is of crucial importance. The separation of actual performance into these components would clearly be beyond the scope of a study of this kind. The rate of growth will therefore have to be measured by some summary indication of the current performance of the economy, despite the limitations just noted.

Conceptually, the best available yardstick for measuring the economy's over-all performance would probably be the rate of increase of GNP (or NNP—the difference between the two will usually be slight). For a number of reasons, however, a measure conforming better to the purpose of this study is the rate of increase of industrial production. In the first place, it is usually available within a fairly short time, unlike the GNP estimates, which in most countries are available only with a considerable time lag. It may thus be assumed that, for the purpose of determining their short-term policies, governments which have this measurement available at the relevant time regard it as indicating the growth rate. The government may justly feel that this use is not likely to be very misleading, since industrial production is itself a major component of the national product in the countries concerned. Even aside from the advantage of being readily accessible, industrial production data often attract particular attention. Industrial production is more susceptible to the effects of short-term governmental poli-

cies—and reflects them better—than do other economic activities, and in particular those of the agricultural sector. Likewise, the industrial sector is often assigned a particularly heavy weight, e.g., in comparison with the services sector, by governmental observers. For these reasons, the index of industrial production will usually represent the growth target in the present study.

Beyond the problem of what statistical series best represent the various target variables, the question of how these series should be interpreted must be raised. It must be assumed that a given change (or position) of a series indicates a desirable movement (or level) for the target on hand; while another position is undesirable and calls for correction. The number of possible assumptions, i.e., of possible modes of governmental views, may again be very large. Thus, where the price stability target is concerned, any increase in the price level (measured, for example, by the consumer price index) may be regarded as a disturbance which should be corrected. But if a general upward trend of prices exists, it is possible that a price increase no greater than the average is not a source of concern; or that faster increases are not considered a disturbance as long as the price level is below its "trend line"; or, as still another possibility, that only increases in the rate of increase of prices are considered disturbances. A similar variety of models is conceivable when unemployment is examined. When the rate of unemployment is high in comparison with its average level, and rising, this would certainly be considered a disturbance. It is not clear, however, how a situation in which unemployment is high but falling would be regarded; or, to take the opposite combination, how a situation of low but rising unemployment should be treated. The same ambiguity holds when the growth target is examined. A situation where industrial production is both below its "trend line" and falling would, almost certainly, be regarded as a disturbance. The answer is not clear, however, when the rate of increase is above average, but production is still below its trend level, or when the rate of increase is falling, but production is above its trend level; and so on.

It would be next to impossible to try to examine all such possibilities. In any case, it should be recalled that the study does not purport to investigate *all* the possible targets, and cannot therefore be exhaustive. For this reason, only very few models of reaction will be

examined. In general, it will be assumed that price stability is contravened when prices rise more rapidly than in recent experience; that the target of high employment is contravened by an increase in unemployment; and that a decline in the rate of increase of industrial production (and, needless to say, a negative rate) indicates a deterioration of the target of rapid growth. In the countries which have been investigated, it appears from casual observation that other reasonable models would most often have given similar indications about the timing of disturbances. In some cases where these indications are clearly contradictory, this will be taken into account informally. However, it should again be emphasized that it cannot be claimed that the result of this procedure is based on an exhaustive and definitive study of all reasonable possibilities. It is limited, as has been stated earlier, to the examination of a very limited number of the simplest, and probably most obvious, among these possible models.