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Source: *Staff Papers (International Monetary Fund)*, Mar., 1962, Vol. 9, No. 1 (Mar., 1962), pp. 70-79

Published by: Palgrave Macmillan Journals on behalf of the International Monetary Fund

Stable URL: <https://www.jstor.org/stable/3866082>

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# The Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability

Robert A. Mundell\*

**T**HIS PAPER deals with the problem of achieving internal stability and balance of payments equilibrium in a country which considers it inadvisable to alter the exchange rate or to impose trade controls. It is assumed that monetary and fiscal policy can be used as independent instruments to attain the two objectives if capital flows are responsive to interest rate differentials, but it is concluded that it is a matter of extreme importance how the policies are paired with the objectives. Specifically, it is argued that monetary policy ought to be aimed at external objectives and fiscal policy at internal objectives, and that failure to follow this prescription can make the disequilibrium situation worse than before the policy changes were introduced.

The practical implication of the theory, when stabilization measures are limited to monetary policy and fiscal policy, is that a surplus country experiencing inflationary pressure should ease monetary conditions and raise taxes (or reduce government spending), and that a deficit country suffering from unemployment should tighten interest rates and lower taxes (or increase government spending).<sup>1</sup>

## The Conditions of Equilibrium

Internal balance requires that aggregate demand for domestic output be equal to aggregate supply of domestic output at full employment. If this condition is not fulfilled, there will be inflationary pressure or recessionary potential according to whether aggregate demand exceeds

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<sup>1</sup> This possibility has been suggested, and to a limited extent implemented, elsewhere. See, for example, De Nederlandsche Bank N.V., *Report for the Year 1960* (Amsterdam, 1961).

or falls short of, respectively, full employment output. It will be assumed here that, during transitory periods of disequilibrium, inventories are running down, or accumulating, in excess of desired changes, according to whether the disequilibrium reflects a state of inflationary or recessionary potential.

External balance implies that the balance of trade equals (net) capital exports at the fixed exchange parity. If the balance of trade exceeds capital exports, there will be a balance of payments surplus and a tendency for the exchange rate to appreciate, which the central bank restrains by accumulating stocks of foreign exchange. And likewise, if the balance of trade falls short of capital exports, there will be a balance of payments deficit and a tendency for the exchange rate to depreciate, which the central bank prevents by dispensing with stocks of foreign exchange.

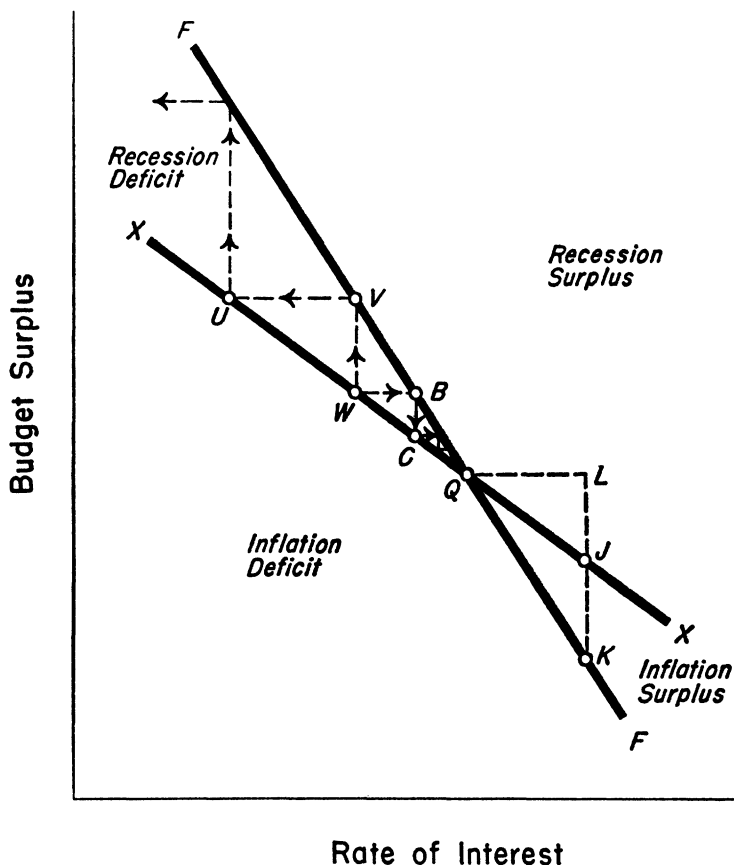
In what follows it is assumed that all foreign policies and export demand are given, that the balance of trade worsens as the level of domestic expenditure increases, and that capital flows are responsive to interest rate differentials. Then domestic expenditure can be assumed to depend only on fiscal policy (the budget surplus) and monetary policy (the interest rate) at the full employment level of output. The complete system can thus be given a geometric interpretation in the two policy variables, the interest rate and the budget surplus<sup>2</sup> (Diagram 1).

In the diagram, the *FF* line, which will be referred to as the "foreign-balance schedule," traces the locus of pairs of interest rates and budget surpluses (at the level of income compatible with full employment) along which the balance of payments is in equilibrium. This schedule has a negative slope because an increase in the interest rate, by reducing capital exports and lowering domestic expenditure and hence imports, improves the balance of payments; while a decrease in the budget surplus, by raising domestic expenditure and hence

<sup>2</sup> The assumptions could be made less restrictive without detracting from the generality of the conclusions. Thus, an assumption that capital imports directly affect domestic expenditure, as in theoretical transfer analysis, would tend to reinforce the conclusions. Even the (plausible) assumption that, in addition to capital flows, capital indebtedness is responsive to the rate of interest (to take account of the "stock" nature of much of international floating capital) would not change the conclusions, although it may affect the quantitative extent of the policy changes required.

Notice, however, that I have implicitly assumed away strong "Pigou" effects, speculation on international markets that is related to the size of the (positive or negative) budget surplus, forward rate movements that more than offset interest-rate-differential changes (an unlikely occurrence), and concern about the precise composition of the balance of payments; the last assumption may mean that the method of achieving equilibrium suggested below is desirable only in the short run.

DIAGRAM 1



imports, worsens the balance of payments. Thus, from any point on the schedule an increase in the rate of interest would cause an external surplus, which would have to be compensated by a reduction in the budget surplus in order to restore equilibrium. Points above and to the right of the foreign-balance schedule refer to balance of payments surpluses, while points below and to the left of the schedule represent balance of payments deficits.

A similar construction can be applied to the conditions representing internal balance. The *XX* line, or "internal-balance schedule," is the locus of pairs of interest rates and budget surpluses which permits continuing full employment equilibrium in the market for goods and services. Along this schedule, full employment output is equal to

aggregate demand for output, or, what amounts to the same condition, home demand for domestic goods is equal to full employment output less exports. There is, therefore, only one level of home demand for domestic goods consistent with full employment and the given level of exports, and this implies that expenditure must be constant along  $XX$ . The internal-balance line must therefore have a negative slope, since increases in the interest rate are associated with decreases in the budget surplus, in order to maintain domestic expenditure constant.

Both the internal-balance and the foreign-balance schedules thus have negative slopes. But it is necessary also to compare the steepness of the slopes. Which of the schedules is steeper?

It can be demonstrated that  $FF$  must be steeper than  $XX$  if capital is even slightly mobile, and by an amount which depends both on the responsiveness of international capital flows to the rate of interest and on the marginal propensity to import. The absolute slope of the internal-balance schedule  $XX$  is the ratio between the responsiveness of domestic expenditure to the rate of interest and the responsiveness of domestic expenditure to the budget surplus. Now, if it is assumed for a moment that capital exports are constant, the balance of payments depends only on expenditure, since exports are assumed constant and imports depend only on expenditure. In other words, if capital exports are constant, the slope of  $FF$  also is the ratio between the responsiveness of domestic expenditure to the rate of interest and the responsiveness of such expenditure to the budget surplus. Therefore, apart from the effects of changes in capital exports, the two slopes are the same. It is then possible to see that the responsiveness of capital exports to the rate of interest makes the slope of  $FF$  greater in absolute value than the slope of  $XX$ .<sup>3</sup>

Consider, for example, what happens to an initial situation of over-all equilibrium at  $Q$  as this equilibrium is disturbed by an increase in the rate of interest equal to  $QL$ . Because of the higher rate of interest, there would be deflationary pressure and a balance of payments surplus at the point  $L$ . If the budget surplus is now lowered, the deflationary pressure can be eliminated at a point like  $J$  on the internal-balance schedule. But at  $J$ , expenditure is the same as it was at  $Q$ , and this means that imports, and hence the balance of *trade*, must be the same as at  $Q$ . The balance of *payments* is therefore in

<sup>3</sup> Both the absolute and relative values of the slopes depend on the particular fiscal policy in question. The discussion in the text applies to income tax reductions because that instrument tends to be neutral as between home and foreign spending. The conclusions would be strengthened or weakened, respectively, as the particular fiscal policy was biased toward or against home goods; the more the change in the budget surplus results from a change in spending on home goods, the greater is the difference between the slopes of  $XX$  and  $FF$ .

surplus at  $J$  because of capital imports attracted by the higher rate of interest; this makes necessary a further reduction in the budget surplus in order to bring the balance of payments again into equilibrium. It follows, then, that the point  $K$  on the foreign-balance schedule is below the point  $J$  on the internal-balance schedule, and that  $FF$  is steeper than  $XX$ . It can then also be concluded that the absolute difference in slopes is greater, the more mobile is capital (because this causes a larger external surplus at  $J$ ) and the lower is the marginal propensity to import (because this necessitates a larger budget deficit to correct any given external surplus).<sup>4</sup>

In Diagram 1, the two schedules separate four quadrants, distinguished from one another by the conditions of internal imbalance and external disequilibrium. Only at the point where the schedules intersect are the policy variables in equilibrium.

## Two Systems of Policy Response

Consider now two possible policy systems determining the behavior of fiscal policy and monetary policy when internal and external balance have not been simultaneously achieved. The government can adjust monetary policy to the requirements of internal stability, and fiscal policy to the needs of external balance, or it can use fiscal policy for purposes of internal stability and monetary policy for purposes of external balance.

It will be demonstrated first that the policy system in which the interest rate is used for internal stability, and fiscal policy is used for external equilibrium, is an unstable system. Consider, for example, a situation of full employment combined with a balance of payments deficit, represented by the point  $W$ . To correct the deficit by fiscal policy, the budget surplus must be raised from that indicated by  $W$  to that given by  $V$ . At  $V$  there will be equilibrium in the balance of

<sup>4</sup> The assumption that imports depend only on expenditure, while the latter depends partly on the rate of interest, means that imports are affected by the rate of interest, although the *share* of imports in expenditure is not. This assumption could be relaxed without fundamentally altering the results, although an exception—remote in practice but possible in theory—does arise, if import goods are highly responsive to the rate of interest while home goods are not, capital flows are only slightly responsive to the rate of interest, and the marginal propensity to buy imports is high relative to the marginal propensity to buy home goods. Under these conditions, it is possible that  $XX$  may be steeper than  $FF$ . More formally, then, it is necessary to limit the present conclusions to countries in which the ratio of the effect of budget policy on the balance of payments to its effect on domestic excess demand is less than the ratio of the effect of the interest rate on the balance of payments to its effect on excess demand.

payments, but the increased budget surplus will have caused recessionary pressure. If now the threatening unemployment is to be prevented by monetary policy, the rate of interest must be lowered from that indicated by *V* to that described by *U*. But at *U* there is again a balance of payments deficit, which in turn necessitates a further increase in the budget surplus. The process continues with the interest rate and the budget surplus moving ever further from equilibrium.<sup>5</sup>

To show formally that the system is unstable, it is sufficient to note that the payments deficit at *U*, after the first round of policy changes, exceeds the deficit at *W*. This is evident since it is known that the balance of *trade* at *U* and *W* is the same but, because of the lower rate of interest, the balance of *payments* at *U* is worse. It follows that this type of policy reaction is unstable.

On the other hand, the opposite type of policy response is stable. Suppose that the authorities adjust the interest rate to correspond to the needs of external equilibrium and adjust fiscal policy to maintain internal stability. Then from the same disequilibrium point *W*, the rate of interest would be raised to *B*, thereby correcting the external deficit. But the tendency toward unemployment generated by the restrictive credit policy must now be corrected by a reduction in the budget surplus or increase in the budget deficit. At *C* there is again internal balance and a balance of payments deficit, as at *W*. But it is now possible to see that the deficit at *C* is *less* than the deficit at *W*. This follows, as before, because the balance of *trade* at *C* is identical with that at *W* but, since the rate of interest is higher at *C*, the balance of *payments* deficit must be less. The system is therefore stable.

The diagrammatic argument can be absorbed at once when it is realized that at *W*—or anywhere in the quadrant representing a deficit and recession—the interest rate is lower, and the budget surplus is higher, than is appropriate to the over-all equilibrium at *Q*. The use of fiscal policy for external balance, and monetary policy for internal balance, drives the interest rate and budget surplus further away from equilibrium, while the alternative system moves the instruments closer to equilibrium.

The same argument applies to an initial disequilibrium in the opposite quadrant, representing inflationary pressure and external surplus. To restore equilibrium, the interest rate must be reduced,

<sup>5</sup> It need hardly be mentioned that the demonstration of instability in this instance (or of stability in the subsequent analysis) is not dependent upon the particular assumption that the government corrects imbalance first in one sector and then in the other, an assumption which is made only for expositional convenience. The conclusions follow, for example, even if the authorities simultaneously adjust fiscal and monetary policies.



and fiscal policy must be made more restrictive. Only if monetary policy is used for the external purpose, and fiscal policy for the internal purpose, will correction of the disequilibrium automatically ensue.<sup>6</sup>

In the other two quadrants, monetary and fiscal policies will be moving in the same direction under either system of policy response, because both tighter monetary policy and an increased budget surplus correct inflationary pressure and external deficit, and both easier monetary policy and a reduced budget surplus tend to alleviate recession and external surplus. The distinction between the two policy systems appears less important in these phases of the international trade cycle; it nevertheless remains, since inaccurate information about the exact location of the point *Q* could propel the situation into one of the quadrants involving either recession and deficit or inflation and surplus.<sup>7</sup>

## Conclusions

It has been demonstrated that, in countries where employment and balance of payments policies are restricted to monetary and fiscal instruments, monetary policy should be reserved for attaining the desired level of the balance of payments, and fiscal policy for preserving internal stability under the conditions assumed here. The opposite system would lead to a progressively worsening unemployment and balance of payments situation.

The explanation can be related to what I have elsewhere called the Principle of Effective Market Classification: policies should be paired with the objectives on which they have the most influence.<sup>8</sup> If this principle is not followed, there will develop a tendency either for a cyclical approach to equilibrium or for instability.

<sup>6</sup> Even if the authorities do not wish to pair instruments and targets, they can use the information provided by the analysis to determine the relation between *actual* policies and *equilibrium* policies. Thus, situations of deficit and recession imply that the budget surplus is too high and the interest rate is too low, while situations of surplus and inflation imply the opposite. In this manner, appropriate policies can be determined by observable situations of target disequilibria.

<sup>7</sup> The system can be generalized for a two-country world by assuming that the other country adjusts fiscal policy to maintain internal stability. The only difference in the conclusion is that the conditions of dynamic stability of the adjustment process are slightly more restrictive, requiring that the marginal propensities to import be, *on the average*, no greater than one half; this is the usual assumption necessary to rule out any "reverse transfer" that is due to policies affecting expenditure.

<sup>8</sup> "The Monetary Dynamics of International Adjustment Under Fixed and Flexible Exchange Rates," *Quarterly Journal of Economics*, Vol. LXXIV (1960), pp. 249-50.



The use of fiscal policy for external purposes and monetary policy for internal stability violates the principle of effective market classification, because the ratio of the effect of the rate of interest on internal stability to its effect on the balance of payments is less than the ratio of the effect of fiscal policy on internal stability to its effect on the balance of payments. And for precisely this reason the opposite set of policy responses is consistent with the principle.

On a still more general level, we have the principle that Tinbergen has made famous: that to attain a given number of independent targets there must be at least an equal number of instruments.<sup>9</sup> Tinbergen's Principle is concerned with the *existence* and location of a solution to the system. It does not assert that any given set of policy responses will in fact lead to that solution. To assert this, it is necessary to investigate the stability properties of a dynamic system. In this respect, the Principle of Effective Market Classification is a necessary companion to Tinbergen's Principle.

## RESUME

Cette étude traite des problèmes que pose la réalisation de la stabilité intérieure et de l'équilibre de la balance des paiements dans un pays qui estime inopportun de modifier le taux de change ou d'imposer des systèmes de contrôle des échanges. On suppose que la politique monétaire et la politique fiscale peuvent être utilisées indépendamment pour atteindre ces deux objectifs si les flux de capitaux sont sensibles à l'écart entre les taux d'intérêts, mais on aboutit à la conclusion que la manière dont les politiques sont assorties aux objectifs revêt une extrême importance. Plus précisément, il est prouvé que la politique monétaire doit être fondée sur les objectifs extérieurs, et la politique fiscale, sur les objectifs intérieurs, et que toute inobservance de cette règle peut aggraver le déséquilibre au-delà de ce qu'il était avant l'introduction de changements de politique.

Cette théorie, lorsque les mesures de stabilisation ne comprennent que la politique monétaire et la politique fiscale, a pour conséquences pratiques qu'un pays excédentaire subissant une pression inflationniste doit alléger les conditions monétaires et augmenter les impôts (ou réduire les dépenses du Gouvernement), alors qu'un pays déficitaire souffrant du chômage doit relever ses taux d'intérêt et abaisser les impôts (ou augmenter les dépenses du Gouvernement).

<sup>9</sup> J. Tinbergen, *On the Theory of Economic Policy* (Amsterdam, 1952).

L'explication de ce résultat peut être liée à le *Principe de la Classification Effective des Marchés*: les politiques doivent aller de pair avec les objectifs sur lesquels elles ont la plus forte influence relative. Si ce principe n'est pas appliqué, il se manifestera une tendance vers un mouvement indirect, voire un mouvement instable des variables. L'utilisation de la politique fiscale à des fins extérieures et de la politique monétaire en vue d'assurer la stabilité intérieure constitue une infraction à ce principe car l'effet du taux d'intérêt sur l'équilibre intérieur, par rapport à son effet sur la balance des paiements, est moindre que l'influence de la politique fiscale sur l'équilibre intérieur par rapport à son influence sur la balance des paiements. Pour des raisons analogues, la combinaison inverse de ces politiques préconisée dans les conditions restrictives indiquées ici, est compatible avec le principe.

A un niveau encore plus général, on trouve le principe de Tinbergen, d'après lequel, pour atteindre un nombre donné d'objectifs, il faut au moins un nombre égal d'instruments. Le principe de Tinbergen s'attache à l'existence et à la détermination d'une solution au système. Il ne prétend pas qu'une série donnée de mesures aboutira en fait à cette solution. Pour soutenir ceci, il y a lieu d'examiner de façon approfondie les caractères stabilisateurs du système dynamique proposé. Dans cette perspective, le *Principe de la Classification Effective des Marchés* accompagne nécessairement le principe de Tinbergen.

## RESUMEN

En este estudio se trata de los problemas inherentes a la consecución de la estabilidad interna y del equilibrio de la balanza de pagos de un país que no considera oportuno modificar su tipo de cambio, o imponer controles al comercio. Se da por sentado que la política monetaria y la fiscal pueden usarse como instrumentos autónomos para lograr los dos objetivos, siempre que los movimientos de capital respondan a los márgenes diferenciales de las tasas de interés, pero se señala que es asunto de extrema importancia aparear la política con los objetivos. Se demuestra especialmente, que la política monetaria debe basarse en objetivos externos y, la fiscal, en objetivos internos y, que el descuido en seguir esta recomendación, puede empeorar aun más la situación de inestabilidad que existía antes de implantar cambios en la política.

La conclusión práctica de la teoría es que cuando las medidas que se toman para lograr la estabilización se limitan a la política monetaria y a la fiscal, aquellos países con superávit, que atraviesan por un periodo de presión inflacionista, deben aflojar las condiciones monetarias y subir los impuestos (o reducir los gastos fiscales), mientras que un país deficitario, con problemas de desempleo, debe aumentar las tasas de interés y disminuir los impuestos (o incrementar los gastos fiscales).

La explicación de este resultado puede relacionarse con el *Principio de Clasificación Efectiva de Mercados*: las políticas que se adopten deberán asimilarse a aquellos objetivos sobre los que ejercen una influencia relativamente mayor. Si no se siguiera este principio, existiría la tendencia hacia un movimiento indirecto y aun inestable de las variables. El empleo de la política fiscal para fines externos y, de la política monetaria, para la estabilidad interna, infringe este principio, porque el efecto de las tasas de interés en el equilibrio interno, comparado con el que ejercen sobre la balanza de pagos, es menor que el efecto de la política fiscal sobre el equilibrio interno, comparado con el que ejerce sobre la balanza de pagos. Por razones análogas, la combinación alternativa de estas políticas que se propone en las condiciones restrictivas aquí señaladas, armoniza con dicho principio.

En un plano aún más amplio está el principio de Tinbergen, que para lograr un número dado de objetivos debe existir, al menos, un número igual de instrumentos. El principio de Tinbergen se relaciona con la existencia y ubicación de una solución al sistema; no mantiene que un conjunto dado de medidas de política habrá de conducir, de hecho, a dicha solución. Para hacer esta aseveración, es necesario investigar los atributos de estabilidad del sistema dinámico. Es por esta razón que el *Principio de Clasificación Efectiva de Mercados* debe necesariamente acompañar al principio de Tinbergen.