TARGETS & INSTRUMENTS OF MONETARY POLICY
AND TINBERGEN CONDITION

This e-Resources Module has been designed to further clarify students on issues relating to Monetary policy especially the conceptual base and technical terminology relating to it. One major issue arising in the context of monetary policy is whether the monetary authority has sufficient instruments of monetary control at its disposal to attain the desired set of targets. In this connection, the Tinbergen condition states that in order to achieve 'n' different policy targets, the monetary authority needs to have a minimum of 'n' different instruments of monetary control provided all policy instruments exert distinct and independent effects on all the policy target variables. It is in fact this "independence" of policy instruments required by "Tinbergen condition" that imposes the major constraint on actual monetary policy making. For, all the different instruments of monetary policy, no matter how large in number, can only affect the Aggregate Demand (AD) in an economy and have absolutely no influence over the Short-Run Aggregate Supply (SRAS). Consequently, the monetary policy is ineffective in attaining the twin target of real national income and price-level. But this problem can be resolved in the short-run, if the monetary policy is supplemented by fiscal policy since the latter is capable to shift the SRAS curve rightwards by lowering the marginal tax rate. In the long-run, however, the real national income target is unattainable since the Long-Run Aggregate Supply Curve typically tends to be vertical by its very nature.

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Monetary policy essentially constitutes the attainment of policy targets by the monetary authority with the help of policy instruments. One major issue that arises in this context is whether the monetary authority has sufficient instruments of monetary control at its disposal to attain the desired set of targets of monetary policy.

In this connection, the well-known economist Jan Tinbergen had established way back in 1952 that in order to attain 'n' distinct policy targets, the monetary authority must have *at least* 'n' distinct policy instruments exerting "independent" influence on the target variables. What this essentially implies is that in order to achieve 'n' different policy targets, the monetary authority needs to have a minimum of 'n' different instruments of monetary control provided all policy instruments exert distinct effects on all the policy target variables. It is in fact this **independence** of policy instruments required by "Tinbergen condition" that poses as the major constraint in actual monetary policy making.

For instance, let us suppose that at the short-run equilibrium point 'e' as defined by the intersection of Short-Run Aggregate Supply Curve SRAS with the Aggregate Demand Curve AD, an economy has y_e and P_e as the respective levels of real national income '**y**' and price level '**P**' as shown in Figure-1.

Evidently, if the monetary authority wishes to attain the twin target of real national income y_f along with the price level P_f, then it is quite clear from Figure-1 that it is possible if and only if, the Aggregate Demand Curve is shifted from AD to AD_1 whereas the Short-Run Aggregate Supply Curve is shifted from SRAS to $SRAS_1$.

Now, as there are only two policy targets *viz.*, real national income and price, therefore according to Tinbergen condition just two policy instruments should suffice to attain them. On the face of it, this appears to be a cakewalk since monetary authority invariably has more than two instruments of monetary control at its disposal such as Open Market Operations, Bank Rate Policy, Changes in Statutory Cash Reserve Requirement (CRR), changes in Statutory Liquidity Requirement (SLR) etc.

But on closer examination, we find that Tinbergen condition also requires that all these policy instruments shall exert 'distinct' and 'independent' influence on the target variables. This however is a more *stringent* condition which is not met in the sense that all the different instruments of monetary policy, no matter how large in number, can only affect the Aggregate Demand (AD) in an economy and have absolutely no influence over the Short-Run Aggregate Supply (SRAS). It is thus very clear from Figure-1 that without shifting Short-Run Aggregate Supply from SRAS to $SRAS_1$, there is no possibility of simultaneously attaining the targeted variables y_f and P_f. That is to say, *monetary policy instruments, due to their inability to have independent influence over target variables typically are not in a position to jointly attain the targets of monetary policy which is a clear-cut manifestation of the constraint posed by Tinbergen condition in monetary policy making and implementation in actual practice.*
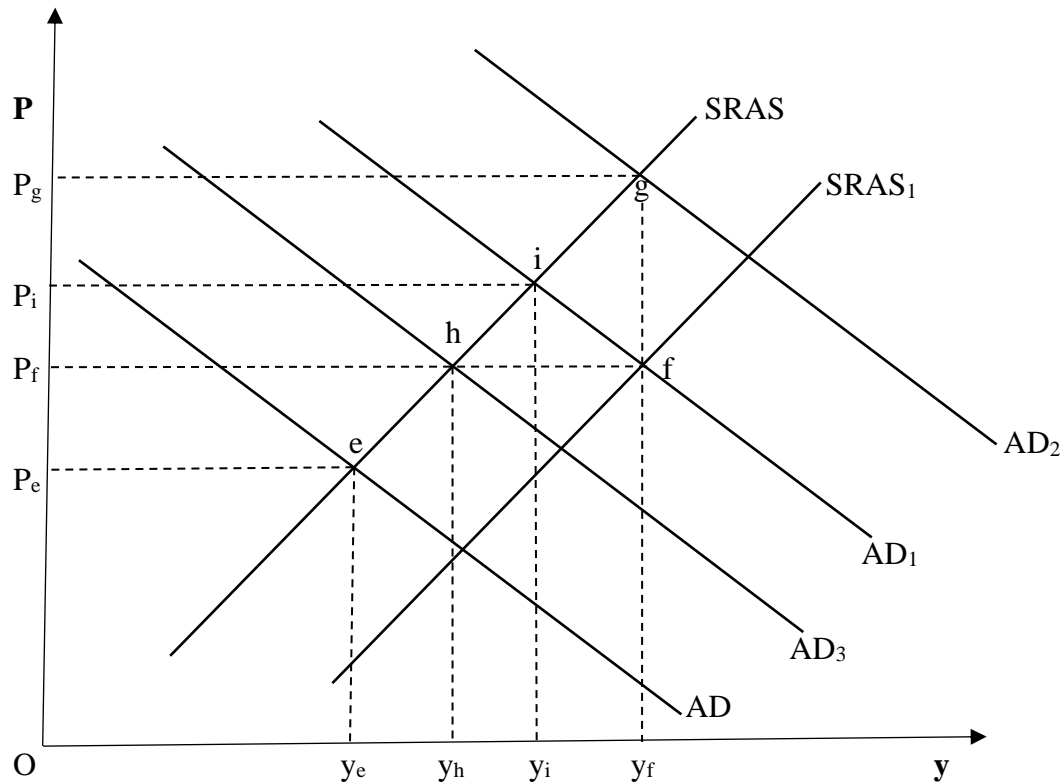
Figure-1

More specifically, in the absence of ability to shift SRAS Curve in Figure-1, if the monetary authority tries to attain real national income target of y_f, it can only be done by shifting the Aggregate Demand curve to AD_2 but consequently the price level will shoot up to P_g as opposed to the targeted level of merely P_f. Likewise, with the original SRAS curve, if the monetary authority tries to attain the price target of P_f by shifting the Aggregate Demand Curve to AD_3 through monetary policy instruments, then it is clear from Figure-1 that the corresponding real national income achieved would be just y_h which falls short of the targeted level of y_f by a large margin. It is thus clear from Figure-1 that due to the operation of Jan Tinbergen condition, the lack of independence of monetary policy instruments makes it impossible to attain real national income and price-level targets together and the moment one of the targets is achieved, the other target is missed by a large margin.

In view of this, as an effective compromise or *via media*, the monetary authority may choose an intermediate point like 'i' by shifting Aggregate Demand Curve to AD_1 in Figure-1 thereby attaining the real national income and price-level combination of y_i and P_i wherein both the targets of y_f and P_f are missed but by a relatively smaller margin.

In this context, it is worth noting that although monetary policy is ineffective in attaining the twin targets of real national income and price level due to Tinbergen condition, yet fiscal policy can help in solving this problem. For, by lowering the marginal tax rate, the fiscal policy can provide the requisite incentive in the economy to shift the Short-Run Aggregate Supply Curve

from SRAS to SRAS$_1$ in Figure-1 which in combination with the shift in Aggregate Demand Curve from AD to AD$_1$ brought about through monetary policy, can clearly attain the twin target of y$_f$ with P$_f$.

It must further be pointed out that the output or *real national income target cannot be achieved in the long-run*. This is largely because as opposed to the upward-sloping Aggregate Supply curve in the short-run, the Long-Run Aggregate Supply curve 'AS' is typically vertical as shown in Figure-2, as a result of which only price-level target can be achieved in the long-run. For instance, as is clear from Figure-2, if the price target is P$_T$ and the economy is operating at the point A, then the price target can simply be achieved by shifting the Aggregate Demand curve from AD$_A$ to AD$_T$ by increasing the money supply. Similarly, if the economy is originally operating at point B, then the price target of P$_T$ can simply be attained by lowering the supply of money thereby shifting the Aggregate Demand leftwards from AD$_B$ to AD$_T$ as is clear from Figure-2.
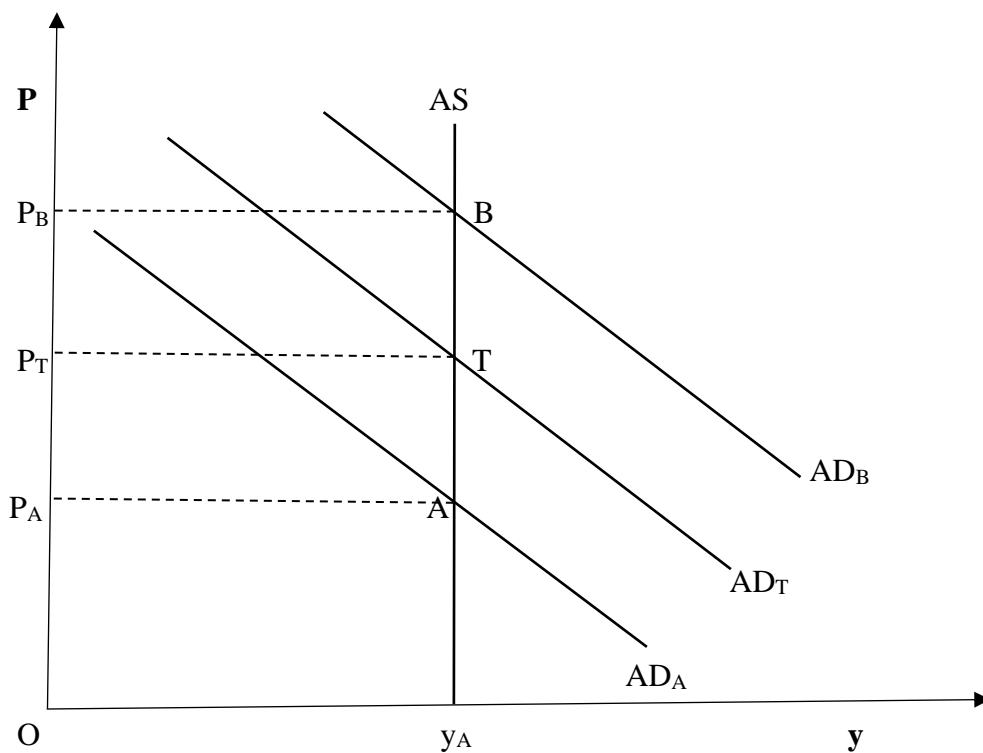

Figure-2