

In fact, his article was titled “9% + 7% is better than 6% + 4%”, Aiyar, (2007). Similarly, the Nobel Laureate Joseph Stiglitz, a frequent visitor to India and influential in policy circles, said

“In a trade-off between growth and moderate inflation, I would plump for growth” (2012).

However, the NRH, based on solid evidence, implies that we do not really have this choice. Therefore, we are better off just pursuing low inflation. Unfortunately, most policy makers and economists in India have generally not accepted this.

## 2.7 OUTPUT BASED VERSION OF THE EAPC: THE BASIC MODEL

At the root of the EAPC lie the URATE and the labour market process. However, it is convenient and often necessary for economists and policy makers to look at output based variables rather than the unemployment rate. This is certainly the case when recent or comprehensive economy wide URATE data are not available, as for India. This calls for converting the EAPC into a product market or output based version. This can be done using the Lokun coefficient to link aftOR with URATE (from Section 1.7)

Accordingly, let us build on Table 1.F, to construct the output based version of the EAPC. In addition to output variables, there will now be inflation and Nominal GDP growth. Assume:

- (a) a 3% trend growth rate and a starting output level of 200 (as in Table 1.F);
- (b) a starting inflation rate of 4% in Period A, corresponding to point F in the earlier chart.
- (c) a Phillips curve coefficient of 1 (a 1 percentage point decrease in URATE causes a 1 percentage point increase in the inflation rate)
- (d) a Lokun coefficient of 0.5, linking unemployment and aftOR, i.e., a 1% point rise in aftOR reduces URATE by 0.5% point and vice versa.

Changes in URATE, the underlying variable, drive the EAPC process. However, since aftOR is *strictly* linked to URATE, we can effectively treat aftOR as the exogenous variable, which is convenient to calculate output levels and then, growth rates. So, therefore, the ADSGAP coefficient will also be 0.5 (response of inflation to aftOR) and we can ignore URATE for the calculations. For completeness, URATE is included in the Table as the first column, since it is the underlying variable that drives the inflationary process.

The basic identity is: Growth in Nominal GDP = Growth in Real GDP + Inflation, or

$$g_Y = g_y + \pi$$

Adding real GDP growth and inflation from EAPC equation yields nominal GDP Growth. In Period B, as aftOR rises to 101, inflation rises to 4.5% based on 0.5 coefficient for ADSGAP. In Period C, ADSGAP increases to 2, with an inflation impact of 1%. Simultaneously expected inflation, based on the previous period B is 4.5%. Thus, their combined effect pushes up inflation to 5.5% in Period C. It is the sum of the ADSGAP impact term and expected inflation, i.e., last period’s inflation. So,  $\pi = 0.5 (\text{ADSGAP}) + \pi_{t-1}$ .

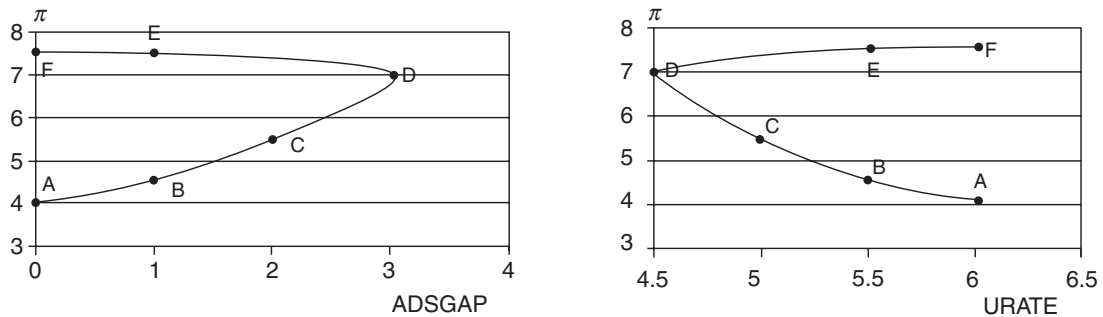
Real GDP level is then backed out from aftOR and the trend output level, namely,  $y = [y^* (\text{aftOR})]/100$ . From real GDP level, we calculate real GDP growth. Finally, nominal GDP growth  $g(Y)$  is calculated as the sum of real GDP + inflation rate. Note in this example, when the economy returns to LRE, nominal GDP growth stabilizes at 10.5%.

**Table 2.E** The Output Version of the Basic EAPC

Period	1	2	3	4	5	6	7	8	9	10
URATE = $6 - 0.5^* \text{aftOR}$ (ADSGAP)	aftOR	ADSGAP = $\text{aftOR} - 100$	ADSGAP impact on $\pi$ $0.5(\text{ADSGAP})$	Exp $\pi =$ $\pi_{t-1}$	$\pi =$ $4 + 5$	$y^* =$ $1.03(y_{t-1}^*)$	$y =$ $\text{aftOR}$ $(y^*)$	$g(y)$	$g(Y) =$ $\pi + g(y)$	
A	6.0	100	0	0	4.0	4.0	200.0	200.0		
B	5.5	101	1	0.5	4.0	4.5	206.0	208.1	4.0	8.5
C	5.0	102	2	1.0	4.5	5.5	212.2	216.4	4.0	9.5
D	4.5	103	3	1.5	5.5	7.0	218.5	225.1	4.0	11.0
E	5.5	101	1	0.5	7.0	7.5	225.1	227.4	1.0	8.5
F	6.0	100	0	0	7.5	7.5	231.9	231.9	2.0	9.5
G	6.0	100	0	0	7.5	7.5	238.8	238.8	3.0	10.5

In the table above, we can see that the economy goes through three periods (B, C, D) of 4% growth, which is higher than trend. This keeps pushing up aftOR. Then, in period E, although  $g(y)$  has fallen sharply to 1%, below trend growth, aftOR remains above 100 and the economy is still overheated. It can be seen GDP growth below trend (in Period E) does not necessarily mean negative ADSGAP.

Further, one can notice that from Period D, aftOR is falling from 103 to 101 and GDP growth has fallen by 3% pts, while inflation is rising from 7% to 7.5%. This phenomenon of weak growth and rising inflation is called stagflation. It can be seen in the charts below and will be discussed later in the book.



**Figure 2.i** Graphical Depiction of the Basic EAPC

### 2.7.1 Policy Decisions and EAPC Loops

The perceptive reader might be wondering what role, if any, policy decisions have played in the IAPC process? We have mostly taken changes in URATE and  $\text{aftOR}$  as exogenous and not spelt out the role of policy in generating this process. An economy can boom for various reasons, including autonomous changes in private investment and other types of spending. But as a practical matter, since Macroeconomic Welfare (MEW) increases when URATE falls, reduction in interest rates is a major reason for expansions and overheating. However, interest rates are outside the purview of this chapter.

Let us briefly look at how Macroeconomic Welfare is affected in the EAPC loops. From the Table below, note that,  $\text{MEW} = 100 - \alpha (\text{URATE}) - \beta (\text{INFLATION})$ , with  $\alpha = 10$  and  $\beta = 1$ . We now start with  $\pi = 4$ . It can be seen from the table below that although MEW rises in the early periods, it ends up lower in the long run at point F.

**Table 2.F** Unemployment, Inflation and Macroeconomic Welfare

Periods	A	B	C	D	E	F	G
URATE	6	5.5	5	4.5	5.5	6	6
Inflation	4	4.5	5.5	7	7.5	7.5	7.5
MEW	36	40.5	44.5	48	37.5	32.5	32.5

The MEW numerically illustrates the long-run benefits of keeping inflation low. The simplest MEW is the misery index (sum of inflation and unemployment) devised by Okun.

## 2.8 INDIA'S INFLATION TARGETING DEBATE

To summarize, our entire discussion of EAPC implies that the focus of policy should be to keep inflation low, and not try to pursue growth. This section extends beyond textbook discussion since there has been a raging debate in India. Reading through the vociferous criticism, in newspaper editorials and columns and articles, of the Urjit Patel report recommending Inflation Targeting, there is still huge lack of acceptance of the Natural Rate Hypothesis. Such vociferous criticism of the central bank for killing growth by targeting inflation has been the case for other countries as well, where inflation targeting was being considered, such as South Africa, as discussed by Vermeulen (2015).

Note that acceptance of NRH does not necessarily imply acceptance of a direct inflation targeting rule or policy as the best way to achieve the goal of low inflation (Moorthy, 2009). It can certainly be said that the RBI Inflation targeting report of January 2014 has not properly communicated to the public the robust and wide ranging evidence indicating there is no long run trade off. Nor has it theoretically explained the long run *welfare gains* from lower inflation, as done here and in the next chapter using an MEW function. Instead, it has relied on its numerous questionable econometric studies to conclude that the growth maximizing inflation rates are in the 4 to 6% range (RBI, 2014, pp. 18 and 78).