

Reply to Anonymous Invited Reader's *Comments on "The endogeneity of the natural rate of growth: an alternative approach"*

We appreciate the invited reader for bringing up some concerns regarding the contents of the manuscript. Below, we address in detail all the concerns of the reader:

The bold and blue explanations belong to the authors. The rest are the original comments of the anonymous invited reader.

This paper identifies a purported problem with previous studies that have investigated the endogeneity of the natural rate of growth to the actual rate. A solution to this problem is proposed that involves using the balance-of-payments-constrained growth (BPCG) rate rather than the actual rate of growth in the process for estimating the natural rate proposed by Thirlwall (1969).

Subsequent empirical results corroborate the finding reported in previous literature, that the natural rate of growth is, indeed, endogenous to the actual rate. I don't think that the premise of the paper is particularly well explained and, in fact, I'm not convinced that the way the authors address the problem they claim to identify is correct.

For example, the introduction of the paper begins with the question of whether we should be focusing on the proximity of the actual rate of growth to the natural rate or the warranted rate when studying the endogeneity of the natural rate. But it then drifts into discussion of "balance of payments difficulties" and using the balance of payments constrained growth rate when testing for endogeneity of the natural rate, without it being clear how (if at all) this is related to the question with which the discussion began.

In the terse discussion of Thirlwall (2001) on p.4, meanwhile, it is asserted that inflationary pressure will result when the warranted rate is less than the natural rate. But why? Are we supposed to assume that the actual rate is equal to warranted rate at this point? And even then, if the actual rate is equal to the warranted rate which is less than the natural rate, then the labor market will slacken over time (the employment rate will be falling). How is this supposed to result in inflationary pressure?

Warranted rate of growth and natural rate of growth means capacity (or capital) growth and labor growth (or effective labor if there is technological progress),

respectively. Then, if warranted rate of growth (capacity growth) is less than natural rate of growth (labor growth):

(1) This obviously points out unemployment.

(2) This points out inflationary pressure since planned investment is less than actual investment or planned savings in a Keynesian sense.

At this point we refer to a quotation from Thirlwall (2013: 19-20).

“In most developing countries, the rate of growth of the labour force in efficiency units exceeds the rate of growth of capital ($l+t > s/c_r$) because population growth is relatively high (say, 2 per cent) and labour productivity may grow at, say, 3 per cent, the natural rate of growth is 5 per cent. But the net savings ratio in poor countries is low, say, 9 per cent and the required capital–output ratio is, say, 3, which gives a warranted growth rate of $g_w = 9/3 = 3$ per cent. The natural growth rate exceeding the warranted rate has two main consequences. The first is growing unemployment of the structural variety because there is not enough capital to ‘man’ labour. The second consequence is inflationary pressure, because if the feasible growth rate is 5 per cent there are profitable investment opportunities for more saving than is planned.”

The main problem, however, arises on p.5, where the claim that γ in equation (1') is the natural rate is, in my view, simply wrong. Hence note that by definition, γ in equation (1) is the natural rate of growth. Put simply, γ in equation (1') is not the same thing and is not, therefore, the natural rate of growth. In fact it is not clear to me what (conceptually) is being measured by γ in equation (1'), but given that this term (erroneously identified as the natural rate) enters into everything that follows, I can only conclude that the paper does not succeed in testing for the endogeneity of the natural rate as claimed.

I would suggest that the authors need to fundamentally rethink what they are doing in this paper.

By definition “...the natural rate of growth must also be that rate which keeps the percentage level of unemployment (%U) constant...” Thirlwall (2013: 60). Thus the fundamental intuition in equation (1') is $\Delta\%U = 0$.

$$g = \gamma - \lambda(\Delta\%U)$$

Therefore when $\Delta\%U = 0$ it becomes $g = \gamma$ and g must equal to the natural rate of growth.

However, the question to be asked is: Is g whether the actual rate of growth or balance-of-payments-constrained rate of growth?

According to Thirlwall (2013: 60):“the natural rate of growth must also be that rate which keeps the percentage level of unemployment ($\%U$) constant because if actual growth is greater than the natural rate, $\%U$ will fall, and if the actual growth rate is less than the natural rate, $\%U$ will rise.”

The italicized phrase above is the main concern of our study. Simply, when actual growth is greater than the natural rate, if $\%U$ will not have to fall, then g does not have to be the actual rate of growth.

As we had based on Thirlwall (2001), the cases of i, ii and v are as follows, respectively, which explain recession periods: $g_w > g_n > g_b$; $g_w > g_n < g_b$; $g_w > g_b > g_n$. According to Thirlwall (2001: 86) when $g_w > g_n < g_b$ or $g_w > g_b > g_n$ economy will be in *recession period*, but the actual rate can exceed the natural rate without balance of payments difficulties arising since $g_b > g_n$. More importantly since $g_w > g_n$ is the “case of over-saving with plans to save exceeding plans to invest, and demand-deficient unemployment” Thirlwall (2001: 85), $\%U$ will rise. Thus, the main point is that the actual rate of growth is determined by balance-of payments growth; if balance-of payments growth does not constrain the actual rate of growth, the actual rate of growth can exceed the natural rate, however $\%U$ may rise.

As a critical result, when actual growth is greater than the natural rate, $\%U$ will not have to fall, it may rise, so, g does not have to be the actual rate of growth. This is our main concern.

Note that, when $g_n > g_b$ even if $g_w = g_n$ there will be unemployment since the actual rate of growth is constrained by balance-of payments and the economy cannot grow at

its capacity rate (Thirlwall, 2001: 85). Thus, again, the main point is that the behavior of the actual rate of growth is influenced by balance-of payments growth.

Therefore, the natural rate of growth must also be that rate which keeps the percentage level of unemployment (% U) constant because if balance-of-payments-constrained rate of growth is less than the natural rate, % U will rise. Note that, if balance-of-payments-constrained rate of growth is greater than the natural rate, we cannot say % U will fall, it may rise.

Consequently, our claims are that

(1) Since the behavior of the actual rate of growth is mainly influenced by balance-of payments growth, we suggest to use balance-of payments growth rather than actual rate of growth when examining endogeneity.

(2) Using the case which points out balance-of-payments-constrained rate of growth is less than the natural rate is compatible with the definition of the natural rate of growth, which emphasizes growth that keeps the percentage level of unemployment (% U) constant.

Indeed, since the U.S. economy is characterized by increasing balance of payments deficit in the relevant period, we focused on the periods in which the balance-of-payments consistent rate of growth is *below* the natural rate ($g_n > g_b$). We test the endogeneity of the natural rate of growth using the balance-of-payments-constrained rate of growth. However, we define the periods in which the balance-of-payments consistent rate of growth below the natural rate, indicating endogeneity.

References

Thirlwall, A. P.(2001), 'The relation between the warranted growth rate, the natural rate, and the balance of payments equilibrium growth rate', *Journal of Post Keynesian Economics*, 24 (1), 81–88.

Thirlwall, A.P. (2013), *Economic Growth in an Open Developing Economy*, UK: Edward Elgar.