

A NEW LOOK AT THE “HENRY GEORGE” THEOREM

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The ‘Henry George Theorem’ states that the level of Rents in a country or a given area will be equal to – or close to- the regular spending of Government in that area, so that a single tax on land (and location) – a tax that will not reduce or distort economic activity -- will raise enough to support the costs of normal government activity.

The Traditional Case

Many arguments for this have been advanced, and alleged proofs offered, starting, of course from George himself, who chiefly noted that the advances in output that gave rise to rents also depended on parallel increases in government. Rents and Government activity tended naturally to move together. But George had a further point: private growth would be faster and more reliable if government were able to deliver the public services – roads and bridges, schools and sewers, police and courts – needed to support development and markets. Moreover, government spending tended to increase land values. Taxing labor and investments would just slow down development, but taxing rents would not; the recipients of rents performed no necessary services – indeed often stood in the way. Taxing rents would provide a fund for government investment in public services. Rents should therefore be taxed to the full and the taxes spent on public investment. Government spending would then not only rise to the level of rents, if

the latter were taxed to the limit, but as it increased it would push up land values, raising rents *pari passu*.

But in fact rents were never taxed to the full; taxes on rents tended to be a part of property taxes, different in different jurisdictions, and at different times. Yet for a long time it still seemed that rents and government spending moved together and stood at roughly comparable levels. Georgist offered an argument to explain this – that public spending drove land values higher - which seemed plausible, but why was the increase in land value about the same in magnitude as the additional public spending? And what about private investment spending - did it not also drive up land values? And was it not also true that some kinds of investment– the new factory produces a smell, there goes the neighborhood! – reduced land values? Or even just deterioration. It seemed likely that many factors were involved, so the claims were not very convincing.

Economic theorists interested in the George tradition offered mathematical ‘proofs’ – building models and deriving the result that the level of aggregate rents equaled the level of Government spending. The so-called ‘proofs’, however, are neither very convincing, nor very Georgist, first because they start from an individualist neo-Classical framework, so do not capture the ideas of Henry George, and secondly, because of this starting point, make impossible assumptions, and third, are too static, often run profits and rents together, and assume that

'individuals' can make 'choices' based on information they could not possibly have.

Here is an example, a simplified version of a model by Stiglitz and others, presented step by step as it appears in several publications¹:

--It begins by assuming that the population is "optimal", which is taken to imply that the land/labor ratio is optimal. The entire exercise is concerned with the properties of a position of static equilibrium.

--Wages and investment are combined – profit as the payment for the services of capital equipment is ignored. The Ricardian inverse relation between wages and profits does not figure in the argument.

--The variables are Y = output, N = employment, G = public goods (Government), X = private goods, R = rents

--The demonstration works through simple equations as follows:

$Y = f(N) = XN + G$, from which it follows that

$X = (Y - G)/N$. Next marginal productivity is introduced

$dY/dN = X =$ 'wages'. But it is actually investment plus

consumption per worker, private goods per worker,

so

$dY/dN = (Y - G)/N$ Thus

$G = Y - XN = f(N) - f'(N)N$ But

Rent = Output – Total Private Earnings (or private goods) So

Rent = $f(N) - f'(N)N = G$

¹ See the website www.foldvary.net/ec156/week-4/hgt. Also Atkinson and Stiglitz, 1987, 523-5. Plus the article by R Arnott and J Stiglitz, 1989, In QUARTERLY JOURNAL OF ECONOMICS, 93

This is really not acceptable. Normally $Y = C+I+G$, but here it seems that $Y = X+G$, that is, output is divided between private goods, X , and public goods, G . The division of private goods between those intended for consumption and those for investment – a key determinant of the rate of growth – is not considered, in spite of the fact that the increase of rents depends on the rate of growth. But worse, if $Y = X+G$, as it must if the conclusion is correct, then $Y = (Y - G)/N + G = Y/N - G/N + NG/N$, so that $NY = Y-G +NG$, implying $N = (Y-G)/(Y-G) = 1$. What does this mean? Should we interpret $N = 1$ to designate full employment? If $N=1$, a constant, can we legitimately consider $f(N)$, and $f'(N)$?

Quite apart from these issues of internal logic, the approach is one of static equilibrium, whereas Henry George examined the *growth* of rents and government, during a process of development.

The empirical studies, however, do show that over long stretches of time, the two were fairly close², though, after World War II, it seems that Government spending came substantially to outstrip Rents, even if Rents are defined pretty widely (that is to say, to include all kinds of earnings from monopoly or oligopoly power, not just land and location and resources)³. But was that long-term closeness just an accident? Let's consider the question.

² Correspondence with Andrew Mazzone, President of Henry George School of Social Studies, 2015-16.

³ Mason Gaffney, 2009, argues that rents and land values are systematically understated, and distorted, in official statistics, and that reconceptualizing them

Rents, Demand Pressure and Taxes

The argument can be made that rents arise because of demand pressure against fixed positions – land, locations, resources – driving up prices, creating rents. Demand pressure, in turn, arises because of expansion, itself partly the result of Government. But Government development is, in turn, driven by the desire to expand the economy, which requires police and courts, schools and sewers, roads and bridges and harbors. Not to mention military preparation or science and technology. So we might consider how things might look, if, in fact, the expansion driving the rise in Rents, and the expansion driving the increase in spending by Government, were both driven by the development of private (and other, e.g. cooperative) investment.

Suppose taxes fall on income and sales, while spending goes on goods and services; it might seem that the taxes would reduce the demand pressure driving up rents. If the tax is collected before or during the

would make it possible to define new kinds of land and rent taxes that would replace many other taxes – income and sales – so that taxes on ‘land and rents’, newly understood, would be sufficient to cover today’s government spending. This position is not widely accepted, though a careful reading of Gaffney’s commentary on official reporting of Real Estate is immensely rewarding and illuminating. The problem: Gaffney shows us that undoing the distortions of ‘land and rent’ in the official figures will give us taxable concepts of both, sizeable enough perhaps to provide the necessary funds, although many disagree. But it is not at all clear that the ‘clarified’ ideas *designate what is driven by growth*. Yes, perhaps we can define ‘land and rents’ that are wide enough to provide taxes sufficient to support modern government, without creating a heavy drag on the economy, but does that concept of ‘land and rent’ designate the features of the economy whose value is driven by the Ricardian and Georgist forces defined earlier in the account of the development process?

economic activity in question, then it well might reduce demand, so that rents would not rise as much. That is to say, Growth would still drive up rents; but growth financed by taxes would drive them up less. The taxes would reduce spending – unless they were uncertain in amount and collected at the end of the period, as with many income taxes! Growth financed by borrowing, however, might be more stimulative since the funds borrowed might come from banks in a flexible monetary system;

The issue is complicated, however. Consider: suppose the initial impetus to demand is an increase of government spending to hire new employees (police, fire fighters, administrators). Assuming wages and salaries are spent on consumer goods, If this new government employment is financed by a tax on wages (or a sales tax on consumer goods) then if the tax is just sufficient to cover the additional spending, no net stimulus will be given to the economy; the tax will reduce overall consumer spending by the just the amount the new government hiring will increase it⁴. So there would be no additional pressure on fixed positions, leading rents to rise.

But if the tax is collected later – especially if it is calculated later, as with many income taxes, then it may not have as much impact on spending. In this case taxes would not have such a great effect on the impact of growth on rents. If it is financed by bonds underwritten by banks operating in a flexible monetary environment – such as we have today in the US or UK – a Government spending expansion will definitely increase overall demand, and drive up rents. (As long as there is excess capacity in the economy, expansion can take place without ‘crowding out’.) This will also be the

⁴ Actually – to nitpick a little -the net stimulative impact will also depend on the difference between the consumer spending of the new government employees, and the spending they were undertaking before, adjusted for how this was financed.

case If the Government funds its spending directly by ‘creating money’, although in this case there may be a need to ‘sterilize’ the new money in order to forestall inflationary pressures.

Of course the Georgist point is that taxes should fall wholly on rents, not on the productive economic activity that generates the pressures creating rents, and that if they did so, growth would be stronger and employment higher.

Analyzing Growth

Now consider growth from the initial period to the next period. New settlers move in, new patterns of cooperation emerge, certain locations prove highly advantageous, others have serious drawbacks, some resources are better than others, some land is easier to cultivate; in short, there are many differentials of many kinds. Those who have positioned themselves in favorable locations will benefit, either by producing at an advantage or renting their positions to other producers. So the pressures generating growth work themselves out partly by expanding economic activities – investing and building capacity, intensifying cultivation, producing more goods and services, furthering the division of labor and innovation – but also partly by paying rents and bribes for access to and use of superior locations and resources, and driving up the prices of scarce skills and specialized knowledge and tools.

$$(1 + g)Y_0 = Y_1 = C_1' + I_1',$$

where the ‘s indicate that consumption and investment, still the only two categories of goods, have been increased as a result of the pressures from growth, but not in a neat or proportional way. In fact,

$$Y_1 = C_1' + I_1' = W_1' + I_1' + R_1$$

Wages no longer equal consumption, nor profits investment. Instead the pressures of growth have led to a new category of returns to ownership – rents – which are totally ‘unproductive’. These rents accrue to the owners of the various locations, resources, etc., described above; they are deductions from wages and profits, and in the early stages will be spent on consumption goods and also on investment goods, although most analysts have tended to think that the spending of rentiers tends to be wasteful – luxury consumption. (In later stages of development, rents will be ‘invested’ not in productive facilities, but in speculation on asset values – stocks, bonds, Real Estate itself, ForEx, etc.) To represent these relationships the economic system can be set forth in the form of a model showing the wages, profits and rents accruing in each industry, along with the outputs of that industry and the price of the goods produced (Sraffa, 1960; Pasinetti, 1975; Nell, 1998, 2004). It is important to do this, to provide a check on our argument – see Appendix - but our argument does not need to draw on this full scale model. So here goes:

Growth and Rents

The size of the rents at any time – the amount of purchasing power drawn away from wages and profits - will be proportional to the rate of growth, g . Let us call α the proportionality factor; it could equal 1, so that g puts full pressure on rents, as Henry George thought; or it could be significantly less, in which case growth will increase rents, but the effect could be small or negligible. But in any case rents in any period will equal $\alpha \times g \times Y$;

$$R_i = R_{i-1} + \alpha g(Y_i - Y_{i-1}) = R_{i-2} + \alpha g(Y_{i-1} - Y_{i-2}) + \alpha g(Y_i - Y_{i-1}) = \dots$$

Redoing the numbers for the periods and rewriting,

$$R_N = R_0 + \alpha g [(Y_1 - Y_0) + (Y_2 - Y_1) + \dots + (Y_N - Y_{N-1})]$$

Rents are proportional to g , but if at any point $g = 0$, rents do not disappear; they fall to their previous level, R_{i-1} . If $g < 0$, then rents will diminish from the previous level in proportion to negative g . For the moment let us assume that g is always the same; or perhaps, that a moving average of g 's over several years is constant. Clearly then we can replace the rental term at the beginning of the RHS by the appropriate formula for rents all the way back to the beginning of the 'settlement'.

Growth or Development and Costs of Government

Now let's consider growth and development – transformational growth - as new settlers move in and find a place on the 'unbounded savannah'. With more people there can be more cooperation, and more opportunity for the separation of function and division of labor to create greater productivity and greater prosperity. But as this takes place it will require more and more public goods – roads, bridges, public health measures, police and courts, schools – to take full advantage of the possibilities opening up. Suppose new settlers arrive, and are able (with funds they brought with them, or drawing on loans from the newly emerging banks) to expand cultivation, opening new lands. This additional demand for lands traditionally drives up rents. But they also open blacksmith shops, grocery stores, hardware stores, set up doctors, nurses and lawyers. The new areas will be further from the established center(s); will very likely (but not always) have poorer resources, and less advantageous locations; so rents will rise. But the new areas will need police and roads and bridges and

schools and sewers...Government will expand in pace with the advance of settlement.

Let τ be the coefficient indicating the amount of new Government spending required, calculated as a fraction of the new growth in economic activity. Put it another way; it shows how much government must increase its activities in order to manage and support the growth of the economy, expressed as a fraction of that growth. (Note that τ is exactly analogous to α .) Then we can write an equation for Government, G , that echoes the equation for Rents:

$$G_N = G_0 + \tau g[(Y_1 - Y_0) + (Y_2 - Y_1) + \dots + (Y_N - Y_{N-1})]$$

Now compare this with the equation for Rents; they are the same except for the coefficient, and the initial terms. As a result, we can combine and solve, giving us:

$$(R_N - R_0) / [G_N - G_0] = \alpha / \tau.$$

The ratio of aggregate rents to the total costs of government depends *only* on the coefficients. If they are equal, then the Henry George Theorem will hold; if they are not equal but are close, then rents will be close to covering the costs of government – though the discrepancy could go either way.

In any case, it seems that rents and costs of government must tend to rise together in the kind of society Henry George envisioned. Consider the case just described: New settlers invest in land and in businesses,

expanding the area of settlement. Now government must expand in this area also, in pace with the rise in business. But *an increase in government tends itself to lead to increases in productivity and in innovation*. However an increase in productivity will lead to an increase in the demand for land, since existing businesses can make do with fewer workers, and workers so released will seek land in order to set up new businesses, driving up rents.

So there is a good case for something like the Henry George Theorem to hold in a society that is largely agrarian and craft-based, prior to Mass Production. But once industry adopts Mass Production technology, labor will be displaced on a large by farm machinery and will flow to the city. Rural rents payments will tend to fall, urban to rise; the offset won't be complete, because urban rental rates will tend to be higher, but the total impact on Rent is likely not to be that great, certainly less than doubling it. By comparison, the move to the cities and suburbs will have an enormous impact on the costs of Government, leading to increases by factors of 3, 4, 5 and more. Think of congestion costs, of public infrastructure, of public health expenses, think of the increase in policing and in the courts, think of the changes in the nature of the family – and the consequent need for caring for children and the aged. This is not the place to spell these out; it's enough to look at the statistics: as the rural percentage of population declined and urban increased, the agenda of Government changed and the costs of Government rose dramatically.

In the age of Mass Production, and still more in the Information Economy, the Henry George Theorem is out of date: Rents alone will not cover the cost of Government. The Single Tax should still have a role to play – the case for it is still sound - but it can't do the job alone.