



# George, Wicksell and Gaffney: a three-factor model of the boom and bust cycle

Mary M. Cleveland

*Association for Geogist Studies, New York, New York, USA and  
Barnard College, Columbia University, New York, New York, USA*

## Abstract

**Purpose** – The purpose of this paper is to compare and contrast three-factor models of boom and bust from Henry George, Knut Wicksell and Mason Gaffney.

**Design/methodology/approach** – The approach takes the form of an analysis and discussion and mathematical appendix.

**Findings** – It was found that gaffney modifies and incorporates features of both George and Wicksell into his own model.

**Practical implications** – The works of George, Wicksell and Gaffney are highly relevant, especially given the current economic crisis.

**Originality/value** – The paper should be useful both to historians of economic thought and contemporary economists. It brings together ideas that have been neglected in recent years, and contributes to the understanding of economic crises.

**Keywords** Economic history, Economic theory, Economic booms, Economic cycles, Interest rates

**Paper type** Conceptual paper

## 1. Henry George on the boom and bust cycle

George (1839-1897), a self-taught American economist and philosopher, came to international fame in 1879 with the publication of *Progress and Poverty (P&P)* (George, 1962). The book offers both a compelling explanation for the persistence of poverty in the midst of growing wealth, and a simple, practicable remedy: a “single tax” on land.

George (1962, p. 38) defines land as “the whole material universe outside of man himself.” A modern definition would be “all common resources” including those created by public investment and spillovers from private investment. Besides, land as we usually think of it, that includes the oceans, the air, the gene pool, rights of way, wild fish and game, aquifers, take-off and landing slots, city streets, and notably today, the broadcast spectrum and the internet. When land has been “appropriated” as Ricardo quaintly puts it, or “privatized” as we put it today, its value derives from the market, independent of actions by the title-holder. See Gaffney (1994a), “Land as a Distinctive Factor of Production.”

George’s explanation of the boom and bust cycle is in part a corollary of his theory of distribution, and in part an argument from analogy. In itself, it is too sketchy to be fully convincing.

### 1.1 Henry George’s theory of distribution

In *P&P*, George addresses a paradox: the persistence and even increase of poverty amid growing prosperity:



[T]he tendency of what we call material progress is in nowise to improve the condition of the lowest class in the essentials of healthy, happy human life. Nay, more, that it is still further to depress the condition of the lowest class. The new forces, elevating in their nature though they be, do not act upon the social fabric from underneath, as was for a long time hoped and believed, but strike it at a point intermediate between top and bottom. It is as though an immense wedge were being forced, not underneath society, but through society. Those who are above the point of separation are elevated, but those who are below are crushed down (George, 1962, p. 9).

George begins with a straightforward Ricardian argument: As the population and prosperity of an economy grow, the margin falls. The benefits increasingly flow as rent to the landowning minority. This is precisely the outcome Ricardo feared for the British economy, and motivated him to seek repeal of the corn laws in order to postpone the inevitable. But then George adds some original twists:

- George spends some 40 pages beating up on a cartoon version of the classical wage fund theory, that wages are determined by dividing the supply of (working) capital by the number of workers. He proposes an alternative “law of wages,” a “corollary” to Ricardo’s “law of rent”:

Wages depend upon the margin of production, or upon the produce which labor can obtain at the highest point of natural productiveness open to it without the payment of rent (George, 1962, p. 213).

This is quite close to the neoclassical concept that wages are determined by the marginal product of labor. In fact, George’s later nemesis, Clark, gives George credit in the introduction to *The Distribution of Wealth* (1899) (Clark, 1965).

- George compellingly demolishes the Malthusian hypothesis that attributes low wages to population pressure on limited resources. Rather, poverty arises from oppressive social systems. “The real cause of want in India has been, and yet is, the rapacity of man, not the niggardliness of nature.” (George, 1962, p. 121). He notes that during the Irish potato famine, Ireland continued to export large quantities of food to England (George, 1962, p. 125):

[T]he Malthusian doctrine [...] furnishes a philosophy by which Dives as he feasts can shut out the image of Lazarus who faints with hunger at his door; by which wealth may complacently button up its pocket when poverty asks an alms, and the rich Christian bend on Sundays in a nicely upholstered pew to implore the good gifts of the All Father without any feeling of responsibility for the squalid misery that is festering but a square away (George, 1962, p. 99).

Following Adam Smith, George sees enormous economies of scale arising from cooperation and specialization made possible both by greater population density and by technological progress. In fact, “even if the increase of population does reduce the power of the natural factor of wealth, by compelling a resort to poorer soils, etc. it yet so vastly increases the power of the human factor as more than to compensate.” (George, 1962, p. 149). George also recognizes the “demographic transition,” that is, as people become more prosperous, they voluntarily limit family size (George, 1962, p. 103).

- George focuses on the phenomenon of “land speculation” – particularly visible in California where he lived. He sees “speculators” grabbing up vast tracts of land, often by fraud:

The man who sets out from the Eastern Seaboard in search of the margin of cultivation, where he may obtain land without paying rent, must [...] pass for long distances through half-tilled farms, and traverse vast areas of virgin soil, before he reaches the point where land can be had free of rent – i.e. by homestead entry or pre-emption. He (and, with him, the margin of cultivation) is forced so much farther than he otherwise need have gone, but the speculation which is holding these unused lands in expectation of increased value in the future. And when he settles, he will, in his turn, take up, if he can, more land than he can use, in the belief that it will soon become valuable [...]” (George, 1962, p. 256).

The same thing may be seen in every rapidly growing city. If the land of superior quality as to location were always fully used before land of inferior quality were resorted to, no vacant lots would be left as a city extended, nor would we find miserable shanties in the midst of costly buildings. These lots, some of them extremely valuable, are withheld from use, or from the full use to which they might be put, because their owners, not being able or not wishing to improve them, prefer, in expectation of the advance of land values, to hold them for a higher rate than could now be obtained from those willing to improve them (George, 1962, p. 257).

George sees such speculative withholding as driving the margin of production below the true margin, forcing wages below their level at the true margin. Note that George implicitly assumes what modern behavioral economics has borne out: far from behaving “rationally,” people make economic decisions based on rules of thumb, notably copying what others do, and projecting the past straight-line into the future.

- George sees capital as stored up labor used to assist current labor. Unlike Smith, Ricardo or Mill, he does not treat capital as a true third factor of production – whose interests can sometimes oppose those of labor as well as land. He also dismisses the distinction they make between “fixed” and “circulating” capital.
- George is an urbanist. Unlike Quesnay, Ricardo and Mill, who focused on farm land, George emphasizes the high productivity of urban land in facilitating communication, cooperation and specialization. He observes that urban land values exceed farm land values by orders of magnitude.

### 1.2 Henry George’s theory of industrial depressions

*P&P* is subtitled, *An Inquiry into the Cause of Industrial Depressions and of Increase of Want with Increase of Wealth... the Remedy*. Yet George devotes only a very short chapter – 18 pages – in *P&P* to *The Primary Cause of Recurring Paroxysms of Industrial Depression*. This is perhaps an acknowledgement that he’s on shaky ground. (In his final, unfinished book, *The Science of Political Economy*, (George, 1981) he does not address the issue at all).

George first reviews and dismisses as secondary other factors in the business cycle, notably “the essential defect of currencies which contract when most needed, and the tremendous alternations in volume that occur in the simpler forms of commercial credit, which, to a much greater extent than currency in any form, constitute the medium or flux of exchanges [...]” (George, 1962, p. 263).

He dismisses “overproduction and overconsumption”:

When, with the desire to consume more, there coexist the ability and willingness to produce more, industrial and commercial paralysis cannot be charged either to overproduction or to

overconsumption. Manifestly, the trouble is that production and consumption cannot meet and satisfy each other.

How does this inability arise? It is evidently and by common consent the result of speculation. But of speculation in what? (George, 1962, p. 267).

That land speculation is the true cause of industrial depression is, in the United States, clearly evident. In each period of industrial activity land values have steadily risen, culminating in speculation which carried them up in great jumps. This has been invariably followed by a partial cessation of production, and its correlative, a cessation of effective demand (dull trade), generally accompanied by a commercial crash; and then has succeeded a period of comparative stagnation, during which the equilibrium has been again slowly established, and the same round been run again (George, 1962, p. 268).

As to the means by which this happens,

[...] the speculative advance in rent, or the value of land, [...] produces the same effects as (in fact, it is) a lockout of labor and capital by landowners. This check in production, beginning a the basis of interlaced industry, propagates itself from exchange point to exchange point, cessation of supply becoming failure of demand, until, so to speak, the whole machine is thrown out of gear, and the spectacle is everywhere presented of labor going to waste while laborers suffer from want (George, 1962, p. 270).

He concludes with a striking mechanical analogy to explain the suddenness of collapse after a period of speculation:

The great pyramid of Gizeh is composed of layers of masonry, the bottom layer, of course, supporting all the rest. Could we by some means gradually contract this bottom layer, the upper part of the pyramid would for some time retain its form, and then, when gravitation at length overcame the adhesiveness of the material, would not diminish gradually and regularly, but would break off suddenly in large pieces (George, 1962, p. 269).

To summarize, George sees growth as setting off a speculative bubble which carries the seeds of its own destruction. That is, the bubble stimulates land withholding which eventually cuts off production, bursting the bubble. Then the cycle repeats. (The cycle resembles what physicists call a “forced harmonic oscillator.” For example, a gusty wind will set a tree to swaying at a rate determined by the structure of the tree).

### 1.3 Henry George's remedy

George borrows his remedy from the Physiocrats and the classical economists, but carries it to its logical conclusion. “We must make land common property” – by confiscating rents for public purposes (George, 1962, p. 328). Yet we must do it in such a way that title-holders retain security for their improvements. How? Essentially by taxing the value of private titles to land and other rent-yielding resources, while untaxing labor and capital. Taxing private titles, as George argues, is equivalent to leasing publicly-held resources at market rents:

[T]he value of land expresses in exact and tangible form the right of the community in land held by an individual; and rent expresses the exact amount which the individual should pay to the community to satisfy the equal rights of all other members of the community (George, 1962, p. 344).

This remedy – shifting all taxes to land – came to be known as the “single tax.” The single tax, he argues, will accomplish the following:

- By eliminating the speculative value of land, bringing the “speculative margin” back to the “productive margin,” it will raise wages to the level of what a man can earn at the productive margin.
- By increasing holding costs, it will force existing title-holders to use land productively or sell it.
- By driving down the price, it will enable would-be users to purchase land.
- By removing the tax burden from labor and capital, it will spur productivity and creativity.
- By encouraging greater population density, it will foster the increased productivity that goes with greater cooperation and specialization.
- By generating greater public revenues, it will enable more spending on schools, museums, libraries, parks, and other public institutions.
- By making wealth and opportunity more equal, it will strengthen democracy and reduce the ability of an elite to buy special favors.
- By eliminating land speculation, it will tame the business cycle.

## 2. Knut Wicksell on the boom and bust cycle

Swedish economist Wicksell (1851-1926) came of age during the “marginalist revolution” set off by Stanley Jevons, Carl Menger and Leon Walras in the early 1870s. Like George, he was a rebel and social critic. Unlike George, he was an ardent Malthusian – a position which scandalized Swedish society and inhibited his career. Like George, he supported land value taxation, though without making it a crusade (Wicksell, 1958 pp. 114-15). Unlike George he was a mathematician and professional academic economist.

In his first book, *Value Capital and Rent* (1893) (Wicksell, 1954), reprised in his *Lectures on Political Economy* Volume I (1901-6) (Wicksell, 1971), Wicksell develops a complete static three-factor marginal theory of value, production and distribution. He builds his theory of capital upon the work of the Austrian Böhm-Bawerk. According to Wicksell: “Capital is saved-up labor and saved-up land. Interest is the difference between the marginal productivity of saved-up labor and land and of current labor and land.” The lower the interest rate, the more capital will be invested in more durable form. (Wicksell, 1971, p. 154). He often writes of capitalists as hiring both labor and land, and replaces the wage-fund theory with the “wage-and-rent fund” theory (Wicksell, 1971, p. 193). He mentions George in Wicksell (1971) only as an adherent of the school of thought that wages are determined in production, versus the “classical view” of Böhm-Bawerk that they are determined by capital. (Wicksell, 1971, p. 188) He allows that the production school is correct only when there is no significant time lag between production and consumption.

In his second book, *Interest and Prices* (1898) (Wicksell, 1965a), reprised in *Lectures on Political Economy* Volume II (1901-1906) (Wicksell, 1967), Wicksell develops the monetary theory that has become his chief claim to fame. In brief, he argues that the classical quantity theory of Ricardo can hold completely only in a commodity-money economy without significant use of long-term credit. Once there is substantial credit, the quantity relationship can slip.

How so? Wicksell posits that there exists a “natural” or “real” rate of interest that, all else being equal, would bring desired saving into line with desired investment. This natural rate varies with conditions in the economy. A time of optimism, for example due to new technology, will raise the natural rate as investors compete for capital. However, banks cannot easily identify the invisible natural rate; in the short run they may set their interest rates either higher or lower than the natural rate. If banks hold their rates lower than the natural rate, prices will rise. If higher, prices will fall. Wicksell even illustrates his argument with a simple model of a pure credit economy – quite a leap of imagination in the high days of the gold standard! (Wicksell, 1965a, pp. 69-72).

Wicksell’s theory of interest and prices offers a potential explanation for the boom and bust cycle. Banks are conservative, he argues, slow to change their practices in the face of changing economic circumstances:

The fluctuations in commodity prices which are not directly caused by *changes in gold production* must therefore have another cause in many cases, namely the changes which occur from time to time in the *real rate of interest*. This is not to be understood as meaning that the level of this interest makes commodities on the average either cheaper or dearer, for that, as we have seen is generally not the case, but because the *loan rate does not adapt itself quickly enough to these changes*, so that the influence of the banks on commodity prices is in fact a consequence of their passivity, and not of their activity, in the loan market (Wicksell, 1967, p. 205; emphasis in original).

When business is booming and investment demand is high:

The money rate should [...] undergo a corresponding change, but there exists, at least in our complex modern monetary system, no other connection between the two than the *variations in commodity prices* caused by the difference between them. And this link is elastic, just like the spiral springs often fitted between the body of a coach and the axles. An increase in the real rate does not therefore immediately cause a corresponding rise in the bank’s rates, but the latter remain unchanged for a time and with them the loan rates between individuals. The money rate therefore becomes abnormally low in relation to the real capital rate [...]. Frequently, commodity prices therefore rise continuously, business requires greater cash holdings, bank loans increase without corresponding deposits, bank reserves, and often bullion reserves, begin to fall and the banks are compelled to raise their rates somewhat, though this does not prevent the continuous rise in prices, until the interest rates have reached the level of the normal rate. Indeed, if the rise in prices itself gives birth to exaggerated hopes of future gains, as often happens, the demand for bank credit may far exceed the normal, and in order to protect themselves the banks may be forced to raise their rates even above the level of the natural rate or the normal loan rate. Still more is this true if signs of a crisis have already appear; confidence begins to be shaken and the credit of the big monetary institutions is the only credit accepted. The converse will naturally occur with a falling natural (or real) rate which is only followed gradually and at a distance by a corresponding fall of the banks’ rates (Wicksell, 1967, pp. 206-7; emphasis in original).

Wicksell does touch on “speculation” at the peak of a boom, but he does not mean “land speculation” in George’s sense. He mentions:

[...] the case where the market is under the influence of *speculation* proper. Goods are now bought not merely to be passed on to other producers and to be distributed to consumers by the normal methods, but to be hastily disposed of to other speculators (Wicksell, 1965a, pp. 97-8).

The excessively low bank rate during a boom, “may act as an incentive to increased business activity and thus to conversion on a large-scale of liquid capital into fixed capital, which [...] is the outstanding characteristic of good times [...]” Wicksell notes the implications for distribution: “But if the formation of the real capital which is then absolutely essential is only based on the rise in prices itself, i.e. is due to diminished consumption on the part of those persons or classes of society with fixed money incomes, then the increased prosperity could scarcely be very great or enduring.” Wicksell, 1967, p. 209).

Wicksell offers an essentially Malthusian account of the underlying economic process that drives fluctuations in the “natural rate”:

What so greatly differentiates our modern communities from those of stationary type is, of course, above all the rapid *population increase* which has been in progress for more than a century in almost all European and most non-European countries. The steadily increasing consumption demand which arises from this cause presupposes and calls forth an ever expanding production. But [...] the development of production cannot conceivably continue at the same steady rate of increase as the rate of population growth; it must necessarily exhibit an alternation of acceleration and retardation [...] For the economy as a whole [...] a general increase of production is a most difficult and, in the long run, an insoluble problem. For an increase in population *per se* involves a corresponding increase of only one factor of production, namely labour (or at most labour and capital), while the other factor, the available quantity of natural resources, remains unchanged. . . . [I]f production shall not hopelessly fall victim to the law of *diminishing returns* [...] there must be *discoveries* and *inventions*, technical and commercial improvements, *new methods*, to outwit nature and obtain from her treasures in ever increasing measure (“Enigma of Business Cycles” 1907, in Wicksell, 1965b, p. 231).

It is in the nature of things that new, great discoveries and inventions must occur sporadically, and that the resulting increase in output cannot take the form of an evenly growing stream like population growth and the increase in consumption demand. As soon as the rate of increase of output begins to lag, a *hitch* will immediately occur in the development of the economy. [...] [I]t is in this that I discern the real source of economic fluctuations and crises [...] (“Enigma” in Wicksell, 1965b, p. 232) (emphasis in original).

Wicksell’s theory resembles that of George in an important respect: he believes that real events in the underlying economy drive the boom and bust cycle. The interest rate and price effects follow and exaggerate the underlying population and technology cycle. At best policy can moderate the cycle by keeping the bank rate more in line with the natural rate.

George by contrast, sees a speculative cycle arising from the psychology of rapid economic growth, aggravated by inequality of landownership. The powerful single tax policy can simultaneously dampen speculation, reduce inequality and stimulate even more rapid economic growth. Where Wicksell is a pessimist, George is an optimist.

### 3. Mason Gaffney on the boom and bust cycle

At age 16, Gaffney joined a free *P&P* class in Chicago. He has spent a career clarifying, correcting and extending the implications of George’s ideas.

Gaffney is best known for writing on urban economics, resource economics, public finance, and capital theory. His writing on macroeconomics emphasizes the Wicksellian concept of “capital turnover” which is the inverse of capital durability. In articles such as “Toward full employment with limited land and capital”

---

(Gaffney, 1975) he argues that many common public policies – ranging from taxation to military spending – slow down the average turnover of capital, lowering average wages and employment, increasing inequality, and damaging the environment.

### 3.1 Gaffney on George's theory of land speculation

In his dissertation, "Land speculation as an obstacle to ideal allocation of land," Gaffney (1956) develops a modern capital-theoretical explanation of what George called "land speculation."

419

As George describes them, land speculators are individuals who "cannot or will not" put land to its best current use, because they are holding it for a rise in price. This definition needs clarification. First, all landholders "speculate," in the sense that they hold property only as long as the discounted value of expected future income (or other benefits) equals or exceeds the (net) market price. Second, some landholders withhold land even absent rising prices, because they have different priorities. Often they are wealthy enough not to need the income – think of the great lords of all civilizations who kept fertile land as hunting preserves. Third, it is sometimes economically logical to withhold appreciating land from present use lest the present use preempt a better use later. For example, it would be a bad investment to plant an orange orchard in land that will be ripe for a subdivision in five years, or to build a two-story building on land soon ripe for six.

Gaffney disentangles these points as follows: It is true that all landholders speculate. It is also true that – even absent rising prices – they may differ in their priorities. And given rising prices, they may vary in their optimism. However, more important, some land holders may use much lower internal discount rates than others in valuing land. In general, wealthier individuals and better-capitalized corporations use lower discount rates – for an obvious reason: having better collateral, they can borrow at lower rates, and having higher income, they have less urgent need for cash. This phenomenon we call "capital market failure." Wealthier individuals or organizations face their own internal structure of prices and incentives and respond accordingly. Within any category of use, low discount rate entities tend to use land less intensively. Land market failure and capital market failure are two sides of a coin. As Gaffney elaborates in "The unwieldy time-dimension of space" (Gaffney, 1961) they are an inescapable reality.

But while capital and land market failure are universal, they take a particularly pernicious form where land values are rising rapidly. On the western frontier, George observed tens of thousands of prime, well-located acres grabbed up and held out of use by eastern absentees, forcing settlers to spread out onto more remote and poorer quality land. He devoted his first book, *Our Land and Land Policy* (1871) (George, 1900) to describing this phenomenon. Dramatic widespread withholding happens because expectations of appreciation amplify the difference in offers for land between poor high-discount bidders and rich low-discount bidders (Appendix, Sections 4 and 5).

To make matters worse, widespread withholding proves self-defeating. Just as a growing settlement creates positive externalities, a cluster of withholders creates negative externalities. The parking-lot owners in downtown Newark, New Jersey create blight that destroys the urban values on which they hope to capitalize.

As Gaffney has argued in many publications, a shift to taxing land values does in fact offer the benefits George claims. On the one hand, it lowers land values, bringing



prices more into the range of would-be active users. On the other hand, it drains cash from passive holders, pressing them to use land or sell. It counteracts capital market failure while reducing inequality, tipping the balance more towards high-discount rate users, and away from low-discount rate holders (Appendix, equation A6).

### *3.2 Combining George and Wicksell on the boom and bust cycle*

In a 1982 working paper, "Causes of downturns: an Austro-Georgist synthesis" Gaffney (1982) draws on his earlier work to extend and clarify George's model. He identifies five major features of the boom and bust cycle. I will loosely follow his outline.

*3.2.1 Overpricing land.* As George observed, a period of growth and prosperity sets land values to increasing, especially in transition areas between different uses: downtown-residential, residential-farmland, farmland-forest. Overoptimism about price increases has a number of consequences:

- Overpriced land gives large, low-discount buyers and holders an edge, especially in rapidly-increasing fringe areas. It drives more marginal buyers and users to less-suitable areas. In the housing market, holdouts create urban sprawl; in the broadcast market they create overuse of inferior frequencies (Appendix).
- Excessive land prices and rents cut into wages and returns on investment. Developers who have overpaid for land spend less on complementary capital. When land values and rents rise under buildings or orchards, they reduce the imputed return on investment, sometimes stopping investment altogether. I myself live in Manhattan's Upper West Side, where land values escalate as new luxury high-rises spring up and five-storey brownstones convert from ten units to single-family townhouses for billionaires. Rising rents have forced the closing of numbers of family restaurants up and down Columbus Avenue. Many sites sit empty; chic new boutiques open with fanfare and fail within the year.

*3.2.2 . Loss and Waste of Capital.* Excessive land prices distort and displace real investment:

- Owners of appreciating land – and that includes homeowners in hot markets all over the USA – understandably begin to treat their appreciation as real income. They cash in by taking out new mortgages. They spend instead of saving. This "wealth effect" causes net disinvestment.
- Owners of income property fail to reinvest. As Gaffney writes, "It is as though grocers ate up part of their own wares, instead of selling and replacing them, leaving some shelves empty. Most of the flow of investing consists of refilling shelves as the goods go out. Now, that flow drops" (Gaffney, 1982, p. 2).
- Low-discount buyers tend to hold rather than improve.

*3.2.3 Overconversion of circulating capital to fixed capital.* There is overinvestment in fixed capital. George largely missed this point; Wicksell emphasized it, but only as a consequence of bank interest rates below the hidden "natural" rate:

- Sprawl requires overextended roads and utility lines.
- High land costs generate overinvestment in land-saving capital. For example, owners build overly tall buildings, or irrigate dry farmland to increase yields per acre.

- Gaffney identifies “claim-staking”, i.e. rent-seeking investments, like logging roads, some R&D, preemptive patenting, accepting losses to capture broadcast licenses, etc. He points out that “This is the slowest-turning [capital] of all, because often the payoff is capturing land and its resources in perpetuity” (p. 3).
- And then there is overinvestment in “land-leading” capital, – excess capacity in anticipation of further growth, for example platted land in swamps and deserts (p. 4).
- Towards the end of a boom, such malinvestment dries up liquid capital, causing a brief spike in interest rates. Half-completed projects are abandoned, often never to resume. Existing capital loses real value, as more of its cash flow must now be imputed to interest. Gaffney calls this phenomenon a “macroeconomic glitch.”

3.2.4 *Lower marginal rate of return on new investing.* Overpricing land and rent leaves less for what Gaffney calls “social investors” – those who hire labor and build new capital. It lowers the return on real investment. There are perverse consequences:

- There is a vicious circle: Lower marginal rate of return on real investment makes land look even more attractive, further fueling the boom.
- The price rise becomes increasingly unstable, motivated more and more by expectations of further price increases. When the rise even pauses, it must soon fall (Appendix, equation A3).

3.2.5 *Collapse of credit system.* There’s a lacuna in both George and Wicksell: the role of collateral in credit extension. George was aware of money, as evident in the passage quoted above about “the essential defect of currencies which contract when most needed” but he barely touches on money and even less on banking; at most there’s a short unfinished chapter on money in his last book. Wicksell addresses banking at length in theory, but very little at the practical level[1].

Collateral and credit play an important role in a boom. As noted, under any circumstances, banks extend more and cheaper credit to well-collateralized low-discount entities. In a boom, this increases these entities’ ability to outbid poorly collateralized entities. However, as a boom progresses, lenders become increasingly ready to lend on inflated values to flaky projects – a further driver of prices and a further waste of capital. Perry Mehrling observes a “natural hierarchy of money” a kind of pyramid of lenders, with the Fed at the top. In a boom this pyramid flattens as credit eases at each level; in a bust the pyramid sharpens (Mehrling, 2000).

Loss of liquidity and unstable prices eventually burst the bubble. Land prices should drop like a rock when the expectation of growth disappears. In fact, the market freezes, as low-discount entities do what they do best – wait. In the credit system:

- After a few losses on bad collateral, banks tighten up their lending. In fact, they overreact, cutting off lending to all but their best collateralized customers. Government regulators overreact too.
- As their equity shrinks, banks cut off lines of credit and stop rolling over loans to smaller customers, including those doing well up to that time. Businesses close, unemployment rises. The money supply dries up, possibly creating deflation.
- As long as the market remains frozen, returns on investment remain preternaturally low. As banks ration credit, lending only to the best-collateralized, interest rates remain low as well. As Gaffney notes, this

creates an illusion that there is an excess of liquid capital seeking investment. In reality, both supply and demand for new capital are low. And consequently production and employment remain low.

Gaffney observes:

Banks almost always get caught up in land booms. During an upswing they lend on the collateral of rising land values. In cycle after cycle, clear back at least to the South Sea and Mississippi Bubbles of 1720, they have expanded their liabilities based on this fragile collateral, and come to grief in the ensuing downturn. They did it again during the 1980s, nearly 300 years after those infamous Bubbles, even with some dozen more in between. Each is a learning experience, but the social learning curve has been flat.

Bank expansion and collapse add to the severity of boom and slump, so much so that the ordinary economist is likely to see the banking accordion as the original cause, rather than the effect of the cycle. Simple sequential observation, however, shows that land cycles have a life of their own, leading banking cycles (p. 6).

*3.2.6 Sequence driven by the land bubble.* So, in summary, what is the sequence? Again following Gaffney (p. 7):

- Land becomes overpriced as holders and buyers project recent growth indefinitely into the future. While both George and Wicksell identify new technology and opportunities as generating overoptimism, it is George who recognizes speculation as the prime initiator of the boom and bust process.
- Capital is lost or wasted as “wealth effect” encourages excessive consumption or misguided investment.
- Too much circulating (liquid) capital is converted to fixed capital – the “Austrian” concept so elegantly modeled by Wicksell. Much of that fixed capital substitutes for overpriced land. This is Gaffney’s synthesis of George and the Austrian concept.
- The marginal rate of return on “real” investment falls, that is, on improving and using land efficiently, creating production and employment. Real investment is in effect crowded out by bogus investment in spiraling land prices, or fixed investment in land substitutes.
- Shortage of circulating capital eventually creates a liquidity crisis. Short-term interest rates spike. The land and rental markets freeze.
- The overextended credit system collapses, cutting off credit from all but the best-collateralized, and aggravating the other problems.
- Much of the damage is invisible: infrastructure and buildings still stand, but lifeless as if hit by a neutron bomb. As prices and rents finally begin to fall, the economy slowly revives.

#### **4. Implications**

The George-Wicksell-Gaffney model of the boom and bust cycle will strike most modern economists as belonging on a different planet. There are three reasons: first, three-factor economics essentially died out almost a century ago. Second, modern macroeconomics treats the boom and bust cycle primarily as a monetary problem. Third, there’s the theme central to George and Gaffney, but sometimes surfacing in

Wicksell: considerations of economic performance cannot be separated from those of social justice.

#### 4.1 *Three-factor economics*

By the beginning of the Keynesian era, the descendants of Clark had largely succeeded in merging land with capital, relegating three-factor economics to quaint history. (Gaffney has called this merger “a stratagem against Henry George” – as indeed George himself believed. (Gaffney, 1994b). In 1955 Solow joked that, “[. . .] if God had meant there to be more than two factors of production, He would have made it easier for us to draw three-dimensional diagrams.” (Solow, 1955). Blaug comments on Wicksell (1971), “From a technical point of view, it must be one of the most difficult books to read in the entire history of economic thought.” (Blaug, 1985, p. 546). Surely that assessment reflects the now-alien character of three-factor economics.

#### 4.2 *Real or monetary phenomenon?*

Modern two-factor “Keynesian” macroeconomics treats the boom and bust cycle as primarily a monetary phenomenon. We expect the Fed to steer us between the Scylla of inflation and the Charybdis of unemployment by maintaining just the right discount rate – an idea developed originally by Wicksell! That has come to mean “targeting” an acceptable modest rate of inflation, on the order of two percent a year, by keeping down interest rates. Yet there’s absolutely no conception that, following Wicksell, such a policy may bias the economy to excessively durable investments. The “fiscal” end of modern macroeconomics – what’s left of it – treats all government spending and taxation alike; there’s no distinction between buying tanks and buying textbooks, nor between taxing wages and taxing wealth.

#### 4.3 *Economic and social justice*

George argues that all members of a society have an equal right to land, whose value is created by society itself. Land taxes assert that right. Because land ownership is currently so concentrated, taxing land becomes powerfully redistributive. Simultaneously, eliminating other taxes will act on the economy like “removing an immense weight from a powerful spring.” (George, 1962, p. 434). Moreover, greater equality will foster cooperation:

To compare society to a boat. Her progress through the water will not depend upon the exertion of her crew, but upon the exertion devoted to propelling her. This will be lessened by any expenditure of force required for bailing, or any expenditure of force in fighting among themselves, or in pulling in different directions [ . . . ]

Thus, association in equality is the law of progress (George, 1962, p. 508).

In conclusion:

“[E]conomic law and moral law are essentially one.” (George, 1962, p. 560). “[T]he want and injustice of the present social state are not necessary; but . . . on the contrary, a social state is possible in which poverty would be unknown, and all the better qualities and higher powers of human nature would have opportunity for full development” (George, 1962, pp. 559-60).

Wicksell warns that, “there is one inequality from which we can never abstract, without making a serious mistake, namely social differences and the unequal distribution of property.” Therefore, we should not rule out policies that would “be of

distinct advantage to the workers and consequently to the most numerous class of society” on grounds that they violate equal marginal utility considerations (what we today know as Pareto optimality). (Wicksell, 1971, p. 77).

In an essay on the centennial of Henry George’s death in 1897, Gaffney wrote:

Over the last twenty years, wealth and wages have grown ever more unequal, while the death of the Communist bogeyman reveals the ugliness of capitalism without fair laws or equal opportunity. Neo-classical economists, trundling through a Mars-scape of dusty statistics and forbidding formulas, can proffer only unpleasant tradeoffs. In the debate over the newly-passed 1997 income tax “reforms,” Democrats complained that cuts in estate taxes and capital gains taxes for the rich were “unfair.” Republicans argued – successfully – that such tax favors are essential to investment and growth.

Neo-classical economists give us only a hard choice: we may have equity, or efficiency, but not both. By contrast, George’s program reconciles equity and efficiency. Think of it! George takes two polar philosophies, collectivism and individualism, and composes them into one solution. He cuts the Gordian knot. Like Keynes after him, George inspires us by saying, “Forget the bitter tradeoffs; we can have it all!” (Gaffney, 1997).

#### 4.4 Conclusions

Thanks to the environmental movement, land is sneaking back into economics in the form of “natural capital.” Simultaneously, land increasingly intrudes on us in the form of today’s massive quivering real estate bubble. At the February 2007 Eastern Economic Association meeting in New York City, Robert Shiller, author of *Irrational Exuberance*, gave a chilling preview of possible consequences. Growing inequality of wealth has also brought issues of social and economic justice to the fore. In fact, according to estimates of Edward Wolff, concentration of wealth has now approached that of the last great peak in 1929! (Wolff, 2002). Perhaps, the next two years will offer us a test of the George-Wicksell-Gaffney model of boom and bust!

#### Note

1. He mentions collateral in a passing comment on Tooke, “It is here maintained that on the assumption that the banks issue notes purely by way of lending on adequate security – and not through advancing large sums to the government and the like – the banks are entirely dependent on the requirements of the business world for means of payment and have no means of affecting these requirements or of influencing prices” (Wicksell, 1965b, p. 82).

#### References

- Blaug, M. (1985), *Economic Theory in Retrospect*, 4th ed., Cambridge University Press, Cambridge.
- Clark, J.B. (1965), *The Distribution of Wealth: A Theory of Wages, Interest and Profits (1899)*, Augustus M. Kelley, New York, NY.
- Gaffney, M. (1956), “Land speculation as an obstacle to ideal allocation of land”, PhD dissertation, University of California, Berkeley, CA, available at: [www.masongaffney.org/dissertation.html](http://www.masongaffney.org/dissertation.html)
- Gaffney, M. (1961), “The unwieldy time-dimension of space”, *American Journal of Economics and Sociology*, Vol. 20 No. 5, pp. 465-81, available at: [www.masongaffney.org/publications/C4-UnwieldyTime-DimensionofSpace.CV.pdf](http://www.masongaffney.org/publications/C4-UnwieldyTime-DimensionofSpace.CV.pdf)

- Gaffney, M. (1975), "Toward full employment with limited land and capital", in Lynn, A. Jr (Ed.), *Property Taxes, Land Use and Public Policy*, University of Wisconsin Press, Madison, WI, pp. 99-166, available at: [www.masongaffney.org/publications/11Full\\_Employment\\_Limited\\_Land\\_&Capital.CV.pdf](http://www.masongaffney.org/publications/11Full_Employment_Limited_Land_&Capital.CV.pdf)
- Gaffney, M. (1982), "Causes of downturns: an Austro-Georgist synthesis", unpublished work, available at: [www.masongaffney.org/workpapers/Causes\\_of\\_downturn-Austro-Georgist\\_synthesis\\_1982.pdf](http://www.masongaffney.org/workpapers/Causes_of_downturn-Austro-Georgist_synthesis_1982.pdf)
- Gaffney, M. (1994a), "Land as a distinctive factor of production", in Nicolaus, T. (Ed.), *Land and Taxation*, Shephard-Walwyn, London, pp. 39-102, available at: [www.masongaffney.org/publications/C9Land\\_Distinctive\\_Factor.CV.pdf](http://www.masongaffney.org/publications/C9Land_Distinctive_Factor.CV.pdf)
- Gaffney, M. (1994b), "Neo-classical economics as a stratagem against Henry George", in Harrison, F. (Ed.), *The Corruption of Economics*, Shephard-Walwyn, London, p. 29-163, available at: [www.masongaffney.org/publications/K1Neo-classical\\_Stratagem.CV.pdf](http://www.masongaffney.org/publications/K1Neo-classical_Stratagem.CV.pdf)
- Gaffney, M. (1997), "Henry George 100 years later", available at: [www.masongaffney.org/essays/Henry\\_George\\_100\\_Years\\_Later.pdf](http://www.masongaffney.org/essays/Henry_George_100_Years_Later.pdf)
- George, H. (1900), *Our Land and Land Policy*, National Single Tax League, New York, NY.
- George, H. (1962), *Progress and Poverty [1879]*, Robert Schalkenbach Foundation, New York, NY, available at: [www.econlib.org/library/YPDBooks/George/grgPP.html](http://www.econlib.org/library/YPDBooks/George/grgPP.html)
- George, H. (1981), *The Science of Political Economy [1897]*, Robert Schalkenbach Foundation, New York, NY.
- Mehrling, P. (2000), "What is monetary economics about?", available at: <http://cedar.barnard.columbia.edu/faculty/mehrling/What%20is%20Monetary%20Economics%20About.pdf>
- Solow, R.M. (1955-1956), "The production function and the theory of capital", *Review Economic Studies*, Vol. 23 No. 2, pp. 101-8.
- Wicksell, K. (1954), *Value Capital and Rent*, George Allen & Unwin, London.
- Wicksell, K. (1958), "A new principle of just taxation", in Musgrave, R.A. and Peacock, A.T. (Eds), *Classics in the Theory of Public Finance*, Macmillan & Co., London, pp. 72-118.
- Wicksell, K. (1965a), *Interest and Prices: A Study of the Causes Regulating the Value of Money*, Augustus M. Kelley, New York, NY.
- Wicksell, K. (1965b), "The enigma of business cycles [1907]", *Interest and Prices*, Augustus M. Kelley, New York, NY, pp. 223-39.
- Wicksell, K. (1967), *Lectures on Political Economy Volume 1: Money*, Augustus M. Kelley, New York, NY.
- Wicksell, K. (1971), *Lectures on Political Economy: Volume 2: General Theory*, Augustus M. Kelley, New York, NY.
- Wolff, E.N. (2002), *Top Heavy: The Increasing Inequality of Wealth in America and What Can Be Done about It*, The New Press, New York, NY.

#### Appendix. Simple mathematics of land values

##### *Present value of an infinite stream of income*

An actual or potential landholder values land as follows. Assume a level series of expected net returns,  $a$ , starting at the end of the year and continuing indefinitely. Assume an internal discount rate  $r$ . Land value  $V$  is given by:

$$V = \frac{a}{1+r} + \frac{a}{(1+r)^2} + \dots + \frac{a}{(1+r)^n} + \dots \quad \text{or} \quad (A1)$$

$$V = \frac{a}{r}$$

*Effect of a tax on value of land*

Suppose there is an annual tax on the value of land at rate  $t$ . Then:

$$V = \frac{a - tV}{r} = \frac{a}{r + t} \quad (\text{A2})$$

Even a small rate has a big impact. If  $t$  is 1 percent, and  $r = 5$  percent, the ratio of taxed to untaxed value becomes:  $(0.05/0.06) = 0.83$  – a 17 percent decrease. Note that  $t$  can be very much larger than  $r$  – and in fact larger than 100 percent! For example, if  $t = 200$  percent, and  $r = 5$  percent, the ratio of the taxed to untaxed value will be  $(0.05/2.05) = 0.024$ . Small, but still positive.

*Effect of expected growth in land value*

Now suppose that land is expected to appreciate by an amount  $g$  every year. Then:

$$V = \frac{a(1+g)}{1+r} + \frac{a(1+g)^2}{(1+r)^2} + \dots + \frac{a(1+g)^n}{(1+r)^n} + \dots \quad \text{or} \quad (\text{A3})$$

$$V = \frac{a}{r-g}$$

Obviously  $g$  must remain less than  $r$ , or value will explode. Equally obviously, a small change in expected  $g$  can have a huge impact on value. For example, suppose  $r = 0.07$  and  $g = 0.05$ , in which case  $V = a/0.02$ . If expected  $g$  rises to 0.55,  $V$  becomes  $a/1.5$ , a 33 percent increase! If expected  $g$  drops to 0.045,  $V$  will fall to  $a/0.025$ . This is a drop of 20 percent! Since  $V$  cannot rise indefinitely, the moment expected growth  $g$  starts to falter,  $V$  will drop like a rock – or would, except that the market first freezes.

*Effect of different internal discount rates*

Now imagine two potential land buyers. Buyer One has a lower internal discount rate,  $r_1$  than that of Buyer Two,  $r_2$ . If they both expect the same net return,  $a$ , Buyer One can outbid Buyer Two:

$$V_1 = \frac{a}{r_1} > V_2 = \frac{a}{r_2} \quad (\text{A4})$$

Only if Buyer Two expects to earn a higher net revenue, that is,  $a_2 > a_1$ , can Buyer Two possibly outbid Buyer One (Buyer Two may pay or impute a lower wage than that of Buyer One).

*Effect of growth, given different internal discount rates*

Say that Buyers One and Two can bid the same for a particular parcel of land, because Buyer Two expects to earn a sufficiently higher net revenue from the land to compensate for the higher internal discount rate. Then:

$$V_1 = \frac{a_1}{r_1} = V_2 = \frac{a_2}{r_2} \quad (\text{A5})$$

---

But suppose now the two buyers expect the land to appreciate at rate  $g$  each year. Now:

The boom and  
bust cycle

$$V_1 = \frac{a_1}{r_1 - g} \cdots \quad \text{and} \quad \cdots V_2 = \frac{a_2}{r_2 - g} \Rightarrow \frac{V_1}{V_2} = \frac{1 - \frac{g}{r_2}}{1 - \frac{g}{r_1}} > 1 \quad (\text{A6})$$

Expectations of growth give Buyer One the power to outbid Buyer Two for land where they were previously equals (Conversely, expectations of decline give Buyer Two the advantage).

---

427

*Effect of growth and taxes, given different internal discount rates*

Finally, suppose Buyers One and Two face a tax at rate  $t$  on land value. The value to them becomes, respectively:

$$V_1 = \frac{a_1}{r_1 - g + t} \quad V_2 = \frac{a_2}{r_2 - g + t} \quad (\text{A7})$$

Quite apparently, if  $t = g$ , Buyers One and Two return to equal bids. If  $t > g$ , then Buyer Two can now outbid Buyer One. In short, a land tax at a fairly low rate can overcome the effect of expected growth.

**Corresponding author**

Mary M. Cleveland can be contacted at: [mc2264@columbia.edu](mailto:mc2264@columbia.edu)