real-world economics review, issue no. 69
subscribe for free

Egalitarianism's latest foe: a critical review of Thomas Piketty's *Capital in the Twenty-Frist Century*

Yanis Varoufakis[1] [University of Athens, Greece and University of Texas at Austin, USA]

Copyright: Yanis Varoufakis, 2014
You may post comments on this paper at
http://rwer.wordpress.com/comments-on-rwer-issue-no-69/

1. Introduction

> "The rich... divide with the poor the produce of all their improvements. They are led by an invisible hand to make nearly the same distribution of the necessaries of life which would have been made, had the earth been divided into equal proportions among all its inhabitants and thus without intending it, without knowing it, advance the interest of the society, and afford means to the multiplication of the species." Adam Smith, *The Theory of Moral Sentiments*, Part IV Chapter 1

> "For he that hath, to him shall be given: and he that hath not, from him shall be taken even that which he hath." Mark, *King James Bible*, 1611, 4:25

Adam Smith's optimism and its vulgar neoliberal reincarnation, the 'trickle down effect', are thankfully on the back foot these days, steadily losing ground to a more 'biblical' narrative (see Mark 4:25 above[2]). The Crash of 2008, the bailouts that followed, and the 'secular stagnation' which is keeping the wage share at historic lows (at a time of conspicuous QE-fuelled, bubble-led, asset-price inflation), have put paid to the touching belief that the 'invisible hand', left to its own devices, distributes the fruits of human endeavour more evenly across humanity.

The commercial and discursive triumph of Thomas Piketty's *Capital in the 21st Century* symbolises this turning point in the public's mood both in the United States and in Europe. Capitalism is, suddenly, portrayed as the purveyor of intolerable inequality which destabilises liberal democracy and, in the limit, begets chaos. Dissident economists, who spent long years arguing in isolation against the trickle-down fantasy, are naturally tempted to welcome Professor Piketty's publishing phenomenon.

The sudden resurgence of the fundamental truth that the best predictor of socio-economic success is the success of one's parents, in contrast to the inanities of human capital models, is undoubtedly uplifting. Similarly with the air of disillusionment with mainstream economics' toleration of increasing inequality evident throughout Professor Piketty's book. And yet, despite the soothing effect of Professor Piketty's anti-inequality narrative, this paper will be arguing that *Capital in the 21st Century* constitutes a disservice to the cause of pragmatic egalitarianism.

[1] Thanks are due to Joseph Halevi, for steering my thinking, and to James Galbraith for commenting extensively an earlier draft. Errors are, naturally, mine

[2] Of course when Mark was prognosticating that more will be given to the 'haves', and taken away from the 'have nots', he was not referring to wealth, but to understanding, wisdom, propriety. Still, the quote fits recent wealth and income dynamics so well that it would seem a pity not to employ it in this context.

Underpinning this controversial, and seemingly harsh, verdict, is the judgment that the book's:

- chief theoretical thesis requires several indefensible axioms to animate and mobilise three economic 'laws' of which the first is a tautology, the second is based on an heroic assumption, and the third is a triviality
- economic method employs the logically incoherent tricks that have allowed mainstream economic theory to disguise grand theoretical failure as relevant, scientific modelling
- vast data confuses rather than enlightens the reader, as a direct result of the poor theory underpinning its interpretation
- policy recommendations soothe our ears but, in the end, empower those who are eager to impose policies that will further boost inequality
- political philosophy invites a future retort from the neoliberal camp that will prove devastating to those who will allow themselves to be lured by this book's arguments, philosophy and method.

2. Conflating wealth with capital

Teaching economics to undergraduates requires, as a first step, 'deprogramming' them. To relate properly the concept of economic rent, we must first expunge from students' minds the everyday meaning of 'rent'. Similarly, with economic (as opposed to accounting) cost, profit etc. But perhaps the hardest concept to convey to students is that of capital.

To understand what capital means in the context of either classical or neoclassical economics, students must leave outside the seminar room's door their preconception that capital means 'money' or assets expressed in money terms. Instead, they need to embrace the idea of capital as scarce goods that have been produced so as to be enlisted in the production of other goods; "produced means of production" as we keep repeating hoping that repetition will help free our students' thinking from their urge to conflate a firm's or nation's (a) capital and (b) the total value of its marketable assets.[3]

Professor Piketty has no such need to deprogram his readers. For he is himself defining capital as the sum of the net worth of all assets (excluding human skills and labour power) that can be sold and bought courtesy of well-defined property rights over them, measured in terms of their net market price (minus, that is, of any debt liabilities). From this prism, aggregate capital (of a person, a company or a nation) is the sum of the market prices of not only robotic assembly lines and tractors but also of assets like shares, stamp collections, paintings by Van Gogh, the equity that people have in their house (i.e. its price minus any outstanding loan on it).[4]

Deprogramming our students so that they can tell the difference between capital and wealth, in a manner that Professor Piketty eschews *vis-à-vis* his readers, is hard and dispiriting work which we would rather avoid doing. But we do it with good cause: for without such de-

[3] Taking students further from capital as 'produced means of production' to Karl Marx's idea that capital is, besides steam engines and harvesters, a 'social relation' between people, requires a degree of de-programming that most lecturers have no time to effect.

[4] Professor Piketty chooses not to include consumer durables in his 'capital' measure. So, washing machines do not count and nor do cars, unless they have become antiques and can be sold by auction to some collector.

programming, it is impossible to introduce an audience to anything resembling a coherent theory of production and prices.

Collecting stamps is a romantic and, in many ways worthy, pursuit. It can also be quite profitable. Similarly with art collections. Or a garage full of Ferraris. Nevertheless none of these assets can be enlisted as inputs into some production process. Even if a photographic book is to be published depicting such a collection, we need machinery, paper, ink etc. to produce it. Capital goods (in the sense of 'produced means of production') must be blended in with human labour to produce the album. Otherwise, however splendid the collection may be, it will not produce anything beyond itself.

In short, production and growth depends on material or physical capital. And while capital is a form of wealth, a great deal of wealth is not a form of capital; i.e. it is not an input into any production process generating hitherto non-existent commodities. Thus, the growth of an economy cannot rely on wealth. It needs a *particular* kind of wealth: capital goods. So if we conflate capital with wealth, our theory of production will suffer to the extent that we will have wilfully misspecified a key input, mistaking all increases in wealth as increases in capital's contribution to the production process.

In 2010, many rich Greeks escaping the crisis that had just engulfed their country took their savings to London and bought princely homes in Belgravia and Holland Park, bidding up London's house prices in the process. Inadvertently they boosted Professor Piketty's measure of the UK's aggregate capital. But if an econometrician were to use this measure in some aggregate production function of the British economy, expecting an uptick in GDP, she would be mightily disappointed and would find it impossible to estimate her model's parameters properly. While Professor Piketty can argue that his definition of capital is logically consistent, it is nevertheless incapable of helping us understand the link between capital and GDP, or between increases in the stock of capital, its 'price' and growth; a link that is, as we shall see below (see Section 3), crucial for Professor Piketty's own narrative.

Once a problematic definition of aggregate capital is embedded in an analysis, the problems spread out to the definition of the return to capital. When a capital good has a physical form, we more or less know its material utility since it is a technical matter to work out, e.g., how much electricity an electricity generator produces per hour per given quantities of diesel. But what is the return to an art collection that the collector is not auctioning off? Or to an owner-occupied home in which a family insists on living? Indeed, what is the rationale of treating (as Professor Piketty must do, to remain consistent with his wealth-capital conflation) the income of a stamp collector from trading in stamps as a return to capital (and not as income from work) while the super-sized bonuses of money market traders are counted not as returns to capital but, instead, as… wage income?

Naturally, Professor Piketty knows this all too well. So, why has he chosen to conflate capital and wealth? One plausible answer is that his primary concern was to present an empirical study that tracked the evolution of Western civilisation's wealth and income distributions, so as to show that inequality is spreading like a forest fire since the 1970s, reverting to 19th Century levels and trends. To do this he had no need to refer to aggregate capital at all (which is, also, impossible to quantify). However, Professor Piketty is an ambitious man and wanted to do more: he wanted to prove, as a mathematical theorem, the proposition that this historical trend of increasing inequality is capitalism's 'natural' tendency.

To achieve this proof, he needed to talk about capital as an input into the production process; as the engine of the growth that determines a society's future wealth (and, therefore, the 'laws' of the wealth distribution's evolution). Alas, this required a demonstration that his wealth-metric is interchangeable with a reliable capital-metric; a demonstration that is impossible and, therefore, never appears in the book's many pages.

Summing up, Professor Piketty's capital is a metric of wealth. A hugely important metric indeed since, in any society, relative wealth determines the relative power between those who have oodles of it and the rest who do not. Adam Smith, one may recall, made his name with a magnificent book that attempted to explain "the nature and causes of the wealth of nations". So, why did Professor Piketty not attempt to emulate the great Adam Smith, mainstream economics' patron saint, given that he, in essence, wrote a large volume on the… wealth of nations? Why did he, instead, choose the title of another classic book, *Das Kapital*, that does not reflect in the slightest the contents of his own book or the method of his approach?

One explanation is that Smith did not offer a theoretical link between capital and wealth creation that can have much currency in 21st Century debates.[5] A second explanation is that Smith, as the quotation at the beginning of this article reveals, had precisely the opposite perspective to that of Professor Piketty on the prospects of wealth inequality. In contrast, Marx's epic narrative on capitalism's remarkable capacity to create, simultaneously, untold wealth and unprecedented misery resonates much better with Professor Piketty's message; namely that capitalism, left unchecked, has a 'natural' tendency toward creating vast, destabilising inequality. It is therefore entirely possible that *Capital in the 21st Century* had the ambition to warn a complacent society (including its über-bourgeoisie), as apocalyptically as *Das Kapital* had done in the 19th Century, about capitalism's self-defeating tendencies while, at once, rejecting Marx's analytical method, and of course his political program.

3. Professor Piketty's three economic 'laws'

To avoid following Professor Piketty in conflating wealth (W) with capital (K), and rates of return to investment in capital goods (r) with the rate at which dollar-valued wealth begets more dollar-valued wealth, the present section will be narrated in terms of a different notation that is consistent with Professor Piketty's assumptions (unlike his own notation that is designed to conflate W and K). So, where he mentions capital (K), conflating it with wealth measured at its market value, I shall refer explicitly to the latter as wealth (W); and where he speaks of 'returns to capital', which he denotes as r, I shall use the Greek letter ρ which I shall define as the ratio of income accruing to wealth (R) over aggregate money-valued wealth (W).

Three are the 'laws' of capitalism postulated in, and making up the theoretical backbone of, *Capital in the Twenty-First Century*. The first 'law' ties together the preponderance of wealth in society's total income (ω) to its own returns per unit of income (x) and to its capacity to reproduce itself (ρ).[6] The second 'law' attempts to explain the same preponderance of wealth

[5] Indeed, Adam Smith understood perfectly well how hard it is to combine a theory of growth with a theory of the distribution of income. Indeed, Varoufakis, Halevi and Theocarakis (2011) demonstrate that this combination (i.e. a grand theory that explains both growth and distribution) is not just difficult to construct: it is, rather, impossible. We also argue that Smith, cognizant of this impossibility, chose to 'fix' his income distribution by assuming that wages are determined exogenously vis-à-vis the market mechanism (and set equal to subsistence levels defined in the realm of biology and, possibly, of social norms). (See Varoufakis et al, 2011, Chapter 3.)

[6] Professor Piketty's own notation denotes my ω and x as β and α respectively.

(ω) by linking it to net savings and growth. Finally, the third 'law' depicts the manner in which unequal wealth distributions beget even more unequal wealth distributions *via* the inheritance mechanism. In more detail,

'Law' 1: ω = x/ρ, where

ω = W/Y is the share of Wealth (W) of aggregate income Y (e.g. GDP)
x = R/Y is the ratio of income accruing to Wealth (R) over aggregate income Y; and
ρ = R/W is the income accruing to Wealth (R) per unit (or $1) of Wealth (W)

'Law' 2: ω rises if σ>g [or $\frac{\dot{\omega}}{\omega} = \sigma - g$] where

σ = s/ω
s = S/Y with S representing net aggregate savings
g = is the proportional rate of change, over time, of aggregate income Y; i.e. $g = \frac{\dot{Y}}{Y}$

'Law' 3: ω rises in proportion to ψ-e•d [or $\frac{\dot{W}}{W} \propto \psi - e \cdot d$] where

ψ = i/Y is the ratio of aggregate inheritance transfers (i) over aggregate income Y
e = W_d/W_a is the ratio of wealth owned by people at the time of their death (W_d) over the mean wealth of those alive (W_a)
d = the death rate

In the Introduction I referred to the first 'law' as a tautology, to the second as reliant on a contestable assumption and to the third as trivial. That 'Law' 1 is an identity, empty of theoretical content, is self-evident,[7] as is the claim that 'Law' 3 is a simple codification of the inevitable feedback of wealth disparities when the rich bequeath their wealth to their offspring.[8] In this sense, 'Law' 2 is the theoretical 'workhorse' that energises Professor Piketty's analysis, animating his wealth dynamics with the indispensible help of a theorem (which I discuss in the next section) concerning the relationship between variables W and ρ in 'Law' 1.

'Law' 2 pivots on a crucial assumption:

An economy's aggregate net savings (S) feed fully into increases in aggregate wealth (W) (i.e. $\dot{W} = S$). Then and only then $\frac{\dot{\omega}}{\omega}$ = σ-g;

i.e. the rate of growth of wealth's share of total income shall equal the difference between:

(i) the ratio σ of aggregate savings (S) over aggregate wealth (W) *and*
(ii) the economy's growth rate $g = \frac{\dot{Y}}{Y}$.

[7] Dividing both the numerator and denominator of ω = W/Y with R we get (W/R)/(R/Y). 'Law' 1 obtains from re-arranging (W/R)/(R/Y) as (R/Y)/(R/W).
[8] As long as older people's average wealth is higher than average wealth (i.e. d>1), increases in an economy's wealth preponderance (ω) boost inherited wealth per unit of overall income (ψ) that, in a never-ending cycle, reinforces ω thus increasing ψ which magnifies ω etc.

Put simply, only when net savings equal new wealth will an excess of savings per unit of wealth (σ) over and above the growth rate (g) cause the preponderance of wealth in society's total income (ω) to rise over time.[9]

The above suffices to put together, in summary form, the main analytical argument that is the foundation of Professor Piketty's book:

> We live in a low growth (g) era. Courtesy of 'Law' 2, net savings boost the wealth-to-GDP ratio (ω) because savings as a percentage of total wealth (σ) rise faster than the economy's growth rate. 'Law' 1 then kicks in. As the wealth-to-GDP ratio (ω) rises, the already wealthy acquire access to a higher rate of return to their wealth in proportion to existing wealth (i.e. ρ rises). This means that the returns to wealth also increase *vis-à-vis* national income (i.e. x rises in sympathy). Finally, 'Law' 3 ensures that the wealth-inequality-multiplier described above becomes a wealth-inequality-accelerator as inheritance permits the creation of dynastic wealth concentrations which add fuel to the inferno of in-egalitarianism. So, given the trends established during the past three decades, with savings rates at 10% and growth no more than 1.5%, capitalism's current steady state is pushing us to a situation where wealth will exceed six times GDP and the proportion of GDP that will be going to those living off wealth (as opposed to wages) will be at least one third.[10] This is an unsustainable tendency that operates like a time bomb in the foundations of liberal democracies.

Undoubtedly, those of us already convinced that global capitalism is on an unsustainable path find the above verdict plausible. Alas, lowering one's analytical guard just because one likes the offered analysis' epilogue is fraught with danger (e.g. a powerful backlash from the supporters of even greater inequality), not to mention unworthy of an inquisitive mind. Looking once more at the logical structure of Professor Piketty's argument, its flimsiness becomes clear quickly.

Two are the conditions that must hold for the above storyline to hold together. One pertains to 'Law' 2 and boils down to the requirement that, as mentioned above, net savings must transform themselves, without any 'leakages', into new wealth. The second one is that, in the context of 'Law' 1, increases in ω must give rise to, or at least be consistent with, increases in

---

[9] Note that, by definition, $\dot{\omega} = \frac{Y \times \dot{W} - \dot{Y}W}{Y^2} = \frac{\dot{W}}{Y} - g\frac{W}{Y}$. If we then assume that $\dot{W} = S$, it turns out that $\frac{\dot{\omega}}{\omega} = \frac{S/Y}{\omega} - g = \frac{\frac{S}{Y}}{\frac{W}{Y}} - g = \frac{S}{W} - g = \sigma - g$ where s=S/Y

[10] To see how these numbers are derived, we need to inspect the steady state of the differential equation time-path in 'Law' 2. If we assume $\Delta W_t = S_t$ then we can re-write this assumption as $W_{t+1} = W_t + S_t$. Dividing both sides by $Y_{t+1} = (1 + g_t)Y_t$ we get:
$\omega_{t+1} = \frac{W_{t+1}}{Y_{t+1}} = \frac{W_t + S_t}{(1+g_t)Y_t} = \frac{1}{(1+g_t)}[\omega_t(1 + \sigma_t)]$ or $\omega_{t+1}/\omega_t = \frac{1+\sigma_t}{1+g_t}$.
In other words, in discrete time, the steady-state condition $(\omega_{t+1} = \omega_t)$ requires that $\sigma_t = g_t$ or $s_t/\omega_t = g_t$. If, as Professor Piketty suggests, our era is one in which growth is stuck at 1.5% (g=0.05) and savings ratios are stabilising at 10% of GDP (i.e. s=0.1), then global capitalism tends towards $0.1/\omega_t = 0.015$ or $\omega_t = 6.67$. Plugging $\omega_t = 6.67$ into 'Law' 1, and assuming as Professor Piketty does that the rate of return to wealth ρ is approximately 5% (i.e. ρ=0.05), then it turns out that x=0.33. This means that wealth's monetary value will tend to 670% of GDP while non-wage income (accruing to wealth assets) stabilises at one third of GDP annually.

ρ and in x. Below I refer to the first condition as Professor Piketty's 1st Axiom and to the second condition as his Theorem.

> **Axiom 1:** (i) All net savings become new wealth. (ii) There can be no new wealth unless there are positive net savings from which to materialise.[11]

While this axiom seems plausible, the question is whether it is consistent with the particular definition of wealth at hand. In times typified by a glut of savings (e.g. the billions of idle dollars and euros currently 'parked' with Central Banks or in zero-interest bearing accounts) and wildly fluctuating real estate prices, it seems a little *risqué* to presume that there are neither any leakages in the process transforming net savings into fresh wealth nor any instances when wealth is created in the absence of new net savings.

For example, consider Europe's periphery today, with its collapsed house prices and catastrophic falls in aggregate wealth *at a time when net savings are increasing* (as the private sector is de-leveraging). This observation should cast serious doubt on the notion that net savings translate automatically into greater wealth, as should the memory of long periods prior to 2008 when asset price inflation managed substantially to inflate wealth even though net savings were zero or even negative (e.g. in Ireland or in the UK during the 2001-2008 period). In other words, it is neither true that *all* new wealth springs from net savings nor that without net savings there can be no new wealth.

One possible rejoinder to the above is that wealth cannot be created out of nothing. Tell this, if you dare, to the army of financial engineers whose job is, daily, to add to paper wealth by manipulating existing bundles of debt. Of course one will rightly claim that this is not 'real' wealth. Be that as it may, this is an argument that became unavailable to Professor Piketty the moment he chose to define wealth as the sum of the net market value of all assets, excluding human skills, labour power and consumer durables. Toxic derivatives are, thus, part of his wealth stock and, for this reason, his Axiom 1, underpinning 'Law' 2, is clashing with our experience of really existing, financialised capitalism.

Another potential retort by Professor Piketty is that his 'laws' pertain only to the long run. Resisting the understandable urge to quote John Maynard Keynes regarding the fate of us all in the long term, it is an empirical fact that the 'deviations' mentioned above, which contradict his first axiom, lasted almost as long as the central empirical finding central of his book; namely, that ρ has been rising since the 1970s. If these four decades have been sufficiently long to establish his main 'empirical regularity', they are long enough to qualify as a long-term deviation, and thus refutation, of his first axiom.

Let us now turn to the second condition or prerequisite for Professor Piketty's main argument to remain valid: a positive relationship between the market value stock of wealth, W, and its self-reproductive rate, ρ (=R/W). Without this positive relationship, 'Law' 1 cannot demonstrate, as the author wants to do, that income inequality is also rising. Indeed, even if the wealth-to-GDP ratio increases, it might also be true that the return to wealth per unit of wealth (ρ) falls (as long as it is falling faster than x, the ratio of returns to wealth and GDP).

[11] Axiom 1 is somewhat reminiscent of Karl Marx's 'Fundamental Theorem' which states that all profit stems from surplus labour value and no profit can be realised in the absence of surplus labour value. Of course, Marx's proposition came in the form of a genuine theorem that Marx attempted to prove (and whose proof ended up particularly controversial, as it sparked off the so-called 'transformation problem' – see Varoufakis *et al.* 2011, Chapter 5). In Professor Piketty's case, all we have is a mere axiom that is not even discussed in any great detail, buried as it is inside the unfolding narrative.

Unwilling to leave that possibility open, and thus blunt his powerful storyline, Professor Piketty wants to find solid theoretical grounds in order to argue that, along with ω, x and ρ have a 'natural' tendency to rise too. Only to do this, he needs a model of ρ.

The problem with ρ, as explained in the previous section, is that its numerator (R) conflates too many disparate income streams (e.g. the proceeds from trading in junk CDOs, the profits of a factory owner, the income of a stamp collector from buying and selling stamps) while excluding other income streams that ought to be relevant (e.g. bankers' salary bonuses). This conflation makes it difficult to conjure up a model that delivers a coherent theory of ρ's fluctuations.

One of the, admittedly lesser, problems with this conflation is that it makes it next to impossible to compare Professor Piketty's theoretical results to those of other political economists who focus, as they should, on capital (as opposed to wealth) in an attempt to tell a story about its rate of return r (as opposed to ρ). For instance, Karl Marx famously and controversially predicted, on the basis of his assumption of an increasing organic composition of capital (or capital utilisation per unit of output), that the rate of return to capital, or the profit rate, would be in a secular decline (the infamous 'falling rate of profit' hypothesis). Confusingly, it is perfectly possible to have a macro-economy in which both Marx's r falls in the long term while Piketty's ρ is rising in the long term. Similarly with John Maynard Keynes' 'euthanasia of the rentier' hypothesis, which proposes a negative relationship between K and r, and prognosticates that a society that mechanises and automates production will be typified by a falling r. This hypothesis too can be reconciled with a rising ρ. After all, has ρ not been rising inexorably since 2008 while r (at least in its guise as the Central Banks' real overnight interest rate) has hit the 'lower zero bound'?

None of these qualms seem, however, to have impeded Professor Piketty's commitment to telling a determinate story regarding the determination of his ρ, as a prelude to 'closing' his model of wealth and income dynamics in a manner reinforcing his argument that ω, ρ and x (see 'Law' 1) have a tendency to rise all at once. In a spectacular, and stunningly unacknowledged, move, the purpose of which is to provide him with the missing theory of the determination of ρ, he shifts surreptitiously from his ρ to the economists' r (be they neoclassical, Marxist or Keynesian). All of a sudden (around p.216), his rate of return to money-valued wealth is treated as if it were the rate of return to the type of physical capital goods that one comes across in standard neoclassical textbooks. Why? Because Professor Piketty wants to borrow from the latter their determinate theory of r, his hidden assumption being that r and ρ are either the same or highly correlated.

4. The slide to vulgar neoclassicism

Honouring a long tradition of mainstream economics (and corporate accounting for that matter), according to which the modeller's ends justify his underlying assumptions, Professor Piketty picks the one aggregate production function in neoclassical textbooks which delivers the relationship between K and r that he needs – and which he uses to tie up his wealth (W) metric with wealth's rate of reproduction (ρ). His pick is the CES (constant elasticity of substitution) aggregate production function that can deliver K and r values that move in unison as long as the elasticity of substitution of capital and labour in the production of given units of output is greater than one.

Suppose that aggregate output:

$$Y = \left\{\alpha K^{\frac{\varepsilon-1}{\varepsilon}} + (1-\alpha)L^{\frac{\varepsilon-1}{\varepsilon}}\right\}^{\frac{\varepsilon}{\varepsilon-1}}$$

where α is an exogenous share parameter and ε is the elasticity of substitution between capital input (K) and labour input (L) for the production of the same output. The first order derivative of output w.r.t K. i.e. the marginal product of capital (MP_K), equals $\alpha(K/Y)^{(-1/\varepsilon)}$.

> **Theorem:** The rate of return to capital, r, is determined by its marginal productivity and, thus, $r = \alpha(K/Y)^{(-1/\varepsilon)}$.

The proof of this standard neoclassical theorem requires two familiar axioms that, intriguingly, never get much of a mention in *Capital in the Twenty-First Century*:

> **Axiom 2:** Aggregate capital K is an independent variable in the determination of the rate of return to capital r (in the sense that r is not necessary in the measurement of K).

> **Axiom 3:** Labour has, in the following sense, precisely zero bargaining power in the determination of wages and employment levels: Wages are determined *as if* by some large-scale, economy-wide auction in which workers pile up the labour services they want to rent out and allow employers to bid for them, settling a wage that (i) reflects labour's marginal product and (ii) clears the labour market. Then, given that equilibrium wage, employers choose freely how much labour, or employment, to hire; i.e. they select the point on their labour demand curve that corresponds to the equilibrium wage.

Even with Axioms 2&3 in place, sufficing to prove Theorem 1, to have any relevance to the preceding analysis of a society's wealth dynamics, the above results must be augmented by Axiom 4:

> **Axiom 4:** K equals (or is highly correlated with) W and r equals (or is highly correlated with) ρ.

Of course, Professor Piketty does not need to make Axiom 4 explicit as he has already subsumed it by adopting K and r to refer, respectively, to W and ρ throughout his book. With this sleight of hand, and the rest of the axioms in place, he can now argue that:

$$\rho=r=\alpha(K/Y)^{(-1/\varepsilon)}=\alpha(W/Y)^{(-1/\varepsilon)}=\alpha\omega^{(-1/\varepsilon)}.$$

Substituting into 'Law' 1 (see previous section), he finds that $x=\alpha\omega^{(\varepsilon-1)/\varepsilon}$. All he now needs in order to complete his narrative is Axiom 5 below:

> **Axiom 5:** The elasticity of substitution (ε) in our economies' production function exceeds unity.

Indeed, if ε>1 then ρ,ω and x all rise together, as Professor Piketty believes is capitalism's innate tendency. And what does ε>1 mean? At ε=1, the production function is of the Cobb-Douglas kind. This will not do, as such 'technology' would result in an inverse relationship between K and r. But when ε>1, production technology is moving toward a linear type where

labour and capital can be substituted for one another at a constant rate and K and r rise or fall together. Moreover, although this is not mentioned by Professor Piketty, it can be shown that the larger ε the more the economy grows in a steady-state (see Klump and Preissler, 2000).

With the underlying model now in full view, it is possible to assess its assumptions one by one.

Axiom 1 is impossible to fathom given Professor Piketty's definition of wealth (W) and its returns (R) while Axiom 4, we have already seen (see the previous section), is hardly defensible by any school of economic thought, including the neoclassical mainstream. Axiom 5, on the other hand, is the least problematic,[12] if one is prepared to adopt Axiom 2 which is, in fact, an axiom that neoclassical research programs *must* make even though it has been shown to be logically incoherent.

Why is Axiom 2 logically incoherent? Because, as the so-called Capital Controversies revealed in the 1960s, aggregate capital (K) cannot be measured independently of its rate of return (r), in which case r cannot be said to be determined by the first order derivative of Y w.r.t K. (see Harcourt, 1972, and Cohen and Harcourt, 2003). The reason why neoclassical theorists ignore this 'small' logical difficulty, and habitually adopt Axiom 2, is that their only alternative is to abandon their neoclassical research program (e.g. to switch to a theory of production like that of Luigi Pasinetti[13]) which endows them with tremendous discursive power in the academy.[14] It would take a truly heroic disposition to do this. Professor Piketty sides with them, in sticking to a neoclassical production function but, intriguingly, chooses to misrepresent the meaning and outcome of the Capital Controversy debates, rather than to ignore them (as is the neoclassical 'practice').[15]

Of Professor Piketty's five axioms, Axiom 3 is the most revealing since it shows his economics to be not merely neoclassical but a species of antiquated, vulgar neoclassicism. By assuming wage-taking firms and workers, on the one hand he succeeds in determining ρ in a manner that is consistent with a rising ω and x but, on the other hand, he is paying the hefty price of assuming:

(a) the impossibility of involuntary unemployment[16] (i.e. of recessions or even mild depressions, like the one Europe is now experiencing or the 'secular stagnation' we encounter today in the United States, the UK and Japan); *and*

(b) the perfect incapacity of labour to bargain collectively or to exert extra-market influence in the wage and employment determination process.

Run-of-the-mill, junior economists, who just want to 'close' some inconsequential neoclassical model and publish it in some run-of-the-mill journal (e.g. in the pursuit of tenure), can be excused for adopting Axiom 3. However, Axiom 3 has been surpassed by enlightened

[12] Axiom 5 is the least problematic in this analysis. If we *had* to adopt a CES aggregate production function, we might as well opt for an elasticity value large enough to capture the fact that, in the real world, it is often impossible smoothly to substitute labour with capital while affecting output.
[13] See Pasinetti (1977,1983).
[14] For an analysis of the sociology of knowledge behind this 'choice', see the Chapter 1 in Varoufakis (2013).
[15] In his only refernce to the Cambridge Capital Controversies the author tells his reader that the objection to the neoclassical aggregate production approach had to do with a dislike of capital-labour substitutability (when the objection concerned the logical fallacy of needing to determine r before measuring K so that r can be determined). He also states, as a matter of fact, that the neoclassical argument won the argument (which, of course, it did not).
[16] Even a cursory inspection of Axiom 3 reveals that, as wages equal marginal productivity and employers are free to choose the level of employment on their labour demand curve, there can never exist a single worker willing to work for the going wage but unable to find a job.

members of the mainstream a long time ago and to such an extent that the economics mainstream itself now rejects Axiom 3 as too uncouth. For instance Akerlof (1980, 1982) and Akerlof and Yellen (1986) showed that it is perfectly possible for involuntary unemployment to persist in neoclassical models. All it takes is an admission that wages and unemployment levels influence labour productivity, a terribly uncontroversial and highly plausible assumption. Moreover, as Varoufakis (2013, Chapter 2) demonstrates, even a small degree of bargaining power on the part of a collective of workers (e.g. a trades union, an informal association) suffices to throw off the labour demand curve not only the actual levels of wages and employment but even the wage and employment *targets* of both workers and their employers. In short, *any* level of involuntary unemployment, especially when combined with *some* bargaining power in the hands of labour, radically undermines Professor Piketty' theory of income distribution.[17]

The question thus becomes: why did the author of a major treatise on global inequality adopt Axiom 3? Why did he ignore not only the compelling objections of dissident economists but also forty years of neoclassical efforts to instil a modicum of realism into neoclassical models? Does he not recognize that, as a long-standing social democrat (which Professor Piketty certainly is), he may have a certain difficulty explaining (even to himself) his:

- assumption that involuntary unemployment cannot prevail,
- unqualified adoption of Say's Law,
- implicit rejection of the notion that investment is influenced by aggregate demand,
- supposition that savings adapt to investment (rather than then the opposite); *and his*
- espousal of the type of supply-side economics that caused so much damage upon the poor whose plight his book is, ostensibly, passionately concerned with?

I have no doubt that Professor Piketty is fully aware of all of the above but, nevertheless, opted for a particularly vulgar form of neoclassicism that jars terribly with his own social democratic pedigree. The next section offers an explanation of this peculiar choice.

5. Why, oh why?

Controversial assumptions have a *raison d' être* only if there is no other way (i) to generate some desired hypothesis or (ii) to 'close' one's model. In the case of Professor Piketty's controversial axioms (see previous section), it is clear that (ii) must have been his prime motivation. For if he simply wanted to make the point that wealth inequality tends to reproduce and reinforce itself, he needed none of his problematic axioms.

It is, demonstrably, a simple matter to prove that when the rich have a higher propensity to save than the average person, the chances are that their share of wealth will be rising. As long as they save more than the poor and receive total income (wage income plus returns to their wealth) well over and above the average citizen's income, the rich will find themselves on a perpetual escalator that guarantees them a constantly increasing share of aggregate wealth. And even if they enjoy *less* than half of aggregate income, it is still possible to show that their wealth share will be rising as long as their marginal propensity to save is considerably greater than that of the poorer citizens.[18] In short, none of the modelling tricks

[17] Galbraith (2000) shows the importance of industry-specific labour rents.
[18] Let γ equal the rate at which the wealth of the rich grows in relation to aggregate wealth, or

that left Professor Piketty open to serious criticism in the previous section are necessary in order to show that wealth inequality tends to reinforce itself.

So, why? Why base such a weighty treatise, as *Capital in the Twenty-First Century* clearly is, on shaky theoretical foundations? If I were allowed to speculate on this question, I would be tempted to outline two reasons. One is expediency. Professor Piketty's analysis allowed him to come up with some very catchy numbers; e.g. the 'result' that when the rate of return to wealth is at its historic average of around 5%, there is a tendency for wealth to grow to more than six times the level of GDP and for income accruing to wealth to converge to one third of GDP (see note 9). This is the stuff that contributes to headlines that journalists and the wider public are eager to consume. But to come up with these numbers, and then argue that they are reflected in the empirical data, the author had to 'close' his model; he had somehow to snatch determinacy from the jaws of radical indeterminacy. And if this requires incorrigible assumptions that are ill equipped to sustain the cold light of critical analysis, one may be tempted to assume that the wider public will never know or care. Catchy numbers, in combination with excellent marketing, are bound to over-rule any objections like the ones appearing in this journal in general and in the present paper in particular.

A second, related, reason has to do with a penchant for staying clear of some fascinating, but also all-consuming, debates within political economics. To give a flavour of this, consider the only decent alternative to Professor Piketty's axioms. Without Axioms 2&3, for example, he would have to choose between (or some combination of):

a) the aforementioned sophisticated neoclassical theorists' models of efficiency wages and endogenous involuntary unemployment
b) analyses along the lines of Richard Goodwin and Luigi Pasinetti that demonstrate the permanence and indeterminate nature of cycles unfolding on the two-dimensional plane of growth and income distribution (see Taylor, 2014)
c) Keynes' argument that aggregate investment is perfectly capable of driving employment and aggregate income, while being *driven* by aggregate employment and income, thus giving rise to multiple macroeconomic equilibria some of which involve permanently high unemployment, secular stagnation etc.

While (a), (b) and (c) would furnish Professor Piketty with narratives significantly more sophisticated and nuanced than his vulgar neoclassical framework, there is one thing they share that, one suspects, makes them terribly unattractive to him: they are radically

---

$\gamma = \frac{\Delta W^R}{\Delta W} = \frac{s^R(Y^R+R^R)}{s(Y+R)} = \xi\frac{M}{N}$ where,
W^R is the wealth of the rich
Y^R is the wage income that the rich receive
R^R is the unearned income the rich receive from owning wealth assets
s^R is the propensity to save of the rich
ξ equals s^R/s – i.e. is the ratio of the saving propensity of the rich vis-à-vis society's average propensity to save
$M = Y^R + R^R$ is total income of the rich
$N = Y + R$ is society's total income (from both labour and from owning wealth)
For the wealth distribution increasingly to favour the already rich, i.e. for γ>1, ξ>1 is a necessary but not sufficient condition. If M>N, then γ>1 and so the wealth distribution will be increasingly unequal, favouring the rich; that is, if the wealthy receive more than 50% of total income, and save more than average, they will own an increasing portion of society's wealth. But even if the rich receive less that 50% of societal income (i.e. if M<N), wealth will concentrate increasingly in their hands as long as $\xi > \frac{M}{N}$.
For example, if the rich enjoy 40% of total income, but they save more than 12.5% of their income, when the average citizen saves only 5%, then the rich can expect to own a greater and greater portion of total wealth.

indeterminate models, in the sense that they cannot offer determinate answers to the question "what will the wage share be given all the microeconomically relevant data?"

In conclusion, Professor Piketty chose a theoretical framework that simultaneously allowed him to produce catchy numerical predictions, in tune with his empirical findings, while soaring like an eagle above the 'messy' debates of political economists shunned by their own profession's mainstream and condemned diligently to inquire, in pristine isolation, into capitalism's radical indeterminacy. The fact that, to do this, he had to adopt axioms that are both grossly unrealistic and logically incoherent must have seemed to him a small price to pay.

6. Explaining the 'aberration'

Professor Piketty's empirical findings confirm the widely acknowledged fact that wealth inequality rose exorbitantly during the 19th Century but began to ebb in the 1910s, continuing its slide during the two world wars until the time the Bretton Woods system caved in. Since then, it has resumed its upward trend. If his analytics are taken for granted, accepting that inequality must normally rise and rise, then the bulk of what Eric Hobsbaum described as the Short Twentieth Century (1914-1989) manifests itself as an 'aberration'; a departure from capitalism's 'natural' tendency to boost ω at a rate maintained through the operations of ρ.

To explain this remarkable 'aberration',[19] spanning at least one sixth of the 20th Century, Professor Piketty refers his reader to the effects of the two world wars on the politicians' commitment to egalitarianism, the imposition of strict capital controls by the New Dealers (which later spread worldwide under Bretton Woods), the positive effect of trades unions on the wage share, of fiscal policies that civilised society *via* progressive income taxation, etc. Undoubtedly, these factors forged a more equitable distribution of income and wealth. However, one might have expected from Professor Piketty an explanation of why these policies and institutions were in place after 1949 and why they survived until 1970 but not afterwards.

Why, for instance, were the New Dealers, as Galbraith (2014) reminds us, intent on, and capable of, preventing (both during and especially *after* the war had ended) the creation of multi-millionaires? Why were Republican administrations in the United States (e.g. under President Eisenhower) or Tory governments in Britain (e.g. under Harold Macmillan) uninterested in reversing the decline of inequality and adopting the trickle-down fantasies that prevailed after the 1970s under both Democrat and Republican, Tory and Labour (or European social democratic), administrations? Were the exogenous shocks that pushed capitalism into a more egalitarian posture occasioned by a visitation of an 'exogenous' ethical spirit upon the high and mighty, perhaps one brought on by the war? Or could the answer, instead, lie in some deeper dynamic at work that is as endogenous to capitalism as the latter's tendency to enrich the already wealthy? And could an argument be made that the said dynamic fizzled out in the 1970s for reasons that are in no sense 'natural'?

Professor Piketty, rather than attempting to tackle such questions, seems eager to transcend them by implying that the factors which caused the '20th Century aberration' had an

[19] Other authors have delved into Professor Piketty's empirics more diligently, and in greater detail, than I – see for example Galbraith (2014). My focus will, instead, be on explanations the author gives for the observed 'aberration'.

exogenous expiry date. Once the latter arrived, inequality returned to its long-term equilibrium path. At the very least, it is comforting to note that his ironclad empirical determinism maps fully into his analytical determinism (as outlined in the previous sections), even if it throws no light on 20th Century, or early 21st Century, economic history.

Elsewhere (see Varoufakis, 2011, 2nd edition 2013), I have sought to provide the kind of answer that Professor Piketty does not. While this is not the place to offer the argument in full, it may be helpful for the reader briefly to sample *one* possible explanation of why the 20th Century was no aberration but, rather, an illustration that, while there is nothing 'natural' or deterministic about the wealth and income distributions that capitalism throws out, nevertheless coherent accounts of the feedback loop between its politics and economics are possible.

In summary, Varoufakis (2011, 2nd edition 2013) hypothesises that, having already run the war economy successfully, the New Dealers feared, with excellent cause, a post-war recession. In charge of the only major surplus economy left after the war had demolished most of Europe, they understood that the sole alternative to a global recession, which might have threatened an already weakened western capitalism, would be to strengthen aggregate demand within the United States by (a) boosting real wages and (b) recycling America's aggregate surpluses to Europe and to Japan so as to create the demand that would keep American factories going. If anything, Bretton Woods was the global framework within which this project was embedded. Its fixed exchange rates, capital controls and an underlying international consensus on labour market policies that would keep the wage share above a certain level, were all aspects of the same struggle to prevent the post-war world from slipping back into depression.

Naturally, the resulting wealth and income dynamics reduced inequality, increased the availability of decent jobs, and produced capitalism's golden age. Was this an aberration? Of course it was not! The Marshall Plan, the Bretton Woods institutions, the strict regulation of banks etc. would not have been politically feasible had capitalism not threatened to commit suicide in the late 1940s, as it does once in a while (the last episode having occurred in 2008). Were these policies and new institutions inevitable? Of course they were not! While the political interventions that had the by-product of reducing income inequality were fully endogenous to the period's capitalist dynamics, the latter are always indeterminate both in terms of the politics that they engender as well as of their economic outcomes.

Alas, Bretton Woods and the institutions the New Dealers had established in the 1940s could not survive the end of the 1960s. Why? Because they were predicated upon the recycling of American surpluses to Europe and to Asia (see above). Once the United States slipped into a deficit position, some time in 1968, this was no longer possible. America would have either to abandon its hegemonic position, together with the dollar's 'exorbitant privilege', or it would have to find another way of remaining at the centre of global surplus recycling. Or, to quote a phrase coined by Paul Volcker, "if we cannot recycle our surpluses, we might as well recycle other people's surpluses".

This is, according to my book's narrative, why the early 1970s, and the end of Bretton Woods, proved so pivotal: The United States, through its twin deficits, began to absorb from the rest of the world both net exports and surplus capital, therefore 'closing' the recycling loop. It provided net exporters (e.g. Germany, Japan and later China) with the aggregate demand they so desperately needed in return for a tsunami of foreign capital (generated in the surplus

economies by their net exports to America, and to other economies energised by the United States' trade deficit).

However, for this tsunami to materialise capital controls had to go, wage inflation in the United States had to drop below that of its competitors, incomes policies had to be jettisoned, and financialisation had to be afforded its foothold. From this perspective, inequality's resurgence in the 1970s, the never-ending rise of finance at the expense of industry, and the diminution of collective agency around the world, were all symptoms of the reversal in the direction and nature of global surplus recycling. The manner in which by-product 'inequality' and by-product 'financialisation' coalesced to destabilise capitalism, until it hit the wall in 2008, is a process that several studies have thrown light on in recent times (e.g. see Galbraith, 2012). Professor Piketty's single-minded effort to construct, at any cost, a simple deterministic argument is, unfortunately, not one of them.

7. Conclusion: political repercussions in the struggle for equality and… Europe

Capital in the Twenty-First Century has been hailed as a book to turn the tide of inequality; a treatise that will blow fresh winds into egalitarianism's sails. I very much fear it will do the opposite. For two distinct reasons.

Take a brief look at today's Europe. In its periphery, proud nations are beaten into a pulp, a humanitarian crisis is on the boil and, naturally, inequality is having a field day. Why? Because of the European leaders' denial that this is a systemic crisis in need of systematic treatment and due to their insistence that the crisis was caused by too lax an imposition of the existing rules, as opposed to a faulty economic architecture and rules that were, therefore, impossible to impose once a global financial crisis hit in 2008.

Interestingly, Professor Piketty has recently assembled a group of fifteen French economists (the so-called Piketty Group) that have joined forces with a group of German economists, known as the Glienecker Gruppe, to propose institutional changes that may help resolve the Euro Crisis and return Europe on the path of stability and integration. The parallel with *Capital in the 21st Century* is uncanny. Professor Piketty has a talent for making bold statements replete with good intentions. Just as he presents his *Capital* as a dagger with which to slay the abomination of unbearable inequality, so too his stated intention on Europe is to end the crisis through a recognition that:

> "…Europe's existing institutions are dysfunctional and need to be rebuilt. The central issue is simple: democracy and the public authorities must be enabled to regain control of and effectively regulate 21st century globalised financial capitalism." (Piketty, 2014)

Stirring words! Until, that is, one delves into the actual proposal. Galbraith and Varoufakis (2014), who did precisely that, show that the Piketty proposals for Europe amount to: (a) a fresh spate of universal austerity that will be felt throughout Europe, and (b) a form of political union that, as Varoufakis (2014) argues, can be described better as an 'iron cage' which extinguishes all hope that Europe may move toward a democratic federation.

Similarly with inequality. When it comes to Professor Piketty's policy recommendations for stemming inequality's triumphant march, the new idea on offer is the much-discussed proposal

for a global wealth tax.[20] Most commentators have focused on its utopian nature, which is disarmingly acknowledged by Professor Piketty himself. I shall not do so. Rather, allow me to assume that it is feasible and that it is agreed to by, say, the G20. Consider what the implementation of this global wealth tax would mean:

Returning to the long-suffering Eurozone, let us pay a visit to one of the thousands of Irish families whose members remain unemployed, or terribly under-paid and under-employed, but whose house has 'managed' to escape the travails of negative equity. According to Professor Piketty, these wretched people should now be paying a new wealth tax on the remaining equity of their homes, in addition to their remaining mortgage repayments. Independently of their income streams!

Taking our leave from these suffering families, whom Professor Piketty's wealth tax would burden further, let us now turn to a Greek industrialist struggling to survive the twin assaults from non-existent demand and from the severe credit crunch. Let us suppose that her capital stock has not lost all of its value yet. Well, soon after Professor Piketty's policy is enacted, it most certainly will, as she must now cough up a wealth tax that is to be paid from a non-existent income stream.

How long will it take, dear reader, before committed libertarians, who believe that wealth and income inequality is not only fine but also an inevitable repercussion of liberty-at-work, latch on to the above repercussions of Professor Piketty's policy proposals? Why would they hesitate before blowing his analysis and recommended policies out of the proverbial water, castigating them as sloppy theorising leading to policies that simultaneously (a) worsen a bad set of socio-economic circumstances and (b) threaten basic liberties and rights? Moreover, is there a greater gift to committed Eurosceptics, bent on demonstrating that the European Union was a step along the road to serfdom, than Professor Piketty's proposals for the Eurozone?

Moving on to the realm of political philosophy, some years back I expressed the view that well-meaning proponents of distributive justice and equality were perhaps egalitarianism's greatest threat. Varoufakis (2002/3) argued that, for too long, western political philosophy was dominated by the clash between:

(a) those who searched ceaselessly for the holy grail of some Optimal Degree of Inequality (ODI), (e.g. Rawls, 1971), *and*
(b) libertarians insisting that there is no such thing as ODI (e.g. Nozick, 1974); that what matters instead is how just the process of wealth and income acquisition is.

Arguing from the perspective of a radical egalitarian, I conceded that the libertarians had the better tunes. That their focus on the justice of the process generating values and what distributes them (i.e. their dedication to procedural theories of justice) was significantly more interesting, useful and, indeed, progressive than the pseudo-egalitarian dedication to end-state, distributive, theories of justice. That the libertarians' readiness to separate 'good' from 'bad' inequality, rather than to treat inequality as a single, uni-dimensional metric, held more promise to those who wished to understand the vagaries, and instability, of capitalism than the social democrats' protestations that income and wealth outcomes were too unequal. That

[20] This is not to say that Professor Piketty is renouncing older ideas, like a progressive income tax, inheritance tax etc. However, as his book is meant to be 'groundbreaking' and 'innovative' the reader naturally focuses on the new ideas and policy recommendations on offer.

those interested in reinvigorating a pragmatic, radical egalitarianism should abandon static notions, and simple metrics, of equality.

Reading *Capital in the Twenty-First Century* reminded me of how the cause of egalitarianism is often undermined by its most famous, mainstream proponents. John Rawls, despite the elegance and sophistication of his 'veil of ignorance', did untold damage to the egalitarian 'cause' by offering a static theory of justice that crumbled the moment a talented libertarian took a shot at it. Professor Piketty's book will, I am convinced, prove even easier prey for today's, or tomorrow's, equivalent of Robert Nozick. And when this happens, the multitude that are now celebrating *Capital in the Twenty-First Century* as a staunch ally in the war against inequality will run for cover.

References

Akerlof, G and J.Yellen (1986). *Efficiency Wage Models of the Labor Market*, Cambridge: Cambridge University Press

Akerlof, G. (1980). 'A theory of social custom of which unemployment may be one consequence', *Quarterly Journal of Economics*, 94, 749-75.

Akerlof, G. (1982). 'Labor Contracts as Partial Gift Exchange', *Quarterly Journal of Economics*, 96, 543-69.

Akerlof, G. (2007).'The missing motivation of macroeconomics'. *American Economic Review*, 97, 5-36.

Cohen, A.J. and G. C. Harcourt (2003), 'Retrospectives: Whatever Happened to the Cambridge Capital Theory Controversies?', *Journal of Economic Perspectives*, 17, 199–214

Galbraith, J.K. (2000). *Created Unequal: The crisis in American pay*, Chicago: The University of Chicago Press

Galbraith, J.K. (2012). *Inequality and Instability: A study of the world economy just before the great crisis*, Oxford University Press

Galbraith, J. K. (2014). *Kapital* for the Twenty-First Century?, *Dissent*, Spring Issue, http://www.dissentmagazine.org/article/kapital-for-the-twenty-first-century (last accessed 19th September 2014)

Galbraith, J.K. and Y. Varoufakis (2014). 'Whither Europe? The Modest Camp versus the Federal Austerians', *Open Democracy*, 11th June 2014, https://opendemocracy.net/can-europe-make-it/james-galbraith-yanis-varoufakis/whither-europe-modest-camp-vs-federalist-austeri (last accessed 17th September 2014)

Harcourt, G. (1972). *Some Cambridge Controversies in the Theory of Capital*. Cambridge: Cambridge University Press

Klump, R. and H. Preissler (2000). 'CES Production Functions and Growth', *Scandinavian Journal of Economics*, 102, 41-56

Nozick, R. (1974). *Anarchy, State and Utopia*. New York: Basic Books.

Pasinetti, L. (1983). ' The Accumulation of Capital ', *Cambridge Journal of Economics,* 7, 405-11

Passinetti, L. (1977). *Lectures on the Theory of Production*, New York: Columbia University Press

Piketty, T. (2014). *Capital in the Twenty-First Century,* Cambridge, MA: Belknap Press.

Piketty, T. (2014b). 'Our manifesto for Europe', *The Guardian*, 2nd May 2014, http://www.theguardian.com/commentisfree/2014/may/02/manifesto-europe-radical-financial-democratic (Last accessed 17th September 2014)

Rawls, J. (1971). *A Theory of Justice*, Cambridge Mass.: Harvard University Press

Smith, A. (1759,1982). *The Theory of Moral Sentiments,* ed. D.D. Raphael and A.L. Macfie, vol. I of the *Glasgow Edition of the Works and Correspondence of Adam Smith,* Indianapolis: Liberty Fund

Taylor. L. (2014). 'The Triumph of the Rentier? Thomas Piketty versus Luigi Pasinetti and John Maynard Keynes', *mimeo*

Varoufakis, Y. (2002/3). 'Against Equality', *Science and Society*, 4, 448-72

Varoufakis, Y. (2011, 2nd edition 2013). *The Global Minotaur: America, Europe and the Future of the World Economy*, London and New York: Zed Books

Varoufakis, Y. (2013). *Economic Indeterminacy: A personal encounter with the economists' peculiar nemesis*, London and New York: Routledge

Varoufakis, Y. (2014). 'Can Europe escape its crisis without turning into an 'iron cage'?', mimeo, 7th September 2014, http://yanisvaroufakis.eu/2014/09/07/can-europe-escape-its-crisis-without-turning-into-an-iron-cage/ (Last accessed 17th September 2014)

Varoufakis, Y., J. Halevi and N. Theocarakis (2011). *Modern Political Economics: Making sense of the post-2008*

Author contact: yanisvaroufakis@gmail.com

____
SUGGESTED CITATION:
Yanis Varoufakis, "Egalitarianism's latest foe: a critical review of Thomas Piketty's *Capital in the Twenty-First Century*", *real-world economics review*, issue no. 69, 7 Oct 2014, pp. 18-35,
http://www.paecon.net/PAEReview/issue69/Varoufakis69.pdf

You may post and read comments on this paper at http://rwer.wordpress.com/comments-on-rwer-issue-no-69/