

# Laws of Capitalism

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# Laws of Capitalism

Thomas Piketty, in *Capital in the Twenty-First Century*, has invigorated inequality research and public policy discussion.

*Capital* argues that large inequalities are determined, at the macro level, by a tendency for the rate of return on capital to exceed the growth rate of the economy as a whole. This discrepancy, when combined with inheritance of capital ownership, creates “patrimonial capitalism.”

Is this explanation compelling? Blume and Durlauf (2015) (among others) argue it is not.

# The Fundamental Laws

Piketty macro theory involves two claims, which he calls fundamental laws.

1. Capital's share of output is the product of the rate of return on capital and the capital/output ratio . In Piketty's notation,

$$\alpha = r\beta$$

where  $\alpha$  is the capital share of national income,  $r$  is the rate of return on capital and  $\beta$  is the capital/output ratio. As Piketty observes, this is an accounting identity.

# The Fundamental Laws

2. In a steady state, the capital/output ratio is the ratio of the savings rate to the growth rate  $g$  of output

$$\beta = \frac{s}{g}$$

Piketty considers this a long-run equilibrium condition.

Putting the two together, the long-run capital share of output is

$$\beta = s \frac{r}{g}$$

# Defects of this “Theory”

## 1. No theory of dynamics

The fundamental laws are an accounting identity and an assertion of a steady state condition. These do not entail anything about dynamics.

# Defects of this “Theory”

## 2. No coherence of equilibrium quantities

One cannot move  $r, s, g$  willy-nilly to derive any  $\beta$  one likes. Transition paths cannot be inferred from an identity and a steady state definition.

# Defects of this “Theory”

## 3. Mishandling of Gross versus Net

Krusell and Smith (2015) point out a major lacuna in the analysis. Depreciation is not addressed. Rognlie (2016) does so as well.

# Defects of this “Theory”

## 4. Wrong Steady State Condition

On its own terms, the relevant condition in the second law is  $sr > g$ .

Further, as noted by Ray (2014),  $r > g$  denotes inefficiency in a capital accumulation path.

# The Elasticity of Substitution: A Solution?

Piketty observes that if the elasticity of substitution in production exceeds 1, an increase in the capital/output ratio will widen the gap between  $r$  and  $g$ . Accepting at this point the neoclassical theory of output distribution, he argues that by eyeballing his curves we can conclude that the elasticity of substitution exceeds 1.

Thus the accumulation of income by the capitalists feeds itself as the resulting decline in the rate of return to capital feeds the demand for capital, thereby increasing the capitalists' share of output.

# The Elasticity of Substitution: A Solution?

How does Piketty justify his empirical stance on the elasticity? He argues that, historically,  $s$  lies between 1.3 and 1.6.

These values derive from a back of the envelope calculation in which a CES production function is used to back out an elasticity value which reconciles the capital/output and capital share numbers he has constructed.

Note that attacks on marginal productivity theories of distribution contradict the use of the elasticity condition. Further, the condition does not require the laws!

# The Elasticity of Substitution: A Solution?

It is hard to conclude that, by itself, the Piketty exercise should lead economists to place a high probability on the proposition that  $s > 1$ .

Antras (2004) estimates  $s$  for US aggregate data and finds that while, under the assumption of Hicks-neutrality of technical change,  $s = 1$ , allowing for biased technical change produces estimates of 0.5 and lower. McAdam and Willmon (2013), allowing biased technical change in conjunction with demand side factors produce estimates between 0.62 and 0.87.

# The Elasticity of Substitution: A Solution?

Recent research which has attempted to link micro and macro estimates of the elasticity are consistent with values less than 1.

Oberfield and Raval (2014) use plant-level data to conclude that the aggregate elasticity for US manufacturing is approximately 0.7.

# The Elasticity of Substitution: A Solution?

Unsurprisingly, there are also studies whose conclusions are more supportive of Piketty, e.g. Bentotilla and Saint-Paul (2003).

Bottom line is that the condition is not well supported by data.

## *Capital*: Microeconomic Theory

*Capital* presents distinct explanations of what is termed “distribution at the individual level” for both capital and labor returns. In both cases, marginal product factor pricing is rejected.

# Capital Income

*Capital*'s individual-level explanation of the distribution of capital income has two dimensions.

First, *Capital* rejects marginal product factor pricing as an explanation of capital returns.

Broadly speaking the central fact is that the return on capital often inextricably intertwines elements of true entrepreneurial labor (an absolutely indispensable force for economic development), pure luck (one happens at the right moment to buy a promising asset at a good price), and outright theft. (446)

# Capital Income

This statement is somewhat confused, since it conflates the return on capital with high skilled labor and confuses expected and realized marginal product. No empirical evidence outside of anecdotes is presented for its individual claims.

Thus *Capital* does not establish either a basis for rejecting neoclassical theory, let alone replacing it

# Capital Income

Skewness of the wealth distribution is the second dimension of capital income inequality. Piketty's theoretical basis for this skewness is unclear since *Capital* does not have a theory of savings behavior, although there is an implicit assumption in much of the book that capital income is all saved while wage income is all spent.

# Capital Income

Many forms of individual heterogeneity are ignored. Variation across individuals in their attributes, which come to them by genetics, by luck, and by choices made earlier in their lives are determinants of the distribution of capital ownership at a point in time.

This heterogeneity is significant if one wants to understand the mechanisms (and therefore remedies) generating inequality.

Ethical arguments about inequality, claims concerning distributive justice, depend upon the nature of this heterogeneity; in particular, whether it arises from preferences or from constraints.

# Capital Income

Instead of presenting a theory of capital ownership, Piketty makes much of the rise of income generated by inherited capital, arguing that capital income delimits intergenerational mobility. The strongest evidence on the rising role of inheritance comes from France and led him to conclude that 25% of income will come from inherited wealth by 2030, a level comparable to 1790.

The import of this claim about inherited capital and inequality is weaker than it might appear.

# Capital Income

First, the distribution of the remaining 75% consists of wages and noninherited capital income, which bounds the inequality associated with Piketty's rentier dystopia. This simple calculation ignores any interrelationship between inheritance and wages. The ultimate role of wages in total could be bigger or smaller, depending on how wages affect inheritance and inheritance affects wages.

# Wages

While the primary focus on *Capital* is on capital income, there is substantial discussion of wage inequality, with distinctions drawn between continental Europe and the United Kingdom and, especially, the United States. For the US, the rise of “super managers” is argued to have led to wage growth being concentrated in the extreme upper tail

# Wages

What explains the growth of very high wages? *Capital* starts with an argument that this theory cannot apply to highest earners.

. . . the vast majority of top earners are senior managers of large firms. It is rather naïve to seek an objective basis for their high salaries in individual “productivity”. When a job is replicable, as in the case of an assembly-line worker or fast-food server, we can give an approximate estimate of the “marginal product” that would be realized by adding one additional worker or waiter (albeit with a considerable margin of error in our estimate). But when an individual’s job functions are unique, or nearly so, then the margin of error is much greater. Indeed, once we introduce the hypothesis of imperfect information into standard economic models (eminently justifiable in this context), the very notion of ‘individual marginal productivity’ becomes hard to define. (pp. 330-331.)

# Wages

This theoretical discussion does not rise to the level of a scholarly argument.

Examples: Uniqueness of tasks does not imply the impossibility of constructing empirical proxies for productivity. One cannot argue that if Adobe hires a manager from Microsoft, information from past is irrelevant to forming beliefs about future performance.

Imperfect information has nothing to do with the concept of marginal productivity per se.

# Wages

Beyond the evident problems with the internal logic of these claims, they are startlingly insensitive to contemporary economics. One can read *Capital* and have no idea that microeconomics in general and labor economics in particular have evolved beyond the introductory course model of wage determination. Principal-agent problems and labor contracts are hardly a new area of research. Baranchuk, MacDonald and Yang (2011) show how many stylized facts on executive compensation can be understood using modern ways to think about the setting of incentives.

# Wages

Prominent examples include Kaplan and Rauh (2010), which elaborates evidence on a wage/productivity link for managers, and Frydman and Saks (2010) which argues that executive compensation has been linked to firm performance for most decades of the 20th century and has increased since 1980. This role of productivity in high salaries is hardly resolved; contrast Bertrand (2009) and Kaplan and Rauh (2013). Strong claims about the state of knowledge are not appropriate.

# Wages

*Capital* claims that the extent of extremely high wages in a given economy is determined by social norms. The position is justified based on the argument that the far higher wages of US managers compared to continental Europe and Japan shows that national differences in tolerance for inequality, rather than differences in the productivity of top managers, explain these disparities.

# Wages

The claim about cross-country compensation differences presupposes that there are common production functions across corporations, which is hardly obvious if one considers how legal regimes or norms affect the transformation of given levels of capital and labor into output.

Clark (1987) is a classic historical study of how, for a given technology, effort norms can induce dramatic productivity differences.

# Wages

Further, it assumes that managerial talent is equal across countries. If the market for CEOs were truly international, then it is hard to see how massive salary discrepancies which are the basis of the argument can be sustained. If these flows do not occur, one can just as easily argue that Anglo-American firms create more scope for managerial productivity.

By analogy, one cannot plausibly use the fact that the Soviet Union earned far fewer Nobel Prizes in the natural sciences than UC Berkeley to argue that Nobel Prizes are socially determined, as opposed to a demonstration of the limited possibilities for many forms of exceptional scientific achievement under communism.

# Wages

Even if the claim that cross-country discrepancies in CEO salaries are not consistent with marginal productivity wage determination were true, this only implies that at least one of the two sets of CEOs is not paid this way.

One could argue that American (and in this case British) exceptionalism means that these societies do not have norms against inequality, as Piketty argues, but that this absence simply means US/UK CEOs are paid their marginal products and that it is the egalitarian norms of continental Europe that leads to a deviation between productivity and wages.

# Wages

There is a venerable tradition of arguing the capitalistic American character, which would be interpreted as suggesting a marginal productivity explanation that is unique to American salaries.

Classic studies include Sombart (1906) and Potter (1954), which respectively emphasize how American views of opportunities for prosperity helped inhibit the emergence of a socialist party and created the belief among Americans that societies should level up rather than level down.

# But What About the Long Term Factor Shares?

## 1. Conflation of Capital and Wealth

Piketty writes about wealth, not capital. “To simplify the text, I use the words ‘capital’ and ‘wealth’ interchangeably, as if they were perfectly synonymous” (p. 47)

This includes traditional definitions of capital — buildings, machines, etc. — and also land, natural resources, works of art, and so forth.

# But What About the Long Term Factor Shares?

The questions we would ask concerning the growth and distribution of wealth are different from those we would ask concerning the growth and distribution of a factor of production, and the models we would use to address questions concerning wealth are likely not those applicable to the study of the evolution of the capital stock and its distribution.

One consequence of this category error is an omission in Piketty's otherwise erudite discussion. Piketty is concerned with the political economy of wealth ownership.

## But What About the Long Term Factor Shares?

This class of measurement issues underlies a number of critiques of *Capital's* empirical analysis. The debate over the housing's contribution increases in the value of capital is one such example. Bonnet et al. (2014) make this argument and conclude that Piketty's results are due to changes in the value of housing, primarily driven by price appreciation rather than growth of the stock.

# But What About the Long Term Factor Shares?

## 2. Inappropriate Boundaries for Definition of Capital

Second, Piketty's wealth/capital measures are at once too inclusive and too exclusive: all alienable and tradeable physical commodities are included, while anything else is not.

## But What About the Long Term Factor Shares?

Human capital, for instance, barely makes an appearance. Why? “There are many reasons. . . .”, says Piketty. “The most obvious is that human capital cannot be owned by another person nor traded on a market (not permanently at any rate).” (46) This is the only reason offered, and it amounts to saying, “I don’t include it because I can’t measure it.” Measurable or not, if wealth inequality is supposed to capture claims to resources, then ignoring human capital makes reported inequality meaningless.

# But What About the Long Term Factor Shares?

Similarly, lifetime budget constraints depend on pension and social security systems, which are also ignored.

Nor is there discussion of the public capital involved in institutions ranging from universities to museums. One wonders whether inequality in the private ownership of Picasso's paintings matters much for Manhattanites who have access to the Museum of Modern Art, the Guggenheim, and the Whitney.

# But What About the Long Term Factor Shares?

## 3. Missing Dimensions of Inequality

When the just distribution of resources is at issue, more than dollars, euros, or “years of national income” (Piketty’s capital/wealth measure), the concern is with the distribution of well-being, quality of life, and opportunity.

*Capital* lacks a systematic description of the ways in which income and wealth equality are associated with inequalities in important life outcomes. Following Piketty, there are two questions we would ask about “well-being”. How is it distributed, and what are its dynamics? In particular, how well does wealth track life outcomes?

# But What About the Long Term Factor Shares?

Of course there is no time series of well-being, but other measures can be brought to bear on these questions. Biomedical measures are one example. There has been a great deal of research on the historical record over the past thirty years on anthropometric data.

Obvious example: life expectancy.

# Problems with Empirics: Ahistoricity

Piketty's vision of the long run behavior of the capital share, despite his insistence that his book is a work of history as well as economics, is in fact in important respects, ahistorical.

# Problems with Empirics: Ahistoricity

In Piketty's view a relatively high capital share is the norm for various countries, and between 50 and 70 years of the 210 years characterized by lower capital shares are anomalous due to shocks (war, high growth, wealth destroying inflation, unusually progressive tax policies, etc.).

One sees a similar view with respect to Piketty's laws of capitalism and efforts to formalize capital share dynamics. An invariant economic environment underlies his effort to link data to theory.

# Problems with Empirics: Ahistoricity

A competing vision of long run inequality dynamics, which is much closer to the way that economists and historians think about very long run behavior, is that economies, as well as associated polities and societies, have evolved across this time span.

From this vantage point, the historical regularities on which Piketty focuses are meaningless because they presuppose an underlying stationarity that does not exist. What one wants to understand is the process by which the economy evolves from approximately invariant structure to another, and how this evolution affects the income distribution.

# Problems with Empirics: Ahistoricity

While Piketty does pay lip service to structural transformation, e.g. in distinguishing between “a Society of Rentiers” and “a Society of Managers” it plays no substantive role in his thinking. Piketty treats the evolving role of human capital as nothing more than a caveat to the way he thinks about factor share inequality. He says:

The probable long-run decrease in capital’s share of national income from 35–40 percent to 25–30 percent is, I think, quite plausible and surely significant but does not amount to a change of civilization. Clearly, skill levels have increased markedly over the past two centuries. But the stock of industrial, financial, and real estate capital has also increased enormously. . . . But I have already shown enough to warn against such mindless optimism: capital has not disappeared for the simple reason that it is still useful — hardly less useful than in the era of Balzac and Austen, perhaps — and may well remain so in the future. (p. 224.)

## Problems with Empirics: Ahistoricity

This tepid view of the effects of human capital on factor shares is odd, since it is the movement from 15–25 percent factor shares (Figure 6.5) that is the problem in Piketty's eyes; no reason is given why one 10 percent movement matters more than the other.

## Problems with Empirics: Ahistoricity

More important, despite Piketty's repeated suggestions that human capital is overemphasized by economists because of its "optimistic" message about meritocracy, it is surely the case that a society in which a fixed factor, land, plays a primary role in income and wealth accumulation is very different from one in which a factor which embodies individual ability, educational and other human investments by families and the broader society.

# Problems with Empirics: Ahistoricity

Beyond the unsatisfactory treatment of human capital, there are deep problems with any search for timeless regularities of the type Piketty argues for.

Fertility patterns, political institutions, scientific and medical knowledge, religious beliefs, ethical values (one could easily treble the list) have coevolved with the capital share during the last two centuries. Claims about the return of patrimonial capitalism, measured in terms of the capital share of the income share derived from inheritance beg the question of the meaning of such a reversion given the changes of these other variables

# Problems with Empirics: Ahistoricity

The contemporary economics literature has provided a rich set of models to describe economic transformations over the last two centuries

Improvements in the levels of mortality and morbidity will only be reversed under bizarre future scenarios. The implications of a particular value of the capital share for individual wellbeing render comparability over long time horizons impossible.

# Problems with Empirics: Ahistoricity

Our general view of the limits of effort to construct grand theories of economic invariants is similar to that of Solow (1987):

The permanent substructure of applicable economics cannot be so very large because social institutions and social norms evolve, and the characteristics of economic behavior will surely evolve with them.

(pg. xxvi.)

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