Dr Piketty on wealth and capital: Accumulation vs. Finance

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Piketty’s Capital

\[ R > G = \frown \]
Piketty’s Capital

“a magnificent, sweeping meditation on inequality”; “the most important economics book of the year—and maybe of the decade.” (Krugman)

“a new and powerful contribution to an old topic: as long as the rate of return exceeds the rate of growth, the income and wealth of the rich will grow faster than the typical income from work” (Solow)

“a modern surge in inequality has new economists wondering, as Marx and Ricardo did, which forces may be stopping the fruits of capitalism from being more widely distributed. ‘Capital in the Twenty-First Century’ … is an authoritative guide to the question.” (Economist)
Piketty’s Capital

- Rising inequality of wealth and income in advanced economies since 1970s
- Piketty attributes this to rising capital/income ratio
- Implication is strong capital investment
- Piketty presents data on capital/income ratios and saving rates
- These series mainly measure price effects
- Causality of rising wealth/income → rising profits/income is incorrect
- Piketty confuses financial saving with capital accumulation
- Only financial mechanisms can generate the results claimed
**Figure:** Adjusted wage share as % of GDP at current factor cost, 1960–2012 (2013–14 predicted)

Source: AMECO
Source: Alvaredo, Atkinson, Piketty & Saez (2013)
**Piketty’s Laws of Capitalism**

First Law of Capitalism: capital income equals rate of profit times capital/output ratio

\[ \alpha = r \cdot \beta \]

Second Law of Capitalism: capital/output ratio determined by saving rate and growth rate (both exogenous)

\[ \beta = \frac{s}{g} \]

Fundamental force for divergence: rate of profit exceeds growth of output

\[ r > g \]
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\[ \frac{\Pi}{Y} = r \cdot \frac{K}{Y} \]

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\[ \frac{K}{Y} = s/g \]

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Piketty’s Laws of Capitalism

First Law of Capitalism: rate of profit equals ratio of profits to capital expenditure

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Second Law of Capitalism: Harrod-Domar-Solow equation

\[ g = \frac{sY}{K} \]

Fundamental force for divergence: rate of profit exceeds growth of output

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Piketty’s Laws of Capitalism

- Assume growth $g$ is determined by exogenous population growth and technological change.
- Saving rate $s$ and depreciation rate determine capital accumulation, thus $K/Y$ ratio and $K/L$ ratio.
- Aggregate CES production function with $\sigma > 1$ determines return on capital $r$.
- “First Law of Capitalism” determines division of income between wages and profits.
- When $r > g$, personal wealth distribution will become more unequal.
- Growing inequality caused by high $s$ and low $g$ → rising $K/Y$ and $\Pi/Y$.
- A crisis of overaccumulation?
Piketty on Marx

Marx totally neglected the possibility of durable technical progress and steadily increasing productivity

— (Piketty, 2014, p. 10)

Marx . . . uses the books of a textile factory [that] seem to show an extremely high ratio of the total amount of fixed and variable capital used in the production process to the value of a years’ output—apparently greater than ten. A capital/income ratio of this level is indeed rather frightening.

— (Piketty, 2014, p. 228)
Second Law: Solow growth model

When the formula $\beta = s/g$ was explicitly introduced for the first time by the economists Roy Harrod and Evsey Domar in the late 1930s, it was common to invert it as $g = s/\beta$.

Even more important was Solow’s introduction in 1956 of a production function with substitutable factors, which made it possible to invert the formula and write $\beta = s/g$.

– Piketty (2014)
Elasticity of K/L substitution

The interesting question is not whether the marginal productivity of capital decreases when the stock of capital increases (this is obvious) but how fast it decreases (p. 216)

Over a very long period of time, the elasticity of substitution between capital and labour seems to have been greater than one . . . Intuitively this corresponds to a situation in which there are many different uses for capital in the long run. . . . On the basis of historical data, one can estimate an elasticity between 1.3 and 1.6 . . . on the basis of historical experience the most likely outcome is . . . that the accumulation effect will outweigh the decrease in the return on capital (p. 221)
FUNDAMENTAL FORCE FOR DIVERGENCE: \( r > g \)

This fundamental inequality ... will play a crucial role in this book. In a sense it sums up the overall logic of my conclusions. When the rate of return on capital significantly exceeds the growth rate of the economy ... then it logically follows that inherited wealth grows faster than output and income. People with inherited wealth only need save a portion of their income from capital to that capital grow more quickly than the economy as a whole.
Piketty’s Laws of Capitalism

- Endogenous macro variables
  - Functional distribution $\alpha$
  - Capital-output ratio $\beta$
  - Rate of return on capital $r$
  - Saving rate $s$
  - Growth rate $g$

- Endogenous micro variables
  - Personal distribution

- Exogenous variables
  - Elasticity of substitution between K and L
  - Rate of inter-temporal discount
  - Depreciation rate
  - Technology
  - Population Growth

Piketty in a nutshell
Source: Michell (2014)
PRIVATE CAPITAL/INCOME RATIOS
Definition of capital

Two definitions of capital (Hodgson, 2014)

- A physical factor of production
- ‘...a fund of money to be invested by a person or firm in some enterprise. It can also refer to the money value of tangible and intangible assets owned by the person or firm’ (Hodgson, p. 1070)

- Piketty: ‘I use the words “capital” and “wealth” interchangeably as if they were perfectly synonymous’ (p. 47)

- ‘no need for the c-word if the w-word means the same’ (Hodgson, p. 1064)
Digression: the capital controversies

- No way to ‘measure’ physical quantity of heterogenous capital other than at market prices
- In Solow aggregate production function, quantity of capital determines price—equals marginal productivity
- ‘the problem is not the measurement of “capital” but its meaning . . . capital hires labour but labour does not hire capital.’ (Harcourt 1976, p. 29)
Capital controversies

Controversy continued, however, in the 1950s and 1960s between economists based primarily in Cambridge, Massachusetts (including Solow and Samuelson, who defended the production function with substitutable factors) and economists working in Cambridge, England (including Joan Robinson, Nicholas Kaldor, and Luigi Pasinetti), who (not without a certain confusion at times) saw in Solow’s model a claim that growth is always perfectly balanced, thus negating the importance Keynes had attributed to short-term fluctuations. It was not until the 1970s that Solow’s so-called neoclassical growth model definitively carried the day.

— Piketty (2014)
Three definitions of capital

- Physical quantity of factor of production.
- Market value of factor of production.
- Financial wealth—claims on other agents.
  - Measured at current prices
  - In flow terms: accumulation of financial claims, *matched by issuance of liabilities elsewhere*
  - *Not* equivalent to macroeconomic saving

*Financial investment is a transfer of assets, not a use of income. Buying [financial assets] transfers liquidity from one economic agent to another... macroeconomically, financial investment cannot substitute for physical investment*

– Stockhammer (2000)
**Fundamental force for divergence:** $r > g$

People with inherited wealth only need save a portion of their income from capital to that capital grow more quickly than the economy as a whole.
**Fundamental force** \( r > g \)

- Fallacy of composition: in SSBG, \( r > g \) requires consumption out of capital income (or dis-saving out of wages).
- In SSBG: \( g = sY/K = I/K \)
- Assume a closed economy without government.

\[
Y = \Pi + W = I + C \\
\Pi = I + C_c + (C_w - W) \\
\frac{\Pi}{K} = \frac{I}{K} + \frac{C_c - S_w}{K} \\
r = g + \frac{C_c - S_w}{K}
\]

- \( r > g \) requires \( C_c > S_w \).
- If workers consume income and ‘people with inherited wealth’ save all income, then \( r=g \).
Fundamental force $r > g$

- Can be extended to open economy with government sector: $r > g \rightarrow C_c + (G - T) + (X - M) > S_w$.
- Rate of profit can be maintained by export surplus, government deficit or borrowing for consumption by workers.
- Rosa Luxemburg’s profit realisation through external surplus.
- Kalecki’s ‘internal exports’
**Fundamental force** $r > g$

Outside steady-state growth:

$$\left( \frac{\dot{K}}{Y} \right) > 0 \rightarrow \frac{\dot{K}}{Y} > \frac{K}{Y}g$$

$$\Pi > Kg$$

$$r > g$$

- if rising $K/Y$ ratio then $r > g$ possible.
- Is $K/Y$ rising? (crisis of overaccumulation?)
  
  Difficult to measure!
**Figure:** Net saving, per cent of GDP
Definition of wealth and capital

- National wealth can be measured at market value or book value
  - ‘market value national wealth’, ... The capital stock of corporations is included in national wealth through the equity holdings of households and the government.
  - ‘book-value national wealth’, sums all the nonfinancial assets ... of all domestic sectors and adds the net foreign asset position.
- Piketty uses market value national wealth

The main reason is that corporate tangible assets seem to be systematically over-estimated in national balance sheets.
# Measuring $K/Y$: Macroeconomic Balance Sheet

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| Tot            | $NW_h$     |               |           |           |           |           |           |           | $H.p_h + K.p_k$ |\(- (A_b.p_a - L_b.p_l)\)

**Table**: Macroeconomic balance sheet.

$Capital_{piketty} = H.p_h + A_h.p_a - L_h.p_l + e.p_e$

$Capital_{michell} = H.p_h + K.p_k - A_b.p_a - L_b.p_l$
CONSOLIDATED BALANCE SHEET OF US CORPORATE SECTOR

Figure: Net saving, per cent of GDP
Non-financial firms’ balance sheet – US
**Figure:** Non-financial flow transactions – US
Share buybacks

When a firm buys its own shares, it enables its shareholders to realize capital gains, which will generally be taxed less heavily than if the firm had used the same sum of money to distribute dividends.

Under these conditions, it is better to treat retained earnings as savings realized on behalf of the firms’ owners and therefore as a component of private saving.

— Piketty (2014)
**Figure:** Aggregate net financial positions (stock) – US
PRIVATE VS. PUBLIC WEALTH - US

![Graph showing private vs. public wealth in the US from 1950 to 2010. The graph indicates a significant increase in government wealth compared to private wealth, with a notable peak around 2007.]
US private sector wealth accumulation

- House prices.
- Equity prices.
- Statistical discrepancy.
- Transfer of net assets from public to private sector.
**Figure:** Piketty’s K/Y and corrected K/Y – US
CONSOLIDATED BALANCE SHEET OF
UK CORPORATE SECTOR

Figure: Net saving, per cent of GDP
Figure: Piketty’s K/Y and corrected K/Y – UK
Summary and Conclusion

- Piketty claims inequality (functional and personal) driven by accumulation of real assets — positive sum game
- Measure of private wealth is faulty—driven by price changes accumulation of financial claims and redistribution from public to private sector.
- Net saving falling since 1970s, now negative in many countries
  - $K/Y$ falling (US) or flat (UK) since 70s.
  - ‘Fundamental force’ $r > g$ based on fallacy of composition
- Rise in private wealth zero-sum game—requires financial mechanism.
- Piketty cannot explanation falling wage share.