Value, price and profit

The transformation problem and its afterlife

Julian Wells

An Introduction to Post Keynesian Economics
and Political Economy
Kingston University 11–13 July 2013

Reading

1. **Preliminary**: Brendan McCooney videos at `http://www.youtube.com/user/brendanmcooney`; Marx: *Wage Labour and Capital*, *Value, Price and Profit* (also published under the title *Wages, Price and Profit*); Freeman (1995); Wells (2013); Wright (2005)
2. **Further**: Kliman (2007) *Reclaiming Marx's "Capital"*; Kliman (2012) *The Failure of Capitalist Production*; Farjoun and Machover (1983) *Laws of Chaos*; Allin Cottrell *et al.* (2009) *Classical Econophysics*.
3. **Marx**: *Capital* (but you knew that), and references given in notes and slides.
4. My web-site: `http://fass.kingston.ac.uk/faculty/staff/cv.php?staffnum=287`

How to use this document

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Outline

Notes

1. Prologue explains the alleged problem, and how it came to be re-problematised after Marx's solution.
2. TSSI: 'making sense of Marx'—although it is '20th century Marxism' that made nonsense of Marx. Falling rate of profit (LTRPF): 'in every respect the most important' (Marx – source?).
3. T-problem is a *logical* problem relating to a special case—permanent *actual* equalisation not only of profits but of market prices; in other words, 'perfect competition'.
4. The world Marx wanted to change was 'actually-existing' capitalism, so how should we interpret his theory?

What this is about . . .

. . . and what it's not

- It's about interpretation
  - is Marx a theorist of equilibrium or *disequilibrium*?
    - Compare Keynes . . .
- and disproving claim that Marx's theory is logically incoherent
  - hence allowing his other work to be considered seriously
  - in particular, falling rate of profit as basis of capitalist crisis
- It's *not* about 'correcting' or 'completing' Marx
  - neither new methods nor new solutions
  - not proving Marx's value theory *correct*
  - especially not proving that everything he wrote was *true*
- emphatically not about *re*-interpreting Marx

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Fundamental principle of interpretation (hermaneutics): can the author be read in such a way as to make their argument make sense?

Especially necessary when the text is incomplete or doubtful; vol.s II and III of *Capital* are both. Hence not about re-interpreting to fit in with some other preferred perspective.

Two quotations. . .

. . . and two interpretations

If M. Proudhon admits that the value of products is determined by labour time, he should equally admit that it is the fluctuating movement alone that in a society founded on individual exchanges makes labour the measure of value. *There is* no ready-made constituted 'proportional relation', but *only a constituting movement*.[1]

[T]he rate of profit . . . seeks the 'ideal' mean position, i.e. a mean position which does not exist in reality. In other words, it tends to shape itself around this ideal as a norm.[2]

[1] *The Poverty of Philosophy*: 71 (emphases added)
[2] *Capital* Vol. III: 273

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[2] *Capital* Vol. III: 273

Notes

Both cited in Freeman (1995): each quotation supports both temporalist and probabilist interpretations

1. Temporalism, because Marx's theory is dynamic, i.e. movement in time
2. Probabilism, because non-equalisation at any given t means we have to consider distributions of variables in cross-section as well as longitudinally, which is as far as the 'gravitation' school gets; see ergodicity below

Value, price and profit
Can labour-time explain exchange value?

Marx simply speaks of 'value theory': is it

- 'labour theory of value'?
  - labour-time *determines* value
    - x hours labour $\Longrightarrow$ y units of value
- 'value theory of labour'? [3]
  - 'how come labour is represented by (exchange) value?'
    - rather than seen directly
- both, because the representation is both quantitative and qualitative
  - the quantity of one kind of thing (ultimately, individual human activity) is represented by quantity of a quite different kind of thing (exchange value)

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Notes

1. Sometimes (often?) 'law' of value—but one that 'appears' as a law of nature (Ch.1 of *Capital*—so how does it become a law? Answer to this in today's Part 3.
2. Elson, Diane (1979) 'The value theory of labour' in Elson, D. (ed) *Value: the representation of labour in capitalism*, London: CSE Books.
3. There is a double transition here: individual human labours (arguably incommensurable) become 'abstract labour', quantities of which are (imperfectly) represented by various forms of value (exchange value, price of production, market price)

Marx's value theory 1

Commodity-owning society

- All agents equal
  - equally commodity-owners
- Workers
  - own their 'labour-power'
  - 'free' in double sense
    - free to sell labour-power to highest bidder
    - free of ownership of means of labour
- Capitalists
  - own the means of labour
    - 'means of production'

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Marx's value theory 2

Use-value and exchange-value

- Exchange value
  - determined by labour-time needed for (re-) production
  - 'use value' merely pre-condition for exchange value
- Value of labour-power?
  - exchange value
    - determined by labour-time needed to produce workers' consumption goods
    - hence for reproduction of labour-power
  - use value
    - is labour-time extracted by capitalists

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Marx's value theory 3

Explaining profits

- Workers sell
  - labour-power for agreed time-span
- Capitalists get
  - labour performed in that time
- Profit
  - A: (exchange) value of product
    - determined by labour-time
  - B: value of labour-power
    - paid as wages; determined by value of wage-goods
  - C: value of used-up means of production
  - $A - (B + C) =$ surplus-value $=$ surplus labour-time

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How to increase profits? Install machinery

A paradoxical claim, if labour is the sole source of value?

Q. How to increase surplus-value?

A. Increase surplus labour-time

- Increase total labour? (lengthen working day)
  - limited by 24 hours
- Decrease necessary labour?
  - raise productivity by introducing machinery
  - workers replace the value of their wages more quickly

Why labour-saving machinery does not shorten the working day (as much as it could)

- It saves the capitalist's time, not the worker's

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Some notation . . .

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Capital	Result	Rates of . . .	
c = constant [4]		profit	$s/(c+v)$
v = variable [5]	s = surplus value	exploitation	s/v

1. More machinery
   $\Longrightarrow$ increasing the 'organic composition of capital' (c/v)
2. Keep your eye on s/v and c/v . . .

[4] means of production
[5] wages

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Falling sideways? Deriving the LTFRP

The Law of the Tendential Fall of the Rate of Profit

- rate of profit

$$\frac{s}{c+v} \Longrightarrow \frac{s/v}{(c/v)+1} \tag{1}$$

  - … and suppose c/v increases?
- *but* counter-acting tendencies
  - increasing rate of exploitation: s/v
    - *e.g.* speed-up machinery
  - cheapening variable capital: v
  - cheapening constant capital: c
- all of which predicts … what?

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    - *e.g.* speed-up machinery
  - cheapening variable capital: v
  - cheapening constant capital: c
- all of which predicts ... what?

Notes

Falling upwards! Illustrating the LTFTG

The Law of the Tendential Fall of Things in General

- Obviously this does not refute the law of gravity
- Indeed, it confirms the law by means of the counteracting tendencies
- Without LTFRP, no theory of crisis
  - decline
  - breakdown
  - perennial crisis
  - . . . or whatever

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  - perennial crisis
  - ... or whatever

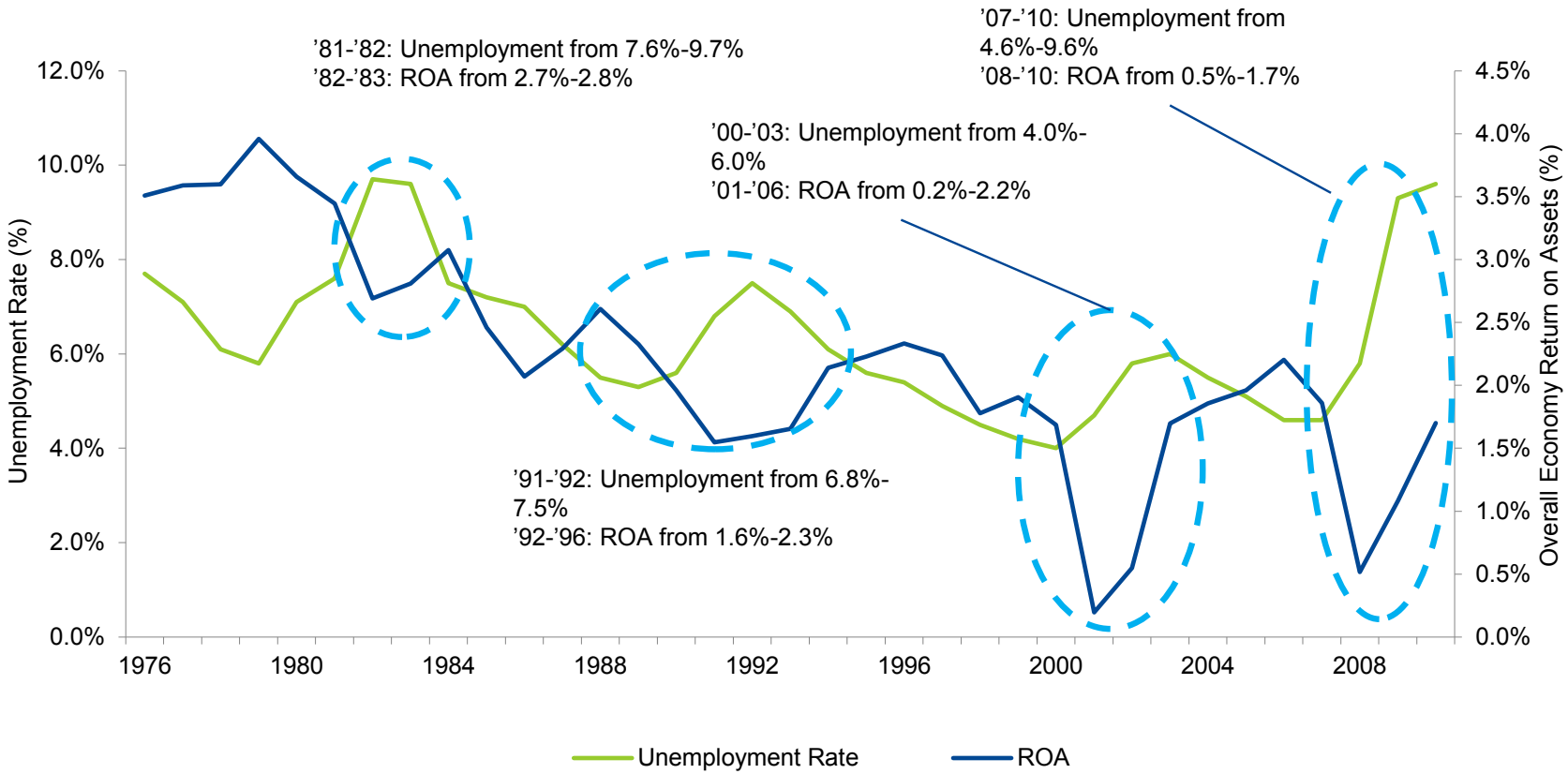
Notes

1. *Falling Upwards: how we took to the air*, Richard Holmes (2013).

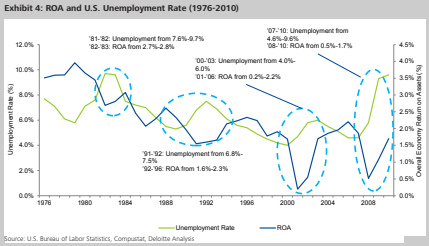
Falling downwards! News from the Edge

Demonstrating the LTFRP

Exhibit 4: ROA and U.S. Unemployment Rate (1976-2010)



Source: U.S. Bureau of Labor Statistics, Compustat, Deloitte Analysis



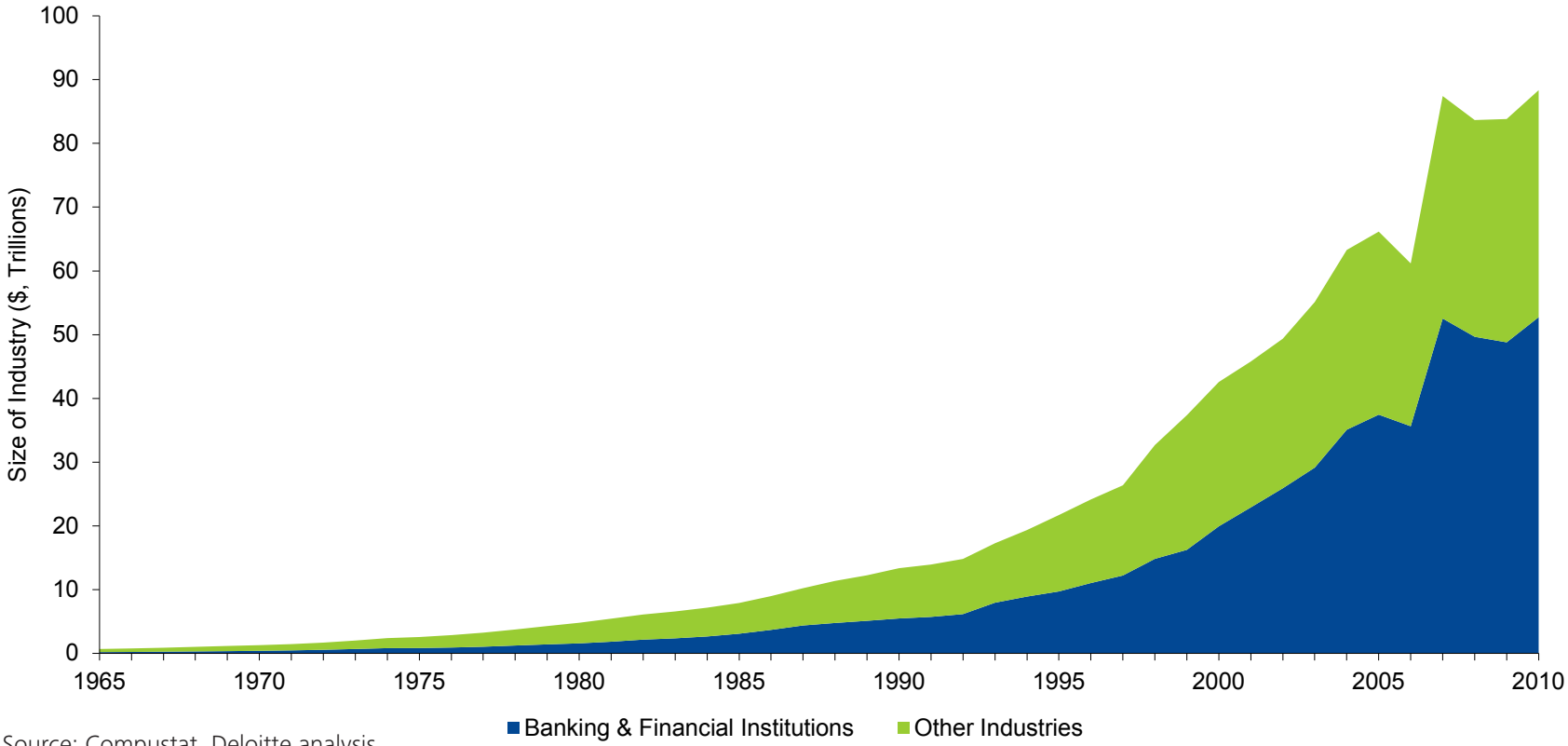
Notes

1. Deloitte Center for the Edge: *The 2011 Shift Index*, page 10, exhibit 4.
   `http://www.deloitte.com/us/shiftindex`
2. See also
   `http://www.thepointhowever.org/index.php/the-big-idea/160-capitalism-s-achilles-heel-pt-ii`

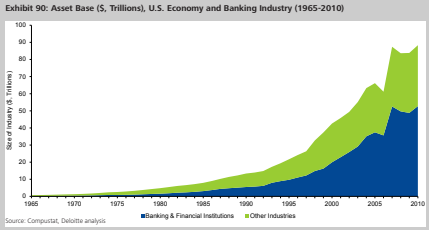
The inexorable rise of capital

Falling downwards! News from the Edge 2

Exhibit 90: Asset Base ($, Trillions), U.S. Economy and Banking Industry (1965-2010)



Source: Compustat, Deloitte analysis



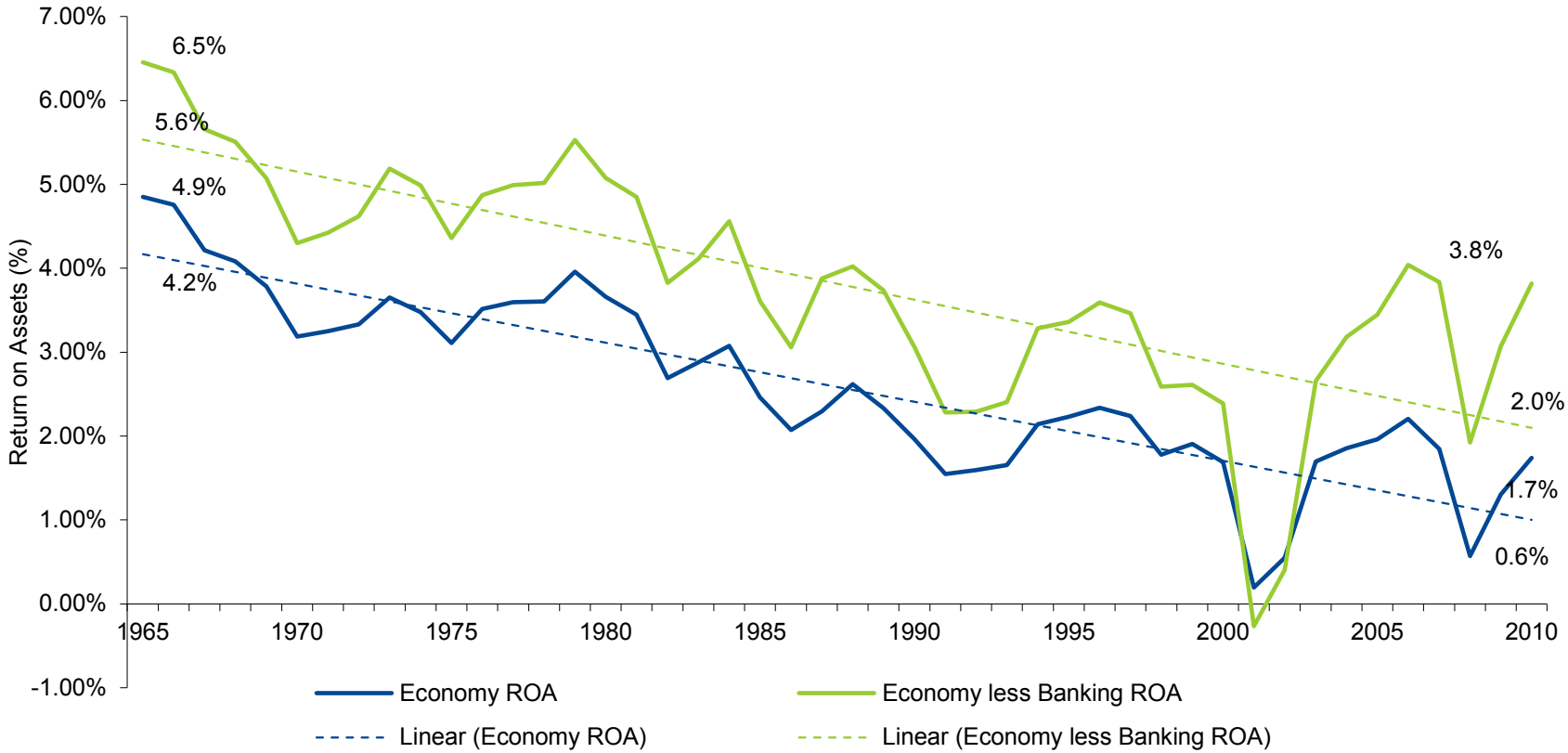
Notes

1. *The 2011 Shift Index*, page 121, exhibit 90.

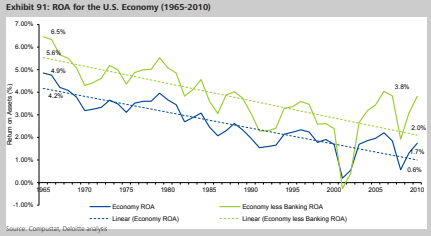
It's not (just) financialisation

Falling downwards! News from the Edge 3

Exhibit 91: ROA for the U.S. Economy (1965-2010)



Source: Compustat, Deloitte analysis



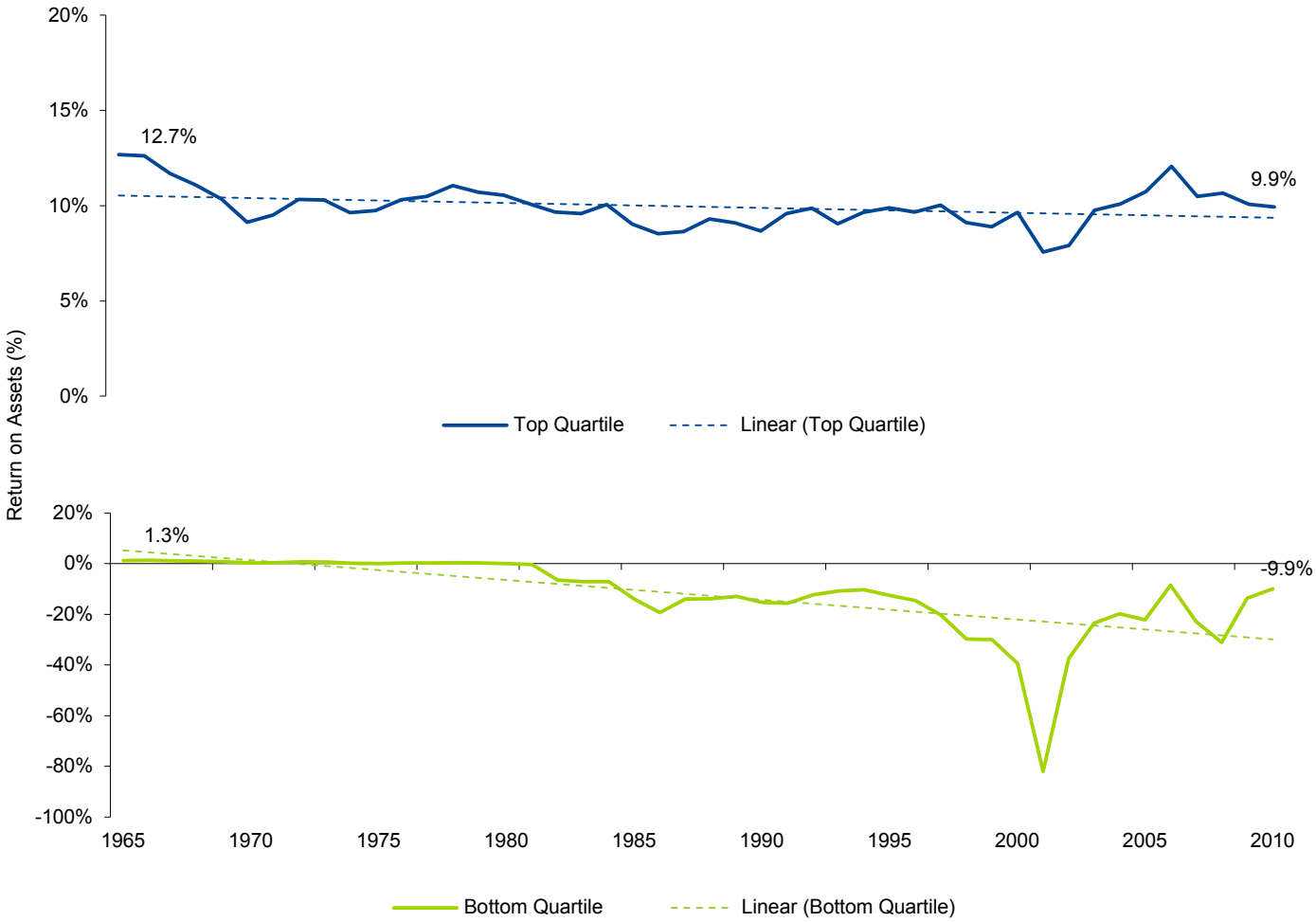
Notes

1. *The 2011 Shift Index*, page 122, exhibit 91.

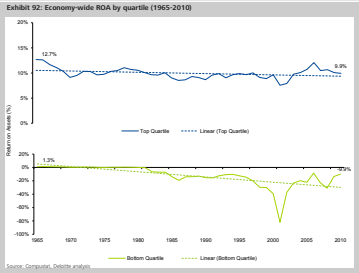
From him that hath not shall be taken away . . .

Falling downwards! News from the Edge 4

Exhibit 92: Economy-wide ROA by quartile (1965-2010)



Source: Compustat, Deloitte analysis



Notes

1. Matthew 25:29: “From him that hath not shall be taken away even that which he hath.”
2. only top one per cent of firms have increased ROA; top decile has remained steady.
3. *The 2011 Shift Index*, page 124, exhibit 92.

The transformation problem 1

More notation—and assumptions and conditions

Production			**Market**
Capital	Results	Rates of . . .	
c = constant [6]	w = value	profit: $s/(c+v)$	p = price
v = variable [7]	s = surplus value	exploitation: s/v	π = profit

- Assumptions
  - Competition equalises market profit rate, $\pi/(c+v)$
  - Equal rate of exploitation
- Conditions
  - Total value equals total price
  - Total surplus value equals total profit

[6] means of production
[7] wages

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Notes

1. **profit:** there is is distinction to be explicated—ambiguity of meanings between firm/production/market]
2. $s/(c+v)$ is a *value* expression at market level, NOT expression for firm-level profit, if c/v unequal
3. $\pi/(c+v)$ is equal to value rate as “social” or “general” rate of profit, and maximum rate of self-expansion of capitalist sector

The transformation problem 2

Disintegration of the Ricardo school

However,

- Value $\neq$ price, especially $\neq$ *market* price
- $\exists$ different 'compositions of capital' (c/v) in different industries
- $\Longrightarrow$ different ratios imply unequal profit rates
  - *if* labour time *directly* determines exchange value

Ricardo aware of the problem, but neither he nor followers had an answer

- '93 per cent' labour theory of value [8]
- Disintegration of Ricardo school [9]

[8] Stigler t.b.a.

[9] *Theories of Surplus Value* Ch.20, ¶ 2(a)

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[9] *Theories of Surplus Value* Ch.20, ¶ 2(a)

Notes

1. Marx's commentary on James Mill's method of solving the t-problem: 'a much more difficult problem to solve than that of squaring the circle, which can be solved algebraically. It is simply an attempt to present that which does not exist as in fact existing.' *TSV* Ch.20, ¶ 2(a)
2. James Mill's method: 'an attempt to present that which does not exist as in fact existing.'
3. The t-problem: 'more difficult . . . than . . . squaring the circle, *which can be solved algebraically*.
   This ought to be a clue: implies that t-problem *cannot* be (fully) 'solved' (better: 'understood') by algebra alone.

The transformation problem

Engels' prize essay competition

Set in the Introduction to *Capital* II (1884)

- Winner: Peter Fireman
- Runner-up: Conrad Schmidt
- Booby prize: George Steibeling

Notes for solution

- Two distinctions between value and price
  - Qualitative: ways of measuring—labour-time and money
    - 'Price, taken by itself, is only the monetary expression of value' [10]
  - Quantitative: 'value produced' *vs.* 'value received'
    - value determined by labour-time
    - price received for commodity in money

[10] *Value, Price and Profit*: 29

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[10] *Value, Price and Profit*: 29

Notes

1. Results announced in Preface to *Capital* III.
2. On Fireman, see Alain Alcouffe (2010), 14th Annual Conference of the European Society for the History of Economic Thought (ESHET), Amsterdam; note also:
   Highly commended: Werner Sombart
3. Engels on Steibeling: 'when a man wants to deal with scientific questions he should above all learn to read the works he wishes to use just as the author had written them, and above all without reading anything into them that they do not contain'.
   Twentieth-century Marxists should take note.
4. 'Notes for solution': see *RMC*, page 24.
5. *Value, Price and Profit*: citation is to Progress Publishers edition (1947) under the title *Wages, Price and Profit*

Marx's answer
Capitalist communism

- 'Prices of production'
  - re-distribute surplus value to equalise profit rates

Branch	c	v	s	w	π	p	$c:v$	$\frac{s}{c+v}$	$\frac{\pi}{c+v}$
1	54	6	12	72	15	75	9:1	20%	25%
2	16	4	8	28	5	25	4:1	40%	25%
$\sum$	70	10	20	100	20	100	7:1	25%	25%

- Three equalities:
  - Total surplus value = total profit
  - Total price = total value
  - Value rate of profit = price rate of profit

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Notes

1. having more productive process *does not* 'create more value': it allows you to appropriate value created by other capitalists (or rather, by their workers).

Bortkiewicz's problem

Supposed proof of 'internal contradiction'

Period	Dept.	r	c	v	s	w	π	p	$\frac{s}{(c+v)}$	$\frac{\pi}{(c+v)}$
	I		280	72	48	400	88	440	13.6%	25.0%
1	II		80	96	64	240	44	220	36.4%	25.0%
	III		40	72	48	160	28	140	42.9%	25.0%
	$\sum$		400	240	160	800	160	800	25.0%	25.0%

- With sale at values simple reproduction is possible
  - e.g., in Dept. I the value of output ($w = 400$) equals total quantity of used-up means of production: $c = 400$
- But if Dept. I output sells at prices of production ($p = 440$)
  - some will go unsold, since constant capital expenditure $c = 400$, and production will contract

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Notes

1. Department I: material elements of constant capital (means of production)
   Department II: material elements of variable capital (workers' means of subsistence)
   Department III: luxuries (capitalist consumption)
2. 'Period' and 'r': see later slide . . .

Bortkiewicz's solution

Walrasian 'marxism'

Alfred Marshall said once of Ricardo: 'He does not state clearly, and in some cases he perhaps did not fully and clearly perceive how, in the problem of normal value, the various elements govern one another mutually, not successively, in a long chain of causation.' This description applies even more to Marx . . . [who] held firmly to the view that the elements concerned must be regarded as a kind of causal chain, in which each link is determined, in its composition and its magnitude, only by the preceding links . . . Modern economics is beginning to free itself gradually from the successivist prejudice, the chief merit being due to the mathematical school led by Leon Walras.[11]

[11] Bortkiewicz (1952:23-24)

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[11] Bortkiewicz (1952:23-24)

Notes

1. 'Your writings, sir, have awakened in me a lively interest in the application of mathematics to political economy, and has pointed out to me the road to travel in my researches into the methodology of economic science.' (Bortkiewicz to Walras, at the age of 19).
2. what about *simultaneist* prejudice? The words emphasised effectively *define* the problem, without attempt at justification, as simultaneist one—indeed define simultaneist approach as only possible one

System	Branch	vpu	c	v	s	w	$\frac{s}{c+v}$
Value	1	1	96	10	14	120	13.2
	2	1	12	20	28	60	87.5
	Total		108	30	42	180	30.4

	Branch	ppu	c'	v'	π	p	$\frac{\pi}{c'+v'}$
Bortkiewicz	1	1.75	168	7	35	210	20
	2	0.70	21	14	7	42	20
	Total		189	21	42	252	20
Moszkowska-Winternitz	1	1.25	120	5	25	150	20
	2	0.50	15	10	5	30	20
	Total		135	15	30	180	20
`New and improved'	1	1.50	144	6	30	180	20
	2	0.6	18	12	6	36	20
	Total		162	18	36	216	20

System	Branch	vpu	c	v	s	w	$\frac{s}{c+v}$
Value	1	1	96	10	14	120	13.2
	2	1	12	20	28	60	87.5
	Total		108	30	42	180	30.4

	Branch	ppu	c'	v'	π	p	$\frac{\pi}{c'+v'}$
Bortkiewicz	1	1.75	168	7	35	210	20
	2	0.70	21	14	7	42	20
	Total		189	21	42	252	20
Moszkowska-Winternitz	1	1.25	120	5	25	150	20
	2	0.50	15	10	5	30	20
	Total		135	15	30	180	20
'New and improved'	1	1.50	144	6	30	180	20
	2	0.6	18	12	6	36	20
	Total		162	18	36	216	20

Notes

1. RMC Table 9.2, p.159
2. circle-squaring literature: at best two equalities preserved, usually not the vital one—i.e. profit rate
3. Bortkiewicz preserves total surplus = total profit
4. Moszkowska-Winternitz preserves total value = total price
5. 'New and improved' preserves total capital advanced = total value produced—which $\Longrightarrow$ 'profit' is a pure mark-up
6. Sweezey's endorsement, and '20$^{\text{th}}$-century Marxism'

Simultaneism $\Longrightarrow$ physicalism

Steedman's 'physical quantities approach'

- Simultaneism: requirement that per-unit input prices (or values) must equal per-unit output prices (or values)
- Physicalism: sole proximate determinants of values, relative prices, profits, and rate of profit are technology and real wages

	Corn	Price (or value)	Capital
Input	10 bushels	\$6/bushel	$\$6 \times 10 = \$60$
Output	12 bushels	\$5/bushel	$\$5 \times 12 = \$60$
Input	10 bushels	\$5/bushel	$\$5 \times 10 = \$50$
Output	12 bushels	\$5/bushel	$\$5 \times 12 = \$60$

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Notes

1. *physical* rate of return clearly 20% in both cases
2. rate of *profit* only = 20% by imposing simultaneous valuation (at any strictly positive price/value)
3. see RMC, Ch.5, for discussion
   Steedman (1977: p.72, pp.216–217) and Sraffa
   Samuelson's 'eraser method'
   struggle over wage:profit share
4. Incompatible with labour values since rising productivity $\equiv$ lower labour values (C.I); see Okishio Theorem and LTFRP
5. physical quantities are the only ones unchanged by competitive process: altered prices, and both exchanges *and use* values are *results* of competition.

The Temporal Single System Interpretation

Freeing economics from the simultaneist prejudice

Bortkiewiczian transformation problem is a problem because simultaneism

- leads to physicalism
  - leaves out labour values
- either implies static economy
- or contrary to physics
  - capitalists can't go back in time to purchase new outputs at old values/prices
    - contrary to second law of thermodynamics

Take output prices (of production) as input values in next period

- Because capitalists lay out value in form of money to purchase inputs

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Notes

Bortkiewicz refuted

Bringing back time—and giving up equilibrium

Period	Dept.	r	c	v	s	w	π	p	$\frac{s}{(c+v)}$	$\frac{\pi}{(c+v)}$
	I		280	72	48	400	88	440	13.6%	25.0%
1	II		80	96	64	240	44	220	36.4%	25.0%
	III		40	72	48	160	28	140	42.9%	25.0%
	$\sum$		400	240	160	800	160	800	25.0%	25.0%
	I	66	308	66	54	428	102	476	14.4%	27.3%
2	II	44	88	88	72	248	48	224	40.9%	27.3%
	III	30	66	66	54	164	30	140	49.1%	27.3%
	$\sum$	140	440	220	180	840	180	840	27.3%	27.3%

r = residual proceeds ('revenue', in Marx)

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Notes

1. see RMC discussion pp.151–2
2. Total price $=$ total value
3. Period 1 output prices $=$ Period 2 input prices
4. Total residual proceeds equal price of Dept. III output, so capitalists can buy luxury goods
5. Hence physical quantities are the same in each period, which is definition of simple reproduction

‘It is always possible to go wrong’

. . . and many readers have

As the price of production of a commodity can diverge from its value, so [can] the cost price of a commodity, in which the price of production of other commodities is involved ... . It is necessary to bear in mind this modified significance of the cost price ... if the cost price of a commodity is equated with the value of the means of production used up in producing it, it is always possible to go wrong. (Capital, Vol. III, p.309, New York, Vintage Books, 1981.)

- This supposedly licences simultaneism . . .
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However . . .

- the price of production of a commodity that diverges in this way from its value enters as an element into the cost-price of other commodities ... [hence] ... a divergence from the value of the means of production consumed may already be contained in the cost price, quite apart from the divergence that may arise for the commodity itself from the difference between average profit and surplus value [12]

[12] *Capital* III: 309

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Hence we are considering two different questions[13]

Marx what is the relation between values and prices in the same economy at two points in time?

- divergence 'already contained in the cost-price' (period 0)

Bortkiewicz what is the relation between prices in two different economies at the same point in time?

- difference between the surplus value and profit (period 1)

See also a telling passage from *Theories of Surplus Value*[14]

[13] Freeman (1995)

[14] TSV Part. III, p.167

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- difference between the surplus value and profit (period 1)

See also a telling passage from *Theories of Surplus Value*[14]

[13] Freeman (1995)
[14] TSV Part. III, p.167

Notes

1. "the cost-price of constant capital – or of the commodities which enter into the value of the newly produced commodity ... may likewise be either above or below its value. Thus ... the difference between cost-price and value, in so far as it enters into the price of the new commodity independently of its own production process, is incorporated into the value of the new commodity as an antecedent element"
   Theories of Surplus Value Part. III, p.167, Moscow, Progress Publishers, 1971.

Farjoun and Machover
Giving up (empirical) profit-rate equalisation

Dissolving the transformation problem

- Temporal Single System refutes claims of logical inconsistency in Marx's theory
- Farjoun and Machover drop profit rate equalisation
  - empirical approach, but also changes logic of problem
- demonstrate probabilistic correspondence of value and price categories
- appeal to statistical mechanics for hypothesis about profit rate *distribution* . . .
  - . . . which is that it should be gamma distribution

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Notes

Farjoun and Machover
Economics and physics

Laws of Chaos (1983)

- large systems of independent agents sound like markets
- large systems of independent atoms sound like ideal gas
- use statistical mechanical concepts to think about market economies
- 'econophysics' *terminology* coined by Stanley *et al.* (1992)
  - but priority of application evidently goes to Farjoun and Machover
- ideal gas laws are "emergent property" of interaction of atoms

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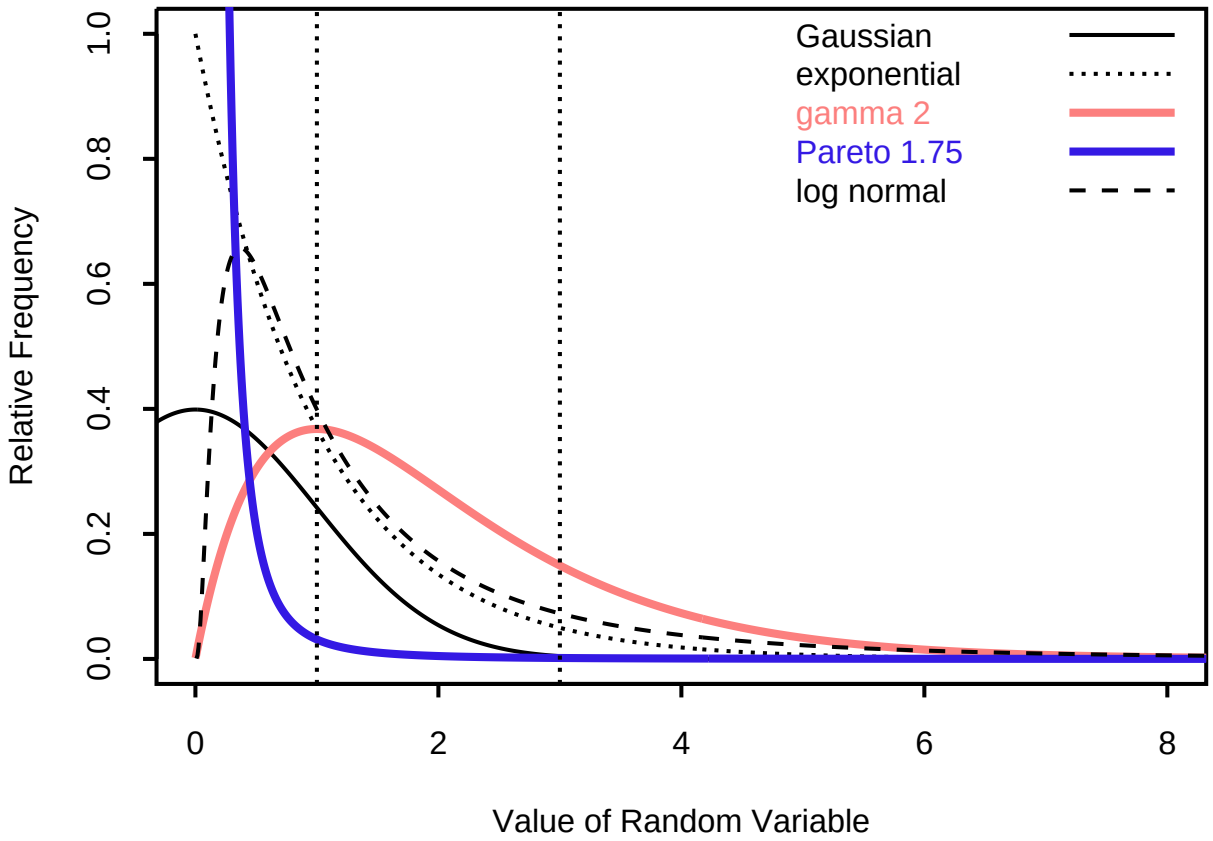
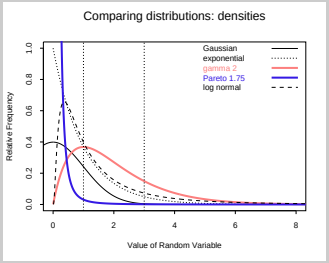
Notes

Comparing distributions: densities

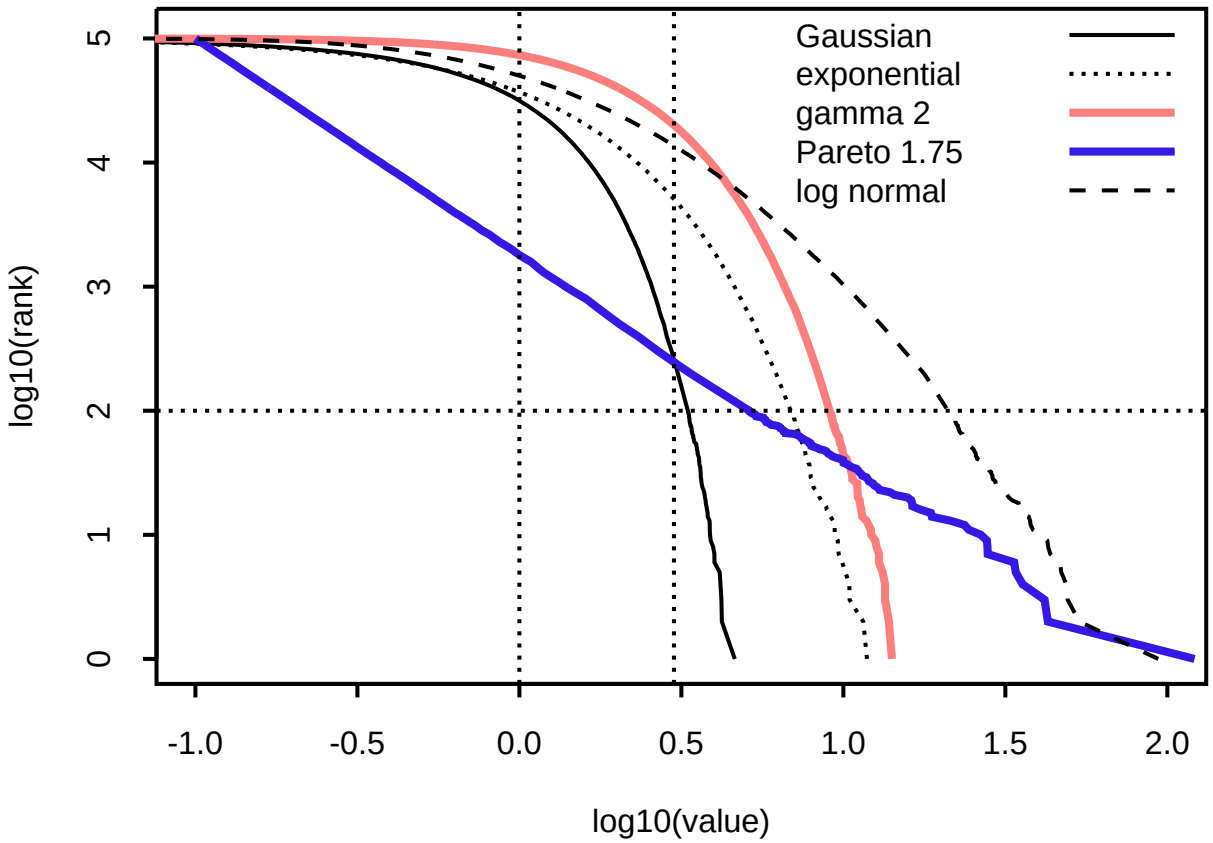


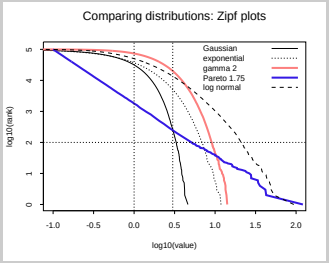


Notes

1. Gamma and Pareto distributions emphasised for reasons that will appear
2. lower bound of Pareto is 10^{-1}
3. vertical lines at one and three standard deviations

Comparing distributions: Zipf plots

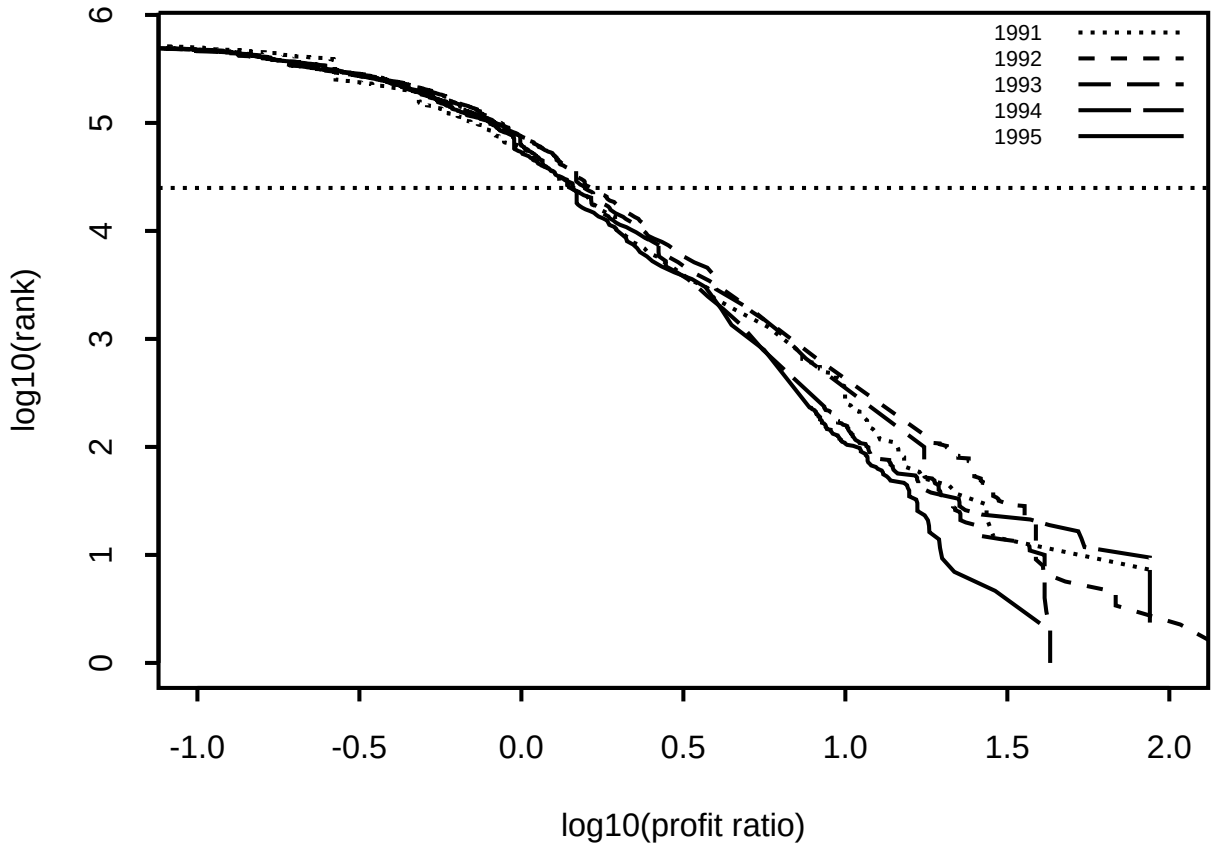


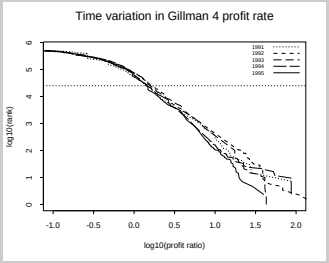


Notes

1. data is *simulated* for comparability with empirical chart to follow
2. below horizontal line we are looking at the 100 largest values plotted individually (above, only 1 in 1,000 shown)
3. vertical lines at one and three standard deviations, as before
4. despite appearances, members of the exponential family do *not* have asymptotes

Time variation in Gillman 4 profit rate





Notes

1. Gillman4 corresponds to Farjoun and Machover's profit rate; see Joseph Gillman (1956) *The falling rate of profit: Marx's law and its significance to twentieth-century capitalism*.
2. below horizontal line we are looking at approximately 10 per cent of the total capital
3. exponential above, power law tail below (compare simulated Pareto)
4. tail variation disrupted identification of gamma as distribution of Gillman4

Profit rates and power-laws

It's the tails that matter, not the cats

- Power-law tails found for all profit-rate definitions
  - . . . also widely accepted as stylized fact about returns to financial assets
  - . . . and for many key variables, such as wealth and income

[T]his reflects an underlying heterogeneity in the population . . . . The fat tails mean that a relatively small number of events, or people or something, have a big influence. And I think most of our theories of price changes, of changes in investment in response to different conditions are deficient because they don't take account of the shapes of the distributions. (Kenneth Arrow[15])

[15] Dubra 2005, pp 11–12

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[15] Dubra 2005, pp 11–12

Notes

1. Power-law tails: as found long ago by Madelbrot, forgotten by Fama, overlooked by LTCM, revived by econophysicists; see Wells (2013) *Fat Cats*, also discussion in Mirowski (2004) *The effortless economy of science?* Chapters 11 and 12
2. Shapes: compare Marx . . .

Econophysics and complexity | Probabilistic marxism

- Complex systems: order an 'emergent property' of large systems of independent agents
  - features can't be deduced from rules
- power law tails an indicator of 'criticality'
  - system can rapidly re-organise in face of a shock

- *Classical Econophysics* (Cottrell *et al.* 2009)
- *The Social Architecture of Capitalism* (Wright 2005)
  - agent-based modelling: simple rules of exchange; only 'built-in' structure is employers/employees/unemployed
  - generates stylised facts about many economic variables: distributions of wealth, income, firm size, firm life-span, and so on

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Notes

Early years
The doctoral dissertation

- well-known that aim is to justify human free-will against determinism
- less appreciated: that method is to praise Epicurus's views on chance
  - in particular, the 'swerve of the atom'
- *spontaneous* deviation, deduced dialectically from *concept* of the atom

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Notes

Early years
First steps in political economy

The true law of political economy is chance, from whose movement we . . . isolate certain factors arbitrarily in the form of laws.[16]

. . . it is precisely these fluctuations [in supply and demand] that force the price to conform to the cost of production. In the totality of this disorderly movement is to be found its order.[17]

If M. Proudhon admits that the value of products is determined by labour time, he should equally admit that it is the fluctuating movement alone that in a society founded on individual exchanges makes labour the measure of value. *There is* no ready-made constituted 'proportional relation', but *only a constituting movement*.[18]

[16] 'Notes on James Mill'
[17] *Wage Labour and Capital*
[18] *The Poverty of Philosophy*: 71 (emphases added)

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[16] 'Notes on James Mill'
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[18] *The Poverty of Philosophy*: 71 (emphases added)

Notes

1. On Mill: this is the concluding sentence of the *first para.* of Marx's notes…
2. anti-Proudhon developed further in *Grundrisse*

Grundrisse: complexity and emergent properties

. . . as much as the individual moments of this movement arise from the conscious will and particular purposes of individuals, so much does the totality of the process appear as an objective interrelation, which arises spontaneously from nature. . .

Their own collisions with one another produce an **alien** *social power standing above them, produce their mutual interaction as a process and power independent of them.* . . .

Circulation as the first totality among the economic categories is well suited to bring this to light. [19] (emphases added: 'alien' is Marx's emphasis)

[19] *Grundrisse* pp.196–197

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[19] *Grundrisse* pp.196–197

Notes

Probability density functions: *Capital* Volume III

- on the 'equalization' of profit rates

Between those spheres that approximate more or less to the social average, there is again a tendency to equalization, which seeks the 'ideal' mean position, i.e. a mean position which does not exist in reality. In other words, it tends to shape itself around this ideal as a norm. [20]

- introduces extended discussion that is verbal description of probability density

[20] *Capital* III: p.273

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[20] *Capital* III: p.273

Notes

The central limit theorem: *Capital* Volume I

Edmund Burke, that famous sophist and sycophant, goes so far as to make the following assertion, based on his practical observations as a farmer: that 'in so small a platoon' as that of five farm labourers, all individual differences in the labour vanish . . . Compare Quételet

But if the 12 men are employed in six pairs, by six different 'small masters', it will be entirely a matter of chance whether each of these masters produces the same value, and consequently whether he secure the general rate of surplus-value. . . . The inequalities would cancel out for the society as a whole, but not for the individual masters. [21], emphasis added???

[21] *Capital* I: p.xxx

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[21] *Capital* I: p.xxx

Notes

1. Central limit theorem—used in astronomy, *and by Quetelet*, but not yet either named or proved (details here)

Marx and Quetelet

- *citations* are scanty—but highly significant
- *influence* seems great, although little noticed
- *concrete evidence*: two notebooks, one noting Quetelet's *Treatise*, another dealing with a later work
- *inferential evidence*
  - 'Peuchet' on suicide: Quetelet and 'statistical fatalism'?
  - letter to Kugelmann

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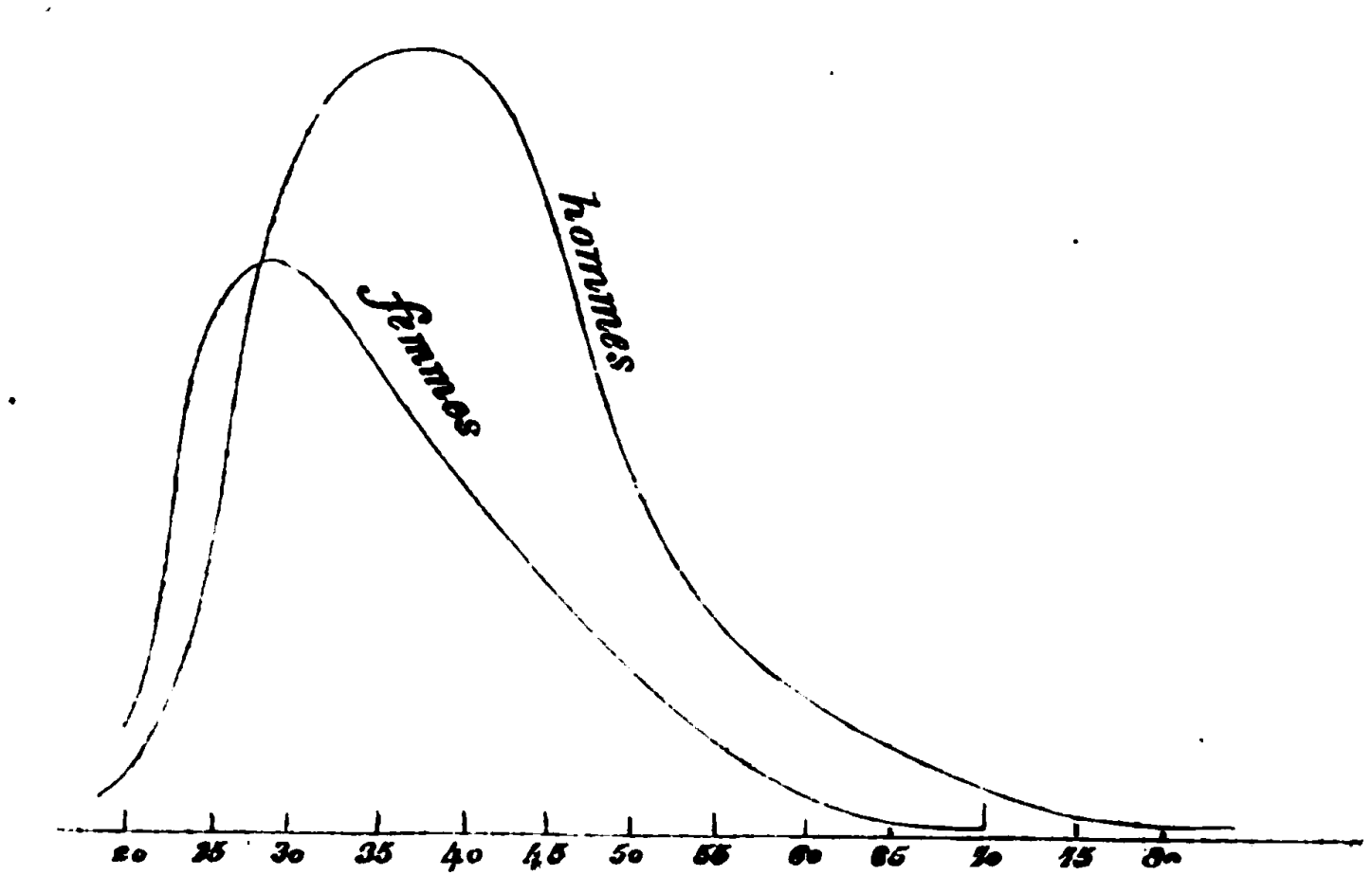
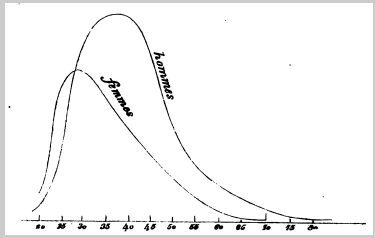
What Marx saw in Quetelet





Notes

1. Quetelet (1848) *Du système social et des lois qui le régissent*: 80

Conclusion

- Marx's value theory is dynamic, non-equilibrium theory
- Marx's critics are entitled to their own theories, but not to claim that his is inconsistent
- Marx's probabilism should inspire 21st century marxists

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Notes


Big Game...
I'm told they're very timid, so we mustn't do anything to startle them or make them run away...

Notes

1. The ConDem coalition on safari
   Martin Rowson *The Guardian* 25 September 2010
2. Fat Cats. . . on to Iren and financialization