



Germany:

Intangibles and the Rate of Return

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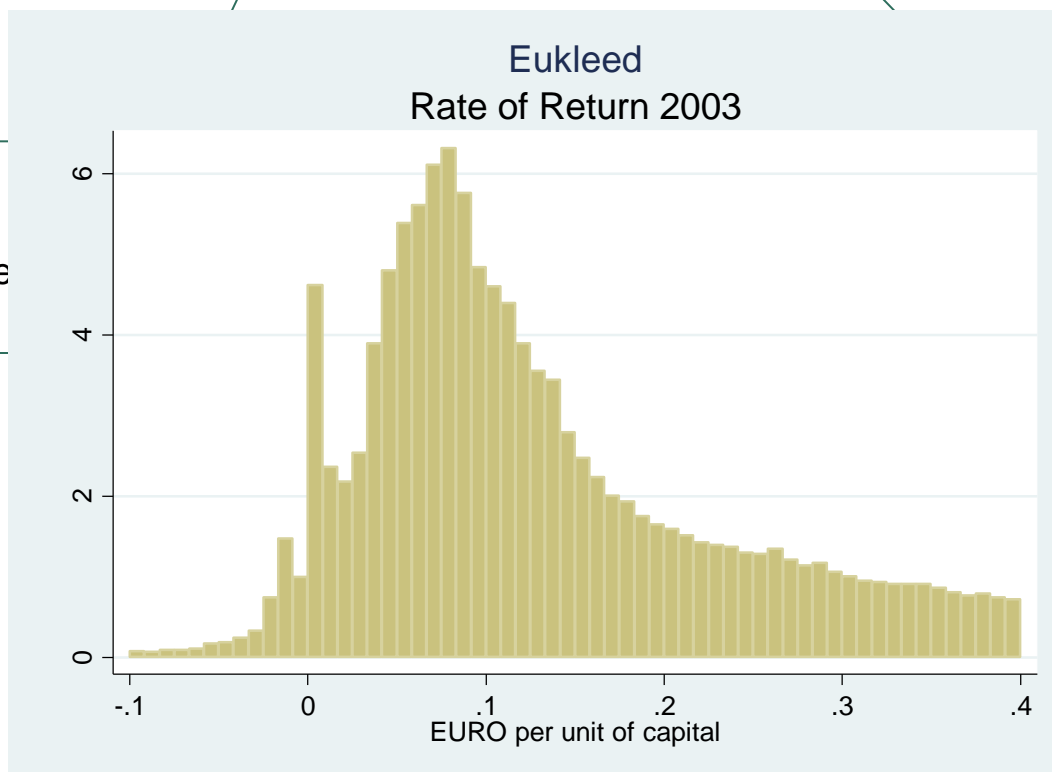
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Rate of Return on Capital

Density distribution - All firms

Operating surplus
minus labour
compensation of se
employed



Average net capital
stock = (opening +
closing stock)/2 valued
at historical prices



Diverging return rates: **Lack of competition?**

- Given the economists' ideal world, return rates should not differ. Denis Mueller (1977) concluded

***“In an efficient market economy,
profits above or below the norm
should quickly disappear.”***

- Debate in the seventies:
 - Is there a need for policy makers to enforce competition?



Diverging return rates: **Measurement Error?**

- The accounting rate of return does not measure correctly the “genuine” rate of return: *Weiss (1969)*, *Bloch (1974)*
- Not all expenses in balance sheets, which are in the nature of capital formation are capitalized as they should under economic aspects (*Ayanian 1975*), namely:
 - Advertising, and
 - R&D



Accountants' and Economists' View of Investment

- Accountants (national and firm level)
 - Classified types of (mostly) tangible goods

- Economists
 - All expenditures made in expectation of future returns

- Gap between both views
 - ⇒ Unobserved (mostly intangible) capital formation



Accounting for Unobserved Assets

- The case of own account production

Observed production = O

Hidden own account production = H

- Value added
- Investment
- Capital stock
- Depreciation
- Wages

$$Y = Y_O + Y_H$$

$$I = I_O + I_H \quad \text{with} \quad I_H = Y_H$$

$$K = K_O + K_H$$

$$D = D_O + D_H$$

$$W = W_O$$

Asymmetric
treatment of
costs and value
added



Impact of Hidden Capital on Return Rates

- Operating surplus measured as residual

True
minus
observed
profit

True profit

$$P = Y - W - D$$

$$P - P_O = I_H - D_H$$

Positive, as long
as hidden net
investment is
positive

- Return rates

“True” rate:
Competitive or
Internal Rate

$$r = \frac{P}{K}$$

?

$$r_O = \frac{P_O}{K_O}$$

Observed rate

Given an unique internal rate of return:

$$(r_O - r) = (r_O - g_H) \frac{K_H}{K}$$

Jorgensen/Griliches
approach (1967)

Growth rate of
hidden capital



Presumptions to Verify Empirically

- The observed rate of return could potentially be biased upward (Ayanian 1975)
- In most empirical cases the observed rate of return overstates the “true” rate



The Eukleed Data Base

- LEED data for Germany adapted to the EU KLEMS data base
- Nace industries D to J, K(excl.70), N, O
- Employment
 - 77% of employment in selected industries
= 23 mill. employed persons
 - 61% of total employment in the German economy
- Number of firms in 2003: 1.455 thousand
 - 162.000 Big Firms
 - with a turnover of more than 2 mill. Euro
 - 1.293.000 Small Firms

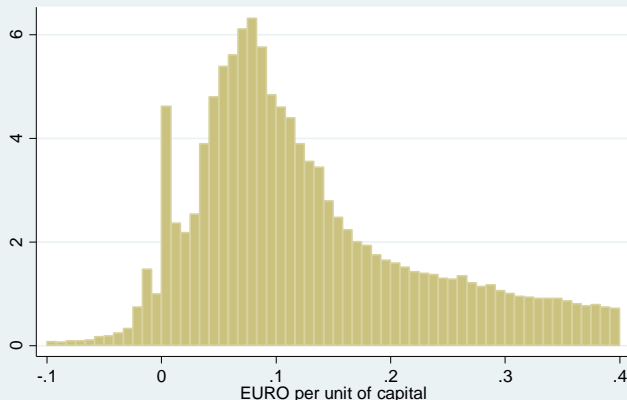


Eukleed Rates of Return

– 2003 –

		All firms ¹
Number of firms		1.454.417
Averages ³	weighted	0,11
	not weighted	1,39
Standard deviation		9,08
Coefficient of variance		6,51
Percentiles	0,1	0,04
	0,5	0,19
	0,9	2,58

Eukleed
Rate of Return 2003



estimates for Nace rev1 industries: I
estimates with Eukleed (20
vided by net capital stock at
U KLEMS (2006), Eukleed



Return Rates including Intangibles

– All Firms 2003 –

		All firms ¹	
		National accounts/ EU KLEMS	Innodrive ²
Number of firms		1 454 417	
Averages ³	weighted	0,11	0,10
	not weighted	1,39	0,23
Standard deviation		9,08	0,47
Coefficient of variance		6,51	2,05
Percentiles	0,1	0,04	0,01
	0,5	0,19	0,10
	0,9	2,58	0,65

¹ Establishment values for Nace rev1 industries: D to J, K (excl. 70), N, O. ² Firm-level estimates with Eukleed (2010). ³ Operating surplus divided by net capital stock at historical prices. - Sources: EU KLEMS (2006), Eukleed (2010).



Return Rates including Intangibles

– *Big Firms 2003* –

		Big firms ¹ (turnover above 2 million €)	
		National accounts/ EU KLEMS	Innodrive ²
Number of firms		161.515	
Averages ³	weighted	0,11	0,09
	not weighted	0,21	0,17
Standard deviation		0,40	0,26
Coefficient of variance		1,94	1,57
Percentiles	0,1	0,02	0,01
	0,5	0,11	0,09
	0,9	0,43	0,37

¹ Establishment values for Nace rev1 industries: D to J, K (excl. 70), N, O. ² Firm-level estimates with Eukleed (2010). ³ Operating surplus divided by net capital stock at historical prices. - Sources: EU KLEMS (2006), Eukleed (2010).



Results

- Theoretical and empirical evidence prove that capitalizing intangibles
 - Will lead to a lower level of firm-level return rates, and
 - The dispersion of the resulting return rates between firms diminishes



Conclusions

- Research:
 - **Past studies on the relationship between innovation and success of firms have to be revised in the sense that intangible capital has to be included explicitly**

- Policy:
 - **Measured high rates of return on capital do not necessarily imply market failures but may solely indicate insufficient coverage of capital**



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Thank you for listening

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