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Profit and resource rent in fisheries

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1. Background

- "**Transferable** licenses and quotas given for free to the fishermen may be efficient in reducing the capacity of the fishing fleet, but they are not able to secure future above-normal remuneration for the industry." (Flaaten, Heen and Salvanes 1995)
- Rationalisation of fisheries to achieve e.g. MEY should be based on operating costs and costs of the physical capital. Financial costs of fishing rights should not be included.
- If financial costs of fishing rights are included in profitability studies and bioeconomic analysis too many **"Sunken Billions"** will be reported.

Table 2. Summary of vessel statistics. Mean values with standard deviation in parenthesis

	All Vessels		A-Vessels		B-Vessels	
	1983	1984	1983	1984	1983	1984
Vessels in sample	43	43	31	31	12	12
Age (years)	21.23 (13.77)	22.23 (13.77)	21.29 (14.12)	22.29 (14.12)	21.08 (13.42)	22.08 (13.42)
Licensed capacity (hl)	6,721 (2,486)	6,721 (2,486)	7,053 (2,218)	7,053 (2,218)	5,863 (3,011)	5,863 (3,011)
Calculated book value	6,079 (7,256)	6,382 (6,885)	5,568 (7,422)	6,023 (7,063)	7,425 (6,931)	7,307 (6,606)
Acquisition value	8,399 (6,814)	8,399 (6,814)	7,877 (7,380)	7,877 (7,380)	9,748 (5,099)	9,748 (5,099)
Market value incl. license	14,779 (7,016)	14,779 (7,016)	15,581 (7,098)	15,581 (7,098)	12,708 (6,638)	12,708 (6,638)
Gross revenue (1,000 NOK)	3,912 (1,761)	4,155 (1,908)	4,160 (1,811)	4,420 (1,913)	3,271 (1,506)	3,471 (1,790)
Operating costs (1,000 NOK)	2,493 (927)	2,440 (971)	2,608 (911)	2,599 (989)	2,196 (941)	2,029 (822)
Calculated depreciation (1,000 NOK)	492 (412)	467 (381)	427 (384)	409 (353)	658 (450)	615 (426)
Calculated interests (1,000 NOK)	760 (907)	798 (861)	695 (928)	753 (8,831)	928 (866)	913 (826)
Rent (1,000 NOK)	167 (1,216)	451 (1,091)	430 (1,085)	659 (876)	−512 (1,316)	−87 (1,419)

which bought their licenses, B-vessels, have a negative rent of −512 thousand and −87 thousand NOK in 1983 and in 1984, respectively. The differences between the two categories of vessels are 942 and 745, respectively, in the two years of analysis. It is the difference of profitability that is of interest in the analysis.

If the main hypothesis of this paper is correct, *i.e.*, the license value is included

Two hypotheses

1. **Hypothesis:** Earnings before tax (**EBT**) underestimates the natural resource rent in managed fish harvesting industries.

2. **Hypothesis:** The commonly used business economic indicator return on capital (**ROC**) underestimates the welfare economic performance of managed fish harvesting industries.

Theory and methodology

Concept	Explanation
Operating Revenues	Mainly from catch of fish and other marine organisms
- Total operating expenses	Including fuel, labour costs, insurance, maintenance and depreciation of vessel and fishing rights.
= Operating profit (EBIT)	Earnings before interest and tax
+ Total financial revenues	Financial income and currency rate gains
- Total financial expenses	Financial costs and currency rate losses
= Profit on ordinary activities before tax (EBT)	The residual for the private firm
+ Depreciation on fishing rights	Fishing rights include licenses, permits, access rights, user rights and vessel quotas
+ Financial costs of fishing rights	Financial costs of fishing rights purchases
- Calculated interests on equity	The interest rate should be equal to what the vessels pay on long term loans, or equal to the interest yield of government bonds
= Resource rent unadjusted (RR1)	The residual for the resource owner, without deducting management costs

Theory and methodology - additional

Concepts: Business accounts	
+ Income from leasing/sale of fishing rights	
- Cost of purchasing/leasing fishing rights	
- Cost of auction-purchased fishing rights	
Concepts: National accounts	
+ Industry specific subsidies	
- Industry specifictaxes	

Theory and methodology, contn.

- Return on total assets (**ROC=ROA**) = (Profit on ordinary activities before tax + financial costs)/(Total assets) in percent

- Return on capital including fishing rights

  ROC$_I$ = (EBT + Financial costs)/(Total capital)

- Return on capital excluding fishing rights

  ROC$_E$ = (EBT + Financial costs + Depreciation on fishing rights)/(Total capital – Value of fishing rights)

TABLE 2 Summary of Norwegian and Icelandic Fisheries Statistics (average 2009–2013)

	Number of vessels	Gross tonnage (GRT)	Number of fishermen	Catch (1,000 tons)	Value of catch (million USD)	Price (USD/kg)
Norway	6,281	307,760	12,530	2,349	2,293	0.99
Iceland	1,650	158,090	3,800	1,231	1,175	0.96

Results - Norway

	Profit and ROC including fishing rights		Rent and ROC exclusive fishing rights		ROC Norwegian non-financial companies
	Profit	**ROC I**	Rent	**ROCE**	
	(In million USD)	(In %)	(In million USD)	(In %)	(In %)
2009	160	6.6	238	11.7	9
2010	198	7.1	272	12.1	9.7
2011	405	9.5	506	16.9	9.2
2012	184	5.8	263	11.5	10.2
2013	43	3.8	154	8.7	8.1
Average (2009-2013)	198	6.6	287	12.0	9.2

Theory meets Icelandic data

Concept	Explanation
= Resource rent unadjusted (RR1)	The residual for the resource owner, without deducting management costs
+ Adjustment for transfer pricing	Vertical integration of fishing and processing and share payments distort raw fish prices
+ Adjustment for labor opportunity costs	Mincer regressions indicate that fishermen earn more than their „oportunity cost“
= Resource rent (RR)	

4. Results - Iceland

	Profit and ROC including fishing rights		Rent and ROC exclusive of fishing rights		Non-financial companies
	Profit (EBT)	ROC^{I}	Rent (RR)	ROC^{E}	ROC*
	(Million USD)	(%)	(Million USD)	(%)	(%)
2009	−11	6.0	331	21.0	6.3
2010	31	6.6	374	22.4	8.2
2011	98	7.4	468	24.5	8.1
2012	82	7.2	431	27.0	n.a.
2013	30	5.1	353	22.0	n.a.

5. Discussion and conclusion

- **Return on capital (ROC)** will be lower with fishing rights included in the companies balance sheets than without.
- **Empirical evidence** for the fishing fleet in Norway 2008-2013 demonstrates that ROC on average equals 6.6 and 12.0 percent, with and without, respectively, fishing rights. Compare this to ROC=9.2 for Norwegian non-financial companies.
- **For Iceland** the corresponding figures are 6.5, 23.4 and 7.5 percent

5. Discussion and conclusion, contn

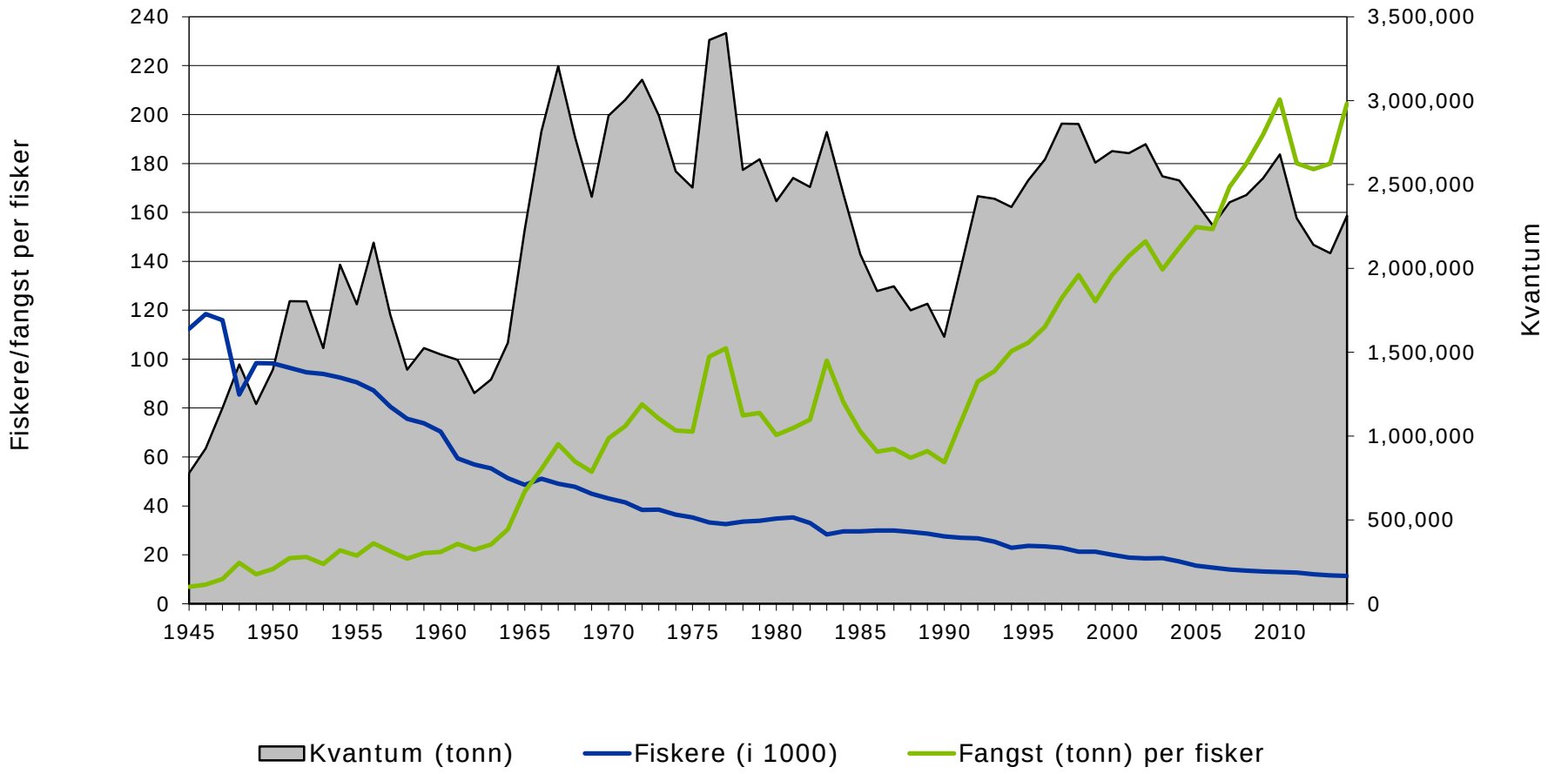
- Theory and empirical findings demonstrate that in the long run the profitability of the fish harvesting industry does not exceed what is found in other comparable industries, despite rationalization with licence and quota trade. This resembles Tullock's Transitional gains trap.

Possible resource rent distribution

Former quota/licence holders (vessel owners)
Present and future quota and licence holders
Crew members
Processing firms – vertical ownership
Financial institutions
Auction revenues (government/resource owner)
Resource rental fees and taxes
Company taxes
Local communities/municipalities

Thank you for your attention

Trends in Norwegian fisheries 1945-2014



4. Results, contn. (not in the paper)
Average, 2008-2013

	Rent	%	ROC without fishing rights
All vessels	1,683	100%	11.8%
Pelagic fisheries	1,165	69%	9.8%
- Purse seine	945	56%	13.3%
Bottom fisheries	518	31%	8.5%
- < 11m	123	7%	7.8%
- Trawler	370	22%	12.2%