



COMPARISON OF ECONOMIC PERFORMANCE OF PANGASIU CATFISH AND SEABASS- SEABREAM PRODUCTION FIRMS



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Programme

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1. Introduction

- Pangasius has been one of the fastest growing aquaculture species globally since the 1990s
- Vietnam is a major producer accounting more than 75% of global production and 95% of global export value

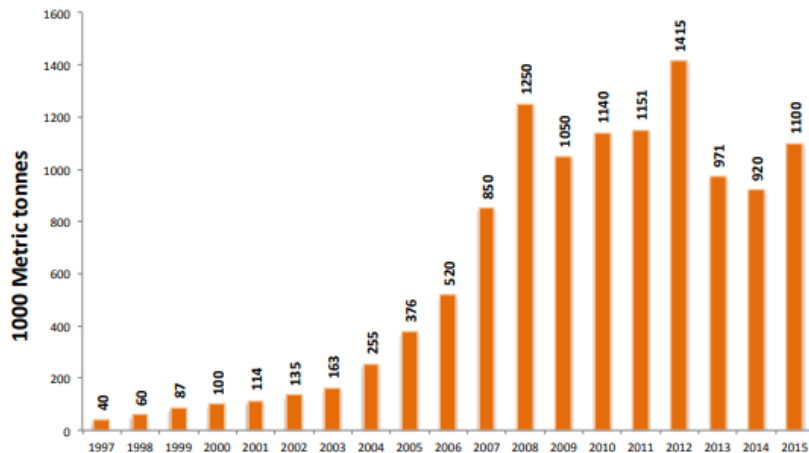


Figure 6. Vietnamese pangasius production (VASEP, 2016)



1. Introduction (cont'd.)

- The EU and the US are major markets of the Vietnam pangasius accounting 24% and 21%, respectively of the Vietnam total pangasius exports and 90% of the EU pangasius imports is originated from Vietnam

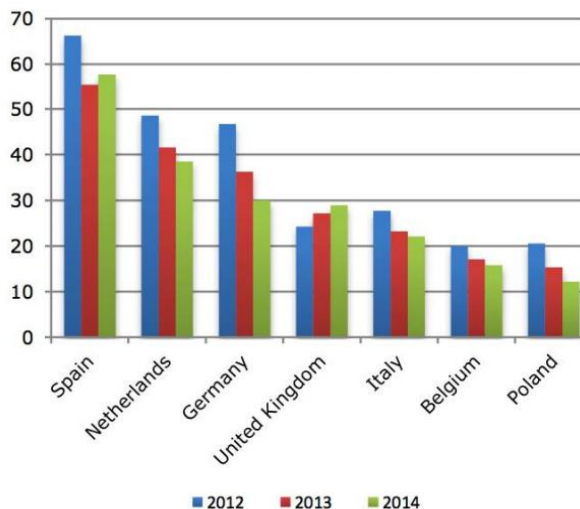


Figure 7. EU imports of frozen pangasius fillets in 2012-2014 (EUR million). Source: CBI, 2015.

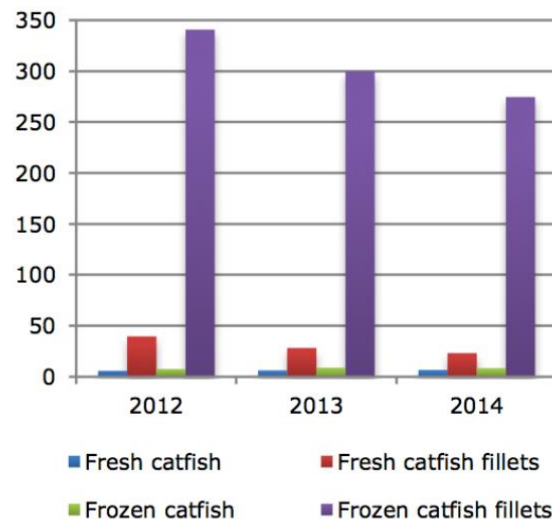


Figure 8 EU imports of pangasius in 2012 – 2014 (EUR million). Source: CBI, 2015.

1. Introduction (cont'd.)

- Sea bass and sea bream have been produced mainly in the Mediterranean countries
- The production of sea bass and sea bream in these countries increased significantly in term of production, price, and revenue

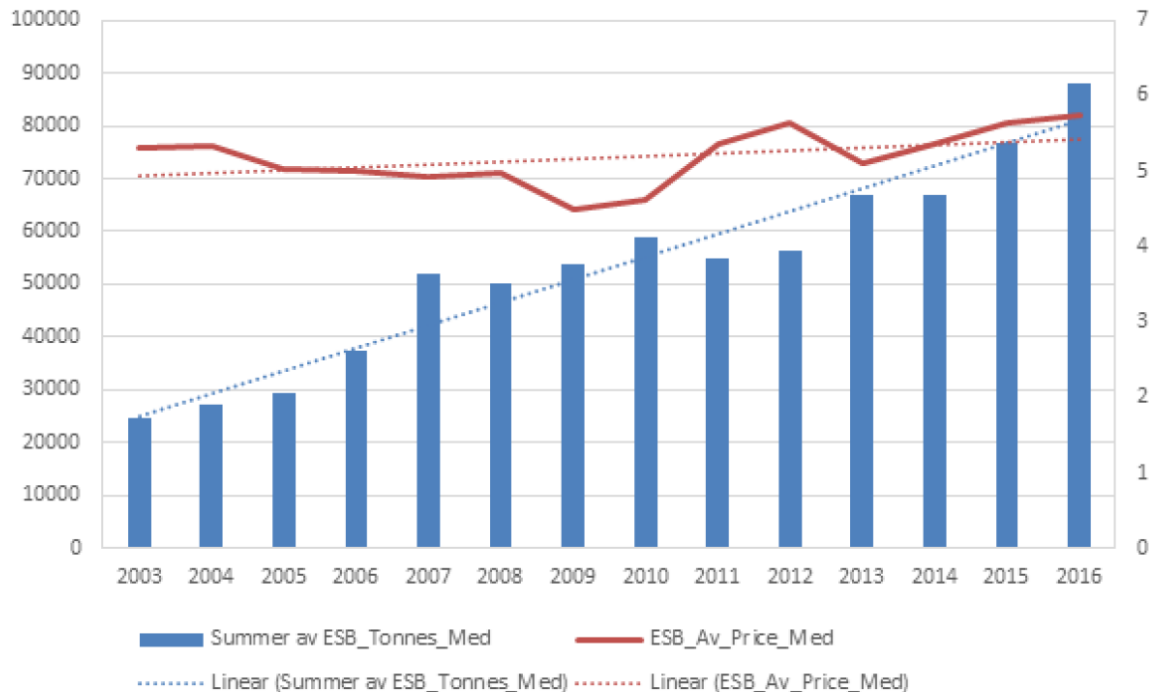


Figure 11. Production (left axis) and price per kg (right axis) of farmed sea bass in the Mediterranean countries 2003-2016. (Kontali Analyse AS)

1. Introduction (cont'd.)

- Pangasius and seabass/seabream are freshwater farmed fish and both become very competitive products in the EU markets
- ***The purpose of this research is to analyze and compare the economic performance of Pangasius farmed in Vietnam and seabass-seabream farmed in Mediterranean countries***
- The results provide critical information of the competitiveness of the EU aquaculture production and its partners



2. Method and data

- Data for pangasius was collected from 20 firms in Vietnam
- Data for sea bass and sea bream was collected from 13 firms in Greece, Spain, Italy, and Croatia
- Time frame: from 2009 to 2014
- Collected information: operating revenue, current assets, fixed assets, non-current liabilities, and current liabilities

Table 4. Descriptive statistics of the Vietnamese pangasius firms. EUR million (2015 prices).

	Average	Median	Std. dev.	Max	Min
Operating revenue	36.8	28.1	33.7	224.3	0.1
Current assets	26.5	22.8	18.2	111.2	1.3
Fixed assets	11.9	9.4	8.8	48.9	0.2
Non-current liabilities	2.3	1.2	2.7	13.9	0.0
Current liabilities	24.1	20.9	15.5	90.3	0.8

Table 5. Descriptive statistics of the European seabass and seabream firms. EUR million (2015 prices).

	Average	Median	Std. dev.	Max	Min
Operating revenue	42.9	23.6	50.9	222.9	2.4
Current assets	56.4	22.5	75.0	318.9	2.3
Fixed assets	37.0	9.0	60.1	242.8	0.2
Non-current liabilities	26.9	4.3	47.7	218.0	0.0
Current liabilities	46.6	15.9	66.8	284.6	0.9
Number of employees	283.9	134.5	389.6	1,797.0	6.0



2. Method and data (cont'd.)

- We use the Data Envelopment Analysis (DEA) to decompose productivity into changes:
 - ▣ Technical efficiency (TE)
 - ▣ Scale efficiency (SE)
 - ▣ Total factor productivity (TFP)



3. Results

Technical and scale efficiency for pangasius and sea bass/sea bream

Table 9. Vietnamese pangasius firms. Average technical efficiency and scale efficiency

Year	CRS-TE (1)	VRS-TE (2)	SE (3)=(1)/(2)
2009	0.515	0.646	0.836
2010	0.660	0.775	0.838
2011	0.823	0.883	0.928
2012	0.723	0.863	0.844
2013	0.662	0.782	0.864
2014	0.676	0.814	0.820
Mean	0.677	0.794	0.855

Note: CRSTE = technical efficiency from CRS DEA

VRSTE = technical efficiency from VRS DEA

SE = scale efficiency = CRSTE/VRSTE

Table 12. Mediterranean sea-bass and bream firms. Average technical efficiency and scale efficiency.

Year	CRS-TE (1)	VRS-TE (2)	SE (3)=(1)/(2)
2009	0.365	0.836	0.428
2010	0.395	0.754	0.546
2011	0.414	0.681	0.610
2012	0.443	0.676	0.672
2013	0.477	0.690	0.658
2014	0.481	0.681	0.713
Mean	0.429	0.720	0.605

Note: CRSTE = technical efficiency from CRS DEA

VRSTE = technical efficiency from VRS DEA

SE = scale efficiency = CRSTE/VRSTE



3. Results (cont'd.)

Technical for pangasius and sea bass/sea bream

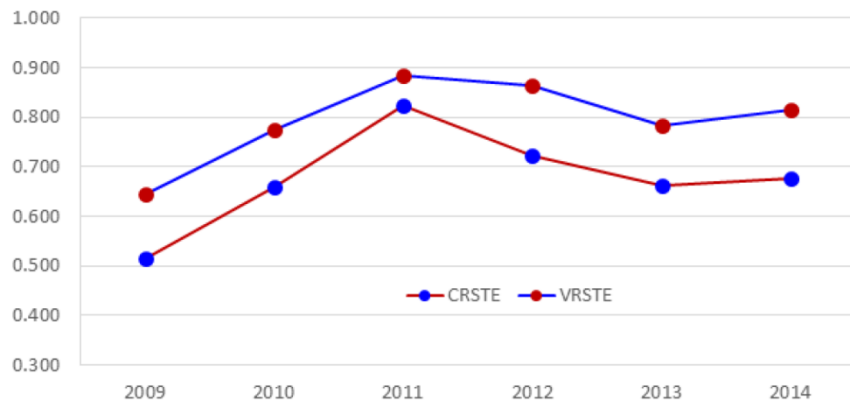


Figure 30. Vietnamese pangasius firms. Development of technical efficiency under VRS and CRS.

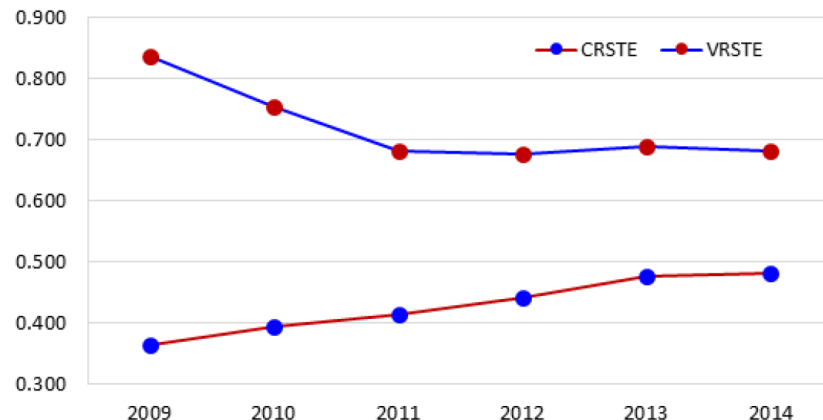


Figure 37. Mediterranean sea bass and bream firms. Development of technical efficiency under VRS and CRS.



3. Results (cont'd.)

Saving potentials of input costs

Table 10. Vietnamese pangasius firms. Comparison of actual and projected input usage (EUR 1000 per year).

	Current assets	Fixed assets	Non-current liabilities	Current liabilities
Actual value	26,513	11,946	2,305	24,142
Projected value on frontier	19,821	8,802	1,267	16,791
Difference (%)	-25.2	-26.3	-45.0	-30.4

Table 13. Mediterranean sea bass and bream firms. Comparison of actual and projected input usage (EUR 1000 per year).

	Current assets	Fixed assets	Non-current liabilities	Current liabilities	Number of employees
Actual value	56,387	37,036	26,859	46,647	284
Projected value on frontier	35,874	24,806	16,076	31,665	180
Difference (%)	-36.4	-33.0	-40.1	-32.1	-36.6



3. Results (cont'd.)

Saving potential of current assets

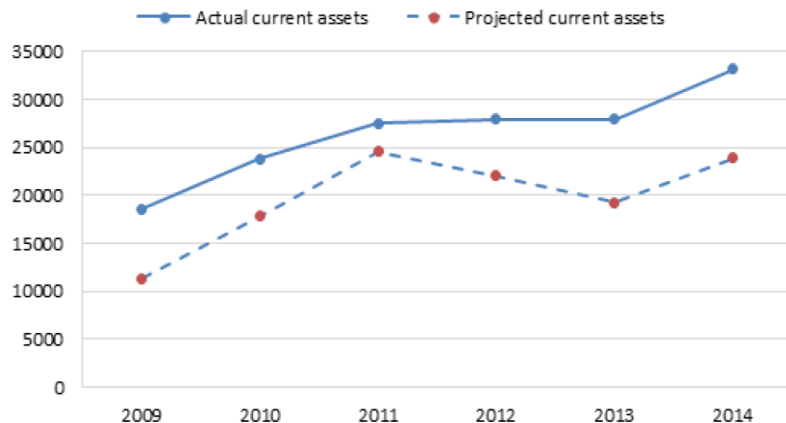


Figure 31. Vietnamese pangasius firms. Actual and projected (frontier) values of current assets.

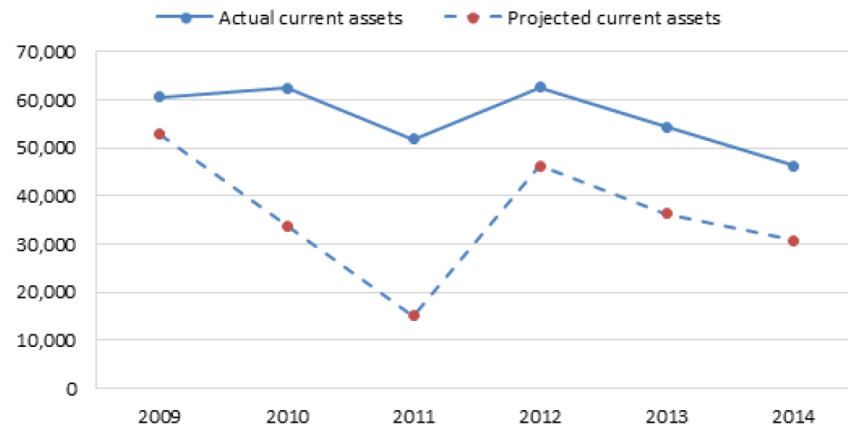


Figure 38. Mediterranean sea bass and bream firms. Actual and projected (frontier) values of current assets.



3. Results (cont'd.)

Saving potential of fixed assets

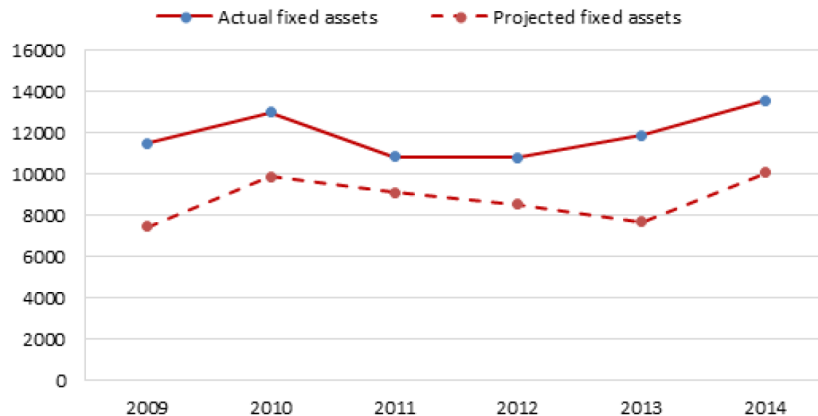


Figure 32. Vietnamese pangasius firms. Actual and projected (frontier) values of fixed assets.

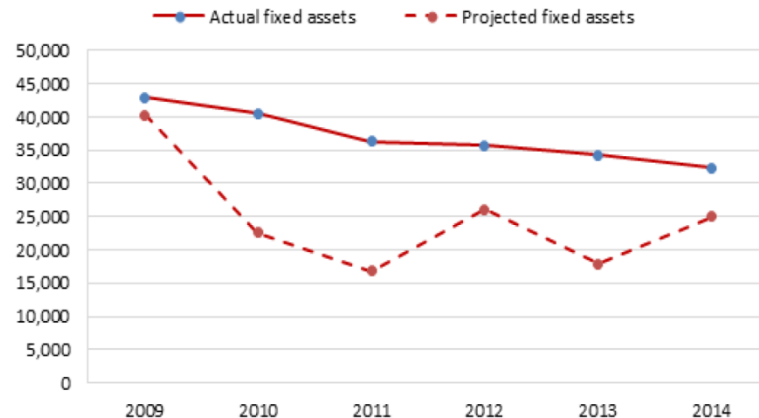


Figure 39. Mediterranean sea bass and bream firms. Actual and projected (frontier) values of fixed assets.



3. Results (cont'd.)

Saving potentials of non-current liability

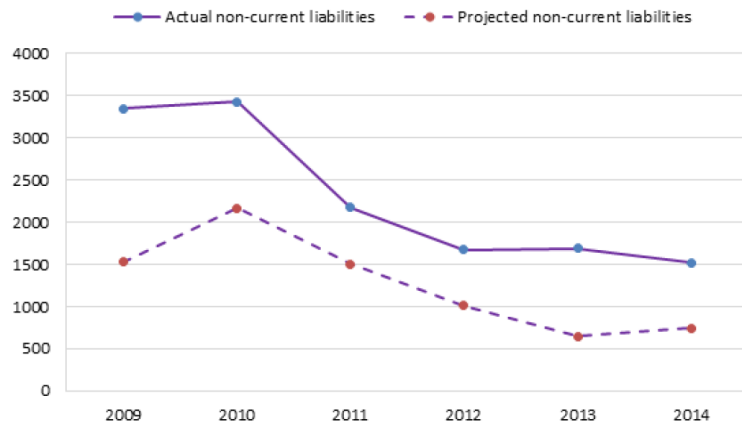


Figure 33. Vietnamese pangasius firms. Actual and projected (frontier) values of non-current liabilities.

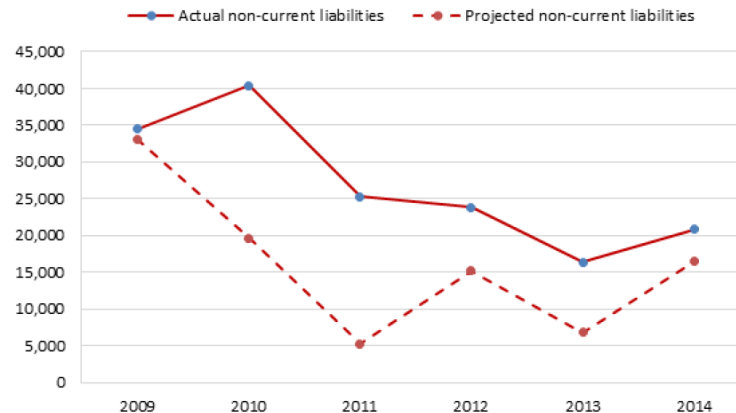


Figure 40. Mediterranean sea bass and bream firms. Actual and projected (frontier) values of non-current liabilities.



3. Results (cont'd.)

Saving potential of current liability

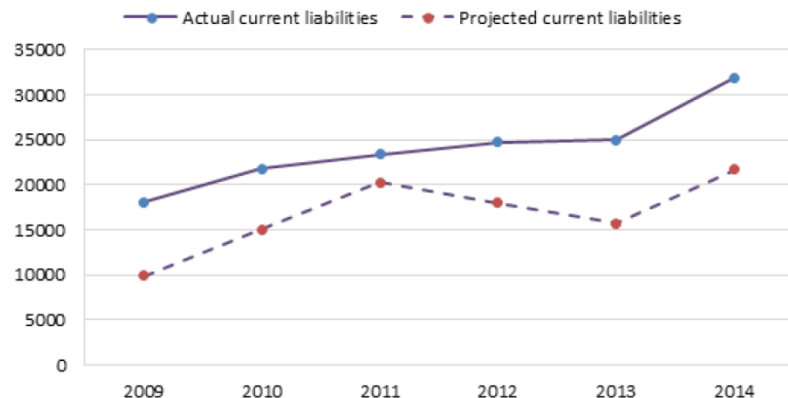


Figure 34. Vietnamese pangasius firms. Actual and projected (frontier) values of current liabilities.

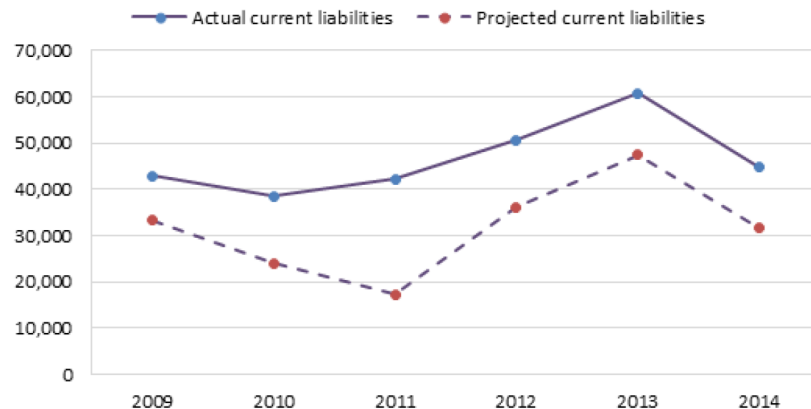


Figure 41. Mediterranean sea bass and bream firms. Actual and projected (frontier) values of current liabilities.



3. Results (cont'd.)

Total factor productivity for pangasius and sea bass/sea bream

Table 11. Vietnamese pangasius firms. Annual mean changes in productivity (TFP) decomposed into changes in pure technical efficiency (PE), scale efficiency (SE), technical efficiency (TE) and technology (TC).

Year	PE (1)	SE (2)	TE (3)=(1)*(2)	TC (4)	TFP (5)=(3)*(4)
2010	1.274	1.181	1.504	0.597	0.898
2011	1.159	1.147	1.329	1.066	1.417
2012	0.969	0.898	0.870	1.603	1.396
2013	0.887	0.988	0.877	1.255	1.101
2014	1.035	0.935	0.968	1.022	0.989
Mean	1.065	1.030	1.110	1.109	1.160

Table 14. Mediterranean sea bass and bream firms. Annual mean changes in productivity (TFP) decomposed into changes in pure technical efficiency (PE), scale efficiency (SE), technical efficiency (TE) and technology (TC).

Year	PE (1)	SE (2)	TE (3)=(1)*(2)	TC (4)	TFP (5)=(3)*(4)
2010	0.861	1.357	1.169	0.903	1.055
2011	0.857	1.105	0.947	1.139	1.078
2012	1.019	1.122	1.143	1.096	1.252
2013	1.019	1.020	1.040	1.248	1.298
2014	0.944	1.144	1.080	0.712	0.769
Mean	0.940	1.150	1.076	1.020	1.090

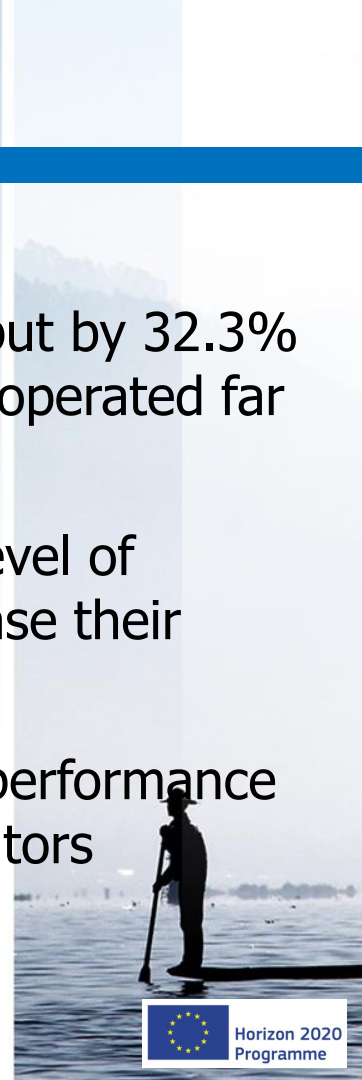
Note that all TFP averages are geometric means of the sample.



Conclusions

Vietnam pangasius technical and scale efficiency

- $TE = 0.67$: Vietnam pangasius firms could have reduced input by 32.3% while maintaining the same level of output and these firms operated far below the efficiency frontier
- $SE = 0.86$: Vietnam pangasius firms operated at far below level of optimal scale efficient level. It implies the firms could increase their efficiency by 14.5%
- The small and medium firms were experienced the largest performance improvements and are outperformed to their larger competitors



Conclusions (cont'd.)

Mediterranean sea bass/sea bream technical and scale efficiency

- $TE = 0.43$: Mediterranean sea bass/sea bream firms could have reduced input by 57.1% while maintaining the same level of output. These firms operated far below the efficiency frontier
- $SE = 0.61$: the sea bass/sea bream firms operated at far below level of optimal scale efficient level. It implies the firms could increase their efficiency by 39%
- No firm operated at the scale optimal level





Thank You!

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