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## Enjoying a Quiet Life Even During a Great Recession? Evidence From the Greek Olive Oil Industry

Ioanna KERAMIDOU

Department of Economic and Regional Development  
Panteion University of Social and Political Sciences, Greece  
[ikeram@panteion.gr](mailto:ikeram@panteion.gr)

Angelos MIMIS

Department of Economic and Regional Development  
Panteion University of Social and Political Sciences, Greece  
[mimis@panteion.gr](mailto:mimis@panteion.gr)

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**Abstract:** The research investigates the link between market concentration and efficiency by analyzing the Greek olive oil industry data from 2006 to 2014. Unlike previous research on this issue, which focused on the impact of overall company efficiency on market power, we study the association between the three types of firm efficiency (profit, technical, and scale) and market concentration. Our theoretical framework and research assumptions were not predefined but were generated by modelling the data from the Greek oil olive sector through data mining techniques. The predicted causal relationships constructed in the preceding stage were investigated using partial least squares path modeling (PLS-PM) regression. The results show a significant negative relationship between market concentration and technical and profit efficiency. The paucity of completion resulted in prolonged firm inefficiencies, demonstrating that Greek enterprises, even during a severe recession, refrained from rigorous efforts to enhance technical and profit efficiency as they would in a competitive market, preferring instead to live a quiet life (QL). This study has several policy implications for regulators and policymakers, such as extending antitrust rules, which may enhance company efficiency and competitiveness.

**Keywords:** efficiency; concentration; quiet life hypothesis; Greece; partial least squares path modeling; Bayesian network.

**JEL Classification:** L13; L25; L44; L52; L66; O25; O43; R11.

### Introduction

At the end of the 2000s, the Greek government imposed an internal devaluation policy to improve firms' efficiency. Nonetheless, even though the basic salary fell by 20.8%, the contribution of net exports to recovering growth and employment was insufficient, and the Greek real GDP decreased by -23.1% from 2008 to 2019 (World Bank data). During this period, the idea that Greece's economic reforms would achieve a significant acceleration in growth was increasingly called into question in public debate. Does competition failure due to high market concentration in the Greek industry impede economic reforms from gaining a substantial acceleration in growth? Rapid reduction of salaries seems reasonable to improve cost efficiency, but what if monopoly profits remain unchanged due to high market concentration and firms enjoy a quiet life (QL) without making intensive efforts to improve efficiency, as they would in a competitive market?

The paper attempts to answer these questions within the theoretical framework of firms' profitability in imperfectly competitive markets. Market power's effects on efficiency have been debated for decades (for this discussion, see Schmalensee 1989; Sutton 2007). Despite this lengthy literature, more field observations are necessary to adopt adequate policy objectives and choose the right tools for fostering efficiency.

In response to this demand, significant contemporary research extensively analyses the relationship between concentration, competition, and efficiency in the financial sector. A negative link was discovered for American banks between profit efficiency and market power (Berger and Hannan 1998; Ariss 2010). Delis and Tsionas' research (2009) suggests that concentrated EMU banks are among the least profit-efficient financial













University of Athens. Specifically, 195 Greek oil manufacturing firms randomly selected, operating in different regions of Greece, were contacted, and 82 of them provided us with the relevant information (a response rate of 42.0 %). Our sample included three size groups of firms. The first group consisted of the seven most prominent companies with a market share of over 87%. The other two groups comprised several medium-sized (*i.e.*, 50–249 employees) and small companies (*i.e.*, fewer than 49 employees) selected randomly by size. Our panel data was balanced and included 738 observations. It is worth noting that the DEA convention was satisfied, stating that the minimum number of DMU should be greater than three times the number of inputs plus outputs. Our sample size also is consistent with the rule of thumb specified in the PLS path modelling literature. The sample size is ten times the most significant number of structural paths directed at any construct (Chin 1998).

## 4. Empirical Results

### 4.1 Market Concentration and Efficiency Measures

The bootstrap test by Simar and Wilson (2002) was initially performed to determine the production technology type in the Greek oil olive industry. The results show that we can reject the null hypothesis of the constant scale of return (CRS) at any conventional significance level after conducting 100 bootstrap replications because the *p* values were less than 0.01 for each year in the 9-year study period. Under the condition of globally variable returns to scale VRS, the overall efficiency (OE), technical (TE) and profit efficiency (PE) scores of olive oil manufacturing firms in Greece were estimated via the VRS model of efficiency decomposition proposed by Chen *et al.* (2009).

Table 1 shows a high market concentration characterized by the Greek olive oil market. The share of global market sales earned by the four most prominent companies in this industry (the so-called C4) approached, on average, about 62,15% from 2006 to 2014 (see also Figure 2). As Table 1 demonstrated, the OE of the firms operating in this market registered at 0.69, indicating room for improvement. Profit inefficiency amounted to about 0.60-0.62 during the study period, while concerning technical inefficiency, the exact output of this industry could have been produced for different years by using 9%–19% less than the observed inputs.

Encouraging is that OE grew slightly by 1.43% between 2006 and 2014 when the average four-firm concentration ratio had a higher increasing trend of 3% in the same period. However, OE deteriorated by -9.64% in 2008 compared to 2006, when the sector's four largest firms (C4) rapidly increased their market share by ten percentage points (from 58.10% in 2006 to 68.30% in 2008). Then, as the competition has risen since 2009, OE experienced low progress.

Lastly, it should be noted that before the global financial crisis, the average level of OE was high (0.70) in 2006-2007, then fell to 0.63 in 2008. From 2009-2010 it improved to 0.72, but when economic reforms effectuated in 2011, the OE worsened again, reaching 0.64 in 2013 and increasing only in 2014 to 0.71.

Table 1. The average technical efficiency, profit efficiency, overall efficiency scores and concentration ratio for the period 2006-2014

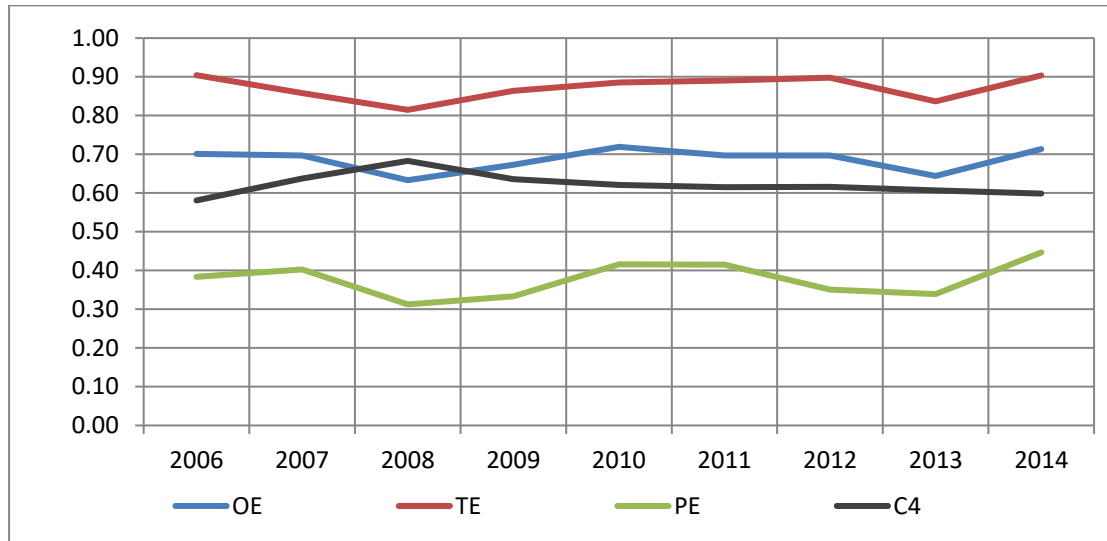
Years	OE			w1	w2	E1*			E2*			E1			E2			C4
	Mean	Min	Std.-Dev			Mean	Min	Std.-Dev	Mean	Min	Std.-Dev	Mean	Min	Std.-Dev	Mean	Min	Std.-Dev	
2006	0.70	0.43	0.19	0.62	0.38	0.90	0.55	0.10	0.38	0.01	0.31	0.90	0.55	0.10	0.39	0.01	0.31	58.10
2007	0.70	0.22	0.21	0.65	0.35	0.86	0.18	0.15	0.40	0.01	0.32	0.85	0.18	0.16	0.42	0.01	0.31	63.74
2008	0.63	0.22	0.20	0.64	0.36	0.81	0.24	0.17	0.31	0.03	0.26	0.81	0.24	0.17	0.31	0.08	0.25	68.30
2009	0.67	0.26	0.20	0.63	0.37	0.86	0.34	0.15	0.33	0.03	0.27	0.85	0.34	0.15	0.35	0.02	0.28	63.58
2010	0.72	0.35	0.18	0.60	0.40	0.89	0.20	0.18	0.42	0.01	0.29	0.81	0.20	0.26	0.50	0.01	0.32	62.09
2011	0.70	0.32	0.19	0.62	0.38	0.89	0.37	0.14	0.41	0.01	0.32	0.89	0.36	0.14	0.42	0.04	0.31	61.50
2012	0.70	0.25	0.19	0.61	0.39	0.90	0.29	0.15	0.35	0.00	0.30	0.89	0.29	0.16	0.36	0.00	0.29	61.58
2013	0.64	0.22	0.19	0.62	0.38	0.84	0.27	0.15	0.34	0.00	0.29	0.82	0.22	0.17	0.37	0.02	0.31	60.66
2014	0.71	0.36	0.20	0.59	0.41	0.90	0.50	0.12	0.45	0.01	0.32	0.91	0.50	0.12	0.44	0.01	0.32	59.84
Mean	0.69	0.22	0.20	0.62	0.38	0.87	0.18	0.15	0.38	0.00	0.30	0.86	0.18	0.17	0.40	0.00	0.30	62.15

Table 2. Percentage distribution of firms by the average technical, profit and overall efficiency for the years 2006-2014

Years	Overall Efficiency					E1(based on 1)					E2(based on 1)				
	>70	71-80	81-90	>91	Total	>70	71-80	81-90	>91	Total	>70	71-80	81-90	>91	Total
2006	67.1	3.7	2.4	26.8	100.0	2.5	13.9	29.1	54.4	100.0	2.5	13.9	34.2	49.4	100.0
2007	59.8	8.5	4.9	26.8	100.0	13.9	21.5	20.3	44.3	100.0	12.7	26.6	17.7	43.0	100.0
2008	73.2	7.3	0.0	19.5	100.0	22.8	25.3	15.2	36.7	100.0	22.8	27.8	15.2	34.2	100.0
2009	64.6	8.5	6.1	20.7	100.0	14.1	19.2	15.4	51.3	100.0	17.9	15.4	17.9	48.7	100.0
2010	56.1	11.0	7.3	25.6	100.0	11.5	9.0	14.1	65.4	100.0	26.9	10.3	16.7	46.2	100.0
2011	61.0	12.2	3.7	23.2	100.0	11.1	8.6	25.9	54.3	100.0	12.3	8.6	24.7	54.3	100.0
2012	52.4	19.5	6.1	22.0	100.0	10.8	4.8	24.1	60.2	100.0	9.6	6.0	24.1	60.2	100.0
2013	70.7	6.1	3.7	19.5	100.0	14.3	26.2	21.4	38.1	100.0	20.2	21.4	22.6	35.7	100.0
2014	57.3	9.8	3.7	29.3	100.0	6.0	10.8	26.5	56.6	100.0	6.1	9.8	24.4	59.8	100.0
MO	61.8	9.2	3.9	25.0	100.0	12.7	16.5	19.0	51.9	100.0	15.2	15.2	21.5	48.1	100.0

OE stands for Overall Efficiency, and w1 and w2 are weights that capture each stage's importance. E1\* and E2\* stood for the technical efficiency and profit efficiency measures when priority was given in the first stage, and E1 and E2 for the technical efficiency and profitability measures prioritized in the second stage.

Figure 2. The average market concentration ratio and technical (TE), profit (PE) and overall efficiency (OE) scores for the period 2006-2014

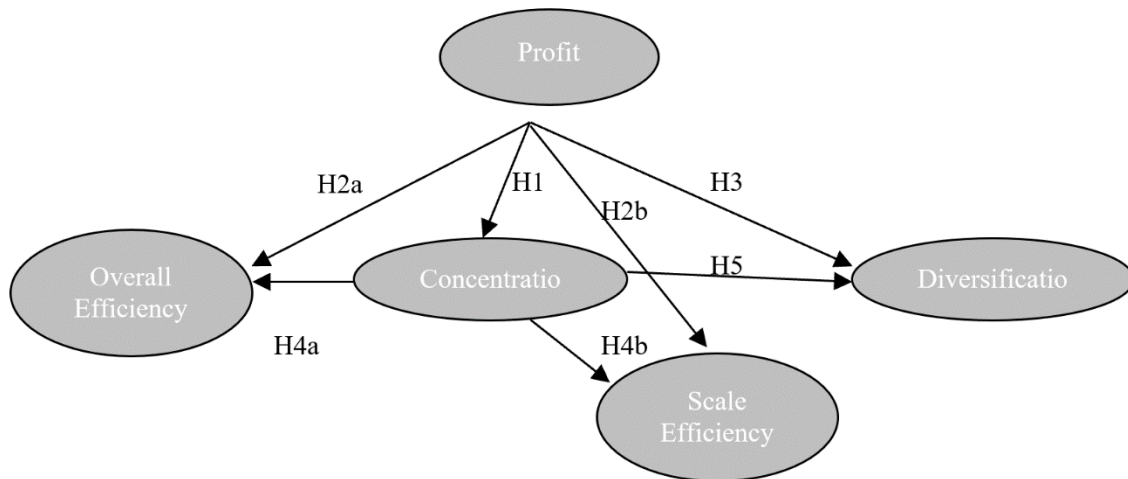


In light of the above, Greece's reforms do not substantially improve efficiency in this sector. The structural weaknesses of the Greek economy seem to be not addressed and remain the most crucial factor behind the difficulties of adjusting to intense international competition.

#### 4.2 The Research Model and our Hypotheses

The current study emphasized and supported the Bayesian network's application for shedding light on the causal relations among interest variables (Wu *et al.* 2012). The causal diagram resulting from the Bayesian network is exhibited in Fig. 3. It should be noted that before applying the PLS approach, the causal directions obtained by the TAN search algorithm should be reversed (Wu *et al.* 2012). Based on this diagram, our hypotheses are created accordingly.

Figure 3. Causal diagram acquired by Bayesian Network TAN classifier

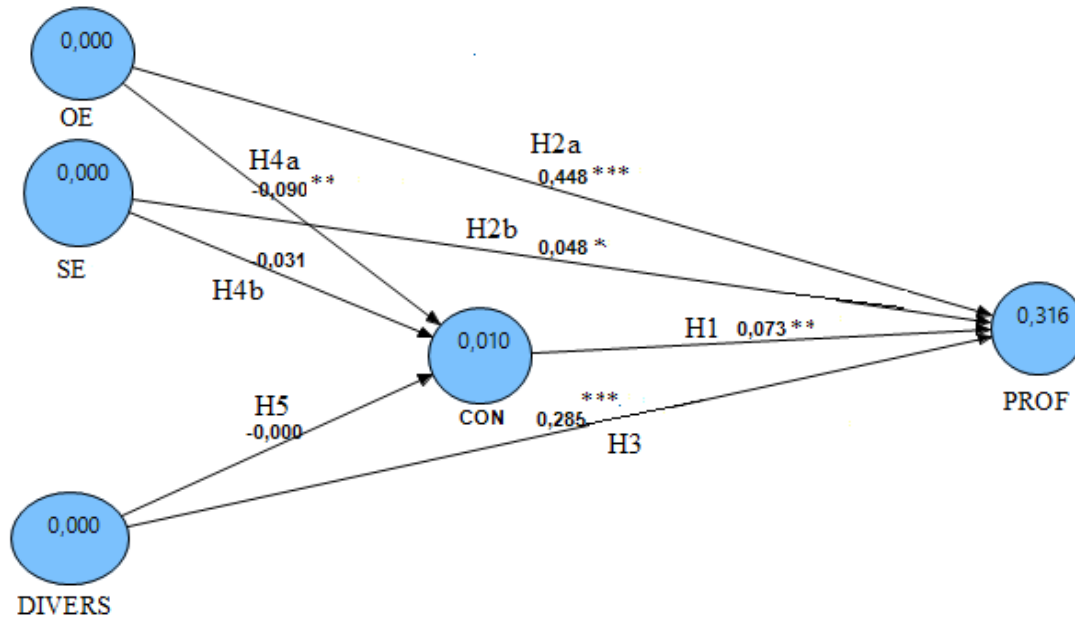


The Bayesian network findings suggest that seven crucial relationships may be valid in the specific spatial and temporal horizon, namely Greece's olive oil manufacture from 2006 to 2014. Four of these assumptions show a direct effect on the profits of concentration (H1), overall efficiency (H2a), scale efficiency (H2b), and product diversification (H3). Thus, the SCP, the RMP, and ES hypotheses described in the literature must be part of our research model (see Section 2). Additionally, three assumptions that indicate the impact on the concentration of overall efficiency (H4a), scale efficiency (H4b) and diversification (H5) were also formulated. The sources of concentration are the subject of dispute between economists. The literature on this controversy was dominated for a long time by opposing Hicks's and Chicago's approaches, known as the quiet life theory and efficiency paradigm respectively (see Section 2).

### 4.3 Testing the Structural Model

Figure 4 shows the hypothesis testing results by employing PLS path modeling. Based on them, we observed that the combination of four factors examined, market concentration (CONC), overall efficiency (OE), scale efficiency (SE), and product differentiation, has a moderate predictive ability of 31.6 % for the profits (PROF).

Figure 4. The results of PLS path modeling



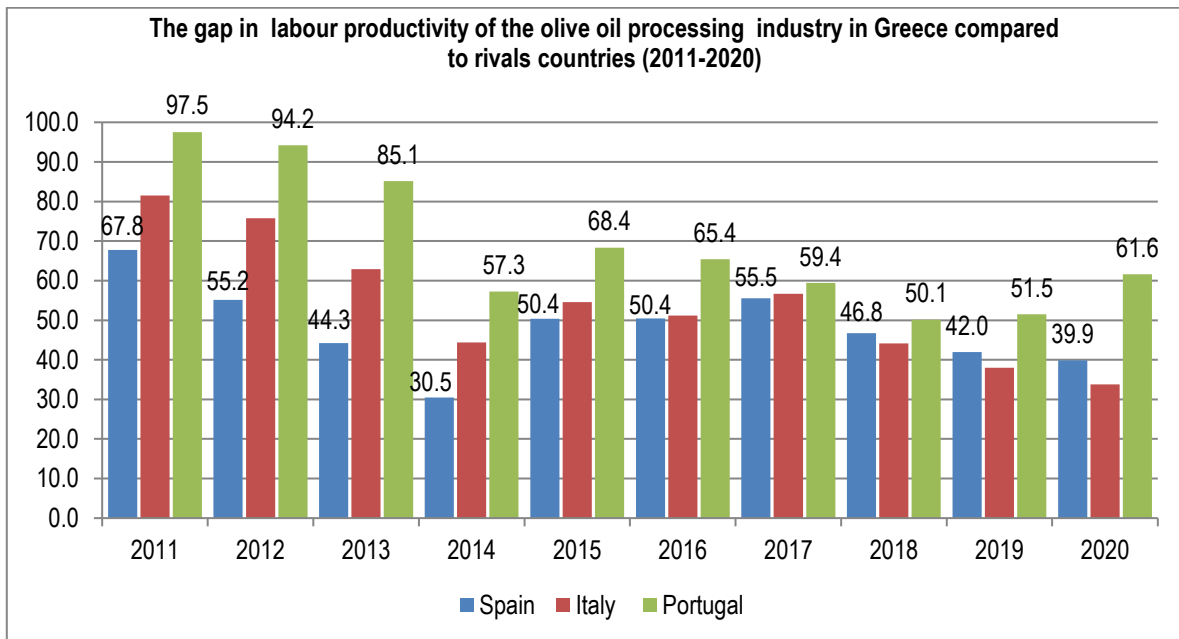
\* significant at  $p < 0.10$ ; \*\* significant at  $p < 0.05$ ; \*\*\* significant at  $p < 0.001$

From this Figure, it is also clear that the hypothesis of a positive effect on profitability of overall efficiency (H2a) and the scale efficiency (H2b) are supported at  $p < 0.001$  and  $p < 0.1$  since their standardized coefficients are statistically significant, with H2a ( $\beta=0.448$ ,  $t= 16.0184$ ,  $p < 0.001$ ) and H2b ( $\beta=0.048$ ,  $t= 1.65986$ ,  $p < 0.1$ ). Moreover, diversification (DIVERS) permits meaningful interpretations of profits as its path coefficient is positive and more than 0,25, suggesting the acceptance of the H3 hypothesis ( $\beta=0.285$ ,  $t= 6.90970$ ,  $p < 0.01$ ). Furthermore, the collusion hypothesis (H1) also prevails because concentration is significantly correlated with profits ( $\beta=0.073$ ,  $t=1.98836$ ,  $p > 0.05$ ). Hence, the evidence of this study confirms the links suggested by the theories of SCP, relative market power and efficiency structure. Looking at causal relations between the potential determinants of concentration, we discover that concentration exhibits a slight ability to be explained by this model ( $R^2 = 0,010\%$ ), and in particular, by three factors, overall efficiency (H4a) and scale efficiency (H4b) and product diversification (H5). Specifically, the empirical evidence revealed that H5 should be rejected, as diversification was found to have an insignificant negative relationship with concentration ( $\beta=-0.000$ ,  $t= 0.008922$ ,  $p > 0.1$ ).

A further intriguing finding is a statistically significant but adverse link between total overall efficiency and concentration ( $\beta=-0.090$ ,  $t=2.1852$ ,  $p < 0.05$ ), demonstrating the lack of support for the H4a hypothesis. A statistically insignificant negative influence of scale efficiency on concentration ( $\beta=-0.031$ ,  $t=1.282$ ,  $p > 0.1$ ) is also signalled, leading us to reject hypothesis H4b. These results verify the quiet life theory's assumption, which partially explains why a trend of fall in the labour productivity of the olive processing industry in Greece is observed from 2011 to 2020 (see Fig. 5).

As a result of the quiet existence of the Greek olive oil processing business, the productivity of companies that process olive oil in Greece in 2020 corresponds to 39.9% of the productivity of the Spanish sector (when this index was 67.8% in 2011), to the 33.8% of the productivity of the Italian industry (from 81.5% in 2011) and to the 61.6% of that of the Portuguese olive oil processing industry (from 97.5% in 2011). However, despite the widening of the gap in the labour productivity of the Greek olive oil industry compared to the international competitors, the companies in Greece over 2015- 2020 continued to enjoy a higher average gross operating surplus to value-added ratio, which amounted to 60.2%, more significant than the average profits businesses in Spain (49.0%), Portugal (57.6%), and Italy (54.5%).

Figure 5. The gap in labour productivity of the Greek olive oil processing industry (2011-2020)



Lastly, it should be noted that in the Greek context, after 2015, there is a trend toward a low rising the value of production of the olive oil industry (on average, by 1.5% annually). At the same time, the gross operating surplus to added value ratio (0.6%), the apparent labour productivity (0.8%), and the total number of firms (0.2%) of this sector in Greece trend to stagnation (Eurostat, Structural Business Statistics, 2022). During the COVID-19 pandemic, even though the number of firms is nearly unchanged (0.06%), the production value of the olive oil industry in Greece declined by -10.6% in 2019, along with the operating margin to added value ratio (-9.9%). However, in the subsequent calendar year, in 2020, there were enhancements in the operating margin to added value ratio (1,4%) and the output value (2,5%), with the number of enterprises declining -2.5% from the prior year serving as the sole exception.

## Conclusion

Whether increased firm concentration leads to inefficiency due to expanded market power is critical in developing anti-competitive policies. The paper investigates this question by examining the relationship between market concentration and efficiency. In particular, the article discusses the dynamics and effects of concentration on the different types of firm efficiency: technical, scale, and profit efficiency. For this purpose, we employed a new research methodology which might be used in future research to identify the interaction between firms' behaviour, performance, and market structure in Greece's olive oil industry from 2006 to 2014.

Several policy implications and regulations arise from this study. Based on the research results, their anti-competitive conduct contributed to higher profitability. Although effective resource management and product differentiation increased profits within Greece's olive oil manufacturing enterprises, these features were not the primary sources behind industrial concentration. Instead, the findings supported the QLH by demonstrating a negative link between efficiency and concentration. The olive oil manufacturing companies that opted for a peaceful existence continued to be both technically and profitably inefficient. They have been discovered to fail to exploit economies of scale to reduce the cost of production. Because of our evidence concerning the effects of market concentration on various types of efficiency, anti-competitive actions are necessary to prevent companies from gaining excessive profits. The restoration of Greek industry competitiveness necessitates the adoption of regulations that support the competitive function of the market. We can get similar conclusions if we examine the currently available data for the evolution of the Greek olive oil sector from 2015 to 2020. Therefore, increased competition is necessary to improve organizational and technical changes in the production process, motivate managers to cut cost inefficiencies and resource waste and encourage the discovery of new products if combined with the promotion of an integrated government policy of productive reconstruction at the micro-region level.

## References

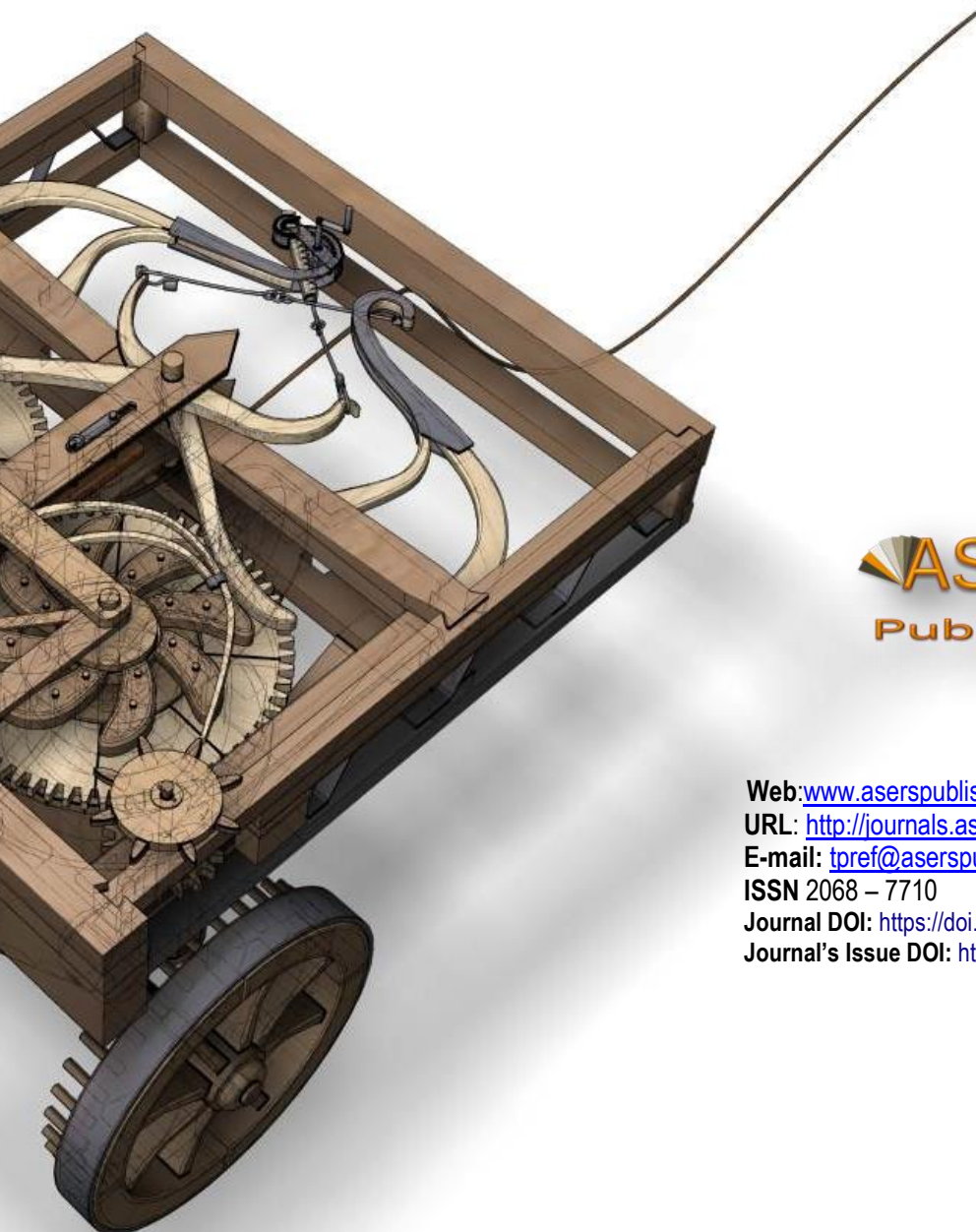
- [1] Anzoategu, D., Peria M.S.M. and Rocha, R.R. 2010. Bank competition in the Middle East and Northern Africa region. *Rev Middle East Econ Financ*, 6 (2): 26- 48. DOI: <https://doi.org/10.2202/1475-3693.1313>
- [2] Ariss, R.T. 2010. On the implications of market power in banking: Evidence from developing countries. *J Bank Financ*, 34(4): 765-775. DOI: <https://doi.org/10.1016/j.jbankfin.2013.09.012>
- [3] Asongu S A, Odhiambo N M (2019). Testing the quiet life hypothesis in the African banking industry. *J. Ind Compet Trade*, 19(1): 69-82. DOI: <https://doi.org/10.1007/s10842-018-0278-3>
- [4] Badunenko, O. 2010. Downsizing in the German chemical manufacturing industry during the 1990s. Why is small beautiful? *Small Bus Econ*, 34(4): 413-431. DOI: <https://doi.org/10.1007/s11187-008-9142-x>
- [5] Baesens B, et al. 2004. Bayesian network classifiers for identifying the slope of the customer lifecycle of long-life customers. *Eur J Oper Res*, 156 (2): 508–523. DOI: [https://doi.org/10.1016/S0377-2217\(03\)00043-2](https://doi.org/10.1016/S0377-2217(03)00043-2)
- [6] Bain, J.S. 1956. *Barriers to new competition*. Cambridge, Massachusetts: Harvard University Press.
- [7] Beck, T., Demircuc-Kunt, A.S., Laeven, L. and Levine, R. 2008. Finance, firm size, and growth. *J. Money Credit Bank*, 40(7): 1379-1405. DOI: <https://doi.org/10.1111/j.1538-4616.2008.00164.x>
- [8] Berger, A.N., and Hannan, T.H. 1998. The Efficiency Cost of Market Power in the Banking Industry: A Test of the 'Quiet Life' and Related Hypotheses. *Rev Econ Statistics*, 80(3): 454-465. DOI:<https://doi.org/10.1162/003465398557555>
- [9] Bikker, J.A. and Haaf, K. 2002. Competition, concentration and their relationship: An empirical analysis of the banking industry. *J Bank Financ*, 26(11): 2191-2214. DOI: [https://doi.org/10.1016/S0378-4266\(02\)00205-4](https://doi.org/10.1016/S0378-4266(02)00205-4)
- [10] Boyer, R and Freyssenet, M. 2000. Les modèles productifs. La Découverte, Repères n 298, Paris.
- [11] Carter, J.R. 1978. Collusion, efficiency, and antitrust. *J Law Econ*, 21(2): 435-444.
- [12] Castelli, L., Pesenti, R., and Ukovich, W. 2010. A classification of DEA models when the internal structure of the decision-making units is considered. *Ann Oper Res*, 173(1): 207-235. DOI:<https://doi.org/10.1007/s10479-008-0414-2>
- [13] Casu, B., and Girardone, C. 2009. Testing the relationship between competition and efficiency in banking: A panel data analysis. *Econ Lett*, 105(1): 134-137. DOI: <https://doi.org/10.1016/j.econlet.2009.06.018>
- [14] Caves, R., and Barton, D.R. 1990. *Efficiency in US Manufacturing Industries* Cambridge, MA: MIT Press.
- [15] Chao, J.C. and Swanson, N.R. 2005. Consistent estimation with a large number of weak instruments. *Econometrica*, 73(5): 1673-1692. DOI: <https://doi.org/10.1111/j.1468-0262.2005.00632.x>
- [16] Chen, Y., Cook, W.D., Li, N. and Zhu, J. 2009. Additive efficiency decomposition in two-stage DEA. *Eur J Oper Res*, 196(3): 1170-1176. DOI: <https://doi.org/10.1016/j.ejor.2008.05.011>
- [17] Chin, W.W. 1998. The partial least squares approach to structural equation modeling. In: *Modern Methods for Business Research*, Psychology Press, Talyor and Francis Group, New York, pp 295-336
- [18] Coccorese, P. and Pellicchia, A. 2010. Testing the 'quiet life hypothesis' in the Italian banking industry. *Econ Notes*, 39(3):173-202. DOI: <https://doi.org/10.1111/j.1468-0300.2011.00227.x>
- [19] Cowling, K. and Waterson, M. 1976. Price-cost margins and market structure. *Economica*, 43(171): 267-274. DOI: <https://doi.org/10.2307/2553125>
- [20] Delis, M.D., and Tsionas, E.G. 2009. The joint estimation of bank-level market power and efficiency. *J Bank Financ*, 33(10): 1842–1850. DOI: <https://doi.org/10.1016/j.jbankfin.2009.04.006>
- [21] Delorme, Jr C.D., Kamerschen, D.R., Klein, P.G., and Voeks, L.F. 2002. Structure, conduct and performance: a simultaneous equations approach. *Appl Econ*, 34(17): 2135-2141. DOI:<https://doi.org/10.1080/00036840210135836>
- [22] Demsetz, H. 1973. Industry structure, market rivalry, and public policy. *J Law Econ*, 16(1): 1-9.



- [23] Färe, R., Grosskopf, S., Maudos, J., and Tortosa-ausina, E. 2015. Revisiting the quiet life hypothesis in banking using non-parametric techniques. *J Bus Econ Manag*, 16(1): 159-187. DOI:<https://doi.org/10.3846/16111699.2012.726929>
- [24] Ferreira, C. 2013. Bank market concentration and bank efficiency in the European Union: a panel Granger causality approach. *Int Econ Econ Policy*, 10(3): 365-391. DOI: <https://doi.org/10.1007/s10368-013-0234-y>
- [25] Friedman, N., Geiger, D., and Goldszmidt, M. 1997. Bayesian network classifiers. *Mach Learn*, 29(2): 131-163. DOI: <https://doi.org/10.1023/A:1007465528199>
- [26] Fu, X.M., and Heffernan, S. 2009. The effects of reform on China's bank structure and performance. *J Bank Financ* 33(1): 39-52. DOI: <https://doi.org/10.1016/j.jbankfin.2006.11.023>
- [27] Garza-García, J.G. 2012. Does market power influence bank profits in Mexico? A study on market power and efficiency. *Appl Financial Econ*, 22(1): 21-32. DOI: <https://doi.org/10.1080/09603107.2011.595681>
- [28] Geroski, P.A. 1982. Simultaneous equations models in the structure-performance paradigm. *Eur Econ Rev*, 19: 145–58. DOI: [https://doi.org/10.1016/0014-2921\(82\)90009-5](https://doi.org/10.1016/0014-2921(82)90009-5)
- [29] Graddy, D.B. 1980. The measurement of market structure and its influence on bank prices and profitability. *Neb J Econ Bus*: 41–54. Available at: <https://www.jstor.org/stable/40472669>
- [30] Gumbau-Albert, M, and Maudos, J. 2002. The determinants of efficiency: The case of the Spanish industry. *Appl Econ*, 35: 1941–1948. DOI: <https://doi.org/10.1080/00036840210127213>
- [31] Hicks, J.R. 1935. Annual survey of economic theory: the theory of monopoly. *Econ: J Econ Soc*: 1-20.
- [32] Kao, C., and Hwang, S.N. 2008. Efficiency decomposition in two-stage data envelopment analysis: An application to non-life insurance companies in Taiwan. *Eur J Oper Res*, 185(1): 418-429. DOI: <https://doi.org/10.1016/j.ejor.2006.11.041>
- [33] Khan, H.H., Ahmad, R.B., and Chan, S.G. 2018. Market structure, bank conduct and bank performance: Evidence from ASEAN. *J Policy Model*, 40(5): 934-958. DOI: <https://doi.org/10.1016/j.jpplmod.2018.02.001>
- [34] Koetter, M., Kolari, J.W., and Spierdijk, L. 2012. Enjoying the quiet life under deregulation? Evidence from adjusted Lerner indices for US banks. *Rev Econ Stat*, 94(2): 462–480. DOI:[https://doi.org/10.1162/REST\\_a\\_00155](https://doi.org/10.1162/REST_a_00155)
- [35] Kouki, I., and Al-Nasser, A. 2017. The implication of banking competition: Evidence from African countries. *Res Int Bus Financ*, 39: 878-895. DOI: <https://doi.org/10.1016/j.ribaf.2014.09.009>
- [36] Lerner, A.P. 1934. The concept of monopoly and the measurement of monopoly power. *Rev Econ Stud*, 1(3): 157–175.
- [37] Mason, E.S. 1939. Price and production policies of large-scale enterprise. *Am Econ Rev*, 29(1):61-74. DOI:<https://www.jstor.org/stable/1806955%0D>
- [38] Maudos, J., and De Guevara, J.F. 2007. The cost of market power in banking: social welfare loss versus cost inefficiency. *J Bank Financ*, 31 (7): 2103–2125. DOI: <https://doi.org/10.1016/j.jbankfin.2006.10.028>
- [39] Nyangu, M., Marwa, N., Fanta, A., and Uwe, L.L. 2022. The Dynamics of Bank Concentration, Competition and Efficiency in the East African Community. *J Ind Compet Trade*, 22(1): 21-49. DOI:<https://doi.org/10.1007/s10842-022-00379-7>
- [40] Panzar, J.C. and Rosse, J.N. 1982. *Structure, conduct, and comparative statistics*. Bell Telephone Laboratories.
- [41] Peltzman, S. 1977. The gains and losses from industrial concentration. *J Law Econ*, 20(2): 229-263.
- [42] Resende, M. 2007. Structure, conduct and performance: a simultaneous equations investigation for the Brazilian manufacturing industry. *Appl Econ*, 39(7): 937-942. DOI:<https://doi.org/10.1080/00036840500461949>
- [43] Rhoades, S.A. 1985. Market share as a source of market power: Implications and some evidence. *J Econ Bus*, 37(4): 343-363. DOI: [https://doi.org/10.1016/0148-6195\(85\)90027-X](https://doi.org/10.1016/0148-6195(85)90027-X)

- [44] Ringle, C.M., Wende, S. and Will, S. 2005. SmartPLS 2.0 M3 Beta. Available at: <http://www.smartpls.de>
- [45] Sahile, S.W.G., Tarus, D.K., and Cheruiyot, T.K. 2015. Market structure-performance hypothesis in Kenyan banking industry. *Int J Emerg Mark*, 10(4): 697-710. DOI: <http://dx.doi.org/10.1108/IJoEM-12-2012-0178>
- [46] Schmalensee, R. 1989. Inter-industry studies of structure and performance. In: Handbook of industrial organization 2, Amsterdam, North-Holland, pp 951-1009. DOI: [https://doi.org/10.1016/S1573-448X\(89\)02004-2](https://doi.org/10.1016/S1573-448X(89)02004-2)
- [47] Seiford, L.M. and Zhu, J. 1999. Profitability and marketability of the top 55 US commercial banks. *Manag. Manag. Sci*, 45(9): 1270-1288. DOI: <https://doi.org/10.1287/mnsc.45.9.1270>
- [48] Setiawan, M., Emvalomatis, G., and Lansink, A.O. 2012. The relationship between technical efficiency and industrial concentration: Evidence from the Indonesian food and beverages industry. *J Asian Econ* 23(4): 466-475. DOI: <https://doi.org/10.1016/j.asieco.2012.01.002>
- [49] Shepherd, W.G. 1983. *Economies of scale and monopoly profits*. In: *Industrial organization, antitrust, and public policy*. Springer, Dordrecht, Boston, pp 165-204
- [50] Simar, L., and Wilson, P.W. 2002. Non-parametric tests of returns to scale. *Eur J Oper Res*, 139(1): 115-132. DOI: [https://doi.org/10.1016/S0377-2217\(01\)00167-9](https://doi.org/10.1016/S0377-2217(01)00167-9)
- [51] Sutton, J. 2007. Market structure: theory and evidence. *Handbook of industrial organization*, 3: 2301-2368. DOI: [https://doi.org/10.1016/S1573-448X\(06\)03035-4](https://doi.org/10.1016/S1573-448X(06)03035-4)
- [52] Williams, J 2012. Efficiency and market power in Latin American banking. *J Financ Stab*, 8(4): 263-276. DOI: <https://doi.org/10.1016/j.ifs.2012.05.001>
- [53] Wu, W.W., Lan, L.W., and Lee, Y.T. 2012. Exploring the critical pillars and causal relations within the NRI: An innovative approach. *Eur J Oper Res*, 218(1): 230-238. DOI: <https://DOI:10.1016/j.ejor.2011.10.013>

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