

# Product market competition and corporate governance disclosure: Evidence from the UK

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## ABSTRACT

*In this study we measure multiple dimensions of product market competition and examine their impacts on corporate governance disclosure, based on a sample of UK public firms over the period 2001 to 2009. We use factor analysis to explore the different dimensions of product market competition; and regression models to analyse the association between multiple dimensions of product market competition and corporate governance disclosure. We find that firms in less competitive industries have significantly more corporate governance disclosure. Furthermore, we detect a positive association between corporate governance disclosure and board independence, as well as audit committee independence. This suggests that firms with better corporate governance tend to disclose more information to external investors. Overall the findings support the view that managers use more corporate governance disclosure as a substitute for the external disciplinary force of product market competition.*

## 1. INTRODUCTION

**W**E INVESTIGATE the association between product market competition and corporate governance disclosure. Our research question is motivated by the different predictions in the theoretical literature. On the one hand, Darrough and Stoughton (1990) investigate competition in the context of an entry game, and predict that firms in more competitive industries will adopt better disclosure practice. This is because withholding information can be interpreted by potential entrants as good news, thus encouraging competitors to enter the market. On the other hand, Gertner et al (1988) detect that firms in more competitive industries will have less disclosure. Here, the logic is that information disclosed by one firm can be used opportunistically by industry rivals, and hence it is optimal for firms to have less information disclosure. In a similar vein, Wagenhofer (1990) suggests that greater product market competition inhibits disclosure in markets with mature competitors.

Empirical studies in this area also present mixed results. For example, Harris (1998) finds that a firm's decision to provide separate segment disclosure is positively related to the level of competition. In contrast, Verrecchia and Weber (2006) report that the probability of a firm providing proprietary information is negatively related to product market competition, measured by industry concentration. Based on a survey of UK private firms, Dedman and Lennox (2009) suggest that when managers perceive more competition, they are more likely to withhold information on sales and costs. Healy and Palepu (2001) conclude that the empirical studies provide little evidence on how product market competition is related to disclosure. To summarise, disagreements over the association between product market competition and disclosure remain unresolved and we aim to investigate this issue within corporate governance disclosure in a sample of UK public firms.

In the current study, we suggest that product market competition can potentially have two opposing effects on corporate governance disclosure. One reason for this is that firms might have more disclosure as a result of intense product market competition, since competition serves as a disciplinary and monitoring mechanism, to pressure managers to commit to better disclosure practice. Alternatively, corporate governance disclosure can be seen as a substitute for product market competition: managers use more disclosure in less competitive markets to maintain investors' confidence in their firms.

Under the Companies Act 1967, UK public firms are mandated to disclose audited financial statements to shareholders. In 1993, the Accounting Standard Board (ASB) introduced voluntary 'Operating and Financial Review'(OFR) for public firms. OFR recommends public firms in the UK provide a formalised narrative explanation of their financial performance, containing information on corporate social responsibility and internal governance, as such information is useful for investors to interpret firms' financial performance. Furthermore, UK public firms have low entry barriers for most industries (except for those under tight government regulation). Therefore, we exploit the UK setting to analyse the relationship between product market competition and corporate governance disclosure.

In previous empirical studies, competition is constructed typically as an industry level measure. For example, the level of concentration is used to measure competition (see for example, Marciukaityte and Park 2009; Balakrishnan and Cohen 2009). However, other studies suggest that product market competition has different dimensions (see for example, Raith 2003). Following the approach of Li (2010), we employ different measures, to reflect product market competition at the industry level, and examine their impact on the corporate governance disclosure. We report that firms in less competitive industries (where entry cost is high and market size is large) have significantly more disclosure compared with their counterparts in more competitive industries.

Our results are robust after controlling for those firm-specific characteristics and corporate governance factors that have been documented to

affect disclosure, in previous studies. Furthermore, we find a positive association between corporate governance disclosure and both board independence and audit committee independence. This suggests that firms with better corporate governance disclose more information to external investors. Overall, the findings support the argument that managers use more corporate governance disclosure as a substitute for the external disciplinary force of competition.

Accordingly, this paper contributes to the literature in a number of ways. To the best of our knowledge, this is the first study to measure multiple dimensions of product market competition, and to investigate the relationship between corporate governance disclosure and competition in the UK context. We add to the previous literature by identifying competition as an important economic determinant of a firm's decision to disclose more information. Second, we provide evidence on the positive association between corporate governance factors and disclosure. Finally, we extend earlier studies (e.g., Marciukaityte and Park 2009), that use industry concentration to measure competition, and find that different dimensions of competition can have different impacts on disclosure.

The rest of the paper is organised as follows. Section 2 reviews the literature and develops hypotheses. Section 3 describes the data and research method. Section 4 presents the empirical results, and Section 5 concludes.

## 2. CORPORATE GOVERNANCE, DISCLOSURE AND PRODUCT MARKET COMPETITION: THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

In this Section we start with a discussion of corporate governance disclosure, then we develop our hypotheses.

### *2.1 Corporate governance disclosure and product market competition in the UK context*

Historically, the Companies Act of 1900 (UK) required companies to disclose a limited amount of audited balance sheet information to their shareholders. A revised version in 1907 made it mandatory for public firms to file balance sheets with a central registry at Companies House (Flower 2004). In 1918, the Wrenbury Committee considered potential reforms of the Companies Act and recommended that the policy of limited public disclosure should continue. In 1925, the Institute of Chartered Accountants in England and Wales took a similar stance. In 1967, private companies were required to start filing their accounts with Companies House (Flower 2004).

In 1993, the Accounting Standard Board issued the statement of 'Operating and Financial Review' (OFR). The OFR enabled UK public firms to provide a structured narrative explanation of their financial performance, which has been voluntary (mandatory) for all listed firms before (after) April 1, 2005. However, on November 28, 2005 the UK government announced that the OFR would no longer be mandatory. In 2006, the Accounting Standard

Board recommended a revised version of the OFR, which can be seen as an extended version. According to the Accounting Standard Board, the revised OFR should be 'addressed to members, setting out their analysis of business with a forward-looking orientation in order to assist members to assess the strategies adopted by the entity and the potential for those strategies to succeed; the OFR should focus on matters that are relevant to the interest of members' (the Accounting Standard Board, 2006: principle 6). The OFR, which is qualitative in nature, contains information on corporate social responsibility and internal governance, as such information is valuable for investors to interpret the financial performance of public firms.

Furthermore, public firms in the UK, similar to their US counterparts, have a diverse corporate ownership structure and high quality disclosure. Apart from those tightly regulated industries (such as utilities), entry barriers are generally low for other industries in the UK. This indicates that there is a sufficient variation in the level of competition from industry to industry. Consequently, we take advantage of this interesting institutional setting in the UK to explore the relationship between product market competition and corporate governance disclosure.

## *2.2 Theoretical framework*

The classical agency problem arises from the information asymmetry and the conflict of interests between principals (shareholders) and agents (managers). The separation between ownership and control provides managers with the opportunity to make decisions that maximise their benefits, at the expense of shareholders (Jensen and Meckling 1976; Fama and Jensen 1983). Information asymmetry between managers and shareholders leads to inefficient resource allocation, which subsequently increases the cost of raising capital because shareholders demand a risk premium for their investments. Prior literature suggests that product market competition is an efficient monitoring and disciplining mechanism to alleviate agency problems, as Shleifer and Vishny (1997, p. 738) assert: 'Product market competition is probably the most powerful force towards economic efficiency in the world'.

Previous studies show that product market competition provides incentives for managers to better align their interests with those of shareholders. It is well established in the literature that firms with strong governance have on average better performance (see for example, Gompers *et al* 2003; Anderson *et al* 2004). However, Giroud and Mueller (2011) find that firms with good corporate governance have higher firm value and better operating performance, in non-competitive industries, suggesting that firms in non-competitive industries will benefit more from strong governance practices. This implies that competition serves as an effective mechanism to discipline managers and thus partially substitutes internal governance tools.

Another theoretical perspective that is pertinent to the relationship between competition and disclosure is a manager's career concern (Narayanan

1985). Narayanan observes that top executives have an incentive to take actions that boost short-term performance at the expense of long-run shareholders' interests, if they are concerned with their reputation on the labour market, and that such concerns could become more serious when product market competition is high. Other studies show that CEO turnover is higher in more competitive industries (see for example, DeFond and Park 1999), and poorly performing firms in competitive industries are more likely to become takeover targets (Kruse and Rennie 2006). In contrast, managers in less competitive industries tend to suffer less from such career concern problems. However, information asymmetry still exists in the presence of intensive competition (albeit to a less extent), and disclosure can be used partially to solve the information asymmetry problem.

### *2.3 Hypotheses development*

Product market competition plays an instrumental role in determining firms' disclosure practice. On the one hand, firms can strengthen disclosure to enhance corporate transparency and improve their reputation among investors. On the other hand, if the information disclosed is opportunistically exploited by current or potential competitors, such disclosure could put firms at risk. This suggests that firms tend to adopt a low level of disclosure (Verrecchia 1983). Thus, firms have to balance the benefits and costs of disclosure to decide the optimal level of such disclosure. We further elaborate two potential channels through which product market competition can affect a manager's incentives on corporate governance disclosure.

First, managers in less competitive industries are more likely to suffer from agency conflicts, as they are operating in an environment where the disciplinary force of competition is largely absent. In order to substitute the weak monitoring function of competition and signal to the market that their interests are aligned with those of shareholders, managers in less competitive industries can volunteer to make more disclosure, to build a good reputation and occupy advantageous positions in the labour market. This 'substitution argument' is based on the assumption that firms in less competitive industries have access to more free cash flows from operations, as a result of dominant market power. Hence, managers are likely to benefit themselves with corporate resources in the absence of a strong monitoring environment. To alleviate the concerns of shareholders and maintain investors' confidence in their firms, managers in less competitive industries are motivated to disclose more information on corporate governance. As such, managers can use disclosure as a substitute for the disciplinary force of competition.

Although theoretical work (see for example, Clarke 1983) predicts that it could be sub-optimal for firms in less competitive industries to increase disclosure on sales and investment strategies, we suggest that corporate governance disclosure can bring more benefits than costs, for the following reasons. First, corporate governance disclosure does not involve specific information on

a product or investment decision, so competitors are less likely to benefit from such information. Second, a high level of disclosure on corporate governance signals that firms are committed to high transparency, which is generally appreciated by investors. Based on the above discussion we expect to find support for the following hypothesis:

*H1: Firms operating in less competitive industries disclose more information on corporate governance.*

However, Guadalupe and Peres-Gonzalez (2005) find evidence that the private benefits of managerial control, as a measure of the magnitude of conflict between managers and shareholders, decrease with the intensity of product market competition. Relating product market competition to quality of financial reporting, Marciukaityte and Park (2009) detect that firms in more competitive industries are less likely to engage in earnings management. In a similar vein, Balakrishnan and Cohen (2009) find that competition disciplines managers because the frequencies of earnings re-statement are significantly lower in more competitive industries. Focusing on the relationship between product market competition and a firm's social performance, Fernandez-Kranz and Santalo (2010) report that firms in more competitive industries have better social ratings. These results indicate that shareholders of firms in more competitive industries are more likely to have fewer agency conflicts.

Previous literature also suggests that more disclosure is able to reduce information asymmetry and alleviate agency problems (see for example, Easley and O'Hara 2004; Lambert *et al* 2007). Furthermore, La Porta *et al* (2006) find that an increase in mandatory disclosure is associated with a substantially lower level of private benefits of control. Therefore, managers in more competitive industries might voluntarily commit to better corporate governance disclosure. Here, competition can be seen as a powerful disciplinary mechanism for managers, since competition effectively removes incapable managers and managers who do not act in the best interest of shareholders. Furthermore, firms operating in highly competitive industries are more likely to rely on external financing for growth, *ceteris paribus*, because competition (in general) will lower the profit margin at the industry level. Previous literature suggests that a major benefit of increased disclosure to reduce information asymmetry and lower cost of capital (see for example, Easley and O'Hara 2004; Lambert *et al* 2007). Consequently, as firms in competitive industries also compete for funds in the financial market, they have strong incentives to disclose more information on corporate governance to raise capital at lower costs. Hence we posit that:

*H2: Firms operating in more competitive industries disclose more information on corporate governance.*

Prior studies suggest that internal corporate governance can be of great significance in monitoring firms' performance and minimising managers' oppor-

tunistic behaviours. For example, Bujaki and McConomy (2002) report that firms with more 'unrelated directors on the board' voluntarily provide more information related to corporate governance. Ben-Amar and Boujenoui (2010) also find that 'the percentage of unrelated directors on the board' impacts governance disclosure. Wang and Hussainey (2013) show that corporate governance features (board size and composition, CEO duality, directors' ownership) influence companies' decision to disclose forward-looking statements voluntarily in the narrative section of annual reports, from a sample of UK public firms.

The findings of these studies suggest that board independence (measured by the percentage of independent directors on the board) plays an important role in increasing board strength and monitoring of managers. This is because insider directors are more likely to have a close relationship with the management, which lowers their incentive and effectiveness in monitoring the top executives (see for example, Pincus *et al* 1989). Accordingly, we hypothesise that there is a positive relationship between independent directors and corporate governance disclosure. In addition, audit committee independence can enhance the quality of disclosure, as they are more able to question the financial reports and to provide better links with external auditors. Accordingly, we predict a positive association between audit committee independence and the disclosure of information related to corporate governance. Thus we hypothesise that:

*H3: Firms with more independent board and audit committee disclose more information on corporate governance.*

### 3. RESEARCH DESIGN

In this section we first discuss the data used in the current study. Then we provide more details on the source of data and research method adopted in the study.

#### *3.1. Data on product market competition*

Raith (2003) suggests that product market competition has multiple dimensions, so drawing a conclusion based on one dimension of competition could be misleading. Following the literature (such as, Karuna 2007; Li 2010), in this study we construct variables to measure three dimensions of competition: potential entry cost to an industry, industry profitability and industry concentration. Specifically, we use industry capital expenditure (the average capital expenditure for all firms in one industry) and industry market size (logarithm of aggregate industry sales) to reflect entry cost. This is because industry capital expenditure reflects the necessary investment for potential rivals to compete with existing players in an industry, so it is positively correlated with entry costs. As large sales is normally associated with high initial investment, the correlation between industry market size and entry costs should also be positive.

Next, we use industry price-cost margin and industry return on assets (ROA) to measure industry profitability, as large profits can motivate firms to enter an industry. It is necessary to control for industry profitability in the analysis. High industry profitability might imply more competition from potential entrants, or less competition from existing players in the industry (because existing players can achieve high profit, so they have less incentives to increase competition), and hence the interrelationship between industry profitability and competition is ambiguous. Finally, we use the four firm concentration ratio and Herfindahl index to capture industry concentration, as highly concentrated industries are assumed to have less competition.

We further employ principal component analysis with Oblimin rotation, to generate three factors with eigenvalue larger than one: Entry cost is a factor obtained from the factor analysis on industry capital expenditure and industry market size; industry profitability is a factor obtained from the factor analysis on industry price-cost margin and industry ROA; whilst industry concentration is a factor obtained from the factor analysis on the four firm concentration ratio and Herfindahl index. All the data used to calculate competition measures are collected from DataStream for all the firms listed in each industry. In the analysis we first use each individual measure for competition and then use three factors simultaneously in the regression, to generate a complete overview of the association between the dimensions of competition and corporate governance disclosure. It is worth mentioning that for industry classification, we employ the 4 digit SIC codes available in DataStream. Finally, consistent with previous studies, we exclude financial firms.

### *3.2 Data on corporate governance disclosure and firm-specific characteristics*

Our initial sample is based on FTSE 250 companies over the period 2001 to 2009. After excluding financial and utilities firms, the final sample consists of 162 firms. We use the corporate governance rating score of the Corporate Governance Quotient database developed by Institutional Shareholder Services (ISS), that rates publicly traded companies in terms of the quality of their corporate governance. The information is voluntarily disclosed by the firm, which reflects their disclosure levels of internal governance information. The information about corporate governance variables such as board independence and audit independence, is hand-collected from firms' annual reports. Firm level financial information is obtained from DataStream.

### *3.3 Research method*

In order to investigate the effect of competition and internal corporate governance on governance disclosure, we employ panel data analysis. Our main interest is to examine the relationship between competition and corporate governance disclosure. Previous studies show that firm size is important in explaining the level of disclosure (Zarzeski 1996; Chen and Jaggi 2000; Cheng and Courtenay 2006), so we control for firm size (natural logarithm of total



assets) in our analysis. Both theoretical and empirical studies in industry organisations suggest that leverage reduces the intensity of competition (Fudenburg and Tirole 1986; Chevalier 1995), so we include leverage (long-term debt to total assets) as another control variable. Firms with a high growth rate and greater risk are less likely to disclose information (Rogers and Stocken 2005; Waymire 1985), so we include market-to-book ratio, cash flow (ratio of cash flow to total assets) and the firm's historical beta (a measure of a firm's systematic risk, obtained from DataStream) in our models. We also control for institutional ownership, since these investors can obtain more information directly from their meetings with managers and hence there is less need for disclosure (Schadewitz and Blevins 1998; Celik *et al* 2006).

We first estimate the determinants of firms' corporate governance disclosure (INDEXCGQ) without controlling for the industry effect. Next, following Fernandez-Kranz and Santalo (2010), we re-estimate the model by adding industry effects. It is worth noting that we have examined issues related to endogeneity in our models. According to the Hausman Test there is no strong significant evidence of an endogeneity problem among the industry variables we are employing. We also used lagged variables to double check the robustness of our results. Those findings are not significantly different from what is reported in this paper. Our random effects model is as follows:

$$INDEXCGQ_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Control + \varepsilon_{it} \quad (1)$$

Where  $INDEXCGQ_{it}$  is our corporate governance disclosure for firm  $i$  at year  $t$ , with  $\alpha$  as an intercept term;  $X_{it}$  is a vector of product market competition measures and Control is a vector of control variables.  $\varepsilon_{it}$  is the error term. Variable definitions are provided in Table 1.

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Table 1: Variable Definition

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AUDIND is the percentage of independent directors in the audit committee

BETA is historical beta of firms

BOARDIND is board independence, which is measured as the ratio of independent directors to total number of directors on board

CASHFLOW is defined as ratio of cash flow to total assets

ICAPEXP is measured as the weighted average of capital expenditures for firms in each industry per year

INDCON4 is the four firm concentration ratio, which is measured as the sum of the market share of four biggest firms in each industry each year

INDEXCGQ is corporate governance disclosure measure

INDHHI is defined as the Herfindahl index, which is measured as the sum squared of market share of firms in each industry each year cont...

*...cont*

INDMGN is the price-cost margin measured as industry sales to industry operating costs

INDMKTS is assessed as the product market size which is the natural logarithm of industry sales in each industry yearly

INDROA is defined as industry Earnings Before Interest, Taxes and Depreciation (EBITDA) to industry total assets

INSIDEROWN is the percentage of shares owned by insiders

INSTITUTIONOWN is the percentage of shares owned by institutions

LEV is leverage which is measured as the ratio of long term debt to total assets

MKBV is market to book ratio

SIZE is measured as the natural logarithm of total assets

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#### 4. RESULTS

This section is divided into two sub-sections. Firstly, we discuss the descriptive statistics and report findings from the correlation analysis of the investigated variables. Secondly, we discuss the results of the regression analysis on the relationship between competition and corporate governance on corporate governance disclosure.

##### *4.1. Descriptive statistics and correlation*

Table 2 presents the descriptive statistics of the variables. The mean of the corporate governance disclosure score is 86.79, indicating that the average firms in the sample have a relatively good ranking of disclosure. The mean of the four firm concentration ratio is 0.625 which suggests that, on average, firms operate in a relatively concentrated industry (the largest four firms in the industrial control 62.5 per cent of market share). The mean of firm size (logarithm of total assets) is 13.36, as our sample is populated with large firms included in the FTSE250 index. The mean of board independence (audit committee independence) is 0.48 (0.96), indicating that 48 per cent (96 per cent) of board members (audit committee directors) are independent. Finally, on average 17.49 per cent of shares are owned by institutions.

Table 3 shows the correlations between variables. Corporate governance disclosure is positively correlated with firm size, board independence and audit committee independence, suggesting that large firms, and firms with independent boards and independent audit committees, are more likely to disclose more information on corporate governance. The industry-average of capital expenditure is positively related to price-cost margin at the industry level and the industry return on assets, indicating that profitable industries tend to have high entry costs in terms of capital investment. The industry-

Table 2: Descriptive statistics

<i>Variables</i>	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>
INDEXCGQ	86.788	0	100
ICAPEXP	385155.5	46894	986944.2
INDMKTS	18.253	16.730	19.951
INDMGN	0.015	1.93e-06	0.065
INDROA	0.963	-0.711	7.690
INDCON4	0.625	0.239	1
INDHHI	0.178	0.049	1
SIZE	13.364	9.919	18.212
MKBV	2.847	-99.6	21.25
LEV	0.171	0	0.647
BOARDIND	0.480	0.1	0.818
CASHFLOW	0.188	-6.676	0.980
AUDIND	0.959	0.286	1
BETA	1.058	-0.54	5.35
INSIDEROWN (%)	17.485	0.01	73.4

average of capital expenditure is also positively correlated with the four firm concentration ratio, indicating that relatively concentrated industries have high entry costs.

Industry market size is positively correlated with price-cost margin and industry return on assets, which implies that industries with large market size are more profitable. Price-cost margin at the industry level (industry return on assets) is positively correlated with the four firm concentration ratio and Herfindahl index, indicating that highly concentrated industries are more profitable. This is consistent with findings in the economics literature (see for example, Rivera-Batiz 1988), as powerful firms in less competitive industries are price makers instead of price takers, so they can charge high prices to increase their profits. The four firm concentration ratio is highly correlated with the Herfindahl index, as they both measure the level of industry concentration.

Industry return on assets is positively related to insider ownership, suggesting that insiders are more likely to invest in firms operating in profitable industries. The correlation between board independence (audit committee independence) and firm size is positive, as large firms are likely to have more independent boards (audit committee). Leverage is negatively related to

cash flow, which indicates that firms with less cash flow use higher gearing to finance their operations. Finally, board independence is negatively correlated with institutional ownership, hence institutions invest less in firms with independent boards, possibly due to concerns of the board that firms become less transparent when institutions hold a significant percentage of shares. According to Table 2, the correlations between variables are low to moderate, which implies that multicollinearity is not of a concern in our specification.

#### *4.2. Results on the association between competition and corporate governance disclosure*

Table 4 presents our main results on the association between product market competition and corporate governance disclosure, without controlling for the industry effects. In Models 1 to 6, the dependent variable is the corporate governance disclosure index, while the independent variable of central interest is each individual measure of competition. In Model 7 the dependent variable is still the corporate governance disclosure index, while the independent variables are three factors resulting from the principal component analysis (entry cost, industry profitability and industry concentration, respectively). In each model we control for firm-specific characteristics and corporate governance variables. The coefficients of industry average capital expenditure (ICAPEXP, Model 1), industry market size (INDMKTS, Model 2) and industry price-cost margin (INDMGN, Model 3) are positive and significant, which suggest that firms operating in industries with higher entry costs (higher capital expenditure and large market size) tend to disclose more information on corporate governance. Furthermore, firms in more profitable industries tend to have more corporate governance disclosure.

In Model 7 the coefficient of entry cost (which is the factor score obtained from the principal component analysis on industry capital expenditure and industry market size) is positive and significant, which confirms our earlier result that firms disclose more governance information in less competitive industries where there is higher entry cost. Our findings are consistent with Li (2010), who shows that competition from potential rivals increases management earnings forecasts and management investment forecasts.<sup>4</sup> Overall, our findings support the argument that firms use more corporate governance disclosure as a substitute for the external disciplinary force of product market competition, as managers in these firms aim to gain a reputation for the good treatment of their shareholders and the maintenance of investors' confidence in their firms. *H1* is thus supported.

Our results also suggest that the association between competition and corporate governance disclosure is sensitive to the multi-dimensional characterisation of competition, as we find a positive and significant association between entry cost (industry profitability) and disclosure, but an insignificant association between industry concentration and disclosure. Therefore, we caution against the use of a concentration ratio as the only measure of

Table 3: Correlation

	INDEXCGQ	ICAPEXP	INDMKTS	INDMGV	INDROA	INDCON4	INDHHI	SIZE	MKBV	LEV
INDEXCGQ	1.000									
ICAPEXP	0.027 (0.497)	1.000								
INDMKTS	0.011 (0.772)	0.390*** (0.000)	1.000							
INDMGV	0.005 (0.905)	0.289*** (0.000)	0.912*** (0.000)	1.000						
INDROA	-0.012 (0.766)	0.154*** (0.000)	0.445*** (0.000)	0.621*** (0.000)	1.000					
INDCON4	0.010 (0.805)	0.205*** (0.000)	0.127*** (0.000)	0.313*** (0.000)	0.677*** (0.000)	1.000				
INDHHI	-0.002 (0.951)	0.032 (0.230)	0.044* (0.096)	0.318 (0.000)	0.695*** (0.000)	0.868*** (0.000)	1.000			
SIZE	0.203*** (0.000)	0.078* (0.007)	-0.020 (0.480)	-0.027 (0.343)	-0.083** (0.004)	-0.010 (0.733)	0.002 (0.947)	1.000		
MKBV	-0.019 (0.638)	-0.011 (0.719)	0.034 (0.259)	0.039 (0.196)	0.049* (0.101)	0.015 (0.607)	0.030 (0.311)	-0.168*** (0.000)	1.000	
LEV	0.042 (0.293)	0.151*** (0.000)	-0.019 (0.519)	-0.040 (0.178)	-0.039 (0.184)	0.048* (0.105)	0.008 (0.785)	0.437*** (0.000)	-0.162*** (0.000)	1.000
BOARDIND	0.193*** (0.000)	-0.017 (0.584)	-0.026 (0.397)	-0.013 (0.661)	-0.075** (0.014)	0.015 (0.632)	0.034 (0.266)	0.232*** (0.000)	0.009 (0.771)	0.009 (0.765)
CASHFLOW	-0.199*** (0.000)	0.008 (0.823)	-0.008 (0.812)	-0.007 (0.833)	-0.083** (0.013)	0.015 (0.660)	0.013 (0.701)	-0.250*** (0.000)	0.104** (0.003)	-0.066* (0.052)
AUDIND	0.129** (0.002)	-0.025 (0.447)	0.036 (0.269)	0.027 (0.406)	0.009 (0.772)	-0.032 (0.326)	-0.011 (0.738)	0.023 (0.482)	0.158*** (0.000)	0.003 (0.940)
BETA	0.118** (0.003)	0.112*** (0.000)	0.146*** (0.000)	0.088** (0.002)	0.131*** (0.000)	0.047* (0.106)	-0.012 (0.685)	0.100** (0.001)	0.046 (0.126)	0.130*** (0.000)
INSIDEROWN	-0.006 (0.891)	0.105*** (0.000)	0.026 (0.374)	0.001 (0.972)	-0.028 (0.350)	-0.008 (0.789)	-0.031 (0.296)	-0.238*** (0.000)	0.042 (0.175)	-0.163*** (0.000)

\*\*\*, \*\*, \* significant at 1 %, 5 % and 10 % levels respectively.

Table 4: The association between product market competition and corporate governance disclosure without controlling for industry effects (for the 162 firms (clusters))

<i>Dependent variable:</i> Indexcgq	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Independent Variables:</i>							
ICAPEXP	0.001** (0.033)						
INDMKTS		2.775** (0.030)					
INDMGN			109.972* (0.094)				
INDROA				-0.005 (0.993)			
INDCON4					-0.751 (0.821)		
INDHHI						-0.736 (0.910)	
Entry cost							2.144** (0.026)
Industry profitability							-0.453 (0.691)
Ind'y concentration							-0.283 (0.792)
BOARDIND	14.142** (0.038)	11.985* (0.077)	12.117* (0.075)	11.819* (0.088)	11.593* (0.093)	11.745* (0.087)	13.103* (0.056)
AUDIND	11.341* (0.072)	11.058* (0.080)	10.884* (0.085)	11.350* (0.074)	11.420* (0.073)	11.386* (0.073)	11.301* (0.074)
INSIDEROWN (%)	0.011 (0.796)	0.012 (0.777)	0.019 (0.668)	0.0226 (0.601)	0.0229 (0.597)	0.0227 (0.600)	0.006 (0.884)
SIZE	2.276** (0.012)	2.679** (0.003)	2.631** (0.004)	2.466** (0.007)	2.487** (0.007)	2.474** (0.007)	2.438** (0.008)
MKBV	0.827** (0.003)	0.793** (0.004)	0.766** (0.006)	0.734** (0.008)	0.736** (0.008)	0.735** (0.008)	0.856** (0.002)
LEV	0.552 (0.909)	1.117 (0.818)	1.208 (0.804)	1.268 (0.795)	1.356 (0.782)	1.293 (0.791)	0.549 (0.911)
CASHFLOW	-5.938** (0.045)	-5.278* (0.074)	-5.349* (0.071)	-5.264* (0.077)	-5.136* (0.090)	-5.213* (0.083)	-5.662* (0.063)
BETA	0.626 (0.486)	0.549 (0.543)	0.694 (0.442)	0.729 (0.436)	0.759 (0.408)	0.735 (0.419)	0.636 (0.484)
Constant	31.367** (0.023)	-20.792 (0.464)	29.117** (0.039)	33.060** (0.018)	33.162** (0.018)	33.031** (0.018)	32.163** (0.023)
Observation	353	353	353	353	353	353	353
Wald Chi <sup>2</sup>	38.06*** (0.000)	37.87*** (0.000)	35.78*** (0.000)	32.66*** (0.000)	32.66*** (0.000)	32.65*** (0.000)	40.02*** (0.000)
R2	0.131	0.129	0.126	0.119	0.119	0.119	0.136

\*\*\*, \*\*, \* significant at 1 %, 5 %, 10 % levels respectively.

Table 5: The association between product market competition and corporate governance disclosure after controlling for industry effects (for the 162 firms (clusters))

<i>Dependent Variable:</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Indexcgq							
<i>Independent variables:</i>							
ICAPEXP	0.001** (0.038)1						
INDMKTS		4.141* (0.062)					
INDMGN			204.105 (0.132)				
INDROA				-0.485 (0.582)			
INDCON4					-35.288 (0.178)		
INDHHI						6.549 (0.857)	
Entry cost							3.018** (0.033)
Industry profitability							-0.845 (0.640)
Ind'y concentration							1.707 (0.800)
BOARDIND	1.864* (0.102)	11.751* (0.108)	11.800* (0.107)	12.995* (0.074)	13.526* (0.064)	13.084* (0.071)	11.629 (0.111)
AUDIND	11.180* (0.081)	11.335* (0.077)	11.156* (0.083)	11.860* (0.066)	11.078* (0.086)	12.321* (0.056)	11.482* (0.074)
INSTITUTIONOWN (%)	0.013 (0.760)	0.010 (0.828)	0.017 (0.701)	0.024 (0.584)	0.021 (0.639)	0.026 (0.550)	0.008 (0.849)
SIZE	2.481** (0.009)	2.576** (0.007)	2.606** (0.007)	2.624** (0.006)	2.586** (0.007)	2.606** (0.006)	2.443** (0.010)
MKBV	0.896** (0.002)	0.863** (0.003)	0.828** (0.005)	0.720** (0.011)	0.758** (0.008)	0.714** (0.012)	0.921** (0.002)
LEV	0.431 (0.932)	0.231 (0.964)	0.125 (0.980)	0.161 (0.975)	0.439 (0.931)	0.383 (0.939)	0.181 (0.971)
CASHFLOW	-6.010* (0.059)	-5.860* (0.067)	-5.734* (0.073)	-5.091* (0.107)	-5.210* (0.100)	-5.050* (0.107)	-6.237* (0.049)
BETA	0.981 (0.321)	0.764 (0.441)	0.952 (0.339)	0.929 (0.355)	0.901 (0.365)	0.844 (0.393)	0.917 (0.354)
Constant	23.240 (0.126)	-46.776 (0.283)	25.931* (0.088)	31.483** (0.040)	62.357** (0.029)	28.398* (0.091)	27.751* (0.082)
Wald Chi <sup>2</sup>	40.01** (0.001)	38.63** (0.001)	37.34** (0.002)	35.66** (0.003)	36.92** (0.002)	36.35** (0.003)	41.43** (0.001)
R2	0.141	0.134	0.134	0.132	0.134	0.131	0.140

\*\*\*, \*\*, \* significant at 1 %, 5 %, 10 % levels respectively.

competition (see for example, Marciukaityte and Park 2009), because the subsequent inference could be misleading.

The coefficients on board independence and audit committee independence are positive and significant across all the regressions, which indicate that firms with independent boards and independent audit committees have better corporate governance disclosure. This is consistent with previous findings of a positive relationship between governance and disclosure (see for example, Anderson *et al* 2004). Accordingly, the empirical evidence supports *H3*. Regarding the firm-specific variables, we show that there is a positive relationship between corporate governance disclosure and both firm size and market to book ratio. In addition, cash flow is negatively associated with corporate governance disclosure.

We re-estimate the regressions after controlling for industry effects, and report the findings in Table 5. The results are qualitatively consistent, as the coefficients of ICAPEXP (Model 1), INDMKTS (Model 2), INDMGN (Model 3) and entry costs (Model 7) remain positive and significant, which suggests that our results stay robust after controlling for the industry effects.

Finally, we estimate the models using the lagged corporate governance factors to control for any possible endogeneity. The results (not reported) were not substantially different from the results reported in this paper.<sup>5</sup>

Our results have important implications for regulators and policy makers, as government policies to regulate product market competition may have unintended consequences on firms' disclosure practices. For example, the multiple dimensions of competition imply that regulators need to consider both *current* level of competition in terms of industry concentration and the *potential* level of competition in terms of entry barriers, to assess appropriately the overall level of competition across different industries.

## 5. CONCLUSIONS

In this study we test the association between product market competition and corporate governance disclosure, using a sample of UK firms. What distinguishes the current study from previous studies on competition and corporate disclosure is that we use multiple measures (entry cost, industry concentration and industry profitability), to reflect the different dimensions of competition, and analyse the association between each competition dimension and corporate governance disclosure. We find that firms in less competitive industries (where entry cost is high and market size is large) have significantly more disclosure. The results remain robust after controlling for the firm-specific factors and corporate governance variables that have been documented to affect disclosure. Furthermore, we report a positive association between disclosure and board independence, as well as audit committee independence, which suggests that firms with better corporate governance tend to disclose more information to external investors. Overall, the findings support the argument



that managers use more disclosure as a substitute for the external disciplinary force of product market competition.

We contribute to the literature by identifying competition as an important determinant of corporate governance disclosure. As far as we are aware of, this is the first study to measure multiple dimensions of product market competition, and investigate the relationship between corporate governance disclosure and competition in the UK context. Second, we provide new evidence on the positive association between corporate governance factors and disclosure. Finally, our findings confirm that the association between competition and corporate governance disclosure is sensitive to the multi-dimensional characterisation of competition. Therefore, we suggest that in future studies, product market competition needs to be measured by more than merely industry concentration to avoid reaching misleading inferences.

Our findings may have implications for both academics and policy makers, as we provide empirical evidence that different dimensions of competition affect a firm's decision to disclose more information. In addition, firms with strong internal governance (such as having more independent directors on the board) are likely to disclose more information. Hence, our results suggest that regulators might harmonise industry policies and accounting regulations to increase social welfare of the general public. Furthermore, the multiple dimensions of competition imply that policy makers may consider different aspects of competition before they assess the impact of important merger and acquisition deals that could re-shape the level of competition within an industry. Our study is subject to the following limitations. First, we adopt an industry level competition measure based on data from publicly listed firms in the UK. As we do not have access to data on UK private firms, our measure is likely to underestimate the actual level of competition. Second, our competition measure is compiled based on UK domestic firms. As the result of economic integration within the European Union (EU), companies from other EU countries may compete directly with domestic UK firms, so our competition measure is likely to be downward biased. Finally, by construction, our competition measure is at an industry level, however firms operating in the same industry may confront different levels of competition. Unfortunately this is not captured by our competition measure.

We suggest three directions for future research. First, researchers may go beyond a single country to investigate the association between competition and corporate governance disclosure from economically integrated regions, such as the EU, in particular countries that use a common currency, such as the euro. Within the EU, firms from different countries compete directly with each other, which suggests that competition at the EU level may have an impact on firms' disclosure practices.

Second, recent studies (e.g. Li *et al* 2013) develop a firm-level competition measure, based on how managers perceive the firm's competitive environment in the management discussion and analysis section (MD&A) of 10-K

filing for US public firms.<sup>6</sup> Future research may use firm level competition measures to provide in-depth insights on the association between competition and corporate governance disclosure.

Finally, although competition at the industry level is considered stable in the short to medium term, longitudinal studies may take the advantage of studying external shocks to an industry, to explore how an increased or decreased level of competition shapes firms' disclosure practice over time.

*Accepted for publication: 5 January 2014*

#### ENDNOTES

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2. We employ a corporate governance rating score from the Corporate Governance Quotient database developed by Institutional Shareholder Services, that rates publicly traded companies in terms of the quality of their corporate governance. Each public company is assigned a rating based on a number of factors including board structure and composition, the executive and director compensation charter, and bylaw provisions. The information is disclosed voluntarily by each firm, which reflects their level of disclosure of internal governance information.

3. It is essential to note that firms from regulated industries (i.e., financial and utilities firms) are excluded because they have different statutory requirements compared with firms in other industries.

4. Based on a large sample of US firms, Li (2010) uses principal component analysis to construct competition from potential rivals with industry average of plant and equipment, industry average R&D, industry average capital expenditure and industry market size.

5. These results are available upon request.

6. Li *et al* (2013) use the number of occurrences of competition-related words (such as competition, competitor, competitive and competing) per 1,000 total words in the 10-K to capture competition at firm level, and find that firms' rates of diminishing marginal return on new and existing investment vary significantly with this measure.

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