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Testing the Validity of Blue Ocean Strategy versus Competitive Strategy: An Analysis of the Retail Industry

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Abstract. We investigate the nature of the competition process in retailing by contrasting blue ocean strategy and competitive strategy. We develop a methodology to test the core assumptions of both these major schools of strategic management. Applying this methodology to a large data set of shop type averages within the retailing sector, we find empirical support for blue ocean strategy in terms of creating new retail market space. At the same time we also find support for competitive forces eroding temporary profits. However, we find that these forces are sufficiently slow to enable periods of supernormal profits for retail innovators.

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1. Introduction

Retailers operate in heavily contested markets. A way to avoid this heavy competition is to look for uncontested market space. This strategy is known as blue ocean strategy (Kim and Mauborgne, 2005a). In contrast, competitive strategy emphasizes the inevitability of long term competition among relatively homogeneous contenders pretending that market conditions are stable (Porter, 1980, 1985). While canonical strategy preaches to find a good niche, to try to understand it, to control it and to harvest supernormal profits, market conditions usually don't remain stable so that your niche disappears. How fast it disappears

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determines the relevance of the blue ocean strategy. In other words, it is determined by how long new market space remains sustainable because uncontested or unsuccessfully contested. In yet other words, it is determined by how long it takes for a blue ocean to turn red. Longitudinal data are then needed to show the relevance of blue ocean relative to competitive strategy.

Using a large data set and a two equation econometric error correction model, the present paper investigates the speed and force of competition in retailing industries. As a general framework to investigate competition we contrast blue ocean strategy and competitive strategy. Our econometric model allows to test to what extent empirical evidence is in line with the assumptions of either of these major schools of thought. This will shed light on the nature of the competitive process in retailing and also on the viability of blue ocean versus competitive strategies for retail managers.

Kim and Mauborgne (2005a) contest the dominant position that competition is assumed to play in strategic management.[2] At the heart of this debate is Kim and Mauborgne's view that in the long term firm profits need not be negatively related to the number of firms in its industry. They argue that firms can find markets where they can grow their profits without competition. By contrast, competitive strategy (Porter 1980, 1985) is related to economics' concepts where long term competition and imitation are dominant forces (e.g. Cool *et al.*, 1999). In this framework, even if firms adopt highly innovative strategies leading to enhanced performance (Hamel and Prahalad, 1994, and Hamel, 2002), the axiomatic underlying assumption of competitive strategy is that these will be temporary/transient advantages that sooner or later will be imitated and improved upon by other firms (Buisson and Silberzahn, 2010). This focus on competition in the literature means that the ability of firms to generate a 'competitive advantage' is the central objective permeating most areas of strategic management (De Wit and Meyer, 2005).

Both competitive strategy and blue ocean strategy emphasize the importance of firms avoiding intense competition. In the competitive strategy framework avoiding competition has much to do with a resource based view of the firm (Penrose, 1959) where unique resources limit imitation and create a sustainable competitive advantage and enhance profits (Barney, 1991, Amit and Schoemaker, 1993, and Peteraf, 1993).[3] Of course, over time it becomes increasingly possible for other firms to replicate what was once a unique resource. Since market opportunities continuously change, unless a firm continues developing new unique resources and new sustainable competitive advantages, a greater number of firms should simultaneously increase competition while reducing profits. Consistent with these observations, Black and Boal (1994), Teece *et al.* (1997) and Winter (2003) highlight the importance for firms to develop the dynamic

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2. See also Kim and Mauborgne (2004 and 2005b).
3. Ndofor et al. (2011) find that the interaction between resources and competitive actions is important for understanding the drivers of superior firm performance.

capabilities necessary to continually create new unique resources facilitating new sustainable advantages over competitors thus aligning the firm to future profit opportunities.[4] Cohen and Levinthal (1990), Zollo and Winter (2002) and Kim and Mauborgne (2005c) emphasize the critical role played by learning and managing information. In turn, McEvily and Chakravarthy (2002) and Lee *et al*. (2000) deal with the next level of the imitation challenge which is the propensity for dynamic capabilities themselves to be replicated by others. Obviously, the faster this imitative process happens, the faster and more intensely firms find themselves in a situation leading to reduced profits. Porter (1980, 1985) argues that this process happens quickly. In fact, it is sufficiently fast that the main concern of strategic management ought to be survival and winning inter-firm competition. Put differently, innovation can provide a short term panacea but in the long term imitation forces firms to engage in and win competitions with close rivals.

So despite the lack of radically different theoretical dispositions, there are valuable differences between blue ocean and competitive strategy centered on completely different empirical conjectures regarding the speed at which profits generated by innovation are eroded by imitative behavior. In essence, the proponents of the blue ocean strategy take a more optimistic view of the impact of innovation on firm profitability. If there are barriers to imitation and if firms can continually find uncontested markets or create new consumer demand through innovation, then the main strategic concern of firms is not managing competition, but rather managing innovation. It requires different managerial objectives. Kim and Mauborgne (2005a, b and c) view the blue ocean strategy as a generic option for management because they take an empirical view that through ‘value innovation’ firms will be able to find sufficient untapped markets thus creating consumer demand and ultimately growing while avoiding confrontation with competitors. By contrast, the view of the competitive strategy school of thought is that there is no guarantee that a plentiful supply of untapped markets exists and even if it is found, it only temporarily distracts from the core business activity: competition among firms.

Therefore the key questions arising from the recent interest in blue ocean strategy centers on which set of assumptions dominates. First, do more firms mean more competition with a static pool of potential profits and hence lower average firm profits, as predicted by competitive strategy, or does it mean more firms engaging in value innovation thus generating a larger pool of profits across an entire industry, as predicted by blue ocean strategy? Second, if innovation takes place, do supernormal profits for innovators last sufficiently long to make innovation worthwhile (as predicted by blue ocean strategy school of thought), or does erosion of profits occur more quickly (as predicted by competitive strategy school of thought)? These are the questions addressed in this paper and to answer

4. See Eisenhardt and Martin (2000) for a more explorative and deep account of dynamic capabilities.

them we take advantage of a unique, rich data set on the Dutch retail industry over the period 1982 to 2000. Importantly, we will not investigate how supernormal profits in retailing industries come about. Rather, we look at what happens with average profits when these profits deviate from a sustainable level. Do profit levels return to the equilibrium value relatively quickly, and how does the number of firms in the industry develop in relation to profit levels?

The paper makes two main contributions to the literature. *Firstly*, a methodology to test the dominance of blue ocean versus competitive strategy in both short and long-term time horizons is introduced. This approach provides a general blueprint which can be used to ascertain the dominant form of strategy in industries. Remarkably, at the time that some of our results were first disseminated in Burke et al (2010) there was no statistical analysis either rejecting or supporting blue ocean strategy. Since then we can find only one other statistical analysis of the efficacy of blue ocean strategy i.e. Parvinen et al. (2011)[5]. So far, blue ocean support relies on a data base of case studies (e.g., Chang, 2010; Lindic et al., 2012; Becker, 2014) that does not statistically analyze overall patterns. Instead, Kim and Mauborgne (2005a, b, and c) and Kim *et al*. (2008a and b) base their evidence on case by case observation of the popularity and success of blue ocean strategy among a set of firms. While blue ocean strategy may have worked for these particular firms it leaves open the critical question whether it can be used as a *generic* strategy. Statistical analysis is used to answer this question. Our methodological approach ascertains at the industry level whether average profits can be enhanced by firms adopting the blue ocean approach thus bringing statistical evidence to bear on this key but largely unexplored area of strategic management decision making.

Secondly, we apply this method to a unique and rich data set covering the Dutch retail industry in order to generate the first statistical test of blue ocean versus competitive strategy; pertinently in a major and highly relevant industry test bed. Retailing in the Netherlands has undergone the same innovation revolution that occurred in most of the developed world. It manifests the strategies that blue ocean strategists suggest: product differentiation, innovation, branding, chain stores, product proliferation, accelerated product life cycle, and segmentation, to name some (Verhoef *et al*., 2000 and OECD, 2008). Therefore, Dutch retailing provides a relevant real life social science laboratory which tests the prevalence and success of both blue ocean and competitive strategy.

The results from our analysis provide, to our knowledge, the first statistical evidence supporting the claim that blue ocean strategy is successfully used at a generic level within an industry. Our analysis reveals a long-term positive

5. Using questionnaire data for 168 Finnish companies, Parvinen et al. (2011) performed a quantitative analysis on the link between implementation of Blue Ocean strategy in sales management and overall sales performance. These authors found that the enforcement of Blue Ocean strategy in a company's sales management indeed increased the company's sales performance.

relationship between the number of firms and average profits per firm in Dutch retailing (consistent with blue ocean strategy) but simultaneously indicates that in the short term competitive strategy effects dominate. In particular, when the average profit level is above sustainable levels, new firms enter and average profits fall. We thus find that competitive forces exist but we also find that they are weak enough – taking roughly a generation to erode profits from differentiation strategies – to enable the generic effective use of blue ocean strategy.

Some conclusions from the present study were already presented in a one-page article "Blue Ocean vs. Five Forces", published in *Harvard Business Review* (Burke, Van Stel and Thurik, 2010). The current paper presents the complete underlying analysis.

The next section outlines the theory framework and hypotheses. The propositions are grounded using an adaptation of beach theory which has the advantage of embracing the properties of both blue ocean and competitive strategy as well as being a well known model in both management and economics.

In section three, the statistical methodology used to test the two theories is presented. An error-correction model (based on Salmon, 1982) to test a central assumption of the competitive strategy literature is used. This determines if a dynamic and sustainable number of firms exists in an industry at any point in time. This implies short run adjustment effects where an excessive number of (competing) firms will subsequently result in fewer firms, while too few firms will result in opportunities for firms to enter the industry. Within this framework we test the long-term relationship between average profits and the number of firms in the industry. A negative relationship supports a dominant competitive strategy in both the short and long run. A positive relationship shows that the blue ocean model can be a long term generic strategy even in the presence of short run competing firms, or red oceans.

In the fourth section, the data is discussed. A unique rich data set on the Dutch retail industry during a highly innovative period is used. Between 1982 and 2000 consumer retailing expenditures soared, the sector grew with intensive innovation leading to new markets, brand proliferation, product differentiation and rejuvenation of some mature segments. In fact, all of the ingredients of blue ocean strategy - value innovation, demand creation and untapped market potential - appear to exist. Therefore, if blue ocean theory can really insulate firms from the negative consequences of competition on firm profits, then Dutch retailing over this period provides a good scientific test bed.

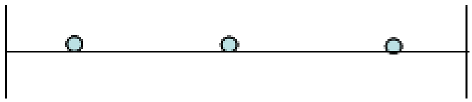
The final sections of the paper present the results of the statistical analysis, followed by discussion and conclusions.

2. Theory

Beach theory is a common theoretical framework within which competitive strategy and blue ocean strategy are nested for comparison. The core features of beach theory can easily accommodate the central assumptions of both strategic schools of thought. Beach theory is also a useful way to communicate the relevance of our analysis to a wider audience since it is an easily understood and a popular construct in strategic management education. Moreover, it is also understood by economists since it has its origins in economics theory (Hotelling, 1929).

The essence of beach theory is depicted by ice cream vendors (firms) which are identical in products and services, save for one characteristic: their location along a beach. Therefore, the only feature which differentiates firms from a beach visitor's perspective is the convenience of the firm's location: consumers buy ice cream from the vendor which is the shortest distance away. In Figure 1 we present the optimal location/differentiation strategies of three firms selling ice cream on a beach where consumer density is distributed equally along the beach and where firms do not have the option of using blue ocean strategy. Porter's competitive analysis draws from the competitive process depicted in Figure 1. Firstly, all firms maximize their profits by differentiating themselves from one another while still competing for customers. Furthermore, if a fourth firm enters the market it will cause existing firms to further differentiate themselves by relocating along the beach. But with one extra firm competing for customers on the same beach, each firm faces tougher competition and ultimately lower profits. Therefore, more firms mean more competition causing lower average profits (competitive strategy).

Figure 1: One limited beach with competing ice cream sellers

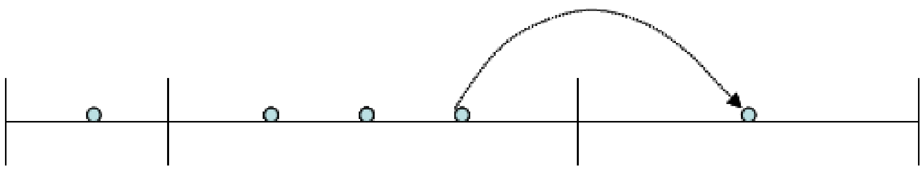


In Figure 2, we open up the opportunity of discovering new market space through blue ocean strategy. So we add two new untapped beaches/markets without ice cream sellers. Demand for ice cream on the new beaches may not be apparent to others until a firm starts selling ice cream on them.[6] As far as consumers are concerned, the strip of sand may not even be considered a beach without the ice cream stand. In Figure 2 we show one example of what can happen if some firms adopt blue ocean strategy – in this case, one firm relocates from the

6. It does not have to be a 'real' new beach. It can also be the case that there are consumers between two vendors who consider the current distances too great. There is untapped demand 'on the beach'.

current beach to one of the new beaches and simultaneously a new firm enters the other new beach. The number of firms in the beach ice cream industry has now increased and the average profit has increased because the new firms have found sufficiently large untapped consumer demand. They achieve this by innovating in order to align their offerings with the needs of these untapped markets and to differentiate themselves. They are now located further apart and each has a larger consumer base and profits than before.

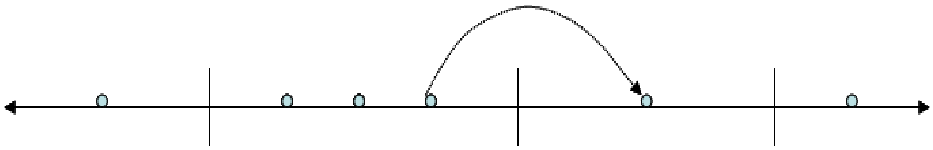
Figure 2: Market creation with blue ocean strategy adopted by an entrant and an incumbent



It is important to note that the short term outcome in Figure 2 does not imply that blue ocean strategy is either a successful strategy or that it can be used as a generic strategy. Proponents of blue ocean strategy make two assumptions which have a pivotal bearing on what happens next and by consequence on the effect of blue ocean strategy on firm profitability. Firstly, they assume that the competition is sufficiently weak so that the profits from value innovation sustain for a sufficiently long period to make the investment in blue ocean strategy worthwhile. In contrast, proponents of competitive strategy assume that supernormal profits are eroded quickly by imitation. Secondly, blue ocean strategy proponents make an implicit assumption that there will always be an available supply of untapped consumer demand for firms adopting blue ocean strategy. If there are only three beaches in existence as depicted in Figure 2 then over the long-term average profits of firms will decline as more firms enter the beach ice cream retail industry and compete for limited markets (competitive strategy)[7]. A different scenario is depicted in Figure 3 where the arrows on the left and right of the diagram indicate the existence of other untapped beaches populated by consumers who want ice cream but have no access to it. If new firms enter these untapped markets rather than entering known beaches and competing with existing firms then the increase in firms should lead to increasing profits (blue ocean strategy).

7. In essence, this competitive process derives from the very foundation of the theory underlying differentiation strategy dating back to the work of Chamberlin (1933).

Figure 3: Unlimited untapped beaches with a mix of competition and market creation



In summary, we have identified two testable assumptions which shed light on the viability of blue ocean strategy (BOS) versus competitive strategy (CS).

BOS Assumption 1: Competition is sufficiently weak to make the gains from blue ocean strategy (i.e., supernormal profits) long lasting

CS Assumption 1: Competition is strong so that supernormal profits erode relatively quickly

BOS Assumption 2: There is a sufficient supply of untapped consumer demand for firms adopting blue ocean strategy so that in the long run there is a positive relationship between the number of firms and average profit per firm

CS Assumption 2: There is a limited supply of untapped consumer demand for firms adopting blue ocean strategy so that in the long run there is a negative relationship between the number of firms and average profit per firm

We stress that in our empirical work we will only consider how long supernormal profits last, and whether we can indeed find indications of sufficient supply of untapped consumer demand. We do not investigate how these supernormal profits and exploitation of untapped consumer demand came into existence. Although we may suspect that value innovation plays an important role, our data set does not allow us to measure innovation. Hence, we are concerned with what happens once supernormal profits have emerged in an industry. First, do these profits erode relatively slowly (BOS assumption 1) or relatively quickly (CS assumption 1)? Second, do these profits go together with more firms in the market so that the size of the market in terms of total industry profits increases (BOS assumption 2) or, alternatively, are higher average profits negatively related to the number of firms in the market (CS assumption 2)?

3. Model Specification

The model is constructed in order to test the assumptions while making sure to separate out extraneous influences by including control variables as well as accounting for dynamic effects. We use error correction variables[8] in equations (1) and (2) below in order to test (BOS vs. CS) Assumption 1 which relate to the *existence* and *speed* of a competitive adjustment process when actual average profits and the number of firms deviate from their long run sustainable levels. BOS and CS Assumptions 2 refers to the long run relationship between average profits and the number of firms which we estimate in equations (3a) and (3b) below. Our model, while incorporating the previously discussed theory, also accounts for differing causality directions between the variables by defining two equations with (changes in) average profits and number of firms as dependent variables. Several control variables influencing short-term changes in profits and the number of firms are also included. In so doing, we borrow from the industrial organization literature as we must control for many influences and nuances in order to isolate and test the assumptions.

We specify a simultaneous equation model where deviations between the sustainable (dynamic equilibrium) and the actual number of firms have consequences for the number of firms in subsequent periods. In other words, the model allows for dynamic situations where an unsustainable number of firms in one year will lead to a reduction in the number of firms in the subsequent year (Burke and Van Stel, 2014). For example, an over supply of shoe stores relative to the number of shoe customers in one year will lead to a reduction in subsequent years. The sustainable number can vary from year to year depending on the full range of factors, macro and micro, affecting consumer demand, and business viability. An analogous equation for profits which accounts for a dynamic process where through competitive forces excessive/unsustainable profit levels regress to sustainable levels in a similar error-correction process is defined. The existence and power of this adjustment process gives us an indication of the importance of these pivotal forces which are assumed to be weak under blue ocean strategy, and strong under competitive strategy. The model reads as follows:

$$\Delta\pi_{it} = \alpha_1\Delta\pi_{i,t-1} + \alpha_2\Delta NOF_{it} + \alpha_3\Delta Q_{it} + \alpha_4\Delta MI_t + \alpha_5\Delta CS_{it} + \alpha_6\Delta TUR_{it} + \alpha_7(\pi_{i,t-1} - \pi^*_{i,t-1}) + \varepsilon_{it} \tag{1}$$

$$\Delta NOF_{it} = \beta_1\Delta NOF_{i,t-1} + \beta_2\Delta\pi_{it-1} + \beta_3\Delta UN_t + \beta_4\Delta MI_t + \beta_5\Delta CS_{it} + \beta_6\Delta TUR_{it} + \beta_7(NOF_{i,t-1} - NOF^*_{i,t-1}) + \eta_{it} \tag{2}$$

$$NOF^*_{it} = \gamma_{1i} + \gamma_2\pi_{it} + \gamma_3 MI_t + \gamma_4 CS_{it} + \gamma_5 TUR_{it} + \gamma_6 IR_t + \gamma_7 HP_t \tag{3a}$$

$$\pi^*_{it} = \frac{NOF_{it} - \gamma_{1i} - \gamma_3 MI_t - \gamma_4 CS_{it} - \gamma_5 TUR_{it} - \gamma_6 IR_t - \gamma_7 HP_t}{\gamma_2} \tag{3b}$$

8. See, Salmon (1982).

where:
π : logarithm of the average profit per store (in 1990 prices)
π^* : logarithm of the equilibrium average profit per store (in 1990 prices)
NOF : logarithm of the number of firms
NOF^* : logarithm of the equilibrium number of firms
Q : logarithm of the average turnover per store (in 1990 prices)
MI : logarithm of the average modal income (in 1990 prices)
CS : logarithm of the total consumer spending (in 1990 prices)
TUR : logarithm of turbulence (sum of entry and exit)
UN : logarithm of the number of unemployed
IR : ten years interest rate
HP : average house price index
ε, η : disturbance terms of equations (1) and (2), possibly correlated
i, t : indices for shop type and year, respectively
Δ : first difference operator

Therefore, our model is a two-equation error-correction model where the endogenous variables are growth of average profit per firm and growth of the number of firms. Both equations consist of three parts. The first part contains the lagged effects of the endogenous variables. The lagged dependent variables capture autocorrelation effects (effect of lagged profit growth on current profit growth, for instance) on the one hand, and short-term dynamics between the dependent variables on the other hand (effect of change in number of firms on current profit growth, and vice versa).[9] The second part of the equations consists of exogenous explanatory variables. Combined these first two parts describe the short-term relations between the endogenous and exogenous variables in the model.

Third and finally, we look at the long-term relationship. Variables playing a role in the long-term relationship are included as levels, see equations (3a) and (3b). Furthermore, some parameter restrictions are imposed as the equilibrium relation is used in both equations (the γ parameters in the model).[10] We are particularly interested in the long-term relationship between the number of firms and profit levels. This relationship, which relates to both BOS and CS Assumptions 1 and 2, is captured by parameter γ_2.

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9. Equation (1) includes the *contemporaneous* change in the number of firms while equation (2) includes the *lagged* change in average profit level as a right-hand-side variable. As the stock of firms is measured at the start of year t, and the profit variable is a flow variable (rather than stock), variable ΔNOF_{it} precedes variable $\Delta \pi_{it}$ on the time line, consistent with the direction of causality implied by equation (1). For the same reason, a lagged profit variable is included in equation (2), instead of a contemporaneous one.
10. Note that equations (3a) and (3b) are equivalent. Equation (3a) is defined in terms of the equilibrium number of firms while equation (3b) rewrites the relation in terms of the equilibrium profit level. This way of formulating facilitates comparison of the speeds of adjustment of both equations (parameters α_7 and β_7).

We are also interested in the speed in which competition can erode the gains from blue ocean strategy. Parameters α_7 and β_7 measure the effect of being out-of-equilibrium (actual level deviating from the long run sustainable level) on the growth of average profits and the growth of the number of firms, respectively. These effects relate to BOS and CS Assumptions 1. In particular, the parameters α_7 and β_7 measure the speed of error-correction (speed of adjustment) with respect to profits and the number of firms, respectively.

As the assumptions underlying dominant blue ocean strategy do not necessarily involve an equilibrium process, the error-correction parameters α_7 and β_7 need not have any impact. In this extreme scenario there is no long term equilibrium relation, so the γ parameters do not apply. By contrast if competition is an active force then these parameters should be statistically significant and negative. If this is the case, then blue ocean strategy will only work if the absolute values of these parameters are low enough to show that the competitive force from imitators is sufficiently slow/weak to ensure that the gains from innovation are long lasting i.e. that BOS Assumption 1 holds. Turning to BOS Assumption 2, the generic use of blue ocean should generate a positive long term relationship between the number of firms and average profits. Therefore, in order for blue ocean strategy's Assumption 2 to hold, the parameter γ_2 should be either zero or positive. We summarize the discussion in Table 1.

Table 1: Expected signs of key parameters for different schools of strategic thought

	Dominant Competitive Strategy (CS)	Dominant Blue Ocean Strategy (BOS)
Error-correction effect profits (α_7)	- (but big absolute value: high speed of adjustment) (BOS Assumption 1 rejected; CS Assumption 1 supported)	-, 0 (but small absolute value: low speed of adjustment) (BOS Assumption 1 supported; CS Assumption 1 rejected)
Error-correction effect number of firms (β_7)	- (but big absolute value: high speed of adjustment) (BOS Assumption 1 rejected; CS Assumption 1 supported)	-, 0 (but small absolute value: low speed of adjustment) (BOS Assumption 1 supported; CS Assumption 1 rejected)
Long-term equilibrium association number of firms and profit level (γ_2)	- (BOS Assumption 2 rejected; CS Assumption 2 supported)	0, + (BOS Assumption 2 supported; CS Assumption 2 rejected)

Expected signs of the control variables utilized in equations (1)-through-(3)

The expected signs for the remaining parameters in the model are now discussed. Parameter α_2 measures the short-term effect of net-entry (ΔNOF) on changes in the average profit level of a shop type, while the reverse effect (changes in profit levels influencing net-entry) is measured by parameter β_2. Turnover and profits should move together. However, instead of using the growth of the profit ratio (profit divided by turnover) as a variable, we allow for separate development of profits and turnover. Nevertheless, we expect parameter α_3 to be close to unity. An increase in general income level may signal an overall upturn of the economy from which shopkeepers will benefit (Carree and Thurik, 1994). Hence, parameter α_4 is expected to be positive. Likewise, an increase in average consumer spending in certain shop types signals increasing demand, which may lead to higher profits (Nooteboom, 1985). Parameter α_5 is positive. The sum of entries and exits in a shop type, i.e. turbulence, can be seen as an inverse indicator of entry and exit barriers. High turbulence indicates low barriers, and hence a higher threat of potential competitors (Dunne *et al.*, 1988). Hence the expected sign of α_6 is negative.

Concerning the equation for the number of firms (2), we expect an increase in unemployment to positively affect the number of firms (β_3 positive), as unemployed individuals may experience more difficulties finding wage-employment, and hence may be more inclined to start new firms (Thurik *et al.*, 2008).[11] Change in modal income is an indicator for the growth of wage rates and increased wages imply higher opportunity costs of starting a business (Nooteboom, 1985). We expect β_4 to be negative. A higher demand for products and services sold in a certain shop type will encourage entry and discourage exit (Schmalensee, 1989, Evans and Leighton, 1989, Michael and Kim, 2005). Hence we expect a positive parameter β_5. Higher turbulence indicates lower entry barriers (Beesley and Hamilton, 1984), and so β_6 should be positive.

Regarding the equilibrium relation (3a), we allow the long term number of firms in a shop type to depend on the self-employment income (i.e., net profit), the opportunity costs of self-employment (i.e., modal income), the demand for products and services sold in the shop type, the entry and exit barriers present in the shop type, and the costs of operating a business. Similar to the short term parameters we expect γ_3, γ_4 and γ_5 to be negative, positive and positive, respectively.[12] The interest rate and the average house price are indicators for the cost of capital and cost of property (for example floor space rent), respectively, and if these costs increase over time, fewer people may be inclined to start

11. Note that, with the exception of the variables change in average turnover in equation (1) and change in unemployment in equation (2) (parameters α_3 and β_3, respectively), equations (1) and (2) are symmetric. As, by construction, change in average turnover (i.e., change in average firm size) is inversely related to the change in the number of firms, it is not included in equation (2). Furthermore, increases in the number of unemployed may be associated with lower average profit levels because they signal poor economic conditions. However, we do not include the unemployment variable in equation (1) because we already have two other indicators of developments in the business cycle in this equation (variables ΔMI and ΔCS). Therefore, equations (1) and (2) are not completely symmetric.
12. As both the number of firms and the turbulence level are included in levels, parameter γ_5 may to some extent also capture market size differences between the industries.

businesses (γ_6 and γ_7 negative).[13] In addition, we include shop type-specific constants γ_{1i} (i.e., fixed effects). These dummy variables capture structural differences between industries such as the minimum efficient scale, capital requirements, market size, etc.

4. Data: The Dutch Retail Industry

A database for 41 shop types in the retail sector over the period 1980–2000 is used. It combines variables from two major sources: the Dutch Central Registration Office (CRK) and a panel of independent Dutch retailers (establishments) called 'Bedrijfssignaleringssysteem' (interfirm comparison system) operated by the EIM Business and Policy Research group based in Zoetermeer, The Netherlands. The data are complemented using information from several sources. As the number of shop types investigated in the 'Bedrijfssignaleringssysteem' varied throughout the 1980s and 90s, the database is an unbalanced panel. Overall there are 28 shop types with data for the 1980s and 90s, while thirteen shop types have data only for the 1990s. The exact data period per shop type is given in Table 2. The table also contains averages for the main variables in the model. The averages are computed based on the sample used in the final estimations, fully discussed in the results section.[14] As shown in the table, for about half of the shop types, average profits increased while the number of firms decreased. Details on the measurement and source for each variable are given below. Several corrections to the raw data are applied in order to make the data ready for analysis.

Raw data on the number of firms (NOF) and turbulence (TUR) are obtained from the Dutch Central Registration Office (CRK). CRK provides data on the number of new registrations and deregistrations of establishments for each shop type. The sum of new registrations and deregistrations equals TUR. Several times the CRK changed the sectoral classification of shop types so it was necessary to correct and adjust trend breaks due to these changes.

Raw data on average (net) profit per store, π, and average turnover per store, Q, are taken from the 'Bedrijfssignaleringssysteem' (BSS). This panel was started by EIM in the 1970s and each year a large number of firms are asked for their financial performance. Although the panel varies from year to year (each year some firms exit the panel while others enter), it is important to note that the relative change in average profits or average turnover is based on only those firms present in the panel in two consecutive years. Hence, the dynamics of these

13. As we expect house prices and interest rates to have an impact on the number of firms in the long term rather than in the short tern, these variables are included in the long term equation (3) rather than in the short tern equation (2).
14. Note that the periods in the table start in 1982 instead of 1980. Two years are lost due to our model specification. We use a time lag of a year and we also use variables in first differences.

variables are not influenced by changes in panel composition.[15] Until the beginning of the 1990s average profit and turnover levels are computed based on about seventy individual retail stores per shop type but from the beginning of the 1990s the coverage of the panel decreases, i.e., fewer firms participate so that shop type averages become less reliable. Fortunately, the timing of this decrease coincides with the start of average financial performance registration by Statistics Netherlands (CBS) at low sectoral aggregation levels. Hence, from the early 1990s onwards, we have information on the development over time of these variables from two sources: BSS and CBS. Differences between these two sources are small which supports the reliability of our constructed times series. From 1994 onwards we use the average of the annual relative change implied by these two sources.[16]

Data on total consumer spending on the products and services sold in a certain shop type, CS, is taken from Statistics Netherlands (publication 'Budgetonderzoeken' or Budget statistics).[17] The variables modal income, MI, and unemployment, UN, are also taken from Statistics Netherlands, while the ten years interest rate, IR, and the average house price index, HP, are taken from ORTEC, a distinguished financial research firm based in the Netherlands. Finally, for the variables profits, turnover, modal income, and consumer spending a consumer price index to correct for inflation is used.

15. Hence we choose a base year to compute the level of average profits or turnover, and next we compute the levels for the other years making use of the relative changes of only those firms present in two consecutive years. As most firms stayed in the panel for many years, these relative changes are also based on a substantial number of firms, but this way we correct for trend breaks introduced by a changing composition of the panel (e.g. when a firm with exceptionally high profits would enter or exit the panel). For the base year we always choose a year for which the number of participating firms in the panel is high.
16. Ideally, one would like to use information from Statistics Netherlands (CBS) as this is the national statistical office in the Netherlands. However, as the number of firms in a shop type (which is approximately fourth digit level) is often small, and the number of firms is rounded to thousands in CBS statistics, using the CBS data also implies some extent of measurement error. Therefore we use information from both sources to estimate the dynamic pattern of the profit and turnover variables.
17. Total consumer spending was computed by multiplying the variables average household spending, the total number of households in the Netherlands and the share of a certain shop type in total household spending.

Table 2: Descriptive statistics for shop types (655 observations)

Shop type	Period	$\Delta\pi$	ΔNOF	Turbulence rate	N
Grocers/supermarkets	1982–2000	0.031	-0.020	0.195	19
Greengrocers	1982–2000	0.008	-0.028	0.199	19
Liquor stores	1982–2000	0.028	-0.019	0.188	19
Shoe stores	1982–2000	0.024	-0.009	0.164	19
Furnishing + furniture (mixed)	1982–2000	0.011	-0.021	0.158	19
Bicycle stores	1982–2000	0.030	-0.012	0.108	19
Jewelries	1982–2000	0.050	0.003	0.175	19
Drug stores	1982–2000	0.029	0.007	0.153	19
Florists	1982–2000	0.018	-0.002	0.237	19
Butchers	1982–2000	-0.012	-0.028	0.188	19
Fish shops	1982–2000	0.009	-0.002	0.227	18
Bakers	1982–2000	0.006	-0.015	0.174	19
Confectioners	1982–2000	0.013	-0.010	0.226	19
Tobacco shops	1982–2000	0.027	-0.035	0.139	19
Households goods shops	1982–2000	-0.009	-0.004	0.195	19
Paint, glass, wall-paper	1982–2000	0.021	-0.030	0.143	19
Hardware stores	1982–2000	0.020	-0.018	0.152	19
Photographer's shops	1982–2000	0.023	-0.002	0.168	19
Pet shops	1982–2000	0.011	0.003	0.206	19
Textiles men's wear	1991–2000	0.016	-0.052	0.144	10
Furniture	1982–2000	0.081	0.016	0.245	19
Dairy shops	1982–2000	-0.010	-0.050	0.140	19
Electrics	1982–2000	0.027	-0.020	0.158	19
Audiovisual devices	1982–2000	0.028	0.009	0.289	19
Sewing-machines	1982–2000	-0.009	-0.027	0.164	19
Glass, porcelain and pottery	1982–2000	0.028	0.007	0.251	19
Office and school materials	1982–2000	0.000	0.001	0.207	19
Opticians	1982–2000	0.063	0.025	0.175	19
Toys	1982–2000	0.073	0.040	0.282	19
Poultry	1994–2000	0.010	-0.049	0.192	7
Clothing materials	1991–2000	0.060	-0.055	0.171	10
Musical instruments	1991–2000	0.031	0.012	0.174	10
Do-it-yourself shop	1991–2000	-0.006	0.020	0.227	9
Videotheques	1991–1997	0.057	0.016	0.683	7
Gardening centers	1991–2000	0.040	0.057	0.245	10
Reform	1991–2000	0.065	0.076	0.347	10
Baby's clothing	1991–2000	0.046	-0.018	0.311	10
Children's clothing	1991–2000	0.017	0.079	0.474	10
Textiles underwear	1991–2000	0.038	0.055	0.344	10
Leather goods	1991–2000	-0.003	-0.006	0.232	10
Sport and camping equipment	1991–2000	0.025	0.044	0.265	9

Note: The second column indicates the period for which the variables are available. The second through fourth columns contain the period averages for annual profit growth (averaged per store), annual growth of the number of firms in the shop type and the turbulence rate, defined as (entry+exit)/number of firms (note that this is not the same as the variable TUR which is used in our model). The final column contains the number of observations on which the shop type averages are based (655 observations for the whole database).
Source: Dutch Central Registration Office (CRK) and EIM Business and Policy Research.

5. Results

Our model consisting of equations (1)-through-(3) is estimated using the three stage least squares method (3SLS) because the error terms of equations (1) and (2) may be correlated. When estimating the model, we have to take care of a number of methodological issues.

First, the variance of the error terms differs from shop type to shop type. Development over time for some shop types is stable, such as shoe stores, while others suffer from greater variance, such as the audiovisual sector. White-heteroskedasticity tests confirm our suspicions. We correct for this by estimating the variance of the error terms per shop type and adjusting the models accordingly. Estimates of these variances are obtained by regressing the squared residuals of the uncorrected models on a set of shop type dummy variables. Our models are then adjusted by dividing each explanatory and dependent variable by the appropriate square root of the estimated variance. This is in effect similar to a weighted least squares estimation and solves the problem of heteroskedasticity that otherwise occurs across different shop types (Stewart, 1991).

Second, another type of heteroskedasticity can arise if variances change over time. The effect of a year dummy on the estimated variance is determined in the same manner as were shop type dummies. No empirical indications were found that this type of heteroskedasticity was present in our models.

Third, we tested for stationarity of our endogenous variables, i.e., the change in average profit levels $\Delta\pi_{it}$ and the change in the number of firms ΔNOF_{it}. A series of (augmented) Dickey Fuller (ADF) tests (Dickey and Fuller, 1979) indicated that our endogenous variables are indeed stationary.

Our database is an unbalanced panel of 655 observations of averages distributed over 41 shop types. Jarque-Bera statistics indicated normally distributed residuals for both equations. Estimation results are in Table 3.

Table 3 displays the results. First, the estimation results are consistent with the concept of a dynamic equilibrium relationship between average profits and the number of retail firms. The estimates for the error-correction parameters α_7 and β_7 are significant while also evidence for a long term relationship between the number of retailers, the average profit level, modal income, house prices, and the level of turbulence in an industry (witness the various significant γ parameters) is found. The existence of equilibrating forces indicates that competitive forces influence the number of sustainable firms and profits in the short term. However, we find a positive long term relation between the number of firms and average profit levels (γ_2 is significantly positive) indicating support for BOS's Assumption 2 (but not for CS's Assumption 2).

This viewpoint is supported by the slow speed of adjustment back to the dynamic equilibrium (the coefficients of α_7 and β_7 have low values), consistent with Assumption 1 of blue ocean strategy. When profit levels are above equilibrium (consistent with the number of firms being below equilibrium), there is a market correction, as shown by α_7 being significant. The speed of adjustment is 0.158 implying that, *ceteris paribus,* in the course of a year the distance between the actual and the equilibrium profit level decreases by 15.8 percent. It is likely to be in part caused by the increased entry reflected in parameter β_7: when the number of firms is below equilibrium, the net-entry rate will increase in the subsequent period due to competition by imitators. Hence, in case there are too few firms in the market new firms will enter, and average profits drop. The *autonomous* speed of adjustment of the number of firms (5.7%) is lower than the speed of adjustment of the average profit level (15.8%).

Table 3: Estimation results

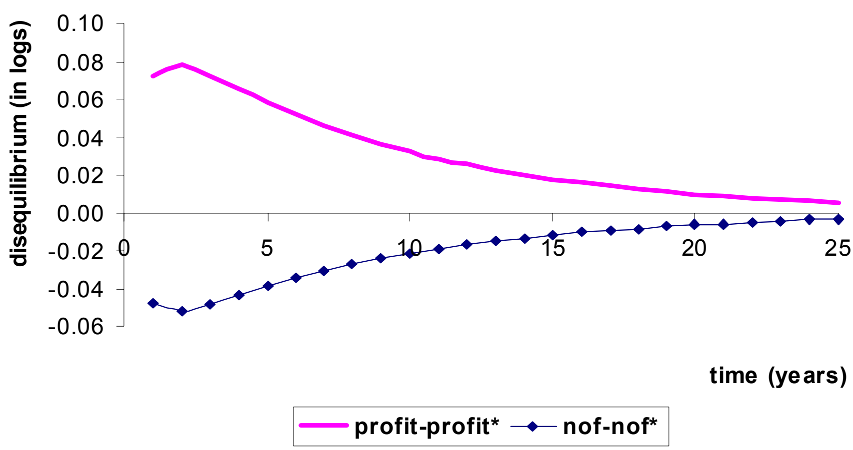
Short-term relation I: Dependent variable $\Delta\pi_{it}$			
Parameter	Variable	Coefficient	P-value
α_1	$\Delta\pi_{it-1}$	-0.020	0.637
α_2	ΔNOF_{it}	2.26	0.000
α_3	ΔQ_{it}	0.998	0.000
α_4	ΔMI_t	1.39	0.000
α_5	ΔCS_{it}	0.059	0.319
α_6	ΔTUR_{it}	-0.148	0.000
α_7	$\pi_{it-1} - \pi^*_{it-1}$	-0.158	0.000
Short-term relation II: Dependent variable ΔNOF_{it}			
Parameter	Variable	Coefficient	P-value
β_1	ΔNOF_{it-1}	0.314	0.000
β_2	$\Delta\pi_{it-1}$	-0.022	0.001
β_3	ΔUN_t	0.014	0.015
β_4	ΔMI_t	-0.091	0.020
β_5	ΔCS_{it}	-0.008	0.415
β_6	ΔTUR_{it}	0.038	0.000
β_7	$NOF_{it-1} - NOF^*_{it-1}$	-0.057	0.000
Long-term relation: dependent variable NOF^*_{it} [1]			
Parameter	Variable	Coefficient	P-value
γ_2	π_{it}	0.666	0.000
γ_3	MI_t	-0.881	0.075
γ_4	CS_{it}	-0.119	0.224
γ_5	TUR_{it}	0.819	0.000
γ_6	IR_t	-0.570	0.707
γ_7	HP_t	-0.004	0.000
Number of observations		655	

[1] Industry fixed effects dummies not reported.

However, the dynamics of our model are more complex than suggested by these numbers, for two reasons. First, the model contains lagged endogenous variables on the right hand side, so that exogenous shocks have an impact on the system not just via the error-correction mechanism (adjustment parameters α_7 and β_7) but also through the short-term dynamics of the model (parameters α_1, α_2, β_1, and β_2).

Second, the equilibrium relationship is itself dynamic: a shock to the number of firms or to the average profit level not only impacts on the *actual* number of firms and the actual profit level but also on the *equilibrium/sustainable* number of firms and the equilibrium profit level, see equations (3a) and (3b). Therefore, as an illustration, Figure 4 pictures the development of the extent of disequilibrium ($NOF - NOF^*$) and ($\pi - \pi^*$), following an exogenous shock of 10 percent to the number of firms (i.e., a shock of log (1.1) to the logarithm of the number of firms).[18] It takes the system some 20 to 25 years to converge on equilibrium, demonstrating that for this industry competitive forces are weak enough to ensure that the profits from blue ocean style innovation strategy are sustained for long periods of time. The number of firms converges somewhat faster than the average profit level: the shock to the number of firms implies an even greater shock to the average profit level (parameter α_2 is greater than one). As shown, the immediate impact is actually smaller than 0.10 because the *equilibrium* levels NOF^* and π^* – and hence the extents of disequilibrium ($NOF - NOF^*$) and ($\pi - \pi^*$) – also change as a result of the shock to the number of firms. See equations (3a) and (3b).

Figure 4: Convergence process towards equilibrium following an exogenous shock to the number of firms of 10%.



18. We assume an initial situation where the system is in equilibrium, hence all variables in differences are zero.

Concerning the effect of the number of retail firms on average profit level, there is a positive short term effect (parameter α_2 positive). For the long term, the statistical association between profits and number of retailers (parameter γ_2) is also positive. When new technologies or untapped markets emerge, there is an increase of new 'value innovating' firms which obtain the higher profits associated with the establishment of new markets.[19] In addition, there is also a counter effect of imitative competition captured by the error-correction mechanism (parameters α_7 and β_7 are significantly negative). Combined, these results indicate that blue ocean strategy has coexisted with but is not free of competitive forces in Dutch retailing between 1982 and 2000. Note that the long term dominance of blue ocean strategy in our empirical analysis is consistent with the low speed of adjustment towards equilibrium as illustrated by Figure 4.

The impact of average profits on the number of firms (parameter β_2) is negative. Hence, lower profits lead to more firms. This is consistent with blue ocean strategy (and Nordhaus, 1969) where R&D/innovation investment costs can have a short-term negative effect on profits, but where the market sees these short-term effects as a positive signal for future long-term profit opportunities available to value innovators[20]. As a result, more firms enter, anticipating these future profits opportunities. In essence, it depicts an entrepreneurial business environment where there is a time lag between the costs of start-up and the return on that investment (see our test below to account for a temporal increase in the importance of an entrepreneurial business environment).

Last, but not least, the parameters for the control variables are either insignificant or consistent with expectations. In the profit equation a positive effect of the change in turnover (parameter α_3) is found. As expected, the coefficient is approximately one. Consistent with expectations, a positive effect of changes in modal income (parameter α_4), is found. Consumer spending (α_5) is insignificant.[21] The effect of changes in turbulence on profits (parameter α_6) is negative. Higher turbulence levels indicate that the industry is easy to enter and hence the threat of potential competitors is high, meaning that excess profits are hard to maintain in these shop types.

In the number of firms equation a positive effect of the lagged dependent variable (parameter β_1) is found indicating that changes in the number of firms usually last for several years. There is a positive but small effect of the number of unemployed (parameter β_3). The effect of changes in modal income (parameter

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19. We acknowledge that this is an interpretation, as we are not able to observe whether the firms in our data base do actually innovate or penetrate untapped markets. However, a positive estimate for γ_2 does imply that a higher number of firms goes together with a bigger market size in terms of total industry profits, consistent with blue ocean strategy.
20. For an overview of the knowledge creation/R&D and commercialisation process see Link and Siegel (2007) and for an insightful account of the time taken by new ventures to commercialise new knowledge/ideas see Bhide (2000).
21. We checked for possible multicollinearity between change in average turnover and change in average consumer spending in a shop type. However, the correlation is only 0.17.

β_4) is negative and significant, implying that starting a business is less attractive when wages are higher. As in the profit equation consumer spending (parameter β_5) is insignificant. Perhaps expanding incumbent firms, instead of new firms, capture increased consumer spending. Finally, as expected, the estimate of parameter β_6 is positive: higher turbulence rates are associated with lower entry barriers, and hence higher net-entry rates into retailing.

Concerning the equilibrium relation, the number of firms in a shop type is significantly negatively related to modal income (parameter γ_3), positively related to turbulence levels (parameter γ_5), and negatively related to costs of property (parameter γ_7). These results are all as expected. Neither the long term effects of consumer spending (parameter γ_4) nor the cost of capital (parameter γ_6) is significant.

6. Discussion

The validity of blue ocean strategy as a generic approach to strategic management depends on two unorthodox assumptions: (1) the prediction that competition can be made irrelevant by creating new market space (Kim and Mauborgne, 2005a), and (2) the belief that there are sufficient untapped market opportunities available for it to be a feasible industry-wide strategy. The fact that these empirical claims were only based on firm level case studies of successful firms rather than industry wide statistical analysis of *all* firms means that the theory lacked evidence. We provide an empirical methodology in order to test these assumptions. Applying this to a rich panel dataset on Dutch retailing covering 1982–2000, we find that blue ocean strategy appears to have worked at an industry level as we find a positive long term relationship between average profits and numbers of firms. By contrast if there were insufficient opportunities to sustain extra firms or if the market was dominated by forms of competition which rapidly reallocate market share between firms but do little to enhance market size then this relationship would be negative. But notably, we find that the usage of blue ocean strategy by Dutch retailers did not ‘make the competition irrelevant’. Consistent with conventional thought we find a limit to the number of sustainable firms in the Dutch retail industry at any point in time. Furthermore, deviation from this dynamic sustainable number causes an adjustment in the number of firms and profits in line with competitive business environments. However, this competitive mechanism is sufficiently weak to ensure that an innovator’s gains are eroded at a slow pace. So while competition is not irrelevant the pace of imitation by competitors is not strong enough to undermine the incentive to innovate.

A novel insight from the research is the evidence for the ongoing supply of untapped market opportunities that existed in this industry over two decades. This is especially interesting as retail is typically regarded as a mature industry. Despite having a large number of firms competing for retail market share, our evidence shows it was still possible for creative firms to find untapped market opportunities. Furthermore, their exploitation not only benefited these innovative firms but also the wider market; culminating in a long run positive relationship between the number of firms and average profit per firm.

Our findings indicate that managers intent on using innovation strategies can do well by staying in their existing industry both because the pressure to innovate is less than suggested by blue ocean strategists as well as the finding that a crowded differentiated market only erodes profits slowly. In practical terms, the problem with blue ocean strategy is that it may cause firms to over innovate or try to differentiate their business too much - often losing touch (and brand value) with their core customers. If there is a general lesson from our research for managers it is to not be drawn into a 'one size fits all' rule of thumb approach to strategy. Put differently, our evidence does not support strategic management extremists – managers who either embrace or reject the recommendations of blue ocean strategy in their entirety.

We provide evidence from market segments across the retail industry over 18 years which can provide some encouragement for retail managers seeking to generate sustainable profits from innovation strategies aimed at differentiation and blue oceans. In particular, as supernormal profits resulting from strategies such as location, brand and product differentiation are only slowly eroded by competition, such strategies are more worthwhile pursuing than previously suggested by competition centric economics and strategic management. Of course, much more research remains to be done before one can begin to extrapolate more widely about the validity of the unorthodox assumptions underlying blue ocean strategy (and in turn the extent to which this strategy works) in other contexts. However, we have provided a methodology which can enable statistical analysis of other industries and time periods provided sufficiently rich data is available or can be collected. Therefore, we hope that this paper will enable a trajectory of empirical research on this important area of strategic management.

7. Conclusion

Despite its claims to turn strategic management thinking on its head blue ocean strategy is not a new theory (Agnihotri, 2015). Most of its core ideas have a long history in both economics and strategic management thought. However, what distinguishes blue ocean strategy is that within this framework it adopts two unorthodox assumptions which have radical implications. The first of these is that there is an enduring supply of untapped market opportunities waiting to be exploited by innovative firms. The second assumes that when these opportunities have been exploited the resulting enhanced profits will last sufficiently long in order to make innovation a rewarding strategy for firms. In other words, competitive imitative forces are weak enough to allow these supernormal profits to persist. In fact, blue ocean strategy adopts a more extreme version of this second assumption, namely that competition becomes irrelevant but in order for blue ocean strategy to be a dominant generic strategy only the weaker form we outline here is necessary. When these assumptions hold innovation can become a generic strategy that can work at the industry level and not just a limited opportunity to make a few deviant innovative firms successful.

So far, these assumptions remain untested. The evidence presented in support of blue ocean strategy is case based at the level of the firm and therefore, does not investigate whether the value enhancing effects of innovation are sufficient to overpower the widely believed long term dominance of competitive forces – where in the long term a negative relationship ought to exist between the number of firms in a market and the average profits of firms therein. In this paper we seek to redress this paucity of empirical evidence. We provide a methodology and apply it to a unique rich dataset on the Dutch retail industry over the period 1982–2000 in order to test the pivotal assumptions necessary for blue ocean strategy. This is a useful scholarly laboratory for this debate as retailing has undergone a strategic revolution over this period. New brands and differentiation strategies have been rife leading to increased market segmentation, deeper and wider market boundaries, and the rejuvenation of some previously regarded 'tired' sectors such as cafés and hardware stores. Using an error-correction model the short and long term relationship between the number of firms and the average profits per firm in the Dutch retail industry is estimated.

Our results show that in this industry over the duration of the sample, blue ocean has worked to the extent that we find a long-term positive relationship between the number of firms and average profits. So we find that there were enough untapped market opportunities to avoid the negative competitive effects on average profits that one would normally associate with an increased number of firms in an industry. However, the results do not support the claims of the proponents of blue ocean strategy that it 'makes the competition irrelevant'. But nevertheless, we find that a weaker form of this assumption holds namely that the speed at which competition reduces profits from innovation is slow enough to make innovation a viable strategic objective — the adjustment process back to equilibrium level of profits takes approximately 20–25 years after an initial 10 percent deviation between the actual and the dynamic equilibrium number of firms back to equilibrium.

Our analysis relates to the retail industry at one period of its history and hence further research is required in order to investigate the extent to which blue ocean strategy works or not in other circumstances. However, we have outlined a methodology which may be used in such a pursuit of this knowledge.

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