IS SUPERIOR ECONOMIC PERFORMANCE THE SAME AS SUSTAINED COMPETITIVE ADVANTAGE?

THE CASE OF SOUTHWEST AIRLINES[†]

SHORT TITLE: FIRM AUTONOMY AND SCA

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ABSTRACT

Evaluating the sustained competitive advantage (SCA) of a firm according exclusively to superior economic performance sustained for a given period of time can hide alternative manifestations of SCA. We suggest that SCA is a multidimensional construct that may be subject to different operationalizations in empirical tests. We propose an untapped dimension of SCA related to the degree of autonomy of a firm with respect to its industry rivals and present a novel method, inspired in the CAPM model, to measure it. We illustrate the relevance of our measure in studies of SCA applying it to the US airlines industry (1982-2002).

Keywords: Sustained competitive advantage; Superior economic performance; Firm autonomy; Resource-based view; Airlines industry

INTRODUCTION

The concept of competitive advantage (CA) has a long tradition in the strategy literature (Ansoff, 1965; Porter, 1980, 1985; Barney, 1991, 2002; Peteraf, 1993; Besanko, Dranove and Shanley, 2000; Ghemawat and Rivkin, 1999; Grant, 2005; Barney and Hesterly, 2006) and in recent years it has become one of the key concepts in business strategy. Similarly, the more recent concept of sustained competitive advantage (SCA) has become also a major area of research mainly in theoretical and empirical studies based on the resource-based view of the firm (RBV) (Barney, 1991; Wiggins and Ruefli, 2002; Foss and Knudsen, 2003; Peteraf and Barney, 2003).

Despite the fact that most academic papers in strategic management refer to the notion of SCA, a precise definition of the concept remains elusive (Rumelt, 2003). The elusiveness problem affects to both the definition of what SCA is as well as to its operationalization in empirical tests. For example, Porter (1980, 1985) refers to SCA in terms of a low cost, a differentiation or a focus *advantage* over industry rivals. According to Barney (1991: 102) "a firm is said to have a CA when it is implementing a value creating strategy not simultaneously implemented by any current or potential competitors and a SCA when it is implementing a value creating strategy not simultaneously implemented by any current or potential competitors *and* when these other firms are unable to duplicate the benefits of this strategy" [1]. Peteraf (1993) defines SCA as "sustained above normal returns".

[1]While the theoretical distinction between CA and SCA is more or less precise (however see Rumelt, 2003), their distinction in empirical research is not so. Different authors propose alternative measures of SCA such as "long-term profitability", "above average performance in the long run" or "sustained above normal returns" to operationalize SCA (Porter, 1985; Peteraf, 1993; Wiggins and Ruefli, 2002; Barney and Hesterly, 2006). Given our focus in this paper on long term performance, hereinafter we will refer to the term SCA although many of the issues discussed also apply to the related concept of CA.

Part of the problem in the above definitions arises from the fact that antecedents of SCA --resources, strategic postures, decisions, and so on-- are often confounded with its outcomes --financial performance, economic rents, and so on-- (see figure 1). If we look at the antecedents of SCA we find abundant research investigating a wide range of independent variables that affect performance. The generic strategies of the kind described by Porter (1980) --cost, differentiation and focus advantage-- or the arguments presented by the RBV regarding the sustainability of CA will be very helpful for that kind of research. However, it is surprising that while studies on antecedents of SCA abound, we observe relatively few discussions about the dependent variable: how do we operationalize and measure "advantage" and its consequences (outcomes) in terms of performance?

Insert figure 1 about here

In general, RBV scholars assume, implicitly or explicitly, that a firm earning *above average accounting* or *above normal economic performance* for a sufficiently long period of time enjoys a SCA (Porter, 1985: 11; Wiggins and Ruefli, 2002; Barney and Hesterly, 2006: 22). One main problem in identifying SCA with superior profitability (whatever the measure of profitability used and the time span considered) is that a CA may not be revealed in higher profitability because, for example, a firm may forgo current profits in order to invest in human capital, technology, customer and employee loyalty, executive perks and so on (Grant, 2005). Indeed, Coff (1999) has

shown *how* and *when* CA does not lead to financial performance in situations when stakeholders have certain bargaining power.

If SCA does not lead *always* to superior performance (Coff, 1999; Ray, Barney and Muhanna, 2004), how can we identify, then, firms with SCA in empirical studies? A plausible solution may be to avoid narrow conceptualizations of SCA and to enlarge our current operationalizations of SCA to include not only superior performance-related measures as dependent variables in tests of the RBV (Ray, Barney and Muhanna, 2004).

In this paper we argue that SCA is a multidimensional construct, meaning that different definitions and operationalizations may be capturing different relevant aspects of the competitive positions of firms. In particular we present an alternative and complementary method to measure the *outcomes* of SCA (see figure 1) that are not captured in traditional performance measures. Our proposed measure is based on the correlation between the performance of a firm and the performance of all the other rivals in an industry. The notion of correlation between a firm's performance and its rivals is intrinsic to the notion of competition and SCA because the very idea of *advantage* must be always related to a reference group of competitors. Depending on such a correlation, a firm can be said to have a high or low degree of independence within its industry[2].

[2] Despite the fact that traditional measures of SCA focuses mainly on sustained superior performance we think that our focus on the correlation among the performances of firms in an industry is justified by two main reasons. First, the high independence achieved by a firm, if proven to be sustainable, is related to the notions of isolating mechanisms (Rumelt, 1984, 1987) and the committed competition (Caves and Porter, 1977; Caves, 1984) as we discuss towards the end of the paper. Only a firm that has sealed off itself from its industry by means of strategic and resource commitments can disconnect its performance cycles from the ones of the industry. At the same time, the isolating mechanisms and the committed competition have been associated to the concepts of CA and SCA (Caves, 1984; Ghemawat, 1991). The second reason is related to the impossibility, in certain cases, of accurately measuring superior performance in empirical studies –when SCA does not lead to sustained superior performance (Coff, 1999; Ray, Barney and Muhanna, 2004)--.Given that impossibility, we argue that using alternative measures of SCA have the potential to reveal new insights.

Inspired in the CAPM model, the method presented in this paper is a simple but powerful way to measure rigorously such degree of independence of a firm in empirical tests of SCA. As we illustrate in the paper using the example of Southwest Airlines and the US airlines industry, our method allows researchers to capture and detect manifestations of SCA that remained "hidden" using the traditional measures of SCA *outcomes* based exclusively on superior performance.

The rest of the paper is structured as follows. In the next section we review prior empirical and analytical work studying SCA. Next, we introduce the notion of *firm autonomy* as a particular measure of SCA[3]. Then, we illustrate the usefulness of this measure in the specific case of Southwest Airlines and the U.S. airlines industry for the period 1982-2002. After that we discuss several explanations found in the literature explaining the origin of *firm autonomy*. The paper closes with a final section on the limitations and caveats of our research, future research and extensions, and some conclusions.

SUSTAINED COMPETITIVE ADVANTAGE AND SUPERIOR ECONOMIC PERFORMANCE

Research investigating SCA and studies on competitive heterogeneity (Hoopes, Madsen and Walker, 2003) aims at answering the major question of why firms in the same industry vary *systematically* in performance over time. As stated in the introduction, the way this systematic variation in performance has been operationalized

[3] As we show in the following sections, firm autonomy is defined as the degree of independence a firm has in relation to its industry.

in previous empirical works varies across studies of different firms and sectors, generating inconsistencies in the empirical testing of the theory.

Previous research falls into two coarse groups: analytical models and empirical studies. On the one hand, analytical models go from the early works of Eaton and Lipsey (1978) and the later contributions of Lippman and Rumelt (1992) to more recent developments by scholars such as Makadok and Barney (Makadok, 2001; Makadok and Barney, 2002) and Zott (2003) among others. These approaches elaborate formal models that explain how SCA can emerge and persist under certain conditions of firms and their industries. On the other hand, empirical studies analyze variance in performance among firms in order to explain SCA (Schmalensee, 1985; Mueller, 1986; Rumelt, 1991; Brush and Bromiley, 1997; McGahan and Porter, 1997, 1999, 2003; James, 1998; Brush, Bromiley, and Hendrickx, 1999; Bowman and Helfat, 2001; Wiggins and Ruefli, 2002). All of these studies examine performance variance attributable to different levels of analysis: industry, parent corporation, and business unit. Although those empirical studies have found evidence of industry level, corporate level and firm level effects, the most consistent result across studies is that firm level effects explain the most variance in performance (Brush and Bromiley, 1997; James 1998; Rumelt, 1991).

Our paper seeks to contribute to the research based on the empirical and analytical studies that examine sustained and systematic performance differences *over time*. Both research streams aim at explaining the antecedents and consequences of SCA and developing appropriate measures of SCA. However, the question of operationalization and measurement of SCA has proven to be very challenging (Barney and Hesterly, 2006).

When we look at current operationalizations of SCA we realize that *value creation* is a common theme (Rumelt, 2003). Value creation has been defined in previous research as "above-normal returns" (Peteraf, 1993); "a higher rate of economic profit than the average rate of economic profit of other firms competing within the same market" (Besanko, Dranove and Shanley, 2000); "being able to create more economic value than the marginal (breakeven) competitor in its product market" (Peteraf and Barney, 2003: 314) or "having an above-average performance *in the long run"* (Porter, 1985; Ghemawat, 1999; Barney and Hesterly, 2006: 22). All of the previous definitions refer in one way or another to some sort of *superior performance* measure.

As stated in the introduction, our thesis is that evaluating the SCA of a firm exclusively according to *superior economic performance* (relative to a reference set of competitors or an industry) sustained for a given period of time can, in fact, hide the SCA of those firms whose advantage does not materialized in higher performance (Coff, 1999; Ray, Barney and Muhanna, 2004).

For instance, in a recent rigorous study of persistent superior performance, Wiggins and Ruefli (2002: 93-94) found that no firm in the airlines industry, telephone and telegraph equipment, operative builders, television broadcasting and advertising agencies achieved even 10 years of persistent superior economic performance.[4] However these results contrast with the well-known story of the outstanding SCA of a firm such as Southwest Airlines, based on a strategy of short-haul flights, no meals and a set of consistent institutionalized organizational practices that support a high level of intra-firm trust, cooperation among employees and managers, commitment of the workforce and so on. Academic as well as non-academic works and publications have

[4] Specifically, Wiggins and Ruefli's (2002: 93-94) empirical study finds that no firm in the airline industry achieved at least ten years of superior persistent performance using the Tobin's Q as a measure of performance, or 20 years of superior persistent performance when using ROA.

extensively celebrated the Southwest Airlines model, with a record of more than thirty years of successful operations and a record of consistent profitability in each year other than its first, while other airlines were suffering recurrent losses (Gittell, 2003). The Southwest model is taught in business schools as an example of excellence, and its strategy has been imitated – sometimes unsuccessfully – by many competitors (Continental, US Airways, Delta Airlines, JetBlue Airways…) in the airline industry (Gittell, 2003). Based on these records, and after all that has been said and written about Southwest Airlines, it would be difficult to admit that this company has not achieved some form of a CA over a long period of time. Could it be that the dependent variable is inappropriate?

It may be the case that Wiggins and Ruefli (2002) used a method that was unable to capture the superior performance of Southwest. For instance, the arbitrary 10 (20) years of persistent superior economic performance these two authors chose for their study could have been a bad choice. Had they chosen shorter periods of time (e.g., five years) their results would have been different. However what we show in this paper is that there are other ways of measuring a firm's SCA over time. We suggest that SCA is a multidimensional construct that may be subject to different operationalizations in empirical tests (see figure 1). In particular, we propose firm autonomy as a measure of the degree of independence a given firm has relative to its industry. This particular way of measuring a firm's performance emphasizes those aspects of a firm's performance that are related to its internal autonomy and isolation from the industry/market fluctuations and to its internal strength or resilience, allowing it to outperform rivals even in situations of crisis or an economic recession. For many years, Southwest Airlines has shown a great resilience derived, among other things, from a unique

strategy and an internally committed workforce, two attributes that most competitors have been unable to copy successfully (Gittell, 2003). Our alternative measure of SCA offers a potential explanation of why excellent companies like Southwest Airlines are likely to be excluded from studies where superior performance over a period of time is the only dependent variable used.

AN ALTERNATIVE MEASURE OF SCA: FIRM AUTONOMY

Building on previous work by Ariño, Ariño and Garcia-Castro (2007), our approach is based on the idea of *firm autonomy* which we define as *the degree of independence a firm has in relation to its industry*[5]. Firm autonomy captures the variability of a firm's performance which is independent of the variability of the whole industry.

Industry Cycles and Firm Performance

Previous empirical research on SCA typically analyze long periods of time – generally more than 10 or 20 years – to identify firms showing persistent superior performance (e.g., Mueller, 1986; Wiggins and Ruefli, 2002). These studies tend to ignore, or treat marginally, the effect of industry cycles on the performance of firms. Ignoring these cycles means that performance differentials among firms should be sustained both during the upward and downward part of the industry cycle (Figure 2).

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[5]The notion of independence is fuzzy. As we will show in this section what our model precisely does is to operationalize the concept of independence: independence is defined in our model as the correlation (covariates) between a firm economic performance and the industry activity level (operationalized either by using an activity based indicator or using the aggregated performance of all of the firms competing in that industry). The lower (higher) the correlation between the two, the more (less) independent a firm will be with respect to the industry where it operates.

Insert figure 2

However, such an approach to firm performance may hide the sustained ability of a firm to generate income independently of the evolution of its industry. We will say, then, that a firm is autonomous or industry independent, when its performance is exclusively internally driven (Figure 3). The dashed line in Figure 3 is independent of the business cycle and can be above (point A) or below (point B) the average performance of the firms in a particular industry at a point of the cycle. This alternative perspective on income generation, we conjecture, could be a first step towards the full understanding of cases such as Southwest Airlines in which performance might not be *persistently superior* (given the cyclicality) but might be *autonomous*. Quite clearly, using the traditional approach to persistent superior performance, it is extremely difficult to identify empirically a case such as that described in figure 3, because the superior performance is not persistent (the line representing firm autonomous performance in figure 3 is outperformed on a regular basis by the persistent superior performance and by the industry average performance line as a consequence of business cycles).

Insert figure 3

In the real world it is highly unlikely that a firm can achieve absolute independence in relation to its industry. However, it is precisely the relative differences among firms competing in the same industry that constitutes the focus of our analysis.

Firm Autonomy = Exposure and Intensity

Our approach is based on a simple linear regression equation in which a selected indicator of activity in the industry (*industry activity indicator*) is regressed onto the observed firm ROA or any other accounting- or market-based measure of a firm's financial performance for a long time series (Ariño et al., 2007). In the airline industry for example, a good industry activity indicator is the revenue passenger per mile (RPM). It is possible that financial performance and the measures of industry activity (e.g., number of passengers carried in the airline industry or number of bottles of beer consumed in the case of the brewing industry) are not correlated because of a number of reasons, such as, initial massive investments by the firms, appropriation of rents by stakeholders, and the like. For the purpose of this paper we will treat the level of activity within an industry and the industry cycle as quasi-equivalent terms, where a high (low) level of activity reflects an upward (downward) part of the business cycle.[6]

The specified *exposure-intensity* equation is:

$R_{it} = \alpha_i + \beta_i X_{jt} + e$;

R_{it} represents a particular measure of financial performance for the selected firm *i* in time *t*; X_{jt} represents the activity indicator for industry *j* in time *t*; and e is the regression error. The fit of the regression model (the R-squared of the model) is what we call *exposure* to the business cycle. The parameter β_i will be our measure of *intensity* of the business cycle for firm *i*.

The *exposure* indicates how much the industry cycle (or activity within the industry) explains the performance of firm *i*. The *intensity of the exposure* (the

[6] In fact, this treatment of activity level, cycle and ROA is justified in the U.S. airline industry by the existence, for our sample, of a significant correlation between ROA and the activity in the industry measured as passengers carried per mile (.60; p-value<0.01).

coefficient, β_i) measures the impact of a percentage point change in the industry activity indicator on firm financial performance.

Firm autonomy and the CAPM

As it can be easily observed, the above proposed method is inspired in the CAPM (Sharpe, 1964; Lintner, 1965) but differs from it in several aspects. First, our method seeks to explain how much of the variation in performance of a given firm is explained by variations in the industry business cycle. Our discussion focuses on the industry where the firm operates. In diversified firms our discussion refers to the business unit level (firms competing in the same product market). Thus, our method is more suitable than CAPM for strategic analysis. Second, our method does not use firm's financial returns only, but we can apply it to any accounting or market based measure of performance (ROA, ROE, Tobin's Q, MVA, …). Third, the inputs for the method are not just the financial returns*;* we propose the concept of *industry activity indicator* to assess the industry business cycle. The introduction of the industry activity indicator is the main reason why we do not just calculate the beta for each firm simply using the CAPM model.

What mainly distinguishes the CAPM from our approach is that our measure of industry activity level is exogenous (e.g., RPM in the airline industry) whereas in the CAPM that measure is endogenous (the business cycle would be defined simply by the market returns in a particular industry). In other words: firm autonomy measures independence from industry activity cycles whereas CAPM measures independence from capital market cycles.We consider the introduction of an exogenous measure of industry activity level a major contribution in the discussion especially if we take into account that this measure can significantly explain the pattern of firm's financial

performance over time. For example, in the case of the airline industry, with only the RPM indicator, we can explain up to 60% of performance variations over time for some of the firms in the sample, as we will show in the following section.

What we are measuring, in a sense, is the ability of a firm to sustain performance independently from the specific evolution of the industry to which it belongs. When this autonomous performance is consistently achieved by a firm (or a small group of firms) in an industry over a long period of time, then, we can talk of a manifestation of a SCA for that particular firm. This SCA is produced by the ability of the firm to develop mechanisms that isolate it from its immediate environment (industry).

The idea of isolating mechanisms is in the spirit of Rumelt (1984, 1987). A firm can be industry-independent and present a systematic above normal performance, or just the opposite: a systematic below normal performance. Whereas the measure of sustained superior performance is a measure of the relative success of a firm operating in a given industry with respect to its competitors, the *firm autonomy* measure aims at capturing the firm's ability to sustain a given level of performance (be it high or low) independent of external conditions. Furthermore, *firm autonomy* can be seen as a relative measure of the risk of a firm relative to its rivals. Higher autonomy indicates lower exposure to the industry cycle, and hence reduces the risks associated with that particular firm. In this way the idea of *firm autonomy* is introducing the familiar notion of systematic risk (market risk) from CAPM in studies of SCA in the strategic management field[7]. Both, high returns and low risk are desirable attributes in the performance of any firm.

[7] The difference between *independence* and *risk* is subtle. The fact that a firm is able to generate profits autonomously does not necessarily imply that its risk is low. Although most of the time high independence and low risk will coincide, it is absolutely possible for a firm obtaining returns with a high standard deviation (relative to rivals in the industry) to show independent (autonomous) performance and

With the simple but powerful method presented it is possible to assess industry cycle effects on the performance of all the different players in the industry, and so it is possible to assess how dependent each firm is on the external circumstances. The difficulties of the method reside in properly defining the industry –who are the rivals, how to treat multi-business corporations, establish the limits of the industry— choosing the appropriate industry activity indicator as well as a sufficiently long time series of data to allow a longitudinal estimation of firm performance. We next illustrate some of the applications of our method for the airline industry in the US, where such a long time series is available.

AN ILLUSTRATION: THE US AIRLINE INDUSTRY (1982-2002)

As an illustrative example, we examine the US airline industry for a period of twenty years, from 1982 to 2002. We also include, for comparative purposes, the provisional ROA reported by the companies for 2003 at the moment of writing this paper. The time period chosen was determined by data availability. The ROA for 2003 did not affect any of the results reported here. Data was collected from *Thomson One Banker* (Worldscope data, Datastream and Thomson financial data).[8] Ten airlines were included in the analysis: Southwest Airlines, US Airways, America West Airlines,

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vice versa (e.g., if a firm performance has a high standard deviation over time and it follows the cycle sometimes, sometimes it goes against the cycle and so on). The CAPM model (Sharpe, 1964; Lintner, 1965) distinguishes between *systematic risk* or variations in return caused by economy-wide disturbances (non diversifiable) and *unsystematic risk* or firm-specific risk (diversifiable). Given that investors with properly diversified portfolios eliminate unsystematic risk, the risk that mostly matters is the systematic one, which is related to economy-wide or industry driven disturbances. This is the risk we study in this paper. The CAPM analyzes the covariates between a firm and the market returns (systematic risk). In that sense it is possible to talk about risk-adjusted returns to condense risk and return in one single measure. Our model captures to what extent a firm is able to generate profits independently of the industry conditions. The model introduces the *industry activity indicator* to condense in one single indicator the information regarding the level of activity in a given industry (the profit generating opportunities for a given firm in that industry).What our model does is to relate the performance of a single firm to the level of activity in an industry, establishing the level of dependence or independence for every single firm.

[8] Different databases were used in order to access the most complete time series possible for the period 1982-2002.

American Airlines (AMR), Continental Airlines, United Airlines (UAL), Alaska Airlines, Air Canada, Northwest Airlines and Delta Airlines (see Table 1 for a summary of the main ratios of these ten companies). Thus our data set includes ten airlines for a period of 20 years each. We selected US firms or firms operating mainly in the U.S. in order to control for country effects, general country economic cycles and the development of the industry. In the case of Air Canada all these three factors also held and it was thus included in the analysis as well. The criterion for our sampling was size: we chose passenger airlines classified as major carriers (revenues greater than $1 billion). These airlines together accounted for nearly 80% of the US's market share of passenger transportation in 2005.[9] Our final sample is consistent with previous studies of this industry (Gittell et al., 2004).

Insert table 1

Measures

Consistent with the work of Wiggins and Ruefli (2002) we use an accounting measure (return on assets, ROA) of firm performance. ROA, net income divided by total assets, has also been used in most of the studies of superior economic performance (Schmalensee, 1985; Rumelt, 1991; McGahan and Porter, 1997; Bowman and Helfat, 2001).

We use two measures to operationalize the industry cycle or industry level of activity: an accounting measure (ROA) and an industry activity indicator such as the

[9] Market shares are measured using the RPM (revenue passenger mile) approach. Source: Bureau of Transportation Statistics

revenue passenger mile (RPM growth).[10] The ROA used in our model is just the average ROA obtained by these ten airlines for each year from 1982 to 2002. RPM is calculated as *one paying passenger flown one mile.*[11] Technically it is computed as the summation of the products of the revenue aircraft mile flown on each inter-airport hop multiplied by the number of *revenue passengers* carried on that hop (US Department of Transportation). *Revenue passenger* refers to any person receiving air transportation from an air carrier for which remuneration is received by the carrier, excluding those passengers who do not pay the normal fare such as infants or handicapped individuals. The RPM indicator is widely used within the airline industry as the main measure of "traffic," so it is one of the best individual indicators for reflecting the part of the industry cycle we are in. Both measures of the cycle, ROA and RPM, are significantly correlated for this time period in our sample (.60; P-value≤0.01).

Results

We use the method proposed to accurately assess *firm autonomy* (exposure and intensity) in this particular industry. What we expect to find *a priori* is for Southwest Airlines to show a higher autonomy from the environment than any other competitor within the industry. Some authors have advanced the hypothesis that Southwest's HRM systems and policies, its historical track of employment and union relationships and its previous commitments to a certain behavior could contribute to isolate the firm from external turbulences in the industry (Gittell, 2003; Gittell et al., 2004; Pfeffer, 1996). These organizational characteristics may work as environmental buffers. We do not

[10] Data on U.S. passengers and activity level indicators were collected from the U.S. Department of Transportation.
[11] A paying passenger flying one mile generates 1 RPM. 100 passengers flying 500 miles generate 50,000 RPMs. For example, in a typical day in 2001, American produced 290 million RPMs.

discuss the plausibility of this hypothesis; in this paper we *just* aim at showing the existence of and at measuring *firm autonomy*, as defined earlier in this paper, and at revealing its statistical significance.

The thickest line in Figure 4 represents the return on assets (ROA) of Southwest for the period from 1982 to 2002 and also the forecasted ROA for 2003. We can appreciate in the figure how other airlines (US Air, UAL, America West for instance) outperformed Southwest for specific periods of time at the end of the 1980s, in the mid-1990s and in the late 1990s. The companies mentioned seem also to be more negatively affected by the downturn in the industry cycle (early 1990s and late 2001, after the 9/11 terrorist attacks), with their ROAs reaching high negative values in Figure 4. Southwest, on the other hand, apparently seemed to be much less affected by environmental forces.

Insert figure 4

Insert table 2

In Table 2, we present the correlation table for the ROA of the ten carriers, the industry average ROA and RPM growth for the period considered. The time series include more than twelve years of analysis in all cases, with the only exception of Northwest Airlines with nine observations. For six airlines 22 observations are available. In total 225 observations were included in our OLS regressions. It is possible in this preliminary approach to roughly confirm the hypothesis of the autonomy of Southwest in relation to its competitors in the industry. Southwest's correlation

coefficient between firm ROA and industry average ROA and RPM growth is, together with Continental's, the lowest in the industry. This low correlation coefficient is a first indicator of *firm autonomy*.

Given these initial correlations, we expect to find consistent results when applying the exposure-intensity regression model. The results are shown in Table 3.

Insert table 3 about here

ROA and RPM Exposure

In Table 3 we observe that two firms present a clear under-exposure to industry activity: Southwest and Continental. From the model we calculated that the exposure of Southwest to the industry ROA is 0.23 and the exposure to RPM is 0.04. What does this mean? According to our model, 0.23 means that 23 % of Southwest ROA variations are dependent on the industry cycle. In other words, 77 % of Southwest's performance can be considered to be autonomously generated by the firm. In contrast, firms such as US Airlines or United Airlines have a level of exposure to industry cycle of 75% and 81% respectively (Table 3).

Some could argue that the industry average ROA is not a good benchmark because it is a weighted measure of all of the individual ROAs for these ten companies. In order to increase the robustness of our results we also computed the exposure using an indirect measure of industry activity: RPM growth. The results are consistent with the previous analysis: again Southwest and Continental present the lowest level of exposure to RPM growth (4% and an almost imperceptible effect, respectively). Again

these two parameters are powerful indicators of the internal capacity of Southwest and Continental to generate consistent returns on assets regardless of the evolution of passenger growth and industry activity. At the other extreme, companies such as Northwest or US Airways, show a high dependence on the evolution of RPM and hence on the industry cycle (61% and 38% respectively). As a consequence, the performance of firms such us Northwest or US Airways can be more easily predicted from the RPM index.

It is interesting to note that even firms smaller than Southwest in terms of revenues, such as America West (exposure of 71% using the ROA and 30% using the RPM) show a significantly higher level of exposure to the industry cycle for both the ROA and the RPM indicators (Table 3). This empirical finding shows that even small firms with a small impact in the overall evolution of the industry ROA and RPM can be highly correlated with the industry cycle, confirming that our results are not driven by the relative size of firms.

The next step is to understand what conclusions we can draw from the statistics regarding the relative firm autonomy of Southwest and Continental. Unfortunately, there is no absolute basis for comparison. When is an R-squared high enough? The answer varies depending on the object of study: in time series data, an R-squared of 0.9 can be routine, whereas in cross-sectional data a 0.2 is sometimes noteworthy (Greene, 2003). The F-statistic provides us with valuable information regarding the significance of the regression model. High values of the F-statistic imply a small probability for the regression coefficients not being significant. We include the F-test for the ten regression equations for the case of ROA and RPM growth. A 0.01 significance level is considered to be a very reliable criterion for distinguishing statistical significance. At this 0.01

level, and for the case of ROA as an industry activity indicator, only Southwest, Continental and Northwest can be considered autonomous (their p-values are above the threshold of 0.01, indicating that the regression coefficients are not statistically significant). However, in the case of the RPM as activity indicator, given the lower general fitness of the regression equations, the 0.01 level is not very useful for discriminating *firm autonomy*. Therefore relaxing the 0.01 criteria to 0.05, only four companies, Southwest, America West, Continental and UAL can be considered to be relatively autonomous. If the benchmark is fixed at the 0.1 level, then again, Southwest and Continental emerge clearly as the only two autonomous firms in this industry.

Given the persistence of Southwest and Continental in different measures of exposure (note also that the F-values and p-values are widely different from the rest of airlines), we conclude that these two companies present a different (autonomous) behavior in relation to their peers in the industry. Interestingly enough, as discussed earlier, the particular cases of Southwest and Continental show two different patterns of *firm autonomy*: whereas Southwest's performance is autonomous and above average (the average ROA for the 20 year period is 7.7%), the performance of Continental is autonomous but below average (average ROA 0.1%).

Intensity of the Exposure

Given that the model only considers one independent variable, industry average ROA or RPM growth, then the significance levels of the F-test and the t-test are the same as shown in Table 3. This automatically implies that the results and analysis made for the level of exposure can be extended to the *intensity of the exposure*. Again for the case of ROA, and for a significance level of 0.01, only Southwest, Continental and

Northwest can be regarded as low intensity firms (Northwest being in the limit: p-value=0.013). We observe however that the coefficient β_{ij} in the case of Continental is 0.93, higher than in the case of other competitors. But the fact of the low fit of the model in the case of Continental does not allow us to conclude that there is a high intensity of exposure.

For the RPM case, and taking into account the previous discussion about confidence levels, Southwest and Continental also present a substantial difference in their respective p-values. The 0.383 and 0.987 p-values obtained by Southwest and Continental respectively *do not* allow us to reject the null hypothesis that the β_{ij} coefficients are zero, and, therefore, that the intensity of the exposure for those two firms is also zero.

To illustrate the critical impact of these parameters, consider the difference between the intensity of the exposure to RPM growth of Southwest and US Airways. For Southwest the value of the *intensity* is 0.14 and for US Airways, it is 1.54. This means that if the passenger traffic for a given year decreases (increases), let's say by 3%, then Southwest's ROA for that particular year would be reduced (increased) by only 0.42% – all else being equal – whereas the ROA of US Airways for that year would be reduced (increased) by 4.62% – all else being equal.

From the previous analysis and results we can reasonably conclude that the data supports our initial conjecture: the degree of independence from the environment really distinguishes the behavior of Southwest Airlines. Drawing from the 20-year time series, the results of the model suggest that Southwest's organizational characteristics and/or strategy create some environmental buffers that effectively insulate this firm from the turbulences of the US airline industry. This independence means that Southwest

outperforms its rivals during the "bad times" while some of its rivals are able to outperform Southwest when the "good times" come. This finding would definitively be an explanation of why Wiggins and Ruefli (2002) did not find any company with a sustained superior economic performance during those 20 (10) years in the airlines industry. The fact that our study traces back 20 years of data on ROA and RPM leads us to strongly believe that the differences in the level of exposure are not casual, but that there is a causal reason for such a difference.

In the next section we briefly review some works that can help us to understand the characteristics and possible sources of these isolating mechanisms.

ALTERNATIVE EXPLANATIONS TO THE ORIGIN OF FIRM AUTONOMY AND INDUSTRY DEPENDENCE

So far we have shown the evidence collected from the U.S. airline industry regarding the existence of sustained differences among firms in their degree of independence from the environment, conceptualized in this paper as the industry cycle. Although it is not the ultimate purpose of this paper to provide a theoretical explanation that accounts for and explains these differences in *firm autonomy*, in this section we will briefly discuss some plausible alternatives we have found in the existing literature. Our explorative review has found several possible approaches to the question depicted in table 4 coming from the organization theory, strategic management and human resource management fields.

Insert table 4

Organization theory

The idea that some organizations are buffered from external pressures has a long history in organization theory (Cyert and March, 1963; Weick, 1976; Meyer and Rowan, 1978; Scott, 1987; Miner, Amburgey and Stearns, 1990; Kraatz and Zajac, 2001). Perhaps Thompson (1967) is the first author to propose that "under norms of rationality organizations seek to seal off their core technologies from environmental influences." This buffering mechanism, according to Thompson, insulates the core technology from disturbances in the task environment. Aldrich (1979), like Thompson (1967), extends the concept of buffer to include "governmental protection or regulation, support from powerful elites, or shared beliefs and values that selectively screen out potentially disruptive external events" as possible mechanisms that can insulate certain organizational forms against environmental pressures.

Strategic management

The idea of *commitments* at the firm level as a different source of environmental buffers has been present in both organizational theory (Selznick, 1957) and strategic management literature (Caves, 1984; Ghemawat, 1991; Caves and Ghemawat, 1992; Argyres and Liebeskind, 2000). Commitments at the organizational level, by voluntarily restricting the set of possible actions in the short term, force such organization to reject some short term environmental opportunities in order to maintain the commitment and preserve the distinctive character of the organization (Selznick, 1957).

Within the strategic management literature the argument is built on a different basis. Instead of stressing the importance of commitment for decision making within organizations, Ghemawat (1991, p.14) discusses commitment as "the tendency of

strategies to persist over time." This persistence of strategies is the only factor that can ultimately account for sustained performance differences in an industry over time. It is only through strategic commitment that truly effective isolating mechanisms are created.

Other traditional approaches to commitment within the strategic literature consider previous commitments such as irreversible investments and sunk costs as the origins of within-industry mobility barriers and strategic groups (Caves and Porter 1977; Caves, 1984). The existence of an irrevocable investment for a non-trivial period of time can also contribute to our understanding of why a firm rejects environmental opportunities or is protected during economic recessions by virtue of those pre-commitments. Rumelt (1984, 1987) isolating mechanisms operate in a similar vein.

Human resource management

Finally, we also found a possible rationale for *firm autonomy* within the strategic human resource management literature (SHRM). Wright, McMahan and McWilliams (1994), in an attempt to integrate the field of SHRM (Wright, Dunford, Snell, 2001) with the RBV (Wernerfelt, 1984; Barney, 1991), posit that the firm's SHRM is a potential source of SCA. These authors argue that "in dynamic environments, firms with high levels of human capital resources possess greater capability to respond to environmental changes through sensing the need for change, developing strategies to meet the change and quickly and efficiently implementing these strategies" (Wright et al., 1994: 316). The basic premise is that the cognitive abilities of a highly motivated work force can allow a firm to detect and adapt successfully to environmental shifts, making the firm less vulnerable to those shifts.

The isolation and buffering mechanisms discussed in table 4 contribute to reduce the correlation (dependence) between a firm performance and the industry overall evolution. To what extent and under what conditions such isolation or buffering leads to superior (or inferior) performance remains unclear. For instance, Caves and Porter (1977) and Caves (1984) state that previous commitments such as irreversible investments and sunk costs are the origin of within industry mobility barriers and strategic groups. Now, a sunk cost could lead to a company to a long period of superior performance…or inferior performance if the sunk cost or irreversible investment is proven to be the wrong one, given the market conditions. Similarly the idea of commitments and institutionalization suggested by Selznick (1957) is related with our notion of independence because it explains why a firm's behaviour may differ from the common, general strategy adopted by the rest of competitors in the market. However it does not explain if those commitments and institutionalization will lead to superior or inferior performance as we do not know if the short term opportunities missed by the company were worthy or not. Our point is that those mechanisms, although they have been used in strategic management and organizational theory to explain superior performance, in reality, they can be also understood as mechanisms that reduce the correlation between firms' performance in an industry. In other words: mechanisms to explain the origin of firm autonomy. Although the isolation mechanisms discussed in the paper are not novel or original --they have been for much time in the literature-- what is novel is the relation the paper establishes between those mechanisms and autonomy rather than superior or inferior performance.

The RBV has been, to a certain extent, sensitive to all these previous theoretical discussions, incorporating them into the broader discussion of SCA. However it is

necessary once more to highlight the importance of specifically studying the relation between a firm's individual performance and the performance of the industry as a whole in empirical and analytical studies of SCA. Our analysis points in that direction.

LIMITATIONS AND FUTURE APPLICATIONS

The limitations of our research are related to both the selected sample and the method itself. From an operational point of view it would be desirable to gather even longer time series data to better observe the patterns in *firm autonomy*, *exposure* and *intensity* in order to obtain more refined measures of those parameters for each firm. Furthermore, extending these observations to other industries would provide new insights. Also, applying the exposure-intensity model to other industries and longer time series would also contribute to mitigating some limitations of the present paper.

A second limitation of our analysis is the presence across our sample of different strategies followed by the ten airlines. For example, Southwest competes with a strategy based on short-haul, point-to-point routes and low cost flights between U.S. cities with a high density of frequent fliers. Obviously not all of the companies in the industry follow the same strategy as Southwest. Other companies, such as Continental or American Airlines for example, compete on longer routes, serving a large range of cities including domestic destinations as well as international ones. We have not controlled for these factors in our analysis, because we did not attempt to predict the origin and causality of those differences in firms' *exposure* to the cycle. The possible explanation for those differences – SHRM (Wright, McMahan and McWilliams, 1994), interorganizational linkages (Pfeffer and Salancik, 1978), technological seal off (Thompson, 1967; Aldrich,

1979), commitments (Ghemawat, 1991), institutional forces (Selznick, 1957) or strategy – should be explored in subsequent research on *firm autonomy*.

CONCLUSIONS

If SCA does not lead *always* to superior performance (Coff, 1999; Ray, Barney and Muhanna, 2004), how do we identify, then, firms with SCA in empirical studies? Starting from an irregularity in an empirical test of SCA (Wiggins and Ruefli, 2002) we have suggested an alternative perspective for looking at the differences among firms in the same industry. We argue that SCA is a multidimensional construct that may be subject to different operationalizations in empirical studies rather than using exclusively superior economic performance. In particular we have argued along the paper for the validity of an alternative and complementary measure of SCA: *firm autonomy*. The variable proposed is a measure of the degree of independence from the business cycle a given firm has. According to our method, the autonomy of a given firm can be assessed according to two parameters: the exposure to the industry cycle, and the intensity of that exposure.

From our empirical analysis of the U.S. airline industry, two U.S. carriers, Southwest and Continental, emerge as the two firms with the highest autonomy in the U.S. airline industry for the period of time considered (1982-2002). This autonomy in the case of Southwest means that the company shows a poorer performance than the top performers during the upward part of the industry cycle but it also shows a much better performance than its competitors during the lower part of the cycle. This finding would explain why Wiggins and Ruefli (2002) were not able to find any firm with sustained superior economic performance in the airlines industry. But in fact, Southwest does

have a SCA that seems to lead to higher isolation from the industry turbulences and that makes the firm less vulnerable to economic recessions.

We have also speculated that this difference, far from being coincidental, can be explained by and related with some of the traditional organization and strategic management theories. The evidence provided by this paper contributes, for instance, to the debate between opportunistic adaptation of a firm versus the internal, patient development of a distinctive competence (Selznick, 1957). Opportunistic firms will tend to present higher levels of exposure due to a higher level of dependence on external favorable/unfavorable opportunities. The evidence is also consistent with environmental buffering explanations of organization theorists (Thomson, 1967; Cyert and March, 1963; Aldrich, 1979), the strategic management commitment and isolating mechanisms literature (Ghemawat, 1991; Caves and Porter, 1977; Rumelt, 1984, 1987) and human resources management research (Wright, McMahan and McWilliams, 1994; Pfeffer, 1996; Gittell et al., 2004). Finally, our measure of *firm autonomy* as presented here, offers new understandings for the related concept of firm heterogeneity (Hoopes, Madsen, and Walker, 2003), and in general for the RBV literature, where different alternative antecedents, consequences and measures of sustained differences in performance among firms are explored (Barney, 1991). Whether or not *firm autonomy* antecedents are due to strategic factors, the organizational structure, human resources practices, organizational culture or a combination of these or other factors must be formally explored and analyzed in subsequent papers combining quantitative and qualitative approaches.

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Figure 1. Antecedents, Definitions and Outcomes of SCA

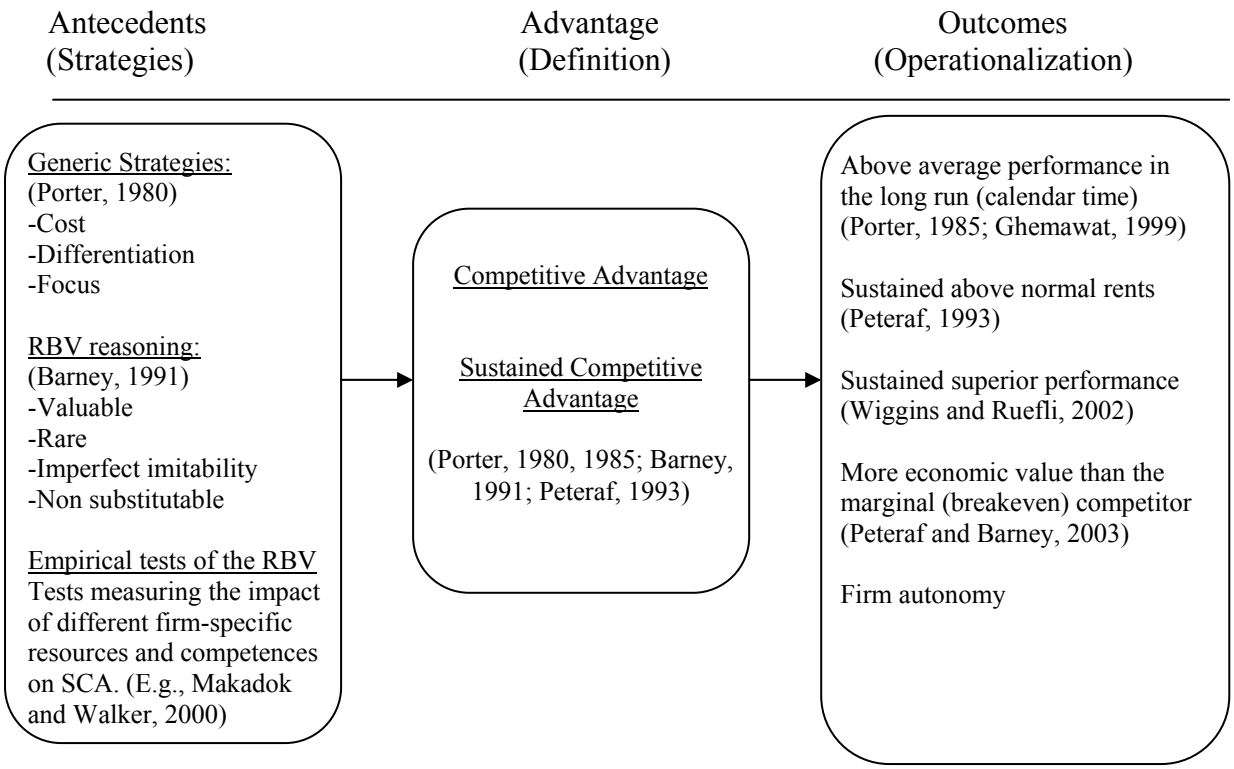


Figure 2. Persistent Superior Performance Along Business Cycles

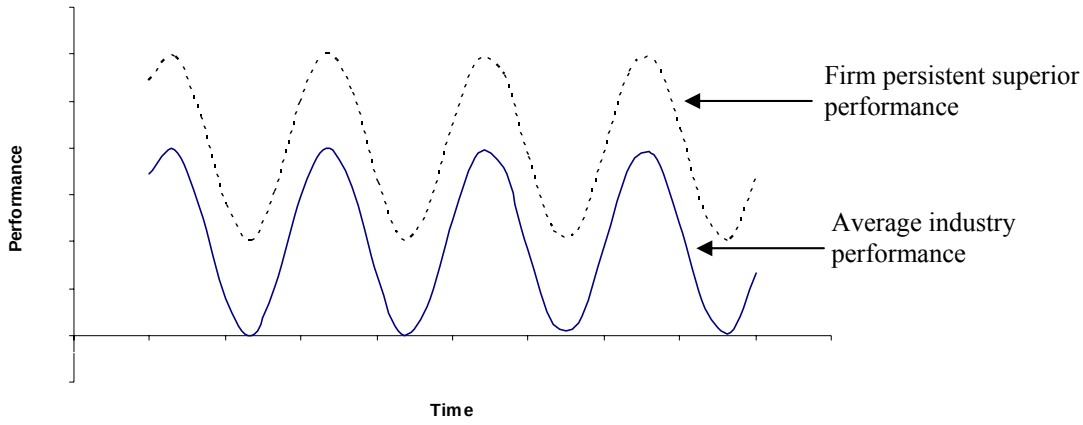
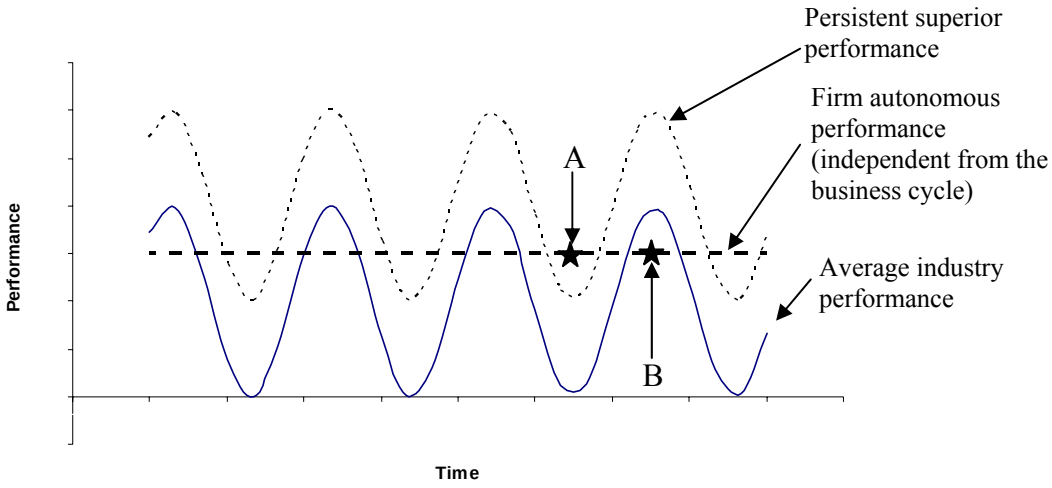
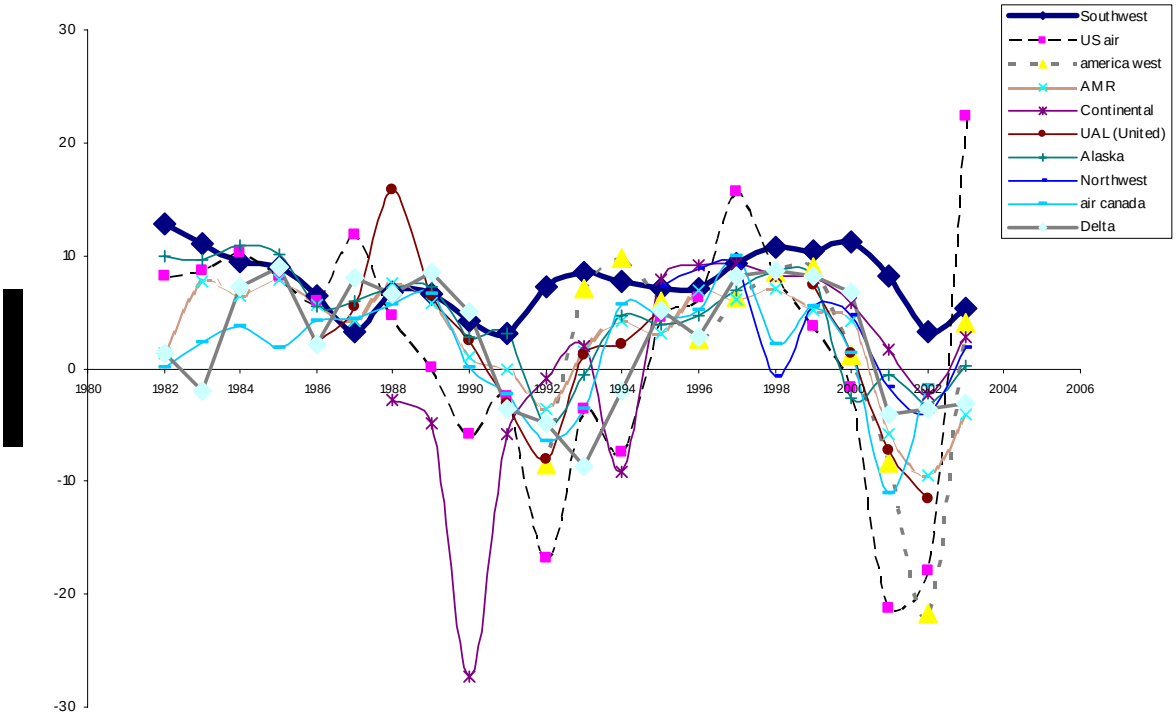


Figure 3. Firm Autonomy



A: Autonomous *and* above average performance
B: Autonomous *and* below average performance

Figure 4. U.S. Airline Industry. ROA Evolution (1982-2002*)



*2003 provisional ROA are included

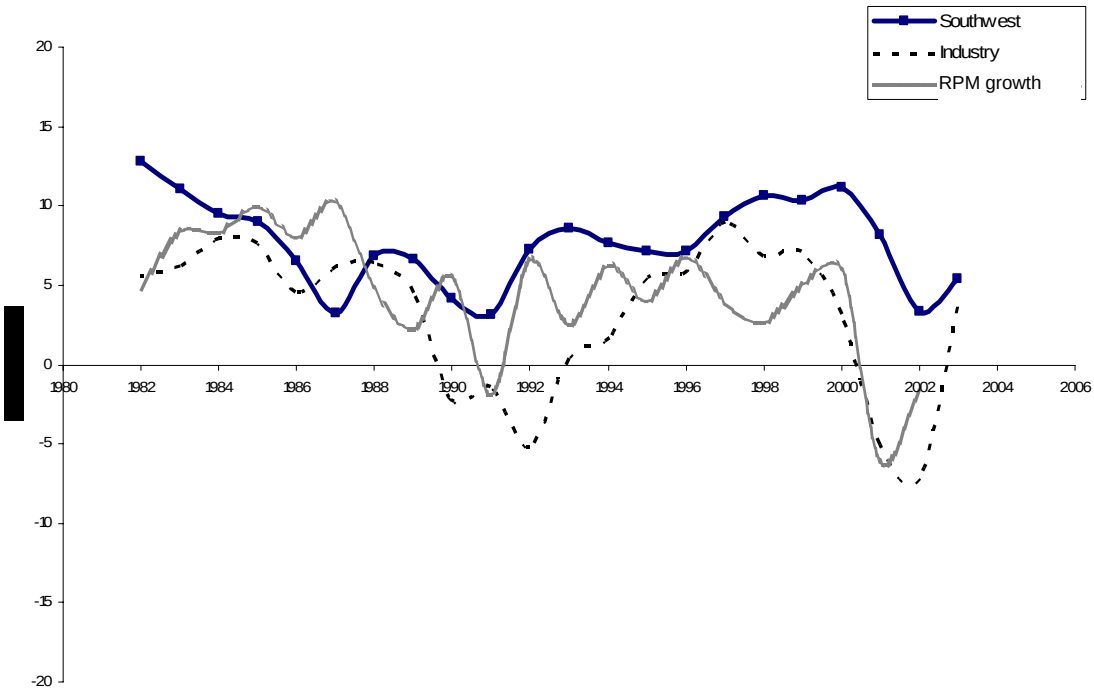


Table 1. Comparison of Top Ten Airlines, (Thompson Financial One, 2002) (in millions)

Company	Southwest Airlines Company	Air Canada Inc	Alaska Air Group Inc	America West Holdings Corp.	AMR (American Airlines)	Continental Airlines Inc	Delta Air Lines Inc	Northwest Airlines Corp.	United Air Lines, Inc.	US Airways Group Inc
Current Sales USD	5,521.77	6,250.61	2,224.10	2,047.12	17,299.00	8,402.00	13,305.00	9,489.00	13,916.00	6,977.00
Current EBITDA USD	884.60	122.17	136.50	-66.42	-1,895.00	149.00	-175.00	-279.00	-1,794.00	-1,305.00
Current EBIT USD	481.99	-113.31	-58.20	-142.32	-3,261.00	-295.00	-1,356.00	-830.00	-2,752.00	-1,600.00
Current Net Income USD	240.97	-858.78	-118.60	-387.91	-3,511.00	-441.00	-1,272.00	-773.00	-3,327.00	-1,646.00
Current Market Cap USD	11,485.63	133.44	719.77	402.51	2,423.68	968.41	1,208.69	960.66	#N/A	238.16
Current Total Assets USD	8,953.75	4,715.00	2,880.70	1,438.95	30,267.00	10,740.00	24,720.00	13,289.00	24,744.00	6,543.00
Current Total Liabilities USD	4,532.13	9,725.00	2,225.00	1,370.78	29,310.00	9,720.00	23,563.00	14,772.00	25,583.00	11,464.00
Current Common Equity USD	4,421.62	-1,550.88	655.70	68.18	957.00	760.00	893.00	-2,262.00	-841.00	-4,921.00
Net Cash & Equiv. CF Stmt USD	-464.51	-509.00	-221.80	178.89	2.00	61.00	-241.00	-415.00	-786.00	-8.00
Free Cash Flow Per Share USD	0.25	-1.25	-1.83	-2.27	-19.08	-7.46	-10.94	-18.19	#N/A	-14.84
1982-2003 ROA Average	**7.7%**	**1.8%**	**4.4%**	**1.3%**	**2.9%**	**0.1%**	**2.5%**	**3.4%**	**1.4%**	**1.9%**
1982-2003 ROA Std. Deviation	**2.7%**	**4.8%**	**4.6%**	**9.5%**	**4.8%**	**9.3%**	**5.6%**	**4.7%**	**7.1%**	**10.9%**
Number of Years	**22**	**21**	**22**	**12**	**22**	**16**	**22**	**9**	**14**	**22**
Market Share U.S. Market (RPM) – 2005	**10.8%**	**-**	**2.5%**	**4.0%**	**15.8%**	**7.2%**	**12.9%**	**7.3%**	**11.8%**	**5.1%**

Table 2. Correlation Matrix, ROA U.S. Airline Industry (1982-2002)

Variable	Mean	Std.	1	2	3	4	5	6	7	8	9	10	11	12
1. Southwest	7.67	2.72	1.0000											
2. US Airways	1.92	10.8	0.2233	1.0000										
3. America West	1.32	9.47	0.6178	0.6784	1.0000									
4. AMR	2.88	4.82	0.4335	0.5930	0.8370	1.0000								
5. Continental	0.10	9.33	0.6093	0.3844	0.3439	0.2218	1.0000							
6. United	1.43	7.11	0.2170	0.8158	0.9364	0.9131	0.0219	1.0000						
7. Alaska	4.44	4.63	0.3960	0.6357	0.7163	0.7657	0.1208	0.8057	1.0000					
8. Northwest	3.42	4.72	0.3470	0.5829	0.6709	0.7394	0.8206	0.9661	0.4713	1.0000				
9. Canada	1.82	4.82	0.0957	0.7523	0.6047	0.7459	0.1893	0.7673	0.6158	0.7657	1.0000			
10. Delta	2.52	5.56	0.2141	0.4918	0.4462	0.6689	0.1683	0.7119	0.6144	0.5880	0.6931	1.0000		
11. Industry ROA	3.26	4.68	0.4769	0.8656	0.8437	0.8591	0.4949	0.8978	0.8135	0.7811	0.7812	0.7027	1.0000	
12. RPM % growth	4.56	4.02	0.2007	0.6128	0.5435	0.6635	0.0046	0.5056	0.4347	0.7817	0.5335	0.4362	0.6003	1.0000

Table 3. Exposure and Intensity in the U.S. Airline Industry (1982-2002), ROA

	Industry performance indicator (ROA)				**Industry activity indicator (RPM, % growth)**			
Airline	***Exposure*** ($\mathcal{E}$)	***F-test***	***Intensity*** (I)	***t-test***	***Exposure*** ($\mathcal{E}$)	***F-test***	***Intensity*** (I)	***t-test***
Southwest	0.23	5.883	0.28	2.426	0.04	0.797	0.14	0.893
p-value		0.025		0.025		0.383		0.383
US Air	0.75	59.784	2.01	7.732	0.38	11.427	1.54	3.380
p-value		0.000		0.000		0.003		0.003
America West	0.71	24.683	1.49	4.968	0.30	3.773	1.36	1.943
p-value		0.001		0.001		0.084		0.084
AMR	0.74	56.343	0.88	7.506	0.44	14.939	0.77	3.865
p-value		0.000		0.000		0.001		0.001
Continental	0.25	4.544	0.93	2.132	0.00	0.000	0.01	0.017
p-value		0.051		0.051		0.987		0.987
UAL (United)	0.81	49.817	1.33	7.058	0.26	4.121	0.83	2.030
p-value		0.000		0.000		0.065		0.065
Alaska	0.66	39.075	0.81	6.251	0.19	4.425	0.50	2.104
p-value		0.000		0.000		0.049		0.049
Northwest	0.61	10.951	0.66	3.309	0.61	9.427	0.90	3.070
p-value		0.013		0.013		0.022		0.022
Air Canada	0.61	29.758	0.78	5.455	0.29	7.559	0.64	2.749
p-value		0.000		0.000		0.013		0.013
Delta	0.49	19.502	0.84	4.416	0.19	4.465	0.60	2.113
p-value		0.000		0.000		0.048		0.048

Table 4. Sources of Firm Autonomy Mechanisms Discussed in the Literature

Source of autonomy	Main features	Authors	Academic discipline
Environmental buffering	-Technological seal off	-Thompson (1967)	Organization theory
	-Organizational slack	-Cyert and March (1963)	
	-Loosely couple structures	-Weick (1976); Meyer and Rowan (1978)	
Commitments	-Commitment and distinctive competence	-Selznick (1957)	Strategic management
	-Committed competition and mobility barriers	-Caves and Porter (1977)	
	-Pre-commitments of resources	-Caves (1984)	
	-Persistence of strategies over time; path dependence	-Ghemawat (1991)	
	-Governance inseparability	-Argyres and Liebeskind (2000)	
Isolating mechanisms	-Sunk costs, switching costs, idiosyncratic investments, causal ambiguity…	-Rumelt (1984,1987)	
Human capital	-Responsiveness to environmental changes	-Wright, McMahan and McWilliams (1994)	Human resources management (HRM)