Supplying for champions: A winning strategy?

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Abstract

Through the analysis of a Formula One Drivers' Championship win's financial impact to official, engine and tyre suppliers, this study contributes to the assessment of firms' sports sponsorship return on investment (ROI). Event studies were conducted over 52 cases (24 engine and 28 tyre suppliers) within 35 championships. Contrary to initial expectations, results demonstrated no positive return for engine suppliers, with the same holding true for 26 analysed tyre suppliers. For proprietary teams, however, significantly positive returns were detected in two subsequent years. Further analysis also suggests no impact of supplier category, geographical provenience and proprietary teams' participation on returns.

Keywords: Sports sponsorship, buyer-supplier relationship, event study

Introduction

Although Sport Management stands for a well-grounded field of study (Lecture, 2001), many questions around the link between companies and sports are still nebulous. The analysis of the interface between the management of the interests of customer-oriented organizations and those of performance-oriented within sports competition (e.g. professional Formula One teams) may contribute to such agenda. If, by one side, firms' communication via sports sponsorship is seen as an effective strategic tool (Shank and Lyberger, 2014), from a more rationalist prospect, it may also represent an additional source of risk for the building of stakeholders' perception and evaluation (Crompton, 2015). Depending on myriad aspects such as appropriate event-sponsor fit (Close and Lacey, 2013; Koo *et al.*, 2006), different types of audience (Herrmann *et al.*, 2016), performance level of the sponsored (Crompton, 2015; Jensen, 2012) or even ethical assessment around corporate social responsibilities demanded from companies (Lamont *et al.*, 2011), results of sponsorship to firms may considerably vary. Such outcomes might also fluctuate from the framing of positive corporate images (Grohs and Reisinger, 2014) and enhanced consumption (Kelly *et al.*, 2016), until severe damages to the assessment of brands following eventual negative spillovers (Schnittka *et al.*, 2013), for instance.

As discussed by Jensen and Cobbs (2014:5), congruent dimensions partnered by two brands such as a sponsor and a team "intensify the cognitive network of associations in the mind of the sponsorship audience". From this perspective, few sponsorships arrangements may be argued to offer stronger congruence than that of official supplying. In the case of the official suppliers analyzed in the present study, this dimension might be

even stronger as "the internal combustion engine has always been the beating heart of a Formula One car" (Formula One, 2016b), while "tyres are still a race car's biggest single performance variable" (Formula One, 2016a).

Despite anecdotal evidences on the benefits of such relation to suppliers are plentiful (e.g. Mukai and Hagiwara, 2013; Nobel, 2013), empirical ones are still lean. Through the assessment of the effect of a F1 Drivers' Championship winning on the market value of official suppliers (i.e. engine and tyre suppliers), the present study offers empirical data on the immediate financial outcomes of this pointful but still not well explored supplier sponsorship relation. The objective of the study is then represented by the following research questions: (i) *Does winning a F1 Drivers' Championship positively affect the market value of official suppliers?;* and (ii) *Do factors such as enhanced television audience, the geographic origins of suppliers and the match between official supplier and F1 team (i.e. as they belong to two different companies or to the same one) influence such effect?*

Literature Review

Sports Marketing and Sponsorship

From a broad perspective, sports marketing may comprehend those ranges of practices destined to interconnect brands and products to the wide public of sports. Shank and Lyberger (2014:5) define it as "the specific application of marketing principles and processes to sport products and to the marketing of non-sports products through association with sports". In this sense, more than a strategic communication tool (Parganas *et al.*, 2015), due to the links it promotes between different sorts of industries (e.g. manufacturing, tourism, education and technology), sports marketing may be seen as an important economic catalyst (Ratten, 2016).

From this prospect, sports sponsorship is argued to promote sponsors' awareness (Cornwell and Relyea, 2000), also comprehending an effective way to capture target markets (Harmeling and Carlson, 2016), to enhance consumption (Kelly *et al.*, 2016) and to influence the quality of brand relationship (Do *et al.*, 2015). Nevertheless, as discussed, depending on the performance level of the sponsored, the eventual conduction of disreputable behavior or the poor presentation of events, sponsorship may also represent a potential risk factor to firms' image (Crompton, 2015). The fit between a given sponsoring brand and the sport in question are likewise pointed as influential in the unfolding of desired sponsorship outcomes, such as brand awareness and image building (Pappu and Cornwell, 2014). F1 may then be understood as a critical sponsorship channel, not only for automakers, but also for any company directly or indirectly linked to the automobile industry.

Links between Positive Reputation and Market Value Reaction

As pointed by Sylt (2012), F1 has been a "playground" for car manufacturers such as Ferrari, Alfa Romeo and Maserati since its very first race in 1950. Still according to the author, the category experienced a severe acceleration on financial investments in engine development in the late 1990's, as car manufacturers consolidated the idea around the marketing potential of the eventual success in F1. In this way, winning in the sport would lead to a higher exposure of their cars, presumably translating into increased sales. From this reasoning, F1 success may be seen as contributing to the building of positive corporate reputations among customers. Within the Management literature, the link between corporate reputation issues and investors' reaction has been assessed by Pfarrer *et al.* (2010). Moreover, positive corporate reputation would be linked to the practice of

higher prices and profitability (Benjamin and Podolny, 1999), variables that shall be incorporated into stock prices as shareholders evaluate their investment decisions.

On what relates to the mechanisms through which market value reflects information into the price of securities, the work of Fama *et al.* (1969) on the adjustment of stock prices to new information and Fama (1970) on the nature of markets may be particularly useful. Accordingly, efficient markets are those that immediately reflect news around companies, comprehending what came to be known as the efficient-market hypothesis – EMH (Fama, 1970). Under the premises of its semi-strong form, once stock markets recognize news that shall affect the evaluation around companies, stock prices shall immediately reflect the financial impact of those news, bringing the price of securities to their fair level. The following section summarizes the main points presented in this literature review, as they lead to the formulation of the hypotheses to be tested in the study.

Hypotheses of the study

H1: Winning a F1 Drivers' Championship increases the market value of official suppliers.

H1a: Winning a F1 Drivers' Championship increases the market value of engine suppliers.

H1b: Winning a F1 Drivers' Championship increases the market value of tyre suppliers.

H2: The effect of winning a F1 Drivers' Championship in the market value of official suppliers is higher after than before the early 1980s.

H2a: The effect of winning a F1 Drivers' Championship in the market value of engine suppliers is higher after than before the early 1980s.

H2b: The effect of winning a F1 Drivers' Championship in the market value of tyre suppliers is higher after than before the early 1980s.

H3: The effect of winning a F1 Drivers' Championship in the market value of European official suppliers is higher than that of Asians, which is higher than that of Americans.

H3a: The effect of winning a F1 Drivers' Championship in the market value of European engine suppliers is higher than that of Asians, which is higher than that of Americans.

H3b: The effect of winning a F1 Drivers' Championship in the market value of European tyre suppliers is higher than that of Asians, which is higher than that of Americans.

H4: The effect of winning a F1 Drivers' Championship in the market value of proprietary teams is higher than that of engine suppliers.

H5: The winning of a F1 Drivers' Championship is anticipated by investors of official suppliers (i.e. is reflected in the market value of firms before the final mathematical definition of the championship).

H5a: The winning of a F1 Drivers' Championship is anticipated by investors of engine suppliers.

H5b: The winning of a F1 Drivers' Championship is anticipated by investors of tyre suppliers.

Method

Event Study

Measure of abnormal returns. Abnormal returns are defined as the difference between the actual return of a given security and the one that would be expected if the event of

interest had not occurred. This last one is also called normal return (Campbell *et al.*, 1997). While actual returns are calculated from the stock market data after the event, a model must be chosen to calculate the estimated normal returns. The market model proposed by Fama (1970) is the most employed and generally accepted method in this sense (Agrawal and Kamakura, 1995). As discussed by MacKinlay (1997:15), "the market model assumes a stable linear relation between the market return and the security return". Accordingly, for any given security *i*, the market model is represented by the following equation:

$$r_{it} = \alpha_i + \beta_i r_{mt} + \varepsilon_{it} \quad (1)$$

With:

$E(\varepsilon_{it}) = 0$ and var $(\varepsilon_{it}) = \sigma^2_{\varepsilon it}$

Where: r_{it} = return on security *i* on period *t*, r_{mt} = return on the market portfolio on period *t*, ε_{it} = zero mean disturbance term, α_i, β_i and $\sigma^2_{\varepsilon it}$ = parameters of the market model (intercept of the function for the returns of stock *i*, the slope of the relationship between the returns of stock *i* and the market return and the variance of the zero mean disturbance term respectively).

Estimation window. For the present study, an estimation window of 200 days previous to the event was considered.

Calculation of the parameters. The parameters of the model are estimated through ordinary least square regression as, under general conditions, it represents a consistent procedure for the parameters of the model (MacKinlay, 1997).

Calculation and aggregation of abnormal returns. Abnormal returns are calculated for each firm of the sample for each day within the event window as follows:

$$AR_{it} = r_{it} - E(i,t) \quad (2)$$

Where:

r_{it} = actual return of stock *i* on day t, E(i,t) = normal return,

The abnormal returns are then aggregated into cumulative abnormal returns (CAR). CARs allow for the assessment of the effect of one specific event to one specific firm, being calculated according to equation 3 below:

$$CAR_T = \sum_{t=1}^{T} AR_t \quad (3)$$

The extension of the analysis from single firms to the whole sample is made through the calculation of average abnormal returns (AARs) and cumulative average abnormal returns (CAARs). That allows the assessment of the general effect of the event of interest through the whole sample. From this view, AARs refers to the average daily abnormal returns of the whole sample. From the sum of the calculated AARs results the cumulative average abnormal returns (CAARs) for all the event windows analyzed. The calculation formulas for AARs and CAARs are presented next in equations 4 and 5, respectively:

$$AAR_T = 1/T \sum_{t=1}^{T} AR_t \quad (4)$$

$$CAAR_{(1,T)} = \sum_{t=1}^{T} AAR_t \quad (5)$$

Multivariate Regression

Additionally, multivariate regression was conducted in order to test for the impact of supplier category (i.e. engine or tyre, hypotheses H1a and H1b), higher audience (hypotheses H2, H2a and H2b), supplier geographic origin (hypotheses H3, H3a and H3b) and proprietary teams (hypothesis H4) on the CARs. Similar to Reiser *et al.* (2012), resulting CARs were input as the dependent variable for the regression model, and dummy variables were created for differentiation between engine and tyre suppliers, between championships before and after 1982, suppliers originating in the US, Europe or Asia, and proprietary teams *versus* official supplying relationship.

Results

Table 1: Calculated AARs and CAAR on the General Effect for Official, Engine and Tyre Suppliers

	Event Window	AAR	t-stat	CAAR	t-stat CAAR
Official Suppliers	D2	0,04%	0,0231	-0,31%	-0,0646
	D1	-0,37%	-0,1791		
	D0	0,15%	0,0605		
	D-1	-0,65%	-0,3187		
	D-2	0,53%	0,2292		
Engine Suppliers	D2	-0,33%	-0,2618	-0,54%	-0,1310
	D1	-0,72%	-0,4084		
	D0	-0,04%	-0,0253		
	D-1	-0,09%	-0,0719		
	D-2	0,65%	0,2301		
Tyre Suppliers	D2	0,28%	0,1650	-0,15%	-0,0286
	D1	-0,13%	-0,0583		
	D0	0,28%	0,0956		
	D-1	-1,03%	-0,4348		
	D-2	0,45%	0,2302		

Table 2: Calculated CARs for the 19 individual Engine events and 28 individual Tyre events

Engine Suppliers				Tyre Suppliers			
Event – Year	**CAR**	**t-stat**		**Event – Year**	**CAR**	**t-stat**	
Event 1 – 1973	2,33%	0,9458		Event 22 – 1971	3,91%	1,3191	
Event 2 – 1974	-14,90%	- 5,9193	*	Event 23 – 1973	-1,36%	-0,3880	
Event 3 – 1976	1,24%	0,5284		Event 24 – 1974	1,28%	0,2903	
Event 4 – 1978	0,80%	0,3939		Event 25 – 1975	0,34%	0,1065	
Event 5 – 1980	-6,77%	-1,4236		Event 26 – 1976	0,84%	0,3228	
Event 6 – 1981	-4,98%	-1,2498		Event 27 – 1977	-1,13%	-0,4778	
Event 7 – 1982	-1,34%	-0,3230		Event 28 – 1978	-0,47%	-0,1875	
Event 8 – 1987	1,81%	0,3208		Event 29 – 1980	-4,57%	-1,3073	
Event 9 – 1988	-3,12%	-0,6953		Event 30 – 1982	-11,68%	-3,0132	*
Event 10 – 1989	1,10%	0,3416		Event 31 – 1985	1,99%	0,7509	
Event 11 – 1990	-2,97%	-0,7333		Event 32 – 1986	11,51%	2,9009	*
Event 12 – 1991	0,99%	0,2560		Event 33 – 1987	-6,92%	-1,4762	
Event 13 – 1994	1,40%	0,4030		Event 34 – 1988	0,57%	0,1913	
Event 16 - 2008	9,66%	1,5834		Event 35 –1989	-9,48%	-3,0592	*
Event 17 - 2009	6,22%	1,5134		Event 36 – 1990	0,89%	0,1902	
Event 18 - 2010	0,98%	0,2653		Event 37 – 1991	4,73%	0,9272	
Event 19 - 2011	4,11%	1,1059		Event 38 – 1992	1,37%	0,3514	
Event 20 - 2012	-1,28%	-0,3428		Event 39 – 1993	-2,00%	-0,5225	
Event 21 - 2013	-5,56%	-1,4213		Event 40 – 1994	0,05%	0,0166	

Event 41 – 1995	-0,33%	-0,1087	
Event 42 – 1996	0,79%	0,2840	
Event 43 – 1997	-6,39%	-2,3813	**
Event 44 – 2005	5,53%	2,0483	**
Event 45 – 2006	4,13%	1,3180	
Event 46 – 2007	-2,00%	-0,5214	
Event 47 – 2008	0,35%	0,0486	
Event 48 – 2009	-0,13%	-0,0204	
Event 49 – 2010	4,10%	0,9279	

Notes: *Statistically significant at 99% significance level
**Statistically significant at 95% significance level

Table 3: Calculated AARs and CAAR until and after early 80's for Official, Engine and Tyre Suppliers

	Event	Until 1982		After 1982		Until 1982		After 1982	
	Window	AAR	t-stat	AAR	t-stat	CAAR	t-stat CAAR	CAAR	t-stat CAAR
Official Suppliers	D2	-0,47%	-0,305	0,30%	0,196	-2,28%	-0,5238	0,71%	0,1470
	D1	-0,75%	-0,317	-0,18%	-0,092				
	D0	0,24%	0,108	0,10%	0,039				
	D-1	-0,72%	-0,447	-0,62%	-0,273				
	D-2	-0,58%	-0,311	1,10%	0,470				
Engine Suppliers	D2	-0,52%	-0,315	-0,22%	-0,212	-3,37%	-0,881	1,11%	0,283
	D1	-0,86%	-0,320	-0,64%	-0,592				
	D0	-0,49%	-0,442	0,22%	0,115				
	D-1	-0,08%	-0,089	-0,10%	-0,066				
	D-2	-1,42%	-0,878	1,85%	0,691				
Tyre Suppliers	D2	-0,43%	-0,277	0,62%	0,362	-1,43%	-0,3048	0,46%	0,0865
	D1	-0,66%	-0,295	0,12%	0,052				
	D0	0,80%	0,293	0,03%	0,010				
	D-1	-1,21%	-0,641	-0,94%	-0,361				
	D-2	0,08%	0,042	0,63%	0,307				

Table 4: Calculated AARs and CAARs for European, Japanese and American Official, Engine and Tyre Suppliers

	Event	European		Asian		American	
	Window	AAR	t-stat	AAR	t-stat	AAR	t-stat
Official Suppliers	D2	-0,04%	-0,0229	-0,11%	0,248	0,10%	0,0637
	D1	0,20%	0,1509	-0,01%	-1,343	-0,63%	-0,3097
	D0	0,42%	0,1972	-0,04%	-0,071	0,13%	0,0490
	D-1	-0,06%	-0,0368	-1,48%	-0,082	-0,56%	-0,3162
	D-2	2,45%	0,8131	1,65%	0,662	-0,32%	-0,2002
		CAAR	t-stat	CAAR	t-stat	CAAR	t-stat
		2,97%	0,0451	0,01%	0,0023	-1,28%	-0,2874
	Event	European		Asian		American	
	Window	AAR	t-stat	AAR	t-stat	AAR	t-stat
Engine Suppliers	D2	-0,47%	-0,333	0,08%	0,248	-0,48%	-0,309
	D1	0,02%	0,034	-1,47%	-1,343	-0,82%	-0,328
	D0	0,41%	0,165	-0,10%	-0,071	-0,35%	-0,320
	D-1	-0,14%	-0,077	-0,12%	-0,082	-0,04%	-0,049
	D-2	2,54%	0,724	1,16%	0,662	-1,09%	-0,617
		CAAR	t-stat	CAAR	t-stat	CAAR	t-stat
		0,477	-0,44%	-0,153	-2,78%	-0,752	2,36%
	Event	European		Asian		American	
	Window	AAR	t-stat	AAR	t-stat	AAR	t-stat
Tyre Supp	D2	1,28%	0,8375	-0,11%	-0,0600	0,31%	0,2015
	D1	0,74%	0,2391	-0,01%	-0,0052	-0,56%	-0,2948
	D0	0,43%	3,0081*	-0,04%	-0,0197	0,31%	0,0986

	D-1	0,19%	0,1841	-1,48%	-0,4880	-0,75%	-0,3769
	D-2	2,20%	1,5032	1,65%	0,6634	-0,03%	0,0233
		CAAR	**t-stat**	**CAAR**	**t t-stat**	**CAAR**	**t-stat**
		4,83%	1,2413	0,01%	0,0023	-0,73%	-0,1560

Note: *Statistically significant at 99% significance level

Table 5: Event Study Results for the Joint and Individual Analysis of Championship Wins from Proprietary Teams

	Event Window	**AAR**	**t-stat**	**CAAR**	**t-stat CAAR**
Joint Analysis	D2	0,35%	0,2398	1,20%	0,580
	D1	0,08%	0,2315		
	D0	0,45%	0,5953		
	D-1	0,04%	0,0799		
	D-2	0,28%	0,2573		
	Year	**CAR**	**t-stat**		
Individual Analysis	2005	3,48%	1,847***		
	2006	4,51%	1,656***		
	2014	0,37%	0,241		
	2015	-0,13%	-0,076		
	2016	-2,25%	-1,2475		

Note: *** Statistically significant at 90% significance level

Table 7: Potential anticipated reaction for engine suppliers

	F1 Season	**Race**	**CAR**	**t-stat**	
Engine Suppliers	1980	9th	11,92%	2,6791	*
	1981	1st	11,56%	2,6923	*
	1990	2nd	8,30%	2,7430	*
	1994	8th	10,08%	3,2388	*
	2006	4th	7,16%	2,7597	*
	2013	5th	10,51%	2,7359	*
	2014	16th	4,61%	3,1746	*
Tyre Suppliers	1978	11th	7,26%	3,0440	*
	1986	6th	9,08%	3,0613	*
	1991	5th	18,59%	3,1184	*
	2006	4th	7,16%	2.7597	*

Note: * Statistically significant at 99% significance level

Table 8: Regression Results

Source	**SS**	**df**	**MS**	Number of obs	52
Model	.019267968	8	.002408496	F(4,47)	1.09
Residual	.094959597	43	.002208363	Prob>F	0.3881
Total	.114227565	51	.002239756	R-squared	0.1687
				Adj R-squared	0.0140
				Root MSE	.04699

CAR	**Coef.**	**Std.Err.**	**T**	**P>|t|**	**[95% Conf.**	**Interval]**
Supplier category	.0295938	.0834572	0.35	0.725	-.1387137	.1979013
Before/After 1982	.0477429	.0502379	0.95	0.347	-.0535715	.1490572
Geogr. Origin	-.02793	.0284558	-0.98	0.332	-.0853166	.0294566
Proprietary Team	.01159	.0284558	0.41	0.686	-.0457966	.0689766
Supplier category * Before/After 1982						
0 1	-.0359531	.0542134	-0.66	0.511	-.1452848	.0733786
1 0	0	(omitted)				
1 1	0	(omitted)				
Supplier category * Geogr. Origin						
0 2	.0806069	.0456485	1.77	0.085	-.0114521	.172666

0 3	.0641369	.0629357	1.02	0.314	-.0627849	.1910588
1 1	-.03748	.064205	-0.58	0.562	-.1669616	.0920016
1 2	0	(omitted)				
1 3	0	(omitted)				
_cons	-.0095167	.0531206	-0.18	0.859	-.1166445	.0976112

Discussion and Conclusion

Despite the relevance of F1 and motorsport as a whole, academic research around the link between sponsorship and the measurement of its results in the sport is still incipient. The further comprehension of the motivations and consequences of management decisions within this environment may offer valuable and unique opportunities for practitioners and scholars also related to other international competitions. On what regards the former, the study of the variables that contribute to value creation (and destruction) in motorsports may allow firms to better evaluate the use of their resources in several strategic areas such as advertising, R&D and operations management in general.

On what concerns scholars more specifically, considering the relevant level of financial investments, the number of firms involved, the high operational complexities and the great attention that F1 receives from its fans, it may be seen as a profitable and worthy environment for academic research, as it may work as a *microcosm* of business reality. Studies that search to extend the current knowledge around the expected results of sports sponsorship may offer new insights for business practices, and shall then be encouraged.

In that sense, through the assessment of market value variations, the present study proposed the analysis of the official supplying sponsorship involving F1 teams and their engine and tyre suppliers. Based on a literature review around sports marketing and sponsorship, the media reach of Formula One, the effectiveness of official supply as a powerful image building mechanism and the link between success in the sport, corporate reputations and the reaction of investors to new information, F1 Drivers' Championship winnings are hypothesized as positively affecting the market value of official suppliers. Four additional hypotheses are also proposed, encompassing the possible difference in investors' perception around the higher audience of the sport, the geographic origin of suppliers, the distinction between suppliers and proprietary teams, as well as the possibility of anticipations throughout the season. In order to answer the research questions, the event study method was discussed and applied in the analysis of the market value variation due to the results of 35 F1 Drivers' Championships. The analyses were conducted through the aggregation of abnormal returns for both individual firms and the totality of each sub-sample considered. Additionally, a regression model assessed for the impact of each of the factors into the resulting CARs, as results suggest no significant effect.

Our findings show that, with the exception of two tyre suppliers in two seasons (1986 and 2005), no statistically positive returns were observed for official suppliers in any situation. In turn, we found partial corroboration for Hypothesis H4, as two events demonstrated significantly positive returns to proprietary team Renault in 2005 and 2006. Despite not confirming Hypotheses H1, H2 and H3, and only partially confirming Hypothesis H5, through the employment of the event study method, the investigation adds to the technical apparatus of alternative manners to measure the value of sports sponsorship, and more specifically the expected or observable return on such investments to firms. Moreover, the multidisciplinary approach presented contributes to the interpretation of the interactions between sports teams and companies within more conventional buyer-supplier relationships. Beyond subscribing to the sports marketing and sponsorship literatures *per se*, the study also adds to the developments around

operations management research. Additionally, the study contributes to the building of the comprehension on the outcomes of a buyer-supplier relationship in sports, as it offers empirical evidences on the issue. Hence, the answer to the research question proposed – *Does winning a F1 Drivers' Championship positively affect the market value of official suppliers?* – is NO, as, in face of the results found, the null hypothesis may not be rejected. Around our second research question – *Do factors such as enhanced television audience, the geographic origins of suppliers and the match between official supplier and F1 team (i.e. as they belong to two different companies or to the same one) influence such effect?* – results suggest that only the last factor may possibly exercise some influence. Further studies are certainly necessary to clarify the issue.

This research counts on limitations that shall be explored in future developments. The central points identified are discussed in the next session.

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