

IS THE TOBIN'S Q A GOOD INDICATOR OF A COMPANY'S PERFORMANCE?

ANTONIO CARLOS AIDAR SAUAIA
UNIVERSIDADE DE SÃO PAULO
ASUAIA@USP.BR

FRANCISCO HENRIQUE FIGUEIREDO CASTRO JUNIOR
UNIVERSIDADE DE SÃO PAULO
HCASTRO@USP.BR

ABSTRACT

The Tobin's q was discussed as a new parameter for the TE - Total Enterprise simulations. The value of the Tobin's q for each simulated company was used as a proxy of company's performance and compared to the other seven past performance indicators in the game (The MMG). Just like in entrepreneurial reality, the hypothesis was proven that companies with a high performance exhibited at the end of ten rounds a higher value for the Tobin's q than those with a poor performance. In addition to portraying past events, as takes place with most performance indicators (sectorial multiples), the Tobin's q demonstrates aspects of the companies' future tendencies.

INTRODUCTION

Belonging to a context that privileges experiential learning, the business games may be viewed as facilitators of the teaching and learning process. In this type of activity the participant (player) acts like a strategist transforming the data, he receives about the game's environment and making decisions that will affect the future results of the company.

According to Carl Rogers (1969:137-9), most of the consequential learning is acquired by means of action. The practical experiencing of problems enables the student to be involved in a teaching environment in which he himself is in charge of the learning. To this, Rogers has given the name of *significant learning* that comprises the entire person bringing about deeper cognitive and affective changes. In the vision of Sauaia (1997:13), the student or professional who is preparing himself to act as an administrator is liable to demands that challenge him in two ways:

(a) Acquire technical knowledge to exercise the administration-science and continuously increase its basis of cognitive learning;

(b) Develop technical and behavior capabilities in the use of knowledge, practice the administration – art, interact affectionately and emotionally with persons in his work group and create an environment of satisfaction.

Business games play an important role in the transmission of these concepts to the future manager, as they promote experiential learning (Sauaia, 1997:14). It is important to stress that the Games are based on models and as such are simplifications of the complex rules of the real market. In them, a high level of realism can be portrayed, but being a game, there are limitations. Teixeira (1982:5) recommends that games should not be used for the evaluation of the executives' or students' performance without having ascertained the correlation between the success of the game and success in managing a real organization. Nevertheless, he believes that the business games are a valuable way to observe potentialities and probable performances. In these games, participants are given an opportunity to use the acquired knowledge and, as it is a simulation, they may dare to learn, reducing, through simulation, the risks they would incur to act in real life.

In a former article (Sauaia, 2001) the use of new performance evaluation criteria during simulation was discussed, based upon financial and non-financial indicators. The aspects discussed here included: the business Games as tools for managerial education; the main characteristics of the game utilized in this experiment: the scenario, the decisions, the results and the performance evaluation criteria utilized in the simulations; the possible uses of the Tobin's q as a performance indicator from the investors point of view; the methodology used in the experiment; the results of the experiment, submitted and discussed and, finally, the conclusions showing how the Tobin's q can contribute and add understanding to simulation as an indicator of the value of the firm and performance of the administration (past and future), in an attempt to combine sectorial multiples relating to several dimensions in one single measure.

BUSINESS GAMES

The source of business games was war games, vastly used in training of military for the combat strategy. Adapted for the administrative environment, these simulations have been perfected over the years and, today, are as

Developments in Business Simulation and Experiential Learning, Volume 29, 2002

sophisticated as the computer resources allow for. Today, they have an extremely dynamic nature, attempting to reflect the actual business conditions.

Just as in the case of war games, the purpose of the business games has from the start been to involve the participants in an environment of training directed towards the significant learning proposed by Rogers, achieving the avoidance of mistakes that could be fatal if made in a real environment. Sauaia (1997:14) states that business games permit to put in command of the enterprises "beginner that experiment and experience the managerial process, who can make mistakes of million of dollars without being fired by the shareholders, but making them learn with their mistakes and avoid them in the real companies".

The business games are a tool intensely used (Almeida, 1998; Sauaia, 1997; Sanvicente et al, 1993; Wolfe, 1985), in the teaching of administration and in the training of executives. In the interactive games, the dynamic connotation leads to the fact that the actions taken by the companies involved in the game influence their entire panorama, affecting the results of the market and therefore of the competitor companies. Martinelli (1987) states that business games are essentially directed towards proportioning to those participating in the simulation a hypothetical entrepreneurial environment, in which they can exercise the art of planning, exercise and develop the capability of decision making at the higher management level, as a preparation and training for their future professional activity.

According to Sauaia (1996), simulated entrepreneurial environments permit to encompass all functional areas of an organization, permitting technical and behaviorist problems to be simultaneously handled in an interactive manner. For managerial education, Sauaia advocates the use of simulations, as they are an efficient way to meet the following education objectives:

- (a) Retrieve the systemic nature of the organizations, integrating the knowledge acquired in the course;
- (b) Develop a critical attitude, vital in decision-making;
- (c) Include the external environment in the managerial concerns; and
- (d) Stimulate the transposition of learning to different types of problems in the professional reality.

One of the important issues of using business games in the teaching of administration or in the training of executives rests upon what Rogers called the "person-centered approach". In this approach the professor participates as a facilitator of learning and not as in the traditional manner in which he states what is right and what is wrong and points to what is important for the learning.

In the experiential approach, the student is led to learn what is important through his own experiences, which renders learning more lasting. Never, did Rogers recommend that the participation of teachers should be wanting, but that they act to orient in the learning process, quite different from the process of teaching. In the learning process, the professor leads the student to learn in a friendly

environment. He forsakes directive instruction and takes on the role of facilitator (Sauaia, 1997:14).

Martinelli (1987) outlines the basic points aimed at by the utilization of games. According to him the role of simulation rests upon:

(a) Eliminate psychological blocks, that through the activity of simulation and decision making end up by being partially or totally overcome;

(b) Develop capability indispensable in the day-to-day of an executive, that is to say: (i) ability to abstract, organize and use information in a diffuse and complex context, (ii) ability to foresee and plan, (iii) ability to aggregate the roles of a generalist and a specialist, currently so important for the success of an executive, (iv) ability to work efficiently with other people, of the same hierarchy level, equal, superior or inferior, within the company, as well as with people of the environment outside the company.

(c) Develop the activity of a processor of information, so important in the modern companies, at all levels of hierarchy, but that become increasingly more important when higher positions are attained within the company's organizational chart.

(d) Business games seek to operate like a stimulant to make the executive experiment new ideas.

In addition to the use for didactic aims, business games have numberless applications in the domain of managerial training and in that of research as social sciences laboratory.

THE SIMULATION

For this article's experiment the "MMG - *The Multinational Management Game*" (Keys et al, 1992) was used. The game is a Total Enterprise simulation with an international scope, encompassing three large markets: the North American (domestic market), the European and the Asian markets. Decision takes place in a dynamic environment (economic growth, market retraction, inflation, exchange rates, etc.) in which each company affects the environment as a whole, influencing the market (marketing mix, volume of sales, productivity, cost of capital, etc.)

The game simulates an industry in which are produced and marketed up to two products: a desktop computer (product A) and an expanded memory module (product B). Decisions represent periods of one year in the operation cycle of each company. This way, the dimension of mid-term and long-term strategic planning is stressed, once the decisions cannot be changed during the intended year.

The game attempts to develop the strategic nature of planning. The markets are dynamic and interactive, where decision made by one company affects the results of all the remaining companies in the game. Market variables operate realistically as an outcome of a series of factors such as the prices practiced, advertising and research & development expenses. The market expands or retracts according to the joint strategies of all companies.

Furthermore, each economy exhibits its own inflation rates, taxes and growth perspectives. The company may act

Developments in Business Simulation and Experiential Learning, Volume 29, 2002

in any market of the game, as a manufacturer or merely as an exporter of products. In this game, the students are led to decide on marketing, production, human resources, Finances and business policy issues.

At the end of simulation, students often make an oral presentation, comparing their strategic plans and the results. It permits an analysis of the decisions during the simulation and the deviations with regard to the outlined objectives.

The *MMG*, makes available seven indicators to assess the past performance of those participating in the game. They may be weighed according to the interest of the participants or of the administrator of the simulation. Weighing may be done attributing a maximum weight of 10 (ten) and a minimum weight of 1 (one). Indicators are the following:

i. market-share; ii. return on sales; iii. asset turnover; iv. inventory turnover; v. return on assets; vi. debt to total assets; vii. return on equity.

Any indicator of this simulation, individually or as a whole, may be weighed as a factor of performance evaluation. Concentrate the attention in one single performance indicator may induce participants to adopt similar strategic plans. The focus of the actions in simulated management would be oriented towards maximizing the main indicator. For instance, if only market-share is selected for the evaluation, other indicators such as return on sales, debt to total assets or asset turnover would be ignored by the participants in favor of the chosen indicator. If however, various indicators are selected as measures of performance, this permits that the range of strategic options may be broader and that each company may maximize its results according to different strategies.

Experienced users in the use of educational simulations and management noticed that the motivation factor is greater when the results of the game, up to a certain point, contribute to the evaluation of the students in the course. The ways of the participants' performance evaluation in a business simulation are quite varied. Market share is more important than inventory turnover and debt to total asset? What about return on asset and asset turnover? No matter what weighing is being used, a question still remains: how to balance past performance and future performance when using traditional sectorial multiples for a company evaluation? Tobin's *Q* could be an answer.

THE TOBIN'S Q

By definition, the *Tobin's q* is the ratio between the market value of the firm's assets and the replacement value of its assets. The company's market value is calculated as being the algebraic sum of the market value of the shares (MVS) plus the market value of the debts (MVD), that is to say, the capital owned by the company plus the capital of third parties. The replacement value of the assets (RVA) is given by the "monetary disbursement needed to purchase the production capacity of the company with the most modern technology available for a minimal cost"

(LINDENBERG & ROSS, 1981). "Therefore, the *Tobin's q* may be written following the expression:

$$q = \frac{(MVS + MVD)}{RVA}$$

The most important application of the *Tobin's q* is the use as proxy for the value of the firm. Some studies relate the *Tobin's q* to the ownership structure of the company and to its capital structure. Others discuss the balance between diversification versus focus on the business or even approached issues such as takeovers, mergers and acquisitions.

In this study the evaluation of the administration's performance (managers) will be measured by means of the *Tobin's q* value calculated for simulated companies. A hypothesis will be tested that the "companies with a better performance exhibit a higher *Tobin's q* than companies with a poor performance", in accordance with the parameters of the game in question.

In Economy and Administration, the use of the *Tobin's q* is very widespread, although it is not usual to find theoretical studies about the aspects involving the concepts of its use as a business indicator. According to Famá & Barros (2000:27), the *Tobin's q* has become consolidated as a variable of unquestionable adequacy in different applications be it in theoretical works or in empirical tests. The use of the *Tobin's q* in Economy and Finance permits that researchers study not only the results produced in the companies (past performance) but also point to growth opportunities in accordance to the value of *q* (future performance) in the following areas:

(a) Dividends Policy: empirical evidence showed that there is an impact on the value of the firm, measured by the *Tobin's q*, due to changes in dividends policy (KOCH & SHENOY, 1999);

(b) Capital Investments: the *Tobin's q* was used as an indicator of new profitable investments available for the firm (TOBIN & BRAINARD, 1968; TOBIN, 1969). A firm with a marginal *q* "greater than one, in an efficient market, can increase its market value, undertaking additional capital investments". It may invest in profitable projects until its *Tobin's q* is equal to 1. According to HAYASHI (1982 apud Famá & Barros, 2000: p.28), the marginal *q* is the ratio between the market value of an additional unit of capital and its replacement cost;

(c) Ownership Structure: authors (Shleifer & Vishny, 1998) used the *Tobin's q* in search of relating the value of the firm and its ownership structure;

(d) Capital Structure: the value of the firm measured by the *Tobin's q* was related to the capital structure in search of verifying if changes on capital structure affects its value (McConnell & Servaes, 1995);

(e) Performance of the Administration: the *Tobin's q* was used as an indicator of company's performance. Lang, Stultz & Walkling (1989) empirically related the performance of the firm to its *Tobin's q* and assumed the

Developments in Business Simulation and Experiential Learning, Volume 29, 2002

main factor of a firm's performance to be the performance of the administration.

(f) Power of Monopoly: Lindenberg & Ross (1981) stated that companies in competitive markets have a value of the *Tobin's q* in the vicinities of 1, while the companies with some monopoly power or that present production costs lower than the average of the sector exhibit a *Tobin's q* higher than 1.

METHODOLOGY

This study was developed based upon the results of a business simulation undertaken in the discipline EAD-5870 of Business Games in the post-graduation course of the University of São Paulo, Brazil. The industry under study had seven competitors, companies conducted by eleven post-graduate students. Three companies were administered by a sole manager (companies 3, 6 and 7). The others had two managers. At each weekly meeting during 12 weeks, a series of decisions totaling 10 was taken. During the meetings, seminars were given on the themes related to administration of international companies, related to the simulation environment.

During the development of the simulation, some critical incidents took place, introduced by the manager of the game. These incidents served to create unforeseeable situations, normal in an environment of business management. The evaluation criterion adopted in the discipline was directly related to the performance of the companies during simulation. Furthermore, at the end of ten rounds of simulation, the strategies of all the competing companies were presented in a seminar.

In this study the value of the *Tobin's q* was utilized as proxy of the value of the firm, testing the hypothesis that the companies with a better performance, according to the criteria of the simulation previously described, exhibited at the end of ten rounds a value for the *Tobin's q* higher than those with a poor performance.

For the purpose of the current study, a firm will be ranked as successful if its final score is above the average of all the companies in the sample, and as unsuccessful the remaining, that is, the ones which scored below the average of the sample.

Studies undertaken in Finance (Lang, Stulz e Walkling, 1989) utilized the *Tobin's q* as

- a) measure of performance of the firm from the investors point of view, and
- b) an indicator of the company's value.

In these studies, the variable is interpreted as a function that increases starting from the quality of current and future projects under the command of the current administration.

Originally proposed by Tobin and Brainard (1986) and Tobin (1969), the ratio that became known as the *Tobin's q*

consolidated itself as a variable of unquestionable utility in different applications in research.

In literature, various ways to calculate the *Tobin's q* may be found. In this article a simplified equation was used that significantly reduces the computing efforts of data and decreases the quantity of estimates to be made, as some of the data for calculation of the *Tobin's q*, according to the original formulation are quite difficult to determine. In a study undertaken by Chung & Pruitt (1994, apud Famá & Barros, 2000: p.38), the simplified formulation adopted here presents and excellent approximation to the original formulation utilized in studies such as that of Lindenberg & Ross (1981). Results of an estimate of the regression of Chung & Pruitt compared to the estimates of Lindenberg & Ross point out that at least 96.6% of the original *q* is explained by the approximate *q*. The index is defined in the following manner:

$$q = \frac{MVS + D}{TA}$$

MVS is the market value of shares, simply calculated by the product of the number of outstanding shares and their quoted value on the stock exchange (stock price showed in the Industry Report), *TA* is the firm's total asset, defined by its accounting value: cash, receivables, inventory and plant, *D*, is the debt, defined by the following expression:

$$D = AVCL + AVLTD - AVCA$$

where, *AVCL* is the accounting value of the company's current liabilities (*taxes payable + short term debt*), *AVLTD* is the accounting value of the long-term liabilities (*long term debt*), and *AVCA* is the accounting value of the current assets (*cash + receivables*).

Once the way to calculate the *Tobin's q* had been defined, data from each participating company began to be drawn from the statements and balance sheet of the results in the 10 annual rounds. The final value of the variable for each company resulted in the mean of the values in the 10 years of simulation.

RESULTS

The values of the *Tobin's q* are showed in Exhibit 1 for the 10 years period. They will be utilized as a global indicator of the companies' performance, past and future. In the year 0 the *Tobin's Q* value is identical for all simulated companies showing the initial condition they started the game.

The values will be compared to the values reached starting from the seven simulation indicators and the eventual difference between these two ways of classification will be verified in due time. The Exhibit 1 shows data of each of the seven companies participating in the business simulation, based upon their balance sheet information and annual profits and losses statement.

Developments in Business Simulation and Experiential Learning, Volume 29, 2002

Exhibit 1

Annual values of the Tobin's q for each company

FIRM	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
1	5,6603	4,5644	3,1596	3,1259	3,1684	2,8065	2,2092	1,9015	2,2435	0,2729	0,5707
2	5,6603	4,7863	3,7019	2,8275	2,6388	1,5023	1,2158	1,1013	0,8303	0,4581	0,2958
3	5,6603	5,2565	2,1698	3,2137	3,2208	2,8326	4,0166	4,7861	5,6779	6,2614	7,1893
4	5,6603	5,2712	4,5218	3,3255	2,4892	2,4746	2,0066	2,6530	2,7695	2,0363	2,3321
5	5,6603	4,2493	3,5690	3,8486	4,0846	3,3616	3,9021	3,9761	3,4381	3,7599	5,6919
6	5,6603	5,3330	4,5695	3,2826	2,4510	2,0996	0,1632	2,0329	1,9027	0,5949	0,5930
7	5,6603	5,0403	3,4734	2,7252	2,4664	2,1900	2,1414	2,2118	2,0332	1,0885	1,0406

In Exhibit 2, the final score of the companies by means of the seven indicators inherent of the game is perceived, with equal weights – sectorial multiples.

Exhibit 2

Ranking of the companies at the end of 10 years with the seven MMG performance indicators.

#	COMPANY	TOTAL OF POINTS	AVERAGE OF POINTS
1°	COMPANY 3	3.930	393
2°	COMPANY 5	3.330	333
3°	COMPANY 4	3.090	309
4°	COMPANY 7	2.820	282
	INDUSTRY MEAN VALUE	2.800	280
5°	COMPANY 6	2.690	269
6°	COMPANY 2	2.370	237
7°	COMPANY 1	1.370	137

The companies were separated in two major groups according to the simulation criteria: those that achieved superior results and those that achieved inferior results. Thus, the companies of numbers 3,5,4 and 7 that had a score

above the overall mean of 280 points formed the group A, while the companies 6, 2 and 1 formed the group B. Results of the mean Tobin's q for each group are shown on Exhibit 3 below:

Exhibit 3

Values for the Tobin's q of the companies at 10 years of simulation

GROUP	Mean	σ	Median	1st Q.	3 rd Q.
GROUP A (n=44)	3,6690	1,4757	3,4558	2,4726	4,8497
GROUP B (n=33)	2,5268	1,7172	2,2435	1,1013	3,2826
GROUPS A & B	3,1795	1,6725	3,1259	2,0996	4,5218

Companies of Group A (Exhibit 3) presented a mean and median higher than the mean and median of the companies in Group B. It is observed that all the values of the means are greater than 1. This may be because of the first years of the simulation in which all the companies had high values for the *Tobin's q*. Such values were not expurgated as they contributed to the accrued performance evaluation, notwithstanding the initial comfort proffered by the low rate of indebtedness of the companies and of the equality of conditions in which the game is started. By the end of the simulation, some companies also showed still high values for the *Tobin's q*. This leads to one of two interpretations: the first one could be that such firms had extremely better performances compared to the other firms in the simulation, while the other explanation could be that these same companies had a lot more investments opportunities but failed to seize them.

To compare the significance of the means between the *Tobin's q* calculated for the companies of group A and of group B the following hypotheses were adopted:

$$H_0: \mu_A = \mu_B$$

$$H_1: \mu_A > \mu_B$$

In the null hypothesis it is admitted that the means of the values of the *Tobin's q* are equal, disregarding to what group they belong. In the alternative hypothesis, it is admitted that the companies belonging to group A have a value for the mean of the *Tobin's q* higher than the companies belonging to group B. The z test was performed for the difference of the means and the calculated value of z was found to be 3.0654, which provides a p-value of 0,001. Thus, H_0 can be rejected at the 99% confidence level. Therefore, the hypotheses H_1 , that the mean *Tobin's q* for companies of group A is higher than that of group B, can be 99.9% accepted.

In Exhibit 4 are shown the mean values of the *Tobin's q* in the 10 years of simulation and the values of the scores according to the criteria of the game.

Developments in Business Simulation and Experiential Learning, Volume 29, 2002

Exhibit 4

Comparison between the classification of criteria by means of simulation indicators and the classification with the use of the *Tobin's q*

#	COMPANY	TOTAL OF POINTS	MEAN OF POINTS	TOBIN'S Q
1°	COMPANY 3	3,930	393	4,5714
2°	COMPANY 5	3,330	333	4,1401
3°	COMPANY 4	3,090	309	3,2309
4°	COMPANY 7	2,820	282	2,7337**(below avg.)
	MEAN of the Industry	2,800	280	3,1795
5°	COMPANY 6	2.690	269	2,6075*(#6)
6°	COMPANY 2	2.370	237	2,2744*(#7)
7°	COMPANY 1	1.370	137	2,6984*(#5)

It can be noted that in this simulation, the classification had only slight changes for the new criterion adopted. These variations* suggest that the companies could be ranked differently by using Tobin's Q values if the future projects represented an important issue for investors and game administrators. The Company 1 (Q=2,6984) ranked as #7 by usual sectorial multiples could be considered a better investment or get better grades when compared to Company 6 (2,6075) ranked as #5 and when compared to Company 2 (2,2744) ranked as #6.

CONCLUSIONS

The current article proposed an alternative manner of measuring the performance of companies combining in one indicator the results of several dimensions. It was shown that for this business simulation, the companies that achieved a better performance in accordance with the sectorial multiples, indicators adopted in the MMG also had a higher value for the *Tobin's q*. The tests for the differences of the averages utilized in the study, also showed that with a confidence of 99.9% it can be said that the value of the *Tobin's q* for companies with a higher performance in the simulation (group A) is higher than the value of the *Tobin's q* of the companies with a lower performance (group B).

The results support the acceptance of the proposed indicator to measure the performance of companies and their administration in TE simulations and suggest the combination of several indicators to evaluate the past and the future performance. The use of the indicator for other subjects in the area of economy and Finance is already widely accepted, and this article suggests that it can also be taken into consideration in the environment of simulation.

While other indicators rely upon the past events to evaluate performance, the *Tobin's q* incorporates to the past events, future tendencies (market value of the shares) including the expectations of success in the implementation of new projects and meets the recommendation of the authors that have studied this subject for years. (Kaplan and Norton, 1999 apud Saaia, 2001)

Along this line, new studies are recommended, with the possibility of reproducing this research with the MMG, as

well as to adopt other simulators to investigate the possibility and convenience of using a single general performance indicator that combines past events and future tendencies. Consistence of the evaluation criteria for simulations can also be verified, as well as of those to calculate the value of fixed assets and of the market price, among others.

REFERENCES

- Famá, R. & Barros, L.A.B.C (2000) "Q de Tobin e seu uso em Finanças: aspectos metodológicos e conceituais." *Caderno de Pesquisas em Administração da Universidade de São Paulo (FEA/USP)*. Volume 7, Number 4, Sao Paulo, 2000.
- Keys, J.B; Edge, A.G. & Wells, R.A. (1992) "The Multinational Management Game: Participant's Manual." 3rd Edition, 1992.
- Lang, L; Stulz, R.M & Walkling, R.A. (1989) "A Test of the Free Cash Flow Hypothesis: the Case of Bidder Returns." *Journal of Financial Economics*. Volume 24, Number 1, September 1989.
- Lindenberg, E. & Ross, S. (1981) "Tobin's q Ratio and Industrial Organization." *Journal of Business*. Volume 54, 1981.
- Martinelli, D.P. (1987) "Utilização dos jogos de empresas no ensino de administração." *Dissertação de Mestrado. Faculdade de Economia. Administração e Contabilidade da Universidade de São Paulo (FEA/USP)*. São Paulo: 1987.
- McConnell, J.J. & Servaes, H. (1995) "Equity Ownership and the Two Faces of Debt." *Journal of Financial Economics*. Volume 39, 1995.
- Rogers, C.R. (1973) "Liberdade para Aprender." *Interlivros de Minas Gerais*. 2nd edition, 1973.
- Saaia, A.C.A. (1996) "Preferências de homens e mulheres que participaram de programas de aprendizagem com jogos de empresas." *Revista Eletrônica de Administração* Edition number 2, Volume 2. Number 1. UFRGS, June 1996.

Developments in Business Simulation and Experiential Learning, Volume 29, 2002

- Sauaia, A.C.A. (1997) "Jogos de Empresas: aprendizagem com satisfação." *Revista de Administração da Universidade de São Paulo*. Volume 32. Number 3. July/September, 1997.
- Sauaia, A.C.A. (2001) "Evaluation of Performance in Business Games: financial and non financial approaches." *Developments in Business Simulation & Experimental Learning*. Volume 27. ABSEL: San Diego. California. 2001.
- Sanvicente, A.Z; Sauaia, A.C.A & Tanabe, M. (1993) "Managerial and Cultural Pre-Conditions for Superior Performance in a Global Setting: an experimental study with the aid of business games." *Developments in Business Simulation & Experimental Exercises*. Volume 20. ABSEL: Savannah, Georgia. 1993.
- Shleifer, A. & Vishny, R. (1998) "Large Shareholders and Corporate Control." *Journal of Political Economy*. Volume 94, 1986.
- Teixeira, G.J.W. (1982) "Comparação das características e aplicações dos métodos de ensino usados em administração." *Artigos do Módulo VII da disciplina de Didática do Ensino de Administração I - FEA-USP*. 2001. São Paulo. 1982.
- Wolfe, J. (1985) "The Teaching Effectiveness of Games in Collegiate Business Courses: a 1973-1983 update." *Simulation & Games*. Volume 16 Number 3. Sage Publications. September, 1985.