In Search of Profitable Growth in Brazilian Sugar and Alcohol Mills

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Summary

This paper presents a study of growth, profitability, and value creation in 68 of the largest Brazilian sugar and alcohol mills from 1995 to 2000. The main conclusion is that apparently decisions on growth are not based on profitability; ¾ of the value destroying mills grew in the period. We argue that in general, profitability has to come before growth. Otherwise companies will just increase the amount of wealth being destroyed. The work is concluded with a discussion of three open opportunities to improve profitability: (1) financing mix, (2) investment process and asset management, and (3) mathematical optimization.

Introduction

Since 1994 when the Brazilian Government introduced *Plano Real* (Real Plan) in the economy, Brazil has made enormous progress in many areas such as standard of living and inflation control. On the other hand, the dark side of these advances seems to be the high level of Brazilian risk-free rate offered by the Government and available to investors in the form of Federal Bonds and mutual funds. As we will see in the remaining of this paper, this situation impelled even the best Brazilian companies and shareholders to destroy huge amounts of capital.

This paper focuses on the sugar and alcohol industry where the problem is the same. We analysed 68 sugar and alcohol mills (hereafter called companies) over a six-year period and found the Brazilian risk-free rate is a problem for the best performing companies (none with returns exceeding the cost of equity) whereas 34% of them are still struggling to make profits, and 12% probably had negative operational cash flows (meaning they had to find sources of cash other than operations). An additional problem is that most of the companies in our sample are investing and growing, destroying increasingly larger amounts of wealth. The results are quite different from what one could expect given the relevance of the Brazilian products in the international markets.

Main concepts used in the study

The Corporate Finance principles underlying this paper can be found in several well-known books on the subject (Damodaran, 2001; Hawawini and Viallet, 1999; Copeland *et al*., 1995). A short revision of the concepts is given here for reference.

As generally is the case in Corporate Finance theory, we assume that the main objective of a company is to maximize its value. With that in mind, we analysed two important drivers of value: growth and profitability.

For the sake of simplicity and reliability, we defined the geometric average of net revenues as our growth measure (it suffers just minor influences of accounting practices). More formally we can define

$$\text{Growth (between years } x \text{ and } y) = \frac{\text{Revenues}(y)}{\text{Revenues}(x)(1+\text{inflation between } x \text{ and } y)} - 1 .$$

In general x=1995 and y=2000, but when the values are not available we use the largest interval we had access. To compute inflation we used the IPCA (Índice Nacional de Preços ao Consumidor Amplo) index, the same used by the Government and IMF to evaluate the Brazilian inflation targets.

In the case of profitability, we used the Return on Equity (ROE) as our measure. It measures the return to equity investors, using net income as the measure of return. Although ROE can arise some criticism for measuring accounting profits and not cash flows, we would argue for its simplicity, intuitive appeal and common usage. Additionally, since our analysis covers a 6-year period, that key drawback is moderated by the tendency of accounting profits and cash flows to converge in the long term. In the study, we compute the ROE as follows:

$$\text{ROE} = \sum_{z=1995}^{2000} \text{Net Income}_z \Big/ \sum_{z=1995}^{2000} \text{Equity}_z \ .$$

Another concept used is the cost of equity, which means the rate of return investors require on an equity investment. In other words, it is the return rate a rational shareholder would expect to make on his/her investment. Using the CAPM (Capital Asset Pricing Model), the cost of equity can be defined as

$$\text{Cost of equity} = r_f + \beta[E(r_m) - r_f] ,$$

where r_f is the risk-free rate for the country, β is the systematic risk for this kind of equity, and $[E(r_m) - r_f]$ is the market risk premium, representing the premium earned by equity investors over riskless investments.

The final important concept is the Economic Profit (EP), a measure of the monetary surplus created by an equity investment. It can be defined as

$$\text{EP} = (\text{ROE} - \text{Cost of equity})\text{Equity}.$$

We used this measure to evaluate companies in our sample. If EP>0, the company is said to create value and if EP<0, the company is said to destroy value.

Study details and findings

Our study sample contains 68 companies, some of them with more than one plant, representing more than 22 % of the total number of plants producing sugar and alcohol in Brazil. The relevance of the sample could be increased if we had assessed its share in terms of total revenues since the companies in our analysis were chosen according to information availability and revenues.

In general, we used data from 1995 to 2000, publicly available in the annual editions of Gazeta Mercantil (1996, 1997, 1998, 1999, 2000 and 2001). Unfortunately, this database lacks data for some companies in specific years (we have 278 datasets out of 408 possible). When this is the case, we used the partial information to assess ROE and the largest time range to assess growth. For instance, if we had only the 1996 and 1999 figures, we used the period 96-99 to measure the growth of the company and the years 1996 and 1999 to compute the ROE.

The average Brazilian risk-free rate for the period was found to be $r_f = 22.1\%$ per year. The estimates are based on CDI (*Certificados de Depósito Interbancário*). The reader can take into account that the Brazilian risk-free rate has been declining over the last years, from 42.5% in 1995 to 13.8% in 2000. The Brazilian risk premium measured as price appreciation plus dividends of the IBOVESPA (main index of the São Paulo Stock Exchange) achieved 25.5% per year, resulting in a market risk premium of 3.4%. Considering the inexistence of information to compute betas conventionally (just Usina Costa Pinto of the approximately 450 companies listed in BOVESPA belongs to the sugar and alcohol industry), we have made our estimates using the accounting betas approach (Damodaran, 2001, p. 209). The estimate of the industry beta is an average of betas of individual companies based on annual periods. After adjustments we find β=14% which is quite similar to Usina Costa Pinto's 60-month beta of 16% (sourced from Economática, a business database).

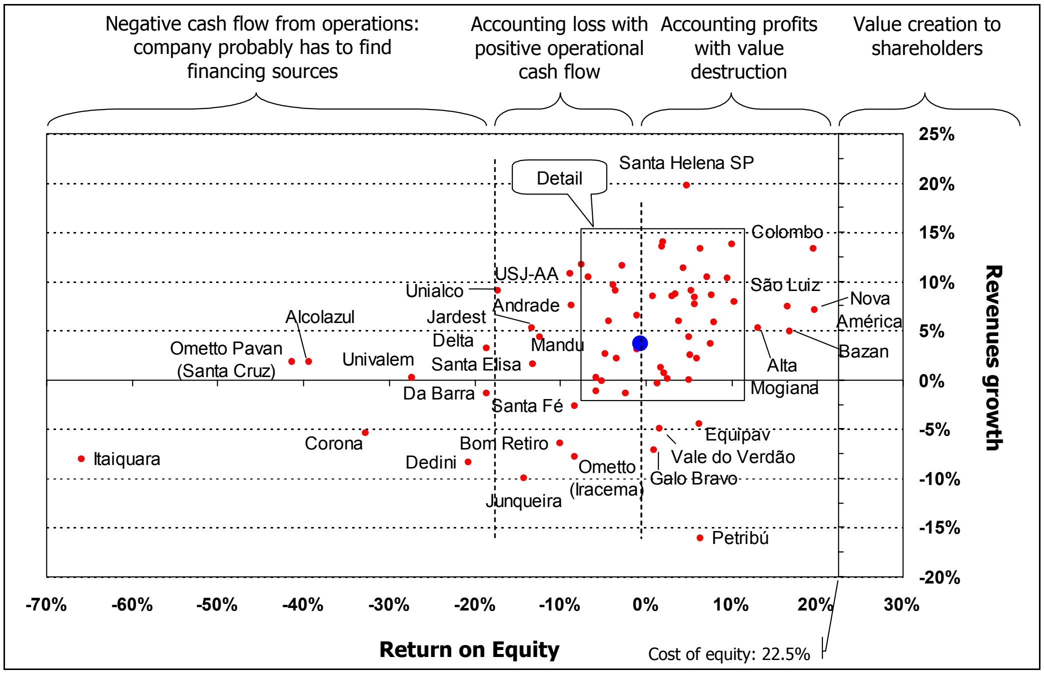

Figure 1. Growth and ROE between 1995 and 2000

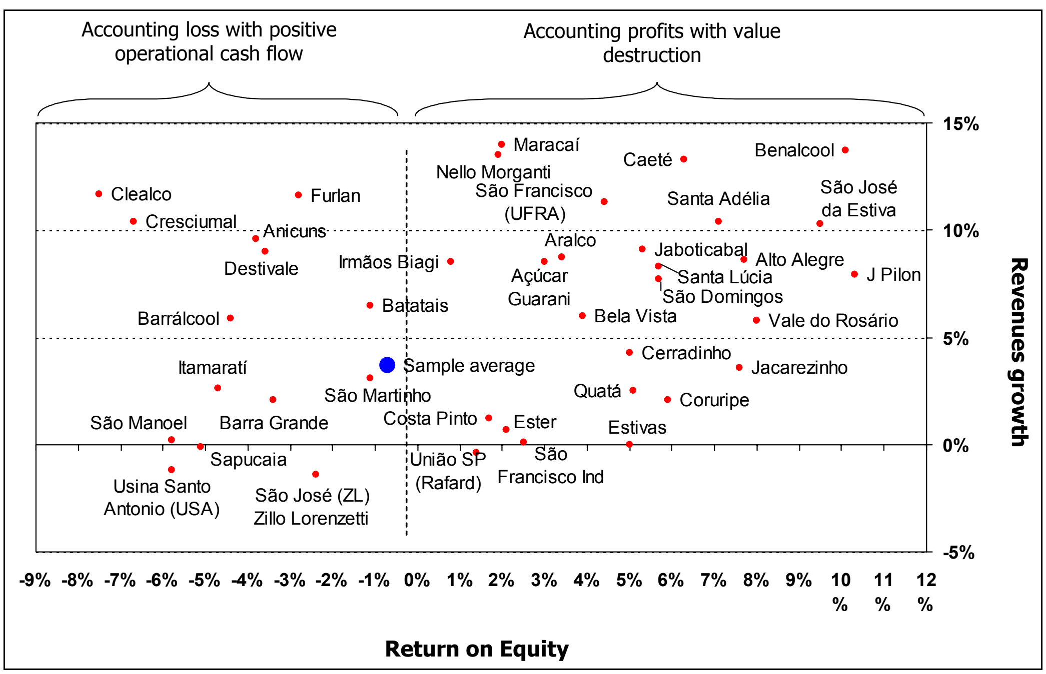

Figure 2. Growth and ROE between 1995 and 2000 – detail of figure 1

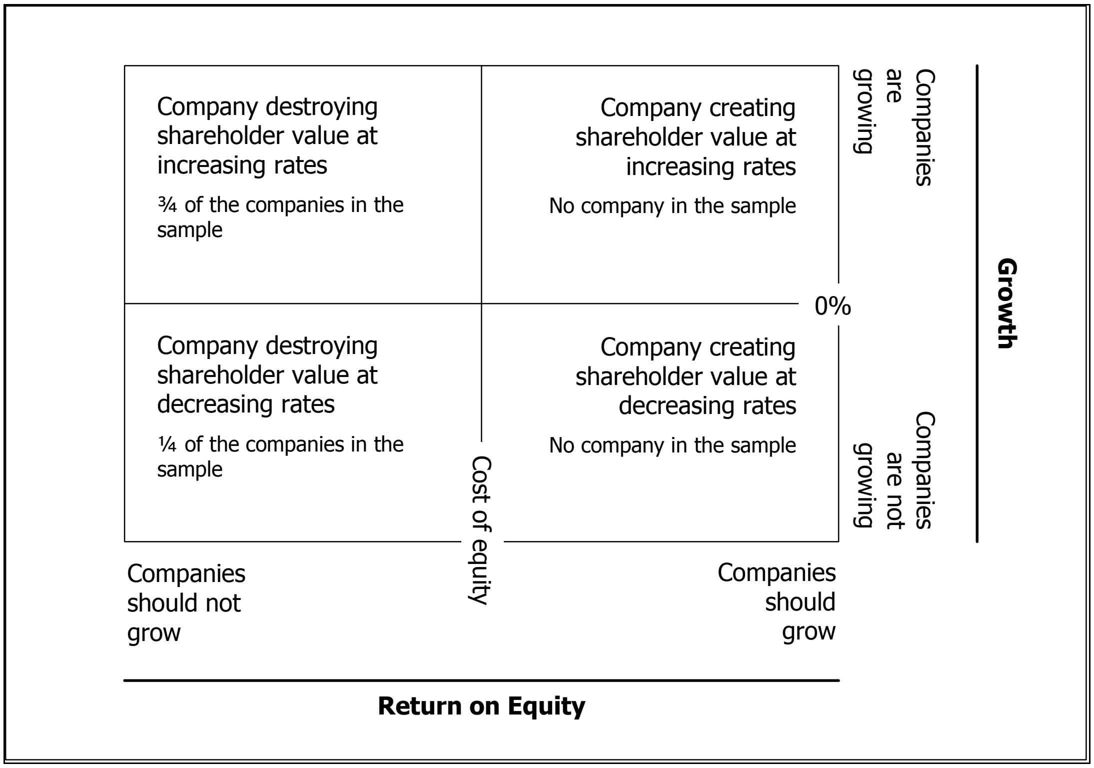

Figure 3. Suggested growth decisions based on ROE and cost of equity

Figures 1 and 2 illustrate ROE and growth for the companies in our sample.

The main conclusion we can draw from the study is that (in general) companies are destroying increasingly larger amounts of wealth. We believe some of the best performing companies (such as Colombo or Nova América) might be preparing the ground for a new environment, where risk-free rates are lower, but it is hard to accept that almost the entire market would be so conscious. Figure 3 shows a framework where companies are classified according ROEs and growth. The reader can observe that although every company is destroying value, ¾ of them are growing, showing that growth decisions are based in criteria other than value creation.

The rationale behind the framework takes into account a company should invest (grow) only if it is creating shareholder value in the long-term (investments and growth are highly correlated in our sample, where we found $\text{Revenues} = 21.688(\text{Total Assets})^{0,6967}$ with $R^2 = 77.14\%$ for both revenues and assets given in thousands R$, the Brazilian currency). Otherwise, shareholders should receive higher dividend payouts to be able to relocate the capital in more profitable investments. One of the forms this can be done is through divestiture of unprofitable divisions.

We have to consider that in many companies, profits may be disguised into high salaries paid to family members, personal expenses, and property borne by the company to give just a few examples. This kind of indirect benefit can mislead the analysis of the actual profitability of the company. In this case, an unprofitable company (with a low ROE) can be creating wealth to shareholders.

Improve profitability and then grow, not the other way round

Our analysis shows there are huge amounts of money being destroyed over the last years in the Brazilian sugar and alcohol industry. Nevertheless, ¾ of the companies in the sample are increasing their investments in the industry, showing the value creation mindset is not widely accepted, or used. In general, growth in unprofitable companies means an increased amount of wealth being destroyed. That is why we argue companies have to achieve profitability to have the right to grow. A company with a portfolio of unprofitable projects can improve its portfolio in the long-term by accepting only projects with return higher than the cost of equity and in the short-term by divesting divisions/products with low profitability.

In our opinion, the sugar and alcohol producers face especially two problems:

- There is a lack of value creation culture among managers and shareholders, many of which playing both roles. This culture might be nurtured with the introduction of value creating strategies to drive managerial decisions. In the long-term, education and management training will play an important role to solve this problem. In the short-term we foresee either bringing external managers with the right competencies in or consultancy to quickly overcome the skills gaps that currently impair value creation in the industry.
- Having acquired the value-creation mindset, shareholders and managers should try to improve the management processes continuously within the company. We know many unrealised opportunities that are not captured by the companies simply because they are not aware of them. A suggested first step in this case is to use value drivers such as sucrose level and tonnes of cane processed per indirect employee. Value drivers are excellent levers to align efforts and interests of employees, managers, and shareholders.

The first problem is easy to solve vis-à-vis the second. The second may be harder, but we believe there are many opportunities to be captured, some of which considered quick wins. We give some examples bellow (obviously the opportunities are valid for some companies):

- **Opportunity 1**: The sample studied shows an inverse correlation between ROE and financial leverage. Many of the companies showing poor ROEs are clearly with the non-optimal financing mix in terms of amounts of debt and equity. Although we do not show in this paper, many of the best performing companies also have non-optimal financing mixes. We show the evidences more clearly on the next section;
- **Opportunity 2**: Companies using very large amounts of capital (as is the case in the sugar and alcohol industry) with low profitability generally have problems in the investment process and/or in asset management. We can expect "small technical trade-offs" (such as overemphasising the importance of automation) of their investments with little/no link with value creation, meaning they are preparing ground to destroy more value in the future. After capital expenditures projects have been approved, it is common to lose track on the actual spending. The value creation mindset will play an important role here, but processes to optimize and control returns on investments are extremely important;
- **Opportunity 3**: Another opportunity that does not demand significant investments but brings significant economies right after the implementation is related to the use of mathematical optimization in the overall planning of operations. This kind of improvements, despite being incremental, may represent several millions of dollars depending on the size of the company. Examples of published works and results achieved in the industry can be found in Colin *et al*. (1999) and Yoshizaki *et al*. (1996).

Example of opportunity still not widely captured

Just to give an example of the improvement opportunities available, we will use a brief analysis to show that many companies are operating with non-optimal financing mixes. The optimal financing mix can be defined according to different techniques, but since we are not analysing an individual company, we will use a simple and intuitive approach called comparative analysis to compare capital structures across the industry and draw conclusions from the deviations identified.

We have partitioned the group of 68 companies into 4 groups (bottom, middle-bottom, middle-top, top) of 17 companies according to their ROEs. The 17 companies with the poorest ROEs belong to the group "bottom", the 17 with the best ROEs are classified as "top", and so on. Figures 4 and 5 illustrate the analysis.

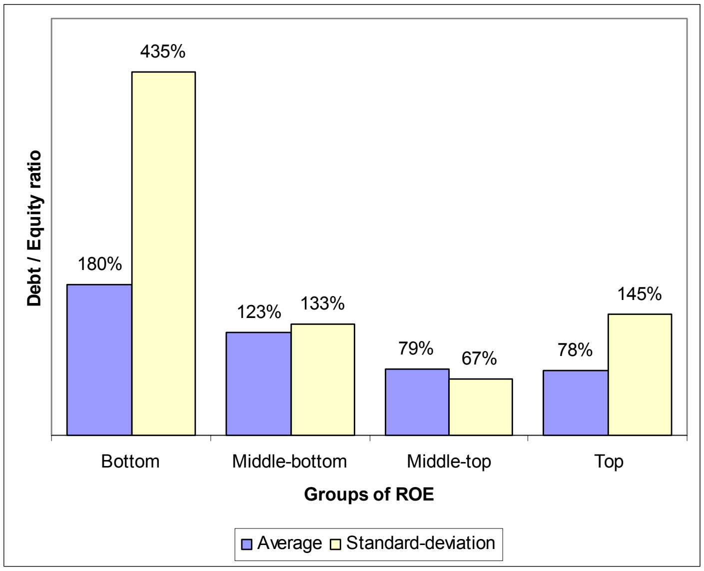

Figure 4. Average and standard-deviation debt/equity ratios according to groups of ROE

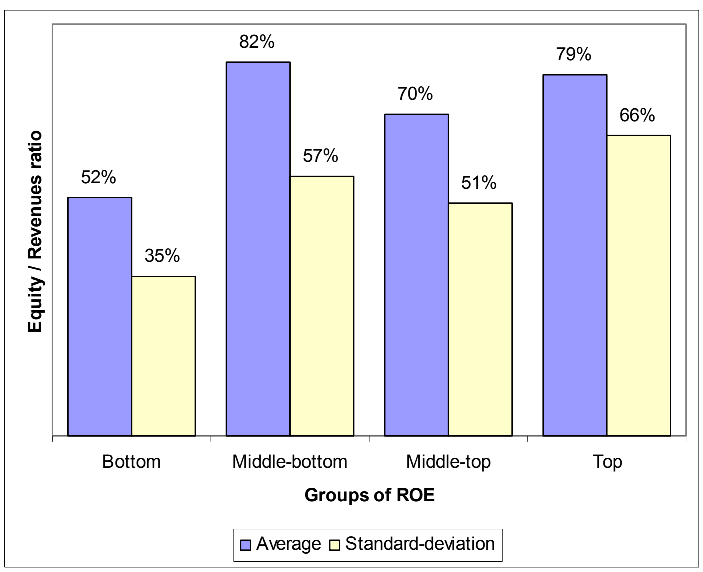

Figure 5. Average and standard-deviation equity/revenue ratios according to groups of ROE

Figure 4 consolidates the average and standard-deviation debt/equity ratio for every company and every group of ROE. It shows a clear correlation between groups of ROE and financial leverage (debt/Equity). According to our sample, companies showing the worst returns are also the most levered. Two points are important to be mentioned. First, companies with accounting losses cannot use the expected tax benefit (i.e., tax rate times debt - considering tax savings in perpetuity) from borrowing and therefore pay real interest rates much higher than if they had accounting profits. Second, although cost of equity raises with financial leverage, figure 4 shows that, in our sample, companies with lowest ROEs are exactly those with highest leverages. The outcome is exactly the inverse the one we could expect.

We can think of two reasons for this outcome: either the "bottom" companies (with lowest ROEs) used a wrong financing mix or the "top" companies used too little equity, creating small value despite their high ROEs. Figure 5 gives evidence that the second possible reason is not true: the average "top" company uses more equity/revenue than the average "bottom" company. That leaves us with the non-optimal financing mix hypothesis, which may well be a consequence of improper investment decisions being taken by the "bottom" companies. Of course, there might be other causes as well.

Figure 5 shows that the average "top" company provides better returns to its shareholders over larger amounts of equity. Therefore we conclude companies (especially those in the "bottom" group) should revise their financing mix and consider reducing financial leverage to achieve higher profitability. For fast results the company can be recapitalized by equity intakes and/or by divesting unprofitable assets. In the medium and long terms, the company can decrease its payout to shareholders and retire debt over time. In this case, additional actions such as minimising investments to only the clearly value-creating "quick-wins", and reducing the total burden posed on the company by shareholders indirect benefits will have to be carried out.

In closing the paper, it is worth pointing that although the analysis and conclusions were performed considering Brazilian companies, we believe that an equivalent situation can exist in several countries, and consequently equivalent opportunities should exist as well.

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