

Mark-ups and competition – a comparison of the profitability of listed South African and American industrial companies

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Abstract:

Aghion, Braun and Fedderke (2006: 1-2) test product market competitiveness in South African manufacturing industries by calculating mark-ups in these industries and find that “the profitability margins as computed from the listed firms sample, is more than twice as large in South Africa than it is in other countries” for a sample from 1980 to 2004; and the gap between mark-ups in South African and elsewhere has been persistent over this period. We test this claim empirically in the following way. By using survivorship bias corrected datasets of the top 25 South African industrial firms listed on the JSE (by market capitalisation) and those in the Dow Jones Industrial Average index, we compare (for this period) the mark-ups (as measured by Aghion et al, 2006) and the relative profitability (as measured by Return on Equity (ROE) and Return on Invested Capital (ROIC)). This detailed comparison of these different measures provides a robustness test for the Aghion et al (2006) result based on mark-ups. This study does not confirm the claim South African industrial have enjoyed sharply higher mark-ups or rates of profitability when compared with international firms.

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1. Introduction

It is commonly argued that competitive markets are necessary for economic growth and, more generally, that “competition is a good thing” in the words of Stephen Nickell (1996). Competition promises to provide incentives for efficient production and innovation and downward pressure on both costs and prices (Nickell, 1996: 724-725). If correct, this has implications for competition policy. However it is difficult to measure the extent of competition in a market directly. Researchers commonly use the size of the mark-ups of firms over their costs and/or the resulting levels of profitability as proxies for competition. In particular, Aghion, Braun and Fedderke (2006) (hereafter ABF) conclude that South African (SA) manufacturing firms operate in relatively uncompetitive markets based on their empirical observations that these firms have been able to generate abnormal profits when compared to their counterparts in other markets. More specifically, ABF claim that SA manufacturing firms have consistently been more profitable on a comparable basis over a period extending from the mid 1960s through to 2006. Using various estimates of mark ups and profitability, they suggest that SA firms have been between 50% and 100% more profitable than their international peers.

We examine the empirical validity of this claim using a smaller, but more detailed data set based on the annual financial statements of listed industrial companies based in SA and the United States (US) for the period 1980 to 2006. To deal with the potential impact of survivorship bias we construct a market capitalisation based index of the top 25 industrial firms for SA for this period. We then compare the profitability of these firms using the same measures applied by ABF and find that this profitability ‘premium’ does not exist for these firms for this period.

Section 2 of the paper reviews the literature relating to competition policy and economic growth. Section 3 outlines the methodology used to identify the firms and what data was collected. The results of this analysis are presented in Section 4 and Section 5 concludes the paper.

2. Literature Review

2.1 South African literature

The literature on the degree of competition in South African industry dates back several decades (Du Plessis, 1978, is an early example). And here, as elsewhere, the measures of competition have been studied along with measures of profitability, following Bain’s (1951) structure-conduct-performance hypothesis. Though much evidence has been presented on this hypothesis in South Africa (for example, Reekie, 1984; Leach, 1992; Fourie and Smith, 1993, 2001) the debate has been inconclusive, and its many methodological, empirical and ideological problems forced the discussion into “gridlock” according to Fourie and Smith (1999: 87).

In addition to the problems of method and interpretation that has held back progress in this literature ABF (2006: 9-10) have also argued that industry level data has become less reliable since the last manufacturing census (1996). They warned that "...the reliability of all results based on industry data are likely to decline substantially after 1996".

Despite these warnings on data quality and the earlier stalemate in the local literature Fedderke, Kularatne and Mariotti (2007) recently opened a new line of research on the profitability of South African manufacturing firms following the methodological innovations of, particularly, Roeger (1995). While growth accounting at the industry level could be used to calculate mark-up of price to marginal-cost based on changes to factor quantities, it possible to derive a dual of the Solow Residual (and hence an expression for the same mark-up) based on changes in factor prices. Roeger (1995) exploited this dual of the Solow residual to find an expression for the mark-up that avoided some of the endogeneity problems present in the calculation of mark-ups using the standard Solow residual.

Fedderke et al. (2007) implemented and extended Roeger (1995) with a panel data set for South African manufacturing industries at the three-digit SIC level for the period 1970 to 1997 at an annual frequency. They extended Roeger's (1995) approach to a panel setting by using the Pooled Mean Group Estimator (PMGE) as proposed by Pesaran, Shin and Smith (1999) which allows for heterogeneity across industries in terms of intercepts, short run coefficients and error variances, while imposing homogenous long-run coefficients across industries.

They reported a series of results suggesting that mark-ups were considerably higher in South African industries than in the United States. Firstly, their estimate of the unadjusted long-run value for the mark-up across industries was around 80% compared with an average result of 45% for the literature on industries in the USA (Fedderke et al., 2007: 45-46). These results were then extended by controlling for various factors associated with the size of the mark-up, following *inter alia* Oliveira Martins and Scarpetta (1999). The second result of Fedderke et al. (2007: 47) is evidence that the mark-up in South African industries can sensibly be split into a constant component and a statistically significant counter-cyclical components.

Thirdly, Fedderke et al (2007: 49-51) controlled for the discipline that international trade might impose on the size of mark-ups in domestic industry. They find evidence supporting the intuitively plausible effect that greater exposure to import and export competition is associated with lower mark-ups. However, the subtlety of their result is to distinguish within-industry and between-industry effects for international competition and they found that the between-industry effect is the more powerful.

Fourthly, Fedderke et al (2007: 52) returned to the long-standing debate on market structure and mark-ups and found a powerful association between industry concentration and mark-ups, i.e. greater concentration is associated with higher mark-ups. Consequently, competition policy aimed at lowering the degree of concentration in industry could, theoretically, lower pricing power of firms and in that way improve the competitiveness of South African industry, or so Fedderke et al (2007: 54) argued. Further, they explored the association between mark-ups and unit-labour cost as a measure of industry competitiveness. Again the results are subtle: an increase in within-industry cost-competitiveness lowers the mark-up, while an increase of cost competitiveness for an entire industry relative to the average for the

manufacturing sector enjoys a higher mark-up, i.e. the increased cost competitiveness is not passed on to customers (Fedderke et al., 2007: 56-57).

The results from Fedderke et al (2007) mentioned up to this point suggests that South African industry enjoys high mark-ups on an international comparison and that the mark-ups are related to characteristics of the South African industrials landscape such as high concentration ratios. This evidence from Fedderke et al (2007) confirms earlier evidence based on a multivariate co-integration model for inflation in South Africa by Fedderke and Schaling (2005). They estimated an average mark-up of 30% over unit labour cost for the South African economy (Fedderke and Schaling, 2005: 91), which was three times as large as comparable estimates for the United States by Ghali (1999).

But Fedderke et al (2007: 58) also report one final result that casts some ambiguity on these findings: adjusting their mark-up estimate to allow for intermediate goods they find a considerably reduced mark-up for South African industry. Not only is estimate sharply lower (in a range of 6 to 9%) but it is also lower than comparable estimates for the USA (13%). Fedderke et al (2007: 59-60) offer two explanations for this result: firstly, they speculate that there might be errors-in variables-problem with the data on intermediate inputs, and secondly, that there might be an omitted variable bias. They offer evidence that incorporating concentration ratios as the potentially omitted variable yields an estimate of the local mark-up that is higher than the comparable figure for the USA².

ABF (2006) extended the work of Fedderke et al (2007) in three directions: firstly, they calculated mark-ups and other measures of profitability for South African industry using three data sets (an industry level panel data set from UNIDO, an industry level panel from TIPS and a firm level panel for listed companies). These data are for South African and a large international cross section. Secondly, they examined these measures of profitability over time and controlled for measures of product market concentration and, finally, they studied the association between product market competition (as measured) and their estimate of productivity growth.

We are particularly interested in the results ABF (2006) obtained from the firm level panel as this study offers firm level calculations as a robustness check. ABF's (2006) firm level panel contained data for listed companies in 56 countries including South Africa for the period 1980 to 2004. They found that listed South African firms earned profits on average around 50% higher than the international average when profitability was measured with Net Income/Sales, Net Income/Assets and Net Income/Equity though the same South African firms had much lower Gross Margin, Market to Book Ratio and Profit-Earnings Ratios. They also found no evidence of systematic variation over time for the these measures profitability, nor evidence that large firms enjoyed higher profits than smaller firms (Aghion et al., 2006: 11: 12). These are the results that are directly at stake in this study.

² Fedderke et al's (2007: 59) concern that "South African data on intermediate inputs is not fully reliable" is laudable, but extends also to the other data used in studies of this kind, including especially industry concentration ratios.

2.2 Survivorship bias

It has long been recognised that empirical studies based on data of listed companies can be subject to the effects of survivorship bias. This is an inherent bias that occurs when a sample is drawn only from the firms which are currently listed for which a historical series is then constructed in a backward-looking manner. This naïve selection will lead to biased historical estimates as it systematically ignores the results or data from firms that used to be listed but no longer form part of the relevant index. By excluding the firms that are no longer listed, data is collected only for the firms that have survived. In the context of this case, such a biased sample of firms and their returns would lead to overly high estimates of mark-ups and profitability, because it is usually the most profitable firms that survive.

Overcoming this problem involves a careful identification and inclusion in the sample frame of firms that are no longer listed³ over the entire sample. Unfortunately ABF do not clearly specify which firms were included in their analysis. According to ABF (2006: 8) they used “(f)irm-level (Worldscope) evidence from publicly listed companies. The firm-level evidence is based on Worldscope data for publicly-listed companies in 56 different countries since the early 1980s. The dataset contains yearly balance sheet and P&L items, and other basic firm characteristics.” Table Four in ABF suggests that the data was sorted by 3 digit (SIC) manufacturing industry. Table Seven then compares the ratios of the listed companies to those of the industry level as computed from the UNIDO’s International Statistics data base. However there is no further discussion in the text of the nature of the firm level data set used. This very brief discussion does not answer the following very important questions:

1. How many companies were included for each country (most importantly, for South Africa)?
2. Has this data set been corrected for survivorship bias?

Given the long period (1980 – 2006) studied by ABF, the chances are very high that their sample is drawn from an incomplete list of firms. However, the lack of discussion of this bias by ABF and the lack of information as to the number or identity of the firms included in the analysis suggests that their conclusions may be subject to this bias.

Given the lack of clarity on these key empirical issues we decided that a new firm-level data set corrected for survivorship bias would be necessary to test the robustness of ABF’s claims. As is discussed in more detail in the next section, the use of indices is a practical way of dealing with the survivorship bias problem. By using component lists of comparable market capitalisation based indices for each year for the two markets we are able to identify a complete, but manageable, list of firms to be included in the analysis; as well as establish the extent to which survivorship bias exists in the dataset which we were actually able to collect. This is a major advance over the data set used by ABF. However, this clarity comes at a price: the complexity of the data collection process limited us to the comparison of only two markets – SA and the USA. Though, in principle, the process could be applied to more markets we report results for these two market alone, which at least allows comparison with the claims advanced of (Fedderke et al., 2007).

³ Firms may no longer be listed for several reasons. They can go bankrupt or decide to de-list. Alternatively their market identities change due to specific corporate actions e.g. mergers, acquisitions or restructurings. The effect is the same from a survivorship bias perspective.

3. Research Method

The key contribution of this paper is the estimation of mark-ups and profitability of manufacturing firms using a data set with minimal survivorship bias. Data was collected at a firm level for listed industrial companies making up a top 25 industrial share index for the SA market and the Dow Jones Industrial Average (DJIA) index for the US. Due to the lack of consistent index for the period under consideration a new market capitalisation weighted index was created for South African industrial companies listed on the JSE Securities Exchange (JSE) for the period 1980 - 2006. The component firms of the DJIA over this period were used as a sample of US industrial companies.

A key challenge was the construction of a list of SA industrial firms which would be comparable to the constituent firms of the DJIA index for the period 1980-2006. No such list existed for this period. The best the JSE could provide us with was the component list of the top 25 industrials index for the period 1998 – 2006⁴. We decided to create a new index of the top 25 industrial firms by market capitalisation. Firstly, the numbers of ordinary shares in issue and the share prices at each financial year-end⁵ was collected with which the market capitalisation could be calculated for each company. Secondly, the top 25 firms on market capitalisation were identified for each year from 1980 to 2006 and these defined the new index. The list of 98 unique firms included in this index over the sample period is reported in Appendix A.

The DJIA was chosen as the representative US industrial firm index. It is made up of 30 shares of a wide range of large industrial firms. The component list of firms for this index was obtained and the annual returns for these firms were collected⁶. The list of 50 unique firms included in this index over this period is reported in Appendix B.

Careful attention was paid to avoid survivorship bias in the data collection process. The extent to which the data collected differed from that required for the entire period is summarised in Table 1. The distribution of this across the 27-year period is illustrated in Figure 1.

Table 1 about here

Figure 1 about here

The data set is incomplete due to shortcoming in the electronic databases used. For example, no financial data was available for two South African firms included in the index. However the bulk of the missing observations were due to missing data points for some years for

⁴ In 2002 the JSE adopted the FTSE index classification methodology. This was a completely different system to that used previously. Indices were only retroactively constructed back to 1998. Data relating to indices for earlier periods have not been maintained.

⁵ The source of this data was Inet-Bridge – a local financial markets data provider.

⁶ This data was obtained from Datastream – an international financial markets data provider.

firms where data was complete for the remainder of the sample. Increasing the representivity of the data set is a key next step for this research project.

The ABF paper does not include any discussion or definition of the profitability measures used in their ratios. Net Income for example could be interpreted as Operating Profit, Profit before Interest and Tax (PBIT) or Net Profit after Tax (NPAT). Results for all three definitions are presented and discussed below. Secondly, ‘assets’ could refer to either total assets (fixed + current assets) or net assets (fixed assets plus net current assets (= current assets – current liabilities)). We have used total assets as it gives a measure of performance that reflects the total stock of long and short-term assets used by the company to generate the profits for that period⁷.

4. Results

ABF used the following ratios as proxies for mark-ups and profitability: Net Income/Sales; Net Income/Assets; Net/Income/Equity; Gross Mark-up; Market to Book ratio; Price to Earnings ratio. Due to limited data with availability respect to the income statement and market data variables at financial year-end, we were only able to calculate comparable results for the first three ratios, but this is precisely where we wish to confirm the robustness of the ABF results as it is for these three ratios that the South African firms outperformed the international average by 50% in the ABF calculation.

4.1 Relative Profit Margins – Operating Profit, PBIT and NPAT (Relative to Sales)

According ABF (2006:11-12) “listed firms in SA exhibit 50% higher profitability when this is measured with Net Income/Sales, Net Income/Assets and Net Income/Equity” when compared to firms in the 56 other countries included in the Worldscope database. The results for these profitability margin ratios for the median firms in our data set are shown in Figures 2 to 4. The mean ratio for each country has been included for illustrative purposes only. We provide two versions of each figure, the first graph (e.g. figure 2a) shows a line-graph of the mean and median for the JSE and Down Jones data for the sample period, while the second version (e.g. figure 2a) show box plots of the distribution per decade for the JSE and Down Jones data⁸. The first graph of each pair shows the time-series of the mean and medians while the second graph provides more information about the sample distribution across firms for each decade.

⁷ Strictly speaking the opening assets should be used to generate a ‘return’ measure as the closing values include the growth of the assets in the year under question. This will lead to lower return estimates. This is not a significant issue in this context as the same approach is used for both countries. As we are doing a comparative analysis, the bias is not important to the relative results.

⁸ The box plot is of standard construction (see for example, Hamilton, 1996) and shows the middle 50 percent of the data inside each box, the median as the circle within each box and the outliers as dots beyond the whiskers (which mark a distance of 1.5 times the inter-quartile range above the 3rd quartile and below the first quartile).

For each measure of profitability and return reported here we also used the non-parametric Wilcoxon-Mann-Whitney statistic to test the null hypothesis that the relevant data for the JSE and DJIA indices was drawn from the population. These test results are reported in table 2.

Table 2 about here

Figure 2a about here

Figure 2b about here

Figures 2a and 2b show very similar distributions for operating margins on the JSE and DJIA since the early 1980s. While the median of the operating margins on the JSE was slightly higher than the DJIA for the 1980s, the distributions only differ significantly (Table 2, first row) for the 1990s and 2000s, and in those cases the distribution of the DJIA lies above that of the JSE.

Figure 3a about here

Figure 3b about here

The distributions of Profit before Interest and Tax (PBIT) margins shown in figures 3a and 3b show little difference between the JSE and DJIA experiences. Indeed the second row of table 2 shows that these distributions do not differ significantly.

Figure 4a about here

Figure 4b about here

Figures 4a and 4b show the distributions of Net Profit after Tax (NPAT) margins since the 1980s. during the 1980s and 1990s the JSE NPAT data seems to have been drawn from a different and higher distribution than the DJIA data. This ranking has been reversed since 2000, though the difference is no longer significant.

In summary these three sets of graphs suggests the following conclusions:

1. The median operating profit and PBIT margins of SA and US industrial firms are relatively similar on average but the US firms are more profitable according to these ratios for more years than the SA firms
2. The median NPAT ratios are relatively tightly correlated with each other over this period.

These conclusions are supported by the data presented in Table 3. The median USA industrial firm has been more profitable than SA industrial firms 56% of the time over this period when looking at their operating margins. According to ABF, SA firms were, on average, always more profitable than their international competitors on this measure.

Table 3 about here

Figures 5 and 6 illustrate the pattern of the difference between the SA and USA margins for these three measures of profitability – firstly in absolute terms and then in relative terms (to the respective USA margin).

Figure 5 about here

Figure 6 about here

Table 4 contains some summary statistics regarding these absolute and relative differences in profit margins.

Table 4 about here

This data supports the previous conclusions regarding the similarity of these margins over the period. On these measurements SA industrial firms are clearly not the 50% to 100% more profitable than their US counterparts as suggested by ABF. Moreover, the lack of a consistently larger profit margin for SA firms (as compared to US firms) over this period also directly challenges the ABF results.

4.2 Relative Returns (on Assets and Equity)

ABF report that SA firms also perform consistently better than their international counterparts when profitability is measured by the firms' returns on assets used and on equity provided by shareholders. ABF define these measures as Net Income/Assets and Net Income/Equity. As pointed out earlier, there is a lack of clarity on the definition of Net Income by ABF. However, rather than present all three versions of these ratios we have decided to focus on NPAT as the measure of net income for the purposes of this section. NPAT is the amount of profit (not cash flow) available for distribution to shareholders. This makes it the most appropriate measure of profit out of the three available for the calculation of returns in this context⁹.

The results of our analysis for returns on assets are illustrated in Figures 7a and 7b and for returns on equity in Figures 8a and 8b. Following the mode of discussion in the previous section Table 5 presents the average returns for the median firms in the two countries for this period. The absolute and relative differences are presented in Figures 9 and 10 and summarised in Table 6.

Figure 7a about here

⁹ As pointed out in the previous section the correct way to estimate a return ratio is to use the opening assets or equity instead of the closing value as is done here. However as the point of this analysis is to establish relative returns and the calculations are performed consistently, there is no reason to suspect a bias.

Figure 7b about here

Figure 8a about here

Figure 8b about here

This data indicates that, over this period, SA firms have consistently generated higher returns on assets (and equity) when compared with their US counterparts. The average ROA for the median SA firm of 8.9% is 3.5% higher than the equivalent median USA firm. This is equivalent to a premium of 66% over the average median US firm's ROA of 5.4%. By way of comparison the average ROA for all the SA firms reviewed by ABF is 5.9% - an estimate that is 45% lower than reported here.

Figure 9 about here

Figure 10 about here

Table 5 about here

Table 6 about here

The results for the difference in the median firms' average ROE is larger at +5.7% although this is less extreme in relative terms (34% of the US median firms' average ROE of 16.6%). The ABF estimate of SA industrial firms' ROE is 14.7% which again is significantly lower (by 34%) than this estimate of 22.2%.

These results create a picture closer to that of ABF, i.e. a picture of SA industrial firms consistently enjoying higher returns than their international (in this case, USA) counterparts. SA firms outperform US firms 96% of the time in terms of ROA and 89% of the time in terms of ROE.

The size of the relative out-performance of SA firms' returns is not similar, however. ABF's estimate of the relative out-performance (in terms of ROA) of 3.5% is 146% of their average international median firm's ROA of 2.4% (ABF, 2006: Table 5). Ours is 77%. In terms of ROE their estimate of the SA firms' relative out-performance (of 6.8%) is 78% of their international average estimate of 8.7% (ABF, 2006: Table 5). These are approximately double our estimates (34%).

5. Conclusion

ABF make a striking empirical statement about the relative profitability of SA industrial firms. This paper confronted their claims with a smaller, but carefully chosen dataset of large listed industrial companies in both SA and the USA. Our analysis comprehensively rejects their statements if profitability is measured in terms of operating, PBIT or NPAT margins. Our data does not provide any evidence to conclude that SA industrial firms are consistently

more profitable than their international counterparts for the period 1980 – 2006 in terms of these variables.

If profitability is measured in terms of ROA or ROE then our analysis provides some (though limited) support for their conclusions. SA industrial firms have consistently outperformed their US counterparts over this period by significant relative margins. However these estimates are still only half as large as those presented by ABF.

The strength of these conclusions rests directly on the completeness of the data sets for both countries. A key next step is to improve the coverage from the current 97% for SA and 83% for the USA. Furthermore, more data is required for the other measures of profitability presented by ABF, namely: Gross Margin, Market to Book Value and Price to Earnings ratios. Finally, this analysis could be extended to more markets – the ABF conclusions are based on the data for listed companies in 56 countries. Using USA firms is an important start in the process but really is only a proxy for these other companies.

Appendix A: South African Industrial Companies

- 1 Abercom Group Limited
- 2 Adcock Ingram Limited
- 3 AECI Limited
- 4 African Cables Limited
- 5 African Oxygen Limited
- 6 Allied Electronics Corporation Limited
- 7 Allied Technologies Limited
- 8 Alpha Limited
- 9 Amalgamated Beverage Industries Limited
- 10 Anglo American Industrial Corporation Limited
- 11 Anglo American Properties Limited
- 12 Anglovaal Industries Limited
- 13 Aspen Pharmacare Holdings Limited
- 14 Barloworld Limited
- 15 Beverage & Consumer Industry Holdings Limited
- 16 Bidvest Group
- 17 Blue Circle Limited
- 18 C G Smith Foods Limited
- 19 C G Smith Limited
- 20 Cadbury Schweppes (South Africa) Limited
- 21 Charter - Sterling
- 22 Comparex Holdings Limited
- 23 Consol Limited
- 24 Cornick Group Limited
- 25 Darling And Hodgson Limited
- 26 Datatec Limited
- 27 Dimension Data Holdings Plc
- 28 Dorbyl Limited
- 29 Dunlop Africa Limited
- 30 Edgars Consolidated Stores Limited
- 31 Energy Africa Limited
- 32 Engen Limited
- 33 Everite Group Limited
- 34 Federale Volksbeleggings Beperk
- 35 Foodcorp Limited
- 36 Foschini Limited
- 37 Genbel South Africa Limited
- 38 Haggie Limited
- 39 Highveld Steel & Vanadium Corporation Limited
- 40 Hunt Leuchars & Hepburn Holdings Limited
- 41 Ics Holdings Limited
- 42 Imperial Holdings Limited
- 43 Iprop Holdings Limited
- 44 Jd Group Limited
- 45 Johannesburg Consolidated Invest Corp
- 46 Johnnic Holdings Limited
- 47 Kanhym Investments Limited
- 48 Kohler Limited
- 49 Malbak Limited
- 50 Massmart Holdings Limited
- 51 Messina Limited (Old)
- 52 Metkor Group Limited
- 53 MIH Holdings Limited

54 Mittal Steel S.A Ltd
55 MTN Group Limited
56 Murray & Roberts Holdings Limited
57 M-Web Holdings Ltd (Ex Mih/M-Web)
58 Nampak Limited
59 Naspers Limited -N
60 Network Healthcare Holdings Limited
61 New Africa Investment Limited
62 New Clicks Holdings Limited
63 Northern Engineering Industries Africa Limited
64 Ok Bazaars (1929) Limited
65 Pep Limited
66 Pepkor Limited
67 Pick `N Pay Stores Limited
68 Plate Glass & Shatterprufe Industries Limited
69 Polifin Limited
70 Premier Group Limited Old
71 Pretoria Portland Cement Company Limited
72 Primedia Limited
73 Profurn Limited
74 Rembrandt Group
75 Remgro Limited
76 Reunert Limited
77 Richemont Securities AG
78 Romatex Limited
79 Rothmans International - Sterling
80 SABmiller Plc
81 Safmarine & Rennie Holdings
82 Sappi Limited
83 Sasol Limited
84 Sentrachem Limited
85 Shoprite Holdings Limited
86 Southern Sun Hotel Holdings Limited
87 Steinhoff International Holdings Limited
88 Sun International (South Africa)
89 Sun International Limited
90 Super Group Limited
91 Technology Systems International Limited
92 Telkom SA Limited
93 Tiger Brands Limited
94 Tigon Limited
95 Toyota South Africa Limited
96 Trencor Limited
97 Truworths International Limited
98 Woolworths Holdings Limited

Appendix B: US Industrial Companies

1	3m
2	Alcoa
3	Altria Group
4	American Can
5	American Express
6	American Intl.Gp.
7	American Tobacco B
8	At&T
9	Bethlehem
10	Boeing
11	Caterpillar
12	Chevron
13	Citigroup
14	Coca Cola
15	Du Pont E I De Nemours
16	Eastman Kodak
17	Exxon Mobil
18	General Electric
19	General Foods
20	General Motors
21	Goodyear Tire & Rub.
22	Hewlett-Packard
23	Home Depot
24	Honeywell Intl.
25	Inco Homes
26	Intel
27	International Business Machines
28	Intl.Paper
29	Johns-Manville
30	Johnson & Johnson
31	JP Morgan Chase & Co.
32	McDonalds
33	Merck & Co.
34	Microsoft
35	Navistar Intl.
36	Pfizer
37	Primerica Corporation
38	Procter & Gamble
39	SBC Communications Incorporated
40	Sears Holdings
41	Texaco Incorporated
42	Union Carbide
43	United Technologies
44	US.Steel
45	USX Corporation
46	Verizon Comms.
47	Wal Mart Stores
48	Walt Disney
49	Westinghouse Electric
50	Woolworth

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Table 1: Extent of survivorship bias

Country	Observations required	Observations collected	%
SA	675	632	97%
USA	810	676	83%

Table 2: Two-sample Wilcoxon-Mann-Whitney test for equal distributions

Measure of profitability or return	Decades					
	1980s		1990s		2000s	
	Higher median?	P-value ^a	Higher median?	P-value ^a	Higher median?	P-value ^a
Operating margins	JSE	0.34	DJIA	0.09	DJIA	0.00
PBIT	JSE	0.53	DJIA	0.85	DJIA	0.21
NPAT	JSE	0.02	JSE	0.03	DJIA	0.59
ROA	JSE	0.002	JSE	0.000	JSE	0.000
ROE	JSE	0.000	JSE	0.000	JSE	0.000

a: The P-value shows the probability that the null hypothesis of equal distributions for the JSE and DJIA is not rejected given the data.

Table 3: Comparison of Profitability Margins (SA vs US): 1980 - 2006

	Average Median Operating Margin	Average Median PBIT Margin	Average Median NPAT Margin	ABF Estimates ¹⁰ Net Income Margin
SA	11.1%	12.6%	7.1%	5.1%
US	12.3%	12.4%	6.5%	N/A ¹¹
Correlation Coefficient	-0.02	0.24	0.40	N/A
SA > US (% time)	44%	48%	59%	N/A

Table 4: Absolute and Relative Differences in Profitability Margins (SA vs US)

	Average Difference	Average Relative Difference (to US)
Operating Margin	-1.2%	-9.7%
PBIT Margin	+0.2%	+3.4%
NPAT Margin	+0.6%	+15.3%

¹⁰ AMF, 2006: Table 5.

¹¹ ABF estimate that international firms on average generate a Net Income/Operating Margin of 3.3% (ABF, 2006: Table 5).

Table 5: Comparison of Returns on Assets and Equity (SA vs US): 1980 - 2006

	Average Return on Assets	Average Return on Equity
SA	8.9%	22.2%
US	5.4%	16.6%
Correlation Coefficient	-4%	25%
SA > US (% time)	96%	89%

Table 6: Absolute and Relative Differences in Returns (SA vs US)

	Average Difference	Average Relative Difference (to US)
Return on Assets	+3.5%	+65.5%
Return on Equity	+5.6%	+34.2%

Figure One: Distribution of data gaps over the sample period

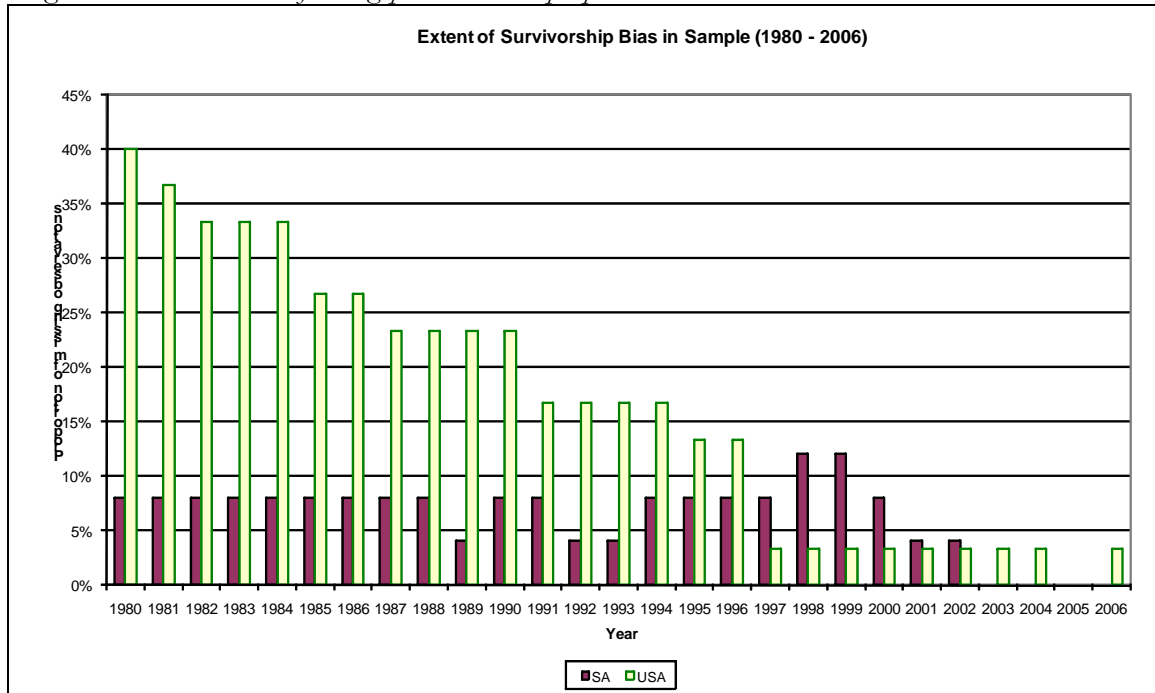


Figure 2a: Line graph of operating Margins Relative to Sales

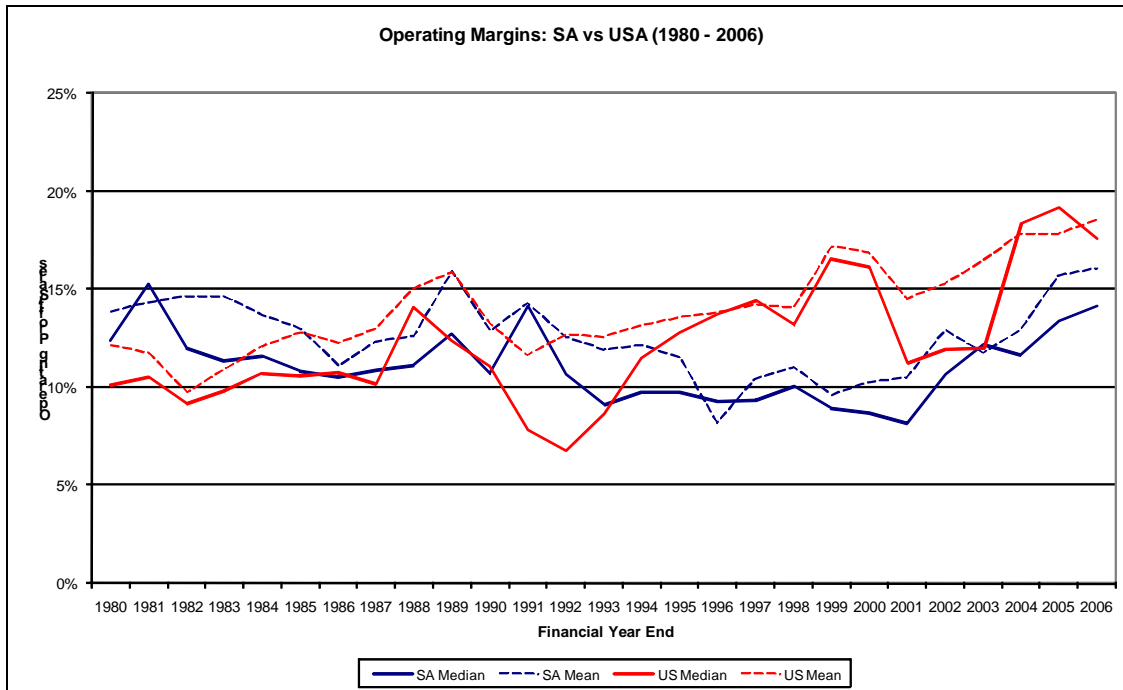


Figure 2b: Box plot of operating Margins Relative to Sales

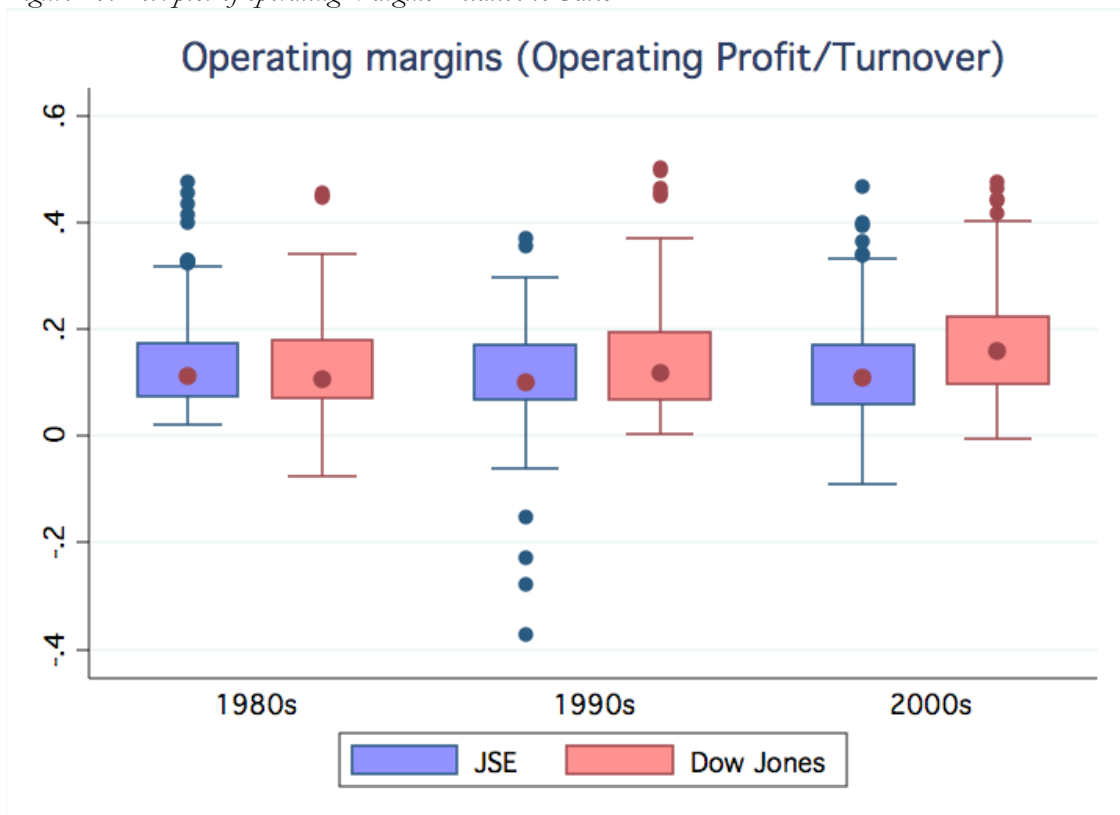


Figure 3a: Line graph of PBIT Margins relative to Sales

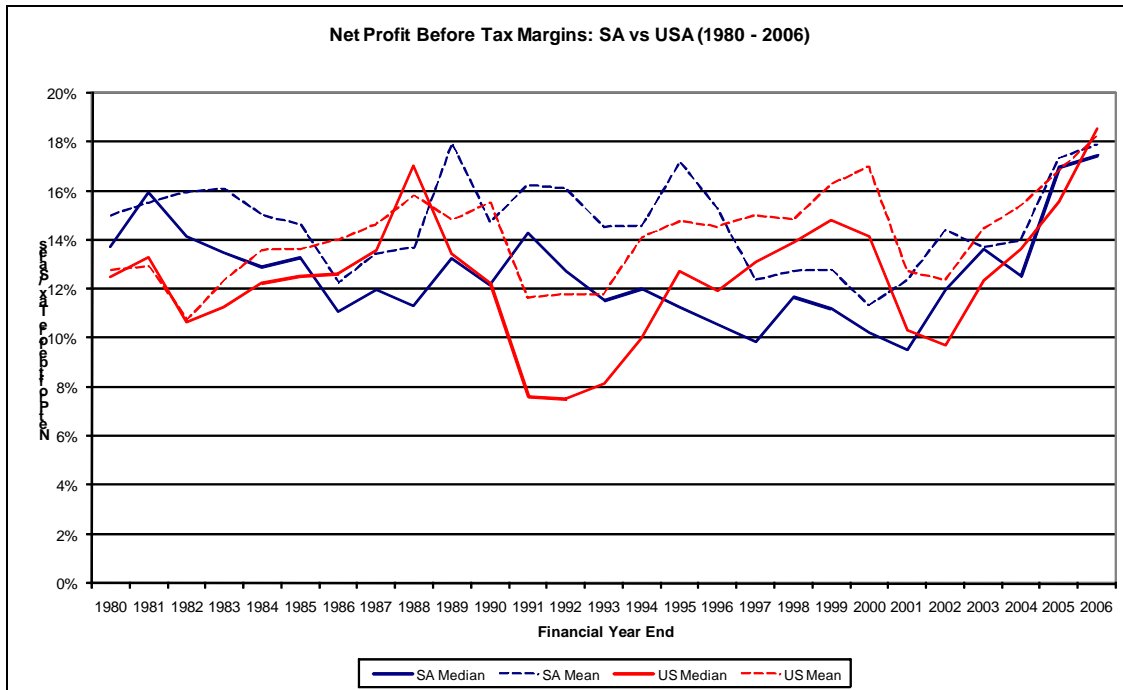


Figure 3b: Box plot of PBIT Margins relative to Sales

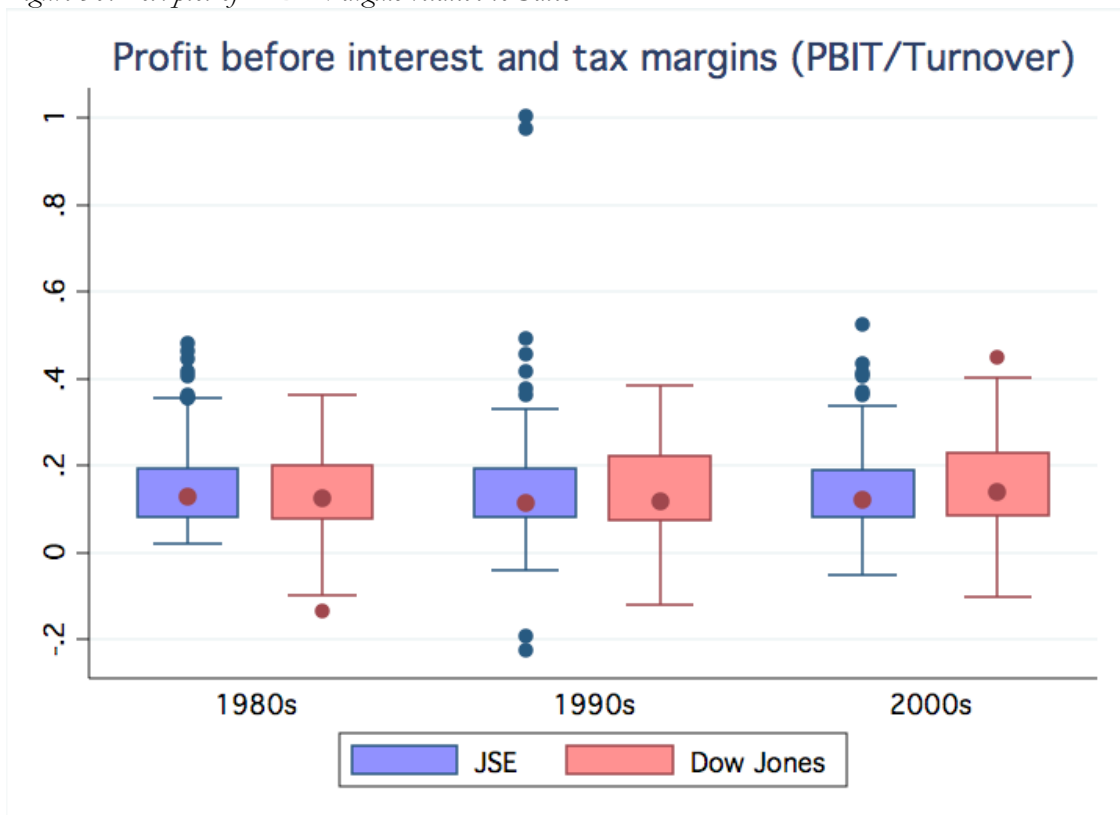


Figure 4a: Line graph of NPAT Margins relative to Sales

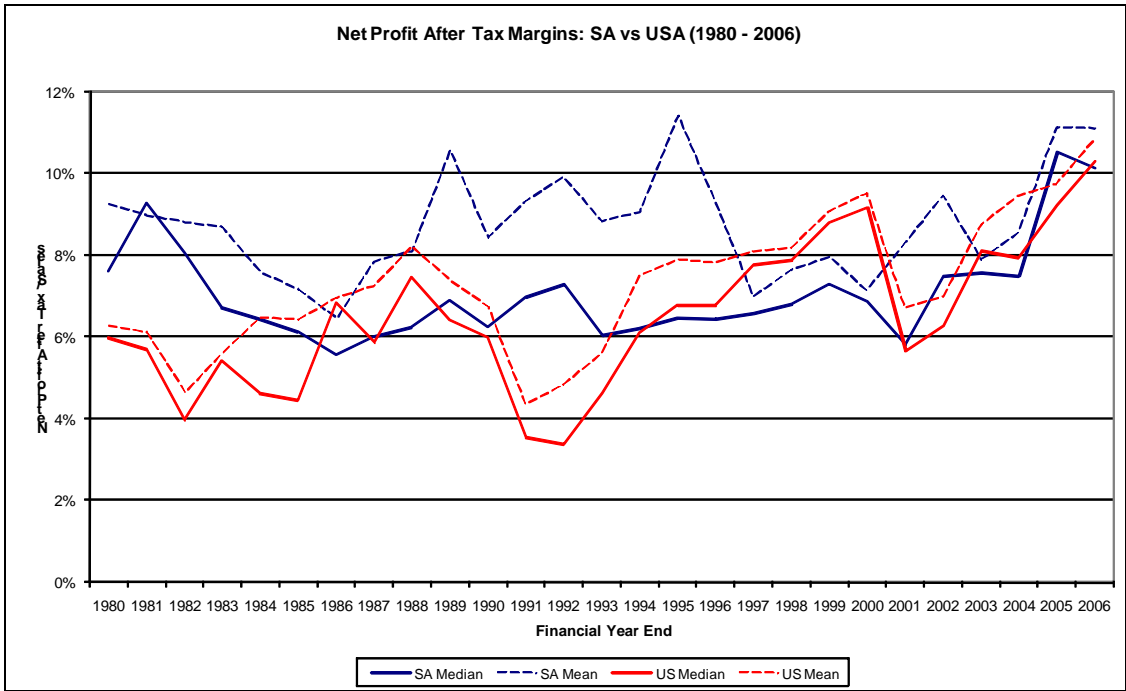


Figure 4b: Box plot of NPAT Margins relative to Sales

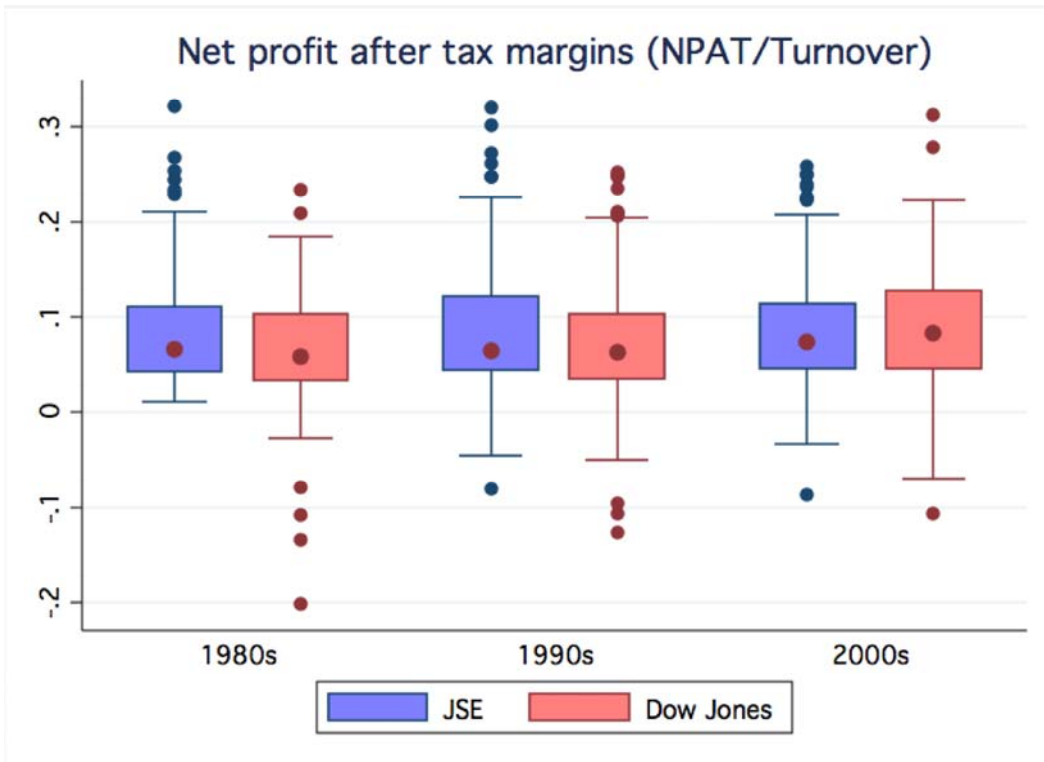


Figure 5: Absolute Differences in Median Margins (SA less US)

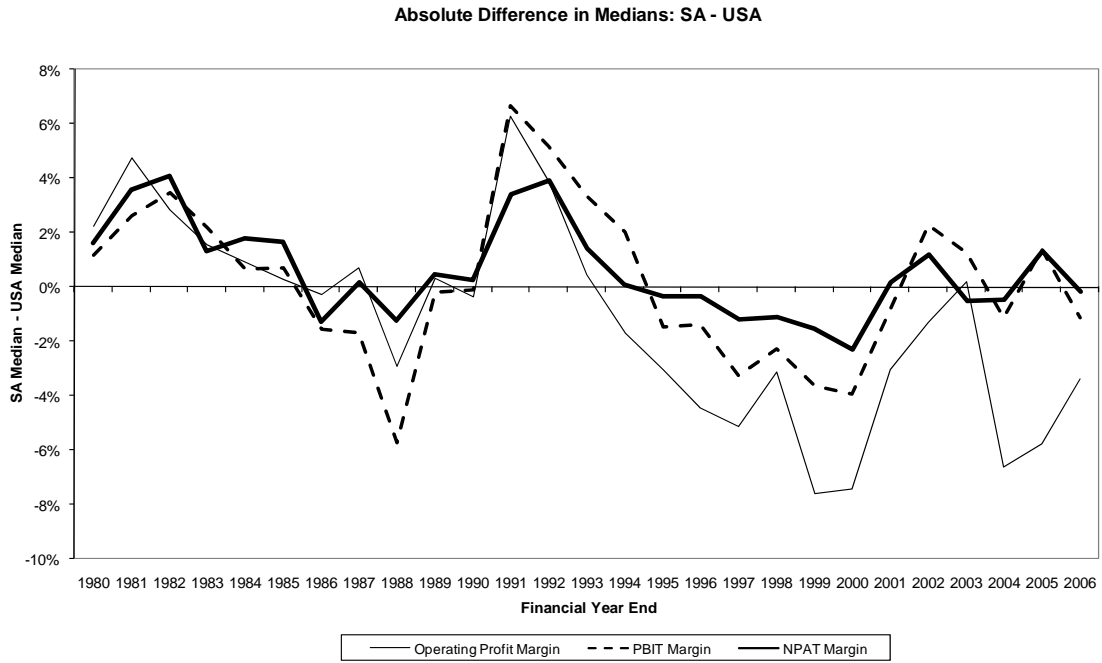


Figure Six: Relative Differences in Median Margins (relative to US median margin)

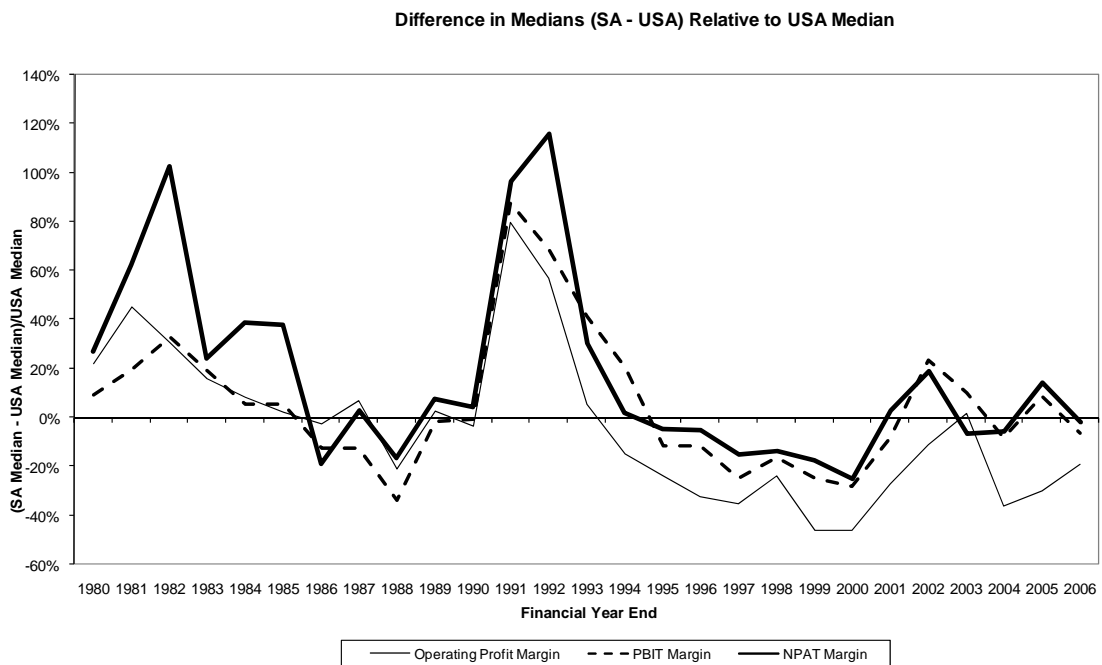


Figure 7a: Line graph of relative Returns on Assets

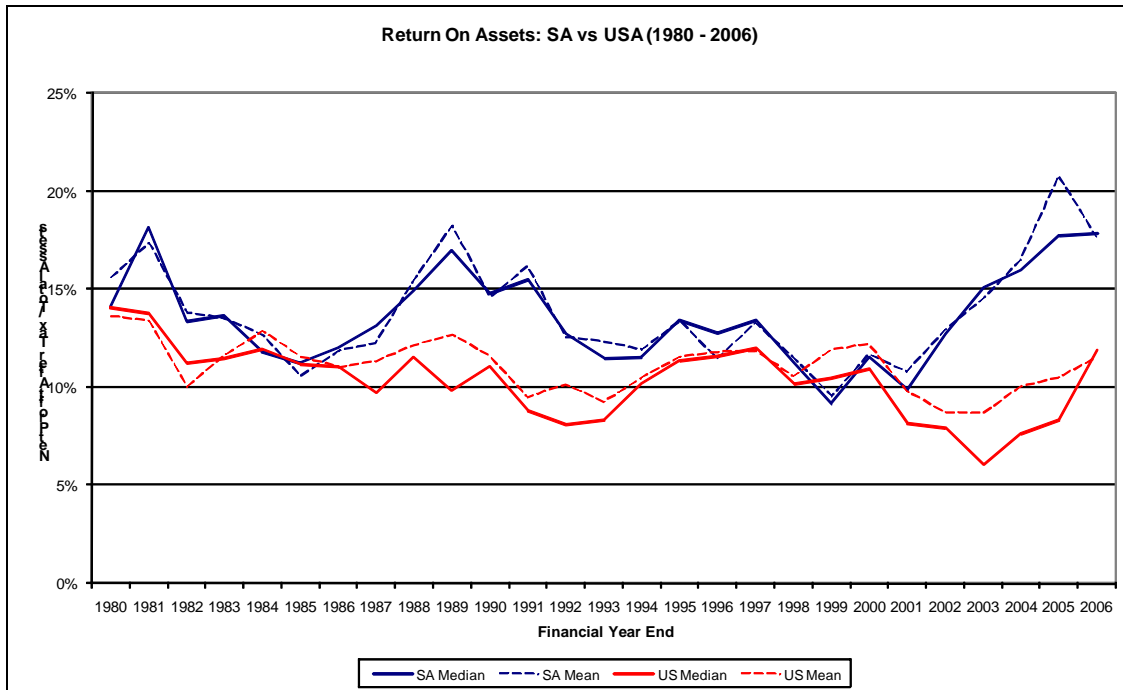


Figure 7b: Box plot of relative Returns on Assets

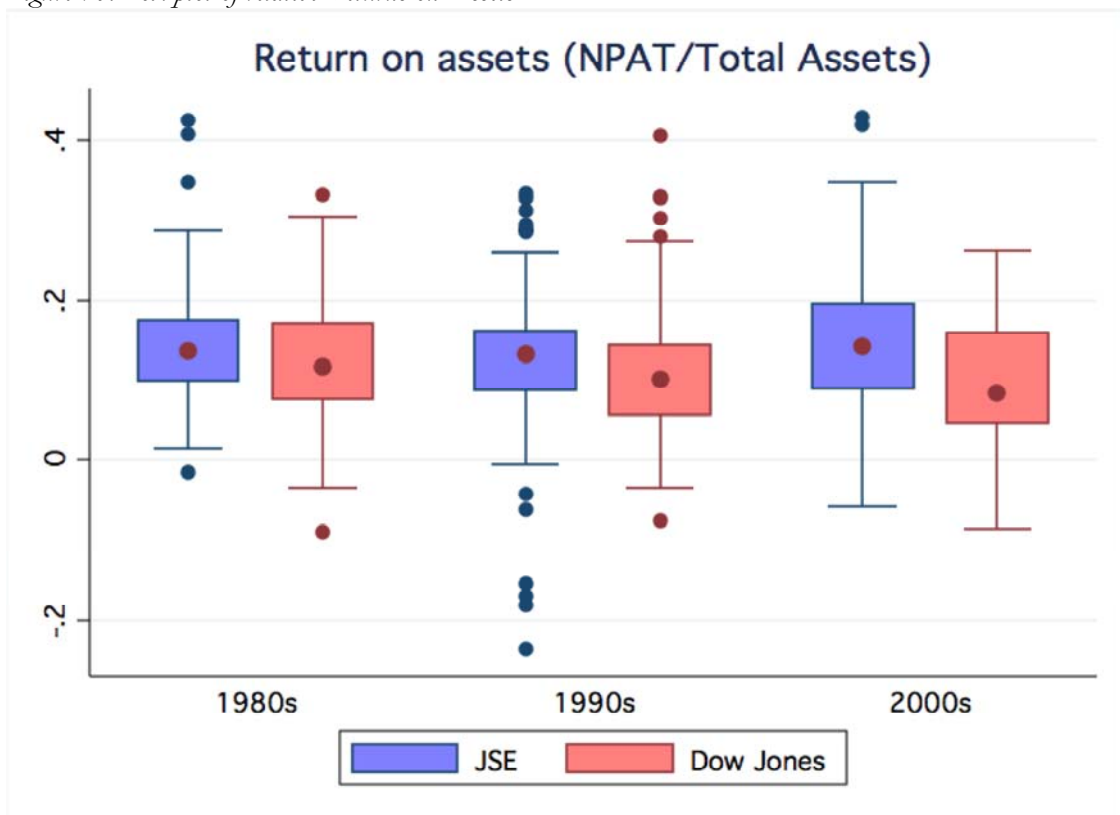


Figure 8a: Line graph of relative Returns on Equity

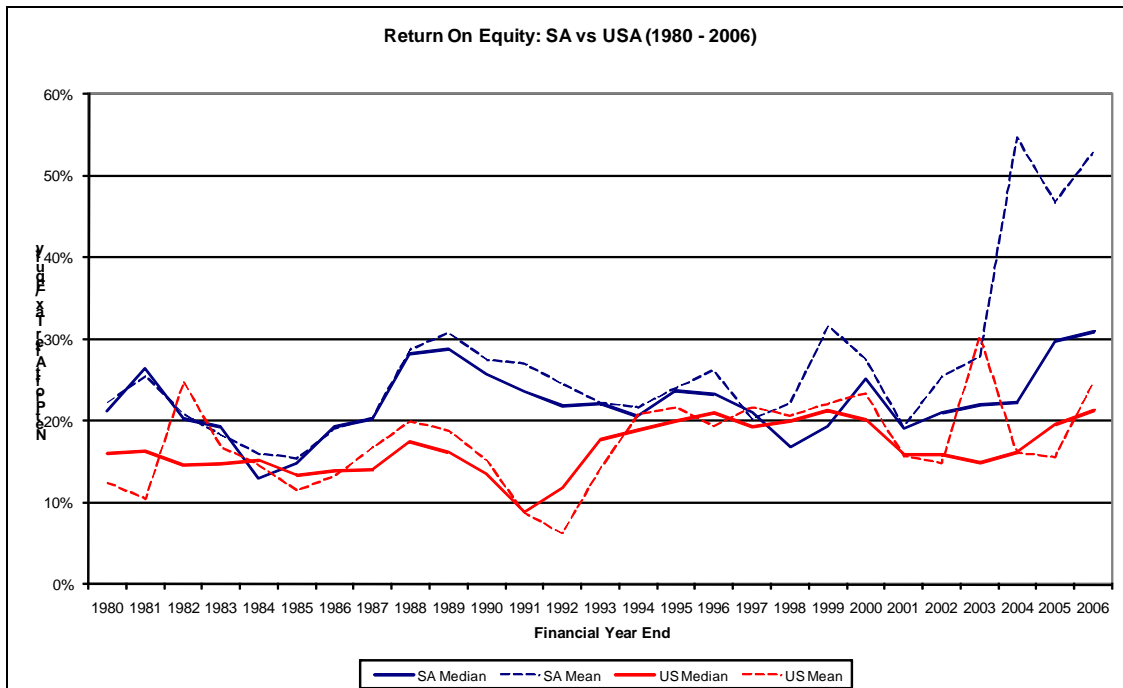


Figure 8b: Box plot of relative Returns on Equity

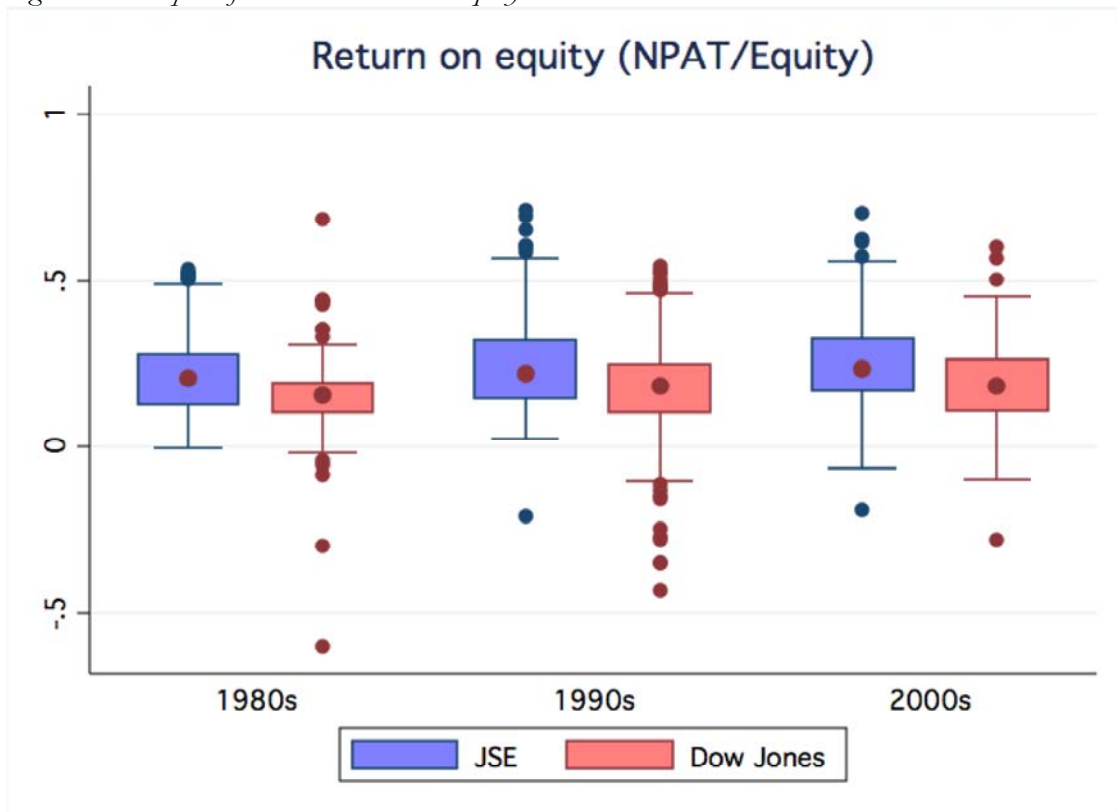


Figure 9: Absolute Differences in Median Returns (SA less US)

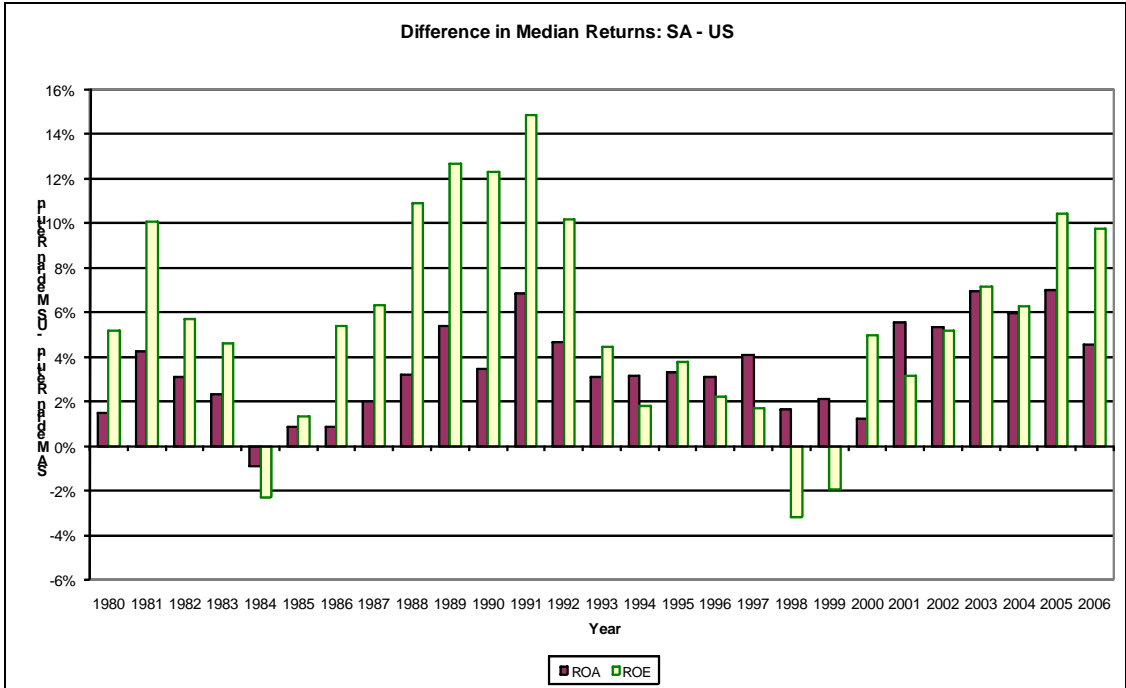


Figure 10: Relative Differences in Median Returns (relative to US median return)

