

FINANCIAL CHARACTERISTICS OF HIGH PERFORMANCE COMPANIES IN TURKEY: A COMPARATIVE ANALYSIS OF STABLE ECONOMY IN THE FINANCIAL CRISIS ERA

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ABSTRACT

Previous research studied characteristics of high performance companies (HPCs) in mature economies (United States, Europe, and Australia) and in an Asian emerging economy (India). This study of HPCs in the developing economy investigates Turkish companies that are listed in the Istanbul Stock Exchange and companies that display specific characteristics of HPCs—sustained and superior cash flow returns, growth rates, and total shareholder returns. We test the hypothesis that there will be no significant difference between the financial performance drivers and measures from before the financial crisis era (2005–2007) and those of after the financial crisis (2008–2009). We identified 41 companies that met the criteria of HPCs over the 2005–2009 time period. When comparing HPCs with ISE ordinary companies, both in the pre-financial crisis period (2005–2007) and the post-financial crisis period 2008–2009, Turkish HPCs were shown to maintain superior asset management and performance profitability, lower financial risk, and stronger cash flow returns compared to the benchmark group over economic periods of rapid growth and stable market conditions and the periods of economic decline and uncertainty. The results provide direction for the management of companies that aspire to HPC status and to maintain HPC status, especially during periods of financial crisis. We identify five operating objectives that are important for maintaining high performance during periods of financial crisis.

•  *Financial Analysis, Ratio Analysis, Performance Measurement, Turkey*

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INTRODUCTION

This study continues the exploration of the links between strategy, execution, and financial performance in high performance companies. Previous research studied characteristics of high performance companies (HPCs) in mature economies (United States, Europe, and Australia) and in an Asian emerging economy (India). This study of HPCs in the developing economy of Turkey differs from previous studies in three significant ways: (1) Turkey has close economic ties with the European Union; (2) the data for this study was developed under international financial reporting standards (IFRS); and (3) the period compares the pre-financial crisis years (2005-2007) with the post-financial crisis years (2008–2009). This study examines Turkey’s market of by empirically investigating companies listed in the Istanbul Stock Exchange (ISE) to test the hypothesis that there will be no significant difference between the financial performance drivers and measures in the era of stable economy (2005–2007) and in the era of financial crisis (2008–2009). We find that HPC in Turkey have statistically superior performance in the financial characteristics related to the four financial objectives of the financial performance scorecard—total asset management, financial risk, liquidity, and profitability. The results provide direction for the management of companies that aspire to HPC status and to maintain HPC status, especially during periods of financial crisis. We identify five operating objectives that are important for maintaining high performance during periods of financial crisis.

1. PREVIOUS RESEARCH

As noted, this research extends previous research, which investigated the relationship between strategy and financial ratio analysis (Frigo *et al.*, 2002; Needles *et al.*, 2004, 2006; Needles *et al.*, 2010). Further, it is related to previous research by Nissim and Penman (1999, 2001), Brief and Lawson (1992), Fairfield and Yohn (1999), Feltham and Olsson (1995), Fera (1997), Jansen and Yohn (2002), Lev and Thiagarajan (1993), Ohlson (1995), Penman (1991), Piotroski (2000), and Selling and Stickney (1989).

Frigo and Litman (2002) have emphasized a “Return Driven Strategy” under which business activities are ethically aligned with achieving maximum financial performance and shareholder wealth. Financial statements reflect how well a company’s management has carried out the strategic and operating plans of the business. Analysts evaluate performance by conducting ratio analysis related to various aspects of a business’s operations. The marketplace, in turn, evaluates this performance, and a value is placed on the company.

Our previous research (Needles *et al.*, 2004, 2006, 2007, 2008) has shown empirically how ratios interact in integrated financial ratio analysis, which we call the Financial Performance Scorecard (FPS), to show whether a company is creating or destroying value. This research was later extended to a 20-year period (Needles *et al.*, 2010). The FPS is a structure or framework for considering the interaction of financial ratios, with

particular emphasis on the drivers of performance and their relationship to performance measures. These performance measures are reflected ultimately in a return that is compared with a benchmark cost of capital. If the return exceeds cost of capital, value has been created. If the return is less than cost of capital, value has been destroyed. The “spread” between return on investment and the cost of capital was used as a criterion for selecting the leading companies; however, for purposes of evaluating the FPS in this study, we will assume that the cost of capital is determinable and given (Abdeen & Haight 2002; Gebhardt *et al.*, 2001).

The FPS is based on the premise that management must achieve certain financial objectives in order to create value and that these financial objectives are interrelated. Further, underlying the performance measures that analysts and the financial press commonly use to assess a company’s financial performance are certain financial ratios, called performance drivers that are critical to achieving the performance measures. We found that while HPCs uniformly excel on the basis of performance measures, they will not display uniform characteristics when it comes to performance drivers, because these measures are more a function of the various strategies that the companies may employ to achieve high performance (Needles *et al.*, 2004). Expanded financial objectives identified by these studies are shown in Appendix A and their relationship to performance drivers, and performance measures are shown in Appendix B. The components and formulas for the ratios addressed in this study also appear in Appendix B. Specifically, previous research investigated (1) evidence with regard to the components of the FPS—in particular, the relationships between the performance drivers and the performance measures and (2) the relationships between the performance of the HPC and that of their respective industries.

The empirical results confirmed the basic propositions of the FPS and the criteria for choosing HPCs. These results are summarized as follows:

1. The performance drivers and performance measures are independent of each other, as shown by low correlation among each other or low rank correlation. This proposition held true for all companies that show independence among the ratios, with low correlations among performance drivers and performance measures.
2. The criteria for choosing HPCs were validated by the performance measures in the FPS model. The HPCs exceed the ordinary averages across all performance measures.
3. The HPCs show mixed results with regard to performance drivers when compared with ordinary drivers. HPCs excel on profit margin, have lower financial risk, have variable results for cash flow yield, and asset turnovers are lower on cash flow yield. We believe these results are due in part to the different strategies that companies may employ.

Previous research also addressed the financial objective of operating asset management. The goal of liquidity is closely related to the goal of operating asset

management. Operating asset management is a measure of management control of the cash conversion cycle, which is the time required to make or buy products, to finance the products, and to sell and collect for them. Operating asset management is the ability to utilize current assets and liabilities in a way that supports growth in revenues with minimum investment. The drivers of operating asset management are the turnover ratios, and the performance measures are the days represented by each turnover measure. The calculations of these ratios are contained in Appendix B. Taken together, the performance measures give an indication of the financing period, as shown by the following formula:

$$\text{Financing Period} = \text{Average Days' Sales Uncollected} + \text{Average Days' Inventory on Hand} - \text{Average Days' Payable}$$

The financing period represents the amount of time during which a company must provide financing for its operating activities.

Our expectation in our previous research was that HPCs would have a shorter financing period than ordinary companies because their superior financial performance would be a reflection of their operating efficiency. The previous results may be summarized as follows:

1. The financing period for HPCs compared to S&P companies was shorter in almost all cases by about 28 days for the 1997–2001 period and 30 days for the 2002–2003 period, which equates to fewer days that need financing, thus lowering the financing costs for HPCs relative to S&P companies.
2. The operating asset turnover ratios, however, showed more variability among industries and between HPCs and S&P companies. We expected HPCs to outperform S&P companies on receivables turnover, and this was generally the case. However, overall the HPC advantage was not significant. This result could be accounted for by the fact that HPCs have less need to sell receivables and take advantage of off-balance-sheet financing than S&P companies. Further, HPCs are better able to take advantage of trade creditors.
3. Inventory turnover ratios were in line with our expectations that the HPCs would outperform the S&P companies. Inventory turnover for HPCs exceeded that of S&P companies, representing fewer days of financing needed and more than offsetting the shortfall from receivables.
4. HPCs had a slightly lower payable turnover than S&P companies. Strong operating results and low debt loads of HPCs enable these companies to obtain longer terms than average from their trade creditors, which accounted for most of the difference. Thus, the deficiencies of HPCs noted above in receivables and inventory are overcome, so that these companies outperform their industry on the financing period.

2. THE TURKISH ECONOMY: 2005–2009

The global economic crisis beginning in the second quarter of 2007 affected the Turkish economy mainly through three channels. These channels can be summarized as a contraction in foreign trade, a tightness in the finance and liquidity conditions, and a deterioration in expectations. In addition to foreign demand, the global crisis also negatively affected domestic demand severely. Because EU countries, constituting nearly half of Turkish exports, felt the effects of crisis intensively, exports, and thus domestic production, declined significantly in real terms. Since over 90 percent of total Turkish export is composed of manufacturing goods, it can be seen that the rapid reduction in exports has an important share in high-rate production contraction recorded in industry sector-added value. With the effect of an accelerated increase in the import dependency of domestic production and export in the recent years, contraction in imports became deeper.

Decline in prices of crude oil and commodities in international markets also reduced the value of Turkish imports during this crisis period. In 2009, as compared with the previous year, the foreign trade balance fell more than 50 percent, from 53 to 25 billion US dollars and the current account deficit fell to 14.2 billion US dollars from a record high of 42 billion US dollars in 2008.

Another channel through which the global economic crisis affected Turkey is the increased pressure on the financing and liquidity conditions in both the domestic and global markets. During the 2002–2007 period, excessive/abundant global liquidity eased the credit conditions and consequently high growth rates were attained in the entire world.

The Turkish economy, structurally suffering from insufficient domestic savings (savings shortage), reached high growth rates by attracting significant foreign capital as a result of structural reforms, privatization of state economic enterprises (SEEs), macroeconomic and political stability, and fiscal discipline. In addition, the Turkish Lira, as other developing countries' currencies, significantly appreciated relative to the US dollar parallel to increases in global asset prices as a result of loose monetary and financial policies in developed countries. These developments further increased the current account deficit by encouraging imports, and the Turkish private sector relied heavily on cheaper foreign debt and other foreign financing resources. Under these conditions, decreases in capital inflows to Turkey as a result of global crisis obstructed the finance of growth. Also in this period, because of the contraction in domestic loans, firms had difficulty in gaining access to financing.

The uncertain environment caused by the crisis, affected negatively the anticipatory expectations of economic units by damaging the confidence in markets, and this situation caused the adjournment of consumption and investment decisions and the significant deceleration of economic activity. As a result of these developments, the GDP growth rate realized as negative 4.7 percent in 2009.

Economic contraction both in developed and developing countries, as well as in emerging markets, followed by the global crisis caused further increases in unemployment rates which were already high. The seasonally-adjusted unemployment rate of 10.8 percent in 2005 increased to 13.4 percent in 2008 and declined to 13.0 percent in 2009 as of each year end. Besides the existing structural problems in domestic labor markets, crisis-induced uncertainties hindered new job creation.

In order to mitigate the negative effects of crisis on the economy, by taking into consideration the suggestions of private sector agents, some support packages were put in place to stimulate domestic demand and to fight against the unemployment. With the effect of the support packages, an important deterioration in public finance occurred in 2009. This deterioration, to a large extent, arose from the reduction in tax and social security premium revenues caused by the rapid decline in consumption, imports, and employment.

These developments caused an increase in the ratio of EU-defined general government nominal debt stock-to-GDP, which decreased permanently from 73.7 percent in 2002 after the 2001 economic crisis to 39.5 percent in 2008 and then, due to the aforementioned measures to stimulate the economy after the global crisis, rose to 45.5 percent at the end of 2009.

Besides the sharp decline in global demand and reduction in energy and commodity prices in the wake of global crisis, the contraction in domestic demand brought the reduction in inflation and inflationary expectations. This conjuncture established grounds for the Central Bank of the Republic of Turkey (CBRT) to lower policy interest rates rapidly. As a result, short-term market interest rates and government debt securities interest rates declined to their lowest levels.

The effect of global crisis on the Turkish banking system remained very limited. After structural and legal reforms put in effect following the 2001 economic crisis to establish a sound banking system, Turkish banks strengthened their capital bases, and by incorporating active risk measurement and management techniques, the asset quality of the sector steadily improved. Bank credits to the private sector, especially consumer and mortgage credits to households, have increased to 256 billion US dollars from 28 billion in 2001 and 114 billion in 2005. Total net credits account for 38 and 48 percent of the total banking sector assets in 2005 and 2009 respectively. The capital adequacy ratio for the banking system as a whole during the 2005–2009 period remained at 20 percent on average.

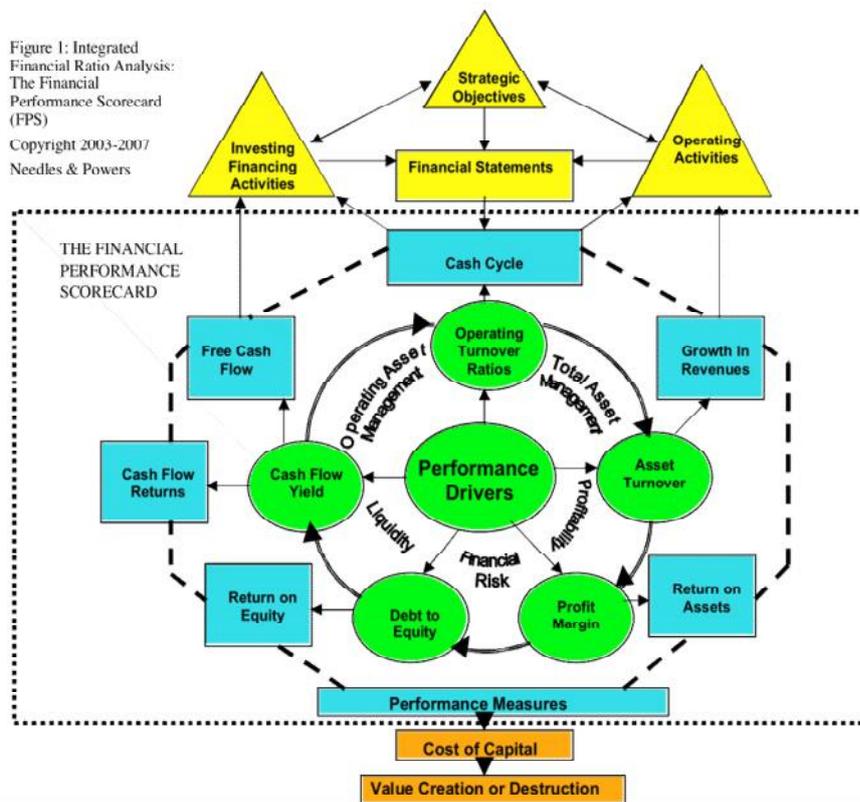
Expectations about the world economy have a critical importance for Turkey when the openness of its economy and the importance of foreign financing resources for the finance of growth are taken into consideration. A rapid recovery in the world economy and capital inflows in the next period will accelerate the recovery period of the Turkish economy from the global crisis.

In summary, the Turkish economy recorded a rapid growth performance until its slowdown started in the second quarter of 2007, accelerated downward from the second half of 2008 when the effects of the global crisis began to be perceived, and then gave way to contraction. While the average annual growth rate of the Turkish economy was 6.9 percent in the 2005–2007 period, the economy grew by 0.7 percent in 2008 and contracted by 4.7 percent in 2009. Thus, comparison of the performance of HPCs in 2005–2007 to that in 2008–2009 will effectively assess the ability of these companies to maintain performance in a period of financial crisis.

3. EMPIRICAL OBJECTIVES

Similar to previous studies, we empirically investigate the hypothesis that, compared to ordinary companies, Turkish HPCs will have statistically superior performance in the financial characteristics related to the first five financial objectives of the financial performance scorecard—total asset management, profitability, financial risk, liquidity, and operating asset management (*Figure 1*).

Figure 1



Sustainability of high performance over a relatively long period of contrasting time periods is a characteristic of any HPC. To test this characteristic of HPCs, two test periods are used in this research. The first test period was the era of stable economy (3-year period of 2005 to 2007) and the second test period was the era of financial crisis (2-year period of 2008 to 2009).

For the Turkish market, the first period, 2005–2007, was characterized by a time of rapid growth in Turkey. The second test period, 2008 to 2009, included alternating periods of slight growth in 2008 and rapid decline in 2009.

To confirm that these time periods are different, we compared the performance of Turkish HPCs for the two time periods across all drivers and measures in Appendix C (Tables 1-a and 1-b). The HPCs performed significantly better in the 2005–2007 time period than in the 2008–2009 period. Albeit not statistically significant in some cases, most of the measures are different between the time periods. We also compared ISE ordinary companies for the same drivers and measures in Appendix C (Tables 1-c and 1-d). In general, ordinary companies have superior measures in the 2005–2007 time period compared to those in 2008–2009. There are statistically significant differences in three of the drivers and four of the measures. Similarly to HPCs, the difference in asset turnover, revenue growth, return on assets, receivables turnover, payables turnover, average days' sales uncollected, and average days' payable are statistically significant.

4. EMPIRICAL SAMPLE

The data for this study was hand collected from the financial statements of the sample companies. Our analysis focused on two groups of companies: ordinary companies and HPCs, both listed in the ISE. We started with companies listed in the ISE for which data exists consecutively from 2005 to 2009. We utilized companies listed in the ISE with the following adjustment—we excluded several industries whose financial structures typically depart from industrial, retail, and service businesses. These industries are banks, other financial institutions, financial services (broker) companies, insurance companies, real estate investment trusts, and hotels. The adjustment improved the comparability of the benchmark group with the HPCs. After that screening of industries, our study sample had 182 companies that are listed in the ISE. Companies included in the HPC list were removed from the ISE ordinary companies list. After the final screenings, the benchmark group had 141 companies.

In determining Turkish HPCs, we identified 41 companies according to the following criteria (where data was available from 2005 to 2009):

- Cash flow return on investment (CFROI) at twice or more the cost of capital or greater than 5% discount rate in Turkey.
- Growth rates in assets exceed average growth rate of Turkish GDP.
- Relative total shareholder returns (TSR) above the ISE 100 average .

These high performance companies (HPCs) are listed in Appendix D.

In the analyses, companies were not grouped to industries because we do not have enough ordinary companies and HPCs to derive reliable industry averages and to discuss industry-specific results.

5. EFFECT OF OUTLIERS

All tests were conducted without outliers. Appendix E (Table 2-a and Table 2-b) shows the number of outliers for Turkish HPCs and ordinary companies for 2005–2007 and for 2008–2009. The descriptive output helps us in evaluating the raw data scores for the outliers. We detect the outliers by comparing the data values to the mean and standard deviation. To get better results on the T-test, we eliminated outliers for various ratios. As shown in Appendix E (Tables 2-a (2005–2007) and 2-b (2008–2009)), in no cases out of sixty-four possible did outliers represent more than 5 percent of the samples. The elimination of outliers did not change the conclusions reached in examining the full set of data, but did affect the significance level on some ratios. In most cases, the results improved with the elimination of outliers. In the following sections, we will discuss the results with outliers eliminated, unless otherwise noted.

6. DISCUSSION OF RESULTS

The results of the analyses are discussed for the two time periods: (1) 2005–2007 and (2) 2008–2009. For each period we examine the financial characteristics of Turkish HPCs compared to Turkish ordinary companies. When referencing the previous study, we are referring to the study of the performance of US HPCs compared to S&P 500 companies (Needles *et al.*, 2006).

We ran independent sample t-test in order to compare the mean scores of the two groups for each ratio. We examined $p (< 0.05)$. We found that most of the mean scores of the ratios for the two groups are different, and these differences are statistically significant at the .05 level in almost all cases.

6.1. Financial Characteristics

Period 2005–2007 Results

Table 3-a compares the HPCs with all ordinary companies on performance drivers and performance measures related to the objectives of total asset management, profitability, financial risk, and cash flow efficiency for the period 2005–2007. Appendix F (Table 3-b) shows the same measures for HPCs and all ordinary companies for 2008–2009. These tables show the percentage differences, respectively,

of HPCs versus all ordinary companies. The results for the first test period of 2005–2007 are summarized as follows:

1. The overall industry analyses for 2005–2007 (Appendix F, Table 3-a) show consistent results across all performance drivers and measures. HPCs are more profitable (profit margin and return on assets), and have better utilization of assets (asset turnover). Financial risk is lower for HPCs (return on equity), but debt to equity is higher for the HPCs. Cash flow yield and cash flow returns are also higher for HPCs. Using the t-test, 2 of the 4 performance drivers and 4 of the 5 performance measures are statistically significant at the .05 level or better.
2. In the period 2005–2007 (Appendix F, Table 3-a), HPCs exceeded all ordinary companies in the performance measure of growth in revenues by 1200%, which was significant at the .000 level.
3. Profitability as measured by profit margin was positive and much greater for HPCs than for all ordinary companies, which were significant at the .000 level. Also return on equity and return on assets were greater for HPCs by 50.03% and 689.73%, which were significant at the .015 level or better.
4. Cash flow yield was also higher for HPCs than for all ordinary companies by 51.10%, which was not significant. This period also produced better relative performance measures for HPCs for cash flow returns on total assets (224.94%). Difference was significant at the .000 level.

In summary for the period 2005–2007, HPCs were shown to maintain superior asset management and performance profitability, lower financial risk, and stronger cash flow returns compared to the benchmark group over an economic period of rapid growth and stable market conditions in Turkey.

Period 2008–2009 Results

The second test period of 2008–2009 is a good test period of superior performance by HPCs because it represents a contrasting period of slight growth following a rapid decline in the Turkish market cycle from the 2005–2007 period. Our expectation was that the HPCs would continue to outperform the ISE ordinary companies in this period, given that the overall market conditions in Turkey have deteriorated. Appendix F (Table 3-b) shows the measures for 2008–2009 for total asset management, profitability, financial risk, and cash flow efficiency drivers and measures. The following observations may be made:

1. For this period, the overall industry analysis shows similar results in favor of the HPCs, especially in the asset turnover and profit margin drivers and the growth in revenue, return on assets, return on equity, and cash flow return on total assets measures. Overall, 2 of the 4 drivers and 4 of the 5 measures have differences that are significant at least at the .069 level or

better. The only exceptions are the drivers of debt to equity and cash flow yield where the differences are in favor of ordinary companies but not statistically significant at the .05 level. These results indicate that HPCs are maintaining their superior position with regard to performance measures and drivers with almost no variations.

2. HPCs continue to have higher debt to equity ratios and thus higher financial risk but continue to have superior return on equity. They also generate superior cash flow returns.

These results strongly support the proposition that HPCs maintain superior performance with regard to asset management and profitability drivers through changing market conditions.

6.2. Operating Asset Management Characteristics

Period 2005–2007 Results

Appendix F (Table 3-c) compares HPCs with all ordinary companies for the period 2005–2007. Also, this appendix (Table 3-d) provides the same comparisons for the period 2008–2009. Our expectation was that HPCs would have a shorter financing period than all ordinary companies because their superior financial performance would be a reflection of their operating efficiency. The results for 2005–2007 may be summarized as follows:

1. The financing period for HPCs was shorter overall for the period 2005–2007. Table 3-c shows that the financing period for the HPC group was shorter by 37.02% for the period 2005–2007, thus lowering the financing costs for HPCs relative to all ordinary companies.
2. HPCs outperform all ordinary companies in terms of the operating asset performance drivers and measures. We expected HPCs to outperform all ordinary companies on receivables turnover, and as shown in Appendix F, Table 3-c, HPCs exceeded the benchmark by 53.78%, which was significant at the .05 level.
3. The inventory turnover ratios are also in line with our expectations that the HPCs would outperform the ISE ordinary companies. Inventory turnover for HPCs in the 2005–2007 period exceeded that of all ordinary companies by 20.09% (not statistically significant), which represents fewer days of financing needed.
4. For the 2005–2007 period, HPCs have a payable turnover that is 12.53% lower than that of all ordinary companies, which was not significant at the .05 level. Strong operating results and low debt loads of HPCs enable these companies to obtain longer terms than average from their trade creditors.

Period 2008–2009 Results

Our expectation was that HPCs would continue to outperform all ordinary companies in operating asset management because of their superior financial performance in the period 2008–2009. The results for this period may be summarized as follows:

1. The financing period for HPCs was also shorter overall for the period 2008–2009. Table 3-d shows that the financing period for the HPC group was shorter by 29.88% for the period.
2. Though HPCs continued to outperform all ordinary companies in all of the operating asset performance measures, the results for turnover ratios are not in line with our expectations.
3. The payables turnover ratios are still in line with our expectations for the period 2008–2009. Payables turnover for HPCs was higher than that of all ordinary companies by 14.13% (not statistically significant).
4. We expected that HPCs would continue to have an inventory turnover that is higher than that of all ordinary companies, but the result was HPCs had a lower inventory turnover in the period 2008–2009 by 10.56%. Receivables turnover for HPCs exceeded that of all ordinary companies by 41.19% (significant at the .002 level). However, this result is not stronger than the result in the period 2005–2007.

In summary, HPCs push their creditors to the limit, excel at inventory management, and are willing to accept a higher level of receivables. HPCs are able to maintain their performance and lower financing period through changing market conditions, and, in a period of financial crisis, most of the results were still statistically significant.

CONCLUSION

We began this research with the objective of replicating the previous study of US, Australian, and Indian HPC for Turkish companies, but with key differences: (1) Turkey has close economic ties with the European Union; (2) the data for this study was developed under international financial reporting standards (IFRS); and (3) the period compares the pre-financial crisis years (2005–2007) with the post-financial crisis years (2008–2009). We concluded that Turkish HPCs are able to sustain superior performance through changing market conditions, including periods of growth and financial crisis, as demonstrated by their performance over the financial drivers and measures. The study finds that the financial characteristics for US, Australian, and Indian HPCs—superior total asset management, profitability, financial risk, liquidity, and operating asset management—hold true in the Turkish market. Knowledge of these high performance attributes has implications not only for performance measurement by financial analysts but also for operating strategies for managers who want to improve company performance. As companies improve or decline on one or more of the five performance drivers, analysts may adjust their projections of future values. At the same time, managers may concentrate efforts to increase their companies' values by focusing efforts on improving these performance drivers.

LIMITATIONS AND FUTURE RESEARCH

This exploratory study, which we consider part of on-going research in the area of strategy and financial performance measurement, has several limitations, some of which we expect to study in future research. First, we were limited to the small sample size. This was due to our limiting our sample to ISE companies. If we expand our sample size sufficiently to non-public companies, we expect to find similar results to this study. Second, we were not able to expand this study to the industry level, because no industry had enough HPCs to produce significant results. If we expand the sample size, we expect to find similar results at the industry level as well. Future research may compare Turkish HPCs to other developing countries across all performance drivers and measures.

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APPENDIX A: EXPANDED FINANCIAL OBJECTIVES

(Source: Needles *et al.*, 2004)

<u>Financial Objectives</u> <u>Performance</u>	<u>Links to Financial</u>
Total Asset Management	Ability to utilize all the assets of a company in a way that maximizes revenue while minimizing investment
Profitability	Ability to earn a satisfactory net income
Financial Risk	Ability to use debt effectively without jeopardizing the future of the company
Liquidity	Ability to generate sufficient cash to pay bills when they're due and to meet unexpected needs for cash
Operating Asset Management	Ability to utilize current assets and liabilities to support growth in revenues with minimum investment

**APPENDIX B: COMPONENTS AND FORMULAS FOR RATIO
COMPUTATIONS (Source: Needles *et al.*, 2004)**

Components

Financial Objective	Performance Drivers	Performance Measures
Total Asset Management	Asset Turnover	Growth in Revenues
Profitability	Profit Margin	Return on Assets
Financial Risk	Debt to Equity	Return on Equity
Liquidity	Cash Flow Yield	Cash Flow Returns
		Free Cash Flows
Operating Asset Management	Turnover Ratios	Cash Cycle

Formulas

Performance Drivers

Asset Turnover: $\text{Net Sales} / \text{Average Total Assets}$

Profit Margin: $\text{Net Income} / \text{Net Sales}$

Debt to Equity: $(\text{Total Assets} - \text{Stockholders' Equity}) / \text{Stockholders' Equity}$

Cash Flow Yield: $\text{Cash Flows from Operating Activities} / \text{Net Income}$

(In the analysis, if either the numerator or denominator of the cash flow yield was negative, the ratio was excluded.)

Valuation Performance Measures

Growth in Revenues: $\text{Change in Net Sales} / \text{Net Sales}$

Return on Assets: $\text{Net Income} / \text{Average Total Assets}$

Return on Equity: $\text{Net Income} / \text{Average Stockholders' Equity}$

Cash Flow Returns: $\text{Cash Flows from Operating Activities} / \text{Average Total Assets}$
 $\text{Cash Flows from Operating Activities} / \text{Average Stockholders' Equity}$

Free Cash Flow: $\text{Cash Flows from Operating Activities} - \text{Dividends} + \text{Sales of Capital Assets} - \text{Purchases of Capital Assets}$ (In the analysis, to adjust for size of company, free cash flow was divided by average total assets.)

Operating Asset and Financing Ratios

Receivables Turnover: $\text{Net Sales} / \text{Average Accounts Receivable}$

Average Days' Sales Uncollected: $365 / \text{Receivables Turnover}$

Inventory Turnover: $\text{Cost of Sales} / \text{Average Accounts Inventory}$

Average Days' Inventory on Hand: $365 / \text{Inventory Turnover}$

Payables Turnover: $(\text{Cost of Sales} \pm \text{Change in Inventory}) / \text{Average Accounts Payable}$

Average Days' Payable: $365 / \text{Payables Turnover}$

Financing Period: $\text{Average Days' Sales Uncollected} + \text{Average Days' Inventory on Hand} - \text{Average Days' Payable}$

APPENDIX C

Table 1-a. Turkish HPCs Performance Compared: Before Financial Crisis (2005–2007) to Post Crisis (2008–2009)

	Performance Drivers				Performance Measures					
	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth Revenues	inReturn Assets	onReturn Equity	onCash Flow on Total Assets	ReturnFree Flow	Cash
2005–2007	1.2139	.1276	.9846	1.1819	.1575	.1153	2.4984	.1251		2.2339E6
2008–2009	1.0980	.0942	1.5122	.7387	.0341	.0808	2.0984	.1325		4.4417E7
Difference	-0.1159	-0.0334	0.5276	-0.4432	-0.1234	-0.0345	-0.4	0.0074		42,183,100
Difference %			53.58							
	-10.56%	-35.46%	%	-60.00%	-361.88%	-42.70%	-19.06%	5.58%		94.97%
t-test values)	(p-.217	.090	.040	.410	.000	.014	.376	.688		.207

Table 1-b. Turkish HPCs Performance: Operating Asset Management: Before Financial Crisis (2005–2007) to Post Crisis (2008–2009)

	Performance Drivers			Performance Measures			
	Receivables Turnover	Inventory Turnover	Payables Turnover	Average Sales Uncollected	Days' Average Inventory on Hand	Days' Average Payable	Days' Financing Period
2005–2007	13.6584	13.5266	12.2516	42.6095	54.6409	36.4582	67.3491
2008–2009	9.3353	11.4759	9.5898	55.9610	73.7891	52.0556	77.6945
Difference	-4.3231	-2.0507	-2.6618	13.3515	19.1482	15.5974	10.3454
Difference %	-46.31%	-17.87%	-27.76%	23.86%	25.95%	29.96%	13.32%
t-test (p-values)	.001	.430	.006	.005	.031	.001	.331

Table 1-c. ISE All Ordinary Companies Performance Compared: Before Financial Crisis (2005–2007) to Post Crisis (2008–2009)

	Performance Drivers				Performance Measures					
	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth Revenues	inReturn Assets	onReturn Equity	onCash Flow on Total Assets	ReturnFree Flow	Cash
2005–2007	.9781	-.0653	.4364	.7822	-.0143	.0146	1.6653	.0385		-6,2120E6
2008–2009	.8170	-.1144	1.3803	1.1213	-.1218	-.0205	1.5678	.0213		-3,7972E6
Difference	-0.1611	-0.0491	0.9439	0.3391	-0.1075	-0.0351	-0.0975	-0.0172		2,414,800
Difference %	-19.72%	42.92%	68.38%	30.24%	88.26%	171.22%	-6.22%	-80.75%		-63.59%
t-test values)	(p-.000	.341	.197	.596	.013	.000	.565	.054		.567

Table 1-d. ISE All Ordinary Companies Performance: Operating Asset Management: Before Crisis(2005–2007) to Post Crisis(2008–2009)

	Performance Drivers			Performance Measures			
	Receivables Turnover	Inventory Turnover	Payables Turnover	Average Sales Uncollected	Days' Average Inventory on Hand	Days' Average Payable	Days' Financing Period
2005–2007	29.5495	11.2639	14.0070	75.4237	89.5218	60.2506	103.7711
2008–2009	6.6117	12.8311	8.4025	92.6804	101.9167	78.8819	110.8007
Difference	-22.9378	1.5672	-5.6045	17.2567	12.3949	18.6313	7.0296
Difference %	-346.92%	12.21%	-66.70%	18.62%	12.16%	23.62%	6.34%
t-test (p-values)	.002	.468	.000	.010	.105	.001	.467

APPENDIX D: HIGH PERFORMANCE COMPANIES OF TURKEY

The description of companies draws upon the data gathered from their web pages.

Number	Company Name	Description
1	ACIBADEM HEALTHCARE SERVICES LTD.	Acibadem Healthcare Services Ltd. is a provider of healthcare services.
2	ADANA CEMENT LTD.	Adana Cement Ltd. is a manufacturer of cement and ready-mix concrete.
3	ADEL LTD.	Adel is the pioneer and leader of the Turkish writing instruments industry, producing wood-cased black-lead, color and copying pencils, ballpoint pens, fiber pens, oil pastels, wax crayons, finger paints, modeling clay, gouache, watercolors, erasers and mechanical pencils, liquid ink pens and fine leads.
4	ANADOLU EFES LTD	Anadolu Efes is the producer of beer, malt drinks and soft drinks which are consumed in over 50 countries throughout the region from the Adriatic Sea to the Pacific Ocean.
5	AFM CINEMAS INC.	Afm Cinemas Inc. is one of the leading companies in Turkey that specializes in operating movie theatres.
6	AKCANSALTD.	Akcansa Ltd. is a manufacturer of cement and ready-mix concrete.
7	ARENA COMPUTERLTD.	Arena Computer Ltd. is providing marketing, selling, and logistics services for technology products.
8	BOLU CEMENT LTD.	Bolu Cement Ltd. is a manufacturer of cement and ready-mix concrete.
9	BOYNER DEPARTMENT STORES LTD.	Boyner Department Stores Ltd. is the leading department store with its 28 Boyner stores and 12 discount stores in 20 different provinces throughout Turkey.
10	BORUSAN MANNESMANN LTD.	Borusan Mannesmann Ltd. is the producer of water installation and gas fitting pipe; industrial pipes; special pipes for several areas like furniture, textiles, and automobiles; boiler pipes; profiles used in the production of roof construction, machines, and agricultural equipment; plastic pipe and fitting systems; and spiral pipes used in water-petrol-natural gas transportation lines.

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11	BOSCH HOME APPLIANCES LTD.	Bosch Home Appliances Ltd. Is the manufacturer of household appliances such as refrigerators, dishwashers, washing machines, and vacuum cleaners.
12	BATI CEMENT LTD.	Bati Cement Ltd. is a manufacturer of cement and ready-mix concrete.
13	BURSA CEMENT LTD.	Bursa Cement Ltd. is a manufacturer of cement and ready-mix concrete.
14	CIMSA LTD.	Cımsa Ltd. is a manufacturer of cement and ready-mix concrete.
15	CELEBI GROUND HANDLING LTD.	Celebi Ground Handling Ltd. is a supplier of ground handling services to the aviation industry.
16	ECZACIBAŞI PHARMACEUTICAL AND INDUSTRIAL INVESTMENT LTD.	Eczacıbaşı Pharmaceutical and Industrial Investment Ltd. is a producer of pharmaceuticals. In addition, the company has activities in real estate development.
17	EGE PROFIL LTD.	Ege Profil Ltd. is a manufacturer of door and window profiles made of polyvinyl chloride (PVC).
18	ENKA CONSTRUCTION LTD.	Enka Construction Ltd. has business activities in engineering and construction, energy investments, real estate, trade & manufacturing, and retail.
19	FORD OTOSAN LTD.	Ford Otosan Ltd. has a licensee and partnership agreement with Ford Motor Company, which is a worldwide leader in automotive products and services.
20	GENTAS LTD.	Gentas Ltd. is a producer of laminates, werzalits, getaprofile products, duralits, and chipboard.
21	GUBRE FABRIKALARI LTD.	Gubre Fabrikaları Ltd. provides fertilizers to the agricultural sector.
22	INTEMA LTD.	Intema Ltd. is a marketing company specializing in construction and installation materials.
23	IPEK TYPOGRAPHY LTD.	Ipek Typography Ltd. is a company active in the commercial printing sector.

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24	IZMIR IRON AND STEEL LTD.	Izmir Iron and Steel Ltd. is a manufacturer of long steel for domestic and international markets.
25	IZOCAM LTD.	Izocam Ltd. is a manufacturer of insulating materials such as glass wool, rock wool, extruded polystyrene (Foamboard) sheets, and elastomeric rubber (flexible) insulation materials.
26	KELEBEK FURNITURE LTD.	Kelebek Furniture Ltd. is a manufacturer of kitchen furniture, bath furniture, and living room furniture.
27	KONFRUT FOOD LTD.	Konfrut Food Ltd. is a producer of fruit and vegetable concentrates and purees, as well as further sales and exports of such products.
28	KARDEMIR KARABUK IRON AND STEEL LTD.	Kardemir Iron and Steel Ltd. is a producer of steel, rolling mill, and coke products.
29	MARDIN CEMENT LTD.	Mardin Cement ltd. is a producer of cement and ready-mix concrete.
30	MUTLU BATTERIES LTD.	Mutlu Batteries Ltd. is a manufacturer of automotive, marine, and industrial batteries.
31	NUH CEMENT LTD.	Nuh Cement ltd. is a producer of cement and ready-mix concrete.
32	OTOKAR LTD.	Otokar Ltd. is one of the major automotive manufacturers in Turkey, and has been providing solutions to its customers both in the commercial and military range.
33	PINAR SU LTD.	Pınar Su Ltd. is a provider of bottled natural spring water and naturel mineral water by making use of the inactive springs in Turkey.
34	SEKER CHICKEN AND FEED LTD.	Seker Chicken and Feed Ltd., in the poultry industry, produces poultry feed and processes chicken products.
35	TURKCELL COMMUNICATION SERVICES LTD.	Turkcell Communication Services Ltd. is the leading GSM operator in Turkey, but is also the third largest GSM operator in Europe in terms of subscriber numbers. Turkcell's shares have been traded on the New York Stock Exchange (NYSE) since 2000.
36	TURKISH AIRLINES LTD.	Turkish Airlines Ltd. is the flag carrier of the Republic of Turkey in the civil air transportation industry.

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37	TOFAS AUTO FACTORIES LTD.	Tofas Auto Factories Ltd. is one of Fiat Auto's 3 strategic production centers worldwide today.
38	TÜPRAŞ PETROL REFINERIES LTD.	Tüpraş Petrol Refineries Ltd. is operating four oil refineries, with a total of 28.1 million tons annual crude oil processing capacity, Tüpraş is Turkey's largest industrial enterprise. In addition, the company has a 50,000 ton capacity petrochemical production facility, a majority stake (79.98 %) in shipping company DİTAŞ, and 40% share ownership of petrol retailer Opet.
39	ÜNYE CEMENT LTD.	Ünye Cement Ltd. is a manufacturer of cement and ready-mix concrete.
40	VAKKO LTD.	Vakko Ltd. is a ready-to-wear fashion emporium in Turkey.
41	ZORLU ENERGY LTD.	Zorlu Energy Ltd. is one of the strongest participants in the Turkish energy sector that is rendering "turn-key delivery" services.

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APPENDIX E

Table 2-a. Turkish HPC and All Ordinary Company (AOC) Outliers Eliminated: 2005–2007

Sample	Performance Drivers				Performance Measures					
	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Flow on Total Assets	Return on Free Cash Flow	
HPC Outliers	3	1	3	2	2	3	1	2	3	
HPC Sample Size	120	122	120	121	121	120	122	121	120	
% of the Sample	2.44%	0.81%	2.44%	1.63%	1.63%	2.44%	0.81%	1.63%	2.44%	
AOC Outliers	4	1	3	7	4	5	10	5	4	
AOC Sample Size	419	422	420	416	419	418	413	418	419	
% of the Sample	0.95%	0.24%	0.71%	1.65%	0.95%	1.18%	2.36%	1.18%	0.95%	

Table 2-a. (cont.) Turkish HPC and All Ordinary Company (AOC) Outliers Eliminated: 2005–2007

Sample	Performance Drivers			Performance Measures				
	Receivables Turnover	Inventory Turnover	Payables Turnover	Average Sales Uncollected	Days' Average Inventory on Hand	Average Days' Payable	Financing Period	
HPC Outliers	2	3	3	3	5	3	1	
HPC Sample Size	121	120	120	120	118	120	122	
% of the Sample	1.63%	2.44%	2.44%	2.44%	4.07%	2.44%	0.81%	
AOC Outliers	2	3	4	2	4	3	1	
AOC Sample Size	421	420	419	421	419	420	422	
% of the Sample	0.47%	0.71%	0.95%	0.47%	0.95%	0.71%	0.24%	

Table 2-b. Turkish HPC and All Ordinary Company (AOC) Outliers Eliminated: 2008–2009

Sample	Performance Drivers				Performance Measures					
	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth in Revenues	Return on Assets	Return on Equity	Cash Return on Assets	Flow on Total	Free Cash Flow
HPC outliers	2	1	1	1	1	1	3	2	2	
HPC sample size	80	81	81	81	81	81	79	80	80	
% of the sample	2.44%	1.22%	1.22%	1.22%	1.22%	1.22%	3.66%	2.44%	2.44%	
AOC Outliers	4	5	3	5	8	6	4	5	4	
AOC Sample Size	278	277	279	277	274	276	278	277	278	
% of the Sample	1.42%	1.77%	1.06%	1.77%	2.84%	2.13%	1.42%	1.77%	1.42%	

Table 2-b. (cont.) Turkish HPC and All Ordinary Company (AOC) Outliers Eliminated: 2008–2009

Sample	Performance Drivers			Performance Measures			
	Receivables Turnover	Inventory Turnover	Payables Turnover	Average Sales Uncollected	Days' Average Inventory on Hand	Average Days' Payable	Financing Period
HPC Outliers	1	3	2	1	1	1	1
HPC Sample Size	81	79	80	81	81	81	81
% of the Sample	1.22%	3.66%	2.44%	1.22%	1.22%	1.22%	1.22%
AOC Outliers	4	5	3	9	7	7	7
AOC Sample Size	278	277	279	273	275	275	275
% of the Sample	1.42%	1.77%	1.06%	3.19%	2.48%	2.48%	2.48%

APPENDIX F

Table 3-a. Performance of Turkish HPCs in Comparison to ISE All Ordinary Companies (AOC): Before Financial Crisis (2005–2007)

	Performance Drivers				Performance Measures					
	Asset Turnover	Profit Margin	Debt to Equity	Cash Flow Yield	Growth Revenues	inReturn Assets	onReturn Equity	onCash Flow on Total Assets	ReturnFree Flow	Cash
HPC	1.2139	.1276	.9846	1.1819	.1575	.1153	2.4984	.1251		2,2339E6
AOC	.9781	-.0653	.4364	.7822	-.0143	.0146	1.6653	.0385		-6,2120E6
Difference	0.2358	0.1929	0.5482	0.3997	0.1718	0.1007	0.8331	0.0866		8,445,900
t-test values)	(p-.000	.000	.615	.572	.000	.000	.015	.000		.459

Table 3-b. Performance of Turkish HPCs in Comparison to ISE All Ordinary Companies (AOC): Post-Financial Crisis (2008–2009)

	Performance Drivers				Performance Measures					
	Asset Turnover	Profit Margin	Debt to Equity	toCash Flow Yield	Growth Revenues	inReturn Assets	onReturn Equity	onCash Flow on Total Assets	FlowFree on TotalFlow	Cash
HPC	1.0980	.0942	1.5122	.7387	.0341	.0808	2.0984	.1325		4,4417E7
AOC	.8170	-.1144	1.3803	1.1213	-.1218	-.0205	1.5678	.0213		-3,7972E6
Difference	0.281	0.2086	0.1319	0.3826	0.1559	0.1013	0.5306	0.1112		48,214,200
t-test values)	(p-.000	.000	.679	.716	.000	.000	.069	.000		.130

Table 3-c. Operating Asset Management Comparison of Turkish HPCs to All Ordinary Companies (AOC): Before Crisis (2005–2007)

	Performance Drivers			Performance Measures			
	Receivable s Turnover	Inventory Turnover	Payables Turnover	Average Sales Uncollected	Days' Average Inventory on Hand	Average Payable	Days' Financing Period
HPC	13.6584	13.5266	12.2516	42.6095	54.6409	36.4582	67.3491
AOC	29.5495	11.2639	14.0070	75.4237	89.5218	60.2506	103.7711
Difference	-15.8911	2.2627	-1.7554	-32.8142	-34.8809	-23.7924	-36.4220
t-test values)	(p-.034	.293	.254	.000	.000	.000	.000

Table 3-d. Operating Asset Management Comparison of Turkish HPCs to All Ordinary Companies (AOC): Post Crisis (2008–2009)

	Performance Drivers			Performance Measures			
	Receivable s Turnover	Inventory Turnover	Payables Turnover	Average Sales Uncollected	Days' Average inventory on Hand	Average Payable	Days' Financing Period
HPC	9.3353	11.4759	9.5898	55.9610	73.7891	52.0556	77.6545
AOC	6.6117	12.8311	8.4025	92.6804	101.9167	78.8819	110.8007
Difference	2.7236	-1.3552	1.1873	-36.7194	-28.1276	-26.8263	-33.1062
t-test values)	(p-.002	.742	.310	.000	.026	.000	.008

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