

Determining the Importance Level of Accounting Information for Investors' Decision Making

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Abstract

The aim of this study was to determine the precedence order of the accounting information (factors) influencing choice of investment, to derive the relative weight of each factor and to identify differences and similarities in such factors between accounting experts and finance experts. Analytical Hierarchy Process (AHP) methodology was used for the outranking of accounting information (Baker & Haslem, 1973) including future economic outlook of the company, quality of management, future economic outlook of the industry in which the firm is a part, expected future growth in sales, financial strength of the company, expected future percentage growth in the company's earnings per share, reputation of the company, rate of return the company earn on its assets, ease with which the company can sell its assets in case of failure, size of the company, expected future level of long-term interest rate on corporate bonds, value of a share of stock based on the company's accounting records (book value) etc. The questionnaires were answered by accounting and finance experts. In this study, subjective opinions of accounting and finance experts turn into quantitative form with Analytic Hierarchy Process. Results of this study can be used by investors, Ministry of Economy, finance, accounting, business and economy students, professionals and academicians etc.

Keywords: Accounting, Information, Finance, Investors, Analytic Hierarchy Process, Multi Criteria Decision Making

Jel Codes: M40, G11, D81

1. Introduction

The purpose of accounting is to provide useful information for making economic decisions. Users of accounting information can be internal or external to the companies. Investors are the external users of accounting information. Decision making is the process of selecting a logical

choice from different alternatives. During the decision process about the investment, investors want to make sure that they are making a reasonable investment before transferring any financial resources to the company, so accounting information is needed during this period. The accounting information can be taken from company's accounting information system.

Knowing all accounting information about the company isn't needed for the investors. Dividing the accounting information to main and sub parts can be easier for investors' decision making. Determining the importance level of main information (factors) and sub-information (sub-factors) helps the investors during the investment.

As investors, accounting and finance experts' thoughts may be different about the precedence order of the accounting information (factors). Two sides which are accounting and finance can have different opinions during the investment decision according to their field. So, by using the results of this study, it is not possible to make general statements about the importance level of accounting information for investors' decision making, but it is possible to find out the similarities and differences of the experts in such factors.

The purpose of this study is to find out the precedence order of accounting information for investors' decision making. In this study, the relative weight of sub-information is also analyzed for determining the importance level. And also, this study finds out differences and similarities between accounting experts and finance experts about the importance of main accounting information (factors) and sub-accounting information (sub-factors).

The remainder of this study has been organized as follows: In section 2, the literature review of subjects covered in this study is given. In section 3, the methodology of the study which is AHP is explained. Section 4 presents our model and results. In section 5, we conclude with a summary of our results, and future research suggestions.

2. Literature Review

Baker, and Haslem's (1973) study focused on reporting and interpreting the information needs of individual investors, and also identifies important sources of information used by investors used by investors in their analyses of common stock. They conducted a survey to the common-stock investors about information needs of individual investors by using a pretested questionnaire including 33 factors used in investment analysis and selected socio-economic variables. The respondents were given the answers according to the relative importance of each factor on a five-point scale. The average (arithmetic mean) was calculated to provide a single figure which summarizes the responses and serves as a basis for comparing the degree of importance the respondents attribute to each factor. The coefficient of variation was also calculated, which is a measure which relates diversity of response to the average response. The findings of the study show that investors make their decisions based primarily on future expectations, they were also interested in historical factors. Future economic outlook of the

company, quality of management, and future economic outlook of the industry are in which the firm is a part are the factors of great importance. Also, the results show that more meaningful information than that provided by profit forecasts or current financial statements is needed by investors in their analyses of common stock. It is not possible to make general statements about the needs of all investors by using the results of this study.

Nagy, and Obenberger (1994) examined the factors influencing the equity selection process of individual investors. 34 factors which were collected were taken from a questionnaire sent to a random sample of individual equity investors with substantial holdings in Fortune 500 firms. The results reveal that individuals base their stock purchase decisions on classical wealth-maximization criteria combined with diverse other variables. First, they focused on determining the relative importance of the variables to individuals making investment decisions. They ranked the variables according to how frequently they were placed in each response category. They found that classical wealth-maximization criteria such as expected earnings, diversification needs, and minimizing risk are the most important variables for investors, even though investors employ diverse criteria when choosing stocks. Second, they used factor analysis to examine how the factors interacted. As a result, the factors were grouped into seven summary factors that capture major investor considerations.

Murphy, and Soutar (2004) presented a study that uses a conjoint analysis approach to investigate the attributes that influence individual investors when they make a decision to buy shares. The results show that financial measures, such as dividend, price-earnings ratio and yield are less important to individual investors than are a stock's recent price movements, the nature of stock, and, in particular, the investors' perceptions of the company's management.

Martin (1971) provided a test of the decision-relevance of accounting information reported to holders (or prospective holders) of common stock equities through published financial statements (annual reports). A regression model, the Accounting Model, was employed to test the decision-relevance of particular annual report accounting variables. The model results provide support for the utility of accounting information. The study uniquely provides an explicit test of the usefulness of a series of accounting variables taken together.

Luminita (2014) presented data as a whole for everyone and from where each consumer of information can extract only the part they are interested in, and which is useful for them. The interests of users of accounting information regarding the interest, the need for information and the decisions they make as a result of the information received and also of the accounting model used by the entity from which the information is expected are also examined in this study. Descriptive method of research is used. It is found that the user of accounting information will look carefully both financial information and non-financial ones, will choose the direction to follow.

3. Analytic Hierarchy Process

AHP was proposed by Thomas Saaty is a multi-criteria decision making (MCDM) methodology. It has been used widely for analyzing complex decisions. AHP has simple structure and allows group decision making. The steps of AHP are shown below (Saaty, 1990; Saaty, 2008; Saaty & Vargas, 2001):

1. Define the problem and determine the criteria. Factors and related sub factors must be correlated
2. Structure the decision hierarchy taking into account the goal of the decision.
3. Construct a set of all judgments in a square comparison matrix in which the set of elements is compared with itself (size $n \times n$) by using the fundamental scale of pair-wise comparison shown in Table 1. Assign the reciprocal value in the corresponding position in the matrix. Total number of comparison is $n \cdot (n-1) / 2$

Table 1. The fundamental scale of pair-wise comparison for AHP

Intensity of Importance	Definition	Explanation
1	Equal importance	Two activities have equal contribute to the objective
3	Moderate importance	Experience and judgment slightly favor one activity over another.
5	Strong importance	Experience and judgment strongly favor one activity over another
7	Very strong on demonstrated	An activity is favored very strongly over another
9	Extreme importance	The evidence favoring one activity over another is of the highest possible order of affirmation
2,4,6,8	For compromise between the above values	Sometimes one needs to interpolate a compromise judgment numerically

4. Use overall or global priorities obtained from weighted values for weighting process. For synthesis of priorities obtain the principal right eigenvector and largest eigenvalue. Matrix $A = (a_{ij})$ is said to be consistent if $a_{ij} \cdot a_{jk} = a_{ik}$ and its principal eigenvalue (λ_{max}) is equal to n .

The general eigenvalue formulation is:

$$Aw = \begin{bmatrix} 1 & w_1/w_2 & \dots & w_1/w_n \\ w_2/w_1 & 1 & \dots & w_2/w_n \\ \dots & \dots & \dots & \dots \\ w_n/w_1 & w_n/w_2 & \dots & 1 \end{bmatrix} \begin{bmatrix} w_1 \\ \dots \\ w_n \end{bmatrix} = nw \tag{1}$$

$$a_{ij} = w_i / w_j, \quad i, j = 1, 2, \dots, n \tag{2}$$

$$Aw = \lambda_{\max} w \tag{3}$$

For measure consistency index (CI) adopt the value:

$$CI = (\lambda_{\max} - n) / (n - 1) \tag{4}$$

Accept the estimate of w if the consistency ratio (CR) of CI that random matrix is significant small. If CR value is too high (more than 0.1), then it means that experts' answers are not consistent (Saaty, 1990). The CR is obtained by comparing the CI with an average random consistency index (RI).

$$CR = \frac{CI}{RI} \tag{5}$$

In Table 2 the average RI values are given:

Table 2. Average RI values

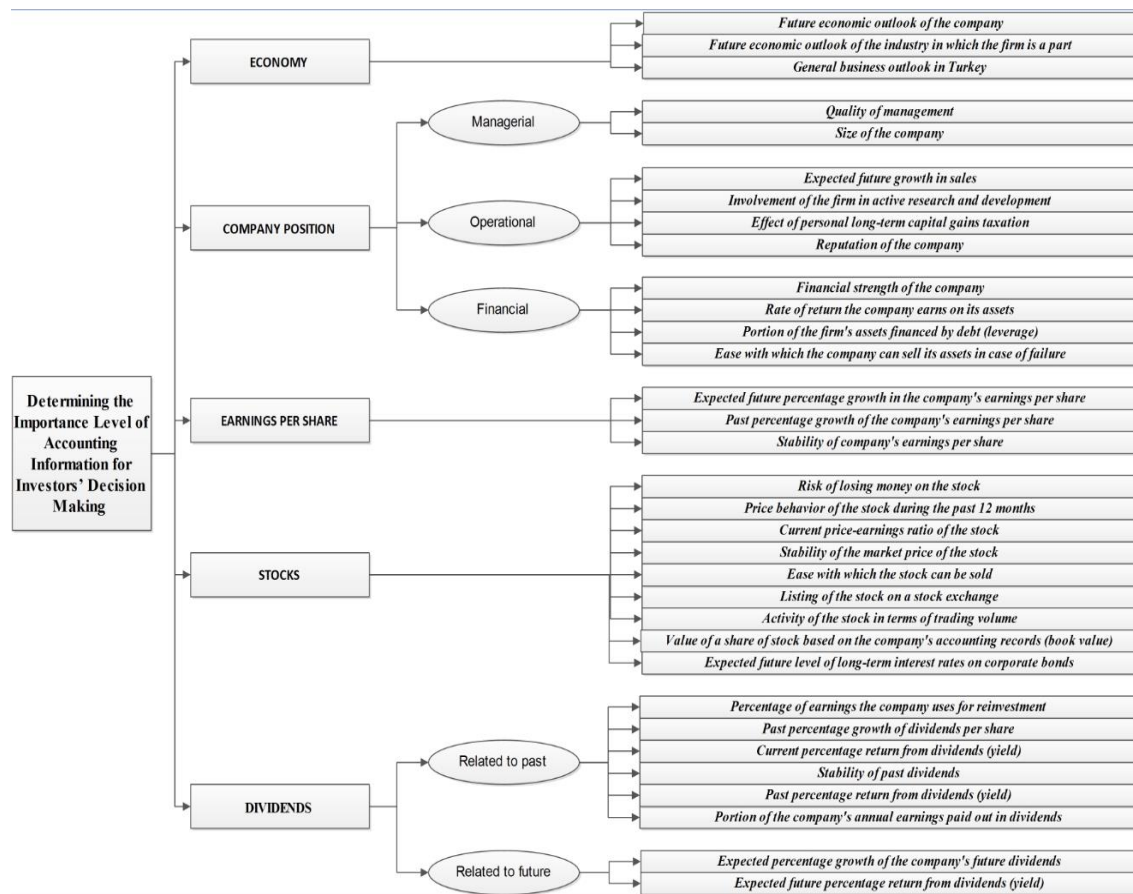
n	1	2	3	4	5	6	7	8	9	10
Random Consistency Index	0	0	0.52	0.89	1.11	1.25	1.35	1.40	1.45	1.49

4. Using AHP to Analyze Priorities

AHP is an effective decision making method especially when subjectivity exists and it is very suitable to solve problems where the decision criteria can be organized in a hierarchical way into sub-criteria. The findings of Baker, and Haslem (1973) about accounting information were first identified. 33 accounting information (factors) which are taken from Baker, and Haslem's (1973) study are used in our model. 33 factors are the ones used in investment analysis and selected socio-economic variables (Baker & Haslem, 1973).

Figure 1 shows the hierarchical structure for the model.

Figure 1. Hierarchical structure for the model



The first level of the hierarchy involved five main information (factors): “Economy”, “Company Position”, “Earnings per Share”, “Stocks” and “Dividends”. The 5 main criteria are decomposed into 33 sub-information (sub-factors). Pairwise comparisons of the factors were done depends on the goal of the hierarchy. The goal of the hierarchy is “Determining the Importance Level of Accounting Information for Investors’ Decision Making”. All second and third level factors are given in Figure 1.

Finance and Accounting experts expressed or defined a ranking for the different types of accounting information in terms of importance/weights. Each experts is asked to fill “checked mark” in the 9-point scale evaluation table. The questionnaires are answered by 20 experts (10 finance experts and 10 accounting experts). Experts are asked to compare the criteria at a given level on a pair-wise basis to identify their relative precedence.

The numbers in the pairwise comparison matrix in table 3 represents the dominance judgment. If the number is greater than 1, it indicates factor listed at the left is dominant. A judgment of 1 means both factors are equal. If the number is less than 1, it indicates factor listed at the top is dominant. Table 3 shows the pairwise comparison matrix for the main factors.

Table 3. Pairwise comparison matrix for the main factors

	Economy	Company Position	Earnings Per Share	Stocks	Dividends
Economy	1	0.95	0.84	0.73	0.84
Company Position	1.05	1	1.23	1.26	1.33
Earnings Per Share	1.18	0.81	1	1.55	1.09
Stocks	1.37	0.79	0.64	1	0.89
Dividends	1.19	0.75	0.92	1.13	1

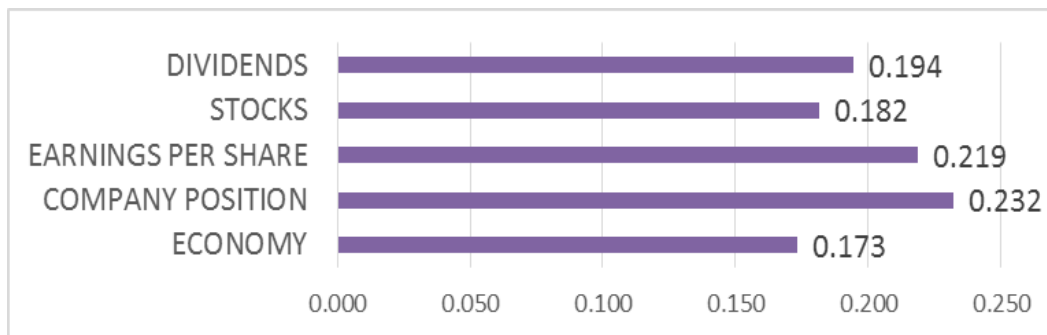
Table 4 shows the AHP parameters of the main factors’ pairwise comparison matrix. CR value (0.011) is lower than 0.1, it means that experts’ answers are consistent.

Table 4. AHP parameters of the main factors’ pairwise comparison matrix

AHP Parameters	
λ_{max}	5.05
CI	0.012
RI	1.12
CR	0.011

Calculated weights of the main information (factors) for all experts are shown in Figure 2.

Figure 2. Calculated weights of the main information (factors) for all experts



Other pairwise factor comparison matrices are given in the appendix part of this study. “Company position” (0.232) is the most important main information for all experts.

The precedence order and the weights of the information for accounting experts, finance experts, and all experts are given in table 5.

Table 5. Precedence order and the weights of the information

Information	Accounting Experts' Weights	Accounting Experts' Rank	Finance Experts' Weights	Finance Experts' Rank	Overall Weights	Overall Rank
Expected future percentage growth in the company's earnings per share	0.0880	1	0.1901	1	0.1334	1
Expected percentage growth of the company's future dividends	0.0845	2	0.0989	2	0.0928	2
General business outlook in Turkey	0.0595	6	0.0679	3	0.0649	3
Expected future percentage return from dividends (yield)	0.0563	7	0.0618	4	0.0600	4
Stability of company's earnings per share	0.0613	4	0.0487	7	0.0561	5
Future economic outlook of the company	0.0686	3	0.0431	9	0.0555	6
Future economic outlook of the industry in which the firm is a part	0.0612	5	0.0439	8	0.0529	7
Rate of return the company earns on its assets	0.0406	9	0.0542	6	0.0488	8
Financial strength of the company	0.0378	10	0.0543	5	0.0473	9
Quality of management	0.0491	8	0.0248	14	0.0358	10
Stability of the market price of the stock	0.0353	11	0.0253	12	0.0303	11
Past percentage growth of the company's earnings per share	0.0313	13	0.0260	11	0.0292	12
Current price-earnings ratio of the stock	0.0348	12	0.0236	15	0.0290	13
Portion of the firm's assets financed by debt (leverage)	0.0223	17	0.0281	10	0.0259	14
Expected future level of long-term interest rates on corporate bonds	0.0260	15	0.0207	17	0.0237	15
Activity of the stock in terms of trading volume	0.0198	18	0.0251	13	0.0226	16
Expected future growth in sales	0.0261	14	0.0172	19	0.0219	17
Ease with which the stock can be sold	0.0238	16	0.0173	18	0.0207	18
Price behavior of the stock during the past 12 months	0.0157	20	0.0223	16	0.0191	19
Risk of losing money on the stock	0.0138	23	0.0154	20	0.0148	20
Size of the company	0.0193	19	0.0105	23	0.0146	21
Involvement of the firm in active	0.0102	27	0.0126	21	0.0116	22

research and development						
Listing of the stock on a stock exchange	0.0135	24	0.0094	24	0.0113	23
Current percentage return from dividends (yield)	0.0153	21	0.0072	27	0.0113	24
Ease with which the company can sell its assets in case of failure	0.0099	28	0.0118	22	0.0112	25
Reputation of the company	0.0125	25	0.0091	25	0.0110	26
Value of a share of stock based on the company's accounting records (book value)	0.0149	22	0.0068	28	0.0102	27
Percentage of earnings the company uses for reinvestment	0.0051	32	0.0083	26	0.0073	28
Stability of past dividends	0.0123	26	0.0026	33	0.0060	29
Past percentage growth of dividends per share	0.0096	29	0.0031	31	0.0057	30
Portion of the company's annual earnings paid out in dividends	0.0089	30	0.0032	30	0.0057	31
Past percentage return from dividends (yield)	0.0086	31	0.0031	32	0.0055	32
Effect of personal long-term capital gains taxation	0.0041	33	0.0035	29	0.0039	33

In Figure 3, the precedence order and the weights of the information for all experts are given.

Figure 3. Precedence order and the weights of the information for all experts



The study found that “Expected future percentage growth in the company's earnings per share” (0.0880) and “Expected percentage growth of the company's future dividends” (0.0845) are most important factor to be considered with their overall priority values for both finance and accounting experts. “General business outlook in Turkey” (0.0679), “Expected future percentage return from dividends (yield)” (0.0618) and “Financial strength of the company” (0.0543) are also important for finance experts whereas “Future economic outlook of the company” (0.0686), “Stability of company's earnings per share” (0.0613) and “Future economic outlook of the industry in which the firm is a part” (0.0612) are important for accounting experts. Least important information are ranked as follows according to overall priority: “Effect

of personal long-term capital gains taxation”, “Past percentage return from dividends (yield)” and “Portion of the company's annual earnings paid out in dividends”.

5. Conclusion

This study determines the precedence order of the accounting information (factors) influencing choice of investment derives the relative weight of each factor and identifies differences and similarities in such factors between accounting experts and finance experts. Subjective opinions of accounting and finance experts are given in quantitative form with Analytic Hierarchy Process.

Our findings indicate that, “Expected future percentage growth in the company's earnings per share” and “Expected percentage growth of the company's future dividends” are the most important factors influence in investing choice for finance and accounting experts. There is no significant difference between finance and accounting experts for the importance of some information. Besides “Financial strength of the company” information’s rank is five for finance experts and ten for accounting experts. Finance experts are more influenced by this information for their investing decision than accounting experts. Financial company position factors and factors related to past dividends have less importance for accounting and finance experts.

Findings of Baker, and Haslem’s (1973) study show that future economic outlook of the company and the industry (economic factors), quality of management (managerial company position), are more important. In our study, future economic outlook of the company’s rank is 6, future economic outlook of the industry’s rank is 7, and quality of management factor’s rank is 10.

The findings of this study could provide a base for investors, Ministry of Economy, finance, accounting, business and economy students, professionals and academicians etc. Findings from this study cannot be generalized, suggesting that a further study is needed to confirm the preliminary findings with the help of more professional investors, finance and accounting experts.

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Appendix

Table 6. Pairwise comparison matrix for the “Economy” factors

	Future economic outlook of the company	Future economic outlook of the industry in which the firm is a part	General business outlook in Turkey
Future economic outlook of the company	1.00	1.06	0.84
Future economic outlook of the industry in which the firm is a part	0.94	1.00	0.83
General business outlook in Turkey	1.19	1.21	1.00

Table 7. Pairwise comparison matrix for the “Company Position” factors

	Managerial	Operational	Financial
Managerial	1.00	1.13	0.35
Operational	0.89	1.00	0.39
Financial	2.87	2.55	1.00

Table 8. Pairwise comparison matrix for the “Company Position: Operational” factors

	Expected future growth in sales	Involvement of the firm in active research and development	Effect of personal long-term capital gains taxation	Reputation of the company
Expected future growth in sales	1.00	2.33	4.78	1.94
Involvement of the firm in active research and development	0.43	1.00	2.90	1.34
Effect of personal long-term capital gains taxation	0.21	0.34	1.00	0.29

Reputation of the company	0.52	0.75	3.41	1.00
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Table 9. Pairwise comparison matrix for the “Company Position: Financial” factors

	Financial strength of the company	Rate of return the company earns on its assets	Portion of the firm's assets financed by debt (leverage)	Ease with which the company can sell its assets in case of failure
Financial strength of the company	1.00	1.22	1.70	3.73
Rate of return the company earns on its assets	0.82	1.00	2.76	3.81
Portion of the firm's assets financed by debt (leverage)	0.59	0.36	1.00	2.98
Ease with which the company can sell its assets in case of failure	0.27	0.26	0.34	1.00

Table 10. Pairwise comparison matrix for the “Earnings per Share” factors

	Expected future percentage growth in the company's earnings per share	Past percentage growth of the company's earnings per share	Stability of company's earnings per share
Expected future percentage growth in the company's earnings per share	1.00	4.74	2.29
Past percentage growth of the company's earnings per share	0.21	1.00	0.54

Stability of company's earnings per share	0.44	1.85	1.00
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Table 11. Pairwise comparison matrix for the “Stocks” factors

	Risk of losing money on the stock	Price behavior of the stock during the past 12 months	Current price-earnings ratio of the stock	Stability of the market price of the stock	Ease with which the stock can be sold	Listing of the stock on a stock exchange	Activity of the stock in terms of trading volume	Value of a share of stock based on the company's accounting records (book value)	Expected future level of long-term interest rates on corporate bonds
Risk of losing money on the stock	1.00	0.55	0.60	0.47	0.60	1.81	0.53	1.66	0.69
Price behavior of the stock during the past 12 months	1.83	1.00	0.57	0.65	0.77	1.25	0.83	1.87	0.99
Current price-earnings ratio of the stock	1.65	1.76	1.00	0.94	1.45	1.98	1.25	3.07	1.52
Stability of the market price of the stock	2.12	1.53	1.06	1.00	1.76	3.01	1.57	2.48	0.99
Ease with which the stock can be sold	1.67	1.30	0.69	0.57	1.00	1.79	0.80	2.14	0.87

Listing of the stock on a stock exchange	0.55	0.80	0.51	0.33	0.56	1.00	0.53	1.03	0.41
Activity of the stock in terms of trading volume	1.88	1.21	0.80	0.64	1.25	1.90	1.00	2.34	0.78
Value of a share of stock based on the company's accounting records (book value)	0.60	0.54	0.33	0.40	0.47	0.97	0.43	1.00	0.49
Expected future level of long-term interest rates on corporate bonds	1.46	1.01	0.66	1.01	1.14	2.47	1.28	2.05	1.00

Table 12. Pairwise comparison matrix for the “Dividends: Related to past” factors

	Percentage of earnings the company uses for reinvestment	Past percentage growth of dividends per share	Current percentage return from dividends (yield)	Stability of past dividends	Past percentage return from dividends (yield)	Portion of the company's annual earnings paid out in dividends
Percentage of earnings the company uses for reinvestment	1.00	1.27	0.98	1.07	1.28	0.96
Past percentage growth of dividends per share	0.79	1.00	0.41	0.95	1.02	1.34
Current percentage return from dividends (yield)	1.02	2.46	1.00	1.97	2.11	2.19
Stability of past dividends	0.94	1.05	0.51	1.00	0.92	1.18
Past percentage return from dividends (yield)	0.78	0.98	0.47	1.09	1.00	0.79
Portion of the company's annual earnings paid out in dividends	1.04	0.75	0.46	0.85	1.26	1.00