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Original Article

The Accounting Information Usage in Measuring Productivity Growth and Evaluating Business Performance

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ABSTRACT

The main objective of this research is to measure productivity variations and performance of 28 companies listed on Tehran stock exchange from automobile and parts industry using financial statements information during the period of 2006-2010. In order to attain this goal, the Malmquist index and DEA have been used, the labor force and the fixed assets stand for inputs and the economic value added represents the only output. The results indicated that variations in the company's performance are due to the change in technical efficiency and technology. Because the productivity and performance of the firms revealed an improvement in two years so that in one year, the efficiency was the prominent factor and in the other year, both of technical efficiency and technology jointly played an important role in this progress. In addition, over the two another years, the firms had not experienced any performance progress and finally in one year, they encountered regressive performance. The reason for this declining performance can be found in technology downfall. Among other results of this research is that the surveyed firms totally experienced productivity progress, although his growth was slight. The reason can be attributed to the negligible technical efficiency growth. Therefore, it can be concluded that technical efficiency improvement by patterning benchmark firms has an important role in productivity and performance improvement. Of course, the critical role of technology growth through the renewing and modernizing facilities should not be overlooked.

Keywords: Performance Evaluation, Accounting Information, DEA, Productivity Changes, Malmquist Index.

Introduction

In recent years, resulting from increasing number of enterprises, a vast competition is emerging all over the world relating to selling merchandises and rendering services. With respect to the scarce and expensive resources, the necessity of cost reduction in order to have required power in competitive market is the most important concern of management in present century So that a business survival is dramatically influenced by this factor. In this regard, productivity improvement plays a key role in conducting business enterprise. Productivity is a criterion by which existent conditions can be improved continuously. Productivity is a concept as well as a criterion appropriate to evaluate phenomena performance and in fact, it means resources consumption in order to achieve goals (Alirezaei et al., 2005). In different organizations and companies, profitability indicates financial position at the moment and productivity is its position in future. Therefore, a typical firm can expect continuous profitability only if it takes into account productivity because in the long run, an increase in productivity causes improvement in different segments performance and development in competition market. Moreover, the business management can realize the optimum way of resources allocation and make effective decisions aiming at increase in profitability. Also from a macroeconomic perspective, an increase in productivity can trigger economic growth, control inflation rate, increase competitiveness and GNP and so on. Generally, efflorescence of a society goes hand in hand with the productivity improvement of that society [2]. The productivity improvement is the primary task of managers and they are expected to play a key role regarding this duty. The first step in improving productivity is to measure it. In other word, clarifying present position of productivity is the basis for future productivity improvement plans. Considering above-mentioned importance, this research is aimed to measure productivity variations of 28 companies belonging to automobile and parts industry listed on Tehran stock exchange to make an effort providing an appropriate basis for evaluating and improving performance.

Literatures review

Alirezaei et al. (2005) evaluated productivity growth using Malmquist criterion and DEA technique and data from 17 Asian countries. The input variables were capital and labor and the output one were GDP. They first separate productivity into two components, efficiency change and technology change, and then analyze it among different countries. Lotfalipour and razmara (2006) analyzed technical efficiency and productivity trend among Iranian industries. They also used Malmquist criterion and DEA technique as Alirezaei et al. (2005). Furthermore, they ranked the surveyed industries based on the technical efficiency. Finally, they specified which type of industries experienced a positive productivity growth and which experienced a negative one. Alirezaei et al. (2007) in addition to the calculating total-factor productivity growth using Criterion and DEA technique, investigated the impact degree of efficiency changes and technology changes on the growth. They concluded that, during the last three decades, the total-factor productivity growth in electricity industry is influenced by efficiency changes rather than technology changes. Hejazi et al. (2008) examined total productivity of Iranian export development bank as well as productivity variations of its branches using DEA technique. They employed slacks-based models And Malmquist productivity criterion in order to treat total productivity and productivity growth respectively. The results indicated that the productivity growth was about 1% in 2004 and 2% in 2005. Seifert and Zhu (1998) investigated excesses and deficits in Chinese industrial productivity, by combining data envelopment analysis (DEA), Delphi and AHP. They selected three inputs; fixed assets, labour force, wages and two outputs; national income and financial revenue. The findings indicated that industrial productivity increased as a result of the five-year plans and efficient and effective targets can be set within the industrial development plans. Isik and Hassan (2003) examined relation between financial disruption and bank productivity in Turkish banks. They employed Mq index and DEA for analysis. The results showed that substantial productivity loss in 1994 was mainly attributable to technical regress and efficiency decrease. Also adverse impact of disruption on small banks was excess than large banks. Rezitis (2007) studied the effect of acquisition on the efficiency and productivity using Mq index and DEA. The results indicated that the effect of merger and acquisition on efficiency and total factor productivity (TFP) growth are rather negative. He emphasized that the technical efficiency and productivity of merger banks decreased in the period after merging, while that of non-merger banks increased over the same period. Furthermore, the decrease in TFP can be attributed to regressive technology. Fiordelisi and Molyneux (2010) investigated shareholder value drivers in European banking focusing on the efficiency and productivity features. They found that TFP changes best explain variations in shareholder value. Also the technological change played the most role in creation of shareholder value. Liu (2010) measured and categorized technical efficiency and productivity change of commercial banks using Mq and DEA. Inputs consisted of labour force, assets and deposits and outputs consisted of long-term loans and short-term loans. The finding indicated that the technical efficiency decreased but the technology was improving since year 1998. He also classified banks based on productivity. Fallahi et al. (2011) measured productivity in power electric generation industry by using Mq and DEA. The results of the study showed that average technical efficiency decreased during the study period and half of companies are below this average. Moreover, the low growth of productivity was more related to low efficiency changes. Chio et al. (2013) compared the operating efficiency between domestic banks and foreign banks. Due to differences in cultural sentiments, values and business philosophies, they employed the Meta-Hybrid DEA model. The results showed that the risk factor affects the value of firm' technical efficiency. Moreover, the operating performance of foreign banks is significantly better than domestic banks.

Theoretical background

Productivity is a comprehensive concept and it means using resources in an efficient and effective manner in order to achieve the best possible output. The main reason that justifies necessity of considering productivity is scarce natural resources and the excess of demand over supply. Different authors stated relatively similar definitions regarding the word "productivity" and the main core of all these definitions is the ratio of which produced from the production process to the which utilized for producing goods and rendering services. Productivity measurement models are very diverse with respect to the purposes and policies overriding the business enterprise. Viewpoints and methods used to measure productivity in businesses are worthwhile to investigate by economists, managers, accountants and mathematicians, some of which are indexes and ratios method, production function models, utility approach, financial ratios method, capital budgeting, unit cost method and mathematic models including DEA as well as Mq index. We will discuss these methods in the next section.

The Mq index and DEA technique usage in measuring productivity variations

Productivity measurement has a long history, and the earliest approach was based on single or partial factor productivity measurement. Although it is easy to calculate, in practice this index is too simple and could give a misleading picture of performance, when there is more than a single output or a single input. In the real world firms usually use multiple inputs to get multiple outputs, so the measuring of productivity must be done using total factor productivity (TFP) measurement. Thus, TFP is a generalization of single factor productivity measurement. However, a transition from partial productivity (the ratio of output to input) to TFP requires selecting inputs and outputs and assigning proper weights to them in numerator and denominator of the fraction resulting in difficulty in productivity calculations. The Mq index as a nonparametric frontier production function together with DEA, measure the TFP variations over a time period and resolve the problem of assigning appropriate weights to different inputs and outputs. This index does not require restrictive assumptions including revenue maximization and cost minimization in productivity measurement, but only needs quantitative information. An illustration using the one input one output case is shown in Fig. 1 below. Points A and B represent observations in period's t and t+1 respectively. The rays from the origin St and St+1 represent frontiers of production for period's t and t+1 respectively. Relative efficiency is measure in one of two ways. The relative efficiency of production of a firm at point A compared to the frontier St is described by the distance function dt(yt,xt)=0a/0b. But compared with the period t+1 frontier St+1,itis DT+1(YT ,xt)=0a/0c. The relative efficiency of production of a firm at point B compared to the period t+1 frontier St+1 is dt+1(yt+1,xt+1)=0d/0e. Compared with the period t frontier St, the relative efficiency is dt(yt+1,xt+1)=0d/0c. The Malmquist index (MI) of the total factor productivity (TFP) change is the geometric mean of the two indices based on the technology for periods t+1 and t respectively. In other words:

$$M_t = \frac{dt\,(yt+1,xt+1)}{dt(yt,xt)} \qquad (1)$$

Note that the only difference between the distance functions in the numerator and the denominator are the activity vectors of the firm evaluated. The benchmark technology is constructed in both periods from the data of period t. The same effect could be measured using the period t +1 technology as the benchmark technology,

$$M_{t+1} = \frac{dt+1(yt+1,xt+1)}{dt+1(yt,xt)} \qquad (2)$$

To avoid choosing arbitrarily between taking period t or period t+1 technology as the reference to compute the Malmquist productivity index, the usual way to proceed is to take the geometric mean of these indexes,

$$M = \left[\frac{dt+1(yt+1,xt+1)}{dt+1(yt,xt)}\ \frac{dt\,(yt+1,xt+1)}{dt(yt,xt)}\right]^{1/2} \qquad (3)$$

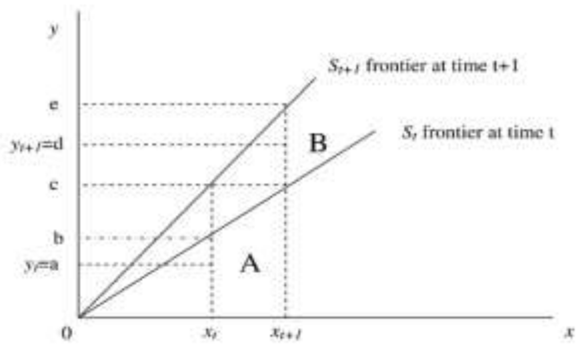


Fig. 1.

If model 3> 1, the index reflects a productivity growth that may come from different sources. First, it is possible that the firm improved its level of efficiency relative to the benchmark firm, i.e., the firm performed relatively better than the benchmark firm. This effect is commonly referred to as catching up. Second, the available technology may have also improved (recall that we have fixed the technology). Färe et al. (1994) were the first to propose a decomposition of the Malmquist index that separates both sources of productivity variation,

(4)

$$M = \frac{dt+1(yt+1,xt+1)}{dt(yt,xt)} \times \left[\frac{dt+1(yt+1,xt+1)}{dt+1(yt,xt)}\ \frac{dt\,(yt+1,xt+1)}{dt(yt,xt)}\right]^{1/2}$$

The model 4 can be represented as model 5:

(5)

M = relative efficiency change(EC) ×
[productivity change(TC)]

The first ratio in (4) reflects the relative efficiency change of the firm evaluated—variation in the distance towards its contemporaneous frontier—while the second ratio (in brackets) shows the productivity change that can be attributed to a movement in the CCR frontier—benchmark firm—between t and t + 1.

In models 4 and 5 if:

EC>1: the technical efficiency of the firm has increased in comparison with the prior period.

EC=1: the technical efficiency of the firm has remained the same as the prior period.

EC<1: the technical efficiency of the firm has decreased in comparison with the prior period.

TC>1: the technology of the firm has improved in period t+1 compared to period t.

TC=1: the technology of the firm has remained the same.

TC<1: the technology of the firm has regressed in period t+1 compared to period t.

Both the numerators and denominators of the ratios in models 1, 2, 3 and 4 are technical efficiency calculated using DEA. Fare, Grosskopf and Norris (1994) were among the first that developed Mq productivity index using DEA based on the constant return to scale assumption. DEA uses mathematic planning method in order to measure productivity. This method can take into account many variables and relations and does not require the constraint of less input and output in other methods.

Research variables

In order to calculate Mq index, model 4 must be applied. Each of the distance function in numerators and denominators of the ratios used in this model is a target function necessary to calculate by DEA. Therefore, before running DEA, the inputs and outputs must be specified. Considering lotfalipour and razmara (2006), Rezitis (2008) and Margaritis and Psillaki (2010), the inputs include labor force (full-time labor) and capital (tangible fixed assets). The economic value added is the only output taken into account in this research. EVA considers the opportunity cost of all resources employed in the company. If net income of a firm was equal to the opportunity cost of capital employed, that firm has not created any value, even if the net income figure exceeds a high level, because investors can gain a return equivalent to the opportunity cost by investing in other projects with similar risk. Therefore, when the net income of the firm exceeds the opportunity cost of capital employed, the share value of the firm will increase and consequently will result in increase in shareholders wealth. Kaplan and Atkinson (2005) stated that financial managers must utilize those measures nearer to the economic facts, in order to promote traditional measures of performance evaluation. They proposed using of economic measures of performance evaluation such as EVA which has resolved the deficiencies of traditional measures of performance evaluation (20). The advocators of EVA acclaimed many advantages including (21):

The only performance measurement that explains stock price variations over time

Assembles progress and operational efficiency objectives.

Improves working capital and assets management.

It is capable of measuring value of tactic and strategic opportunities.

Therefore, considering the priorities of economic value added over other performance measurement index (ex.

Return on assets, return on equity), and following the works done by lotfalipour and razmara (2006) and Rezitis (2008), this research utilized economic value added as the DEA model output. The formula needed for calculating EVA is as follow:

Model (6)

EVA= after tax net operating income-(capital cost rate×capital)

In the preceding model, capital is equal to the sum of the net working capital and net fixed assets. It is necessary to note that in calculating net working capital, interest-bearing current liabilities have excluded from current liabilities. In order to calculate capital cost return, the following model has been used.

Model (7)

$$\text{capital cost rate} = \left(\frac{\text{EPS}}{\text{price per share}} \times \frac{\text{average stockholders equity}}{\text{average capital}}\right) + \left(\frac{\text{average interest-bearing liabilities}}{\text{average capital}} \times \frac{\text{financing cost}}{\text{average interest-bearing liabilities}}\right)$$

In the above equation, interest-bearing liabilities include long-term liabilities and interest-bearing current liabilities. Increases in capital equivalents including tax reserves and employee's termination benefits are added to after-tax net operating income and conversely decreases are deducted to come nearer the economic concept of profit. Moreover, capital equivalent are added to capital.

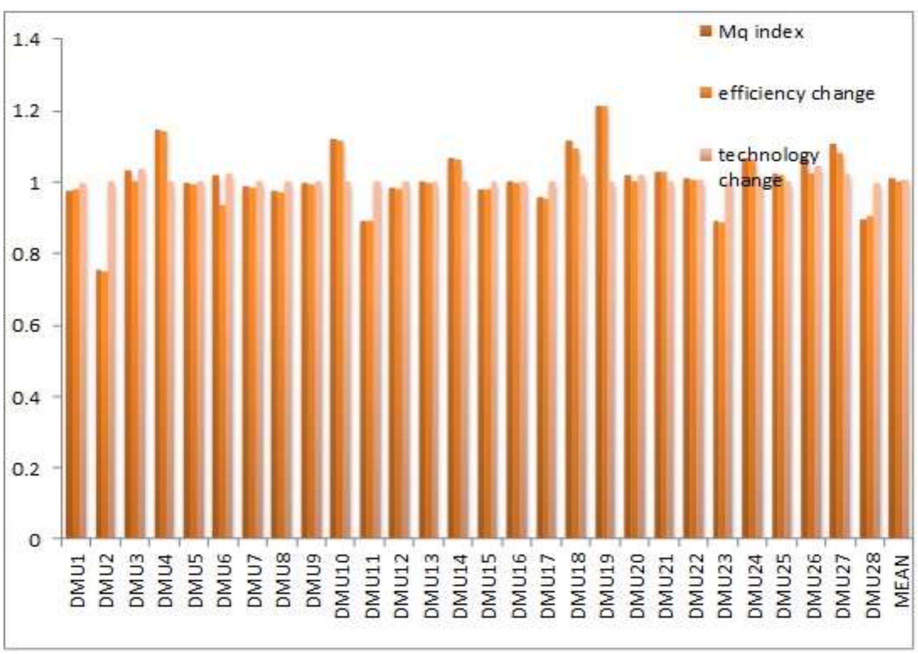
Research population and sample

The current survey statistical population is Tehran stock exchange. However, this research didn't use any certain sampling method but only the number of companies in different industries has been considered and finally one industry whose members were the most has been selected as research sample. It must be noted that information accessibility was one of the most important constraints imposed on sample selection. Consequently, the automobile and parts industry, holding 31 companies, has been selected as research sample and with respect to the foregoing constraint, the surveyed companies declined to 28. The time period covered in this research is limited to a five-year period beginning from 2006 and ending to 2010 (the last year in which financial statements were available).

Results

The current research objective is to measure productivity variations and to evaluate performance of sample companies. Accordingly, using DEA frontier, the productivity variations of 28 companies have been computed and presented in table 1. Considering table 1, you can see that in order to compare different years performance, the number of DMUs with a retrograde productivity (M<1) is divided by the average productivity criterion. The less this ratio is, the more that industry is performing well. If productivity index is merely used for comparing different periods' performance, the results may be misleading. For example, if there is the same Mq index for two different years, it doesn't mean that the performance is also the same but it means that the industry in the year with less DMUs having an regressive productivity has higher performance. Moreover, the productivity index is likely to be very high in a given year. But it may be only due to the presence of a few DMU with highly progressive productivity index. In fact, in addition to the productivity index, the number of DMUs with regressive productivity growth should be taken into account. Table 1 shows that Mq indexes are the same for the years 2009 and 2010. However the number of DMUs with a score less than "one" are 11 and 13 respectively. Therefore, it is apparent that the industry performance in 2009 is better than its performance in 2010. Considering the foregoing discussion, the worst performance is related to 2010, because the ratio (13/1=13) is the largest one in this year in comparison with the other years. The main reason of regressive performance in that year may be attributed to the efficiency drop because there is 15 DMUs with an efficiency drop experienced. Meanwhile, the other DMUs have also experienced a slight growth. The best performance has taken place in 2007 due to the fact that the ratio (9/1.04=8.65) is the smaller than every other period and the main reason of this performance progress is technology growth, because only 2 DMUs have encountered reduction in technology. Generally, the two years (2006 and 2007) in which the performance progress have been observed, that progress can be attributed to efficiency changes in 2006 and to both technology and efficiency changes in 2007. The point worthwhile to note in analyzing results is that these results are relative. It means that a DMU variations that are more or less than 100% are obtained from comparison with the other 27 DMUs. Therefore, the DMUs with a low performance can follow the DMUs experienced high performance and consequently approach the best performance frontier. Among other remarks requiring interest in table 1 is that the DMUs with progressive performance are more than the DMUs with regressive one. However, this progress is slight so that the average Mq index over the five-year period is about 1.012. The average efficiency variations and technology variations over the period are also 1.002 and 1.009 respectively. these figures implies some reasons for growth meaning that the low efficiency growth has a more effective role than the technology variations as a drawback opposite the productivity growth. Considering the table 1, the best technology progress has occurred in 2010 and the worst one occurred in 2006. Similarly, the best and worst efficiency progress have taken place in 2006 and 2010 respectively. Diagram 2 depicts the variations trend for Mq index, efficiency and technology level.

As a general conclusion, it can be stated that a company demanding performance progress, must promote technical efficiency as well as technology, otherwise, the performance will be diminished due to the weakness in one of these two factors.



Conclusion

The main objective of this research was to measure productivity variations and to evaluate performance of 28 companies from automobile and parts industry listed on Tehran stock exchange using information extracted from financial statements. Based on this objective, The DEA technique and Mq index have been used to measure the productivity variations. Moreover, labor and fixed assets candidate represent input and economic value added stands for the only output over the period of 2006-2010. The results revealed that the productivity and the performance of surveyed companies improved in two years of the five-year period, remained the same in another two years and diminished in one year. The technology and efficiency variations had an important effect on the performance, so that the effective factor in the two-year period of improvement was the efficiency variations, although in one of these two years the technology variations also played an effective role in this progress. Finally, reason of regressive performance in one year was recognized the technology downfall. Considering the overall five-year period, the industry has experienced a performance progress amounted to .012. The reason for this slight progress can be found in efficiency and technology variations. Because the average five-year progress of these to variables are 0.002 and 0.009 respectively. However, the technical efficiency is more important as progress obstacle. Accordingly, the sample companies need to follow DMUs with the best performance in order to improve their technical efficiency and approach the best performance frontier and finally make more progress. Moreover, these companies can improve their technology by renewing and modernizing facilities in addition to efficiency improvement by patterning to advance their performance and productivity in a continuous manner. Generally, the present research was looking for an appropriate way of evaluating and improving performance by managers. Following this way, the managers can compare themselves with their competitors and recognize their position in relevant industry. Consequently, they can promote their position and increase their company competitive advantages by adopting appropriate policies and strategies. Of course, these calculations in themselves cannot result in productivity growth, but the productivity progress requires planning and preparing a productivity improvement plan. However, the planning for productivity progress requires organization recognition with respect to the productivity background as well as factors affecting productivity variations over the past periods. Therefore, the calculations relating to the productivity variations can be a basis for appropriate and practical planning regarding productivity growth. This can be realized using strategic planning systems including (balanced scorecard) BSC.

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Table 1. productivity variations (Mq index)

	1385-1384			1386-1385			1387-1386		
	Mq index	Efficiency change	Technology change	Mq index	Efficiency change	Technology change	Mq index	Efficiency change	Technology change
DMU1	0.99	1.02	0.97	0.99	0.96	1.02	0.97	0.99	0.98
DMU2	0.92	0.92	0.99	1.36	1.32	1.02	0.41	0.42	0.98
DMU3	1.07	1.03	1.04	1.04	1.03	1.01	1.02	0.98	1.04
DMU4	1.56	1.58	0.99	1.02	0.99	1.02	1.03	1.06	0.98
DMU5	1.05	1.05	0.99	0.75	0.73	1.02	1.00	1.02	0.98
DMU6	0.70	0.71	0.99	1.04	1.01	1.02	1.01	1.04	0.98
DMU7	0.97	0.97	0.99	1.04	1.01	1.02	0.97	0.99	0.98
DMU8	0.96	0.97	0.99	0.96	0.94	1.02	0.97	1.00	0.98
DMU9	0.99	1.00	0.99	0.95	0.93	1.02	1.02	1.04	0.98
DMU10	1.02	1.03	0.99	1.05	1.02	1.02	0.98	1.01	0.98
DMU11	1.03	1.04	0.99	1.03	1.00	1.03	1.02	1.05	0.98
DMU12	0.74	0.75	0.99	1.40	1.36	1.02	1.12	1.14	0.98
DMU13	1.03	1.04	0.99	1.09	1.06	1.02	0.94	0.96	0.98
DMU14	1.06	1.07	0.99	1.31	1.28	1.02	1.02	1.05	0.98
DMU15	0.98	0.98	0.99	0.96	0.94	1.02	0.95	0.97	0.98
DMU16	1.04	1.05	0.99	1.11	1.08	1.02	0.86	0.88	0.98
DMU17	0.83	0.83	0.99	1.07	1.04	1.02	0.91	0.93	0.98

DMU18	1.29	1.22	1.06	1.07	1.06	1.01	1.10	1.10	1.01
DMU19	1.58	1.59	0.99	0.70	0.69	1.02	1.06	1.08	0.98
DMU20	1.02	1.00	1.02	1.02	1.00	1.02	1.01	1.00	1.01
DMU21	1.01	1.01	0.99	1.10	1.07	1.02	1.08	1.11	0.98
DMU22	1.05	1.07	0.99	0.96	0.95	1.01	1.09	1.07	1.02
DMU23	0.99	1.03	0.97	0.99	0.97	1.02	1.08	1.07	1.01
DMU24	1.20	1.20	0.99	1.03	1.00	1.02	0.98	1.00	0.98
DMU25	1.08	1.09	0.99	1.04	1.01	1.02	1.06	1.09	0.98
DMU26	0.98	0.90	1.09	1.11	1.10	1.01	1.00	0.96	1.04
DMU27	0.98	0.90	1.09	1.09	1.07	1.01	1.29	1.25	1.04
DMU28	0.85	0.86	0.98	0.87	0.85	1.02	0.64	0.64	1.01
Mean	1.03	1.03	1.00	1.04	1.02	1.02	0.99	1.00	0.99
The number of DMUs with score <1	13	10	23	9	10	2	11	10	20
the number of DMUs with score <1 divided by the average index	12.6	9.7	23	8.6	9.8	1.9	11.1	10	20.2

Table 1 continued . productivity variations (Mq index)

	1388-1387			**1389-1388**			**The five-year average**		
	Mq index	**Efficiency change**	**Technology change**	**Mq index**	**Efficiency change**	**Technology change**	**Mq index**	**Efficiency change**	**Technology change**
DMU1	0.97	0.96	1.01	0.97	0.96	1.02	0.978	0.979	0.999
DMU2	1.01	1.00	1.01	0.08	0.08	1.02	0.755	0.750	1.004
DMU3	1.06	1.15	0.93	0.97	0.83	1.17	1.032	1.003	1.036
DMU4	1.08	1.07	1.01	1.03	1.02	1.02	1.146	1.143	1.004
DMU5	1.04	1.03	1.01	1.14	1.12	1.02	0.996	0.993	1.004
DMU6	0.37	0.47	0.77	1.97	1.45	1.36	1.018	0.937	1.025
DMU7	0.97	0.96	1.01	1.01	0.99	1.02	0.990	0.986	1.004
DMU8	0.99	0.98	1.01	0.98	0.97	1.02	0.974	0.970	1.004
DMU9	1.00	0.99	1.01	1.03	1.02	1.02	0.998	0.995	1.004
DMU10	1.08	1.07	1.01	1.48	1.46	1.02	1.122	1.117	1.003
DMU11	1.09	1.08	1.01	0.29	0.28	1.02	0.892	0.890	1.004
DMU12	0.78	0.77	1.01	0.89	0.88	1.02	0.985	0.981	1.004

DMU13	1.03	1.02	1.01	0.93	0.91	1.02	1.004	1.000	1.004
DMU14	1.23	1.22	1.01	0.71	0.70	1.02	1.067	1.063	1.004
DMU15	1.01	1.00	1.01	1.01	1.00	1.02	0.981	0.978	1.004
DMU16	0.93	0.92	1.01	1.08	1.07	1.02	1.004	0.999	1.004
DMU17	1.00	0.99	1.01	0.99	0.97	1.02	0.959	0.954	1.004
DMU18	0.97	0.96	1.01	1.14	1.13	1.02	1.117	1.093	1.021
DMU19	1.62	1.61	1.01	1.11	1.10	1.02	1.215	1.213	1.004
DMU20	0.98	1.00	0.98	1.07	1.00	1.07	1.019	1.000	1.019
DMU21	0.84	0.83	1.01	1.13	1.11	1.02	1.031	1.027	1.004
DMU22	0.99	0.99	1.00	0.96	0.95	1.02	1.010	1.005	1.005
DMU23	0.76	0.76	1.01	0.63	0.62	1.02	0.890	0.889	1.003
DMU24	1.02	1.01	1.01	1.11	1.09	1.02	1.067	1.063	1.004
DMU25	1.00	0.99	1.01	0.94	0.92	1.02	1.023	1.020	1.004
DMU26	1.06	1.17	0.91	1.20	1.00	1.19	1.068	1.025	1.047
DMU27	1.03	1.06	0.97	1.14	1.12	1.02	1.107	1.082	1.024
DMU28	1.15	1.22	0.94	0.98	0.96	1.03	0.898	0.905	0.996
Mean	1.00	1.01	0.99	1.00	0.95	1.04	1.012	1.002	1.009
The number of DMUs with score <1	11	13	7	13	15	0	10	12	0
the number of DMUs with score <1 divided by the average index	11	12.8	7.07	13	15.7	0			