Profitability Migration Analysis of Kentucky Farmers

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Selected Paper 2014 Southern Agricultural Economics Association Meetings, Dallas Texas,
February 1-4.

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Abstract

This study focuses on profitability migration of farm businesses in Kentucky. Migration probabilities across business cycles are tested to see if they differ between expansion and recession years. Based on year-to-year transitions probabilities the results show that the highest return on equity (ROE) class is less likely to retain its performance in a recession, while the lowest ROE is less likely to retain its performance in an expansion. Migration trends for year-to-year are tested to see if there is a drift or persistence in ROE performance based on previous year performance. Results indicate that the Markov independence property is violated when examining return on equity by resulting in trend-reversal of ROE performance. These results will be useful in making policies directed at helping farmers to be more profitable in different economic environments and also for benchmarking analysis.

Profitability Migration Analysis of Kentucky Farmers

Migration analysis has been studied intensely with respect to credit migration in order to provide lenders a way to examine the creditworthiness of farm businesses. Migration analysis is simply a probability-based measurement concept that relays transitional probabilities of upgrading or downgrading to the next class. Past credit risk migration transition probability models as described in Phillips and Katchova (2004) and Barry, Escalante and Ellinger (2002), examine various types of measurements over time such as credit scores and profitability. For this study migration transition probabilities are calculated based on the return on equity in the current year and the probability of migrating to another class of return on equity in the following year.

One key concept of migration analysis is the Markov property of independence related to the probability of a bond or loan moving to any class during a period is independent of what has occurred in the previous period (Phillips and Katchova). The Markov property hypothesizes that the previous periods do not predict the migration direction for future periods. If there is a violation of the property (trend reversal) than the migration direction is independent of past performance. Even though the Markov property was previously applied to examine loans and bonds, in this study the concept will be used to analyze if return on equity migration is independent from the previous year migration.

This study explores migration transition probabilities of profitability measured by return on equity using farm-level data provided by Kentucky Farm Business Management (KFBM) Association from 1998 through 2010. Five groups were made, each capturing 20 percent of the total data, based on ROE. Adapted from Phillips and Katchova (2004), business cycles and profit drifts will be the focus here. One measurement approach will

be used that measures year-to-year transition probabilities. Migration probabilities and migration drift have been studied in terms of credit ratings for bonds and loans performance and farm business performance, while the contribution of this study is to apply this methodology to farm profitability. This study will also help expand on the understanding of changes in performance since much more is known about financial performance than changes in performance.

This topic is very important to Kentucky farmers and agricultural leaders because it will allow them to know if there is any persistence in profitability of Kentucky farm businesses and see how profitability is affected in different economic conditions. The KFBM mission is to help farm businesses improve their financial performance through detailed recording keeping system while helping the farmers accomplish their goals. Using the information from the records financial ratios for all farm businesses can be calculated and tracked over time. It is important to state, that knowing how profitability changes over time can allow farmers to make the correct management decisions. Monitoring ROE trends are helpful when tracking progress of farm businesses (Kohl and Wilson).

Literature Review

Profitability has been studied across agriculture for various reasons. Gloy, Hyde and LaDue (2001) looked at farm management and performance of dairy farms in New York. To measure farm performance return on assets and compound return on assets was used. The authors found that farm size, changes in farm size, and production factors are positively related to farm profitability. Another finding was that, in general, farms were either consistently low or high in regards to ROE. Blank et al. used return on equity

(ROE) to measure profitability when examining household wealth and the factors that influence performance using ARMS data. Barry, Escalante and Ellinger (2002), also measured profitability as return on equity when determining migration transition probabilities. Hagerman, Leathman and Park choose return on equity to measure performance in their study for Texas farm cooperatives. When examining financial performance of dairy farming system in New Zealand, Nocla Shadbolt, found that there was little difference between return on assets and return on equity results. However, ROA and ROE are different in calculations and interpretation.

The main difference between ROA and ROE is interest rates. If ROA is higher than interest rates then ROE will higher than ROA. Also, if the cost of debt is relatively low, then farmers have an incentive to borrow (leverage up) and increase their ROE above ROA. Another way to state this is that ROE will be high if the cost of debt is low. Return on equity is amplified because of debt/leverage both for the good and bad financial scenarios

Migration has mainly been used to determine credit risk or credit score migration to provide lenders a more accurate way to measure creditworthiness for agricultural businesses. Farm credit migration has been examined by various researchers (Fetherstone, Langemeier, and Haverkamp (2006), Barry, Escalante and Ellinger (2002), and Phillips and Katchova (2004)), each using farm-level data but all looking at different factors that influence migration. Featherstone, Langemeier, and Haverkamp (2006), used data from Kansas Farm Management Association Data Bank to analyze credit score migration of farms that had a minimum of Standard & Poor's B classification. They found that most farms had stronger tendencies to retain the same credit quality as

opposed to migrating. Also they found that large farms are normally in the middle range of the Standard & Poor's scale.

Barry, Escalante, and Ellinger (2002) utilized a four measurement approach (year-to-year, two-year moving average, three-year moving average and three-year average to fourth year) along with looking at three different classes: credit score, profitability and repayment capacity. For their study, the highest retention rates came from the three-year moving average for ROE, credit score and repayment capacity. They measured profitability by return on equity.

Looking at business cycles as a factor of credit score migration was studied by Phillips and Katchova (2004). The results found that higher risk classes were more likely to stay in or worsen their current financial position and less likely to improve in recessions. Another component was migration trends, which they found that path dependence does exist. Both Barry, Escalante, and Ellinger, and Phillips and Katchova grouped the farm data into five classes and used Illinois Farm Business Farm Management Association data.

By combining previous studies about credit risk migration and measures of profitability this work focuses on profitability migration for business, in addition to drift classes. As in credit risk migration models, groups are formed based on pre-determined criteria. Gloy, Hyde and LaDue had ten groups based on profitability. The highest ten percent was in the first group, then the next highest ten percent in the second group and so on. This is very similar to this study of profit migration except using five groups, each made to include 20 percent of the data.

Data Source

The study will utilize Kentucky Farm Business Management (KFBM) data from 1998 to 2010. Only individual business types will be used along with only the farm businesses first operator even though there may be multiple operators on one farm. Profitability will be measured in terms of return on equity. Return on equity (ROE) is how well the owner can generate net income which is calculated by the following equation:

$$ROE = \frac{Net\ farm\ income}{(Net\ worth_{B} + Net\ worth_{E})/2}$$

Net farm income is calculated by subtracting total operating expenses from gross farm returns. Net worth is just another way to say owners' equity. With subscript B meaning the net worth of the farmer at the beginning of the year, and subscript E meaning the net worth at the end of the year. The higher the ratio the higher the ROE is for the farm business.

Each farm participating in the KFBM program is given a unique farm identification number, this allows for financial data to be used while keeping personal information confidential. Farms are matched over time using the farm id to make sure that the financial records are continuously certified for the amount of years required by each migration test. The business cycle migration requires two years of continuous data while migration drift requires three years of continuous financial data to calculate the matrices. This is because not all farms are surveyed in all years. One reason could be is that the farm was certified one year but not the next which would eliminate that farm from the study. Any observation that was considered to be an outlier was replaced with value of three standard deviations away from the mean, which was done in previous

credit risk migration studies such as Featherstone, Roessler and Barry (2006) and Featherstone, Langemeier and Haverkamp (2006).

Migration Model and Measurement

In this study, each farm is placed in groups based on the value of return on equity. The five groups capture 20 percent of the data in each group. With lowest ROE class being the lowest return on equity, with highest ROE class meaning that those farms have the highest return on equity, the higher the value the better. Table 1 shows the ranges for each of the ROE classes. The groups are equal in size (number of observations) which has determined the specific cut off values for the five groups.

Profitability migration considers changes to a farm business' profitability over time using the ROE classes stated above. The transition probabilities represent the probability for a farm to migrate to another ROE class or to retain the same ROE class during a specific time frame.

Unconditional transitional probabilities are calculated as follows:

$$P_{ij} = \frac{n_{ij}}{n_i}.$$

With n_i representing farmers in a given ROE class *i* for the current year and with n_{ij} representing the number of farm businesses that have migrated from ROE class *i* to ROE class *j*, which returns P_{ij} or the estimate of one year transition probability (Lando and Skodeberg, and Phillips and Katchova). The unconditional matrices do not take into consideration any economic conditions.

Conditional matrices are calculated using the same equation as the unconditional matrices except taking into consideration business cycles and migration trends. Transition probabilities will be calculated separately for years when the U.S economy

experienced an expansion or recession. The hypothesis for testing the effect of recessions and expansions is:

H_0: $P_{ij} = P_{ij}^c$ (*expansion*)$=P_{ij}^c$ (*recession*)

H_a: $P_{ij} \neq P_{ij}^c$ (*expansion*) or $P_{ij} \neq P_{ij}^c$ (*recession*)

Three conditional matrices will be calculated for the migration trends, upgrade, downgrade and no trend. Hypothesis testing for violation of the Markov property of independence is:

H_0: P_{ij}(upgrade)$= P_{ij}^c$ (upgrade |upgrade)$=P_{ij}^c$ (upgrade|downgrade)

$= P_{ij}^c$ (upgrade|no trend)

H_a:At least one $P_{ij}^c \neq P_{ij}$

Unconditional and conditional matrices will be compared to see how farm businesses perform under different economic circumstances.

Along with calculating ROE migration probabilities for the business cycle, this study also tests for violation of the Markov property of independence (migration trends) for return on equity. Path dependence hypothesizes that previous periods affect the migration direction for future periods. Using the same ROE classes as for the migration business cycle probabilities, migration trends are studied. Uptrend, no trend and downtrend probabilities are examined. With uptrend representing the initial ROE class *i,* moves to ROE class $i+1$, with the opposite movement representing the downward trend if the initial ROE class *i*, moves to ROE class $i - 1$ all for one year probabilities. If the ROE experiences no class changes from one year to the next then that farm business is placed in the no trend matrices for the conditional matrices. If trend reversal is present, another form of path dependence, then farmers will more likely experience upgrades

followed by downgrades rather than experiencing upgrades followed by upgrades (Phillips and Katchova). However, if momentum is present then an upgrade (downgrade) in ROE class would be followed by another upgrade (downgrade).

Business Cycle Definition

In recent research Eldon, Carlos and Camilo used NBER definitions of business cycles when seeking evidence of convergence of total factor productivity across the states. They noted that the speed of convergence is faster during recessions and slower during periods in expansions. Groth, uses an "operating cycle" instead of a traditional business cycle, citing that businesses operate differently depending on the type of business. Such as an operating cycle consists of a business turning its assets into cash, cash into raw materials, then turning the raw materials into a product, this process is called work-in-process. The last two stages of the operating cycle are turning the product into finished goods and to start collecting money, known as accounts receivable. Bredahl and Marks also uses Groth definition of operating cycle instead of a traditional business cycle. The operating cycle definition stated above is not a good business cycle definition to use for this study. It would be very difficult for a farm business to track each of the above operating cycle factors because of unknown and natural factors that affect the agriculture industry, such as weather.

To better explain profitability in different economic situations, the traditional business cycle is used. The National Bureau of Economic Research (NBER) reports when the US economy experiences expansions and recessions. According to NBER the economy was in an expansion during 1998 to 2000 and 2002 to 2007 while recessions occurred in years 2001 and 2008 to 2009. NBER's last announcement was in late 2010

reporting that the recession cycle ended, so for this study it assumes that the US economy is in an expansion for 2010. This same procedure was done by Bangia et al. and Phillips and Katchova.

Results

Transition probability matrices reflect migration of one ROE class in the current year to the same or another ROE class in the next year. Tables 2 and Table 4 shows the unconditional transition probabilities for the year-to-year business cycle and drift migration analysis, respectively. Retention rates can be found on the diagonal of the matrix, representing the probability of remaining within the same ROE class in the next period. Kentucky farmers participating in the KFBM program have a high probability of staying in their respected profitability class resulting in high retention rates, compared to migrating to another ROE class.

If ROE performance was randomly fluctuating from one year to the next, we expect transition probabilities to be close to 1/5 for migration to any of the five ROE classes for the next period. Since we observe higher transition probabilities across the diagonal in comparison to off the diagonal, there is a tendency for ROE performance to remain the same over time. These results indicate strong tendency in ROE performance to be stable over time possibly due to managerial and production skills of the producer.

The results from the unconditional matrices are displayed in Table 2. Results indicate that there is a greater tendency to move up one class away from the current ROE class (improve their performance) than move down one ROE class for Low ROE class and Middle ROE class. The results indicate the opposite for the high ROE classes, with having a higher probability for migrating down one ROE class in the next period.

The Highest ROE class has the highest retention rate of 47.8% while farmers in the Middle ROE class have the lowest retention rate of 32.6%. Middle ROE performance class has the lowest retention rates because they may have not the right management skills or/and access to capital that could is needed to migrate up to the next ROE class however this might not be true for all farmers and is only speculated. Since Highest ROE Class cannot migrate up to another class, those farmers are concerned with migrating downwards, however the probability of moving down one ROE class to the high ROE class in the next period is 25.3%. For top ROE performers, it can be assumed that farm managers have the management skills to continuously be top performers.

When comparing the return on equity retention rates to the Phillips and Katchova credit score retention rates, some retention rates are lower while others are higher. This could be because ROE might fluctuate more over time than credit risk class which combines several financial ratios into one measure of credit score. Return on equity classes only consider one financial measure, profitability.

Business Cycle Results

The results for the business cycle matrices are shown in Table 3. The business cycle matrices are the same transition matrices discussed before, but split into expansion and recession business cycle conditional matrices. The numbers in parentheses show the differences between the unconditional and business cycle conditional matrices, but none of the differences were statistically significantly different from zero.

During expansion periods, farms in the highest, low, and lowest ROE class are more likely to stay in the same class, while farms in the middle ROE class are less likely to

stay in the same class than the unconditional matrix. For example, the likelihood of a farm business staying in the highest ROE class in conditional matrix of an expansion period is 50% which is 2.2% higher than the probability from the unconditional matrix. These findings mean that during expansion, the top farms have the opportunity to keep their top performance and even worst performers are more likely to make improvements on their performance. The opposite trend is true during recession time, with the lowest ROE class performers being more likely to stay in the same ROE class, while farm businesses in the remaining ROE classes are less likely to stay same in the ROE class. The performers in the highest ROE class have retention rates that are 8.5% lower during a recession than the unconditional matrix. While the lowest ROE class retention rate during a recession is 11% higher than the unconditional matrix. During a recession, top performers are less likely to retain their top performance, while worse performers tend to be more likely to stay in their ROE classes. This shows that the main objective for farmers is to do well in expansion years while doing OK in recession years. A reason for this outcome might be because top ROE performers may be able to leverage more in expansions versus recessions. Another point to make is that recessions can have a lingering effect on farm which can be tested in subsequent studies.

Migration Drift Results

Table 4 shows the new unconditional matrix for the migration drift. The drift unconditional matrix consists of farms with three consecutive years of data as opposed to the previously discussed unconditional matrix including farms with two consecutive years of data. Retention rates from the year-to-year looks very similar to the unconditional transition probabilities for the business cycle in Table 2. Lowest, Low and

Middle ROE classes all have a greater tendency to improve to the next ROE class rather than moving down.

Results from the migration drift are displayed in Table 5. The upward trend matrix is for farms that have experiences an upgrade (improvement in ROE class) in the previous period, the no trend is no change in ROE class in the previous period, and the downward trend is for downgrading (worsening in ROE) class in the previous period. The transition probability matrices were re-estimated for these three groups of farms.

For the upward trend, the highest retention rate (36.1%) is for the highest ROE class. Opposite results are found for the no trend matrix, the low ROE class has the highest retention rate, i.e. they stay low. The lowest ROE class has the highest retention rate for the downward trend conditional matrix. All conditional matrices compared to the unconditional matrix that shows the low ROE class has the highest retention rate and the middle ROE class has the lowest rate. The probability of upgrading from middle ROE class to high ROE class following an upgrade is 0.9% less than the unconditional matrix. While the probability of downgrading from middle ROE class to low ROE class is 4.8% higher in the upward trend matrix than the unconditional matrix. Upgrading from the high ROE class to highest ROE class following an upgrade is 9.8% less than the full sample matrix. Similar results are found in the downward trend matrix when further downgrading from the high ROE class to the middle ROE class is 7.4% lower than the unconditional matrix.

In the upward trend matrix, all classes tend to be less likely to stay in their own ROE classes with probabilities ranging from 27% to 31%. Only the low ROE classes tend to be more likely to improve, but the rest of the classes tend to more likely to deteriorate

their performance. For example, the highest ROE class has a 31% chance of staying in the same class; however it has the same probability of decreasing to the next, high ROE class. The high ROE class has a higher chance (31.8%) to deteriorate one class down than staying in the same ROE class (29.5%).

The largest difference from the conditional and unconditional matrix is the retention rate for the low ROE class in the no-trend matrix of 70.9% which is 21.3% higher than the unconditional matrix. In the no-trend matrix, all farms tend to be more likely to continue to stay within their respective ROE class than move away from them. For example, farmers in the Low ROE class have a significant decrease in probability to move away from that class. With the Low ROE class having almost 80% retention rate yet, the probability of moving down or up is 12.7% and 14.5%, respectively. The Highest, High, Middle and Lowest ROE classes have above 34% probability of retaining their same class.

When farm businesses experience a downgrade in the previous period, the lowest ROE class has the highest retention rate, which is 5.3% less than the unconditional matrix. For middle class performers, they are less likely to stay in the same class after downgrading, than if they have no change or upgrade. In the downward trend matrix, only the High ROE class is more likely to stay in the same ROE class, while the other classes are less likely to move away. Only the High ROE class is less likely to improve but the rest of the classes are more likely to improve their performance. This indicates trend reversal for most classes. Trend reversal just means that even if ROE starts off being low, it does not mean it will continue to stay low. For example, following a downtrend in the previous year, a farmer in the High ROE Class, has a 22.6% probability

of migrating up to the Highest ROE class but only a 19.4% of deteriorating to the Middle ROE class. The same can be shown with the upward trend matrix, if a farmer has a return on equity in the Middle ROE class range, then there is a higher probability (23.6%) of migrating down to the Low ROE class than migrating up to the High ROE class (21.8%).

These results in general confirm the Phillips and Katchova trend-reversal of profitability. With the lower credit quality class having higher transition probabilities for the downgrade matrix indicating that a downgrade in credit quality last period would more likely result in an upgrade in the next period. Even though this study focuses on return on equity it can be compared to Phillips and Katchova because a factor of credit quality is profitability.

Concluding Remarks

The results of this study suggest that farmers with high return on equity will more than likely retain their high ROE in expansion and others will improve their performance during expansion. On the other hand, farmers with a low return on equity will more likely keep a low ROE when the U.S economy is experiencing a recession. Yet, the transition probabilities off the diagonal tend to differ across the business cycles when comparing the unconditional and conditional migration probabilities. This generally confirms results from other agricultural finance studies.

Results also indicate trend reversal for most ROE classes, resulting in the violation of the Markov property. Our findings indicate that past performance predicts future performance because we find trend reversal, so upgrades are more likely after downgrades and vice versa. There could be many explanations for these differences

including management skills, weather patterns, agricultural production cycles and the ability to increase net worth.

Kentucky farmers can use this study as a benchmarking tool. If farmers have a benchmark to compare themselves to, more of them might take additional management steps to improve their financial performance. However, not all farmers are able to take the required steps to improve their return on equity for different reasons. KFBM could use the results as a recruitment instrument to show how well farmers perform in their program. By using KFBM data it will help Kentucky farmers gain knowledge about return on equity and where their farm could stand within the ROE classes. One thing that might have some caution attached is that this data mainly represents larger, commercial farms in Kentucky and may not be a good representation for both large and small size farms. Also, the results of this study will not be able to be generalized for farmers in other states.

Further studies are needed to determine if transition probabilities differ significantly when examining a longer time frame (year-to-year vs. year-to-three years). This could bring some insight on how farms perform over time and if their performance should improve. Also, different enterprises should be examined, which was not done in this study. In addition, the finding should be compared against results from other Farm Business Analysis programs that are organized like Kentucky Farm Business Management Program.

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Tables

Table1. Classes of Return on Equity

Classes based on ROE	Obs.	Minimum	Maximum
Lowest ROE	269	-1.00000	-0.00218
Low ROE	270	0.00234	0.03556
Middle ROE	270	0.03557	0.07730
High ROE	270	0.07734	0.14445
Highest ROE	269	0.14462	1.00000

Table 2. Business Cycle Unconditional Matrix

	Next Year						
Current Year	Lowest	Low	Middle	High	Highest	Farm Obs.	Percent Total
Lowest ROE	0.436	0.227	0.147	0.067	0.123	163	18.59%
Low ROE	0.123	0.458	0.240	0.123	0.056	179	20.41%
Middle ROE	0.124	0.161	0.326	0.223	0.166	193	22.01%
High ROE	0.067	0.116	0.268	0.341	0.207	164	18.70%
Highest ROE	0.096	0.051	0.124	0.253	0.478	178	20.30%

Table 3. Business Cycle Conditional Matrix

Current Year	Next Year					Farm Obs.	% Total
	Lowest	Low	Middle	High	Highest		
Expansion							
Lowest ROE	0.431	0.262	0.162	0.069	0.077	130	20.80%
	(-0.005)	(0.035)	(0.014)	(0.002)	(-0.046)		
Low ROE	0.126	0.469	0.245	0.119	0.042	143	22.88%
	(0.003)	(0.010)	(0.005)	(-0.004)	(-0.014)		
Middle ROE	0.119	0.164	0.366	0.201	0.149	134	21.44%
	(-0.005)	(0.004)	(0.039)	(-0.021)	(-0.017)		
High ROE	0.073	0.136	0.236	0.364	0.191	110	17.60%
	(0.006)	(0.021)	(-0.032)	(0.022)	(-0.016)		
Highest ROE	0.102	0.056	0.139	0.204	0.500	108	17.28%
	(0.006)	(0.005)	(0.015)	(-0.049)	(0.022)		
Recession							
Lowest ROE	0.545	0.136	0.091	0.045	0.182	22	12.79%
	(0.110)	(-0.091)	(-0.056)	(-0.022)	(0.059)		
Low ROE	0.160	0.560	0.200	0.080	0	25	14.53%
	(0.037)	(0.102)	(-0.040)	(-0.043)	(-0.056)		
Middle ROE	0.242	0.182	0.303	0.152	0.121	33	19.19%
	(0.118)	(0.021)	(-0.023)	(-0.071)	(-0.045)		
High ROE	0.083	0.111	0.389	0.222	0.194	36	20.93%
	(0.016)	(-0.005)	(0.121)	(-0.119)	(-0.013)		
Highest ROE	0.089	0.054	0.107	0.357	0.393	56	32.56%
	(-0.006)	(0.003)	(-0.016)	(0.104)	(-0.085)		

Expansion years: 1998, 1999, 2000, 2002, 2007, 2010
Recession years: 2001, 2008, 2009
Number is parentheses are differences between the probabilities in the business cycle one year conditional matrix and the unconditional matrix

Table 4. Drift Ratings Unconditional Matrix

	Next Year						
Current Year	Lowest	Low	Middle	High	Highest	Farm Obs.	Percent Total
Lowest ROE	0.418	0.235	0.153	0.061	0.133	98	15.99%
Low ROE	0.128	0.496	0.224	0.088	0.064	125	20.39%
Middle ROE	0.117	0.188	0.325	0.227	0.143	154	25.12%
High ROE	0.052	0.121	0.267	0.328	0.233	116	18.92%
Highest ROE	0.100	0.058	0.117	0.267	0.458	120	19.58%

Table 5. Drift Ratings Conditional Matrix

	Next Year						
Current Year	Lowest	Low	Middle	High	Highest	Farm Obs.	% Total
Upward Trend							
Lowest ROE	-	-	-	-	-		
	-	-	-	-	-		
Low ROE	0.192	0.308	0.385	0.115	0	26	13.98%
	(0.064)	(-0.188)	(0.161)	(0.027)	(-0.064)		
Middle ROE	0.218	0.236	0.273	0.218	0.055	55	29.57%
	(0.101)	(0.048)	(-0.052)	(-0.009)	(-0.088)		
High ROE	0.091	0.159	0.318	0.295	0.136	44	23.66%
	(0.039)	(0.038)	(0.051)	(-0.032)	(-0.096)		
Highest ROE	0.066	0.115	0.098	0.361	0.361	61	32.80%
	(-0.034)	(0.056)	(-0.018)	(0.094)	(-0.098)		
No Trend							
Lowest ROE	0.478	0.283	0.152	0	0.087	46	18.40%
	(0.060)	(0.048)	(-0.001)	(-0.061)	(-0.046)		
Low ROE	0.127	0.709	0.145	0	0.018	55	22.00%
	(-0.001)	(0.213)	(-0.079)	(-0.064)	(-0.046)		
Middle ROE	0.061	0.184	0.469	0.245	0.041	49	19.60%
	(-0.056)	(-0.005)	(0.145)	(0.018)	(-0.102)		
High ROE	0	0.049	0.268	0.341	0.341	41	16.40%
	(-0.052)	(-0.072)	(0.001)	(0.014)	(0.109)		
Highest ROE	0.136	0	0.136	0.169	0.559	59	23.60%
	(0.036)	-0.058	(0.019)	(-0.097)	(0.101)		
Downward Trend							
Lowest ROE	0.365	0.192	0.154	0.115	0.173	52	29.38%
	(-0.053)	(-0.042)	(0.001)	(0.054)	(0.040)		
Low ROE	0.091	0.341	0.227	0.182	0.159	44	24.86%
	(-0.037)	(-0.155)	(0.003)	(0.094)	(0.095)		
Middle ROE	0.060	0.140	0.240	0.220	0.340	50	28.25%
	(-0.057)	(-0.048)	(-0.085)	(-0.007)	(0.197)		
High ROE	0.065	0.161	0.194	0.355	0.226	31	17.51%
	(0.013)	(0.041)	(-0.074)	(0.027)	(-0.007)		
Highest ROE	-	-	-	-	-		
	-	-	-	-	-		

Number is parentheses are differences between the probabilities in the business cycle one year conditional matrix and the unconditional matrix.