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**Credit rating and credit rating forecasts  
of lending investors around Metro Manila  
1999 to 2002**

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## **About the Author**

Dr. Junette Perez focuses in Microfinance and Microfinance risk management as areas for research. Her dissertation entitled “Value at Risk Modeling in Microlending: The Case of Lending Investors around Metro Manila provides breakthrough ideas on sustainable microlending operations and microcredit risk management. Her previous research were “Survey on Financial and Non-financial Techniques among Professional Moneylenders” and An Application of Discriminant Analysis to Paying and Non-Paying Borrowers of Professional Money lending around Metro Manila.” Dr. Perez graduated with distinction in her Doctor of Business Administration degree from the De La Salle University.

## **Abstract**

This working paper aims to identify the implication of credit rating migration to the lending investors in three to five years period. The first part requires CAMEL ratios to be computed from the financial statements of the fifty lending investors around Metro Manila. Using Cluster Analysis, the significant cluster variates were identified to partition the fifty lending investors into groups of credit rating states. In this case, the Standards and Poors rating was used as surrogate rating. Using quadrant analysis, four distinct credit rating groups were established; 29 rated BB, 2 rated B, 15 rated CCC and 4 rated in default. Markov Analysis was then applied to determine the rating migration probabilities. Forecasting the trend in the transition or migration probabilities, the credit rating state of the lenders would most likely decline in three or five years period.

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## **Credit rating and credit rating forecasts of lending investors around Metro Manila, 1999 to 2002**

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### **1. Introduction**

The National Strategy for Microfinance of the National Credit Council (NCC) Secretariat of the Department of Finance (2000) suggested that one of the ways to alleviate poverty is the provision of credit to households engaged in micro businesses.

With the Ramos administration, the 1991-1998 Medium Term Philippine Development Plan articulated the government's twin strategies of global competitiveness and people empowerment. These meant the implementation of market – based financial and credit policies and the increased participation of the private sector in the market place. The vision is to have a viable and sustainable private (micro) financial market where the private sector plays the major role and the government provides the appropriate policy and institutional framework for the efficient functioning of markets.

This paved way for enterprising businessmen to establish their respective lending investor groups to serve the needs of the small borrowers in the community. The National Internal Revenue Code (NIRC) defines lending investors as persons authorized to extend, grant or lend money with interest. They play an important role in mobilizing funds for productive use being an industry that is relatively new. They offer loans without collateral since it is based on the credibility of the borrower unlike pawnshops and financing companies.

The economic slowdown lessened the number of borrowers and led to high levels of delinquent accounts for the lending investor by 1997. Schmidt and Zeitenger (1996) found that despite microlending being attractive among investors, lenders, NGOs and donors alike, their efforts are generally too early to be sustainable financially and operationally. This must have accounted for the close down of at most 50 percent of registered lending investors around Metro Manila (Perez, 1999).

Incidentally by 1998, the development of Value at Risk (VaR) - based risk management as the industry standard by choice and by the Bank of International Settlement (BIS) regulation, Crouchy et al., (2000) provided an added impetus for this study.

This study intends to identify the amount that the lending investors would potentially lose (VaR) from his lending portfolio. It undertakes the following problems in order to help the them manage with issues of sustaining their lending operations.

The study tackled the following research problem areas:

What Value at Risk (VaR) model could be applied to lending investors around Metro Manila?

- 1.How would this VaR model be derived?
- 2.What would be the implications of the 91-day forward treasury rates to the VaR model?
- 3.What would be the implications of the borrower's probability of loan grant and the probability of loan default to the VaR model?
- 4.What would be the implications of credit rating migration to the lending investors?

It is the belief of the researcher that the VaR model that is designed in this study would provide the lending investor with a range of potential losses associated with its range of lending portfolios. This aimed to help the lending investors sustain their micro credit operations and enhance their micro credit risk management strategies.

Generally, the study sought to accomplish the following:

- 1.Derive a VaR model for lending investors around Metro Manila.
  - 2.Illustrate how the 91-day forward treasury rates could affect the VaR model.
  - 3.Illustrate how the borrower's probability of loan grant and probability of loan default could affect the VaR model.
  - 4.Illustrate how the VaR model could help arrive at a range of adjusted lending investor's loan portfolio.
  - 5.Apply Markov Analysis to determine the credit rating state to a proportion of lending investors in three years and in five years from now.
- This working paper covers results for objective number **5**.

## **2. Methodologies and analysis of results.**

The fifty lending investors were asked for their financial statements in order to calculate the CAMEL ratios which are set as a criteria for rating. The CAMEL ratios are conventional measurements of credit risk commonly used to assess banks and other financial institutions. After the CAMEL ratios were computed, cluster analysis was performed to determine the significant cluster variates that can partition the 50 lending investors into groups based on their similarity for a set of specified characteristics.

In the ANOVA results (Table 1), *capital adequacy*, *management* and *earnings* were shown as significant cluster variates that can be applied to classify the 50 lenders. The variable *capital* had the largest standard deviation, which was attributed to the considerable differences observed in the capital adequacy ratings within the sample.

**Table 1. ANOVA Results**

	Cluster		Error		F	Sig.
	Mean Square	Df	Mean Square	df		
CAPITAL	20.103	4	.186	45	107.966	.000
ASSET	.260	4	.143	45	1.8222	.141
MANAGEMENT	13.833	4	.205	45	67.363	.000
EARNING	1.947	4	1.623E-02	45	119.978	.000
LIQUID	4.031E-02	4	8.785E-02	45	.459	.765

The earnings ratio measures the profits generated from the lender's assets, sales and owner's investment. Earnings ratio from assets tests the profits gained from the use of such assets. The earnings ratio from sales exhibits the revenue gained as a percentage of sales. The earnings ratio from use of owner's equity illustrates the profits generated from the use of owner's capital.

Dumlao (2002) cites capital adequacy as representative of the portion of total funds put in by the owners to support the company's operations. It is the basic own-sourced funds that indicate the commitment of the owners to the company. It is permanent and won't have to be taken out or paid out, like debt.

It also represents the buffer when other sourced funds are not available or have dwindled. The bigger the capital, the more funds can be used to generate profits. The bigger the capital, the more funds can be borrowed to increase the base from which to generate profits. The more profits, the more retained earnings become available to further increase the capital base from which to generate profits. Capital adequacy, therefore, measures the ability to fund operations as well as the ability to borrow to fund operations, and also the ability to meet obligations.

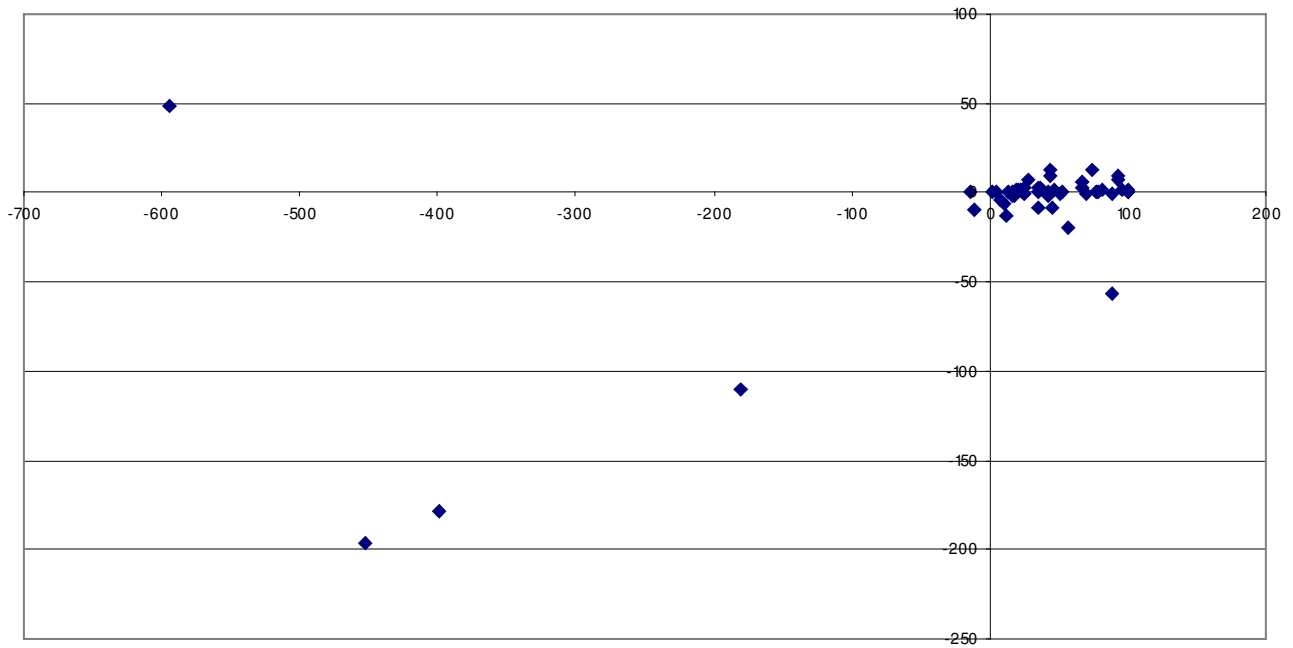
As part of capital adequacy, financial flexibility must be considered. This is the ability or capacity to generate the funds needed, when needed – either through borrowing (in its many forms) or through the injections of additional equity. After the significant cluster variates were identified, the researcher analyzed the relationship between capital adequacy and earnings in a quadrant.

**Table 2. Group descriptive statistics CAMEL**

Variable	Mean	StDev	Min	Max
CAPITAL	8.971E-02	1.346120	-5.9504	1.0000
ASSET	0.178338	0.390089	0.0017	2.2416
MGNT	1.216344	1.147970	0.2000	7.4195
EARNING	-9.47E-02	0.416993	-1.9624	0.4802
LIQUID	0.709590	0.289772	0.0190	1.0000

From the quadrant analysis of Figures 1, it exhibited that 29 lenders were rated BB, two lenders rated B, 15 lenders rated CCC and four lenders rated default.

**Figure 1: Quadrant overview: capital adequacy and earnings**



Looking at Table 3, a lender rated BB would be capital intensive and with normal expected earnings.

**Table 3. Lenders' ratings**

<u>RATING</u>	<u>LENDERS</u>	<u>DESCRIPTIONS</u>
BB	29	Capital intensive and earnings expected normal
B	2	Low capital but good earnings
CCC	15	Good capital but poor earnings
DEFAULT	4	Poor capital and low earnings

As surrogate rating, Standards & Poors provided an initial definition for the ratings. Below are the definitions (descriptions) for each rating.

<i>Rating</i>	<i>Definition</i>
BB	An obligation rated 'BB' is less vulnerable to nonpayment than other speculative issues. However, it faces major ongoing uncertainties or exposure to adverse business, financial, or economic conditions that could lead to the obligor's inadequate capacity to meet its financial commitment on the obligation.
B	An obligation rated 'B' is more vulnerable to nonpayment than obligations rated 'BB', but the obligor currently has the capacity to meet its financial commitment on the obligation. Adverse business, financial, or economic conditions will likely impair the obligor's capacity or willingness to meet its financial commitment on the obligation.
CCC	An obligation rated 'CCC' is currently vulnerable to nonpayment, and is dependent upon favorable business, financial, and economic conditions for the obligor to meet its financial commitment on the obligation. In the event of adverse business, financial, or economic conditions, the obligor is not likely to have the capacity to meet its financial commitment on the obligation.
CCC	An obligation rated 'CCC' is currently vulnerable to nonpayment, and is dependent upon favorable business, financial, and economic conditions for the obligor to meet its financial commitment on the obligation. In the event of adverse business, financial, or economic conditions, the obligor is not likely to have the capacity to meet its financial commitment on the obligation.

<i>Rating</i>	<i>Definition</i>
Default	An obligation rated 'D' is in payment default. The 'D' rating category is used when payments on an obligation are not made on the date due even if the applicable grace period has not expired, unless Standard & Poor's believes that such payments will be made during such grace period. The 'D' rating also will be used upon the filing of a bankruptcy petition or the taking of a similar action if payments on an obligation are jeopardized.

Source: Moodys Investors Service (2000)

Tables 4 shows the 29 lenders rated BB, other than they were capital intensive and have normal expected earnings, lenders rated BB were also above 1.0 both in capital adequacy earnings ratios.

**Table 4. Companies with BB Ratings**

BB		RATIOS	
	Company	Capital Adequacy	Earnings
1	BB1	81.76%	1.55%
2	BB2	93.50%	9.70%
3	BB3	77.78%	0.29%
4	BB4	5.17%	0.35%
5	BB5	12.97%	0.78%
6	BB6	99.64%	0.40%
7	BB7	92.55%	6.95%
8	BB8	28.28%	7.04%
9	BB9	99.52%	0.76%
10	BB10	21.84%	2.08%
11	BB11	23.56%	0.43%
12	BB12	100.00%	1.80%
13	BB13	15.53%	0.97%
14	BB14	96.01%	1.99%
15	BB15	51.77%	0.59%
16	BB16	74.73%	13.32%
17	BB17	76.77%	0.29%
18	BB18	36.74%	2.69%
19	BB19	2.05%	0.09%
20	BB20	34.88%	0.47%
21	BB21	43.73%	12.79%
22	BB22	67.23%	2.95%
23	BB23	19.26%	1.61%
24	BB24	46.13%	1.26%
25	BB25	44.39%	9.98%
26	BB26	34.88%	2.91%
27	BB27	67.44%	6.45%
28	BB28	25.63%	2.85%
29	BB29	20.08%	1.22%

Table 5 shows two lenders rated B. They were low in capital (< 1.0) but had good earnings (> 1.0).

**Table 5. Companies with B Ratings**

B		RATIOS	
	Company	Capital Adequacy	Earnings
1	B1	-14.51%	0.31%
2	B2	-595.04%	48.02%

The next table (Table 6) shows 15 lenders having a CCC rating. They had good capital ( $> 1.0$ ) but poor earnings ( $< 1.0$ ). CCC rated lenders were exactly the reverse of the capital adequacy and earnings status of the B rated lenders.

**Table 6. Companies with CCC Ratings**

CCC		RATIOS	
	Company	Capital Adequacy	Earnings
1	CCC1	35.31%	-8.97%
2	CCC2	11.41%	-12.44%
3	CCC3	25.09%	-0.25%
4	CCC4	10.58%	-6.62%
5	CCC5	42.45%	-0.06%
6	CCC6	16.32%	-1.34%
7	CCC7	7.10%	-3.48%
8	CCC8	17.20%	-1.98%
9	CCC9	88.98%	-0.90%
10	CCC10	50.72%	-0.14%
11	CCC11	70.39%	-0.75%
12	CCC12	45.24%	-8.41%
13	CCC13	88.21%	-56.45%
14	CCC14	56.79%	-20.16%
15	CCC15	42.20%	-1.94%

Table 7 shows the four lenders in default rating. They all had poor capital ( $< 1.0$ ) and low earnings ( $> 1.0$ ). They were the lenders in bad need of help in terms of managerial strategies.

**Table 7. Companies with Default Ratings**

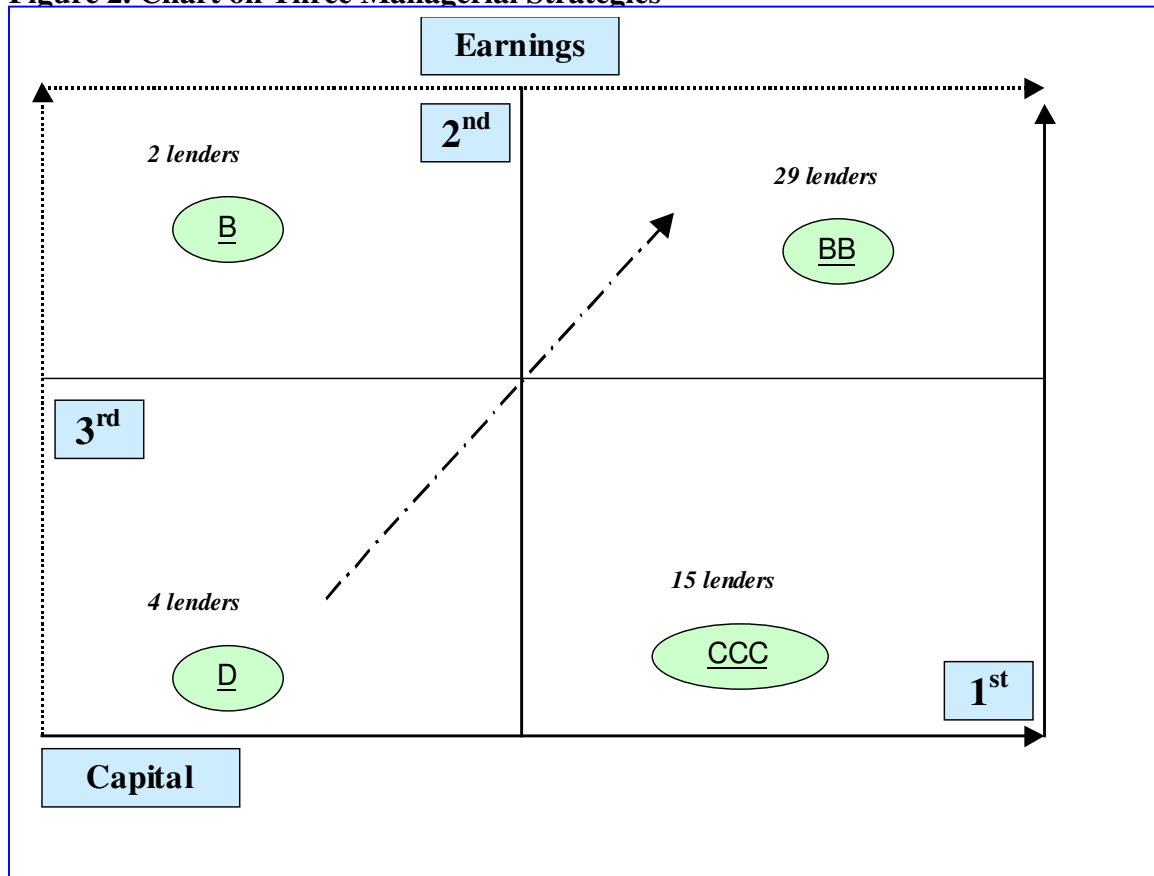
	DEFAULT	RATIOS	
	COMPANY	CAPITAL ADEQUACY	EARNINGS
1	DEFAULT1	-180.99%	-109.96%
2	DEFAULT2	-398.96%	-178.87%
3	DEFAULT3	-11.03%	-9.44%
4	DEFAULT4	-452.73%	-196.24%

All lenders would aim to be in the BB rating or in a higher category, the managerial implication showed three strategies:

- 1.Improve Capital before Earnings
- 2.Improve Earnings before Capital
- 3.Improve both Capital and Earnings simultaneously

The third strategy is the fastest way to improve rating except that it would require heavy capital infusion from the lender or from the lender’s prospective investor. These three strategies were drawn in Figure 2.

**Figure 2. Chart on Three Managerial Strategies**



## **Transition Probabilities using Markov Analysis**

Using Markov Analysis, the migration probabilities were generated using the Standards and Poors transition probabilities. Markov Analysis assumed that the lender performed the same operations, the exact policy and strategy.

Observing the trend of the probabilities from the following graphs of ratings BB to BB, B to B, CCC to CCC and default to default, showed that the chances that the lender's rating would decline were higher than the chances that the lender's rating would improve. Thus, there was a clear mark-up in the chance of the lender's rating to migrate to lower than current rating category over time.

From the first to the fifth year, the rating migration of BB rated lenders fell from 81 percent to 40 percent. By the end of the fifth year, the chance that a BB rated lender to maintain its BB rating is only 40 percent.

Similarly, the rating migration of B rated lenders fell from 84% to 46%. By the end of the fifth year, the chance that a B rated lender to maintain its B rating is only 46%.

The rating migration of CCC rated lenders downgrade from 65 percent to 13 percent. By the end of the fifth year, the chance that a CCC rated lender to maintain its CCC rating slide at 13 percent.

Finally, the rating migration of default rated lenders stabilized at 100 percent indicating that in default, a lender would have very little or no chance at all to improve its rating.

In the long run, several events could interact with a lender's capital and earnings ratio thus making uncertain which driver would propel rating growth for all the lenders. In a steady state, companies would eventually close down, following a natural life cycle.

The lender rated BB had a 55 percent chance to retain its rating while rated B lenders had 61 percent respectively (Table 8). The shift in the movements of CCC rated lenders were dramatic. Only 28 percent probability existed for CCC rated lenders to maintain its CCC rating.

**Third year/period****Table 8. Transition probabilities or credit/rating migration**

RATING	PROBABILITIES		
	HIGHER	SAME	LOWER
BB	22%	55%	23%
B	17%	61%	22%
CCC	29%	28%	43%
Default	0%	100%	0%

As shown in Table 9, the BB-rated lenders had a 40 percent chance to sustain its rating while B-rated lenders had slipped to 46 percent as well. As noted, the shift in the CCC-rated lenders became alarming as its probability to retain its CCC rating slid down to 13 percent, thus enhancing its chances to migrate to a lower rating category, that is, a default rating. Default-rated lenders experienced the same rating as they may have probably stopped lending operations from the first year they were in default.

**Fifth year/period****Table 9. Transition Probabilities or Credit Migration**

RATING	PROBABILITIES		
	HIGHER	SAME	LOWER
BB	25%	40%	35%
B	23%	46%	31%
CCC	33%	13%	54%
Default	0%	100%	0%

### **3. Summary**

CAMEL ratios were computed for 50 lending investors based on information submitted by these firms through their financial statements. Using cluster analysis, the significant cluster variates were identified. In this case, the CAMEL ratios fire up as cluster variates, and ANOVA results clearly indicated that capital adequacy, management, and earnings were the most significant cluster variates .

The quadrant analysis established four distinct groups: BB, capital intensive and normal expected earnings (29 members); B, with low capital but good earnings (2 members); CCC, with good levels of capital but low earnings (15 members); and a “default” rating, for firms with low capital adequacy and earnings (4 members).

Furthermore, firms trying to earn a BB rating should undertake one of three strategies: improve capital before earnings, improve earnings before capital, or improve both earnings and capital simultaneously. However, transition probabilities indicated that over time, the chances of an upgrade in a lender’s rating were lower than the chances of a downgrade.

Four lenders were found to be capital deficient as VaR rose, indicating that they were already experiencing losses – an observation which is consistent with the results obtained for the four firms that were classified under the “default” category based on the CAMEL-ratings analysis.

Transition probabilities indicated that over time, the chances of an upgrade in a lender’s rating were lower than the chances of a downgrade in rating

### **4. Implications: Lending Operations Management**

The results have shown that a proportion of lending investors is not likely to maintain their credit rating state in three years and in five years from now. There are several recommendations for better management of lending operations. For BB-rated lenders, there must be a continuous improvement of their current capital and earning ratio status. B-rated lenders should work on their capital with sustained earnings for them to be able to get to BB-rating status. Critical strategies in changing policies by the third or fifth year are quite alarming for CCC-rated lenders. They are suggested to improve their earnings. Lastly, three strategies are progressive choices for companies in default.

## **5. Conclusion and Recommendation**

From Markov Analysis, the paper concludes that of 50 lending firms examined, over half were able to meet the requirements for a BB rating. It implies that they were capital intensive and had normal expected earnings.

It is recommended therefore that lenders within this category should sustain preferably improve, their current capital and earnings performance if they are to avoid a downgrade. Companies that earned a B rating should improve their capital positions through sustained earnings in order to qualify for BB status. CCC-level lenders should improved earnings if they are to have any hope of improving their standing. For firms slapped with a “default” rating, shoring up both capital and earnings could go a long way towards boosting their chances for an upgrade.

## References

Crouchy, M., Galai and Mark(2000). Comparison of Current Credit Models. *Journal of Banking and Finance*, 24, 59 -117.

Dumlao, E. President of Philratings *Interview 2002*.

\_\_\_\_\_.National Strategy for Microfinance. National Credit Council(NCC) Secretariat. Department of Finance. 2000.

Perez, J. *Discriminant Analysis on Paying and Non-Paying Borrowers among Lenders around Manila, 1999. URCO, DLSU. Unpublished.*

\_\_\_\_\_. *Rating Methodology. Banchmarking Quantitative Default Risk Models: A Validation Methodology.* Moody's Investors Service. Global Credit Research. March 2000

Schmidt,R.and Zeitenger, C. (1996). Prospects, problems and potential of credit granting NGOs. *Journal of International Development*, 8(2), 241-258.