# World Finance & Banking Symposium

Singapore, 12-13, 2014

EPROCEEDINGS

ISBN: 978-989-98816-2-4

# INDEX

## SCIENTIFIC COMMITEE

(Alphabetical Order)

CHAIRMAN:
**João Paulo Vieito**
Polytechnic Institute of Viana do Castelo — **Portugal**

**Almir Ferreira de Sousa**
São Paulo University, Brazil
**Andrey Karolyi**
Cornell University, United States
**Anjan Thakor**
Washingthon University, United States
**Bhagwan Chowdhry**
Indian School of Business and University of California at Los Angeles (UCLA), United States
***Carlos P. Maquieira***
Universidad Santo Tomás, Chile
**Carlos Pombo**
Universidad de los Andes, Colombia
**Christian Wolff**
University of Luxembourg, Luxemburg
**Christopher Polk**
London School of Economics, United Kingdom
**Cynthia J. Campbell**
Iowa State University, United States
**David Ding**
Massey University, New Zealand
**Dilip K. Ghosh**
American University of Cairo, Egypt
**Douglas T. Breeden**
Duke University, United States
**Eduardo S. Schwartz**
University of California at Los Angeles (UCLA), Unites States
**Fariborz Moshirian**
University of New South Wales, Australia
**Finn Østrup**
Copenhagen Business School, Denmark
**Franklin Allen**
The Wharton School, University of Pennsylvania, United States
**Giorgio Valente**
City University of Hong Kong, Hong Kong
**Gonzalo Cortazar**
Pontificia Universidad Católica de Chile, Chile
**Harjoat Bhamra**
Emperial College of London, United Kingdom
**Hideaki Kato**
Nagoya University, Japan
**Huining Henry Cao**
Cheung Kong Graduate School of Business, China
**Ian Cooper**
London Business School, United Kingdom
**Ike Mathur**
Southern Illinois University, United States
**James R. Lothian**
Fordham University, United States
**Jonathan Karpoff**
University of Washington, United States
**Joseph P. H. Fan**
Chinese University of Hong Kong, Hong Kong
**Jun - Koo Kang**
Nanyang Business School, Singapore
**Julian Franks**
London Business School, United Kingdom
**Jun - Koo Kang**
Nanyang Business School, Singapore

# DETERMINANTS OF LOAN AGREEMENT IN ASIA-PACIFIC

**Jemmy Gunawan**[1]
*Universitas Surabaya*

**Deddy Marciano**[2]
*Universitas Surabaya*

**James Bartle**[3]
*BINUS Business School/University of New South Wales*

***ABSTRACT***

*This study aims to investigates and analyze the interdependencies of three main variables of loan agreement. The three main variables are: collateral, maturity, and loan spread. This research is applied in Asia-Pacific corporate area between 2006 and 2010.*

*This study used two stage least square regression analysis. This research used 6 models to describe the interdependencies of collateral, maturity, and loan spread to determine the loan agreement. This study used secondary data in the Dealscan database with 548 samples of Asia-Pacific corporates in 2006-2010.*

*This study shows interdependencies of collateral, maturity, and loan spread. This research reveals that the main variable which affects the loan agreement consideration is collateral.*

*Keywords*: *loan agreement, collateral, maturity, loan spread.*

## BACKGROUND

A company raises new funds from two sources: internal and external finance. Internal finance comes from internal sources such as retained earning. External finance involves obtaining financing from an outside source, such as bank loans, bonds, and shares. Internal finance is prefered by a company for three reasons. The first reason is because it is easier to access, the second reason because quicker to raise, and the third reason is internal finance has a lower flotation cost compared to external finance. One interesting issue regarding financing source alternatives are loans. Loans are considered interesting because it can give benefit in terms of cost saving for tax expense.

The risk for Asia Pacific region is higher compare to the other developing countries, caused by the low level of information transparency (Godlewski and Weill, 2007) quoted in Limtiono, (2012). The other risk arises from moral hazard

[1] Alumny of Faculty of Business & Economics, Universitas Surabaya
[2] Faculty of Business & Economics, Universitas Surabaya. Email: us31143@gmail.com
[3] BINUS Business School/Australian Business School, University of New South Wales

aspect in developing countries. Dennis and Mullineaux (2000) as quoted in Limtiono (2012) said that moral hazard also influenced the given loan structure. Tanjung (2012) mentioned that Asia Pacific as a region with high risk and also has a lower information transparency compare to America and Europe. Marciano (2010) also believed that countries in Asia Pacific region have a higher risk compare to the other developing countries, because the information transparency in Asia Pacific is very low compare to the other developing countries. This situation also leads to a higher moral hazard problems in Asia Pacific countries caused by a higher asymmetric information.

This research about determinants of loan agreement is interesting because it is carried out in a region where developing countries have good economic prospects but also high risk due to asymmetric information and moral hazard.

## THEORITICAL FRAMEWORK

A loan agreement is a contract between a borrower and a lender which regulates the rights and obligation of each party, through a lending instrument. In a loan agreement there are three main issues that needs to be agreed by both parties: the loan spread, collateral, and maturity. These three components are related and influence each other. Below is the relationship between the three variables in the loan agreement.

Signaling theory explains that collateral can be used as a tool to identify the borrower's quality (Bester, 1985) as quoted in Tra, Pham Thi Thu & Lensink, Robert, (2006). A borrower's quality can be seen from their response towards collateral request by the lender. Loan spreads are used by the lender to check the default risk of a loan, or to select between a good loan or a risky loan. The introduction of loan spread can also be a preventive action against the borrower risk. By referring to collateral and loan spread, high risk borrowers can be identified easily. Borrowers with high risk tends to choose loan agreement with low collateral and high loan spread from the lender.

A different approach came from Pozzolo (2002). Pozzolo mentioned that banks will still need collateral and loan spread to identify borrower. The success rate of a borrower is determine by risk level of the borrower and also the performance capacity of the borrower it self. High risk borrower will also gives high credit risk for the bank. To minimize the risk, bank will increase the security level of its credit by requesting a high collateral from the borrower accompanied by a high loan spread as well. This research is based on two assumptions. First, collateral is more important for the borrower than for the bank. Second, borrowers can maximize profit by knowing their own performance and choose a suitable project based on the their capability. Collateral is more important for the borrowerand that is why the borrower will try their best to avoid default in loan, so in order not to loss their collateral. This can be done by choosing the right project based on the risk and capacity of the borrower.

**H1:** Collateral has a positive relationship with loan spread, collateral gives positive influence towards loan spread.

**H2:** Loan spread has a positive relationship with collateral, loan spread gives positive influence towards collateral.

Based on research conducted by Myers (1977), Smith and Warner (1979), Chan and Takor (1987) about agency costs, it was found that collateral has a positive relationship with maturity. Collateral and maturity have a positive relationship because either collateral or maturity can be used to overcome problem faced by the lender, regarding underinvestment and asset substitution by the borrower. The underinvestment issue occur when the company with a high risk loan status can get a loan for a risky project or for low risk project with small NPV. Asset substitution occurs when there is a fund transfers from lender to share holders. If the fund from lender can be managed well by the borrower, then the profit will be owned by the share holders, while if the fund from the lender experience a default, then the lender needs to be responsible for the loss. The solution for this problem is by shortening the maturity period of a loan, or by asking for collateral from a company. The positive relationship can be created from two conditions. First, if the lender wants to strengthen the monitoring activity, then the lender will shortening the maturity period of the and ask for collateral. Second, if the lender want to compensate for the loss if there is a default, then the lender will ask for a higher collateral but with a longer maturity period.

Boot et al (1991) as quoted in Tra, Pham Thi Thu & Lensink, Robert, (2006) concluded that collateral and maturity have a negative relationship. The example given by Boot, provide a situation where the bank has an ownership issue and collateral liquidation, then the cost to ask for a lower collateral will be compensated for long maturity period. The reason behind this action is because with long maturity period, the bank will have flexibility to decide when the loan will be default, and also gives a chance to the borrower to pay off the debt. In this case, the bank takes advantage from the flexibility to reduce the collateral cost by lowering the collateral but compensate it with long maturity period.

**H3:** Collateral has a negative relationship with maturity, collateral gives negative influence towards maturity.

**H4:** Marurity has a negative relationship with collateral; maturity gives negative influence towards collateral.

There is a dissenting opinion between researchers regarding the relationship of maturity and loan spread, because some researchers are still rely on the trade off hypothesis. In regard to this, maturity and loan spread have a positive relationship. This is because the longer maturity period of a loan, the loan spread will also become higher to compensate for the high level of premium risk caused by longer maturity period of a loan. It follows that maturity and loan spread have

a positive relationship. Other than that, based on the term structure of interest rates, longer maturity period means the uncertainty risk will also become higher, resulting in a high interest rate to compensate for the higher risk.

Some researchers believe that maturity has a negative relationship with loan spread. High risk borrower will receive high loan spread and short term maturity from the lender to minimize the lender's risk. The decision is made as part of monitoring action by the lender towards the borrower. The loan risk can be minimized for the lender, because with short term maturity period, so monitoring activity can occur more frequently.

Based on the previous empirical research findings by Gottesman and Roberts (2002), there is a positive relationship between maturity and loand spread. Other research done by Strahan (1999) and Dennis et al (2000) find that there is a negative relationship between loan maturity and loan spread.

**H5:** There is negative correlation between maturity and loan spread, maturity gives negative correlation towards loan spread.
**H6:** There is negative correlation between loan spread and maturity, loan spread gives negative influence towards maturity.

## RESEARCH METHOD

This research is based on applied research, since the previous research findings are still being developed in this area. Based on this purpose, this research is considered as causal research, since there is a specific and clear purpose for this research, which is to identify determinants of loan agreement in Asia Pacific during 2006-2010. Given the data we have this research is both quantative and experimental.

A two stage regression analysis is used in this research, with dependent and independent variables. But this research is also testing the relationship between independent variables and the influence towards loan agreements, which means there is a dependent variable that can also be an independent variable. The dependent variables in this research are maturity, loan spread, and collateral. The independent variables in this research are firm size, loan size, ROA, profit before tax, liquidity ratio, syndicated, seniority, country risk, interest coverage and debt to asset ration. The relationship between dependent and independent variables is multivariate asymmetric, because there are several independent variables that influence dependent variable.

**Model 1**
$Collat = \Pi_1 X + \varepsilon_4$
$Collat = \Pi_1$ [Debta, Profibt, Liquidity, Loan size, Firm size]

**Model 2**

$Lmat = \Pi_2 X + \varepsilon_5$

Lmat = $\Pi_2$ [Liquidity, Debta, Profibt, Firm size, Seniority, Syndicated, Country risk]

**Model 3**

Loan$r = \Pi_3 X + \varepsilon_6$

Loanr = $\Pi_2$ [ROA, Profibt, Debta, Liquidity, Interest coverage]

After we have the regression forecast results, the next step is to perform second regression analysis to see the relationship between three determinant factors of loan agreement. Several variables such as firm size, loan size, ROA, profit before tax, liquidity ratio, syndicated, seniority, country risk, interest coverage, and debt to asset ratio, are used as control variables. The model that we use is:

**Model 4**

$Collat^f = \Pi^f_1 X$

$Collat^f = \Pi^f_1$ [Lmat, Loanr, Debta, Profibt, Liquidity, Loan size, Firm size]

**Model 5**

$Lmat^f = \Pi^f_2 X$

$Lmat^f = \Pi^f_2$ [Collat, Loanr, Liquidity, Debta, Profibt, Firm size, Seniority, Syndicated, Country risk]

**Model 6**

Loanr = $\Pi^f_3 X$

Loanr = $\Pi^f_2$ [Lmat, Collat, ROA, Profibt, Debta, Liquidity, Interest coverage]

**ANALYSIS**

The results for collateral forecast test show that there is a positive and significant correlation between collateral forecast with loan spread as a dependent variable. The positive relationship happens as a response from the lender regarding the borrower risk. A high borrower risk will make the lender request collateral for the loan agreement along with a high loan spread. The reason is that with a high risk borrower, there will be a need for collateral and a large loan spread to minimise the risk of the loan. Based on the research by Pozzolo (2002) this suggests that bank need collateral and give a high loan spread to a high-risk borrower.

The results of maturity forecast test show that there is a positive and significant correlation between maturities forecast with loan spread as a dependent variable. The positive relationship happens as a response from the lender regarding the borrower risk. A longer maturity period in a loan agreement, results in a higher uncertainty risk, which is why we still need a high loan spread to

compensate for this risk. On the contrary, when lender requires a short maturity period to the borrower, the loan spread asked by the lender is also small, because a loan with short maturity has a lower uncertainty risk, which results in a lower loan spread. This is also supports the terms structure of interest theory. Based on research by Tra, Pham Thi Thu & Lensink, Robert, (2006), there is a positive correlation between maturity and loan spread.

**Table 1.**
**Regression Test Results Model 1-3**

| Variable | Collateral | | Maturity | | Loan Spread | |
|---|---|---|---|---|---|---|
| | Coefficient | t-stat | Coefficient | t-stat | Coefficient | t-stat |
| C | 9.5090 | 1.2630 | 125.7350 | 8.7640 | 130.014 | 22.8890 |
| ROA | - | - | - | - | 8.327 | 0.2520 |
| DEBTA | 0.1640 | 1.0520 | -1.8410 | -1.2200 | -5.698 | -1.4900 |
| LIQUIDITY | -0.0003*** | -2.8180 | -0.0020*** | -5.5780 | -0.005*** | -8.6120 |
| PROFIBT | -0.3830** | -1.9780 | 3.1280** | 1.9980 | -3.410 | -0.8640 |
| FIRM SIZE | -0.7630*** | -5.1520 | -5.4580*** | -3.3020 | - | - |
| LOAN SIZE | -3.0270 | -1.1480 | - | - | - | - |
| SENIORITY | - | - | -53.756*** | -4.3700 | - | - |
| SYNDICATED | - | - | -5.6890* | -1.7750 | - | - |
| COUNTRY RISK | - | - | 0.0560 | 0.0520 | - | - |
| INT COVERAGE | - | - | - | - | -0.0010*** | -8.8730 |
| Adj. R-Squared | 0.0950 | | 0.0750 | | 0.0810 | |
| F-STAT | 36.0610*** | | 5.8970*** | | 7.8590*** | |

The results of collateral forecast test show that there is a negative and significant relationship between collateral forecast with maturity as a dependent variable. The negative relationship occurs as a response from the lender regarding the borrower risk. Based on the collateral, if the borrower risk is high, the lender will also give a loan with a short term maturity as a way to monitor the default potential of the borrower. Based on the research by Boot et al (1991) quoted in Tra, Pham Thi Thu & Lensink, Robert, (2006), it is stated that there is a negative correlation between collateral and maturity.

The results of loan spread forecast test show that there is a positive and significant relationship between loan spread forecast and maturity as a dependent variable. The positive relationship occurs to minimize the loan risk. If the borrower receives a loan with a high loan spread, it means that the borrower risk is high. High-risk borrower will get long term maturity from the lender to minimize the default potenial of the loan. On the contrary, if the borrower receive

a low loan spread from the lender, it means that the borrower have a low risk. Further, if the borrower obtains a loan with short term maturity period, it is a positive signal to the market. A short term maturity period shows that the borrower is confident tin being monitored by the lender more frequently because the risk is low. This results also match with the research done by Gottesman and Roberts (2002) quoted in Tanjung, (2012), saying that there is a positive and significant correlation between maturity and loan spread.

**Table 2.**
**Regression Test Results Model 4-6**

| Variable | CollateralF | | MaturityF | | Loan SpreadF | |
|---|---|---|---|---|---|---|
| | Coefficient | t-stat | Coefficient | t-stat | Coefficient | t-stat |
| C | 9.3960 | 7.4050 | 174.297 | 6.5390 | 21.594 | 0.6840 |
| COLLATERALF | - | - | -133.532*** | -3.3450 | 207.425*** | 2.8890 |
| MATURITYF | -0.0130 | -0.6290 | - | - | 1.655** | 2.2180 |
| LOAN SPREADF | 0.0080 | 0.6660 | 0.091** | 1.9690 | - | - |
| ROA | - | - | - | - | -6.859 | -0.2130 |
| DEBTA | 0.1980 | 1.2960 | 0.731 | 0.4810 | 0.324 | 0.0980 |
| LIQUIDITY | -0.0004** | -2.4880 | -0.004*** | -4.4300 | 0.0003 | 0.3640 |
| PROFIBT | -0.3330* | -1.7240 | -1.533 | -0.7070 | -7.756 | -1.4310 |
| FIRM SIZE | -0.8200*** | -4.6470 | -17.212*** | -4.1420 | - | - |
| LOAN SIZE | -3.0450 | -1.1430 | - | - | - | - |
| SENIORITY | - | - | -52.477*** | -4.0410 | - | - |
| SYNDICATED | - | - | -6.239* | -1.9590 | - | - |
| COUNTRY RISK | - | - | -0.458 | -0.4150 | - | - |
| INT COVERAGE | - | - | - | - | -0.0003*** | -7.7350 |
| Adj. R-Squared | 0.0950 | | 0.0750 | | 0.0810 | |
| F-STAT | 36.0600*** | | 5.8970*** | | 7.8590*** | |

The results of maturity forecast test show that there is a negative but insignificant relationship between maturity forecast with collateral as dependent variable. The negative relationship between maturity and collateral can be explained by the borrower risk. If the borrower risk is high, then the lender will give a shorter maturity period to assist monitoring the borrower. High borrower risk also lead to lender's decision to ask for collateral to minimize the loss if there is a default. The research done by Boot et al (1991) as quoted in Tanjung, (2012) shows that collateral and maturity have a negative relationship.

The results of loan spread forecast test show that there is a positive but insignificant correlation between loan spread forecast and collateral as dependent

variable. The positive influence is related to the borrower risk.If there is a high borrower risk, the lender will give a high loan spread with collateral. On the contrary, low-risk borrower will make lender to give a low loan spread without collateral. Pozzolo (2002) gives example that in a loan agreement with collateral, the loan spread is higher compare to the loan spread in a loan agreement without collateral.

## SUMMARY

Collateral instrument in a loan agreement usually indicates short-term maturity debt. This is because if lender asked for a collateral, it means the borrower condition is not poor, and the lender would demand a short-term maturity. This will give implication for the borrower since the inability to get a long term maturity means losing a chance to do long term investment or expansion activity. Long term investment or expansion activity usually use long term financing. Collateral minismises losses borne by the lender and this can be further mitigated by a short term loan for monitoring purposes.

Having a collateral in loan agreement usually leads to a high loan spread. This is because if the lender would demand collateral, the borrower condition is not good, so that the lender will also demand a high loan spread. The implication for borrower with a high loan spread means the borrower will be responsible for a higher interest costs. High interest will disturb the liquidity level and earnings of the borrower. Without income and current assets, the borrower's financial performance will be degraded, and the borrower shall be deemed as a borrower with unfavourable credit quality. In the future, borrower with unfavourable reputation will face difficulties to get a beneficial loan, in terms of collateral, maturity and loan spread aspects.

A borrower who get a loan with long-term maturity from the lender, usually will need to be responsible for a high loan spread. This is based on the term structure of interest, where is a longer maturity means the uncertainty risk of the loan is higher, which means a higher loan spread is needed to compensate the uncertainty risk. A higher loan spread means that the borrower will be responsible to pay a higher interest expenses to the lender, which is also means a lower earnings for the borrower. But with a longer maturity, the default risk of the loan will decrease. The implication of a high loan spread for the lender, it will decrease the risk borne by the lender, especially for uncertainty risk. A higher uncertainty risk means a higher return for the lender. The return level for the lender is obtained from the high loan spread given to the borrower related to the given loan.

## REFERENCES


Atmojo, I., 2004, Corporate Loan Pricing Assesment: Empirical Study in Indonesia, Thesis [*Penilaian Harga Pinjaman Korporasi : Studi Empiris di Indonesia, Skripsi]*, unpublished.

Bester, H. (1985) 'Screening vs. rationing in credit markets with imperfect information', *American Economic Review*, 75: 850-55.

Boot, A., Thakor, A. and Udell, G. F. (1991), 'Secured lending and default risk: equilibrium analysis, policy implications and empirical results', *Economic Journal*,101: 458-72.

Cohil and Yagil, 2007, A International Survey of Corpoorate Financial Policies. *Working paper*. Hal 33.

Dennis, S., Nandy, D., Sharpe, I., 2000, *The Determinants Of Contract Terms In Bank Revolving Credit Agreements, Journal of Financial and Quantitative Analysis* 35, 87-110

Limtiono, 2012, The Determinants of Corporate Debt Maturity in Asia Pacific Region in 2006-2010, Thesis [*Faktor-Faktor yang Mempengaruhi Debt Maturity Pada Pinjaman Korporasi di Asia Pasific Periode 2006-2010, Skripsi], unpublished.*

Marciano, D., 2010, Asymmetric Information, Moral Hazard, and Financing Structure in determining Corporate Value in USD, Working Paper, Dissertation [*Pengaruh Asimetri Informasi, Moral Hazard, dan Struktur Pendanaan Dalam Penentuan Harga Korporasi Dalam Bentuk US Dollar, Working Paper, Disertasi], unpublished.*

Megginson, W, L., 1997, *Corporate Finance Theory*, Addison-Wesley.

Merton, R. C. (1974) 'On the pricing of corporate debt: the risk structure of interest rates', *Journal of Finance*, 29: 449-70.

Pozzolo, A. F. (2002) 'Secured lending and borrowers' riskiness', Working Paper, Bank of Italy, Research Department.

Strahan, P. E. (1999) 'Borrower risk and the price and nonprice terms of bank loans', Staff Report 90, New York: Federal Reserve Bank of New York.

Tanjung, Yudi. S, 2012, Asymmetric Information Effect and Diversification Effect in relations to Loan Pricing in Asia Pacific Region in 2006-2010, Dissertation [*Pengaruh Asymmetry Information Effect dan Diversification Effect Dalam Pembentukan Harga Pinjaman di Asia Pasifik Tahun 2006-2010, Disertasi]*, unpublished.

Tra, Pham Thi Thu & Lensink, Robert, 2006. "*The Determinants of Loan Contracts to Business Firms: Empirical Evidence from a Private Bank in Vietnam*," *Working Paper Series RP2006/86, World Institute for Development Economic Research (UNU-WIDER).*