Nijmegen School of Management

MASTER THESIS

THE EFFECT OF ENFORCEMENT ACTIONS ON LEAD ARRANGER'S REPUTATION: EVIDENCE FROM SYNDICATED LOANS

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ABSTRACT

A formal enforcement action on banks for non-compliance with laws and regulations has an adverse effect on bank's reputation. This thesis examines such case, enforcement action appears as a reputational burden to banks that cause the decrease in bank market's share and the need to attract more potential participants. Moreover, the impacts of enforcement actions are different to bank's size and vary by their types. A larger size bank experiences a larger effect from enforcement actions. The more severe enforcement actions are enacted, the more intensive impacts bank receive. The results are proved through an empirical research using syndicated bank-level data and sample of enforcement actions from 1982 - 2014.

I. INTRODUCTION

"Tough, clear, and direct", this was what Thomas Curry – Head currency controller said about the issuance of enforcement actions levying a large amount of money in fines to punish banks for the foreign exchange market's manipulation from 2008 to 2013 (Srinivas, 2015). Enforcement actions that help to against banks and their management official, directors, and employees, are indeed an important supervisory mechanism. Regulators issue enforcement actions when having the "violation of laws, rules, or regulations; breaches of fiduciary duty, and unsafe or unsound practices" (Fed, 2015). In most of the cases, enforcement actions reveal to the public with new information about banks' condition, their banking practices that might be hard to infer from other disclosures.

However, enforcement actions can be costly to the target that receives the punishment (Srinivas, 2015). Affected banks might spend resources to rectify the problems that enforcement actions identify and are sometimes required to make payments to aggrieved parties. Especially, because one of the types of enforcement actions, formal enforcement actions, are announced publicly, they may bring potential reputation costs. The loss in reputation of disciplined banks can be measured by the change in its market share, or its adjustment of the number of participants in the loan structure (Champagne C., 2007; Gopalan, 2011).

Despite the importance of banks' indirect cost when being a target of enforcement actions, there is little direct empirical evidence to identify the magnitude of enforcement actions damage to punished banks, and how the impact varies across bank's size and with various kinds of enforcement actions. Being motivated to find out the answers for these concerns, this thesis use the loan syndicated market including lead arrangers and participant lenders, as a testing ground to explore: *"To what extent do the effect of enforcement actions on lead arranger's reputation?"*.

Notably, the study will focus on the reputational burden of lead arranger only because of its essential role among participants involved in the syndicated loan. Although the other lenders fund a portion of the loan, they delegate most of the important tasks such as screening and monitoring the borrower to lead arrangers (Gadanecz, 2004; Gopalan, 2011; Sufi, 2007). Thus, the lead arranger's substantial part combines with the rich data available in loan syndicated market would allow the thesis to investigate the magnitude of enforcement actions adverse impacts in the cross section of bank - level over time.

After investigating, the results using bank – level data and multidimensional information of loan contracts, lead arranger's characteristic have significant implications for disciplined banks. They suggest that lead bank's market share will decrease and lead banks will attract more potential participant lenders if receive the enforcement actions. The outcome about lower market share is in line with previous research literature (Gopalan, 2011). However, the higher number of syndicated partners finding is opposite to implication of prior study (Champagne C., 2007; Gopalan, 2011) which indicates a shock to lead's arranger reputation would result a drop in its ability to attract the number of participant lenders. The contradictory findings of this research can be explained based on the past alliances between lead arrangers and lenders. The previous strong relationships can result in continuing collaboration between them (Cai, 2010; Champagne C., 2007) despite the impact of enforcement actions. Moreover, this thesis also find out larger bank experience more intensive effect from enforcement actions, and the more severe enforcement actions is, the more hurt in bank's reputation appear. These are two new striking findings that have not been investigated comprehensively in previous literature.

This research is related to existing literature studies the trade off when syndicate's managing agent take reputable damage (Dennis, 2000; Lee, 2004; Sufi, 2007), and

the researches investigate the adverse effects of enforcement actions (Barth, 2001a; Brous P., 1996; Danisewicz, 2014). The thesis bridges the gap between these two strands by concentrating on the costs of lost reputation, and analyzing how its costs vary across the various lead banks. In specific, the study would contribute to banking supervision literature by providing evidence of causality from enforcement action to the syndicated loan 's structure. This also raises a cautious flag to regulators regarding the indirect reputational cost of publicly regulatory actions. Lenders, borrowers who join syndicated loans with disciplined lead arrangers should notice of the instability of loan's structure.

This paper consists of five main sections. In the first section, the introduction of the thesis is presented, which highlights main objectives and key findings of the paper. The second section provides the main concepts of syndicated loan, enforcement actions, and the literature study related fields to the thesis's question. In section III, the population data is presented. The chapter also reveals methodologies and strategies with appropriate explanation of the equations utilized in this paper. Results of the regression will be then demonstrated in section IV. Finally, section V will discuss and sum up the main conclusions of the paper.

II. LITERATURE REVIEW

2.1. Syndicated loan

In the long - term financial market, syndicated loans have gradually become one of the most important financing sources since the early 2000s (World Bank, 2016). The ratio of syndicated loans rose from just 13% to more than 80% between 1990 and 2010 (Bos J. W. B., 2013). In 2016, global syndicated lending was reaching US$4.0 trillion with nearly 7,456 deals, and the Americas loans accounted for the largest portion with 58% of global loan volume (Thomson Reuters, 2016). Syndication loans are the large and the increasing source of the global finance (Bosch, 2011).

A bank syndicate, in specific, is a collection of banks that jointly extend a loan to a specific borrower (B. Esty, 2001). While a loan sale involves no direct contract exists between the borrower and the buyer, a syndicated loan requires a direct contract between lenders and borrower (Gorton, 1995; Pennacchi, 1988). Lending syndicates resemble pyramids with the top includes a few arranging banks over the bottom with lots of providers (B. Esty, Megginson, W. L., 2003).

Members of syndicated loans are divided into one of two groups including lead banks (agent/lead arrangers) and participant banks (syndicated partners, participant lenders) (Gadanecz, 2004; Sufi, 2007). Among two groups, lead arrangers take substantial part due to various tasks they are involved in before, after and during the loan is syndicated. Prior to closing a loan, the arranging banks take the responsibility such as meeting with the borrower, assessing the credit quality, negotiating the loan contract and they are also in charge of monitoring, or conducting due diligence on the borrower (Bos J. W. B., 2013; B. Esty, Megginson, W. L., 2003; V. Ivashina, 2005; Sufi, 2007). After closing, the lead banks monitor compliance with loan covenants, negotiate contingency agreements as needed, and lead negotiations in default situations (B. Esty, Megginson, W. L., 2003). Furthermore, during the

lifetime of the loan, lead arrangers also act as the agent that monitor the borrowers, governs terms of the syndicated loan, estimate interest payments and enforce financial covenants. On the contrary, other participant lenders rarely communicate with the borrowers and maintain only an "arm's-length" relationship with the borrowing firms through the lead arrangers. Participant banks delegate screening and monitoring of the borrower to the lead arrangers and typically hold a smaller share of the loan than the lead arrangers (Gadanecz, 2004; Gopalan, 2011; Sufi, 2007).

Since lead arrangers play more prominent roles than providing lenders, the latter often depends on the leader's reputation as an important criterion in making lending decisions (Champagne C., 2007; Dennis, 2000; Ross, 2010). On one side, lead arranger's reputation is considered to be a certification of the quality, the ability to attract participants in the syndicated loan (Carter, 1990; Gomes, 2000; Lee, 2001; Megginson, 1991); or an effective mechanism to mitigate the incentive conflicts, the agency cost between members due to information asymmetry (Bushman, 2012; Gatti, 2013; Johnson, 1997; Panyagometh, 2010). On the other side, a loss of reputation would damage the lead arranger's ability to syndicate loan and make lead banks face with troublesome consequences. A study of Gopalan (2011) find out that after experiencing the reputation loss, the lead arrangers retain a larger portion of the loan, are less likely to syndicate loans and find it hard to attract participant lenders in the subsequent year. The role of lead arrangers in the syndicated loan creates the significant role of reputation (Bushman, 2012).

2.2. Enforcement actions

Enforcement actions are an important part of the supervisory mechanism that guarantees for actual operations are in accord with sound practices. The term "enforcement actions" appertains to a broad range of powers used to address suspect practices of institutions and institution - affiliated parties (Gilbert, 2000). In the

banking sector, regulators regularly issue enforcement actions against individuals for several reasons, including "violations of laws, rules, or regulations, as well as for unsafe or unsound practices, breaches of fiduciary duty, and violations of final orders" (Fed, 2015). Noncompliance with enforcement actions can lead to the termination of deposit insurance of banks. Enforcement actions are likely to force changes in conduct (Mailath, 1994).

Enforcement actions take one of two main types: informal understandings between banks and their supervisors and more formal actions. Among two categories, informal actions are the most prevalent, but are not enforceable through the courts and are not publicly revealed (Gilbert, 2000). An informal action is a mutual understanding between a bank and its supervisory agency about the necessary processes to rectify the problems. In contrast, formal enforcement actions, are more serious than informal actions. Supervisors will issue formal actions when violations of law or regulation continue, or when unsafe and abusive practices occur. Formal enforcement actions have more impacts on sanctioned subjects than informal actions since they are legally enforced and publicly disclosed (Gilbert, 2000). Formal actions usually take one of these forms such as cease and desist orders, written agreements, civil money penalties, prompt - corrective - action - directives (Srinivas, 2015).

Even though enforcement actions are aiming to promote safe and sound banking practices, they are considered as costly mechanisms to the institutions involved, and also to individuals at those institutions in almost all instances (Srinivas, 2015). Noticeably, besides the advantage effects of enforcement actions such as punished banks improve their performances (Curry, 1999), lower the fragility (Delis, 2011), improve the operation (Chortareas, 2012), previous literature argues that restricting bank activities has adverse repercussions. Brous (1996) find out that the disclosure

of enforcement actions leads to a negative stock price reaction. Jordan (1999) report negative abnormal stock returns under the reveal of enforcement actions that is consistent with the announcement conveying adverse information about banks' financial condition. Furthermore, in the cross-country investigation, it is showed that enhancing regulatory restrictions on bank activities are correlated with a higher probability of suffering a major banking crisis, and lower banking sector efficiency (Barth, 2001a). Likewise, Danisewicz (2014) prove that enforcement actions have adverse effects on personal growth, firm size.

2.3. Hypothesis

Despite the potential reputational cost of being a target of enforcement actions could be existed and varies by type and their severity (Srinivas, 2015), empirical research exploring the nexus between supervisory enforcement actions and bank's reputation has been scarce, especially in the syndicated loan and aiming at lead arranger prestige, to say the least. There are two strands related to the thesis's concern. One strand is analyzing the trade off when lead arranger's reputation is damaged. The other strand is investigated the effects of enforcement actions on bank's risk and performance. Both of them are described in details in the latest parts. This study will try to brides two strands by approaching the impact of enforcement actions on lead bank's reputation measured by the change in syndicated loan structure: bank's market share and the number of participant lenders.

The hypotheses, therefore, are constructed.

Firstly, regulators would apply enforcement actions on the lead arrangers if they spot that the lead arranger does not comply with the regulatory law (Agarwal, 2014). The enforcement actions is reviewed as a shock/bad new to punished banks, which cause a reputational loss to the target. This leads to the first hypothesis:

The enforcement actions are expected to damage lead arranger's reputation.

Secondly, since large-size lead banks might have more ability to arrange loans, attract a larger number of participants, an impact from enforcement actions may cause larger damage to their reputation than to small size banks. This leads to the second hypothesis:

Enforcement actions are predicted to give stronger effects to larger lead banks than smaller banks.

Moreover, due to the severity characteristics of each type of enforcement actions, banks which are received serve disciplines would suffer larger reputation damage than banks takes the less severe enforcement actions. This leads to the last hypothesis:

Severe enforcement actions are predicted to cause larger reputational loss to punished banks than less severe enforcement actions.

III. DATA AND METHODOLOGY

3.1. Data

3.1.1. Syndicated loan data

Data on global corporate loans are collected from the Loan Pricing Corporation's (LPC) DealScan database. Dealscan is considered as the world's number one source for comprehensive, reliable past and present deal information on the global loan markets. "This database contains detailed historical information on the entire population of global corporate loans, including syndicated loans" (Bos, 2016). Detailed information about on syndicated loan contract terms, lead arrangers, and participant lenders are also found in this database (Champagne C., 2007; Dennis, 2000; Godlewski, 2012; V. Ivashina, & Scharfstein, D. S. , 2010; Sufi, 2007).

Table 1 presented the number of syndicated loan by years, by country, industry and number of arrangers in syndicated loan. It can be seen that since the 1990s the number of syndicated loans has risen sharply. Nearly 70 percent of syndicated loan was constructed during 2004 – 2014 period. Syndicated loan was booming in 2008, with the highest number of syndicated loan conducted during this year in the worldwide, accounting for 9.66 percent of total observations.

Regarding the market of syndication, Asia is the biggest market of syndication in the worldwide during the period 1982 – 2014, contributing 32 percent of the total sample. Due to the rapid economic development of Asian countries, syndicated loans tend to focus on this region. In the Middle East and Africa, and Asia-Pacific regions, most domestic banks are syndicated members following one or more foreign lead arrangers (Gadanecz, 2004). The second largest market is in Western Europe with 22 percent of the total sample.

Among various industry, most syndicated loans in the sample are conducted for borrowers from the transportation, communication, electric, gas and sanitary services with 35 percent. Loans in the agriculture, forestry, and fishing account for 14 percent, and the mining industry accounts for 12 percent of the total sample.

The number of arrangers per syndicated loans varied from 1 to 36 during the period of the data sample. According to the table distribution, most syndicated loans during the studied period has only one arranger.

Table 1: Summary statistics on Syndicated Loans by year, region and industry

Number of syndicated loan by year

Year	Syndicated loan	%	Year	Syndicated loan	%	Year	Syndicated loan	%
1982	1	0.01%	1994	202	1.56%	2004	448	3.45%
1984	3	0.02%	1995	227	1.75%	2005	535	4.13%
1986	2	0.02%	1996	495	3.82%	2006	625	4.82%
1987	18	0.14%	1997	719	5.54%	2007	910	7.02%
1988	22	0.17%	1998	460	3.55%	2008	1253	9.66%
1989	45	0.35%	1999	280	2.16%	2009	688	5.31%
1990	56	0.43%	2000	320	2.47%	2010	1008	7.77%
1991	53	0.41%	2001	359	2.77%	2011	950	7.33%
1992	83	0.64%	2002	343	2.65%	2012	554	4.27%
1993	117	0.90%	2003	409	3.15%	2013	935	7.21%
						2014	847	6.53%
						Total	12967	100%

Number of syndicated loan by region

Regions	Syndicated loan	%	Regions	Syndicated loan	%
Asia excluding Near East	4188	32%	Northern Africa	154	1%
Baltics	21	0%	Northern America	2412	19%
C.W. of IND. States	302	2%	Oceania	487	4%
Eastern Europe	302	2%	Sub-Saharan Africa	390	3%

Latin America	482	4%	Western Europe	2821	22%
Near East	1370	11%	Others	38	0%
			Total	12967	100%

Number of syndicated loan by industry

Industry	No.	%
Agriculture, Forestry and Fishing	1851	14%
Mining	1501	12%
Construction	1322	10%
Manufacturing	1675	13%
Transportation, Communications, Electric	4594	35%
Wholesale Trade	88	1%
Retail Trade	103	1%
Finance, Insurance and Real Estate	733	6%
Services	835	6%
Public Administration	265	2%
Total	12967	100%

Number of arrangers

Number of arranger	No.	%
1	3733	29%
2	2190	17%
3	1380	11%
4	1120	9%
From 5 to 10	3122	24%
From 11 to 20	1158	9%
Higher than 20	264	2%
Total	12967	100%

3.1.2. Enforcement actions data

Since informal actions are voluntary disclosure made by bank's board member, information does not affect bank's reputation. Therefore, this thesis only examines formal enforcement actions which are legally enforced, more severe, and disclose to the public. The data of formal enforcement actions are gathered from the three main banking supervisors in the United States: the Federal Reserve System (FRS), the Federal Deposit Insurance Corporation (FDIC), and the Office of the Comptroller of the Currency (OCC).

Table 2 summarizes main statistics of enforcement action in the data, including the number of action per year and the distribution of each enforcement action. A total

number of enforcement actions during 1990 – 2015 is 233. Since 2010, the number of enforcement action has been risen significantly compared to the previous period. 43 percent of enforcement actions in the sample are written agreement; it is then followed by cease and desist order with 28 percent.

Table 2: Enforcement action during the period 1990 - 2015

Number of enforcement actions per year

Year	Number of enforcement actions				
1990	1	2000	5	2009	14
1991	10	2001	4	2010	24
1992	18	2002	5	2011	17
1993	2	2003	12	2012	14
1994	8	2004	13	2013	19
1995	1	2005	11	2014	11
1996	5	2006	4	2015	15
1997	1	2007	8	N/A	1
1999	4	2008	6	Total	233

Number of enforcement actions per type

Type of actions	Number of actions	%
Cease and Desist Order	66	28%
Civil Money Penalty	61	26%
Prompt Corrective Action	6	3%
Written Agreement	100	43%
Total	233	100%

3.1.3. Bank's characteristic data

Data about bank's characteristic such as total asset represented for bank's size is collected from Thompson Reuters Eikon. Those databases contain financial information from annual reports, as time series over multiple years of global listed corporation (Radboud University Library, 2017).

3.2. Measures

3.2.1. Dependent variables

This thesis will use proxies to the reputation of lead arranger as dependent variables in the equation. These proxies are the market share of lead arranger and the total number of participant lenders in syndicated loan. The lead arranger's market share corresponds to all the loans each bank issues over the size of the market on a given year. The larger the market share is, the more reputable the bank is since it can arrange more loans. Sufi (2007), Gopalan (2011), Champagne (2007) also measures the reputation of lead arrangers by using their market share in the loan syndication market.

The number of participated lenders with each lead bank at a specified period is used as another proxy represent lead arranger's reputation. Because the collaboration maintains the stability of lender's membership across deals and it provides strong incentives for lead banks to maintain and enhance their reputation (Pichler, 2001), the prior study of Champagne (2007), Cai (2010) suggest that bank's reputation can be estimated by the number of syndicated participants.

3.2.2. Independent and control variables

The main variable is the enforcement action, which is a dummy variable takes value 1 if the lead arrangers receive enforcement actions, and otherwise is 0. The coefficient of the main variable is expected to have a significant negative value when

using proxy bank market's share, and it will imply that once a lead arranger is punished, the lead arranger will lost its ability to arrange more loans. For the proxy number of syndicated partners, the coefficient is projected to be positive which indicates that enforcement actions are costly for the target and it needs to attract more syndicated partners.

Furthermore, when banks are disciplined, another dummy variable is used to capture the effects of different enforcement actions' types. The enforcement action's type variable is equal to 2 if bank receive the severe enforcement actions such as cease and desist orders, written agreements, prompt - corrective - action – directives, and is equal to 1 if enforcement actions are less severe including civil money penalties. A significant negative value is forecast to get from this variable which means among the punished banks, severe enforcement actions will cause more extensive effects on bank's reputation than less severe enforcement actions.

Moreover, a set of control variables including lead arranger's size, interaction term, industry concentration and year effects are employed to capture other elements affecting bank's reputation. Firstly, the size of lead arranger measured by its total asset is included because larger banks can arrange more loans, attract more participants (Boyd, 2006; Demirgüç-Kunt, 2008; Flannery, 2008). Secondly, the interaction term between enforcement actions and bank's size is added to check whether the effect of enforcement actions on bank's reputation depends on bank's size. In addition, since some industries may require more financial capital through syndicated loan, I use industries concentration variables to control the loan allocation's priorities. The variables are constructed based on SIC code which represents ten industries group: Agriculture, Forestry and Fishing; Mining; Construction; Manufacturing; Transportation, Communications, Electric, Gas and Sanitary service; Wholesale Trade; Retail Trade; Finance, Insurance and Real

Estate; Service; Public Administration (SICcode.com, 2016). Lastly, year effect variables are utilized to control unexpected special events might occur during research period and distort the outcomes.

3.2.3. Descriptive statistics of the observation sample

I have combined data and information from Dealscan with information about enforcement action and also bank characteristics. Before running the regression, I drop duplicate variables as some lead arrangers make different syndicated loans to the same borrower in the same year. After dropping duplicate value, the sample data now has 3,824 observations. Descriptive statistics for the sample that is used for the regression will be presented in Table 3.

***Table 3**: Descriptive statistics of dependent and explanatory variables*

				Percentile distribution		
Variable	Obs.	Mean	Std. Dev	25th	50th	75th
Dependent variables						
Lead arranger's market share	3824	0.8	2.6	0.17	0.30	0.80
Number of syndicated partners	3824	2.1	1.4	0.69	1.61	2.9
Independent variables						
Enforcement actions	3824	0.2	0.4	0.0	0.0	0.0
Enforcement actions' type	665	1.7	0.4	1.0	2.0	2.0
Control variables						
Bank's size	2261	17.5	1.1	16.8	17.7	17.9
Agriculture, Forestry and Fishing	3824	0.1	0.3	0.0	0.0	0.1
Mining	3824	0.1	0.3	0.0	0.0	0.0
Construction	3824	0.1	0.3	0.0	0.0	0.0
Manufacturing	3824	0.2	0.3	0.0	0.0	0.1
Transportation, Communications, Electric, Gas and Sanitary services	3824	0.3	0.4	0.0	0.0	0.5
Wholesale Trade	3824	0.0	0.1	0.0	0.0	0.0
Retail Trade	3824	0.0	0.1	0.0	0.0	0.0
Finance, Insurance and Real Estate	3824	0.1	0.2	0.0	0.0	0.0
Services	3824	0.1	0.2	0.0	0.0	0.0
Public Administration	3824	0.0	0.1	0.0	0.0	0.0

3.3. Model selections

To answer the question to what extent the enforcement actions affect the lead arranger's reputation, I estimate four regression models:

Model 1

$$\text{Bank's market share}_{i,t} = \beta_0 + \beta_1 \times \text{Enforcement action}_{i,t} + \beta_2 \times \text{Bank's size}_{i,t} + \beta_3 \times \text{Enforcement action}_{i,t} \times \text{Bank's size}_{i,t} + \beta_5 \times \text{Industry concentration}_{i,t} + \beta_6 \times \text{Year effects} + \varepsilon$$

Model 2

$$\text{Bank's market share}_{i,t} = \beta_0 + \beta_1 \times \text{Enforcement action's type}_{i,t} + \beta_2 \times \text{Bank's size}_{i,t} + \beta_3 \times \text{Enforcement action's type}_{i,t} \times \text{Bank's size}_{i,t} + \beta_5 \times \text{Industry concentration}_{i,t} + \beta_6 \times \text{Year effects} + \varepsilon$$

Model 3

$$\text{Number of syndicated partners}_{i,t} = \beta_0 + \beta_1 \times \text{Enforcement action}_{i,t} + \beta_2 \times \text{Bank's size}_{i,t} + \beta_3 \times \text{Enforcement action}_{i,t} \times \text{Bank's size}_{i,t} + \beta_5 \times \text{Industry concentration}_{i,t} + \beta_6 \times \text{Year effects} + \varepsilon$$

Model 4

$$\text{Number of syndicated partners}_{i,t} = \beta_0 + \beta_1 \times \text{Enforcement action's type}_{i,t} + \beta_2 \times \text{Bank's size}_{i,t} + \beta_3 \times \text{Enforcement action's type}_{i,t} \times \text{Bank's size}_{i,t} + \beta_5 \times \text{Industry concentration}_{i,t} + \beta_6 \times \text{Year effects} + \varepsilon$$

where subscript *i* denotes the lead arrangers, and subscript *t* denote the year in which the loan is made. ε is the remainder disturbance.

Model 1 is constructed to capture the impact of enforcement action on bank's reputation using bank's market share proxy as the dependent variable.

Model 2 is constructed to measure the effect of different type of enforcement actions on disciplined bank's reputation using bank's market share proxy as the dependent variable.

The approaches of model 3 and model 4 are similar to model 1 and model 2 respectively, but the number of syndicated partners proxy is used as dependent variable instead of bank's market share.

Regarding model 1 and 2 using bank's market share proxy, the pooled ordinary least squares (pooled OLS) regression is selected. This decision is made after several tests such as Hausman test, F test and Breusch-Pagan Lagrange multiplier test are conducted which suggests that the pooled OLS is the more appropriate method with the data. This method is in line with some previous research papers such as Sufi (2007), Champagne (2007) and Gopalan (2011). For model 3 and 4 using the number of syndicated partners proxy, because the dependent variable is a count variable, the Poisson regressions are chosen. Appendix 1 provides necessary tests for model selection that mentioned above.

IV. EMPIRICAL RESULTS

4.1. Impact of enforcement action on lead arrangers' market share

This part presents the outcomes of Model 1 and Model 2 which use bank's market share as a proxy to approach the effect of enforcement actions on lead arranger's reputation.

Before testing the hypotheses with proposed models, the assumptions of heteroskedasticity, autocorrelation, and multicollinearity are checked and presented in Appendix 2. The tests show that there is only have the appearance of heteroskedasticity so that the robust standard errors are added to the models to correct this problem (Miles, 2014).

Table 4 presents the empirical results of the regressions from Model 1 and Model 2. The R- squared of each regression are also included, which are the relatively good result of a cross-sectional analysis.

Table 4*:* Lead arranger's market share regressions

The table presents coefficients and the robust standard errors of 2 regressions (1), (2). The equations are shown in Section III, part 3.3. The *, **, *** marks denote the significance test at the 10 percent, 5 percent and 1 percent level, respectively. Noticeably, variable Public Administration is automatically excluded by Stata program due to multicollinearity

	Model 1	Model 2
	(1)	(2)
Lead arranger's market share	OLS	OLS for disciplined bank
Enforcement action	2.562**	
	(1.154)	
Bank's size	0.0419***	-0.447
	(0.00946)	(0.340)
Enforcement action *Bank's size	-0.104*	
	(0.0642)	
Enforcement action's type		-10.08*
		(5.943)
Enforcement action's type *Bank's size		0.549
		(0.343)
Agriculture, Forestry and Fishing	0.292**	0.601
	(0.127)	(0.495)
Mining	0.306**	0.606
	(0.132)	(0.562)
Construction	0.169	0.314
	(0.121)	(0.510)
Manufacturing	0.248**	0.962*
	(0.124)	(0.537)
Transportation, Communications, Electric, Gas and Sanitary service	0.395***	0.898*
	(0.123)	(0.461)
Wholesale Trade	0.313	-0.120
	(0.316)	(0.663)
Retail Trade	0.422**	2.605***
	(0.175)	(0.851)
Finance, Insurance and Real Estate	0.289**	0.443
	(0.133)	(0.528)
Service	0.190	0.387
	(0.126)	(0.488)
Constant	48.60***	73.86***
	(12.08)	(5.635)
Observations	2,261	392
R-squared	0.827	0.881
Year effect	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In Table 4, the first model includes dummy variable enforcement actions, the interaction effect between enforcement actions and bank's size, control variables to test for the Hypothesis 1. In the second model, these control variables are as same as model 1. However, the second model is regressed with two types of enforcements actions, and with the new interaction effects between enforcement actions 'types and the size of banks.

In model 1, the coefficient of enforcement actions dummy is positive and statistically significant. The result implies that when a lead arranger is punished, instead of reducing its market share, this bank can have higher ability to arrange more loans than unpunished banks. The result is inconsistent with Hypothesis 1 and the previous research papers which state that enforcement actions will hurt lead banks 'reputation by damaging its ability to syndicate loans. However, because the coefficients of bank's size and interaction effect are also statistically significant, they lead to another understanding. According to Jaccard (2003), if a model contains a term for interaction between two variables, the coefficient of the main effect of these variables represent their value for the situation in which the other variable has value zero. Therefore, under statistic interpretation, the coefficient of enforcement action dummy can be explained for bank's market share only when bank size is equal to zero which takes nonsense for any situation. As a result, the effect of enforcement action on bank's market share can be the best interpreted when taking together with the bank's size. Particularly, the estimated coefficient of bank's size of 0.042 suggests that when bank is larger than 1 unit value, its market share can be widened of 0.042 percent. Moreover, the average size of lead banks in the sample firms is 17.47 unit value, and the average bank market share is 0.81 percent. Thus, other

things equal, a bank receive enforcement actions would lose 0.07 percent[1] of market share when compare to an unpunished bank. The result is consistent with Hypothesis 1. Moreover, the biggest bank in the sample has a size of 21.95 unit value. By combining with the statistically estimated coefficients of enforcement actions dummy and interaction term variable in model 1, it can be interpreted that larger bank would experience more intensive impact of loss in 0.53 percent[2] of market share when being a target of enforcement actions. Therefore, Hypothesis 2 is supported.

Regarding the industry concentration control variables, there are only three coefficient industries over nine industries (not included Public Administration industry because of multicollinearity) are not statistically significant in model 1. The six industries including Agriculture, Forestry and Fishing; Mining; Manufacturing; Transportation, Communications, Electric, Gas and Sanitary service; Retail Trade; Finance, Insurance and Real Estate all have statistical and positive coefficients, which imply the favor of financing these industries from lead banks.

In model 2, the coefficient of enforcement action's type is negative statistically significant while both the coefficients of bank's size and interaction effect variable are insignificant. As a result, the impact of different types of enforcement actions can be interpreted purely and separately in the regression. In specific, a coefficient of -10.08 indicates severe enforcement actions cause a loss of 10.08 percent market share to lead banks when compare to banks receive less severe enforcement actions. Consequently, Hypothesis 3 is supported which means the more intensive enforcement action banks receive, the more hurt in reputation they experience.

[1] Market share decrease is : 0.81 – [2.56+ (-0.104)*17.47] = 0.07 percent
[2] Market share of large bank decrease is : 0.81 - [2.56+ (-0.104)*21.95] = 0.53 percent

Moreover, there are three industries including Manufacturing; Transportation, Communications, Electric, Gas and Sanitary service; Retail Trade still maintain statistically significant coefficient in model 2 which only regress for the disciplined bank. The results indicate that the sanctioned lead banks focus on funding the industries which take the majority section (Manufacturing; Transportation, Communications, Electric, Gas and Sanitary service) or potentially highly profitable industry (Retail Trade) in the lending market.

4.2. Impact of enforcement action on the number of syndicated partners

This part presents the outcomes of Model 3 and Model 4 that use the number of syndicated partners as a proxy to study the impact of enforcement actions on lead arranger's reputation.

To receive the best linear unbiased estimator of the coefficients, the assumption tests included heteroskedasticity, autocorrelation and multicollinearity are checked before running the regressions. The detail results of these tests are reported in Appendix 2. The outcomes show that there are two problems of heteroskedasticity and autocorrelation present. Since the data are at the lead arranger level, observations are related with each other within certain lead arranger groups. The robust clustered standard errors by lead arranger level is used to correct both of these issues.

Table 5 presents the empirical results of the regressions from Model 3 and Model 4.

Table 5: Number of syndicated partners regressions

The table presents coefficients and the robust clustered standard errors by lead arranger level of 2 Poisson regressions in Model 3 and Model 4. The equations are shown in Section III, part 3.3. The *, **, *** marks denote the significance test at the 10 percent, 5 percent and 1 percent level, respectively. Noticeably, variable Public Administration is automatically excluded by Stata program due to multicollinearity.

Syndicated partners	Model 3 (1) Poisson regression	(1*) e^{β}	Model 4 (2) Poisson regression for disciplined bank	(2*) e^{β}
Enforcement action	5.273***	195		
	(1.308)			
Bank's size	0.296***	1.34	-0.00495	
	(0.0962)		(0.166)	
Enforcement action *Bank's size	-0.206***	0.81		
	(0.0745)			
Enforcement action's type			-2.189	
			(2.297)	
Enforcement action's type *Bank's size			0.162	
			(0.133)	
Agriculture, Forestry and Fishing	-0.00248		0.568*	1.76
	(0.232)		(0.301)	
Mining	-0.208		0.0398	
	(0.219)		(0.316)	
Construction	-0.0631		1.020**	2.77
	(0.225)		(0.406)	
Manufacturing	-0.103		0.476*	1.61
	(0.227)		(0.254)	
Transportation, Communications, Electric, Gas and Sanitary service	-0.121		0.146	
	(0.213)		(0.249)	
Wholesale Trade	0.0987		0.607	
	(0.317)		(0.391)	
Retail Trade	-0.171		0.841*	2.32
	(0.373)		(0.451)	
Finance, Insurance and Real Estate	-0.120		0.132	
	(0.245)		(0.334)	
Service	-0.181		0.424	
	(0.249)		(0.308)	
Constant	-7.556***		-2.067	
	(1.912)		(2.872)	
Constant lnalpha	0.232		0.485	
	(0.818)		(1.452)	

Observations	2,261	392
Number of banks	793	53
Year FE	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

To test the Hypothesis 1 and 2, two Poisson regressions are constructed in Table 5. The results of both regression models are reported in column (1) and column (2). The values in column (1*) and (2*) correspond to the exponentiated statistically significant coefficients from the two models and are known as incident rate ratios. First, the incidence ratios of enforcement actions variable and interaction effect variable are 195 and 0.81 respectively indicate that a disciplined bank needs to find more than at least 11 times[3] of syndicated partners to compensate for the loss of reputation caused by enforcement actions. This result is in line with the first Hypothesis 1 which means enforcement actions are costly to lead arranger's reputation. Moreover, regarding the effect of enforcement actions on a large bank, these incident ratios point out that banks which are bigger bear less burden than small size banks. In specific, large banks under the punished condition are expected to attract nearly double[4] than usual condition. Hence, the Hypothesis 2 is not supported.

In model 2, both of the coefficient of enforcement actions type variable and interaction effect variable are negative but insignificant. Thus, the result from second regression cannot support the Hypothesis 3 which hypothesize that bank's reputation would bear more intense damage with more severe enforcement actions.

[3] The syndicated partners increase: [195+0.81*17.47] /18.43 =11 times (The average partners: 18.43; the average size of bank: 17.47]

[4] The syndicate partners increase: [195+0.81* 21.95] /118 =2 times (The maximum partners: 118; the maximum size of bank: 21.95]

In addition, there are four industries including Agriculture, Forestry and Fishing; Construction; Manufacturing; Retail Trade have statistically significant coefficient which approximately by 2. The results indicate that especially with these industries, the lead banks after received the enforcement actions are expected to attract more nearly 2 partners in the syndicated loan.

V. CONCLUSION AND DISCUSSION

This paper uses the loan syndication market of 3,864 lead banks during the period of 1982- 2014 as a testing ground to examines the impact of enforcement actions on lead arranger's reputation. As presented by the hypotheses, the enforcement actions are predicted to damage bank's reputation (Hypothesis 1), and a larger bank in size are forecast to bear the more intensive influence of being the target of enforcement actions (Hypothesis 2). Furthermore, among the enforcement actions' types, the severe enforcement actions are anticipated to have stronger impacts on the reputation of banks than the less severe enforcement actions (Hypothesis 3). Only the hypothesis 1 is supported with both proxies including lead arranger's market share and the number of syndicated partners. The Hypothesis 2 and 3 are supported only in the former proxy, while they are unsupported in the latter proxy's case.

From the research that has been carried out, it is possible to conclude that enforcement actions cause the reputation loss to punished bank, and its costs are indicated through a decrease in bank's market share and a higher number of syndicated partners. Firstly, after received an enforcement action, all else equal, the lead arranger 's market share in the loan syndication market will drop 0.07 percent and have to attract more nearly 11 times lending partners than before. The decrease in bank's market share is in line with the previous literature, while the increase in the number of participant lender is inconsistent. The latter opposite result can be explained by the prior syndicate relationship between syndicate members and the lead's arranger incentive of maintaining the market certainty under the influence of enforcement actions. To compensate for the loss in reputations and to avoid interruption in the market, lead arrangers can attract more syndicated partners based on their past alliances (Champagne C., 2007).

Secondly, the impact of enforcement actions on banks which are different in size is diverse. It is found out that when being a target of enforcement actions, larger bank would experience more intensive impact by a loss of 0.53 percent of its market share than the average figure or attract nearly double number of syndicated participant than before being punished. The adverse result in syndicated partners case can also be tracked from the continuation of ongoing relationship between lead arrangers and participant lenders (Champagne C., 2007), the market power of the lead arrangers. Larger banks would have better ability to control reputational risks caused by enforcement actions. Therefore, they have less pressure to attract a large number of syndicated partners.

Thirdly, regarding the concern whether the various type of enforcement actions have different impacts on bank's reputation, the results show that disciplined bank with severe enforcement actions experience larger 10.08 percent loss in market share than banks receive less severe enforcement actions. It is reasonable since more severe enforcement actions go along with stricter constraints to punished banks, they are likely to carry a higher cost to the disciplined bank. In the case of syndicated partners, more severe enforcement actions are forecast to hurt the ability of syndicating with more participants of lead banks, but the concern cannot be confirmed due to insignificant result.

The results of this study offer an empirical contribution to the literature by showing that enforcement actions are costly to the objectives involved. There are many consequences related to reputational lost including the decline in market share and the pressure of finding a higher number of syndicated partners to compensate the loan's members, and these effects vary by the severity of enforcement actions. Furthermore, the study gives a warning to regulators about the adverse effects of enforcement actions and suggest cautious considerations when issued enforcement

actions to punish banks. Members of syndicated loans including participant lenders and borrowers are also warned about the instability of loan structure when collaborating with sanctioned lead banks.

There are some limitations in this thesis. One of this is missing data in the variable bank's size when lead banks have not been established. The missing data might reduce the strength of the sample to represent the whole population. Besides, there is the limited number of research in the past utilized the number of syndicated partners as a proxy to the reputation of the lead banks. Therefore, the validity of using this proxy is also one of the remaining concern of this thesis. Moreover, in addition to the control variables used, other control variables could have been included. For example, several borrower characteristics such as borrower's reputation, borrower's size, profitability ratio, z score, investment grade, etc could be used. These variables can capture the attractiveness of the borrower, and help to explain the likelihood of specific participants join the syndicate loans since transparent information of borrower is a major factor in syndicated structure (Sufi, 2007). Besides, the prior number of participants can also be used as a control variable because the probability of joining a syndicate is positively related to the past relationship between leads and participants banks (Champagne C., 2007). All of these variables could help to clarify more clearly why there are still more participants get involved in the syndicated loan with a lead arranger bear the effect of enforcement actions.

Finally, future researchers are encouraged to advance the thesis findings by developing them with further control variables that are suggested in the limitation part. Further work might also put more efforts on studying the cost and benefit of lenders when participating in syndicated loan lead by punished lead banks.

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APPENDICES

Appendix 1: Model selection tests

❖ **Proxy bank's market share**

- ***Hausman test for choosing Fixed effects model or Random effects model***

Ho: Random effect is more appropriate

chi2(39) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 98.66

Prob>chi2 = 0.0000

p value of Hausman test is smaller than 5% significant level. Therefore, the null hypothesis is rejected which means Fixed effect model is a better option for the thesis's panel data than Random effect model.

- ***F test for choosing Fixed effects model or Pooled OLS model***

Ho: Pooled OLS is more appropriate

F test that all u_i=0: F(792,1429) =1.32 Prob > F = 0.0000

p value of F test is smaller than 5% significant level. Hence, the null hypothesis is rejected which means Fixed effect model is a better choice.

- ***Breusch and Pagan Lagrangian multiplier test for choosing Random effects model or Pooled OLS model***

Ho: Pooled OLS is more appropriate

bank_market_share[bank_id,t] = Xb + u[bank_id] + e[bank_id,t]

Estimated results:

	Var	sd = sqrt(Var)
Bank market share	6.170591	2.484067

e	1.042344	1.020953
u	0	0

Test: Var(u) = 0

chibar2(01) = 0.00

Prob > chibar2 = 1.0000

p value the test is larger than 5% significant level. Therefore, the null hypothesis cannot be rejected which means Pooled OLS is more suitable with the panel data.

- ***Table 6:*** *Compare the regression results between Fixed effects model, Random effect model and Pooled OLS model using proxy bank market's share*

Bank market's share	(1) Fixed effects model	(1) Random effects model	(3) Pooled OLS model
Enforcement action	(omitted)	2.562*	2.562**
		(1.510)	(1.154)
Bank's size	0.168*	0.0419***	0.0419***
	(0.0872)	(0.0131)	(0.00946)
Enforcement action *Bank's size	-0.167	-0.104	-0.104*
	(0.135)	(0.0788)	(0.0642)
Agriculture, Forestry and Fishing	0.307	0.292**	0.292**
	(0.202)	(0.134)	(0.127)
Mining	0.206	0.306**	0.306**
	(0.206)	(0.151)	(0.132)
Construction	0.312	0.169	0.169
	(0.203)	(0.132)	(0.121)
Manufacturing	0.226	0.248*	0.248**
	(0.200)	(0.138)	(0.124)
Transportation, Communications, Electric, Gas and Sanitary service	0.316	0.395***	0.395***
	(0.197)	(0.136)	(0.123)
Wholesale Trade	0.523*	0.313	0.313
	(0.286)	(0.322)	(0.316)
Retail Trade	0.567**	0.422**	0.422**
	(0.278)	(0.179)	(0.175)
Finance, Insurance and Real Estate	0.328	0.289**	0.289**

	(0.213)	(0.142)	(0.133)
Service	0.348*	0.190	0.190
	(0.210)	(0.134)	(0.126)
Constant	46.42***	48.60***	48.60***
	(10.60)	(11.96)	(12.08)
Observations	2,261	2,261	2,261
R-squared	0.857		0.827
Number of banks	793	793	
Year FE	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

After running all three tests for selecting appropriate model, it is suggested that Fixed effects model is more suitable when using bank's market share as a proxy. Nevertheless, when I continue to run separate regressions for three types of models to compare the coefficients and standard errors, the main independent variable enforcement action is omitted in fixed effects model because it is time invariant variables (Table 7). Therefore, fixed effect model is not the best option for the regression.

Comparing between random effects model and Pooled OLS, there is not much differences in value of for most of the coefficients. However, the standard errors in the Pooled OLS are smaller than the ones in Random effects model. Hence, Pooled OLS model is my final choice.

❖ **Proxy number of syndicated partners**

- ***Hausman test for choosing Fixed effects model or Random effects model***

Ho: Random effect is more appropriate

chi2(39) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 908.55

Prob>chi2 = 0.0000

(V_b-V_B is not positive definite)

p value of Hausman test is smaller than 5% significant level. Therefore, the null hypothesis is rejected which suggest Fixed effect model is a better choice.

- ***F test for choosing Fixed effects model or Pooled OLS model***

  Ho: Pooled OLS is more appropriate

  F test that all u_i=0: F(792, 1429) = 9.02 Prob > F = 0.0000

p value of F test is smaller than 5% significant level. Therefore, the null hypothesis is rejected which means Fixed effect model is a better choice.

- ***Breusch and Pagan Lagrangian multiplier test for choosing Random effects model or Pooled OLS model***

  Ho: Pooled OLS is more appropriate

  log_synd_partners_winsor6[bank_id,t] = Xb + u[bank_id] + e[bank_id,t]

  Estimated results:

	Var	sd = sqrt(Var)
Ln_syndicated_partners	1.397163	1.182017
e	.3141044	.5604502
u	.125027	.3535916

Test: Var(u) = 0

chibar2(01) = 4080.94

Prob > chibar2 = 0.0000

p value the test is smaller than 5% significant level. Therefore, the null hypothesis is rejected which means Random effects model is more suitable with the panel data.

- ***Table 7:*** *Compare the regression results between Fixed effects model, Random effect model, Pooled OLS model and Poisson model using proxy number of syndicated partners*

Number of syndicated partners	(1) Fixed effects model	(2) Random effects model	(3) Pooled OLS model	(4) Poisson RE model
Enforcement action	(omitted)	0.956	1.386	5.273***
		(1.193)	(1.332)	(1.308)
Bank's size	0.113**	0.0966***	0.111***	0.296***
	(0.0572)	(0.0319)	(0.0361)	(0.0962)
Enforcement action *Bank's size	-0.0558	0.0131	-0.0121	-0.206***
	(0.0717)	(0.0665)	(0.0718)	(0.0745)
Agriculture, Forestry and Fishing	0.0101	-0.0256	0.151	-0.00248
	(0.140)	(0.114)	(0.134)	(0.232)
Mining	-0.0476	0.0572	0.414**	-0.208
	(0.140)	(0.124)	(0.162)	(0.219)
Construction	-0.105	-0.186*	-0.0991	-0.0631
	(0.133)	(0.113)	(0.135)	(0.225)
Manufacturing	-0.0421	0.00563	0.240*	-0.103
	(0.133)	(0.112)	(0.131)	(0.227)
Transportation, Communications, Electric, Gas and Sanitary service	-0.0540	0.0864	0.376***	-0.121
	(0.133)	(0.112)	(0.130)	(0.213)
Wholesale Trade	-0.0595	-0.00980	0.136	0.0987
	(0.184)	(0.195)	(0.295)	(0.317)
Retail Trade	0.0380	0.0478	0.0928	-0.171
	(0.201)	(0.186)	(0.228)	(0.373)
Finance, Insurance and Real Estate	0.0380	0.0452	0.165	-0.120
	(0.147)	(0.121)	(0.142)	(0.245)
Service	-0.0311	-0.00919	0.112	-0.181
	(0.150)	(0.119)	(0.144)	(0.249)
Constant syndicated partners				-7.556***
				(1.912)
Constant lnalpha				0.232
				(0.818)
Constant	-3.164***	-3.149***	-2.017**	
	(1.136)	(0.758)	(0.789)	
Observations	2,261	2,261	2,261	2,261
R-squared	0.637		0.281	
Number of banks	793	793		793
Year FE	Yes	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Hausman test, F test and Breusch and Pagan Lagrangian multiplier test suggest that fixed effects model would fit with the data when using the number of syndicated partners as a proxy. However, the main independent variable enforcement action is omitted in fixed effects model because it is time invariant variables. Therefore, the other models should be considered.

In Table 7, comparing between random effects model and Pooled OLS, the coefficients of the main independent variable are nearly equal. However, the standard errors in the Random effects model are smaller than in Pooled OLS model. Hence, Random effects model is more appropriate in this case.

Noticeably, because the dependent variable number of syndicated partners is a count variable, the Poisson regression with random effect option are constructed to make a comparison with Random effects model. The coefficient of the main independent variable enforcement actions is higher and statistically significant in the Poisson regression than in Random effects model. Moreover, the coefficient interaction term variable is also statistically significant. Thus, it can be seen that Poisson regression with random effect option is better with more informative outcomes.

Appendix 2: Assumption Tests

❖ **Proxy bank's market share**

- ***Modified Wald test for Heteroskedasticity***

  H0: sigma(i)^2 = sigma^2 for all i

  chi2 (793) = 8.7e+07

  Prob>chi2 = 0.0000

P value is smaller than 5% significant level, so the null hypothesis is rejected which means there has been a problem of heteroskedasticity.

- ***Wooldridge test for autocorrelation in panel data***

  H0: no first order autocorrelation

  F(1, 174) = 2.961

  Prob > F = 0.0871

P value of Wooldridge test is larger than 5% significant level; then the null hypothesis cannot be rejected which implies there is no autocorrelation.

- ***Check Multicollinearity***

  Table 8: Correlation matrix of independent variables.

	EA	Bank's size	In_a	In_b	In_c	In_d	In_e	In_f	In_g	In_h	In_i	In_j
EA	1.00											
Bank's size	0.00	1.00										
In_a	-0.04	-0.01	1.00									
In_b	0.00	0.06	-0.14	1.00								
In_c	-0.09	0.00	-0.16	-0.12	1.00							
In_d	-0.06	-0.07	-0.18	-0.14	-0.17	1.00						
In_e	0.10	0.00	-0.25	-0.19	-0.25	-0.29	1.00					
In_f	0.09	0.03	-0.04	-0.03	-0.01	-0.04	-0.06	1.00				
In_g	-0.01	0.02	-0.05	-0.04	-0.02	-0.03	-0.08	0.00	1.00			

In_h	0.00	0.03	-0.11	-0.10	-0.09	-0.13	-0.19	-0.02	-0.02	1.00		
In_i	0.04	0.00	-0.11	-0.09	-0.10	-0.13	-0.18	-0.03	-0.02	-0.06	1.00	
In_j	0.02	0.01	-0.06	-0.05	-0.06	-0.07	-0.10	0.00	0.00	-0.04	-0.05	1.00

The review of correlation values indicates that multicollinearity is not a concern since all correlations between the independent variables are lower than 0.5. Therefore, all variables are kept in the model for the analysis.

❖ **Proxy number of syndicated partners**

- ***Modified Wald test for Heteroskedasticity***

  H0: sigma(i)^2 = sigma^2 for all i

  chi2 (793) = 1.4e+05

  Prob>chi2 = 0.0000

P value is smaller than 5% significant level, so the null hypothesis is rejected which means there has been a problem of heteroskedasticity.

- ***Wooldridge test for autocorrelation in panel data***

  H0: no first order autocorrelation

  F(1, 174) = 123.494

  Prob > F = 0.0000

P value of Wooldridge test is smaller than 5% significant level. Thus, the null hypothesis is rejected which means there has been a problem of autocorrelation.

- ***Check Multicollinearity***

The independent variables are used in model with the proxy number of syndicated partners are all the same with the proxy bank market share. Since all data are checked in Table 8, there is no multicollinearity problem in the regressions.