Ownership Structure, Company Value, and Company Risk Taking in the Indonesian Capital Market

Friderica Widyasari Dewi
PhD Student, Universitas Gadjah Mada
fridericaw@yahoo.com

Eduardus Tandelilin
Universitas Gadjah Mada
e_tandelilin@ugm.ac.id

Djokosantoso Moeljono
Universitas Gadjah Mada
dsmns_suryo@yahoo.co.id

Jangkung Handoyo Mulyo
Universitas Gadjah Mada
jhandoyom@ugm.ac.id

Abstract

This study aims to provide empirical evidence for giving policy advice on the Indonesian capital market related to the ownership structure of companies. The motivation of this research starts with the phenomenon of Indonesia capital market growth which is relatively sluggish compared to neighbouring countries. This study hypothesizes that one of the major growth inhibitors is corporate governance, particularly when it is related to hierarchical or pyramidal Indonesian ownership structures where there is high potential for expropriation by the ultimate owners. Thus, this study examines the relationship between company ownership, including ultimate ownership, company value and risk. With a five-year observation period from 2011 to 2015, this study shows that the more concentrated a company's ownership structure, the lower the value of the company. Then, the potential for expropriation by the ultimate owner, as measured by the difference between control rights and cash flow rights, is shown to decrease the value of the company, while on the other hand, the greater this difference is, the greater the risk for the company. The results of this study provide empirical evidence, specific to the case of the Indonesian capital market, that an improvement in policy regarding ownership is certainly necessary.

Introduction

This research aims to examine the influence of the ownership structure of companies listed on the Indonesia Stock Exchange (IDX) on their performance and their risk-taking. This research is motivated by the fact that the depth and development of the capital market in Indonesia are still far from providing the funding needed to support what is required for development in Indonesia. Even compared to developing countries in Asia, the depth of Indonesia's capital market is relatively shallow. The trend in recent research on corporate governance (CG) indicates that the development of a country's capital market is strongly influenced by the quality of CG (La Porta et al. 1998). From the results of this study, it can be concluded that CG is one of the most critical factors that affect the investment climate in a country. Meanwhile, Asian countries, including Indonesia, have pyramidal and concentrated ownership structures that are associated with family companies, crony capitalism, expropriation, tunneling, corruption, and so forth, causing agency conflicts in Indonesian companies that tend to be high (Claessens et al. 1999). The ownership structure can show the quality of a company's CG. Thus, how the ownership structure affects the company's value and risk is one of the key factors determining the investment climate.

Unfortunately, the effect of this ownership structure cannot be depicted as being black or white. Empirical research on finance and CG shows that concentrated ownership structure is like a double-edged sword; on the one hand it serves as a supervisory function thereby suppressing agency conflict; on the other hand, it can use its power to expropriate from minority owners. The issue of weak investor protection, and pyramidal ownership structures, plus massive levels of corruption, make the CG issue in Indonesia very complex when viewed regarding corporate ownership structure. Therefore, it is important that the policymakers acknowledge the issue as it is related to the development of the capital market, and, ultimately to the economic development of the country itself.

The brief description above shows how important the ownership structure is in the context of the development of capital markets in Indonesia. Nevertheless, as far as our knowledge, no research in Indonesia examines the influence of ownership structure on a company’s value and risk taking. The difficulty in obtaining accurate information about the ownership structure can be one factor explaining this phenomenon. With a valid and reliable source, this study will parse the company's ownership structure in the Indonesian capital market and test its impact on company value and risk taking.

2. Literature Review and Hypothesis Development

2.1. The Influence of Ownership Structure on Company Value

As with other Asian countries, the ownership structure of companies in Indonesia is generally concentrated (Claessens, Djankov, and Lang 2000). The BAPEPAM-LK (2008) report shows that public ownership in 2011 accounts for only 25% of companies, while the rest have institutional and corporate ownership. Ismiyanti and Hanafi (2004) and Wardhana and Tandelilin (2018) have shown that the average share ownership by corporate investors is 40%. It supports the indication that the ownership structure in Indonesian capital market is concentrated in corporate investors. Thus, in the context of companies in Indonesia, where the ownership structure is more concentrated, the relevant conflict is the conflict between the majority shareholder (controlling) and the minority shareholders (Wardhana and Tandelilin 2011, 2018). Some research in Indonesia demonstrates that corporate ownership by corporate investors is positively associated with firm value (Mahadwarta and Ismiyanti 2008, Wardhana and Tandelilin 2011).

Research in Indonesia that examines the relationship between ownership and corporate value has only examined the influence of corporate ownership on its own, such as the studies by Mahadwarta and Ismiyanti (2008) and Wardhana and Tandelilin (2011). Meanwhile, there are other controlling shareholders who are not corporate investors, such as family, government, institutional investors, and management who should also be considered. Therefore, the first hypothesis in this study will be directed at the effect of ownership concentration on the value of the firm, regardless of the identity of the controller. In the Indonesian context, the expropriation argument is more appropriate where agency conflicts tend to occur between majority owners (controllers) and minorities. The more ownership is concentrated in a particular investor, the greater his or her control over company policy and the smaller the value of the firm; this because the greater the potential for expropriation by the majority shareholders (Gugler and Yurtoglu 2003, Bøhren, Josefsen, and Steen 2012). In other words, the more concentrated the ownership, the greater the agency conflict and negatively affects the firm's value (Jensen and Meckling 1976). Therefore, the first hypothesis in this study is:

H1 = The more concentrated the ownership structure, the higher the agency conflict tends to be, and ultimately it will negatively affect the value of the firm.

2.2. Influence of Ownership Structure on Risk Taking

In corporate finance, risk is on the other side of the coin from the firm's value. Risk taking is needed by businesses to gain profit and create value. In the context of agency theory, excessive risk taking by majority owners or insiders is a form of expropriation. In concentrated ownership, agency conflicts will be greater if there is greater ownership by the majority shareholders (Gugler and Yurtoglu 2003). However, in the context of risk taking, the greater the ownership of an

investor in a company can be interpreted as being lower diversification of assets in its portfolio, and shareholders with more diversified investments tend to take higher risks (Jensen and Meckling 1976, Galai and Masulis 1976). Thus, the proposed hypothesis is:

H2 = The more concentrated the ownership structure in a company, the lower the risk taking.

2.3. The Influence of the Difference between Voting Rights and Cash-Flow Rights on Firm's Value

Behind corporate investors, there are ultimate owners who are usually family (La Porta, Lopez-de-Silanes, and Shleifer 1999). La Porta, Lopez-de-Silanes, and Shleifer (1999) and Claessens, Djankov, and Lang (2000) point out that the impact of this tiered ownership is the difference in ownership (called cash flow rights) and control (so-called control or voting rights) of the ultimate shareholder of a company.

This difference has significant consequences. This is due to the fact that, if an ultimate owner of a company has little real ownership, but can control the company because of their voting rights in the company through the company that owns it directly is relatively large, then the potential for moral hazard for the ultimate owner will be higher. Claessens et al. (1999) provide the evidence that deviations of voting from cash-flow rights are associated with expropriation. They found that the deviation between ownership right and control right has a negative influence on Tobin's Q. Also, if the chain of ownership's level is higher, there is a greater the chance of expropriation. For example, related party transactions, transfer of assets to other subsidiaries, and so forth. The research of Faccio, Lang, and Young (2001) and Lepetit, Saghi-Zedek, and Tarazi (2015) provide empirical evidence in support of the argument. Of course, this will be different if the ultimate owner has ownership that is the same as control right over the company. The intention to expropriate will be limited by the cost-benefit of the expropriation measures due to impairment because, in this case, the expropriation will have a direct impact on the welfare of the ultimate owner.

Thus, the third hypothesis proposed in this study is:

H3 = The greater the difference between ownership rights and control rights, the lower the firm's value.

2.4. The Influence of the Difference between Cash Flow Rights and Control Rights on Risk Taking

As discussed previously, in the context of Indonesia, which has weak investor protection and complex pyramidal ownership structures, it will be much more beneficial for the ultimate owners to expropriate when they have only low cash flow rights (ownership) (Johnson et al. 2000). Under the conditions of pyramidal ownership, the greater the difference between cash flow rights and control rights, the greater the risk taking (Claessens et al. 1999). Thus, we hypothesize:

H4: The greater the difference between ownership rights and the control right, the greater the risk taking of the firm.

3. Research Methods

3.1. Data and Sample

The sample of this study is all companies listed in Indonesia Stock Exchange (IDX) from 2005 to 2015. The research on the sample started in 2005 to avoid the impact of the economic crisis that occurred in 1998. Since then, many regulations have been applied to improve the CG. Thus, the structure of ownership and corporate behavior after 2000 may be different from the previous year. For example, the study of Ismiyanti and Hanafi (2004) shows a change in ownership structure in Indonesia, i.e., the change of ownership by the largest companies from 66% to 47%. During the years after the crisis, there was a significant change in the government of the Republic of Indonesia. From the New Order regime, in which many state-owned and private companies were tools of power, to a more open, reformed regime. State-owned companies and those who were politically affiliated with the New Order regime experienced a change of behavior. The data to be used in this study will refer to the audited financial statements of each firm. The database of ownership is collected manually with existing information resources at PT. Kustodian Sentral Efek Indonesia (KSEI).

The sample in this study comprises non-financial companies listed on the Indonesia Stock Exchange (IDX) which have financial reports for at least five consecutive years, with an observation period from 2005 to 2015. The data sources used are the company's financial statements and company performance summary which are released on the official website of IDX. In the process of data collection, the most eligible companies in the sample numbered 354. As for hypotheses 3 and 4, namely ultimate ownership, those whose ultimate owner can be traced is 220 firms. Below are the details of the sampling process.

Number of companies recorded as of December 2015	510
(-) Finance companies:	

(-) Banks	40
(-) Non-banks	46
(-) Utility companies	3
(-) Companies with no financial reports for at least 5 consecutive years	66
Number of companies sampled	355
Companies where the ultimate owners could be traced	220

3.2. Definitions of Variables

3.2.1. Ownership Structure

1. Concentration of ownership according to largest ownership.

   The largest share ownership by owners (Lepetit, Meslier, and Wardhana 2017, Wardhana and Tandelilin 2018).

2. Concentration of ownership according to the extent of dispersion of all existing ownership in a company.

   Measured by Herfindahl-Hirschman Index (HHI).

   Where HHI = HHI = $\sum_{n=1}^{N} OS_{in,t}^{2}$

   OS is the percentage of shares owned by each company owner, and N is the total number of shareholders. The higher the HHI, the higher the concentration.

3. Ultimate owners, voting rights, and cash flow rights

   In line with La Porta, Lopez-de-Silanes, and Shleifer (1999), the company is said to have an ultimate owner if there are owners with either direct or indirect ownership of at least 10%. A shareholder has indirect control over company A if:

   - They have direct control over company B, which in fact has direct control of x% of the voting rights in company A.
   - They have direct control over company C which in fact has control over company B, or has another company controlling company B directly (through tiered ownership), which has direct voting rights for company A.

   If there are two shareholders in one of the two criteria above, then the ultimate owner is determined as being the one who has the largest total direct and indirect ownership. Then, the control of an owner of a company is defined as Voting Rights or control (VR), which is

the proportion of direct ownership by the ultimate shareholder of company A. In the above example, the C of the ultimate shareholder is, therefore, the amount of the direct ownership of the company B of company A. Meanwhile, ownership is defined by Cash flow rights or Ownership (CR) and is the product of direct ownership of Company A and the direct ownership of ultimate shareholder of company B.

4. Measure of expropriation by ultimate owner

   The difference between the voting rights (VR) and cashflow rights (CR) of the ultimate owner, or the deviation of VR from CR could show the degree of expropriation (Claessens et al. 1999, Lin, Ma, and Xuan 2011, Lepetit, Saghi-Zedek, and Tarazi 2015). In this study we follow Lin, Ma, and Xuan (2011) for measuring expropriation by the ultimate shareholder using the ratio of $VR/CR_{i,t}$, namely the *control to ownership ratio*. We also use the excess control rights as in Lepetit, Saghi-Zedek, and Tarazi (2015), which is computed as VR - CR. The greater the ratio of VR/CR and the excess control rights, the greater the potential for expropriation that the ultimate owner can engage in the controlled firm, and the lower the value of the firm (Claessens et al. 1999). The following paragraph provide an example of VR/CR ratio computation which is based on Figure 1.

(Figure 1)

PT. Martina Berto Tbk. is basically controlled by PT. Marthana Megahayu Inti, which has 68.82 percent of voting rights, while others' voting rights amount to less than five percent, namely PT. Bringin Wulanki Ayu which has only 0.48 percent and PT. Marthana Megahayu which has 0.44 percent. Directly, PT. Bringin Wulanki Ayu only has 0.48 percent, but its name is still listed on the list of owners because it is also the owner of the largest number of shares among the company's controllers (PT Marthana Megahayu Inti). Meanwhile, the owner of PT. Beringin Wulanki Ayu is Martha Tilaar, who, at the same time, is also the owner of PT Beringin Wulanki Ayu. In the end, to calculate control rights and cash flow rights of the ultimate owner of the company is no longer as simple as the two previous cases. Control rights through PT. Marthana Megahayu Inti = 68.82 percent, through PT Bringin Wulanki Ayu = 0.48 percent, and then the control rights of the ultimate owner is 69.3 percent. For cash flow rights, through PT Marthana Megahayu Inti = 68.82% x 48.45% x 98% = 32.6%, and then through PT. Bringin Wulanki Ayu = 0.482% x 98% = 0.0022%, and then, the cash flow rights of the ultimate owner is 32.6% + 0.0022% = 32.602%.

3.2.2. Dependent Variables: Value and Risk of the Firm

The second research objective of this study is to examine the effect of ownership structure on company value and risk taking. Thus, regression will be used as a tool to estimate the effect of

ownership structure on company value and risk. For this, the company's value and risk will be the dependent variables in this research.

Following previous studies, such as Mork, Shleifer, and Vishny (1988), Coles, Lemmon, and Felix Meschke (2012), and Saona and San Martín (2016), company value is measured by Tobin's Q (Q) and market to book value of equity (M/B). The higher the ratio of Q and M/B, the higher the value of the company. Below is the operational definition of Q and M/B.

$$Q_{i,t} = \frac{Market\ value\ of\ equity_{i,t} + Market\ value\ of\ debt_{i,t}}{total\ assets_{i,t}}$$

$$M,B_{i,t} = \frac{Market\ value\ of\ equity_{i,t}}{Book\ value\ of\ equity_{i,t}}$$

where i and t indicate firm i in the year t.

For the extent of risk taking, in this study, various measures of risks taken by companies will be used that show various types of risks.

1. Risk ($Risk_{i,t}$). Following John, Litov, and Yeung (2008) and Acharya, Amihud, and Litov (2011), risk variables are measured using standard deviations from Return on Assets (ROA) over three years. ROA is calculated by Net Sales before depreciation and amortization of company i in year t divided by total assets.
2. Systematic risk, or $beta_{i,t}$. namely the regression coefficient of stock return variation i during year t against the variation of index return.

3.2.3. Independent Variables

The main independent variables in this study, particularly to test the first and second hypotheses, are company ownership, as described in the first and second points of section 3.2.1.

To test the third and fourth hypotheses, the independent variables used are the differences between the rights and control of the ultimate owner, as described in the third and fourth points of section 3.2.1.

3.2.4. Control Variables

To minimize omitted biased variables in regression estimates, other variables affecting the dependent variable will be included in the estimation model, following the model of Coles,

Lemmon, and Felix Meschke (2012). For the equation with the firm's valueas the dependent variable, the control variables used are the following:

1. Firm size ($SIZE_{i,t}$) is measured using a natural logarithm of total assets..
2. Financial leverage ($LEV_{i,t}$) is measured using total long-term debt in year t divided by total assets at year t.
3. Research and development ($R\&D_{i,t}$) is measured using the amount spent on research and development for year t divided by total assets in year t.
4. Dividend ($DIV_{i,t}$), is measured by the amount of dividends paid at year t divided by net income recorded at year t (Jensen 1986, Francis et al. 2011).

For the risk equation, following the model of John, Litov, and Yeung (2008), the control variables used are:

1. Company size ($SIZE_{i,t}$) is measured by the natural logarithm of total assets.
2. Company growth is measured using annual sales growth.
3. Financial leverage ($LEV_{i,t}$) is measured using total long-term debt at year t divided by total assets at year t.

3.3. Empirical Model of Research and Hypotheses Testing

The purpose of this study is to examine the effect of ownership structure on company value and risk taking. Thus, the tool used to test the hypotheses in this study is panel data regression. The following presents the empirical model and Test hypotheses proposed in this study.

3.3.1. Testing of Hypotheses 1 and 2

The model specifications for testing hypotheses 1 and 2 are as follows.

$$Value_{i,t} = \alpha_i + \beta_1 Ownership_{i,t} + \sum_{k=1}^{4} \gamma_k Control_{i,t} + \delta_i + T_t + \varepsilon_{i,t} \qquad (1)$$

$$Risk_{i,t} = \alpha_i + \beta_1 Ownership_{i,t} + \sum_{k=1}^{4} \gamma_k Control_{i,t} + \delta_i + T_t + \varepsilon_{i,t} \qquad (2)$$

where Value is a proxy of firm's value and Risk is proxy for risk (as described in section 3.2.2), the Ownership variable is the proxy for ownership concentration, Control is a vector of control variables as described in section 3.2.4, and δ_i is a firm fixed effects, and T is time fixed effects.

The first hypothesis (H1), which states that the concentration of ownership negatively affects company value, will be tested using equation 1. H1 will be accepted if the regression estimation results show that the coefficient β1 in equation 1 is negative and significant (β1 <0).

The second hypothesis (H2), which states that ownership concentration negatively affects the risk taking of companies, will be tested using equation 2. H1 will be accepted if the regression estimation results show that the coefficient β1 in equation 1 is negative and significant (β1 <0).

3.3.2. Testing of Hypotheses 3 and 4

The model specifications for testing hypotheses 3 and 4 are as follows.

$$Value_i = \alpha_i + \beta_1 VR/CR_i + \sum_{k=1}^{4} \gamma_k Control_i + \delta_i + \varepsilon_i \qquad (3a)$$

$$\Delta Value_i = \alpha_i + \beta_1 \Delta VR/CR_i + \sum_{k=1}^{4} \gamma_k \Delta Control_i + \Delta\varepsilon_i \qquad (3b)$$

$$Risk_i = \alpha_i + \beta_1 VR/CR_i + \sum_{k=1}^{4} \gamma_k Control_i + \delta_i + \varepsilon_i \qquad (4a)$$

$$\Delta Risk_i = \alpha_i + \beta_1 \Delta VR/CR_i + \sum_{k=1}^{4} \gamma_k \Delta Control_i + \Delta\varepsilon_i \qquad (4b)$$

Where the Value variable is the proxy of the company's value and the Risk variable is the proxy for risk (as described in Section 3.2.2), the VR/CR variable is the proxy for expropriation, also known as the ownership-control wedge, where the greater the VR/CR, the greater the potential for expropriation. Control is a vector of control variables as described in section 3.2.3.

For the testing of the third and the fourth hypothesis, the estimates used are not panel data estimates due to limitations to the collection of information about ultimate ownership, for which data are collected only for 2014 and 2015. Therefore, following Barry, Lepetit, and Tarazi (2011) and Lepetit, Saghi-Zedek, and Tarazi (2015), the estimates to be used are OLS, and the data used are the average data of the last five years for each variable. To overcome the unobservable individual fixed effects, the OLS method with first difference is used. Thus, the regression equation to be performed is as written in equation 3b and 4b.

4. Analysis

The descriptive statistics reported in Table 4.1 are statistics after the outliers existing in the data have been "resolved". All values that are below the 1st percentile (p-1) of the data and above the 99th percentile (p-99) of the data are considered outliers and replaced by the 1st percentile value if it is below p-1 and replaced by the 99th percentile value of the data if it is above p-99. In table 1, the general picture of each variable used in this study can be seen, and the most important thing besides the characteristics of the data is the fact that the value of each variable is reasonable.

(Table 1)

Table 1, on the LSH variable, shows that the corporate structures seen on the IDX differ from public companies in the United States, Canada, Britain, and Australia which tend to be very dispersed. The structure of public companies in Indonesia tends to be similar to public companies in continental Europe. This is indicated by the average proportion of shares owned by the largest shareholder (LSH) which is 50.8%. Of all samples, at least 50 percent of companies have absolute control over the company, which is indicated by 50 percent of companies having the largest shareholders with ownership proportion of at least 51 percent. The reported stylized facts confirm some of the previous research on ownership structure in Indonesia such as that conducted by Mahadwarta and Ismiyanti (2008) and Wardhana and Tandelilin (2018).

For ultimate ownership, as described above, this research traced the identity of the ultimate owners and, of course, also calculated their cash flow rights, for 220 companies. This number accounted for 60 percent of the companies in the research sample. Of the 220 companies, as can be seen in Table 2, the average VR/CR ratio, which is the proxy of the potential expropriation by the ultimate owner, is 1.98, with the smallest value, of course, being 1, and the greatest value is 35.72. When viewed from the value of p25 being worth 1, this means that many companies' ultimate owners seem to be also the owners of the direct control of the company. This is normal if the ultimate owner is the government. Nevertheless, data show that out of 220 companies sampled, it is only about 10% or about 20 companies. This means that, in addition to these 20 companies, companies that have an VR/CR value equal to one, the ultimate owner is an individual or a family. These findings also confirm the research of Claessens, Djankov, and Lang (2000), Faccio, Lang, and Young (2001), Faccio, Lang and Young (2001), and Mahadwarta and Ismiyanti (2008) which show that most companies in Indonesia are controlled by families.

(Table 2)

At first glance, it can be concluded that the ultimate owner is actually the party with direct control over the company. But this is not the case. The ultimate owner owns a 100% stake in the company's direct controlling company. So, if the VR/CR ratio is calculated it will be equal to one.

As an illustration, the VR/CR ratio will be calculated for PT. Alkindo Naratama, Tbk. which has the ownership structure presented in figure 2.

(Figure 2 and Figure 3)

The largest owner of PT. Alkindo Naratama, Tbk. is PT. Golden Arista International, with 58.41% of ownership. Meanwhile, other owners who own more than 5% of its shares do not reach 10% so they are not relevant for further exploration (La Porta, Lopez-de-Silanes, and Shleifer 1999). In addition, the other recorded owners are actually individuals and may be assumed to be members of the ultimate owner's family. This means that the search is then done only for PT. Golden Arista International. Apparently, this controlling company is wholly owned by the Sutanto Family. This means that the value of VR/CR is the right to vote divided by the cash flow right. Meanwhile, the cash flow right is 58.41% multiplied by 100%, i.e. 58.41%. Then the company's VR/CR value is one.

Another example is PT. Akhasa Wira International, Tbk. In the case of PT. Alkindo Naratama, Tbk. above, the ultimate owner is placed in the second layer. In this case, the new ultimate owner is identified in the fourth layer. Since the ownership chain of each controlling company is 100% owned by the controller, as shown in Figure 3, the VR/CR value will be equal to one.

About how many layers of ultimate owner control the company, Table 1 shows that its mean is three, while its smallest value is, of course, one, and its largest value is ten.

Judging from the descriptive statistics of VR/CR and Tier Number in Table 2, it can be concluded that the complexity of pyramidal structures in Indonesian Capital Market varies considerably, with the mean value of VR/CR being 1.98 with a standard deviation of 2.5, with a range of values from 1 to 35.72. While Tier Number has mean of three with a standard deviation of two, with values ranging from one to ten.

The correlations between these variables are reported in the Table 3 and 4. Table 3 shows the correlation between independent variables for testing hypotheses 1 and 2 while Table 4 is for testing hypothesis 3 and 4. For the LSH and HHI variables, both are the proxies of the ownership structure. Thus these two variables will be tested individually and not together in a single model. Then, it can be seen that there is no strong correlation between independent variables. Thus, all independent variables can be in the model together without special handling.

(Table 3 dan Table 4)

Hypotheses Test Results

We look at the previous studies if ownership has reverse causality with firm's value. The argument is that the higher the value of the company, the more the tendency for the majority shareholder to increase its ownership (Grinstein and Michaely 2005). To ensure that the ownership variable is exogenous, in this case, the ownership variable has no reverse causality with the firm's value we conduct an endogeneity test with H_0 that the variable being tested is not endogenous. If the variable proves to be endogenous, then the estimator used is regression with instrument variable.

Instrumental variable (IV) regression has two conditions that must be met, i.e., the instruments have a strong causal relationship with the suspected endogenous variable, and they do not correlate with regression errors. To meet the first condition, the first instrument selected is the previous period ownership variable. This is often used in many studies in finance; the previous period variable will have a strong correlation with the variables in the period t. Meanwhile, this variable is not correlated with regression error in period t (Anderson and Hsiao 1981). The second instrument used, following John, Litov, and Yeung (2008), is the industry mean of the ownership variable. The reason for this is that ownership variables will tend to have a strong correlation with the industry average. The third selected variable instrument is the trading frequency of the company's shares. The higher the frequency of trade, the greater the tendency of the controller to have more ownership.

The estimation results for hypothesis 1 are presented in Table 5 and Table 6, with Tobin's Q (Q) as the dependent variable in Table 5, and market-to-book (M/B) ratios in Table 6. The estimation results using the fixed effect method (FE) do not indicate that there is a relationship between ownership variables, whether measured by the largest ownership (LSH) or by HHI. In other words, the two estimations with the FE method indicate the rejection of hypothesis 1. However, when viewed from the endogenous variable test of ownership, the test result indicates that both LSH and HHI are endogenous variables. Both have a probability of less than 0.05, meaning that this test accepts the alternative hypothesis that the variable being tested is endogenous. This test is valid, as shown by the value of Kleibergen-Paap rk Wald F-stat which is more than the Stock-Yogo critical value at 5% maximal IV bias (which indicates that an instrument is not weak) and the Hansen j statistic which is less than 0.05 for both proprietary proxies (indicating the instrument does not correlate with regression error). Thus, the estimation by the FE method is biased and at the same time both indicators indicate that the estimation with the instrumental variable is strong and valid. Hence, the estimation used is regression IV.

Both IV regression for ownership and HHI show that both ownership variables negatively influence company value and they are statistically significant with an alpha of less than 0.01, both measured by Q and M/B. Therefore, it can be concluded that the first hypothesis is accepted.

Considering the economic impact, the standard deviation of every change of greatest ownership, then Tobin's Q for a company will change by 6.72, on average, while for M/B, a standard deviation of ownership change will change the company's M/B by 3.98, on average. The magnitude of the change of the two variables can be said to be quite large, economically speaking.

Thus, in this study, it has been proved that the influence of concentration of ownership on firm's value, measured both by Tobin's Q and by the market value of equity to its book value, is negative. The more concentrated the ownership, the lower the firm's value, on average, *ceteris paribus*. This supports the expropriation hypothesis and shows that the dominant agency conflict in companies on the Indonesian Capital Market is the conflict between majority and minority shareholders. The more concentrated the ownership of shares on a particular party, the greater the power of that party to control the company and ultimately the greater its potential for expropriation.

For control variables, most of the directions and their statistical significances are consistent with the predictions. The ROA variable, profitability, has a positive influence on firm's value. The Ln Ta variable, or company size, has a positive influence on firm's value. Then for the variable TA growth, annual asset growth, also positively influences the value of the firm. The two control variables that are not statistically significant are leverage and dividends. For the leverage variable, it is possible that the relationship of this variable to the value of the company is not linear (Trade-off Theory). This may cause the parameters to be statistically insignificant. For the dividend variable, it is one of the most difficult puzzle to solve (Black 1976). Studies on this topic are still inconsistent with each another (Baker, Powell, and Veit 2002). Since dividends are not the focus of this study, further discussion and investigation are not conducted in this study.

(Table 5 and Table 6)

The estimation results for the second hypothesis test are presented in Tables 7 and 8. In Table 7 the risk measure used, the dependent variable, is systematic or Beta risk, while in Table 8 the measurements used are standard deviations from ROA (SDROA). In both tables it can be seen that the endogeneity test results do not show that both variables, Beta and SDROA, are endogenous variables. The p-value of the second chi-squared test is greater than 0.05, indicating the rejection of the alternative hypothesis that the tested variable is endogenous. Thus, the regression with the FE estimator is used.

Both ownership variables, LSH and HHI, proved to be not statistically significant. This means that the second hypothesis, that the ownership structure negatively influences the risk, is not proven. One explanation is that the possibility of management's tendency to engage in earnings smoothing with earnings management causes the concentration of ownership variable to be not significant, especially in SDROA proxy for risk. Of course, if the company's earnings have undergone a "smoothing" process, then the company's risk preference that is influenced by the concentration of ownership cannot be seen here. The phenomenon of earnings management itself is common in Indonesia (Siregar and Utama 2008).

(Table 7 and Table 8)

For the third dan fourth hypothesis testing, the estimates used are not panel data estimates due to limitations in the collection of information about ultimate ownership, for which data were collected only for 2014 and 2015. he estimates used are OLS, and the data used are the average data of the last five years for each variable. To overcome the unobservable individual fixed effects, we use OLS method with first difference, taking advantage that we have two year observations for ultimate ownership. Thus, the regression equation to be performed is as written in equation 3b and 4b.

In the process of collecting data, there are several companies where the the ultimate owner could not be traced. Thus, only companies whose ultimate owners can be traced are the samples for testing for the third hypothesis (and also for the fourth hypothesis). As a result, estimates of such data will raise the issue of biased sample selection. To test whether there is such an issue, the Heckman test will be conducted.

The first step of Heckman's procedure is to calculate the inverse mills ratio, which is to estimate the regression error component that explains why ultimate ownership cannot be traced. The explanatory variables used are the frequency of stock trading, domestic or foreign ownership, company age, and company size. It is supposed that the higher the company’s frequency, the lower its opacity, and the more transparent the company will be. Finally, the higher the likelihood will be that the company can be traced. For the largest domestic or foreign ownership, if the largest owner is domestic, then the tendency to be able to trace who the ultimate owner is will be higher. Then, for the age of the company, the more mature a company, the higher the transparency will be, and eventually the possibility of tracing who the ultimate owners are will be even greater.

With the predetermined variable above, a logistic regression is performed to predict its error component to calculate the inverse mills ratio. After the inverse mills ratio is ascertained, it is then included into the main regression, i.e. the regression of company value with the VR/CR variable. If the inverse mills ratio variable is significant, then there is a selection sample bias

problem, and the results of the OLS regression estimation will be biased. If the opposite is true, then there is no selection bias problem, so the OLS is not biased.

The result of logistic regression can be seen in the Appendix in Table L1. All three instruments chosen can explain the dependent variable, which is a categorical variable that equals one if the ultimate owner can be traced and zero if it cannot be traced. This can be seen from each variable that proved statistically significant. The Wald test value for the influence of all instruments on the dependent variable was high, that is 31.19, which is also significant at an alpha of one percent. It can be concluded that the chosen instrument can indeed explain vray well. Then, to find out whether the instrument used is valid, a regression of error estimation of the company's value regression (equation 3b) with all instruments is used. The results show that the statistical F value of this regression is not significant. It is worth 1.70, with a probability value of 0.101. That is, the instrument used is valid. The same procedure is also performed with risk regression (equation 4b) and the results also show the same conclusions, with the result of a F statistic value of 0.57, with a probability of 0.799.

As a result, regression with the inverse mills ratio for models with the Tobin's Q dependent variable resulted in an inverse mills ratio with a p value of 0.149 (greater than 0.05). Meanwhile, regression with independent variable M/B shows that the p value of inverse mills ratio produced is 0.629 (more than 0.05). Thus, it can be concluded that there is no sample selection bias.

For the endogeneity issue, an endogenous test is performed on the ultimate ownership proxy. Variables chosen as instruments are the VR/CR variable of previous period, company age, and number of shareholders. From the test indicators it can be concluded that the VR/CR variable is not endogenous. The weak instruments test, the Kleibergen-Paap rk Wald F statistic, has a result of 38.91 which is much larger than the minimum Stock-Yogo weak ID test of critical values at the 5% maximal IV bias level of 13.91. That is, the selected instrument is not weak. In other words, the instrument used can best explain the endogenous variables. The second indicator shows whether the selected instrument is exogenous (not correlated with the regression error component). The p-value of Hansen j statistic indicates more than 0.05 (0.574 to be precise), meaning that the instrument used is not correlated with regression errors, i.e. exogenous. Thus, the endogeneity test results performed can be trusted because the instruments used comply with both requirements that must be fully met. The endogeneity test results of the VR/CR variable indicates that the variable is not endogenous, which is indicated by the p-value of chi-squared of more than 0.05, i.e. 0.149 for regression with the dependent variable Q, and 0.643 for the dependent variable M/B. Thus, the estimator used is OLS with first difference. The results of the test for hypothesis 3 are presented in Table 9.

The VR/CR variable proved to negatively influence company value with M/B as the proxy, whose coefficient was statistically significant at alpha 5%. Meanwhile, the VR/CR variable has a negative sign on the equation with the Tobin's Q dependent variable. However, the coefficient is not statistically significant.

(Table 9)

The testing of the fourth hypothesis is presented in Table 10. For the endogeneity test, the variables chosen as instruments are the previous period VR/CR variable, company age, and number of shareholders. From the test indicators, it can be concluded that the VR/CR variable is not endogenous. The weak instruments test, the Kleibergen-Paap rk Wald F statistic, indicates it is worth 38.91 which is much larger than the minimum Stock-Yogo weak ID test of critical values at the 5% maximal IV bias level of 13.91. This means that the selected instrument is not weak. In other words, the instrument used can best explain the endogenous variables. The second indicator indicates whether the selected instrument is exogenous (not correlated with the regression error component). The p-value of Hansen j statistic shows more than 0.05, or 0.574 to be precise, meaning that the instrument used is not correlated with the regression error. In other words, the selected instrument is exogenous. Thus, the endogeneity test results performed can be trusted because the instruments used comply with both requirements that must be fully met. The endogeneity test results of the VR/CR variable indicates that the variable is not endogenous, which is indicated by the p-value of chi-squared of more than 0.05, i.e. 0.149 for regression with the dependent variable Q, and 0.643 for the dependent variable M/B. Thus, the estimator used is OLS with first difference.

(Table 10)

For the influence of VR/CR on risk, it is only proven when measured with SDROA, and the sign is positive. The greater the value of the VR/CR ratio (the greater the expropriation), the greater the total risk of the company. Meanwhile, the VR/CR variable is not found to have an influence on systematic risk (Beta). Finally, it can be concluded that the greater the VR/CR ratio, which measures the magnitude of the ultimate owner's expropriation potential, the greater the total risk of the controlled company. The summary of the results of all hypothesis tests and methods is presented in Table 11.

(Table 11)

Discussion

The results of this study indicate that the greater the difference between the voting rights and the cash flow rights, the greater the potential for expropriation, and the lower the company's value and the higher the risk taking. This means that risk taking by the ultimate owner is already beyond the limits of risk that will increase the value. The risk taken will only maximize the wealth for the ultimate owner but will decrease the value of the company and eventually harm the minority shareholders (expropriation).

Expropriation, such as tunneling of company resources by ultimate owners through their corporate policies, has greater potential to occur if the information gap between companies and the general public is high. Lepetit, Meslier, and Wardhana (2017), with a sample of banks throughout western Europe, have found that expropriation is carried out by those with higher information gaps. They argue that at a time when the information disclosure or transparency is high, the controlling owners take personal advantage through company policies that are at the expense of minority shareholders. Thus, one possible solution may be to reduce information gaps between insiders (controlling shareholders and directors) with outsiders (minority shareholders and individual investors).

To reduce the information gap, what can be done is to encourage more information disclosure to the public (Healy and Palepu 2001). Von Eije and Megginson (2008), in their empirical research on 4,000 companies in Europe, found that companies that more often publish financial statements (voluntary disclosure) have a tendency to pay higher dividends. That is, as the information gap diminishes, the company will not engage in expropriation from minority shareholders by not paying dividends[1].

Regulation concerning share ownership of limited liability companies (PT) in Republic of Indonesia is regulated in Limited Liability Company Law No.40 of 2007. However, in this law, the ownership of the company is only regulated in general terms. There is no special section of the law that limits the ownership of the company and its structure.

With regard to ownership reporting, it is only regulated for those who have above five percent shares and who are required to be included in the company's financial statements and annual reports. There are also those with less than five percent that must be reported which those who have a relationship with the board of directors or commissioners or who are becoming directors or commissioners of the company. Regarding the ultimate owner, there is no regulation governing its reporting.

[1] One form of expropriation by controling shareholder recognition from minotritas shareholders is by not paying dividends. The company's cash flow goes to projects that benefit only the controller.

Several other countries have enforced the obligation to report ownership that is considered substantial both directly and indirectly (i.e. ownership through a pyramid structure). Meanwhile regulations in Indonesia only require direct ownership reporting for those who own at least five percent shares of the company. This rule is the same as the rules imposed in Israel[2]. For example, the European Union Act requires owners who have above 25% control of the company, either directly or indirectly, to report it.[3] Namimbia requires those who have ownership of 20% or more, either directly or indirectly, through other persons or agencies, or related parties.[4] Although the rules are like this, for example, the EU has mandated the reporting of indirect ownership that can control the company, the ultimate owners of a company still have to be traced with difficulty, for example research that also traces the ultimate owners by Lepetit, Saghi-Zedek, and Tarazi (2015)

The question is whether it is possible to report who the ultimate owner is. It will be very difficult to implement because of the complexity of pyramidal ownership structures in Indonesian companies. Although difficult, in fact, there are companies that are voluntarily reporting ultimate owners, for example is a company with the BBCA ticker. In addition, this also raises technical issues. If required, who should be required? Is it the company, or the ultimate owner?

In the interim, the policy that can be proposed is to disclose the ownership information in more detail for the public, including, where possible, the reporting of the ultimate owner of the company.

With the current rules, many investors own shares in the Indonesian capital market through foreign brokers because only domestic investors can be traced as ultimate owners, so it will complicate the ownership structure in the Indonesian capital market. If this rule is also imposed on foreign institutional investors, will this reduce their interest in the Indonesian capital market?

Of course, this should be studied further. However, the argument that can be conveyed here is that empirical openness or disclosure is always proven to have a positive influence on company value. This situation will certainly create a healthier investment climate, and will therefore attract investors from various countries to invest.

---

[2] Source: Companies Law, 5759-1999, SEFER HAHUKIM [SH] [BOOK OF LAWS], No. 1711 p. 189, as amended.
[3] Source: Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the Prevention of the Use of the Financial System for the Purposes of Money Laundering or Terrorist Financing, Amending Regulation (EU) No. 648/2012 of the European Parliament and of the Council, and Repealing Directive 2005/60/EC of the European Parliament and of the Council and Commission Directive 2006/70/EC, arts. 3(6), 30, 58, 59, 2015 O.J. (L 141) 73, http://perma.cc/LQW4-UNJ8.
[4] Source: Financial Intelligence Act 13 of 2012, GOVERNMENT GAZETTE OF THE REPUBLIC OF NAMIBIA §§1, 4, 5, 9 & 70 (Dec.14, 2012), https://perma.cc/7PFK-BXGN; Financial Intelligence Regulations, Government Notice Bo. 3 of 2015, §§ 2 & 3(Jan. 28, 2015), https://perma.cc/8KFX-3YU7.

5. Conclusions and Suggestions

The growth of Indonesia's capital market has been relatively slow in increasing the number of issuers and investors compared to the capital markets of its neighbors. Meanwhile, the capital market plays a very crucial role in the economic development of a country. This should be of particular concern to policy makers in the Indonesian capital market.

Several factors may explain this slow growth, but this research highlights the perspective of corporate governance in the Indonesian capital market. If we trace it back, it is the outcome of the Indonesian legal system adopting the French Civil Law system which tends to have weaker investor protection than those who adhere to the British Common Law (La Porta et al. 1998). La Porta, Lopez-de-Silanes, and Shleifer (1999) found that countries adopting French Civil Law tend to have more concentrated ownership structures that lead to family-controlled pyramidal ownership. These circumstances lead to the potential for expropriation and ultimately harm the general public (Faccio, Lang and Young 2001, Claessens et al., 1999). These arguments and studies are the main arguments of researchers when explaining the relatively slow growth rate of the Indonesian capital market.

The design of policies that can address this problem must be supported by evidence. Therefore, this research proposes several hypotheses to be tested. Hypotheses question the relationship between the ownership structure, the potential for ultimate owner expropriation, company value, and risk taking; and how the ownership structure of the company, the identity of the owner, and the potential expropriation of the ultimate owner influences the value and risk taking of a company. Hypothesis testing in this research is done by regression that has taken into account various potential biases that exist with various valid econometric techniques so that the estimation results are free from bias as much as possible.

Using the data of companies listed on the Indonesia Stock Exchange (IDX) during the period of 2011-2015, this study demonstrates empirically that there is a negative relationship between ownership structure—as measured by the largest direct ownership of shareholders and the dispersion of ownership structure (HHI)—and company value. However, the direct ownership and dispersion of the leadership structure is not proven to influence corporate risk taking. By tracing the ownership structure of these companies to their ultimate owners, this study shows empirically that the greater the potential for expropriation, as measured by the VR/CR ratio, the greater the total risk and the lower the company's value.

With the empirical evidence of this study, which shows that ownership concentration is proven to influence company value negatively, it can be concluded that the policy to be proposed or encouraged is the limitation of concentrated ownership structures (in one party). Moreover,

based on the empirical findings of this study that the potential for expropriation by ultimate owners, which is proportional to the VR/CR ratio, indicates that the greater the VR/CR the lower the company value, and at the same time increased risk. Therefore, the proposed policy should be accompanied by a policy on corporate information disclosure, especially regarding the ownership and ownership structure of ultimate owners.

The proving of the first and second hypothesis of this study involves considerable panel data, i.e. 5 periods with approximately 350 non-financial companies listed on the Indonesia Stock Exchange (IDX). Of course, the causality relationships concluded from the hypothesis testing conducted on the sample, with a confidence interval level of 95%, have strong generalizations. Meanwhile, the testing of the third and fourth hypothesis, related to ultimate ownership, cannot be carried out using panel data due to resource constraints. Nevertheless, out of about 350 companies, the ultimate owner could be identified for 220 of them. This number is certainly not a small amount for inference. Nevertheless, the causality cannot be generalized as strongly as with the testing results for the first up to the fourth hypotheses which have a higher Number Observed and observation periods. For that purpose, it is hoped that subsequent research will collect data on ultimate ownership with longer observation periods.

The interactions between the various factors of market imperfection with the VR/CR variable has not been investigated in this study. For example how does the VR/CR level influence a company's risk taking if the company has a high information gap in terms of the market, how regulatory and tax regimes influence the behavior of ultimate owners, and how the degree of diversification of the ultimate owners influences a company's risk taking. Future research should consider some of these for testing as a follow-up investigation.

As with other financial studies, this study excludes finance and utility companies in its sample because both industries are subject to multiple regulations and may have behaviors that are different from those for companies in other industries. However, this does not mean the two industries are already free from the potential moral hazard due to the various regulations imposed on them. Of course, the policy analysis of ownership structure in Indonesia's capital market would be more complete if accompanied by analysis of ownership structures in these two industries. This analysis would certainly be conducted separately from other industries.

References

Acharya, Viral V., Yakov Amihud, and Lubomir Litov. 2011. "Creditor Rights and Corporate Risk-Taking." *Journal of Financial Economics* 102 (1):150-166. doi: http://dx.doi.org/10.1016/j.jfineco.2011.04.001.

Anderson, Theodore, and Cheng Hsiao. 1981. "Estimation of Dynamic Models with Error Components." *Journal of American Statistical Association* 76:598-606.

Baker, H. Kent, Gary E. Powell, and E. Theodore Veit. 2002. "Revisiting The Dividend Puzzle: : Do All of the Pieces now Fit?" *Review of Financial Economics* 11 (4):241-261.

Barry, Thierno Amadou, Laetitia Lepetit, and Amine Tarazi. 2011. "Ownership Structure and Risk in Publicly Held and Privately Owned Banks." *Journal of Banking & Finance* 35 (5):1327-1340. doi: 10.1016/j.jbankfin.2010.10.004.

Black, Fischer. 1976. "The Dividend Puzzle." *The Journal of Portfolio Management* 2 (2):5-8.

Bøhren, Øyvind, Morten G. Josefsen, and Pål E. Steen. 2012. "Stakeholder Conflicts and Dividend Policy." *Journal of Banking & Finance* 36 (10):2852-2864. doi: 10.1016/j.jbankfin.2012.06.007.

Claessens, Stijn , Simeon Djankov, and Larry H.P Lang. 2000. "The Separation of Ownership and Control in East Asian Corporations." *Journal of Financial Economics* 58 (1-2):81-112.

Claessens, Stijn, Joseph P. H. Fan, Simeon Djankov, and Larry H. P. Lang. 1999. "On Expropriation of Minority Shareholders: Evidence from East Asia." *SSRN. Available at SSRN: http://ssrn.com/abstract=202390* doi: http://dx.doi.org/10.2139/ssrn.202390.

Coles, Jeffrey L., Michael L. Lemmon, and J. Felix Meschke. 2012. "Structural Models and Endogeneity in Corporate Finance: The Link between Managerial Ownership and Corporate Performance." *Journal of Financial Economics* 103 (1):149-168. doi: http://dx.doi.org/10.1016/j.jfineco.2011.04.002.

Faccio, Mara , Larry H.P Lang, and Leslie Young. 2001. "Dividends and Expropriation." *The American Economic Review* 91 (1):54-78.

Francis, Bill B., Iftekhar Hasan, Kose John, and Liang Song. 2011. "Payout policy: A Test Using Antitakeover Legislation." *Financial Management* (Spring):83-112.

Galai, Dan, and Ronald W. Masulis. 1976. "The Option Pricing Model and the Risk Factor of Stock." *Journal of Financial Economics* 3 (1):53-81. doi: http://dx.doi.org/10.1016/0304-405X(76)90020-9.

Grinstein, Yaniv, and Roni Michaely. 2005. "Institutional Holdings and Payout Policy." *The Journal of Finance* 60 (3):1389-1426.

Gugler, Klaus, and B. Burcin Yurtoglu. 2003. "Corporate Governance and Dividend Pay-out Policy in Germany." *European Economic Review* 47 (4):731-758. doi: 10.1016/s0014-2921(02)00291-x.

Ismiyanti, Fitri, and Mamduh M. Hanafi. 2004. "Struktur Kepemilikan, Risiko, dan Kebijakan Keuangan: Analisis Persamaan Simultan." *Jurnal Ekonomi dan Bisnis Indonesia* 19 (2):176-195.

Jensen, Michael C. 1986. "Agency Cost of Free Cash Flow, Corporate Finance, and Takeovers." *American Economic Review* 76 (2):323-329.

Jensen, Michael C., and William H. Meckling. 1976. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure " *Journal of Financial Economics* 3 (4):305-360.

John, Kose, Lubomir P. Litov, and Bernard Yeung. 2008. "Corporate Governance and Risk-Taking." *The Journal of Finance* 58 (4):1679-1728.

Johnson, Simon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer. 2000. "Tunneling." *American Economic Review* 90 (2):22-27.

La Porta, Rafael , Florencio Lopez-de-Silanes, and Andrei Shleifer. 1999. "Corporate Ownership around the World." *The Journal of Finance* 54 (2):471-517. doi: 10.2307/2697717.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny. 1998. "Law and Finance." *Journal of Political Economy* 106 (6):1113-1155.

Lepetit, Laetitia, Celine Meslier, and Leo Indra Wardhana. 2017. "Reducing agency conflicts through bank dividend payout decisions: the role of opacity and ownership structure." *Applied Economics* 49:4999-5026. doi: 10.1080/00036846.2017.1296556.

Lepetit, Laetitia, Nadia Saghi-Zedek, and Amine Tarazi. 2015. "Excess Control Rights, Bank Capital Structure Adjustments, and Lending." *Journal of Financial Economics* 115 (3):574-591. doi: http://dx.doi.org/10.1016/j.jfineco.2014.10.004.

Lin, Chen, Yue Ma, and Yuhai Xuan. 2011. "Ownership structure and financial constraints: Evidence from a structural estimation." *Journal of Financial Economics* 102 (2):416-431. doi: https://doi.org/10.1016/j.jfineco.2011.06.001.

Mahadwarta, Putu Anom, and Fitri Ismiyanti. 2008. "Debt Policy, Free Cash Flow Hypothesis, and Balancing of Agency Theory Through Ownership: Evidence From Indonesia." *Corporate Ownership and Control* 5 (2):256-263.

Siregar, Sylvia Veronica, and Sidharta Utama. 2008. "Type of earnings management and the effect of ownership structure, firm size, and corporate-governance practices: Evidence from Indonesia." *The International Journal of Accounting* 43 (1):1-27. doi: https://doi.org/10.1016/j.intacc.2008.01.001.

Von Eije, Henk, and William L. Megginson. 2008. "Dividends and Share Repurchases in the European Union." *Journal of Financial Economics* 89 (2):347-374. doi: 10.1016/j.jfineco.2007.11.002.

Wardhana, Leo Indra, and Eduardus Tandelilin. 2011. "Institutional Ownership and Agency Conflict Controlling Mechanism." *Journal of Indonesian Economy and Business* 26 (3):389-406.

Wardhana, Leo Indra, and Eduardus Tandelilin. 2018. "Do We Need a Mandatory Dividend Regulation? The Case of the Indonesian Capital Market." *Gadjah Mada International Journal of Business* 20 (1):33-68.

Table 1. Descriptive Statistics

Statistic	N	mean	sd	Min	p25	p50	p75	max
M/B	2.583	2.79	5.55	-0.10	0.65	1.28	2.78	42.00
Beta	2.548	0.65	0.53	-1.26	0.32	0.65	0.99	1.92
SDROA	1.764	4.57	6.33	0.13	1.32	2.59	4.90	40.62
O/C	231	1.98	2.49	1.00	1.00	1.00	2.00	35.72
No. Tier	231	2.99	1.57	1.00	2.00	3.00	4.00	10.00
LSH	2.664	50.87	22.91	1.42	31.65	51.00	66.78	99.99
HHI	2.662	0.35	0.23	0.00	0.16	0.30	0.46	0.99
Leverage	2.501	51.86	33.80	3.00	31.00	49.00	66.00	238.00
ROA	2.501	7.62	10.34	-21.74	1.81	5.34	10.65	52.25
DPR	2.455	11.68	23.16	0.00	0.00	0.00	15.54	121.66
ln TA	2.512	14.26	1.82	9.57	12.99	14.29	15.56	18.21
TA Growth	2.138	23.81	75.14	-42.29	0.00	10.29	23.79	630.83

M/B is the market value of the book's equity/value. Beta is systematic risk; SDROA is a total risk, measured using standard deviations of return on assets. O/C is cash flow rights/voting rights. No. Tier is the number of layers or levels at which the ultimate owner is located. LSH is the proportion of ownership of the largest shareholder (controller). HHI is a measure of the concentration of ownership structure measured using the Herfindhal Index. Leverage is total debt/total assets. ROA is net income/total assets. DPR is dividend payout ratio. Ln TA is a company size measured by the natural logarithm of total assets. TA growth is the annual growth of corporate assets.

Table 2. Descriptive Statistics for Ultimate Ownership

Stats	VR/CR	ECR	No. Tier
mean	1.98	0,14	3
sd	2.49	0,21	2
min	1	0	1
p1	1	0	1
p5	1	0	1
p10	1	0	1
p25	1	0	2
p50	1.01	0,00	3
p75	2.00	0,27	4
p90	3.79	0,47	5
p95	5.12	0,56	6
max	35.72	0,82	10

Source: Processed data

VR/CR is voting rights/cash flow rights. ECR is voting rights minus cashflow rights. No. Tier is the number of layers or levels at which the ultimate owner is located.

Table 3. Correlation Matrix Independent Variables 1

	LSH	HHI	Leverage	ROA	DPR	Log TA	Pert. TA
LSH	1.00						

HHI	0.96	1.00					
Leverage	-0.08	-0.08	1.00				
ROA	0.20	0.20	-0.11	1.00			
DPR	0.04	0.04	-0.03	0.04	1.00		
ln TA	0.04	0.00	-0.04	0.09	0.05	1.00	
TA Growth	0.05	0.05	-0.03	0.01	0.05	0.03	1.00

LSH is the proportion of ownership of the largest shareholder (controller). HHI is a measure of the concentration of ownership structure measured using the Herfindahl Index. Leverage is total debt/total assets. ROA is net income/total assets. DPR is dividend payout ratio. Ln TA is a company size measured by the natural logarithm of total assets. TA growth is the annual growth of corporate assets.

Tabel 4. Correlation Matrix Independent variable 2

	VR/CR	ECR	No. Tier	ROA	Leverage	Log TA	Pert. TA
VR/CR	1						
ECR	0.56	1					
No. Tier	0.36	0.44	1				
ROA	0.12	0.23	0.15	1			
Leverage	-0.07	-0.07	-0.02	-0.22	1		
Ln TA	0.12	0.13	0.08	0.12	-0.02	1	
Pertumbuhan TA	-0.10	-0.13	-0.10	-0.07	-0.01	-0.16	1

VR/CR is voting rights/cash flow rights. ECR is voting rights minus cashflow rights. No. Tier is the number of layers or levels at which the ultimate owner is located. Leverage is total debt/total assets. ROA is net income/total assets. DPR is dividend payout ratio. Ln TA is a company size measured by the natural logarithm of total assets. TA growth is the annual growth of corporate assets.

Table 5. Regression of Ownership Structure and Company Value (Q)

	(1)	(2)	(3)	(4)
Dependen: Q	FE LSH	FE HHI	IV LSH	IV HHI
Ownership	**-0.107****	**-0.113*****	**-0.294*****	**-0.257*****
	(0.041)	(0.039)	(0.084)	(0.077)
ROA	0.142**	0.139**	0.116*	0.116*
	(0.0585)	(0.0581)	(0.0624)	(0.0624)
Leverage	-0.0133	-0.0138	-0.0238	-0.0239
	(0.0155)	(0.0153)	(0.0168)	(0.0169)
Ln TA	2.091**	2.139**	1.480**	1.648**
	(0.992)	(0.982)	(0.711)	(0.691)
DPR	0.0204	0.0197	0.0205	0.0177
	(0.0152)	(0.0151)	(0.0188)	(0.0186)
TA Growth	0.00591*	0.00622*	0.00814*	0.00814*
	(0.00325)	(0.00323)	(0.00476)	(0.00467)
Constant	-19.31	-21.50		
	(14.30)	(13.95)		
Fixed year effect	Yes	Yes	Yes	Yes
Number Observed	1778	1778	1450	1450
Number of Groups	315	315	287	287
R-squared	0.0365	0.0372		

Ownership Endogeneity Test(χ^2)	6.916***	5.198**
Endogeneity Test p-stat	0.008	0.0226
Kleibergen-Paap rk Wald F-stat	29.23	25.83
Hansen stat	0.280	0.272
Hansen p-stat	0.596	0.602

*Robust standard error in parentheses, with * p<0.1 **p<0.05 ***p<0.001*
Stock-Yogo weak ID test critical values, with 5% maximum IV bias = 13.91
FE is a regression with fixed effects. IV is a regression with instrumental variable (two stage least squared). Q is Tobin's Q. LSH is the proportion of ownership of the largest shareholder (controller). HHI is a measure of the concentration of ownership structure measured using the Herfindahl Index. Leverage is total debt/total assets. ROA is net income/total assets. DPR is dividend payout ratio. Ln TA is a company size measured by the natural logarithm of total assets. TA growth is the annual growth of corporate assets.

Table 6. Regression of Ownership Structure and Company Value (M/B)

	(1)	(2)	(3)	(4)
Dependent: M/B	FE LSH	FE HHI	IV LSH	IV HHI
Ownership	-0.042	-0.031	**-0.174*** **	**-0.147** **
	(0.039)	(0.039)	(0.067)	(0.062)
ROA	0.0274	0.0278	0.0507**	0.0514**
	(0.0290)	(0.0290)	(0.0248)	(0.0249)
Leverage	0.0320**	0.0326**	0.0236	0.0241
	(0.0135)	(0.0136)	(0.0149)	(0.0151)
Ln TA	-0.952	-0.925	-1.989***	-1.910***
	(0.711)	(0.711)	(0.563)	(0.571)
DPR	-0.00875*	-0.00915*	-0.00372	-0.00527
	(0.00521)	(0.00523)	(0.00491)	(0.00495)
Growth TA	-0.000414	-0.000575	0.00237	0.00201
	(0.00378)	(0.00384)	(0.00398)	(0.00394)
Constant	15.68	14.21		
	(10.88)	(10.48)		
Fixed year effect	Yes	Yes	Yes	Yes
Number Observed	2.091	2.091	1.746	1.746
Number of Groups	352	352	346	346
R-squared	0.0551	0.0528		
Ownership Endogeneity Test(χ^2)			5.070**	4.209**
Endogeneity Test p-stat			0.024	0.0402
Kleibergen-Paap rk Wald F-stat			27.79	26.69
Hansen stat			0.0176	0.00639
Hansen p-stat			0.895	0.936

*Robust standard error in parentheses, with * p<0.1 **p<0.05 ***p<0.001*
Stock-Yogo weak ID test critical values, with 5% maximum IV bias = 13.91
FE is a regression with fixed effects. IV is a regression with instrumental variable (two stage least squared). M/B is the market value of the book's equity/value. LSH is the proportion of ownership of the largest shareholder (controller). HHI is a measure of the concentration of ownership structure measured using the Herfindahl Index. Leverage is total debt/total assets. ROA is net income/total assets. DPR is dividend payout ratio. Ln TA is a company size measured by the natural logarithm of total assets. TA growth is the annual growth of corporate assets.

Table 7. Regression of Ownership Structure and Risk (Beta)

	(1)	(2)	(3)	(4)
Dependent: Beta	FE LSH	FE HHI	IV LSH	IV HHI
Ownership	-0.000902	-0.146	-0.00518	-0.431
	(0.00204)	(0.202)	(0.00371)	(0.340)
ROA	0.00352**	0.00347**	0.00436**	0.00438***
	(0.00176)	(0.00174)	(0.00170)	(0.00170)
Leverage	0.000632	0.000599	0.0000638	0.0000791
	(0.000856)	(0.000854)	(0.000640)	(0.000638)
Ln TA	0.0113	0.0115	-0.0397	-0.0376
	(0.0327)	(0.0328)	(0.0267)	(0.0260)
DPR	0.000780	0.000778	0.000517	0.000473
	(0.000699)	(0.000700)	(0.000607)	(0.000605)
TA Growth	0.0000517	0.0000645	0.0000358	0.0000237
	(0.000201)	(0.000200)	(0.000163)	(0.000158)
Constant	0.438	0.441		
	(0.470)	(0.469)		
Fixed year effect	Yes	Yes	Yes	Yes
Number Observed	1.982	1.982	1.673	1.673
Number of Groups	338	338	334	334
R-squared	0.0495	0.0500		
Ownership Endogeneity Test(χ^2)			1.704	1.364
Endogeneity Test p-stat			0.151	0.243
Kleibergen-Paap rk Wald F-stat			25.65	25.27
Hansen stat			1.704	1.707
Hansen p-stat			0.192	0.191

*Robust standard error in parentheses, with * p<0.1 **p<0.05 ***p<0.001*

Stock-Yogo weak ID test critical values, with 5% maximum IV bias = 13.91

FE is a regression with fixed effects. Beta is systematic risk. IV is a regression with instrumental variable (two-stage least squared). LSH is the proportion of ownership of the largest shareholder (controller). HHI is a measure of the concentration of ownership structure measured using the Herfindahl Index. Leverage is total debt/total assets. ROA is net income/total assets. DPR is dividend payout ratio. Ln TA is a company size measured by the natural logarithm of total assets. TA growth is the annual growth of corporate assets.

Table 8. Regression of ownership structure and risk (SDROA)

	(1)	(2)	(3)	(4)
Dependent: SDROA	FE LSH	FE HHI	IV LSH	IV HHI
Ownership	0.0150	2.966	0.0236	2.672
	(0.0284)	(2.479)	(0.0512)	(4.298)
ROA	0.152***	0.153***	0.129***	0.129***
	(0.0363)	(0.0361)	(0.0346)	(0.0346)
Leverage	0.0461**	0.0472***	0.0460***	0.0464***
	(0.0180)	(0.0181)	(0.0146)	(0.0144)
Ln TA	-0.582	-0.585	-0.591	-0.599*
	(0.464)	(0.454)	(0.361)	(0.349)

DPR	-0.00244	-0.00249	-0.00422	-0.00411
	(0.00631)	(0.00630)	(0.00591)	(0.00590)
TA Growth	0.00320	0.00284	0.00307	0.00297
	(0.00224)	(0.00218)	(0.00289)	(0.00284)
Konstan	8.365	8.118		
	(6.773)	(6.438)		
Fixed year effect	Yes	Yes	Yes	Yes
Number Observed	1.747	1.747	1.699	1.699
Number of Groups	350	350	340	340
R-squared	0.102	0.103		
Ownership Endogeneity Test(χ^2)			0.098	0.005
Endogeneity Test p-stat			0.754	0.945
Kleibergen-Paap rk Wald F-stat			25.59	24.82
Hansen stat			1.456	1.454
Hansen p-stat			0.228	0.228

Robust standard error in *parentheses*, with * p<0.1 **p<0.05 ***p<0.001
Stock-Yogo weak ID test critical values, with 5% maximum IV bias = 13.91
FE is a regression with fixed effects. SDROA is a total risk, measured by standard deviation ROA. IV is a regression method with instrumental variable (two-stage least squared). LSH is the proportion of ownership of the largest shareholder (controller). HHI is a measure of the concentration of ownership structure measured using the Herfindahl Index. Leverage is total debt/total assets. ROA is net income/total assets. DPR is dividend payout ratio. Ln TA is a company size measured by the natural logarithm of total assets. TA growth is the annual growth of corporate assets.

Table 9. Regression of Ultimate Ownership and Firm's Value

	(1)	(2)	(3)	(4)
Dependent:	Q	M/B	Q	M/B
VR/CR	-0.176	-0.0434**		
	(0.135)	(0.0202)		
ECR			-5.624	-3.872
			(9.853)	(2.488)
No. Tier	3.346	0.795	2.438	0.705
	(2.667)	(0.538)	(2.291)	(0.478)
ROA	0.317**	0.176***	0.318**	0.177***
	(0.156)	(0.0648)	(0.158)	(0.0647)
Leverage	-0.0632	0.0171	-0.0669	0.0162
	(0.0503)	(0.0318)	(0.0519)	(0.0314)
Ln TA	2.207	-2.336	2.291	-2.329
	(1.792)	(1.473)	(1.805)	(1.472)
DPR	-0.0270	0.00250	-0.0280	0.00234
	(0.0257)	(0.0173)	(0.0259)	(0.0172)
TA Growth	0.0320	-0.0131	0.0315	-0.0141*
	(0.0742)	(0.00801)	(0.0745)	(0.00803)
Constant	0.796**	0.360*	0.744*	0.349*
	(0.383)	(0.183)	(0.380)	(0.181)
Number Observed	183	220	183	220
F-Stat.	1.221	2.430	1.141	2.325

R-squared	0.045	0.2	0.039	0.198

Robust standard error in parentheses, with * p<0.1 **p<0.05 ***p<0.001

Q is Tobin's Q. M/B is the market value of the book's equity/value. VR/CR is voting rights/ cash flow rights. ECR is voting rights-cash flow rights. No. Tier is the number of layers or levels at which the ultimate owner is located. Leverage is total debt/total assets. ROA is net income/total assets. DPR is dividend payout ratio. Ln TA is a company size measured by the natural logarithm of total assets. TA growth is the annual growth of corporate assets.

Table 10. Regression of Ultimate Ownership and Risk

	(1)	(2)	(3)	(4)
Dependent:	SDROA	Beta	SDROA	Beta
O/C	0.0409***	-0.0054		
	(0.00830)	(0.00291)		
Excess			0.825	-0.175
			(1.361)	(0.266)
No. Tier	0.0541	0.0250	0.209	0.00620
	(0.198)	(0.0454)	(0.235)	(0.0492)
ROA	0.146**	0.00638	0.145**	0.00651
	(0.0596)	(0.00508)	(0.0596)	(0.00507)
Leverage	0.0456***	-0.0000370	0.0464***	-0.000145
	(0.0123)	(0.00113)	(0.0123)	(0.00109)
Ln TA	-0.130	0.0272	-0.167	0.0315
	(0.780)	(0.0451)	(0.780)	(0.0451)
DPR	0.00336	-0.00214***	0.00363	-0.00217***
	(0.00677)	(0.000634)	(0.00672)	(0.000635)
TA Growth	0.0210*	-0.00325	0.0212*	-0.00329
	(0.0121)	(0.00266)	(0.0122)	(0.00267)
Constant	-0.00465	0.00540	0.00575	0.00397
	(0.129)	(0.0129)	(0.129)	(0.0129)
Number Observed	218	212	218	212
F-Stat.	27.42	3.293	4.362	2.890
R-squared	0.117	0.0553	0.112	0.0490

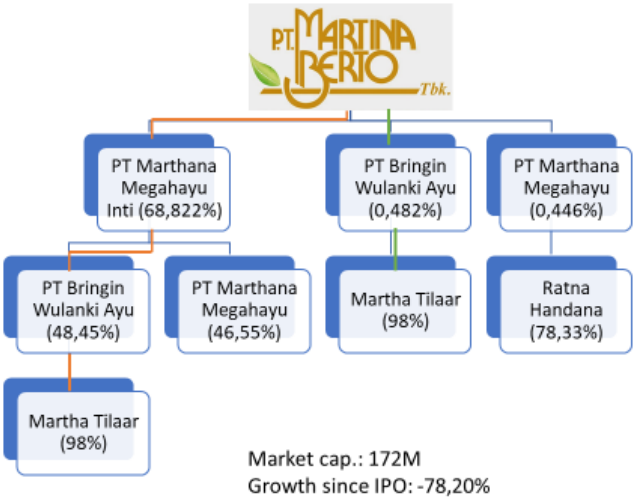
Robust standard error in brackets, with * p<0.1 **p<0.05 ***p<0.001

SDROA is a total risk, measured by standard deviation ROA. Beta is systematic risk. VR/CR is voting rights/ cash flow rights. ECR is voting rights-cash flow rights. No. Tier is the number of layers or levels at which the ultimate owner is located. Leverage is total debt/total assets. ROA is net income/total assets. DPR is dividend payout ratio. Ln TA is a company size measured by the natural logarithm of total assets. TA growth is the annual growth of corporate assets.

Table 11. Summary of Hypotheses Testing Results

	DV	IV	Relationship	Proven	Endogenous	Estimator
H1	Value	Ownership	Negative	Yes	Yes	Panel 2SLS FE
H2	Risk	Ownership	-	No	Yes	Panel 2SLS FE
H3	Value	Expropriation	Negative	Yes	No	OLS with FD
H4	Risk	Expropriation	Positive	Yes	No	OLS with FD

Figure 1. Pyramidal Ownership



Market cap.: 172M
Growth since IPO: -78,20%
Trading Volume: 15 million

Ultimate owner: Martha Tilaar
Voting rights (VR) :
Via PT Marthana Megahayu Inti = 68.82%
Via PT Bringin Wulanki Ayu = 0.48%
Voting rights (VR) = 6. 3%

Cashflow rights (CR):
Via PT Marthana Megahayu Inti = 68.82% x 48.45% x 98% = 32.6%

Via PT Bringin Wulanki Ayu = 0.482% x 98% = 0.0022%

Cashflow rights (CR) =
32.6% + 0.0022% = 32.602%

VR/CR = 69,3%/32,602%
= 2.12

Figure 2. VR/CR = 1

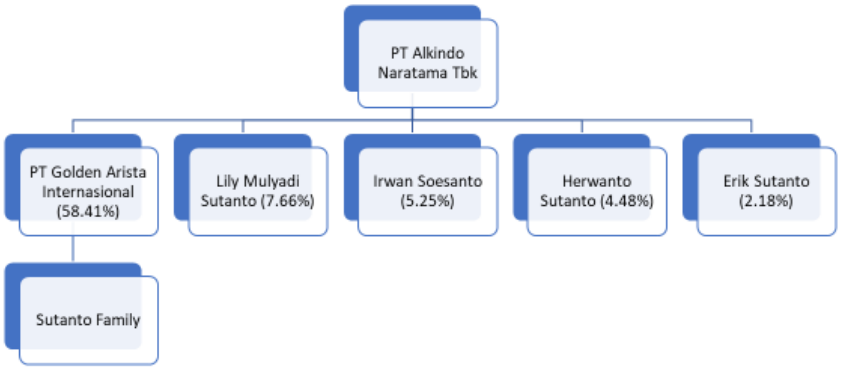


Figure 3. VR/CR = 1

Attachment 1

Table L1. Regression of Logistic of Identity of Ultimate Owner
Dependent: Identity of Ultimate Owner

Trading Frequency	-0.0925**
	(0.0451)
Domestic	1.227***
	(0.271)
Ln Age	0.511*
	(0.308)
ROA	0.0275
	(0.0208)
Leverage	-0.00288
	(0.00430)
Ln TA	0.279***
	(0.0897)
TA Growth	0.00272
	(0.00294)
DPR	-0.00572
	(0.00759)
Constant	-5.531***
	(1.747)
Number Observed	335
Wald Chi-squared	31.19
P-stat	0.000

Robust standard error in brackets, with * p<0.1 **p<0.05 ***p<0.001

All variables are the mean from five observation periods. The regression of the dependent variable in table L1 above is a categorical variable that is worth one if the ultimate owner of company i can be traced and zero if it cannot be traced. Instrument variables outside the main model (excluded instruments) that were used were trade frequency, categorical domestic variable, which is worth one if the direct control owner is domestic and zero if not, and variable ln Age, i.e. the natural logarithm of the company's age.

Private financing into Infrastructure

Naoyuki YOSHINO
Dean & CEO
Asian Development Band Institute (ADBI)
Professor Emeritus of Keio University

Matthias Helble
Co-chair, RES, ADBI

Umid Abidhadjaev
Research Consultant, ADBI

June, 2018

Growing Savings Ratio in Asian Countries

1, Population Growth: Number of children, Population bonus

2, Income Growth

3, Economic Growth

4, Government Support for pensions and un-employees

	Nominal measure								
	1966–70	1971–75	1976–80	1981–85	1986–90	1991–95	1996–2000	2001–07	Average
PRC	28.9	29.1	33.0	34.8	37.0	41.9	40.7	46.2	37.8
Hong Kong, China	28.2	29.4	33.5	31.6	36.0	32.6	30.4	31.5	31.6
Indonesia	14.3	23.9	30.8	30.1	31.9	32.4	28.1	29.9	27.8
India	15.5	16.7	18.7	19.4	21.9	23.0	22.4	29.0	22.2
Korea, Rep. of	15.2	19.0	27.0	27.8	36.5	36.4	35.6	31.8	28.8
Malaysia	24.3	24.2	31.1	28.1	33.3	37.8	45.8	42.6	33.4
Pakistan	8.9	8.0	7.9	7.2	10.3	16.4	14.9	16.1	11.2
Philippines	21.9	23.6	26.2	21.0	19.0	16.3	17.1	13.8	19.1
Singapore	18.4	26.3	34.9	43.8	41.0	47.3	49.9	46.3	39.8
Thailand	21.2	22.8	22.1	24.3	30.8	35.8	34.3	32.2	27.9
Taipei,China	25.3	30.4	33.0	31.6	33.4	27.2	26.0	26.0	28.7
Viet Nam					3.9	14.6	22.2	29.0	17.4
Average a/	19.8	22.0	25.7	26.6	30.0	33.2	32.9	37.5	

Infrastructure Investment Needs in Asia-Pacific (2016-2030)

($ billion in 2015 prices, annual average)

	Baseline Total	% of GDP	Climate Adjusted	% of GDP
Central Asia	33	6.8	38	7.8
East Asia	919	4.5	1071	5.2
South Asia	365	7.6	423	8.8
Southeast Asia	184	5.0	210	5.7
The Pacific	2.8	8.2	3.1	9.1
Asia & Pacific	1503	5.1	1744	5.9

Source: Meeting Asia's Infrastructure Needs, ADB (2017)

Infrastructure Investment Needs by Sector, 2016-2030

($ billion in 2015 prices)

Sector	Baseline estimates		
	Investment Needs	Annual average	% share to total
Power	11689	779	51.8
Transport	7796	520	34.6
Telecommunications	2279	152	10.1
Water and Sanitation	787	52	3.5
Total	22551	1503	100

Source: Meeting Asia's Infrastructure Needs, ADB (2017)

Financing for Infrastructure

Various Private Financial Investors in Asia

1, **Banks --- Safer projects**

- Brown field (infrastructure)
- Invest into operation period
- Securitization after certain period of time
- Privatized projects by the government

2, **Insurance and Pension funds** (Brown fields)

- Long term projects (10 years –20- 30 years)

3, **Revenue Bonds (floating interest rate)**

- uncertain income streams

4, **Equity Investments**

- Construction period and Green fields

Different Classes of Infrastructure Assets

Banks

Insurance

Pension Funds

Revenue Bond

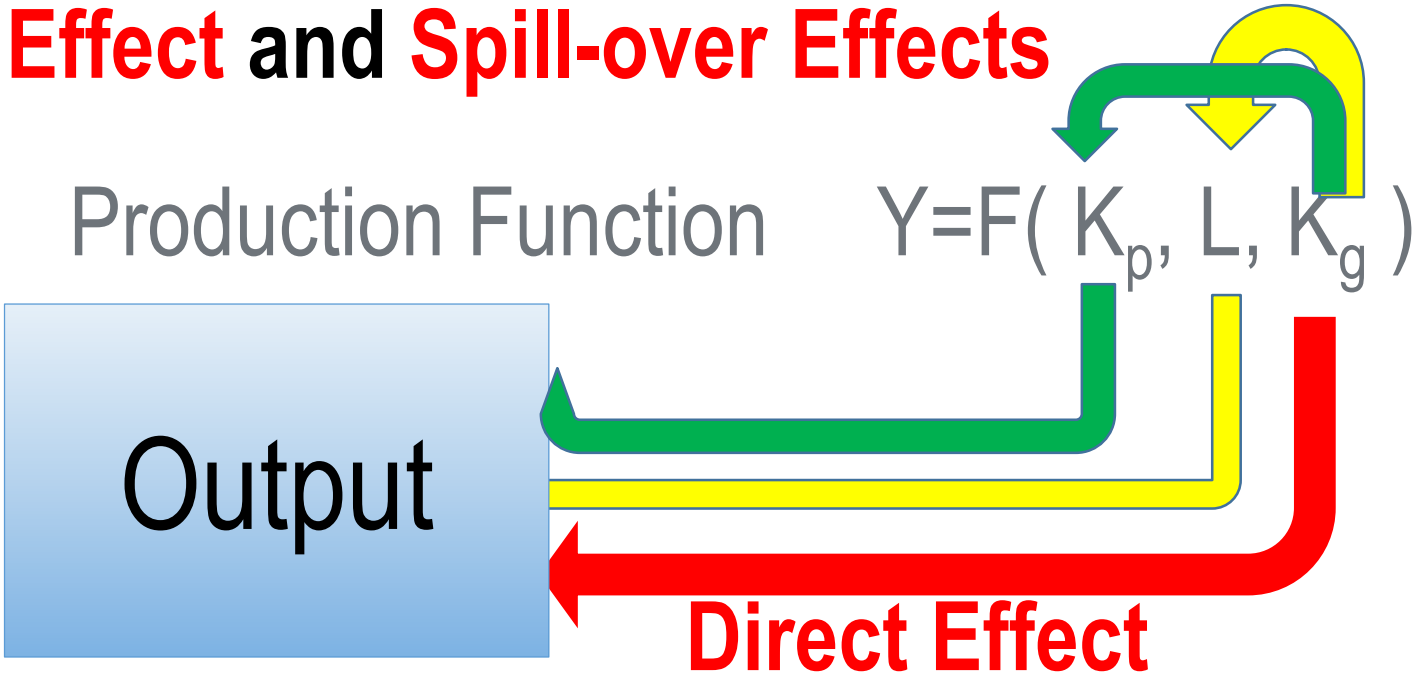
Equity

Safer Assets

Different Infrastructure Classes

Riskier Assets

Direct Effect and Spill-over Effects



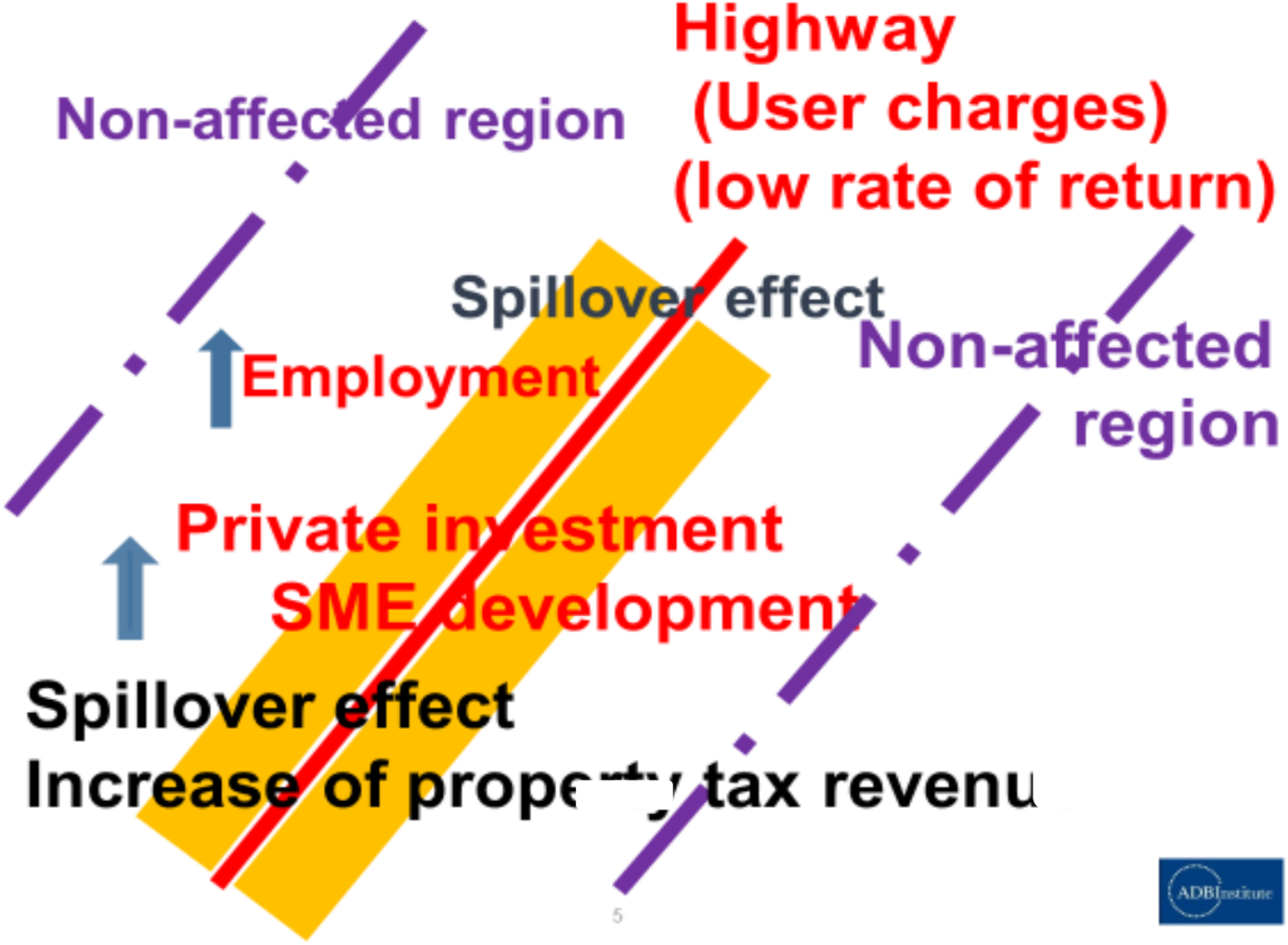
Y= Output,

K_p= private capital,

L = labor

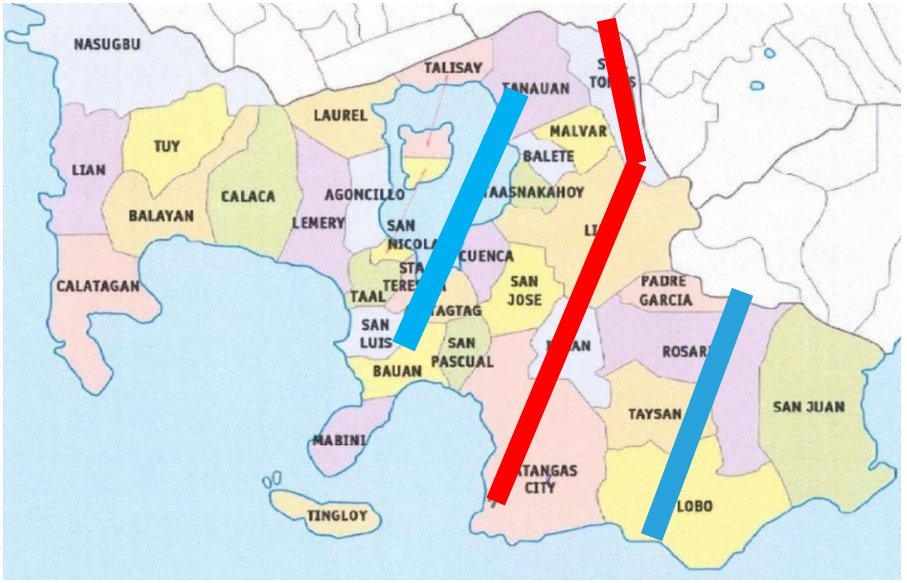
K_g = public capital (infrastructure)

Spillover Effects of Infrastructure Investment



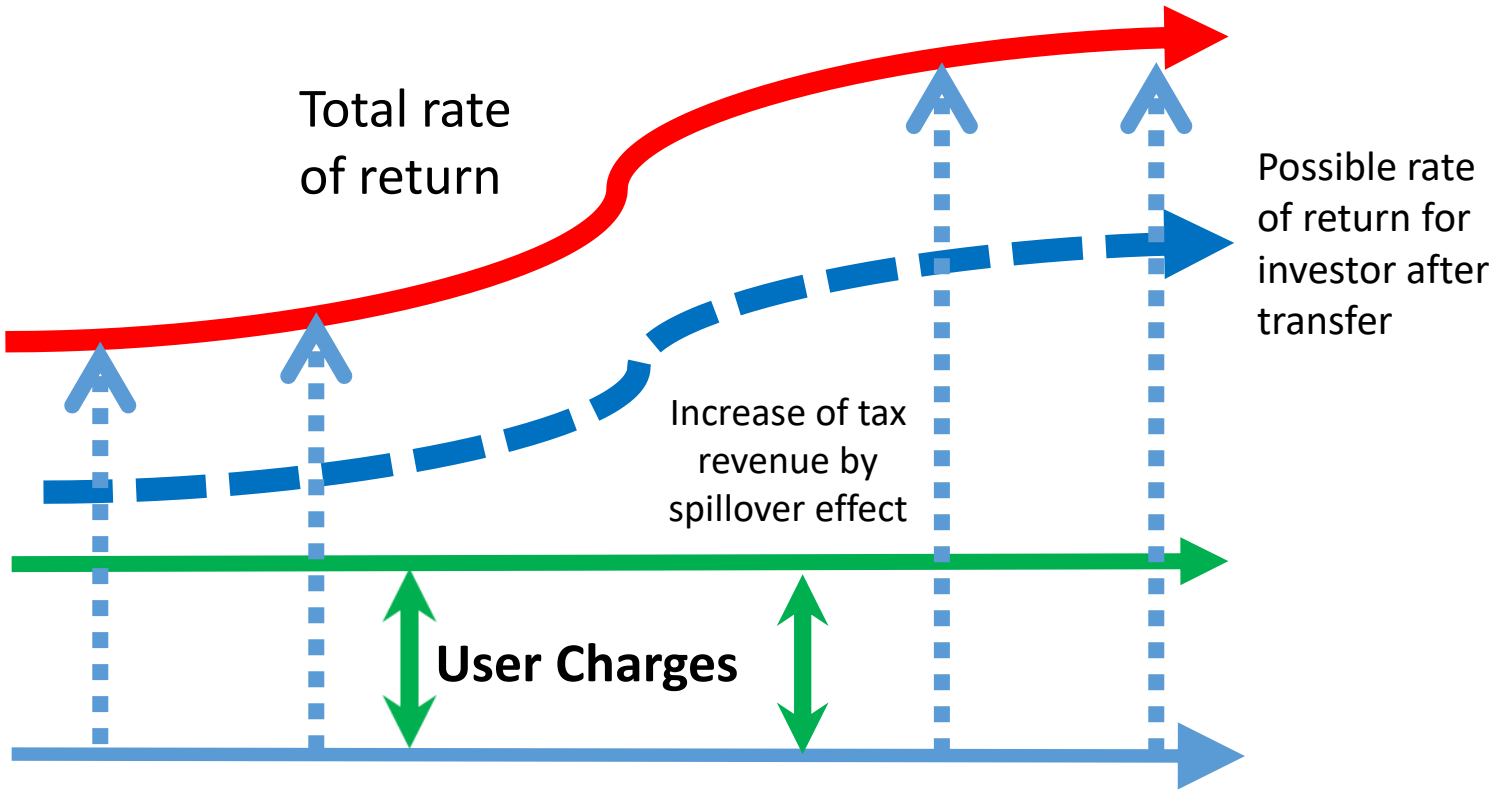
Southern Tagalog Arterial Road (STAR) Philippines (Yoshino and Pontines, Chapter 3)

- STAR tollway built to improve road linkage between Metro Manila and Batangas International Port.
- Tax revenue increased during construction and after completion in communes along the tollway.

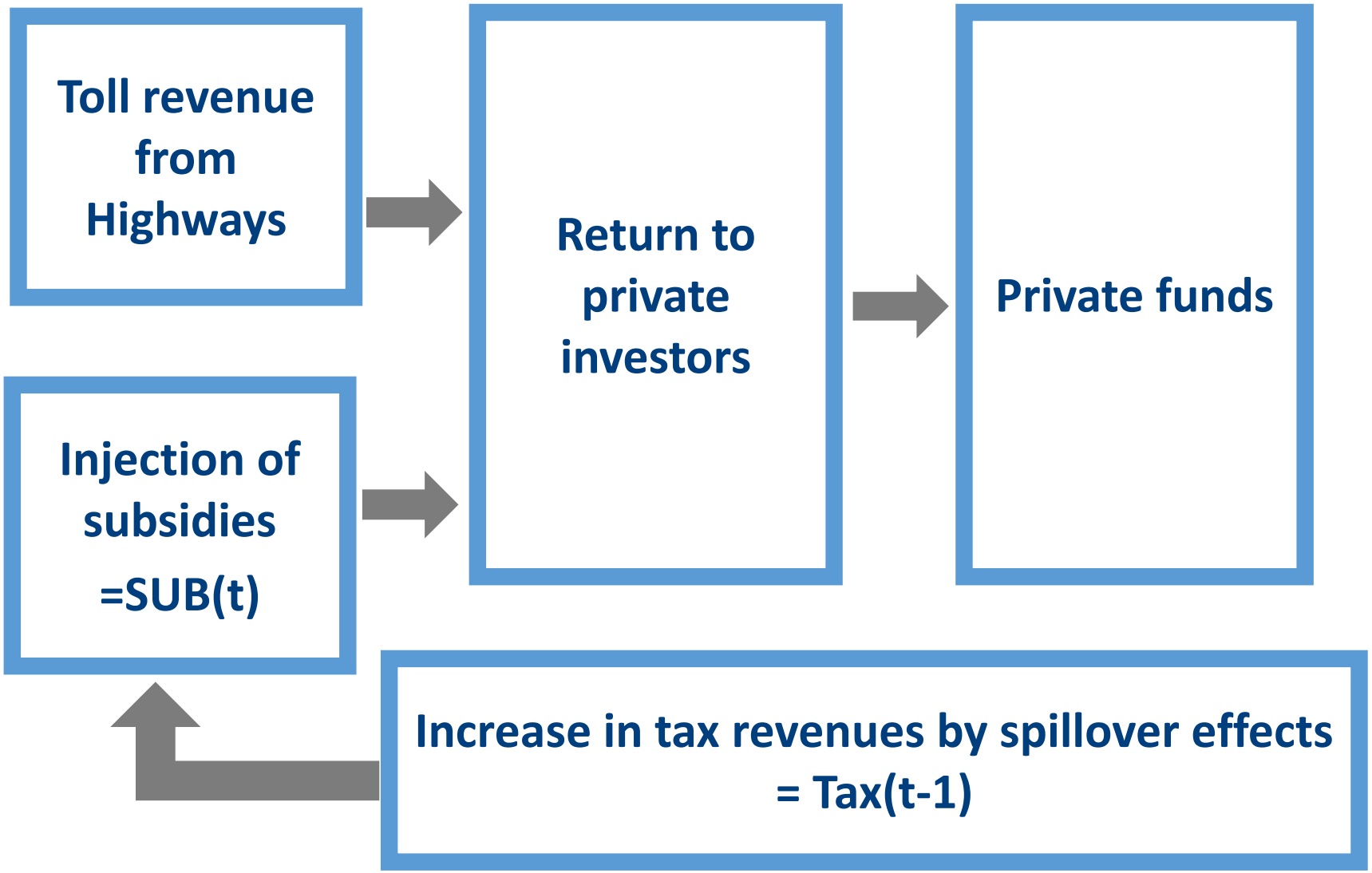


	t_{-2}	t_{-1}	t_0	t_{+1}	t_{+2}	t_{+3}	t_{+4}, forward
Lipa City	134.36	173.50	249.70	184.47	191.81	257.35	371.93
Ibaan City	5.84	7.04	7.97	6.80	5.46	10.05	12.94
Batangas City	490.90	622.65	652.83	637.89	599.49	742.28	1,208.61

Injection of Increased Tax Revenues to Increase the Rate of Return

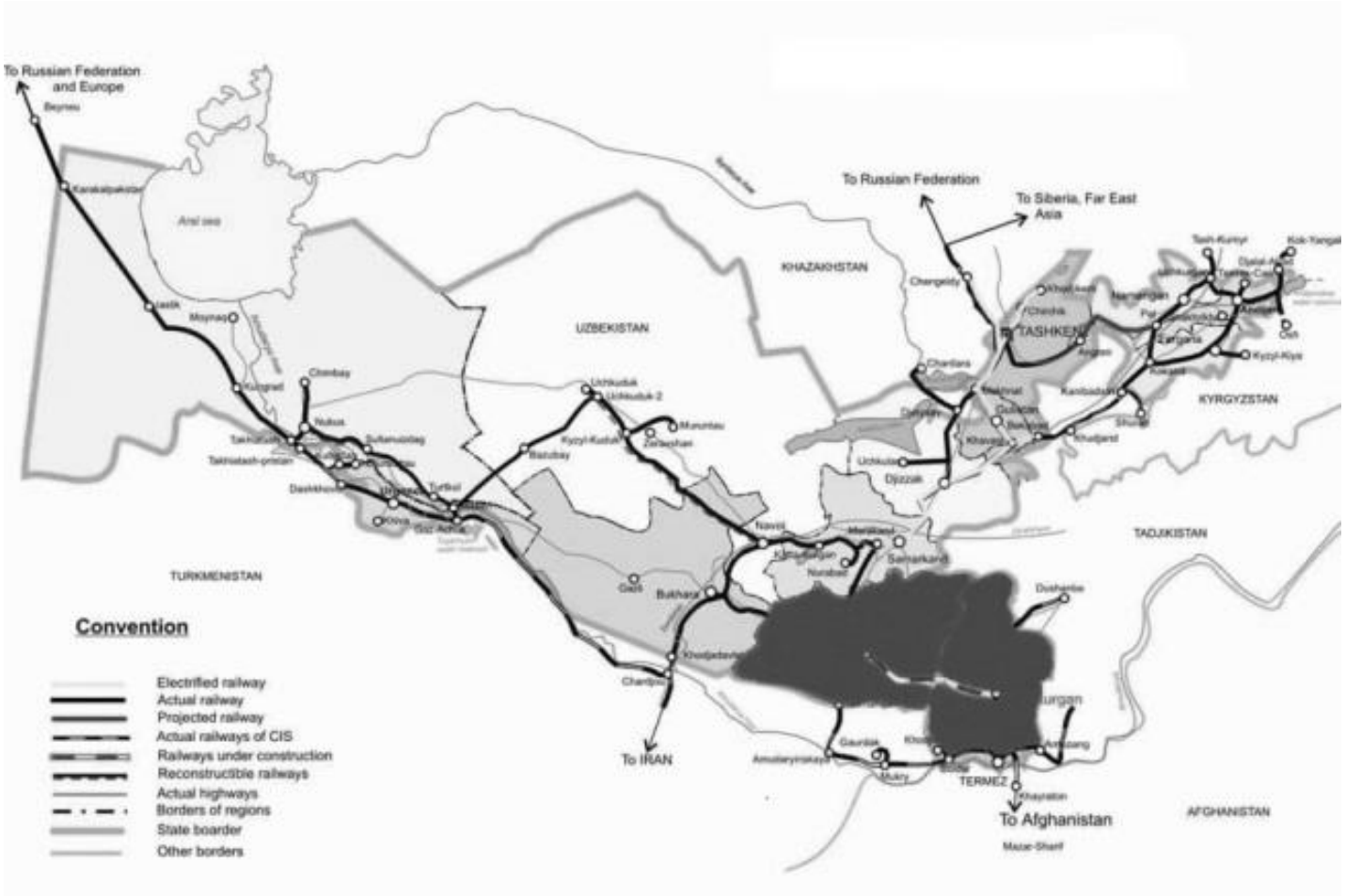


Injection of Fraction of Tax Revenues as Subsidy

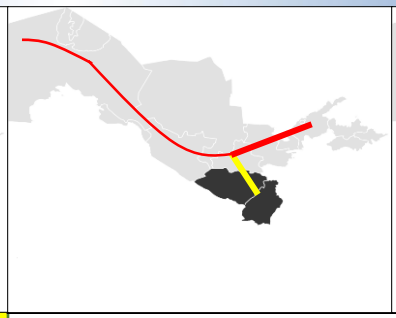


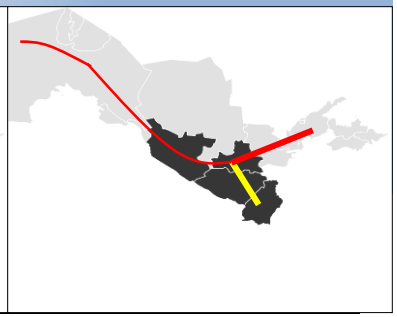
Uzbekistan Railway

(Yoshino and Abidhadjaev, 2017)



GDP





		D_i / D_t	Connectivity effect $D_{g = connectivity}$	Regional effect $D_{g = regional}$	Spillover effect $D_{g = spillover}$
Launch effects					
	Short-term	$D_{t=2010:2009}$	**2.83***[4.48]**	0.70[0.45]	1.33[1.14]
	Mid-term	$D_{t=2011:2009}$	**2.5***[6.88]**	0.36[0.29]	1.27[1.46]
	Long-term	$D_{t=2012:2009}$	**2.06***[3.04]**	-0.42[-0.29]	2.29**[2.94]
1 year	**Anticipation effects**				
	Short-term	$D_{t=2010:2008}$	0.19[0.33]	0.85[1.75]	-0.18[-0.20]
	Mid-term	$D_{t=2011:2008}$	0.31[0.51]	0.64[1.30]	-0.02[-0.03]
	Long-term	$D_{t=2012:2008}$	0.07[0.13]	-0.006[-0.01]	0.50[0.67]
	Postponed effects	$D_{t=2012:2010}$	1.76*[1.95]	-1.49[-0.72]	2.58*[2.03]
2 years	**Anticipation effects**				
	Short-term	$D_{t=2010:2007}$	-1.54[-1.66]	1.42[0.78]	-1.32[-0.92]
	Mid-term	$D_{t=2011:2007}$	0.32[0.44]	0.84[1.42]	0.13[0.13]
	Long-term	$D_{t=2012:2007}$	0.11[0.15]	0.10[0.16]	0.87[1.19]
	Postponed effects	$D_{t=2012:2011}$	-0.14[-0.20]	-1.71[-1.35]	1.05[1.44]

Contents lists available at ScienceDirect

Journal of Asian Economics 49 (2017) 1–11

Full length article

An impact evaluation of investment in infrastructure: The case of a railway connection in Uzbekistan☆

Naoyuki Yoshino[a], Umid Abidhadjaev[b,*]

In the spectrum of economic sectors, the positive effect reflected in regional GDP seems to be driven by approximate increases of 5% in industrial output and of 7% in aggregate services. The effect on agricultural output is moderate relative to other sectors, constituting around 1% for connectivity effects, which is consistent with previous literature on the impacts of public capital.

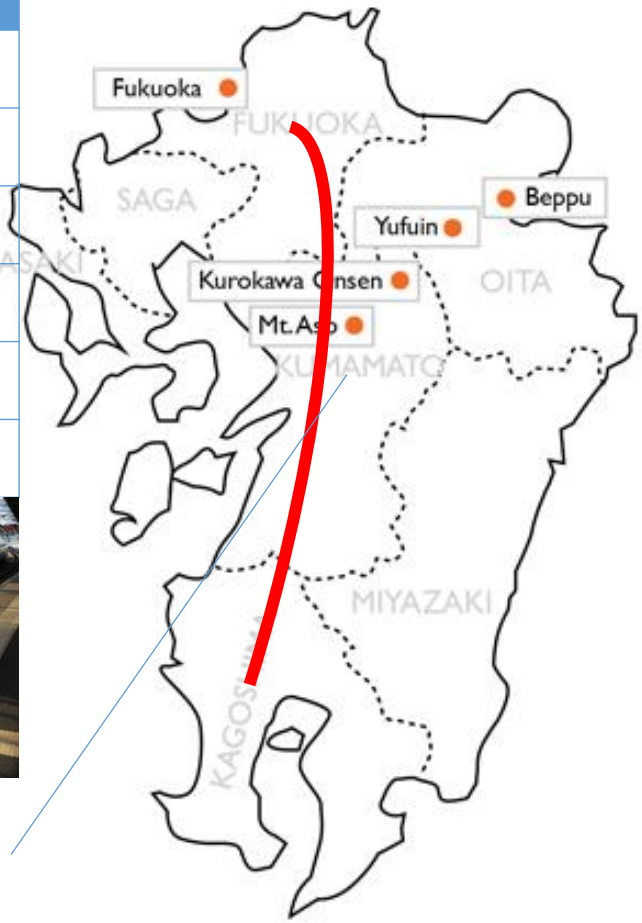
(Yoshino and Abidhadjaev, Chapter 2)

Context: Japan

Travel time to Kagoshima		
	Before	**After**
Tokyo	9h 00m	7h 20m
Shin-Osaka	6h 20m	4h 40m
Hakata	3h 50m	2h 10m
Kumamoto	2h 30m	1h 00m
Shin-Yatsushiro	2h 10m	35m

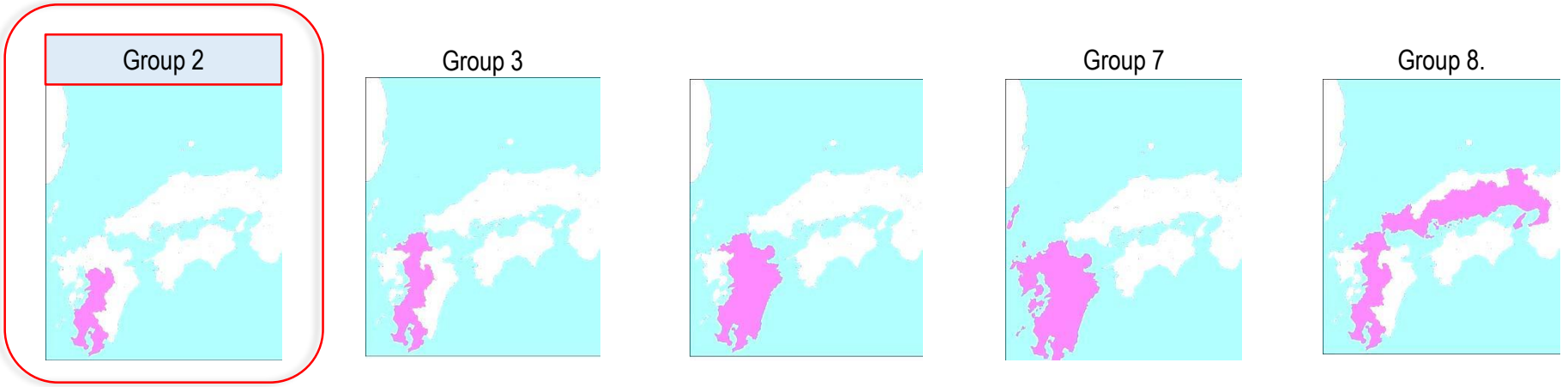
Kyushu Shinkansen

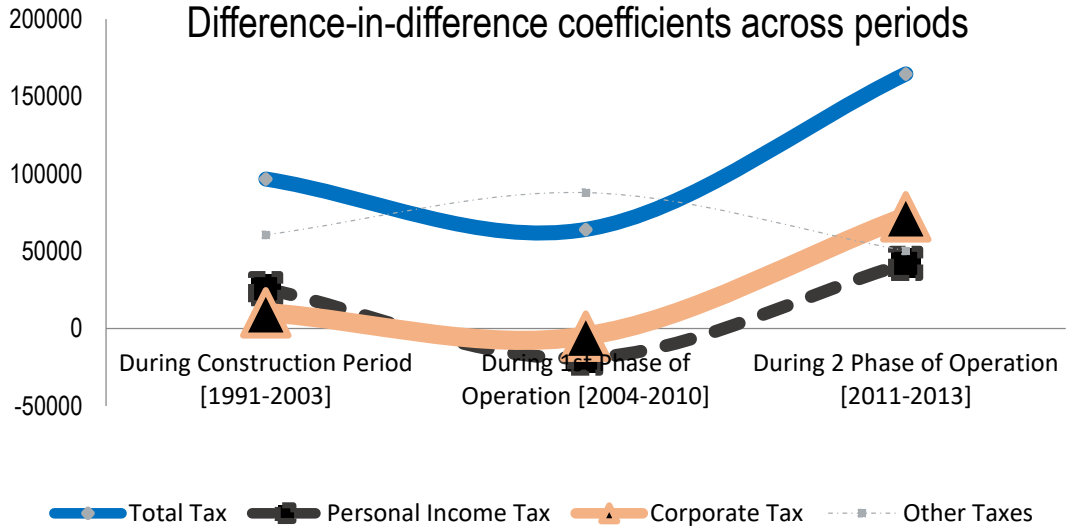
Japan



Source: https://www.acprail.com/rail-passes/japan-rail/bullet-train/kyushu-shinkansen

Estimation Results by Group of Prefectures

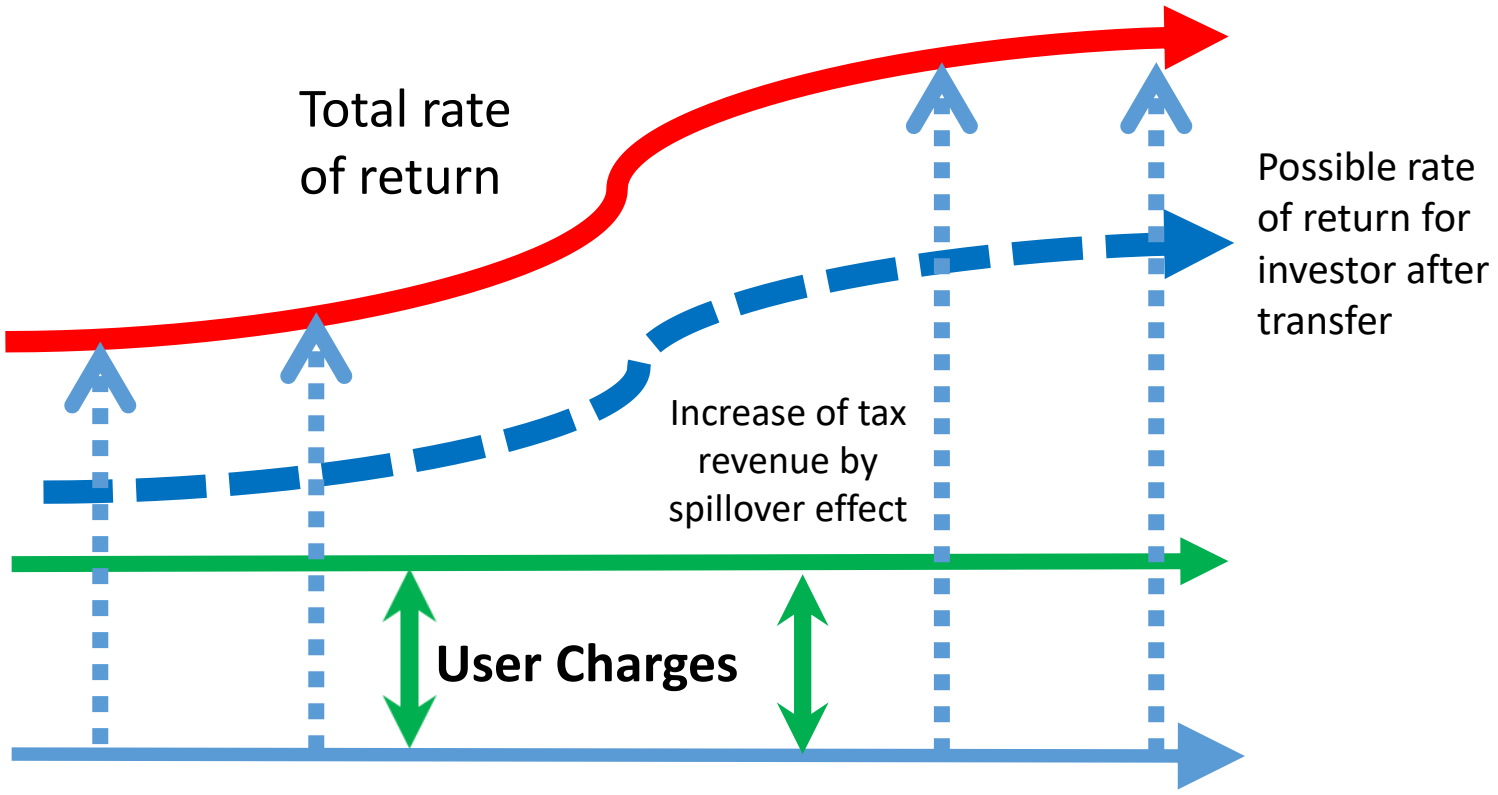




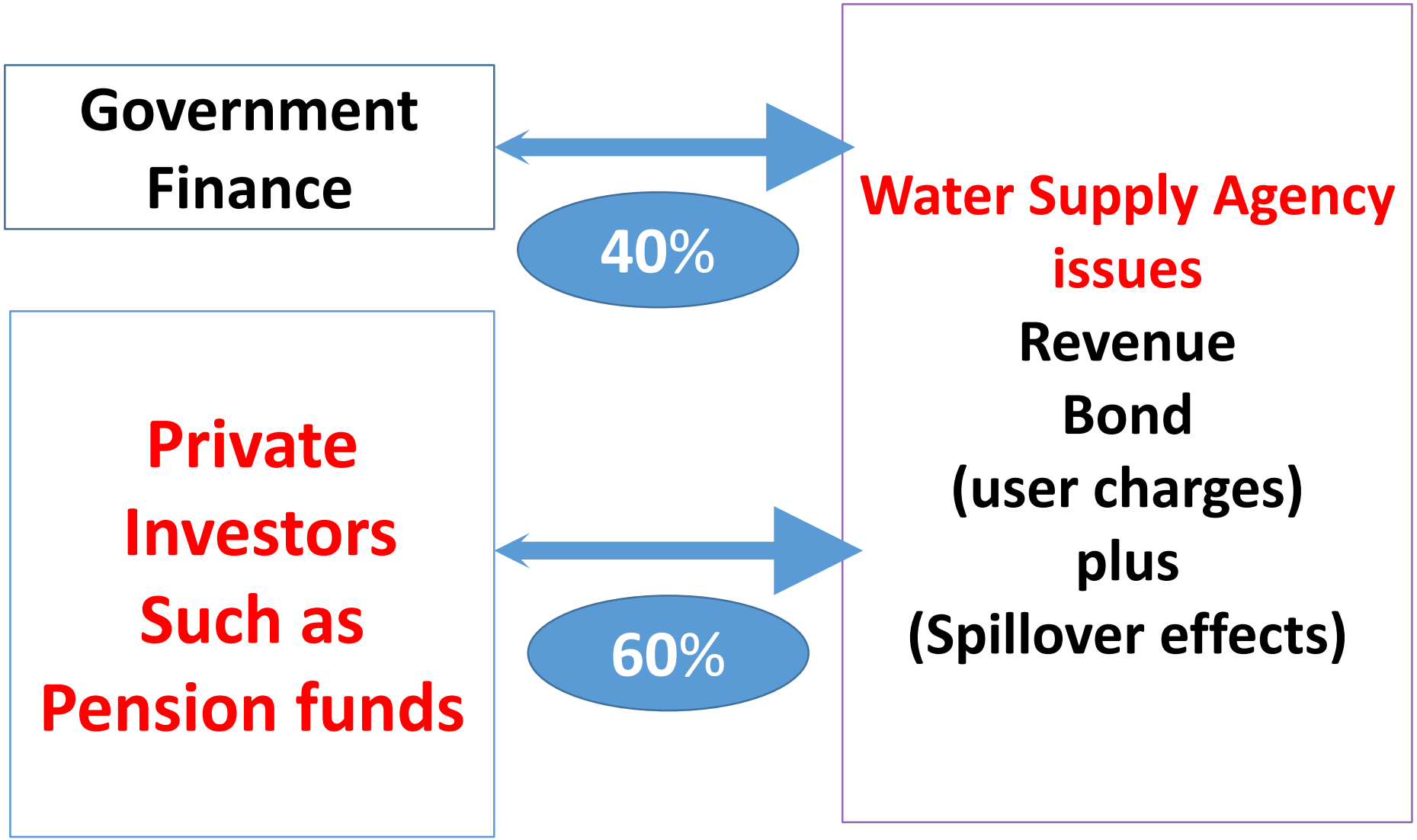
Impact took place during construction, decreased during operation of segmented(autonomous) rail line and bounced back after connection to greater rail system

Note: Numbers for tax revenue amount adjusted for CPI with base year 1982. Pre-shinkansen construction period covers years from 1982 to 1990. Non-affected groups include rest of the prefectures. Treated groups:
Group 2: Kagoshima, Kumamoto
Group 3: Kagoshima, Kumamoto, Fukuoka
Group 5: Kagoshima, Kumamoto, Fukuoka, Oita, Miyazaki
Group 7: Kagoshima, Kumamoto, Fukuoka, Oita, Miyazaki, Saga, Nagasaki
Group Con.: Kagoshima, Kumamoto, Fukuoka, Yamaguchi, Hiroshima, Okayama, Hyogo, Osaka

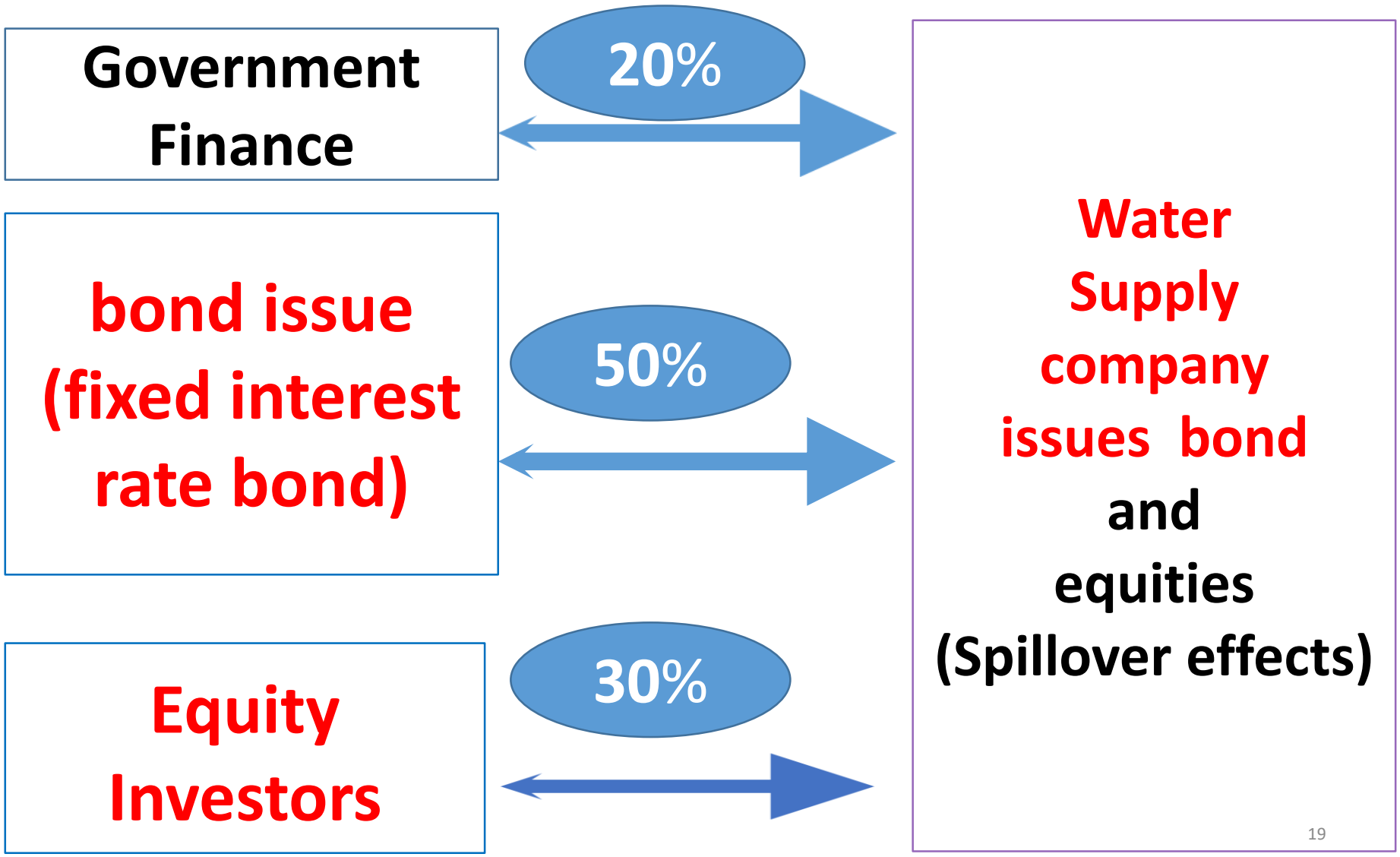
Injection of Increased Tax Revenues to Increase the Rate of Return



Revenue Bond for Infrastructure Investment



Equity and Bond Investment in infrastructure



Macroeconomic Effect of Infrastructure Investment

Spillover Effects Estimated from a Macroeconomic Translog Production Function				
	1956-60	1961-65	2001-05	2006-10
Direct effect	0.696	0.737	0.114	0.108
Indirect effect (K_p)	0.452	0.557	0.091	0.085
Indirect effect (L)	1.071	0.973	0.132	0.125
20% returned	0.305	0.306	0.045	0.042
Increment	43.8%	41.5%	39.0%	39.1%

Source: Yoshino and Nakahigashi (2016)

Infrastructure & Education

Yoshino and Umid Abidhadjaev (2016)

Education

In a study of 44 companies, Professor Yoshino found that education played a significant role in impacting the quantum of the spillover effect. Secondary schools provided basic skills for blue collar workers. Universities provided education for highly skilled workers. Workers' education level impacted businesses' productivity.

Dependent variable: log difference GDP per capita in 1991-2010			
Regression number	REG.1	REG.2	REG.3
Variables	Coef.	Coef.	Coef.
lnY_1991	-0.06	-0.14	-0.14
	(-0.54)	(-1.35)	(-1.38)
ln(n+g+d)	-3.09	-5.75	-4.36
	(-0.59)	(-1.23)	(-0.77)
ln(Kg)	0.23	0.31	0.53
	(1.17)	(2.00)	(3.30)
ln(Sec)			0.00
			(0.46)
ln(Kg)xln(Sec)	0.20		
	(1.59)		
ln(Uni)			0.21
			(2.07)
ln(Kg)xln(Uni)		0.24	
		(2.76)	
Constant	-0.28	0.56	0.48
	(-0.33)	(0.69)	(0.57)
Number of observations	44.00	44.00	44.00
R-squared	0.21	0.30	0.30
F-statistic	2.62	4.14	3.29

Public-Private Partnership (PPP)
Give incentives to operating companies
SOE Reform → Increase efficiency and rate of return

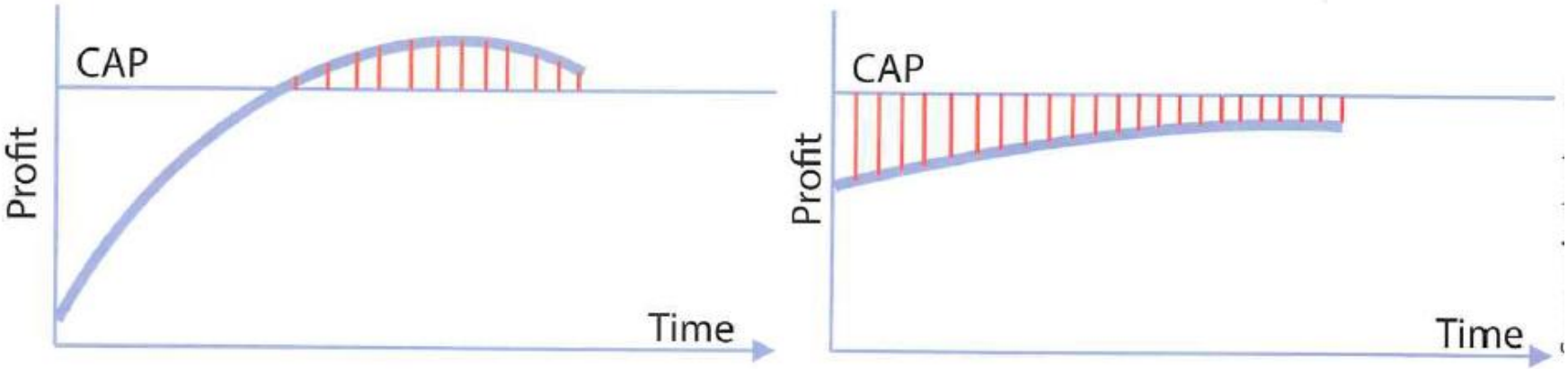
Incentive Mechanism

In order to enhance efficiency and increase the rate of return on infrastructure development, it is necessary to vary the dividend payment for private investors based on the project's revenues, including both user fees and spillover tax revenues. It is also necessary for infrastructure operating entities to exert efforts to increase income. Table 5 shows the payoff matrix, depending on the presence or absence of effort by investors and the infrastructure-operating entity.

Payoff table for infrastructure operating entity and investors

Normal Case	Effort Case
(50 , r) Operating Entity Investors	(50 , αr) Operating Entity Investors
(100 , r) Operating Entity Investors	(100 , αr) Operating Entity Investors

Pooling Various Infrastructure Projects

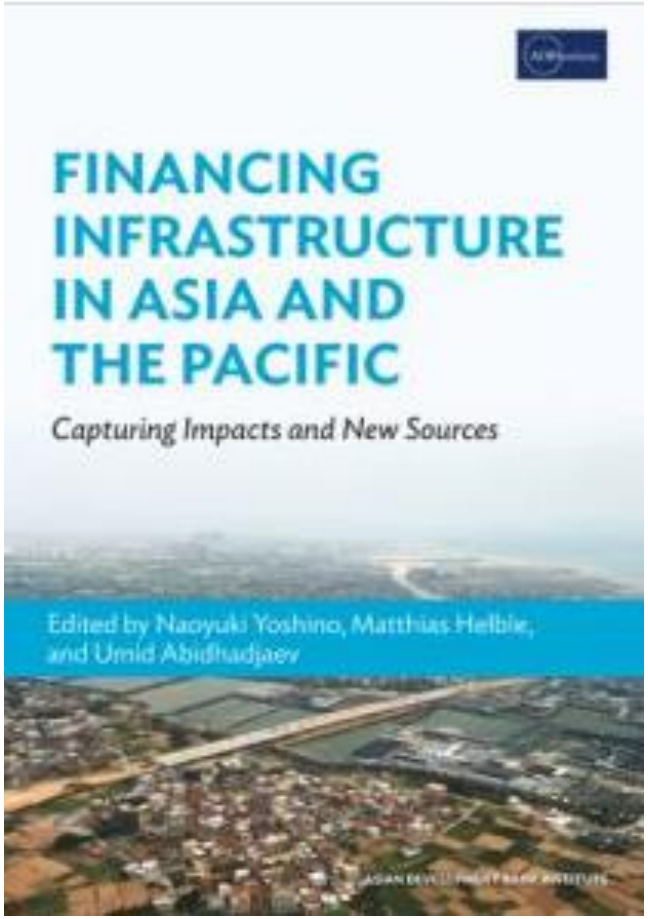


Other possible difficulties concern the ability to collect taxes due to the existence of so-called black markets. Our model cannot be successfully implemented in contexts characterized by low levels of tax collectability and tax avoidance of due payments, which would reflect real underlying economic processes. In this respect, it is necessary to boost the tax payment discipline of businesses and citizens. At the same time, the government should pursue more technocratic tax-collection solutions using information technology and transparent collection mechanisms, making it easier for taxpayers to fulfill their payment obligations.

New Book on Infrastructure

- "FINANCING INFRASTRUCTURE
- IN ASIA AND THE PACIFIC:
- Capturing Impacts and New Sources"

- Edited by Naoyuki Yoshino, Matthias Helble, and Umid Abidhadjaev
  - the latest evidence on the impact of infrastructure investment on economic and social indicators
  - country studies on how infrastructure investment can increase output, taxes, trade and firm productivity
  - innovative modes of infrastructure financing
  - DOWNLOAD FOR FREE: https://www.adb.org/publications/financing-infrastructure-asia-capturing-impacts-and-new-sources



Yoshino, Naoyuki and Masaki Nakahigashi（2004）“The Role of Infrastructure in Economic Development”, ICFAI Journal of Managerial Economics, 2, pp. 7-24
Nakahigashi, M and Yoshino, N. (2016) “Changes in Economic Effect of Infrastructure and Financing Method”, Public Policy Review, Vol.12, No.1.
Yoshino, N. and Pontines, Victor (2015) “The Highway-Effect on Public Finance: Case of the STAR Highway in the Phillippines”, GIE | AAA Special Kick-off Edition, GIE Network publishing.
Yoshino, Naoyuki and Victor Pontines（2015）“The Highway Effect on Public Finance: Case of the STAR Highway in the Philippines”, Asian Development Bank Institute（ADBI） Working Paper No.549.
Yoshino, Naoyuki and Umid Abidhadjaev (2017), “An impact evaluation of investment in infrastructure: The case of a rail way connection in Uzbekistan”. Journal of Asian Economics, 49, 1-11, 2017
Yoshino, Naoyuki and Umid Abidhadjaev (2017), “Impact of infrastructure on tax revenue: Case study of high-speed train in Japan”, Journal of Infrastructure, Policy and Development, Vol.1, Issue 2.
Yoshino, Naoyuki, Umid Abidhadjaev and Makaki Nakahigashi (2018), “Closing the Asian Infrastructure Gap”, HORIZONZ, Journal of International Relations and Sustainable Development, Issue No.10, Winter 2018.
Yoshino, Naoyuki, Matthias Helble and Umid Abidhadjaev (2018), Financing Infrastructure in Asia and the Pacific: Capturing Impacts and New Sources, Asian Development Bank Institute.

Two tales of Derivatives Debacles on Foreign Exchange Risk Management

- Moonyun, Hwang -

Contents & Reference

<Contents>

- Introduction
- Case Ⅰ(Global Forward Hedging Transactions)
- Case Ⅱ(KIKO Transactions)
- Conclusion

<Reference>

『Analysis of Derivatives Debacles in Korea』, Moonyun, Hwang, KBI Publishing, 2013

Introduction

- In late February 2009, GXX Korea(the company) recorded 4.1 trillion won in red by the huge loss of forward transactions
  - The company asked their related banks to extend the settlement maturity of half of outstanding 8.2 billion dollars
  - This year GXX Motors(the head office of the company) was once again losing market share, and it seemed unable to develop products that were truly competitive in the U.S. market
  - On May 18 2018, Korea Development Bank and GXX Motors Co signed a binding agreement on rescue package for GXX Korea

- While KIKO products were designed to hedge foreign exchange risk, the export companies suffered the huge loss on the KIKO contracts
  - The KIKO transactions would be considered neither a customized product nor a packaged financial instrument for hedging foreign exchange risk
  - Up to now, they have claimed the banks' violation of the principle of suitability and duty to explain

Case Ⅰ：Global Forward Hedging
(GXX Co. LTD)

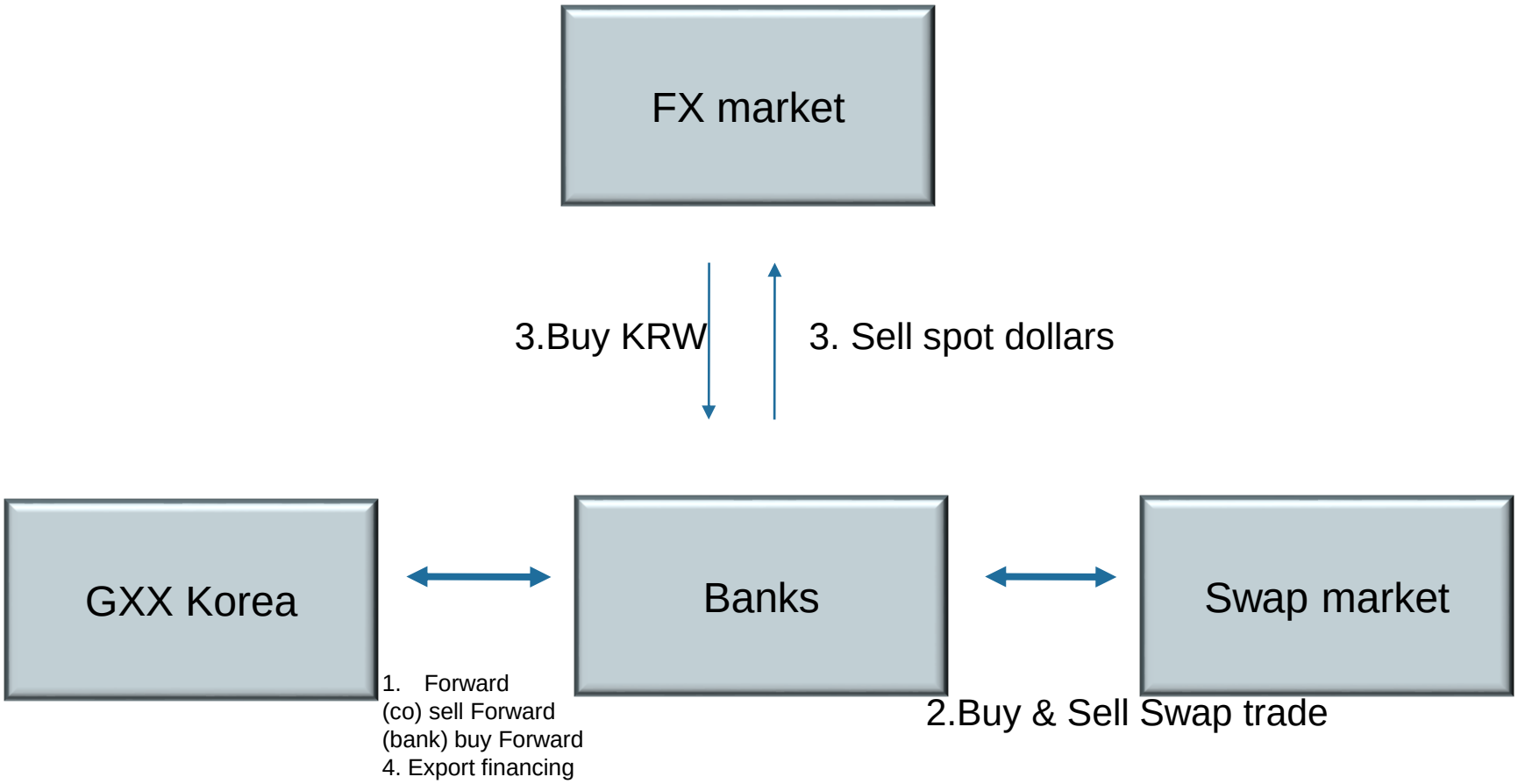
Background of Global Forward Hedging

- GXX, Korea('the company') established after Korean 1998 IMF rescue program, through take-over of Daewoo motors co.

- 5 years later, the company turned a profit since the merger
  - The company played a great part of Asian-Pacific region consisted of 40%
  - The company exported small parts of motors, so called Knock-down Export

- Year 2008, the company recorded the total sale 12.3 trillion won
  - Most sales came from exports (above 90%)
  - The company covered 50~70% of the exports with forward transactions for hedging foreign exchange risk

Hedging Strategy



Failure of Forward Hedging – overestimate hedging

	Sales Account	Export Account	Outstanding Derivatives (A)	Sales Receivables (B)	A/B(%)
2006	9.6	8.0	9.1	2.3	395
2007	12.5	10.9	11.0	2.6	423
2008	12.3	11.0	10.2	2.4	425
2009	9.5	8.0	4.2	2.1	200
2010	12.6	10.8	3.1	1.9	163

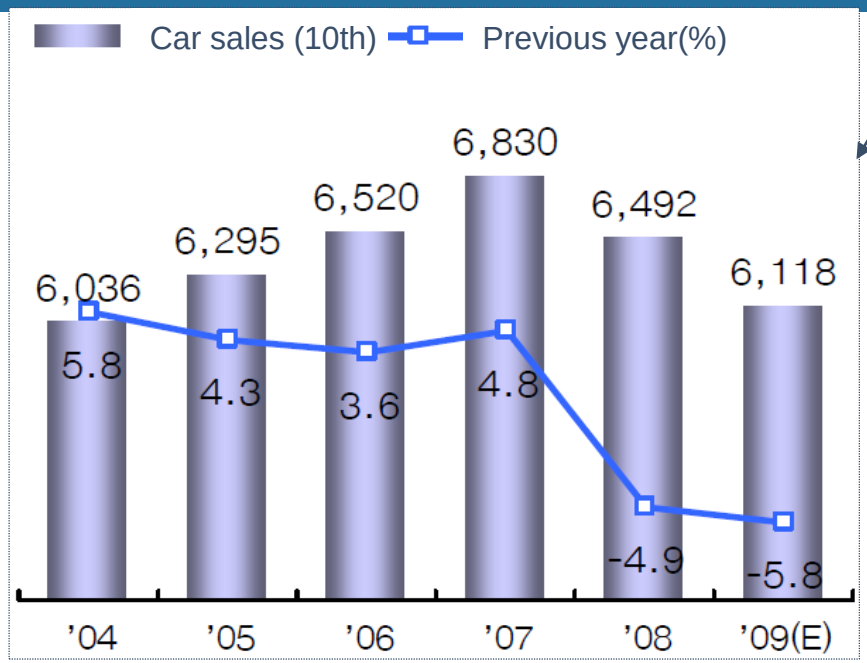
- Their heavy reliance on export and derivatives led to a great exposure to liquidity risk
- The ratio of sales receivables to outstanding derivatives figured 400% above 2007 and 2008 respectively

Failure of Forward Hedging – risk tolerance

	Export Account		Average exchange rate(year)
	KRW(100mil)	USD(mil)	
2006	79,782	8,355	954.86
2007	108,670	11,695	929.15
2008	110,394	10,022	1,101.44
2009	79,916	6,263	1,276.00
2010	108,401	9,374	1,156.37

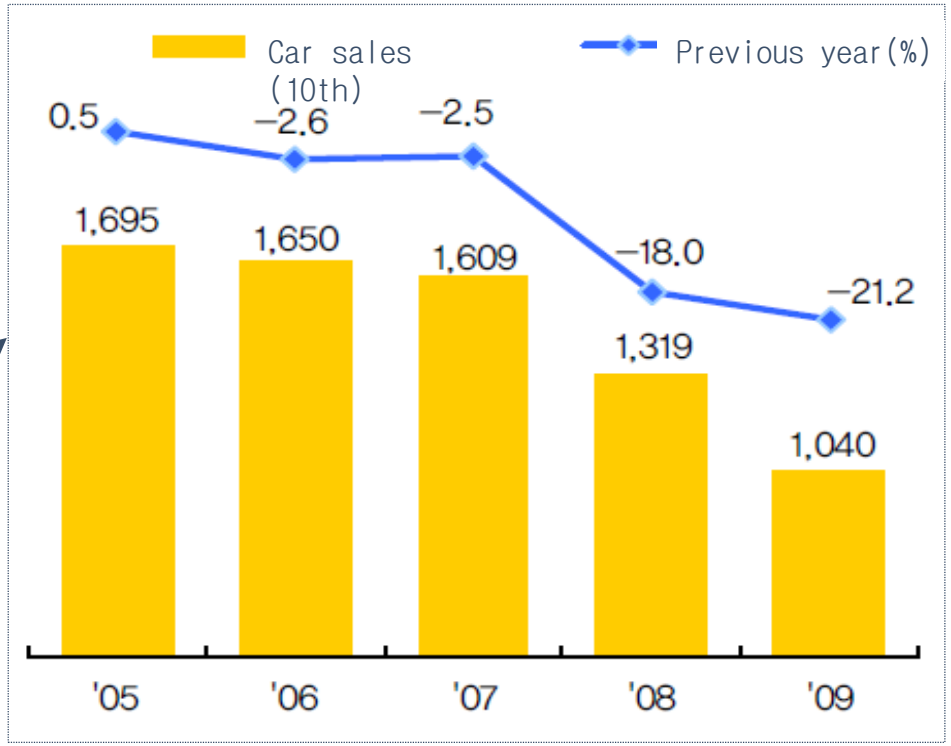
- At the end of Feb 2009, GXX Korea had average exchange rate 1,022 level at forward contracts while prevailing spot USD/KRW 1,516.40
- The company could not tolerate the limit of loss cut at the level by managing open position

Failure of Forward Hedging – delayed debt collection



World, car sales trend

From year 2007 the world economy recession effected on automobile industry deeply



USA, car sales trend

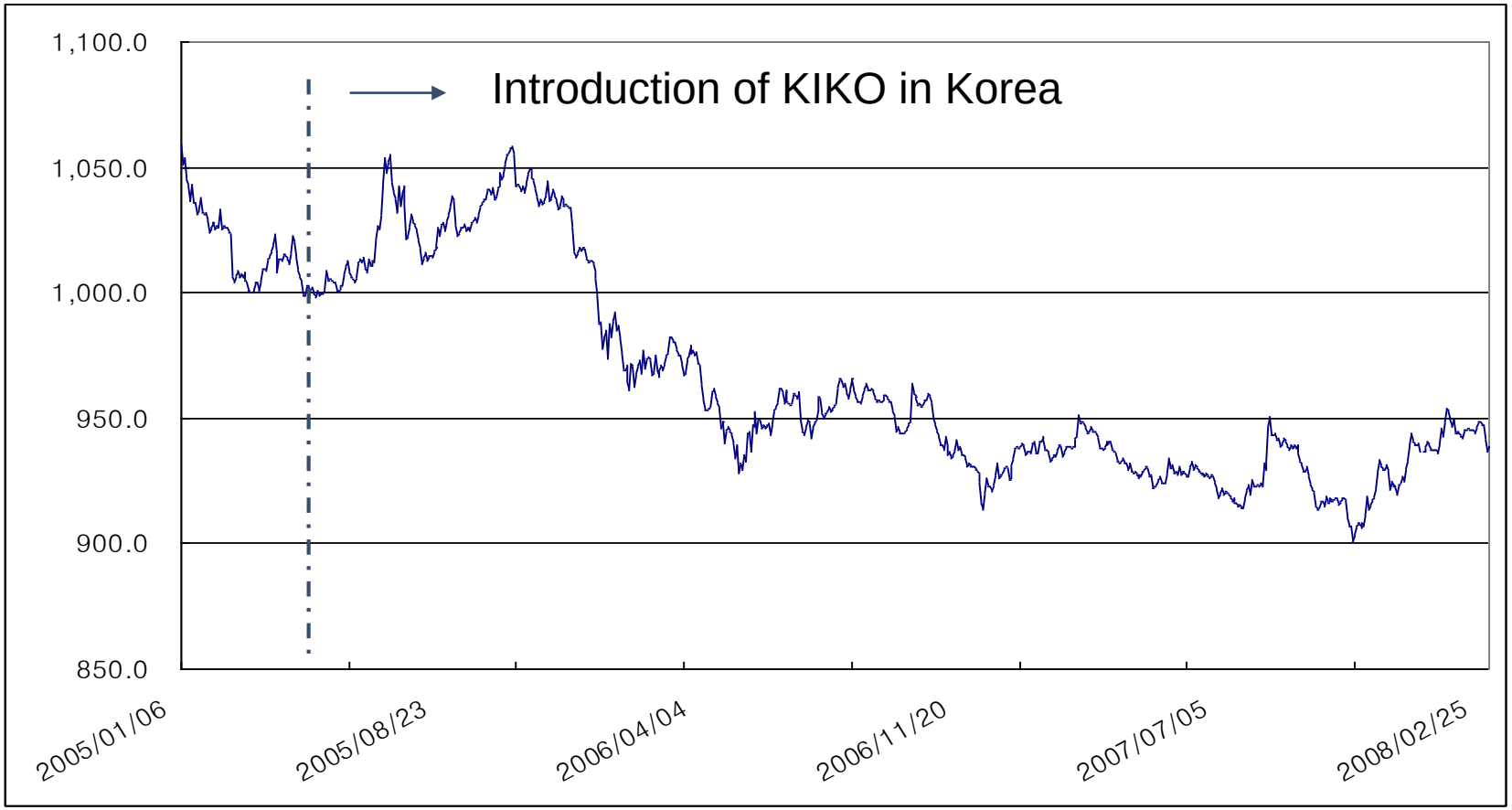
The automobile industry in USA had been worsened.
GXX Korea exported cars through GXX head office channel which had been in difficulty with financing problem
Therefore they settled the payment of imports delayed

Case Ⅱ: KIKO Transactions

Why KIKO Trading?

◆ Continuous Appreciation of Korean won against USD

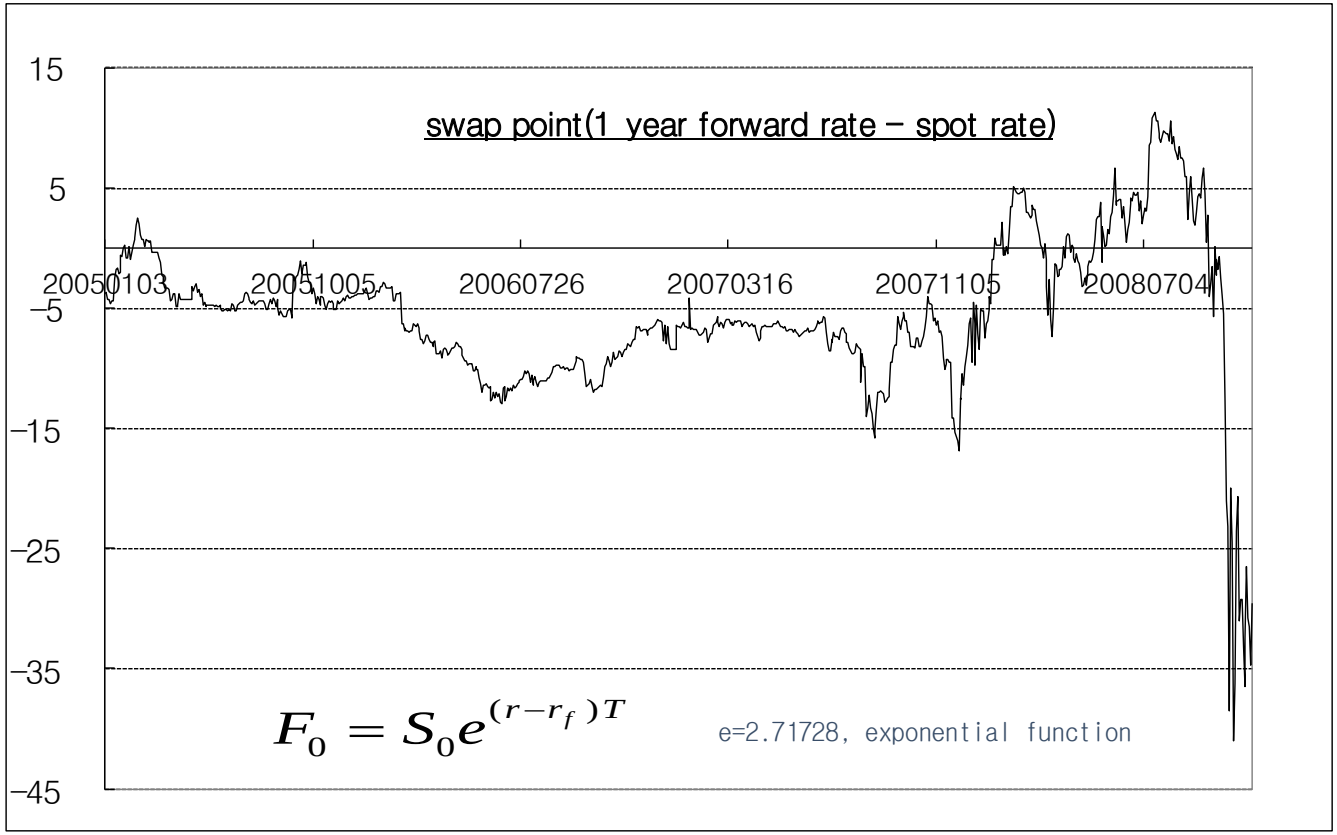
Along with Korean surplus of current account made shipping companies and exports enterprises hedge their USD long positions



Why KIKO Trading?

◆ Irrational Forward Price

Due to over supply of forward volume, the forward rate had been lower than the spot rate comparing with the theoretical price, but KIKO contracts offered better price(@1USD, 20 won high) to the exporters



Why KIKO Trading?

Low volatility of KRW/USD

- From 2005 to 2008 foreign exchange volatility
  - KRW/USD : 5.97%
  - JPY/USD : 9.17%
  - USD/EUR : 8.03%

➢ The volatility of Korean won against USD had showed on low record

KIKO Introduction

- Moreover, Korean won rate would be expected to stay the certain range between knock-in and knock-out
- The export companies preferred to no paying hedging cost

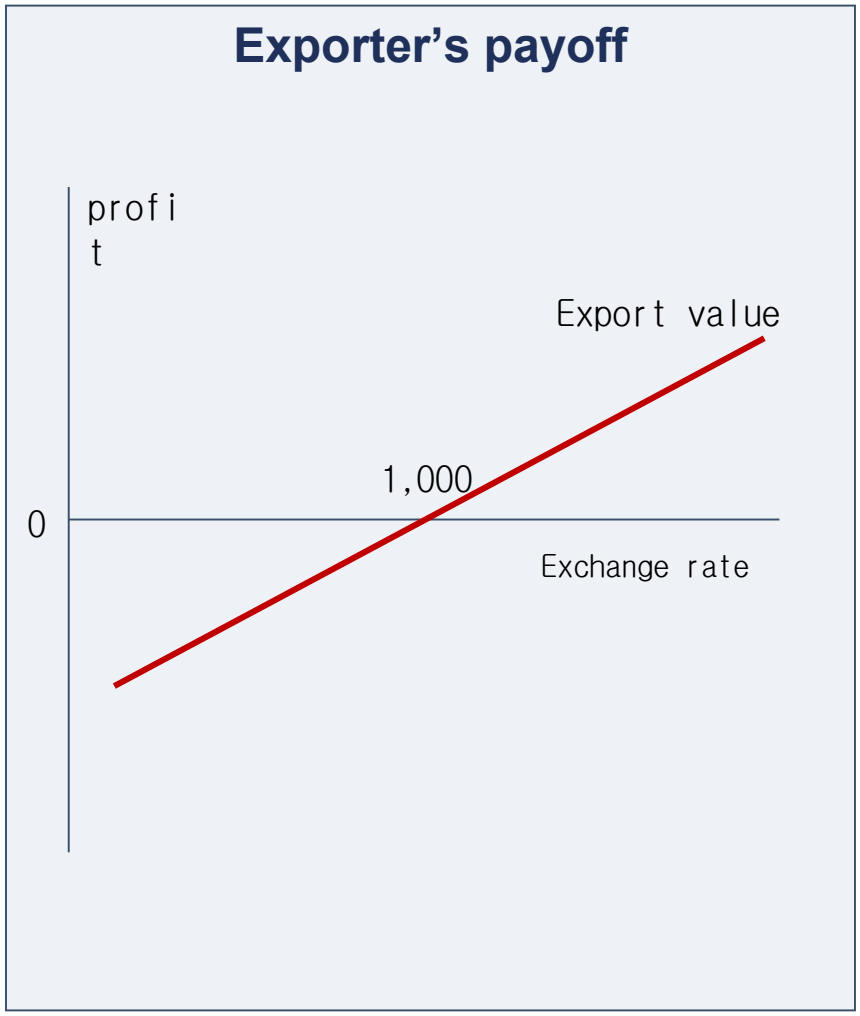
Strategy of KIKO Trading

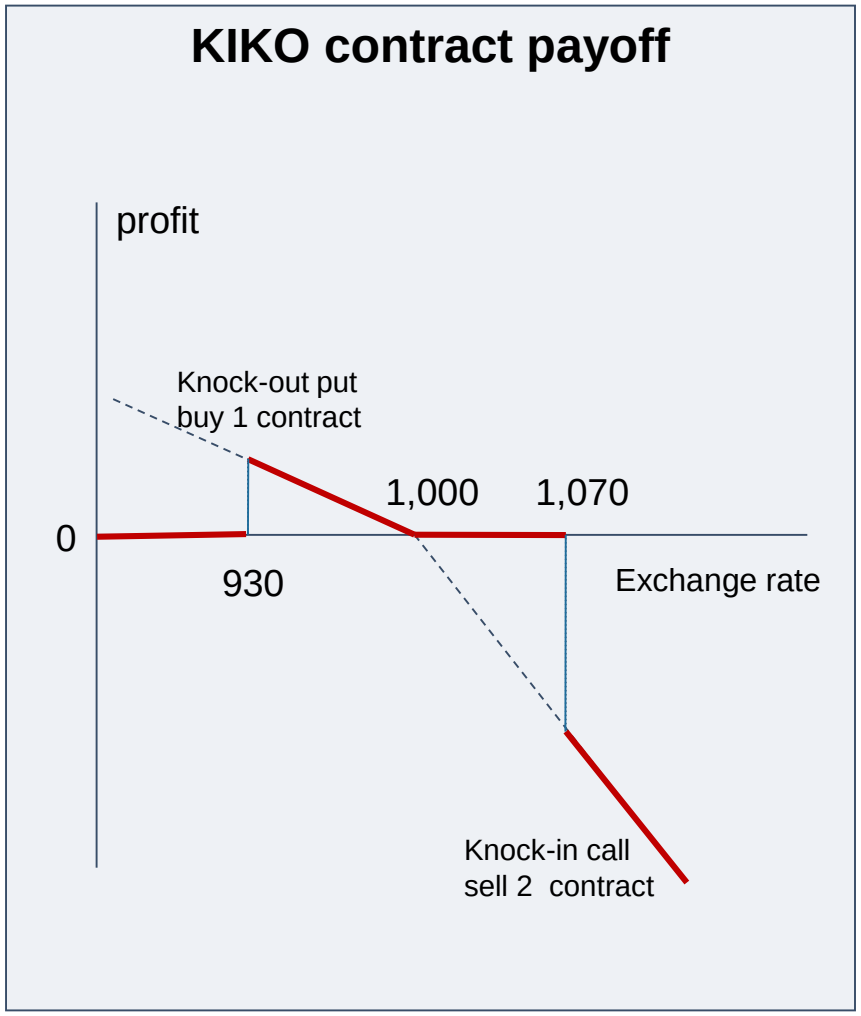
- KIKO contract is one of currency option products which has condition of knock-in, knock-out alternatively for exporting companies to avoid currency risk
  - Knock-in : option will be in effect
  - Knock-out : option will be not in effect
- KIKO contract had 6 to 36 month maturity, and settled the valuation every month in contrast to trading conditions
- KIKO contract designed zero the sum of cost at the beginning in view of companies by structuring the premium of buying and selling option

Typical KIKO Trading Structure

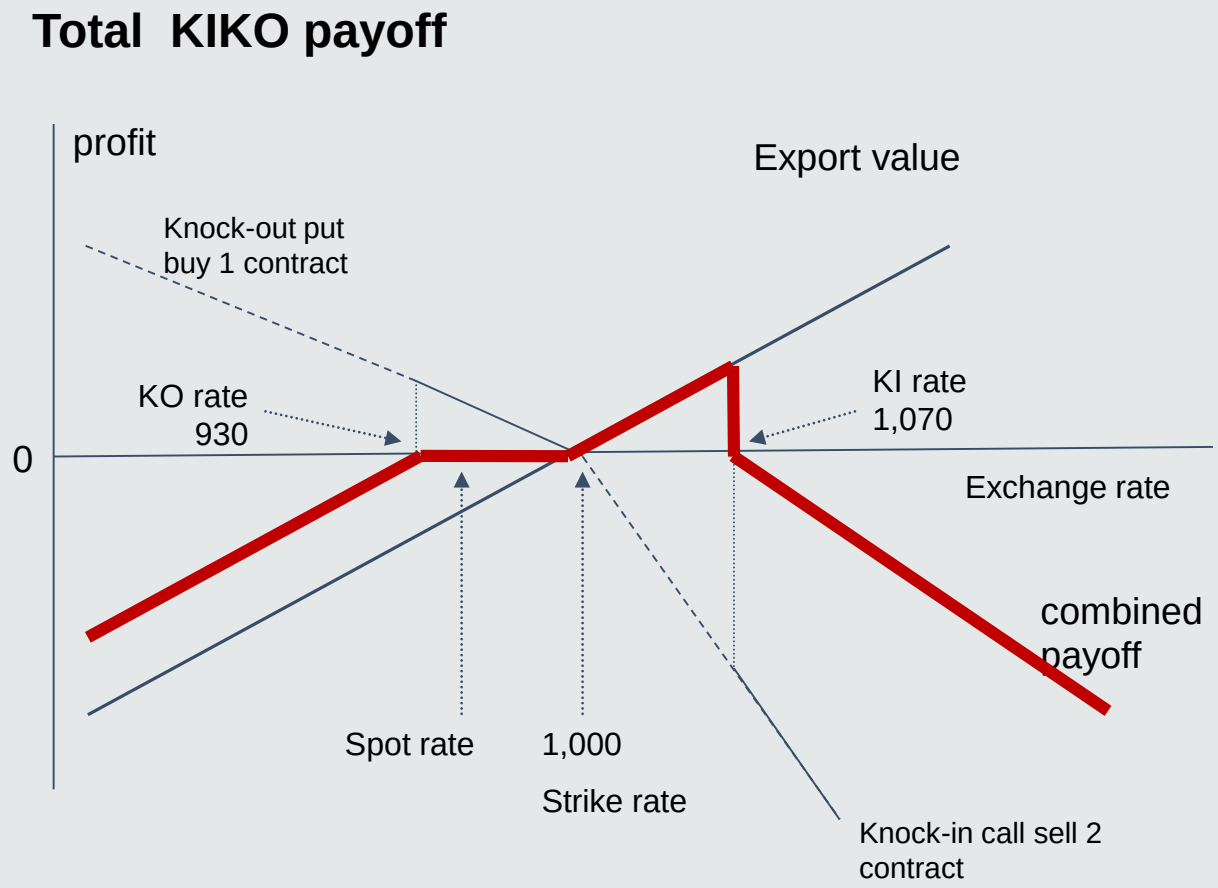
Exchange rate	Contract details
FX ≦ 930	If exchange rate falls once 930 won below, the contract becomes nullified(knock-out)
930 < FX ≦ 1,000	When exchange rate is set between 930 and 1,000won, the customers sell their dollars at 1,000won, gaining profits
1,000 < FX ≦ 1,070	If exchange rat at maturity is set between 1,000won and knock-in(1,070won), the customers can sell their dollars at market rate with no profit.
1,070 < FX	When once there is a transaction above knock-in(1,070 won), the bank can execute call option against the customers**.** They have to sell their stipulated times(ex, two times) of contract amount to the bank under strike exchange rate

KIKO contract payoff





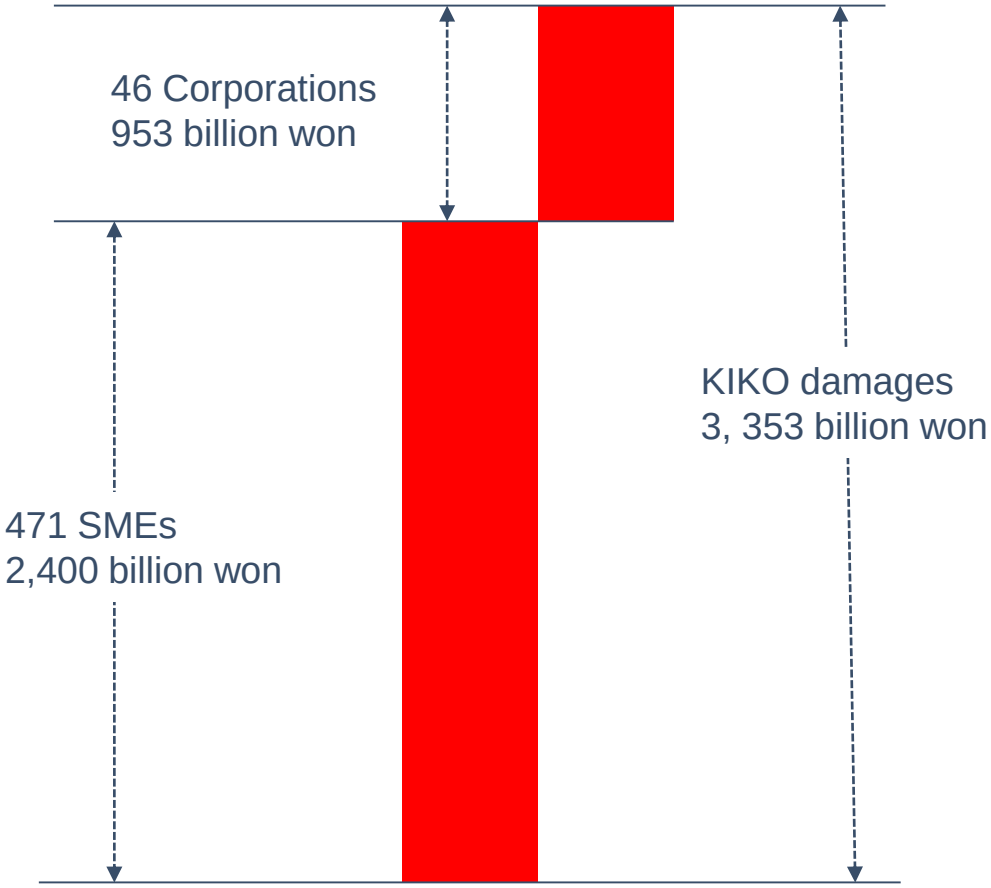
Combined KIKO contract payoff



Causes and Results – Depreciation of Korean won …

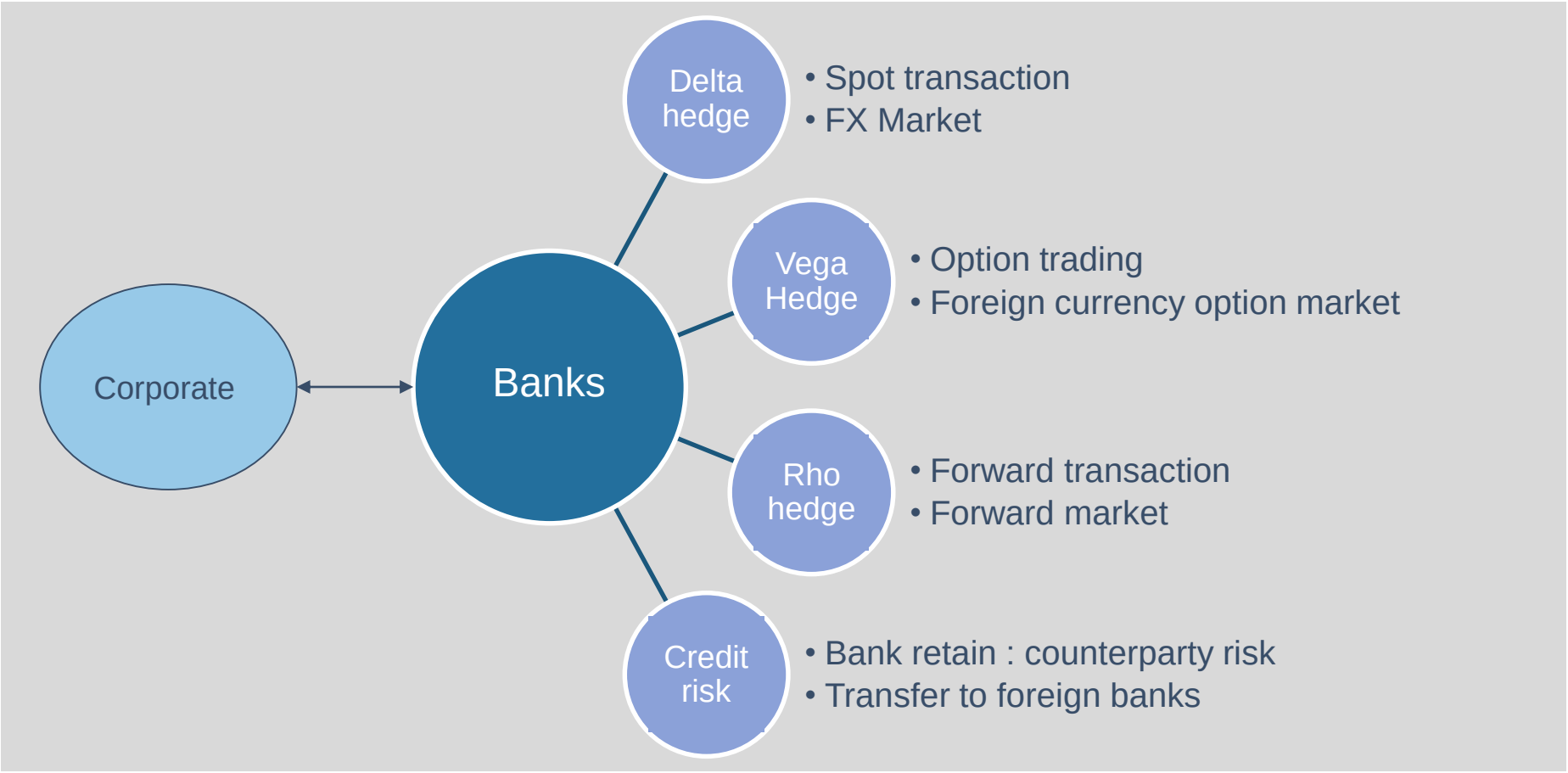
In late March 2008, KRW/USD rate was on the sky-rocketing rise due to hedge fund buying dollars → KIKO contract should be in knock-in

Companies Involved in KIKO (estimated)



Companies involved in KIKO transactions totally 517 consisted of 471 Small and Medium Enterprises. The total amount of them recorded 2,400 billion won damaged.

Bank's Risk Management



In case of bank's risk retain, at year 2009, HXXX bank injected capital 475.4 billion Korean won and at the end of June 2010, 141.3 billon Korean won into TS LCD respectively.

Ongoing KIKO Argument

- Who took a whole lot of KIKO trading profits occurred from corporate loss?
- The defendants argued that the banks violated suitability and duty to explain
  - KIKO contract had a complex structure and the individual KIKO contract was not proper when considering the hedge plan of foreign exchange rate
  - The amount of KIKO contract had been over-hedged and the risk of KIKO was too excessive for export companies
  - There was no enough banks' explanation of structure of KIKO and risk determination

➢ **Up to now, the corporations damaged have been sure that the banks violated the principle of suitability, and denied the court decision and FSS arbitration**

Conclusion

Comparison of two tales

	Global Forward Hedging	KIKO Transaction
Classification of Trader (Definition under the law)	Local unit of global company	Small and Medium Size Business Corp and etc
Main Reasons for Loss	Over-hedged, Wrong exchange rate expectation	Over-hedged, Wrong exchange rate expectation
Restructuring Method	Transfer loss to equity	Transfer loss to equity
Influence on Financial Institutes	Big	Small but massive
Financial Consumer Protection	Non-needed	Needed
Transaction Completion	Re-restructuring	On lawsuit

Lessons from Two Tales

- **First, when the value of the Korean won lost its value against US dollars**
  - the exporting companies had to take a huge loss occurred from forward transactions and KIKO contracts
  - however, as long as they did not over-hedged, the loss could be offset by the exchange gain they earned from exports

➢ **The problem arose when the companies over-hedged either intentionally or not**
  - There was no possibility of actual damages other than foreign exchange loss unless there was an over hedge
  - In this case, the loss was proportional to the level of over hedge and up to the depreciation

➢ **There should be made the model of pertinent hedge ratio applied to export companies**

Lessons from Two Tales

- **Second, with respect to the principle of suitability**
  - even though there was no principle determining which method should be preferred
  - large firms could purchase individual financial products and design its own structured vehicles to meet their needs
  - the exchange hedge was conducted according to each company's own decision making

➢ **However, KIKO and customized forward exchange products were not suitable for small and mid-sized companies that had foreign currency cash flows**

➢ **The financial regulator should take into consideration under the protection of the financial consumers (we don't have to worry about the large firms such as GXX Korea)**

Lessons from Two Tales

- **Third, to be concerned with who's responsibility**
  - the companies had to pay the enormous amount to the banks if an extreme event actually occurred
  - the contracts seemed to be wrong because the companies became an insurer and the banks were the insurance holder

➢ **The banks injected money into the companies by means of transferring any loan into the equity to cover the loss settling the foreign exchange rate at the maturity**
  - The banks were responsible for every default event as a counterparty, as long as their saving customers endured in lessening their interest

➢ **The financial regulator should take into consideration under the supervision of the financial institutes more**