# Regulatory Revolving Door in the Financial Industry: Evidence from South Korea*

Sunjoo Hwang†, Kiyoung Rhee‡, and Hwa Ryung Lee§

Korea Development Institute (KDI)

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**Abstract**

We analyze a unique dataset to examine the economic motivations of financial firms for hiring ex- regulators as executives. In particular, we investigate the effect of revolving door for the Financial Supervisory Service in South Korea. On the one hand, ex- regulators' expertise accumulated during their career may help firms to improve prudential management (the "schooling" hypothesis). However, the analyses of Non-performing ratio and Return on Risk-Weighted Assets reveal no such effect. Rather, regulatory actions become less likely for firms which hired ex- regulators in the previous quarter. The results are consistent with the "collusion" hypothesis in which current regulators give undue favor to a firm in expectation of being hired as an executive by the firm after retirement.

JEL Classifications:

Keywords: Revolving Door, Financial Regulator, Prudential Management, Regulatory Action

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†email: hwang.sunjoo@kdi.re.kr

‡Corresponding author: e-mail: kyrhee@kdi.re.kr

§e-mail: hwaryung.lee@kdi.re.kr

# 1 Introduction

The financial industry is one of the most regulated industries. The heavy regulations on prudential management and consumer protection seem unavoidable in the financial industry, given the potentially huge negative externalities called a system risk and the large information asymmetries between financial companies and consumers. Naturally, financial regulators exert significant influences on the operation of financial companies.

Significant impacts of financial supervisory authorities have raised concerns about the so-called "revolving door" employment where financial companies hire ex- regulators. Some argue that ex- regulators are mainly hired as lobby channel by firms to avoid necessary regulatory actions/penalties or seek undue favors from the government. The use of ex-regulators as lobby channel can be sensible if current regulators expect lucrative executive positions in return after retirement. Others, however, emphasize the value of expertise that ex-regulators can convey to private firms. They have accumulated professional experience during their careers at financial supervisory authorities. This experience can be very useful for private firms to enhance their prudential management.

Recent economic theories offer the opposing views on economic motives for hiring former regulators. On the one hand, firms and regulators can form a collusion in which firms assure executive positions for former regulators and the current regulator gives the firms special treatments ("collusion" hypothesis). On the other hand, the expertise accumulated during their career in financial authorities, ex- regulators are expected to contribute to risk management of financial companies ("schooling" hypothesis). Therefore the motivation of companies for revolving door employment is an empirical question.

In this study, we aim to empirically analyze the economic effects of revolving doors between a financial supervisory authority and private financial firms in South Korea. Regulatory revolving door in the financial industry has long and constantly been the source of controversies in the country. We examine the effects of prudential management to test a schooling hypothesis. The impact on regulatory actions and penalties is then estimated to test a collusion hypothesis. To the end, we collected executive career information and reguatlory action records from financial authorities for all listed, private, financial firms on a quarterly basis from the first quarter of 2010 to the first quarter of 2017. The data covers almost all types of financial companies, including banks, insurers, broker dealers, credit card companies, and so on.

To measure the effect of the revolving doors, we use the number of newly hired executives who had worked at the Financial Supervisory Service (hereafter, FSS). This approach is comparable to Shive and Forster (2017) who exploit the announcement of hiring ex-regulators. The reason why we focus on the revolving doors for the FSS is that the FSS is the only authority dedicated to prudential supervision and the most influential financial supervisor in South Korea. The

FSS, established in 1999 and often called as the "financial prosecutors", has been known to have substantial powers to discipline financial companies. It regularly monitors operations of financial companies and collects/analyzes relevant information through site visits and inspections in order to see whether the companies engage in fraudulent activities or manage risks improperly. If detecting any problems, the FSS may recommend the related firms/persons to correct them and, if necessary, have the authority to determine the sanctions. These huge influences have provided the current regulators at the FSS with the incentive to pursue private benefits by forming collusion with financial companies (Laffont and Martimort, 1999). The substantial expertise accumulated during the FSS career, however, can be efficiently and effectively delivered to private companies through revolving door employment (Che, 1995; Bond and Glode, 2014).

The empirical results are more consistent with a collusion hypothesis than with a schooling hypothesis. First, we find that employment of former FSS officers does not improve the firm's prudential management and even exacerbates it, which is against a schooling hypothesis. Second, the probability that sanctions are imposed decreases after the hire of new executives from the FSS. Moreover, the (negative) link between prudential management and the probability of regulatory actions becomes weak after revolving door employment. These results support a collusion hypothesis.

The rest of the paper is composed as follows. Chapter II reviews the previous works. Chapter III explains data. Chapter IV describes revolving door phenomenon in the financial industry. Chapter V analyzes the relationship between new hire of the former FSS officers and prudential management. Chapter VI explores the effect of ex-FSS-officers on the probability of regulatory actions – sanctions –. Concluding remarks are in Chapter VII.

# 2 Previous literature

The closest previous study to this work is Shive and Forster (2017), who investigated the changes in stock returns, executive compensation, firm risk levels, and regulatory actions/penalties after new hire of ex- regulators in the financial industry. They found positive stock returns to the hiring announcement, decreases in various risk measures, but no significant changes in executive salaries and regulatory actions. The results are consistent with a schooling hypothesis, highlighting the positive side of revolving door employment. Other studies tend to find supporting evidence for a schooling hypothesis, too. For example, Lucca et al. (2014) examined the U.S. banking industry and find that workflow patterns between banks and regulators is consistent with a schooling hypothesis

We take a similar approach to Shive and Forster (2017) by looking into the effect of ex-regulator new hire on prudential management and regulatory actions. However, our results are against a schooling hypothesis and rather consistent with a collusion hypothesis: prudential

management is unaffected or, if any, has been worsened after revolving door employment, whereas the probability of getting sanctions is reduced after the hire.

The findings of this work are somewhat contrary to previous results which mostly study US cases. This may be due to differences in data or differences in financial supervisory systems. In Korea, the revolving door employment is more of a one-way phenomenon – from a regulatory agency to a private sector. In the United States, however, the door is actually "revolving" from the public sector to the private firms and vice versa. The distribution of regulatory power may also matter. According to Laffont and Martimort (1999), the distribution of regulatory power among different institutions makes institutional checks and balances more active and therefore less likely to form a collusive relationship between regulators and private firms. A supervisory system is integrated in Korea, and the FSS and the Financial Supervisory Commission are in charge of all financial regulations for all financial sectors. In contrast, regulatory power is distributed among various institutions in the United States, such as the Federal Reserve, the Federal Reserve Bank, the Federal Deposit Insurance Corporation, the Securities and Exchange Commission, and the state government, depending on the type of business or location of headquarters.

As for the general discussion on regulatory captures or collusion between the monitor and the agent, refer to Laffort and Tirole (1991), Celik (2009), Gromb and Martimort (2007), and others. Besides, Boot and Thakor (1993), Boyer and Ponce (2012), Hiriart et al. (2010), and Kahn and Santos (2005) are theoretical works that demonstrate the need to distribute regulatory powers to various authorities as a means to resolve such collusive relationship.

# 3 Data

We depend on various sources to construct a unique data set. To begin with, we obtained a list of executives of financial firms listed on Korea Stock Exchange (KOSPI) and those executives' characteristics – demographics and work backgrounds – from KIS (Korea Information System) DATA and KIS-LINE from January 2010 to January 2017.[1] The data is checked with and complemented by the business reports disclosed in DART (Data Analysis, Retrieval, and Transfer System).[2] DART is an official electronic disclosure system governed by the FSS. Corporations listed on the KOSPI or KOSDAQ (Korea Securities Dealers Automated Quotation), as well as External Audit Target corporations are obliged to disclose management in the DART system. The final data contains the information on 90 firms from 11 sectors and 3,550 directors.[3] In

[1] http://www.kisline.com, http://www.niceinfo.co.kr/business/KISData.nice

[2] http://englishdart.fss.or.kr/mainEng.do

[3] Banks, thrift institutions, other loan financials, financial leasing, other investment institutions, life insureres, other insurers, credit card companies, futures brokers, asset management companies, and securities companies are included

addition, records of regulatory actions (sanctions and penalties) are hand-collected and matched with firm data. Because the data on regulatory actions are not complete and less reliable before 2010, the sample period is limited to be only after 2010. Lastly, firm financials are available from KIS-Line.

The data is aggregated at the firm-year-quarter level for analyses and includes 1,763 firm-year-quarter observations. Summary statistics for the final sample are shown in Table 1. The degree of prudential management is measured by NPL (non-performing loan) ratio and RORWA (return on risk-weighted assets). We define that regulatory action is taken if sanctions or penalties are imposed by financial regulators. We found regulatory actions in 26% of the firm-year-quarter combinations.

<Table 1> Description of Firms

| | Asset (trillion won) | Profit (trillion won) | ROA (%) | ROE (%) | Growth rate (%) | Tobin Q | NPL ratio | RORWA (%) | Regualtory action (=1 if any sanctions/penalties) |
|---|---|---|---|---|---|---|---|---|---|
| mean | 43.41 | 0.26 | 0.38 | 3.38 | 6.77 | 0.99 | 4.59 | 6.53 | 0.26 |
| std. dev. | 83.76 | 0.49 | 3.85 | 29.60 | 56.58 | 0.38 | 8.90 | 27.69 | 0.44 |
| min | 0.01 | -0.52 | -68.99 | -976.11 | -71.42 | 0.19 | 0.00 | -394.37 | 0.00 |
| max | 405.00 | 3.21 | 22.50 | 82.57 | 1774.53 | 9.16 | 94.03 | 149.27 | 1.00 |
| no. obs | 1520 | 1520 | 1510 | 1510 | 1517 | 1279 | 1518 | 1320 | 1763 |

Note: Growth rate is the increase in assets over the past quarter.

# 4 The revolving door for financial regulators

This chapter describes revolving door phenomenon in the financial industry, with a focus on the FSS. In particular, we examine the number of ex- regulators, the fraction of ex- regulators among all executives from public sectors (that is, the government or public institutions), and the likelihood of former public sector workers to be hired as an executive by a financial company.

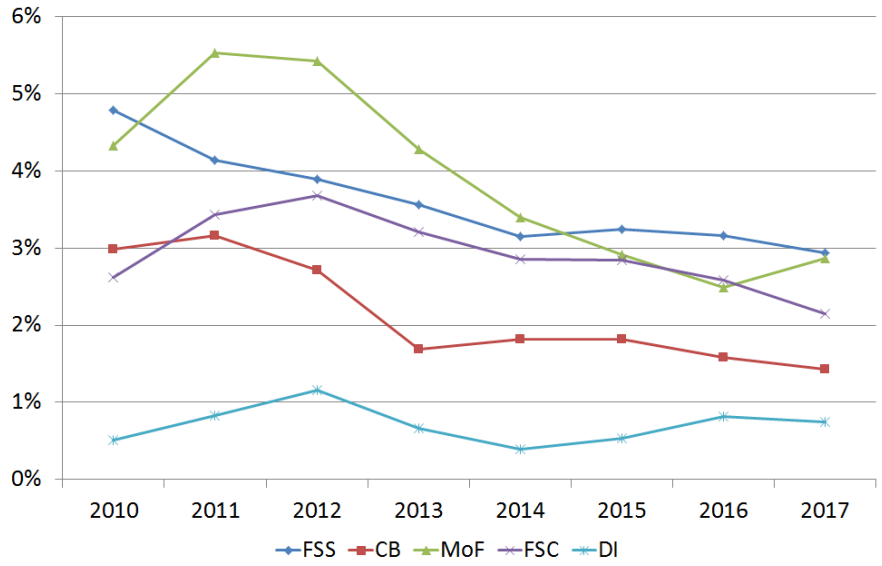
To begin with, we compute the number of executives from public sectors and the proportion of former financial regulators among them. Table 2 shows that revolving door employment is actually significant: about 4 out of 24 executives are from public sectors on average. The last five columns report the fraction of each financial regulator among all executives from public sectors. Among executives from public sectors, 19% are from the FSS, another 19% are from the Ministry of Finance (Ministry of Strategy and Finance), 13% are from the Financial Supervisory Commission, 10% are from the central bank (Bank of Korea), and 3% are from the Deposite Insurance (Korea Deposit Insurance Corporation). Considering that the FSS is much smaller than the Ministry of Finance, it can be seen that revolving doors are more common for FSS workers. The presence of the Deposite Insurance is minimal.

<Table 2> Revolving Door for Ex- Regulators

| | No. executives | From public sectors | FSS | FSS ratio | CB ratio | MoF ratio | FSC ratio | DI ratio |
|---|---|---|---|---|---|---|---|---|
| mean | 23.92 | 4.18 | 0.77 | 0.19 | 0.10 | 0.19 | 0.13 | 0.03 |
| std. dev. | 18.23 | 3.14 | 0.86 | 0.22 | 0.19 | 0.22 | 0.18 | 0.09 |
| min | 4.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| max | 106.00 | 21.00 | 4.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.80 |
| no. obs | 1753 | 1763 | 1763 | 1643 | 1643 | 1643 | 1643 | 1643 |

Notes:
1) "From public sectors" mean executives from public sectors including the government and public institutions.
2) FSS ratio~KDIC ratio are the ratio of executives from each institution among all executives from public sectors.
3) FSS – Financial Supervisory Service, CB – Central Bank, MoF – Ministry of Finance, FSC – Financial Supervisory Commission, DI – Deposit Insurance

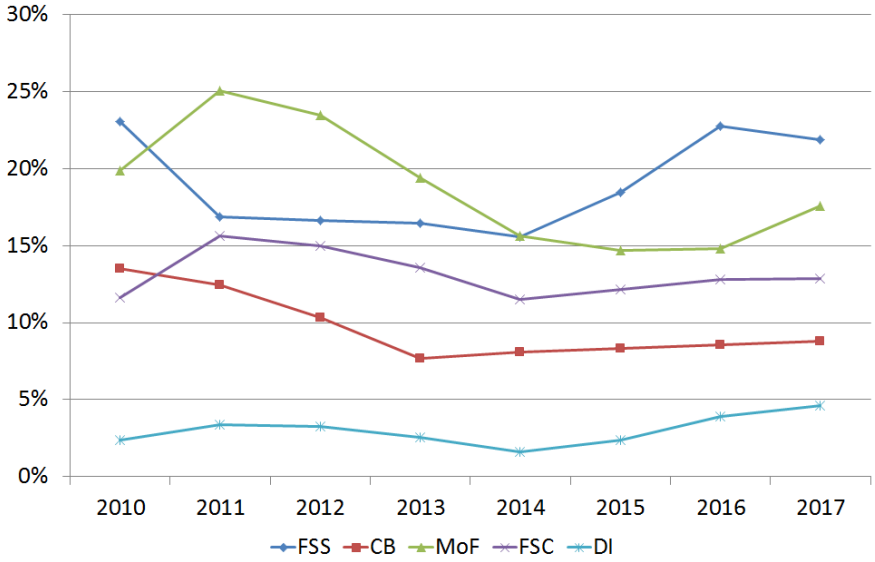
Figure 1 shows the proportion of ex- financial regulators among executives in an average firm by year. The fraction tends to decrease. This is partly due to the increase in the number of executives in financial companies. The average number of executives increased from 21.7 in 2010 to 26.2 in 2017. The declining trend can be also caused by the increased negative view and tightened regulationson on the hiring of ex- government officials by private companies.




[Figure 1] The Average Fraction of Ex- Financial Regulators *among Executives* by Year

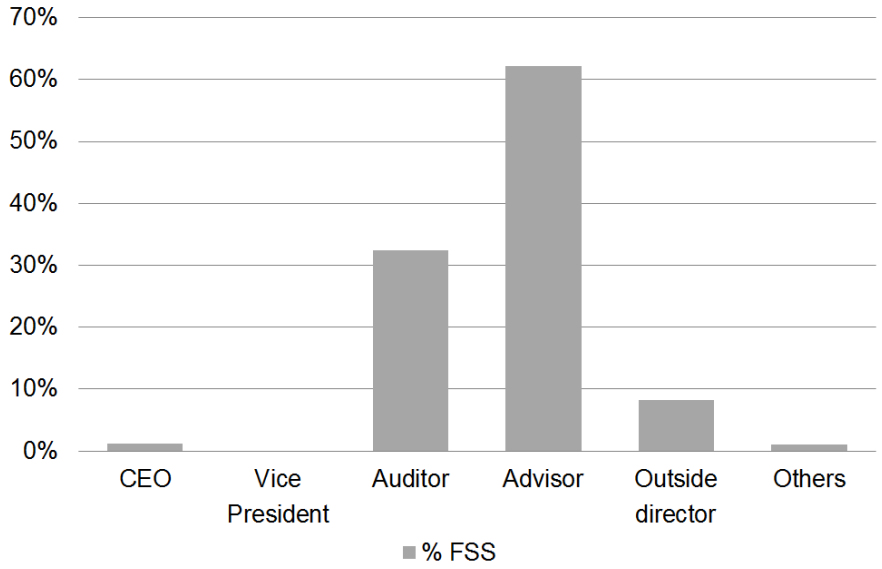
Looking only at revolving door employment, however, we can see that the fraction of ex-FSS workers has not decreased (see Figure 2). Among ex- financial regulators, the presence of

former FSS workers has rather increased and become the most hired by financial companies. It is considered that the FSS is at the center of revolving door phenomenon in the financial industry.



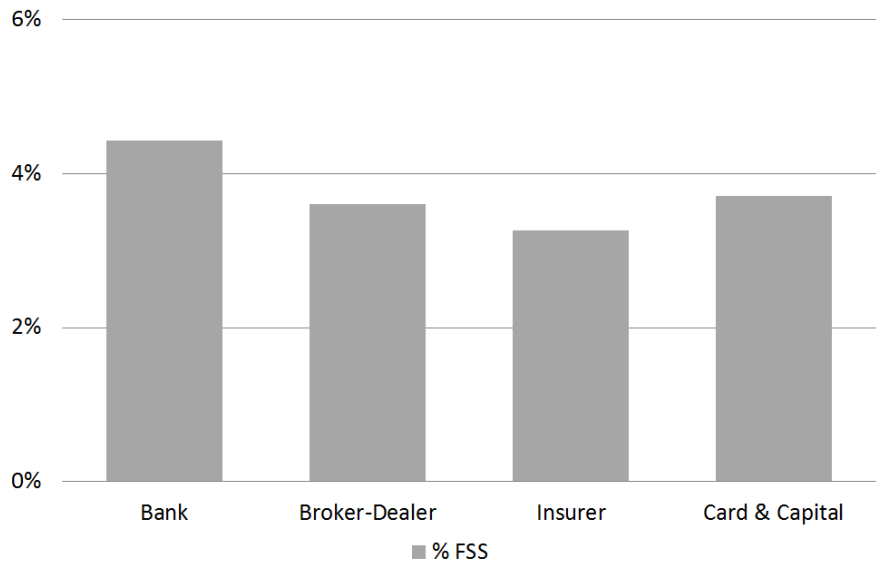

[Figure 2] The Average Fraction of Ex- Financial Regulators *among Executives from Public Sectors* by Year

Revolving door employment of former FSS workers is most prevalent in advisor positions (see Figure 3). Over 60% of executive-level advisors are from the FSS. Auditor (about 32%) and outside director positions (about 8%) follow. It appears that revolving door employments are not common in top manager positions, implying that their expected role is not in major business decision making. Besides, Figure 4 presents four sectors where revolving doors for ex-FSS workers are most commonly observed. FSS's former workers account for about 3 to 4 per cent of all executives in these areas.




[Figure 3] The Fraction of Ex- FSS workers among Executives by Position

Note: The fraction of ex- FSS workers among all executives is computed by year and position and averaged across years




[Figure 4] The Fraction of Ex- FSS workers among Executives by Sector

Note: The fraction of ex- FSS workers among all executives is computed by year and sector and averaged across years

The proportion of ex- financial regulators among executives is informative because it reflects the revealed preference of financial companies for ex- regulators (or the value of ex- regulators

perceived by the companies). However, it is a limited measure of the degree of revolving door employment in a sense that it depends on the size and history of regulatory agencies. That is, the fraction of executives from a particular agency may be large just because of the large number of people from that agency. The expected probability that current regulators is hired in private sector after retirement would matter. It is because, the greater the probability, the greater the incentive for current regulators to give undue favor to financial companies that hire ex- regulators.

Additional information will provide an approximation of the likelihood that the current FSS worker will be hired by a financial company. The conditional probability of revolving door employment for FSS workers can be written as

$$\text{Prob}(Executive|FSS) = \frac{\text{Prob}(Executive \ \& \ FSS)}{\text{Prob}(FSS)} \tag{1}$$

where Prob($FSS$) is the probability of a person to have work experience at the FSS (and is eligible to work as an executive) and Prob($Executive$ & $FSS$) is the probability of a person to have work experience at the FSS and become an executive in a financial company. Then the conditional probability at time $t$ can be approximated by the number of executives from the FSS at time $t$ divided by the number of people who has worked at the FSS at some point until time $t$.

Our data covers the number of executives from the FSS, but we need supplementary data on the number of FSS workers until time $t$. The number of FSS workers is computed simply by adding the number of workers at the time of establishment and the number of new workers since. It needs to be pointed out that this method overestimates the number of FSS workers because the dead and others who somehow cannot work as an executive are also included. We do not correct for this bias because of the lack of data. The conditional probability will then be underestimated.

As a result, the probability that FSS workers will be hired by a financial company is approximated at about 2.1% (during the sample period). The probability is not negligible given that it is the average probability of all workers, including new entrants, without considering mortality and other similar contingencies. People who will soon retire from the FSS are likely to be higher-ranked and more experienced and hence more likely to be recruited by a financial company than new workers. The same method can be applied to other organizations. Then, the probability to be hired by a financial company is estimated to be 0.91% for employees of the Ministry of Finance, 0.2% for employees of the central bank, and 1.08% for employees of the Deposite Insurance. A notable result is that the probability is 12.2% for employees of the Financial Supervisory Commission. This is surprising, but is not unrealistic given that the history

of the Financial Supervisory Commission is short and many workers came from other financial regulators at the time of establishment (so many employees of the Commission also worked at other financial regulators).

This chapter explored the pattern of revolving door phenomenon, with a focus on the FSS, and confirmed that revolving door for financial regulators indeed exists. Then why do financial companies hire ex- regulators? To answer this question, we examine the economic effects of revolving door employment in terms of prudential management and the probability of regulatory actions in the next two chapters.

# 5 The revolving door for financial regulators and prudential management

The existence of revolving door employment is not necessarily negative for society. Financial regulators accumulate expertise in prudential management through regulatory and supervisory experience in their careers. Thus, financial companies can hire former regulators to leverage their expertise. We test this idea by investigating whether financial companies have improved their prudential manaagement indicators after hiring former FSS employees as executives.

In this study, NPL (non-performing loan) ratio and RORWA (return on risk-weighted assets) are used as measures of prudential management.

NPL ratio is the ratio of non-performing loans relative to total loans and RORWA is the ratio of profit before tax relative to risk-weighted assets. NPL ratio is a key indicator of credit risk, the most important risk factor for financial companies, and is indirectly related to interest rate risk and market risk. While NPL ratios are primarily indicative of credit risk, RWA (risk-weighted assets) is not only related to credit risk, but also to interest rate risk, market risk, insurance risk (in case of insurers), operational risk, and so on. Compared to NPL ratios, RWA is a more comprehensive measure of the various risks faced by financial icompanies, but has limitations that can not distinguish between the various risks. Effective risk management may not be simply reducing risk, but doing so while raising or maintaining returns. Thus, we analyze both NPL ratio and the return on RWA.

Specifically, we estimate the following model:

$$Y_{it} = \alpha + \text{lag } New\ Hire_{it}\beta + X_{it}\gamma + \delta_i + \theta_t + \epsilon_{it} \tag{2}$$

where $Y_{it}$ is a measure of prudential management (i.e., NPL raio, RORWA) of firm $i$ at time $t$, lag $New\ Hire_{it}$ is a set of lagged variables of the number of new hires from respective financial

regulatory agency among the FSS, the FSC, the Ministry of Finance, and the central bank (i.e., $\{\text{lag } FSS\ Hire_{it}, \text{lag } FSC\ Hire_{it}, \text{lag } MoF\ Hire_{it}, \text{lag } CB\ Hire_{it}\}$[4] in firm $i$ at time $t$, $\delta_i$ is a fixed effect of firm $i$, $\theta_t$ is a dummy variable for year at time $t$. Here, lag $FSS\ Hire_{it}$ is the key variable of interest. If the coefficient on lag $FSS\ Hire_{it}$ is estimated to be negative and significant, it is considered that a schooling hypothesis is supported. Besides, $X_{it}$ is a set of control variables such as a lagged variable of the number of executives, a log value of assets, asset growth rate, Tobin Q of firm $i$ at time $t$, and $\epsilon_{it}$ is an error term.

A firm fixed-effect model is chosen to address systemic differences in firms. For example, companies that place more emphasis on prudential management may tend to hire former financial regulators to utilize their expertise. Even after controlling for the time-constant heterogeneity in firms, the estimation results may be subject to the reverse causality problem from time-varying characteristics. For instance, the (somehow) increased interest in prudential management leads to the hire of ex- regulators. So, lagged variables are used to complement the fixed-effect approach.

Table 4 presents the estimation results. Columns (1) and (2) are the basic estimation results examining the FSS only. The results show that the effect of hiring ex- FSS worker in the previous quarter on NPL ratio and RORWA, respectively. In the quarter after the hire of ex-FSS workers, NPL ratio is unaffected but RORWA tends to *decrease*. The size of negative impact on RORWA is about 3.4%p. Columns (3) and (4) presents the main results, considering all financial regulators. The negative impact of revolving door employment for ex- FSS workers on RORWA remains, although the magnitude of the impact is slightly reduced to 2.9%p. Given that the average RORWA is 6.5%, the effect is quite large. It appears that firms' prudential management are not significantly affected by the hire of former workers from other financial agencies. The results suggest that hiring ex- regulator does not help to reduce the credit risk of the company, and the revolving door for the FSS, has been shown to even exacerbate the company's profit when considering various risks. Overall, the findings are not consistent with a schooling hypothesis.

[4]Deposit Insurance is not considered because former Depostit Insurance employees are rather scarce among financial company executives.

<Table 4> Estimation Results: Effect on Prudential Management

| Variables | (1) NPL ratio | (2) RORWA | (3) NPL ratio | (4) RORWA |
|---|---|---|---|---|
| lag FSS Hire | 0.0585 | -3.389* | 0.0532 | -2.864* |
| | (0.199) | (1.704) | (0.232) | (1.706) |
| lag FSC Hire | | | 0.0950 | -3.618 |
| | | | (0.248) | (4.815) |
| lag MoF Hire | | | 0.0825 | -2.186 |
| | | | (0.320) | (2.151) |
| lag CB Hire | | | -0.251 | 3.505 |
| | | | (0.191) | (2.638) |
| lag No. Executives | 0.0198 | 0.294 | 0.0357 | 0.581 |
| | (0.0328) | (0.466) | (0.0394) | (0.604) |
| Log Assets | -1.055 | 25.69 | -1.150 | 23.83 |
| | (1.788) | (18.42) | (1.786) | (16.52) |
| Asset growth rate | 5.46e-05 | -0.113** | 0.000286 | -0.105** |
| | (0.00380) | (0.0557) | (0.00370) | (0.0485) |
| Tobin Q | -2.328** | 14.43 | -2.372** | 14.87 |
| | (0.968) | (9.697) | (0.995) | (9.898) |
| Constant | 26.92 | -427.1 | 28.10 | -404.9 |
| | (27.81) | (307.4) | (27.75) | (280.9) |
| Observations | 1,036 | 873 | 1,036 | 873 |
| R-squared (within) | 0.092 | 0.095 | 0.094 | 0.107 |

Notes: 1) Robust standard errors in parentheses
2) *** p<0.01, ** p<0.05, * p<0.1
3) Firm fixed effects and year dummies are included.

# 6 The revolving door for financial regulators and regulatory actions

If regulatory expertise does not help firms improve their prudential management, then why would the firms hire ex- regulators? A collusion hypothesis argues that there is mutual benefit in forming collusion between regulators and firms. We test this idea by estimating the effect of

hiring ex- regulators on the probability of being subject to regulatory actions, that is, sanctions and penalties from financial regulators.

We specifically estimate the following firm fixed-effect logit equation:

$$\log\left(\frac{\pi_{it}}{1-\pi_{it}}\right) = \text{lag } New\ Hire_{it}\beta + X_{it}\gamma + \delta_i + \theta_t \tag{3}$$

where $\pi_{it}$ is the probability that firm $i$ is subject to regulatory action at time $t$, lag $New\ Hire_{it}$ is a set of lagged variables of the number of new hires from respective financial regulatory agency among the FSS, the FSC, the Ministry of Finance, and the central bank (i.e., {lag $FSS\ Hire_{it}$, lag $FSC\ Hire_{it}$, lag $MoF\ Hire_{it}$, lag $CB\ Hire_{it}$}) in firm $i$ at time $t$, $\delta_i$ and $\theta_t$ are firm- and year- fixed effects, respectively. Again, lag $FSS\ Hire_{it}$ is the variable of interest. A negative and significant coefficient estimate on lag $FSS\ Hire_{it}$ will be considered to be consistent with a collusion hypothesis. $X_{it}$_it is a set of control variables which are likely to affect regulatory actions, including prudential management level (NPL ratio, RORWA), capital ratio, liquidity ratio, a lagged variable of the number of executives, and other firm characteristics, such as a log value of assets, asset growth rate, Tobin Q, of firm $i$ at time $t$.

Table 5 shows the MLE (Maximum Likelihood Estimation) results. Column (1) is the basic model which estimates the effect of revolving door employment for ex- FSS workers in the previous quarter on the probability of regulatory actions. The new hire tends to reduce the probability of regulatory actions by 17% (when marginal effect of the new hire is evaluated at mean values). Column (3) is the estimation result considering all financial regulators. The probability of regulatory action diminishes with revolving door employment for former FSS workers by 13%, holding other variables at means.

Another thing to note about Columns (1) and (3) is that NPL ratio is positively and significantly associated with regulatory actions. The marginal effect of NPL ratio is about 1.8%. This relationship seems reasonable and even desirable, because the lack of prudential management can be reflected in high NPL ratio and regulatory actions are required.

Considering that bad risk management leads to regulatory actions, we test if revolving door employment affects this relationship. Columns (2) and (4) represent the estimation results when adding the interaction term between NPL ratio and the new hire of ex- regulator. Interestingly, the negative impact of hiring ex- FSS workers seems mostly through weakening the effect of NPL ratio on regulatory actions. In other words, when ex- FSS workers are hired, high NPL ratio is less likely to lead to regulatory actions in the following quarter. When other financial regulators are considered, negative effect of new executives from the Ministry of Finance and positive effect of new executives from the central bank are found. The result implies that ex- employees of the Ministry of Finance, like those of the FSS, weakens the link between prudential management and regulatory actions while ex- employees of the central bank actually strengthens the link.

Although, they do not seem to affect the probability of regulatory action directly.

<Table 5> Estimation Results: Effect on Regulatory Actions

| Variables | (1) Basic | (2) Interaction | (3) Basic | (4) Interaction |
|---|---|---|---|---|
| lag FSS Hire | -0.802*** | 0.419 | -0.595* | 0.486 |
| | (0.297) | (0.532) | (0.324) | (0.569) |
| * NPL ratio | | -1.552*** | | -1.331** |
| | | (0.558) | | (0.595) |
| lag FSC Hire | | | -0.189 | -0.650 |
| | | | (0.392) | (0.473) |
| * NPL ratio | | | | -0.549 |
| | | | | (1.462) |
| lag MoF Hire | | | -0.200 | 0.704 |
| | | | (0.397) | (0.609) |
| * NPL ratio | | | | -0.705** |
| | | | | (0.282) |
| lag CB Hire | | | -0.753 | -0.036 |
| | | | (0.484) | (1.462) |
| * NPL ratio | | | | 0.227*** |
| | | | | (0.085) |
| NPL ratio | 0.0837** | 0.0826** | 0.0849** | 0.0970** |
| | (0.0385) | (0.0394) | (0.0384) | (0.0420) |
| RORWA | 0.0029 | 0.0028 | 0.0028 | 0.0055 |
| | (0.0045) | (0.0045) | (0.0046) | (0.0043) |
| Capital ratio | 0.0016 | 0.0015 | 0.0015 | 0.0014 |
| | (0.0013) | (0.0013) | (0.0013) | (0.0013) |
| Liquidity ratio | 6.70e-06 | 7.24e-06 | 7.30e-06 | 9.19e-06 |
| | (1.61e-05) | (1.62e-05) | (1.62e-05) | (1.68e-05) |
| lag No. Executives | -0.0377* | -0.0359* | -0.0365* | -0.0308 |
| | (0.0208) | (0.0208) | (0.0208) | (0.0209) |
| Log Assets | 0.195 | 0.149 | 0.155 | 0.092 |
| | (0.647) | (0.652) | (0.650) | (0.657) |
| Asset growth rate | -0.0059 | -0.0055 | -0.0058 | -0.0056 |
| | (0.0070) | (0.0067) | (0.0069) | (0.0070) |
| Tobin Q | -1.069 | -0.911 | -1.022 | -0.877 |
| | (2.022) | (1.987) | (2.015) | (2.009) |
| Observations | 802 | 802 | 802 | 802 |
| Log Likelihood | -434.74 | -431.23 | -432.97 | -425.37 |

Notes: 1) Robust standard errors in parentheses
2) *** p<0.01, ** p<0.05, * p<0.1
3) Firm fixed effects and year dummmies are included.

Overall, the estimation results provide the evidence in favor of a collusion hypothesis rather than a schooling hypothesis. After all, a widely held critical view on the motivation of financial companies for pursuing revolving door employment does not seem unfounded.

# 7 Concluding remarks

It is common in the Korean financial industry for private companies to hire former bureaucrats. There are two opposing hypotheses that explain the motivation of regualatory revolving door employment - a regulatory schooling hypothesis and a collusive behavior hypothesis. The empirical findings of this paper are more consistent with a collusion theory: the performance on risk management is not improved on and, if any, is worsened by revolving door employment, whereas the likelihood of being subject to regulatory action from financial regulators is reduced after the hire. This result is contrary to the extant empirical literature on the topic, which mostly finds evidence in favor of a schooling hypothesis in the United States. One possible explanation is that the regulatory powers are concentrated in a single integrated authority in Korea while the powers are distributed among various authorities in the United States. Another explanation is that the US financial markets are more developed and complicated and hence regulatory expertise is more appreciated. These observations suggest that future research might consider the implications of institution and financial development on the economic effects of revolving door employment.

# References


Hwang, Sunjoo and Kiyoung Rhee. 2018. "The Economic Effects of Ex- Regulator Employment by Financial Firms," Chapter 3, *A Study on Korean Financial Supervisory System,* Korea Development Institute (in Korean)

Bond, P. and Glode, V. 2014. "The Labor Market for Bankers and Regulators," *Review of Financial Studies , 27*(9), 2539–2579.

Boot, A., & Thakor, A. 1993. "Self-Interested Bank Regulation," *American Economic Reviews,* 83(2), 206–212.

Boyer, P. C., & Ponce, J. 2012. "Regulatory Capture and Banking Supervision Reform," *Journal of Financial Stability,* 8(3), 206–217.

Celik, G. 2009. "Mechanism Design with Collusive Supervision," *Journal of Economic Theory,* 144(1), 69–95.

Che, Y-K. 1995. "Revolving Doors and Optimal Tolerance for Agency Collusion," *The RAND Journal of Economics,* 26(3), 378–397.

Gromb, D., & Martimort, D. 2007. "Collusion and the Organization of Delegated Expertise," *Journal of Economic Theory,* 137(1), 271–299.

Hiriart, Y., Martimort, D., & Pouyet, J. 2010. "The Public Management of Risk: Separating Ex Ante and Ex Post Monitors," *Journal of Public Economics,* 94(11), 1008–1019.

Kahn, C. M., & Santos, J. A. 2010. "Allocating Bank Regulatory Powers: Lender of Last Resort, Deposit Insurance and Supervision," *European Economic Review,* 49(8), 2107–2136.

Laffont, J. J., & Martimort, D. 1999. "Separation of Regulators Against Collusive Behavior," *The RAND Journal of Economics,* 30(2), 232–262.

Laffont, J. J., & Tirole, J. 1991. "The Politics of Government Decision-Making: A Theory of Regulatory Capture," *The Quarterly Journal of Economicss,* 106(4), 1089–1127.

Lucca, David, Amit Seru, and Francesco Trebb, 2014. "The Revolving Door and Worker Flows in Banking Regulation," *Journal of Monetary Economics,* 65, 17–32.

Shive, Sophie A. and Margaret M. Forster, 2016. "he Revolving Door for Financial Regulators," *Review of Finance,* 1–40.