

**Performance Comparisons and the Role of Restructuring  
for Foreign and Domestic Banks**

**Yongil Jeon\***

School of Economics, SungKyunKwan University and  
Department of Economics, Central Michigan University

**Stephen M. Miller\*\***

Department of Economics  
University of Nevada, Las Vegas

and

**Insill Yi\*\*\***

Sogang School of Economics,  
Sogang University

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\* **Corresponding Author:** Associate Professor of Economics, School of Economics, SungKyunKwan University, 53 Myeongnyun-dong 3-ga, Jongno-ku, Seoul 110-745, Korea, email: yjeon@skku.edu, phone: 82-2-760-0487; and Department of Economics, Central Michigan University, Sloan Hall 315, Mt Pleasant, MI 48859, USA; email: yjeon@mail.cmich.edu, phone: USA- 989-774-2579, fax: USA-989-774-2040.

\*\* Professor and Chair of Economics, University of Nevada, Las Vegas, telephone: (702)-895-3969, fax: (702)-895-1354, and e-mail: stephen.miller@cmail.nevada.edu.

\*\*\* Associate Professor of Economics, Graduate School of Economics, Sogang University, Seoul, South Korea, telephone: 82-2-705-8503, and e-mail: insill723@sogang.ac.kr.

# **Performance Comparisons and the Role of Restructuring for Foreign and Domestic Banks**

## **Abstract:**

The aggregate performance of the banking industry depends on the underlying micro-level dynamics within that industry – adjustments within banks, reallocations between banks, entries of new banks, and exits of existing banks. This paper develops a generalized Benet (1920) dynamic decomposition and applies it to the return on equity of foreign and domestic commercial banks in Korea from 1994 to 2005. The sample corresponds to the before, during, and after the Asian financial crisis, which encompasses the final stages of a long process of deregulation and privatization in the Korean banking industry. Our findings reveal that foreign banks experienced a “global advantage” before and during the Asian crisis, but Korean domestic banks enjoyed a “home-field advantage” after the crisis. Moreover, the overall performance of Korean domestic banks largely reflected individual bank efficiencies, except during the Asian financial crisis when restructuring played a more important role on the average bank’s performance.

**Key Words:** commercial banks, profitability, foreign banks, global advantage hypothesis, Benet decomposition of banking industry dynamics

**JEL Classification:** E5, G2

## 1. Introduction

Aggregate banking industry data hide important bank level dynamics that collectively determine overall industry dynamics. The performance of the aggregate industry reflects the accumulation of the underlying microeconomic dynamics within that industry -- that is, adjustments within banks, reallocations between banks, entry of new banks, and exit of existing banks. The availability of micro-level (establishment-level) data spawned a series of applied microeconomic research (especially for manufacturing industries).<sup>1</sup> That particular research effort reveals more heterogeneity among firms within the same industry than between industries.

The dynamic decomposition of industry dynamics typically adopts the method originally proposed by Bailey, Hulten, and Campbell (1992). They develop an algebraic decomposition of industry's total factor productivity (TFP) growth divided into three effects – “within,” “between,” and “net-entry” effects. The within-effect measures the contribution of surviving firms toward TFP growth. The between (or reallocation) effect measures the contribution of changing market share of surviving firms toward TFP growth, while the net-entry effect measures the contribution of firms entering into and exiting from the industry toward TFP growth. Haltiwanger (1997) extends Bailey, Hulten, and Campbell (1992) and separates the effects of firm entering into and exiting from the industry. Moreover, he also divides the between effect into two components – the “share” and “covariance” effects. The share effect measures the contribution of the changing share of firms while the covariance effect measures the contribution of the changing share of firms times the changing TFP growth of firms toward TFP growth.

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<sup>1</sup> McGuckin (1995) describes the Longitudinal Research Database (LRD) at the U.S. Bureau of the Census upon which this research relies. Scarpetta, Hemmings, Tressel, and Woo (2002) provide a more recent discussion firm-level databases in ten OECD countries.

Jeon and Miller (2007) extend that method by adopting a Bennet (1920) dynamic decomposition that they apply to the U.S. banking industry at the national and state-by-state levels of aggregation.<sup>2</sup> That extension began by noting that such decomposition methods share a common index-number problem – the choice of the base year. Bailey, Hulten, and Campbell (1992) and Haltiwanger (1997) choose the initial year as the base for their calculations. Thus, the within-effect measures the change in TFP growth at the firm level between the initial and final years weighted by the initial year's market share. Jeon and Miller (2007) apply this methodology to the U.S. banking industry, developing a dynamic Bennet decomposition of within, between, entry, and exit effects, which eliminates the covariance effect derived by Haltiwanger (1997).<sup>3</sup>

We expand that Bennet dynamic decomposition analysis, applying it to the Korean banking industry – Korean nationwide and regional banks as well as foreign banks. As such, we provide the first analysis of the contributing factors to overall performance of banks in the Korean banking industry, measured by return on equity. That analysis also considers differences in performance between Korean and foreign banks as well as between Korean nationwide and regional banks. Furthermore, the analysis examines differences in underlying causes of bank performance before, during, and after the Asian financial crisis.<sup>4</sup>

Several conclusions emerge from our study. Changes in industry return on equity largely reflect changes in individual bank performance, the within-effect. The lone exception occurs for Korean nationwide and regional banks during the immediate post-Asian-crisis period, when the

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<sup>2</sup> Griliches and Regev (1995) employ this decomposition method in their study of firm productivity in Israeli industry. Scarpetta, Hemmings, Tressel, and Woo (2002) briefly discuss the Griliches and Regev (1995) and Haltiwanger (1997) methods of decomposition, noting how they differ. Jeon and Miller (2007), however, link the differences to the base-year weighting issue. Diewert (2005) describes the Bennet (1920) index in much detail, noting that it provides the first-difference analogy to the Fisher (1922) ideal price index for ratios.

<sup>3</sup> After completing an earlier draft of this paper, we discovered that Bartelsman, Haltiwanger, and Scarpetta (2004) also note the disappearance of the covariance term from their decomposition.

<sup>4</sup> Jeon and Miller (2005) examine how bank profitability differed and identify factors that explain some of those differences. Domestic Korean banks suffered more severely from the Asian financial crisis than foreign banks.

reallocation and exit effects dominated and Korean banks restructured in response to the Asian financial crisis. Korean regional banks first experienced a large reallocation effect followed in the next year by an increase in the exit effect. Korean nationwide banks responded to the Asian financial crisis one year later than the Korean regional banks and largely through a reallocation effect, with little change in the exit effect (i.e., the too-big-to-fail view came into play). In addition, the foreign banks did not experience similar reallocation and exit effects after the crisis, and their performance continued to rely primarily on the within-effect. Finally, foreign banks experienced a “global advantage” before and during the Asian crisis, but Korean domestic banks enjoyed a “home-field advantage” in the post-crisis period beginning in 2001.

The paper unfolds as follows. Section 2 discusses the differing views on how foreign banks affect the domestic economy and describes the structure of banking in Korea. Section 3 outlines the derivation of the Bennet dynamic decomposition. Section 4 applies the decomposition technique to the Korean banking industry, including foreign banks and Korean nationwide and regional banks. Section 5 concludes.

## **2. Korean Banking Sector: Asian Financial Crisis, Restructuring, and Competition**

The Korean banking system – nationwide, regional, and foreign banks - plays an important role in Korean economic development.<sup>5</sup> During the 1960s and 1970s, the nationwide banks, acting as pipelines, pumped funds into specific industries. Regional banks, which operate only in their own provinces with a branch in Seoul, entered the scene in 1967 to encourage regionally based economic development. The government asked Korean domestic banks to make riskier loans to small and medium sized firms and to invest in less profitable securities such as monetary stabilization bonds. As a compensation for accommodating this development policy, domestic banks enjoyed risk-free business under the government’s protection. In contrast, foreign banks

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<sup>5</sup> Unlike the U.S. financial system, commercial banks hold more than 55 percent of Korean financial assets.

played the special role of providing foreign currency loans to domestic firms, since the first foreign bank, Chase Manhattan, entered the Korean economy in 1967. Foreign banks received different treatment (not necessarily favorable) by the regulatory agency, because they provided a major source of foreign currency for Korea when faced with large current deficits. Overall, these three bank classes proved complementary rather than competitive before the Asian crisis.

Government plans to deregulate the financial system and to privatize nationwide commercial banks began in the early 1980s.<sup>6</sup> Regulatory changes whittled down the preferential treatment of foreign banks, but reduced barriers and restrictions on foreign banks' activities in other areas. Thus, regulatory change leveled the playing field between foreign and domestic banks. The government's hand, however, still wielded a potent force, controlling interest rates on certain types of loans and deposits. Further, the government's informal credit policy continued to favor selected sectors.<sup>7</sup> But, the environment faced by Korean domestic banks has rapidly changed with respect to globalization, deregulation, and diversification since the 1990s. Furthermore, the economic needs for extra foreign currencies in 1994 and 1995 led to the abolishment of the pre-existing office regulations for foreign banks (i.e., justifying economic contributions to the Korean economy and documenting the necessary office-management experience to run a large-scale branch business in Korea), which stimulated growth in the number of foreign banks (five foreign banks entered in 1997).

Reflecting regulatory change, the total asset size and the number of foreign banks grew unevenly, while domestic banks' assets grew steadily at 15-percent annually, except during the

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<sup>6</sup> Over 1980 to 1994, Gilbert and Wilson (1998) calculate that nationwide banks experienced significant, large productivity improvement while regional banks experienced mixed results. Jeon and Miller (2005) provide more detailed information.

<sup>7</sup> Gilbert and Wilson (1998) argue that the Korean commercial banking system experienced a crisis in the mid-1980s with significant levels of bad loans. Yet, no Korean bank failed at that time. Bank of Korea (1994, 1998), Gilbert and Wilson (1998), and Jeon and Miller (2005) provide more detailed information.

Asian financial crisis. The foreign banks' assets grew rapidly at 24-percent annually in the early 1980s, because of favorable treatment by the Korean government to provide foreign currency loans to domestic firms. But, foreign banks' assets stabilized at an annual growth rate of 9 percent after the Korean economy exhibited both high growth rates and large current account surpluses in the late 1980s, and then fell somewhat after the Asian financial crisis.<sup>8</sup> This decreasing trend of foreign banks started from 1994, which was not solely due to Asian financial crisis.

The Asian financial crisis hit the Korean economy and banking system near the end of this long process of deregulation and liberalization.<sup>9</sup> During the crisis, massive restructuring in banking sector as well as in other financial sectors were implemented by the government to terminate the vicious circle of corporate insolvency, which directly led to that of the whole financial sector. To restore confidence in the overall financial system, positive and effective government actions closed down financially unsound nationwide and regional banks, because severe shortages of liquidity threatened the stability of Korean financial markets. Additionally, the government used *public funds* to support restructuring of viable financial institutions under the conditions that they make their own intensive efforts for turnaround through cutting staff and branches, mergers, and recapitalizations.<sup>10</sup>

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<sup>8</sup> From 1994 through 2005, 66 foreign banks operated in Korea – some for the full sample period, others for only part. The 66 banks include 15 from the US, 14 from Japan, 6 from France, 4 each from Canada, China, Singapore, and the U.K., 2 each from Australia, the Netherlands, and Switzerland, and 1 each from other countries.

<sup>9</sup> Although Korea experienced relatively high economic growth and low inflation in the early 1990s, some weaknesses existed in the financial sector: low international reserves, and poor government regulation and supervision of the banking system. Regional and nationwide commercial banks overused short-term foreign lending as a source of funds. The lack of transparency of balance sheets, income statements, and management practices all led to a crisis of confidence in Korean institutions.

<sup>10</sup> In their own rehabilitation effort, Korean commercial banks reduced their personnel by about 1/3 of total staff, and shut down 1/6 and 1/3 of domestic and foreign branches, respectively. These layoffs and downsizing succeeded in improving the efficiency of the Korean financial industry.

The establishment of an independent and consolidated financial supervisory organization in cooperation with the IMF provided an important step. It authorized the closure of defaulting commercial banks and assumed leadership for restructuring the banking sector. It also established clear exit strategies and standards for loss sharing among parties to enhance the market's role in the banking sector. *The Financial Supervisory Commission*, using the capital adequacy ratio as one of its evaluation standards, checked the asset soundness of all commercial banks. The Commission required that banks falling short of the 8-percent BIS ratio at the end of 1997, submit recapitalization plans, which included timetables for exceeding the assigned ratio. Banks that did not submit a viable plan for success received notice to take drastic steps, such as merger and acquisition, and liquidation. As a result, the number of commercial banks fell from 25 in 1996 (15 nationwide banks and 10 regional banks) to 14 in 2005 (8 nationwide banks and 6 regional banks). Forcing insolvent banks to exit the market provided a basis for both reducing uncertainty and improving efficiency.

The government created the Korean Asset Management Corporation (KAMCO) to resolve the bad debts of commercial banks and the Korean Deposit Insurance Corporation (KDIC) to compensate depositors of failed banks. At the same time, the Korean government accelerated the liberalization of foreign exchange and capital account transactions and also abolished remaining restrictions on foreign investment, which resulted in increased foreign bank participation. Thus, the government achieved much progress in achieving so-called 'hardware-level' of change, in cleaning off a significant part of lingering bad assets, and in developing a more market-friendly and reform-inducing legal and regulatory framework.

Selling the government's 51-percent stake in *Korea First Bank* (a historic nationwide bank) to the U.S.-based *Newbridge Capital* strongly signaled for structural change in the Korean

banking industry. Further, increased foreign bank participation allowed for rapid consolidation among domestic banks, or cross-border consolidation. The recent merger between *CitiBank*, a leading foreign bank in Korea who played a significant role in the consumer-banking sector as well as the corporate banking sector, and KorAm Bank, a nationwide bank, proves noteworthy.<sup>11</sup> These events exhibit a market-oriented endeavor to upgrade business practices with global competition in Korean commercial banks. As Claessens, Demirguc-Kunt and Huzinga (2001) discussed, an increased presence (or entry) of foreign banks in Korea made the Korean domestic banking industry more competitive and less profitable. Furthermore, Hwang, Kim, and Shin (2003) find that foreign banks provided a stabilizing role, since foreign currency loans did not show any cyclical patterns (while domestic banks indicate no cycles on local currency dominated loans).

The competition among and the restructuring of the Korean banking industry generated a trend toward larger banks and universal banking. Universal banking now proves the norm in Korea, following the passage of the Financial Holding Company Act in 2000. In August 2003, domestic banks received authorization to undertake "bancassurance", that is, selling life insurance policies to their customers.<sup>12</sup>

### **3. Bennet Dynamic Decomposition**

This section briefly outlines the steps necessary to generate the Bennet dynamic decomposition. The basic strategy involves decomposition using period  $t$  and period  $t-1$  as the base years and

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<sup>11</sup> *CitiBank* enjoys a unique reputation in Korea. Foreign banks in Korea typically provide credit only to the most profitable domestic market sector (i.e., the corporate sector). In contrast, *CitiBank* consistently provided consumer banking facilities.

<sup>12</sup> Banks and insurance companies already started to forge alliances, many with foreign insurers such as Allianz and AIG. Furthermore, most domestic banks house embryonic securities broking activities.

then combining the resulting decomposition into the Bennet decomposition by computing their simple average.

The return on equity ( $R_t$ ) at time  $t$  is defined as net income ( $NI_t$ ) divided by equity ( $E_t$ ) as follows:

$$R_t = \frac{NI_t}{E_t} = \frac{\sum_{i=1}^{n_t} NI_{i,t}}{\sum_{i=1}^{n_t} E_{i,t}} = \sum_{i=1}^{n_t} \left( \frac{NI_{i,t}}{E_{i,t}} \right) \left( \frac{E_{i,t}}{\sum_{i=1}^{n_t} E_{i,t}} \right) = \sum_{i=1}^{n_t} r_{i,t} \theta_{i,t} ,$$

where  $r_{i,t} = \frac{NI_{i,t}}{E_{i,t}}$  and  $\theta_{i,t} = \frac{E_{i,t}}{\sum_{i=1}^{n_t} E_{i,t}}$ . That is,  $r_{i,t}$  equals net income divided by equity held by

bank  $i$  at time  $t$ , and  $\theta_{i,t}$  equals its share of industry equity. Then, the change in return on equity between two periods equals the following expression:

$$\Delta R_t = R_t - R_{t-1} = \sum_{i=1}^{n_t} r_{i,t} \theta_{i,t} - \sum_{i=1}^{n_{t-1}} r_{i,t-1} \theta_{i,t-1} \quad (1)$$

where  $n_{t-1}$  and  $n_t$  are the number of banks that exist at period t-1 and period t, respectively. That is,  $n_t = n_{t-1} + n_t^{entry} - n_{t-1}^{exit}$ , where  $n_t^{entry}$  equals the number of banks that enter during period t and  $n_{t-1}^{exit}$  equals the number of banks that exit during period t-1. And also,

$$n_t - n_t^{entry} = n_{t-1} - n_{t-1}^{exit} \equiv n_t^{stay} ,$$

where  $n_t^{stay}$  equals the number of banks staying at both t and t-1. Finally, we get that

$$n_t = n_t^{entry} + n_t^{stay} \quad \text{and} \quad n_{t-1} = n_{t-1}^{exit} + n_t^{stay} .$$

We can rewrite the change in return on equity in equation (1) as follows:

$$\begin{aligned}
\Delta R_t &= \sum_{i=1}^{n_t^{stay} + n_t^{entry}} r_{i,t} \theta_{i,t} - \sum_{i=1}^{n_{t-1}^{stay} + n_{t-1}^{exit}} r_{i,t-1} \theta_{i,t-1} \\
&= \sum_{i=1}^{n_t^{stay}} r_{i,t} \theta_{i,t} + \sum_{i=1}^{n_t^{entry}} r_{i,t} \theta_{i,t} - \sum_{i=1}^{n_{t-1}^{stay}} r_{i,t-1} \theta_{i,t-1} - \sum_{i=1}^{n_{t-1}^{exit}} r_{i,t-1} \theta_{i,t-1}
\end{aligned} \tag{2}$$

Note that  $\sum_{i=1}^{n_t} \theta_{i,t} = 1$  and  $\sum_{i=1}^{n_{t-1}} \theta_{i,t-1} = 1$ , which implies that

$$\sum_{i=1}^{n_t^{stay}} \theta_{i,t} + \sum_{i=1}^{n_t^{entry}} \theta_{i,t} = 1 \text{ and } \sum_{i=1}^{n_{t-1}^{stay}} \theta_{i,t-1} + \sum_{i=1}^{n_{t-1}^{exit}} \theta_{i,t-1} = 1 \tag{3}$$

**Proposition** *The change in return on equity over two periods decomposes into four different effects as follows:*

$$\begin{aligned}
\Delta R_t &= R_t - R_{t-1} \\
&= \sum_{i=1}^{n_t^{stay}} r_{i,\Delta t} \left( \frac{\theta_{i,t} + \theta_{i,t-1}}{2} \right) && \text{(i) within effect} \\
&+ \sum_{i=1}^{n_t^{stay}} \left[ \left( \frac{r_{i,t} + r_{i,t-1}}{2} \right) - \left( \frac{R_t + R_{t-1}}{2} \right) \right] \theta_{i,\Delta t} && \text{(ii) reallocation effect} \\
&+ \sum_{i=1}^{n_t^{enter}} \left[ r_{i,t} - \left( \frac{R_t + R_{t-1}}{2} \right) \right] \theta_{i,t} && \text{(iii) entry effect} \\
&- \sum_{i=1}^{n_{t-1}^{exit}} \left[ r_{i,t-1} - \left( \frac{R_t + R_{t-1}}{2} \right) \right] \theta_{i,t-1} && \text{(iv) exit effect}
\end{aligned}$$

where

$$r_{i,\Delta t} = r_{i,t} - r_{i,t-1} = \frac{NI_{i,t}}{E_{i,t}} - \frac{NI_{i,t-1}}{E_{i,t-1}}; \text{ and}$$

$$\theta_{i,\Delta t} = \theta_{i,t} - \theta_{i,t-1} = \left( \frac{E_{i,t}}{\sum_{i=1}^{n_t} E_{i,t}} \right) - \left( \frac{E_{i,t-1}}{\sum_{i=1}^{n_{t-1}} E_{i,t-1}} \right).$$

**Derivation of Proposition:**

The proposition incorporates the idea of the "Fisher Ideal Index."<sup>13</sup> Two alternative methods can calculate the effects of a change in return on equity by each bank - weighted by the current year's (Laspeyres difference index) or previous year's (Paasche difference index) equity share.<sup>14</sup> The existing literature typically uses the previous year's share.<sup>15</sup> When calculating the decomposition, isolate the terms for the exits and entrants. Relating them to some benchmark, add and subtract either the overall return on equity from the previous year or the current year. Then, multiply by the sum of the shares, which equals one by definition. Finally, break the summation apart to allocate the exits and entries as well as the banks that are staying in both years.

To get the *Laspeyres Difference Index*, we add  $\sum_{i=1}^{n_t^{stay}} r_{i,t-1} \theta_{i,t} - \sum_{i=1}^{n_t^{stay}} r_{i,t-1} \theta_{i,t}$  to the right

hand side of equation (2),

$$\begin{aligned}
\Delta R_t &= \sum_{i=1}^{n_t^{stay}} r_{i,t} \theta_{i,t} + \sum_{i=1}^{n_t^{entry}} r_{i,t} \theta_{i,t} - \sum_{i=1}^{n_t^{stay}} r_{i,t-1} \theta_{i,t-1} - \sum_{i=1}^{n_{t-1}^{exit}} r_{i,t-1} \theta_{i,t-1} + [\sum_{i=1}^{n_t^{stay}} r_{i,t-1} \theta_{i,t} - \sum_{i=1}^{n_t^{stay}} r_{i,t-1} \theta_{i,t}] \\
&= \sum_{i=1}^{n_t^{stay}} (r_{i,t} - r_{i,t-1}) \theta_{i,t} + \sum_{i=1}^{n_t^{stay}} r_{i,t-1} (\theta_{i,t} - \theta_{i,t-1}) + \sum_{i=1}^{n_t^{entry}} r_{i,t} \theta_{i,t} - \sum_{i=1}^{n_{t-1}^{exit}} r_{i,t-1} \theta_{i,t-1} \\
&= \sum_{i=1}^{n_t^{stay}} r_{i,\Delta t} \theta_{i,t} + \sum_{i=1}^{n_t^{stay}} r_{i,t-1} \theta_{i,\Delta t} + \sum_{i=1}^{n_t^{entry}} r_{i,t} \theta_{i,t} - \sum_{i=1}^{n_{t-1}^{exit}} r_{i,t-1} \theta_{i,t-1}
\end{aligned}$$

Using equation (3), we can show that

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<sup>13</sup> Diewert (2005) shows that the Bennet (1920) index provides the first-difference analogy to the Fisher ideal price index for ratios.

<sup>14</sup> Entry and exit complicate matters. When comparing numbers between two consecutive years, exits do not exist in the second year while entrants do not exist in the first year.

<sup>15</sup> Griliches and Regev (1995), Scarpetta, Hemmings, Tressel, and Woo (2002), and Jeon and Miller (2007) provide exceptions.

$$\begin{aligned}
\Delta R_t &= \sum_{i=1}^{n_t^{stay}} r_{i,\Delta t} \theta_{i,t} + \sum_{i=1}^{n_t^{stay}} r_{i,t-1} \theta_{i,\Delta t} + \sum_{i=1}^{n_t^{entry}} r_{i,t} \theta_{i,t} - \sum_{i=1}^{n_{t-1}^{exit}} r_{i,t-1} \theta_{i,t-1} \\
&\quad - R_t \left( \sum_{i=1}^{n_t^{stay}} \theta_{i,t} + \sum_{i=1}^{n_t^{entry}} \theta_{i,t} \right) + R_t \left( \sum_{i=1}^{n_t^{stay}} \theta_{i,t-1} + \sum_{i=1}^{n_{t-1}^{exit}} \theta_{i,t-1} \right) \\
&= \sum_{i=1}^{n_t^{stay}} r_{i,\Delta t} \theta_{i,t} + \sum_{i=1}^{n_t^{stay}} r_{i,t-1} \theta_{i,\Delta t} - \sum_{i=1}^{n_t^{stay}} R_t (\theta_{i,t} - \theta_{i,t-1}) \\
&\quad + \sum_{i=1}^{n_t^{entry}} (r_{i,t} - R_t) \theta_{i,t} - \sum_{i=1}^{n_{t-1}^{exit}} (r_{i,t-1} - R_t) \theta_{i,t-1} \\
&= \sum_{i=1}^{n_t^{stay}} r_{i,\Delta t} \theta_{i,t} + \sum_{i=1}^{n_t^{stay}} (r_{i,t-1} - R_t) \theta_{i,\Delta t} + \sum_{i=1}^{n_t^{entry}} (r_{i,t} - R_t) \theta_{i,t} - \sum_{i=1}^{n_{t-1}^{exit}} (r_{i,t-1} - R_t) \theta_{i,t-1}
\end{aligned} \tag{4}$$

To get the *Paasche Difference Index*, we add the term  $\sum_{i=1}^{n_t^{stay}} r_{i,t} \theta_{i,t-1} - \sum_{i=1}^{n_{t-1}^{stay}} r_{i,t} \theta_{i,t-1}$  to the right hand side of equation (2) and then we have

$$\begin{aligned}
\Delta R_t &= \sum_{i=1}^{n_t^{stay}} r_{i,t} \theta_{i,t} + \sum_{i=1}^{n_t^{entry}} r_{i,t} \theta_{i,t} - \sum_{i=1}^{n_t^{stay}} r_{i,t-1} \theta_{i,t-1} - \sum_{i=1}^{n_{t-1}^{exit}} r_{i,t-1} \theta_{i,t-1} + \left( \sum_{i=1}^{n_t^{stay}} r_{i,t} \theta_{i,t-1} - \sum_{i=1}^{n_{t-1}^{stay}} r_{i,t} \theta_{i,t-1} \right) \\
&= \sum_{i=1}^{n_t^{stay}} r_{i,t} (\theta_{i,t} - \theta_{i,t-1}) + \sum_{i=1}^{n_t^{stay}} (r_{i,t} - r_{i,t-1}) \theta_{i,t-1} + \sum_{i=1}^{n_t^{entry}} r_{i,t} \theta_{i,t} - \sum_{i=1}^{n_{t-1}^{exit}} r_{i,t-1} \theta_{i,t-1} \\
&= \sum_{i=1}^{n_t^{stay}} r_{i,t} \theta_{i,\Delta t} + \sum_{i=1}^{n_t^{stay}} r_{i,\Delta t} \theta_{i,t-1} + \sum_{i=1}^{n_t^{entry}} r_{i,t} \theta_{i,t} - \sum_{i=1}^{n_{t-1}^{exit}} r_{i,t-1} \theta_{i,t-1}
\end{aligned}$$

After using equation (3), we can show that

$$\begin{aligned}
\Delta R_t &= \sum_{i=1}^{n_t^{stay}} r_{i,t} \theta_{i,\Delta t} + \sum_{i=1}^{n_t^{stay}} r_{i,\Delta t} \theta_{i,t-1} + \sum_{i=1}^{n_t^{entry}} r_{i,t} \theta_{i,t} - \sum_{i=1}^{n_{t-1}^{exit}} r_{i,t-1} \theta_{i,t-1} \\
&\quad - R_{t-1} \left( \sum_{i=1}^{n_t^{stay}} \theta_{i,t} + \sum_{i=1}^{n_t^{entry}} \theta_{i,t} \right) + R_{t-1} \left( \sum_{i=1}^{n_t^{stay}} \theta_{i,t-1} + \sum_{i=1}^{n_{t-1}^{exit}} \theta_{i,t-1} \right) \\
&= \sum_{i=1}^{n_t^{stay}} r_{i,t} \theta_{i,\Delta t} + \sum_{i=1}^{n_t^{stay}} r_{i,\Delta t} \theta_{i,t-1} - \sum_{i=1}^{n_t^{stay}} R_{t-1} (\theta_{i,t} - \theta_{i,t-1}) \\
&\quad + \sum_{i=1}^{n_t^{entry}} (r_{i,t} - R_{t-1}) \theta_{i,t} - \sum_{i=1}^{n_{t-1}^{exit}} (r_{i,t-1} - R_{t-1}) \theta_{i,t-1} \\
&= \sum_{i=1}^{n_t^{stay}} (r_{i,t} - R_{t-1}) \theta_{i,\Delta t} + \sum_{i=1}^{n_t^{stay}} r_{i,\Delta t} \theta_{i,t-1} + \sum_{i=1}^{n_t^{entry}} (r_{i,t} - R_{t-1}) \theta_{i,t} - \sum_{i=1}^{n_{t-1}^{exit}} (r_{i,t-1} - R_{t-1}) \theta_{i,t-1}
\end{aligned} \tag{5}$$

The Bennet Dynamic Decomposition Index adds the first and second decompositions together, equations (4) and (5). Thus, we have

$$2\Delta R_t = \sum_{i=1}^{n_t^{stay}} r_{i,\Delta t} (\theta_{i,t} + \theta_{i,t-1}) + \sum_{i=1}^{n_t^{stay}} (r_{i,t-1} - R_t + r_{i,t} - R_{t-1}) \theta_{i,\Delta t} \\ + \sum_{i=1}^{n_t^{entry}} (r_{i,t} - R_t + r_{i,t} - R_{t-1}) \theta_{i,t} - \sum_{i=1}^{n_{t-1}^{exit}} (r_{i,t-1} - R_t + r_{i,t-1} - R_{t-1}) \theta_{i,t-1}$$

And, thus, we get as follows:

$$\Delta R_t = \sum_{i=1}^{n_t^{stay}} r_{i,\Delta t} \left( \frac{\theta_{i,t} + \theta_{i,t-1}}{2} \right) + \sum_{i=1}^{n_t^{stay}} \left[ \left( \frac{r_{i,t} + r_{i,t-1}}{2} \right) - \left( \frac{R_t + R_{t-1}}{2} \right) \right] \theta_{i,\Delta t} \\ + \sum_{i=1}^{n_t^{entry}} \left[ r_{i,t} - \left( \frac{R_t + R_{t-1}}{2} \right) \right] \theta_{i,t} - \sum_{i=1}^{n_{t-1}^{exit}} \left[ r_{i,t-1} - \left( \frac{R_t + R_{t-1}}{2} \right) \right] \theta_{i,t-1} \quad Q.E.D.$$

Finally, the existing literature typically decomposes the reallocation effect into two components - a term reflecting changes in shares (but relative to the first year's return on equity), and a covariance term. This decomposition emerges from doing the decomposition in only one way. The Bennet dynamic decomposition identified in the Proposition does not include the covariance term. In addition, decompositions also exist for other portfolio variables such as return on assets, equity to assets, loans to assets, and so on.

#### 4. Application of the Bennet Dynamic Decomposition

Our data on banks in Korea come from Financial Supervisory Services (2001, 2006). Sixteen nationwide banks, 10 regional banks, and 66 foreign banks enter our database for at least one year in the sample from 1994 through 2005. In addition, bank entrances, mergers, acquisitions, and conversions occurred over the sample period. The within-effect captures the performance of individual banks from one year to the next. The reallocation, entry, and exit effects provide an effective way to measure the consequences of bank restructuring.

Table 1 shows that the average return on equity (ROE) for all banks in Korea exceeded zero before 1997. Korean banking industry experienced negative values in the ROE during the Asian Crisis period (1997-2000), touching bottom in 1998. Since 2001 the return on equity resumed its positive value, although it fell from 2001 to 2003 and then rebounded strongly in 2004 and 2005.

Table 1 also shows the differences across different bank types – foreign and domestic Korean, nationwide and regional, banks. Foreign banks did not experience the same dramatic swings in the return on equity during the Asian crisis, exhibiting positive values and reaching the maximum in 1997. But, their ROE generally decreased since 2000. In contrast, the ROE of Korean nationwide banks turned negative from 1997 to 2000, but returned to positive values from 2001 to 2005. Thus, a negative correlation essentially exists between average ROE for foreign banks and that of Korean banks. Regional Korean banks generally matched the ROE of the nationwide banks, but then exhibited much larger negative values during the Asian crisis and much higher positive values in 2002 and 2003, before, once again, matching the nationwide banks in 2004 and 2005.

The information in Table 1 suggests that foreign banks benefited from global-advantage effects during the Asian crisis, but that Korean domestic banks enjoyed the home-field advantage after the crisis. First, during the Asian crisis period foreign banks exhibited a higher average return on equity than Korean banks. Second, foreign banks succumbed less to the shock of the Asian financial crisis than did the domestic Korean banks. Both foreign banks and Korean banks exhibited a substantial decline in average return on equity between 1997 and 1998, where the foreign bank decline reached its minimum. Last, Korean banks experienced higher ROE in the restructuring periods after the Asian Crisis, while the foreign banks suffered continuously with

decreasing ROE. Korean banks outperformed foreign banks in recovering from the shock of the Asian financial crisis, reflecting, in large part, the intervention of the Korean government in response to the Asian financial crisis.

Table 2 shows that Korean banks exited the industry largely in 1997 and 1998 because of bankruptcies, acquisitions, and mergers. Moreover, even though the number of foreign banks began to decrease initially in 1995, a greater frequency of foreign bank exits began in 1998. Finally, since the Asian crisis, the number of “staying banks” fell with foreign banks accounting for most of this trend.

Table 3 reports the results of the decomposition analysis. The Asian financial crisis produced dramatic changes on each effect through time, especially the restructuring process in response to the crisis. For all banks, the within-effect dominates movements in the return on equity, except for 1995-1996 and 1998-1999. That is, the within-effect moves in the same direction and with similar magnitude as the return on equity with a correlation of 0.89. The reallocation effect, however, dominates events from 1995 to 1996 and 1998 to 1999, especially the latter. The exit effect from 1998 to 1999 also achieved a noteworthy level, adding to overall industry performance. In other words, those banks that exited possessed, on average, a lower return on equity than the average for the industry, improving the overall industry performance.

More useful information emerges when we reconsider the decompositions by bank type – foreign and domestic Korean, nationwide and regional, banks. The pattern for Korean nationwide banks matches the pattern for any aggregation that includes nationwide banks, because their size dwarfs the regional Korean and foreign banks. The patterns observed for the foreign and Korean regional banks exhibited differences from the nationwide banks findings. For regional Korean and foreign banks, the within-effect matches more closely the movements in

ROE on a year-by-year basis with correlations of 0.98 and 0.99, respectively. The reallocation and exit effects for regional Korean banks exhibit strong effects on ROE in 1997-1998 and 1998-1999, but not with the same effect as the reallocation and exit effects for nationwide Korean banks in 1998-1999. That is, the correlation of the within-effect and ROE equals 0.98 and 0.82 for regional and nationwide Korean banks, respectively. The reallocation and exit effects prove much less important for foreign banks, where the correlation between the within-effect and ROE equals 0.99.

Table 4 offers summary statistics in four periods - pre-crisis, crisis, recovery from crisis, and post crisis. The Asian financial crisis precipitated a large restructuring that caused the reallocation effect to become much more important from 1998 to 1999 for nationwide banks, and from 1997 to 1998 for regional banks. The recovery from the Asian financial crisis began in 1999 and continued, except for the poor performance of the Korean regional banks. For nationwide Korean banks, the change in ROE (14.65 percent) over 1994 to 2005 associates with a positive reallocation effect (30.18 percent) and a negative within-effect (-23.13 percent). The accumulation of effects over time differs markedly from the year-by-year relationships. That is, the within and ROE move closely together with high positive correlation on a year-by-year basis. But, the accumulation effect points to the reallocation effect, providing more than the full explanation for the change in ROE.<sup>16</sup> Similar findings emerge for regional Korean banks, where the change in ROE (11.85 percent) over 1994 to 2005 associates with a positive reallocation effect (26.43 percent) and a negative within-effect (-27.54). Foreign banks exhibit the reverse finding, where the change in ROE (-5.98 percent) over 1994 to 2005 associates with a positive reallocation effect (1.02 percent) and a negative within-effect (-6.14 percent). For both the

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<sup>16</sup> Jeon and Miller (2007) find similar results for the dynamic decomposition of U.S. banks ROE.

nationwide and regional Korean banks the crisis and recovery from crisis period produces the bulk of the accumulated reallocation effect.

The pre-crisis period (1994 to 1996) shows that Korean banks, nationwide and regional, experienced declining profitability whereas foreign banks exhibited rising profitability. Most of the changes in profitability relate to the within-effects across all types of banks. The recovery-from-crisis and post-crisis periods – 1998 to 1999 and 1999 to 2005, respectively – reverse the story from the pre-crisis period. The Korean banks, nationwide and regional, experienced dramatic increase in profitability, whereas the foreign banks exhibited decreases in profitability. Moreover, while the within-effect explains the bulk of the rising profitability for the regional Korean banks, the reallocation affect played an important role for Korean nationwide banks during the recovery from crisis period and for foreign banks during the post-crisis period.<sup>17</sup> That is, for Korean nationwide banks, the reallocation effect during the recovery-from-crisis period turned a negative within-effect into an overall increase in profitability. In addition, the reallocation effect for the foreign banks reduced the fall in profitability due to the within-effect during the post-crisis period.<sup>18</sup>

The crisis period – 1996 to 1998 – shows that the significant decline in Korean nationwide and regional bank profitability largely reflects the within-effect. Foreign banks paint a different picture primarily because, throughout the crisis, recovery-from-crisis, and post-crisis periods, foreign banks lagged behind the experiences of the Korean banks. That is, foreign bank profitability continued to rise between 1996 and 1997, whereas Korean bank profitability already dropped significantly. Foreign banks experienced the drop in profitability only between 1997 and

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<sup>17</sup> The exit of lower average profitability Korean nationwide and regional banks during the recovery-from-crisis period also helped to boost profitability, especially for the Korean regional banks.

<sup>18</sup> The exit effect for the foreign banks during the post-crisis period also helped reverse the decline in profitability generated by the within-effect.

1998 (see Table 3), so that the accumulated effect over the crisis period still remained positive. Furthermore, the improvement in profitability enjoyed by Korean banks during the recovery-from-crisis period did not affect foreign banks as much until the post-crisis period. While much of this difference reflects the within-effect, the exit of lower-than-average profitability banks also follows a delayed pattern for foreign banks when compared to Korean banks.

## **5. Conclusion**

The performance of domestic and foreign banks has engaged researchers in recent years. Should governments invite or allow foreign banks to operate within domestic financial markets? Can domestic banks compete with foreign banks on domestic soil? Our paper considers some of the issues in this debate, focusing on the events in Korea before, during, and after the Asian financial crisis.

On average, foreign banks performed better during the crisis and worse after the crisis than domestic Korean banks. The evidence strongly suggests that foreign banks experienced a “global advantage” before and during the crisis, but after the crisis domestic banks enjoyed a “home-field advantage.” The global advantage experienced by foreign banks before and during the crisis reflected not only the improved performance on a year-by-year basis, but also the better responses to the difficulties thrust on the Korean economy and financial sector by the Asian financial crisis. The immediate intervention of the Korean government, however, to repair the damage allowed the domestic Korean banks to recover more vigorously than foreign banks after the crisis.

The Bennet dynamic decomposition reveals that the within-effect generally dominated movements in return on equity on a year-by-year basis. The Asian financial crisis did cause a dramatic restructuring of the Korean banking industry, excluding the foreign banks. As already

mentioned, the Korean government played the major role in that restructuring, attempting to prevent the crisis from worsening.<sup>19</sup> As such, the profitability of some Korean banks increased dramatically at the expense of other Korean banks, the reallocation effect, during the period from 1997 to 1998 for Korean regional banks and from 1998 to 1999 for Korean nationwide banks. The regional banks experienced several reversals with declining performance from 1999 to 2000 and then again from 2002 to 2004, whereas Korean nationwide banks exhibited declining profitability from 2001 to 2003. Foreign banks, on the other hand, reported declining profitability from 1997 to 1999, matching the movement in Korean nationwide banks and then again from 2000 to 2002 and from 2003 to 2005. In other words, the intervention of the Korean government not only reduced the bleeding in its domestic banks, but also increased the profitability of domestic banks relative to foreign banks – moving a global advantage by foreign banks into a home-field advantage for domestic banks.

Several final issues deserve discussion. First, why did foreign banks outperform Korean domestic banks only during the crisis? One explanation may provide the bulk of the answer. Foreign banks, unlike domestic Korean banks, did not receive Korean government direction to offer bank credit to selected, favored industries. In that regard, foreign banks may have held more-diversified, less-vulnerable portfolios.<sup>20</sup> Another possible, but less-plausible, explanation

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<sup>19</sup> U.S. regulators faced a financial crisis during the savings and loan debacle. The U.S. government decided to solve that crisis and not sweep the issues under the rug. On the other hand, Japan has yet to address in any serious way the critical problems that it faces in its financial sector. Korea adopted the U.S. approach.

<sup>20</sup> Before the Asian financial crisis, most foreign banks in Korea operated primarily as corporate bankers, focusing on fee-generated income from multinational companies and few Korean firms. Foreign banks did not foster a significant exposure to Korean *chaebols*. The corporate-oriented Korean banks, however, did rely on significant exposure to credit lending to *chaebols*. The failure of several *chaebols* during the Asian financial crisis damaged the financial health of corporate-oriented Korean banks. Retail-oriented domestic and foreign banks exhibited less vulnerability to the crisis. Jeon, Miller, and Natke (2006) provide more discussion of the different business models for banks in Korea and examine whether foreign banks stabilized Korean financial markets.

exists, however. Since they are much smaller than Korean banks (even Korean regional banks), foreign banks can more easily and quickly adjust to changing circumstances.

Second, did foreign-bank participation in the Korean economy affect domestic bank performance during the crisis? Demirgüç-Kunt, Levin, and Min (1998) find that greater participation by foreign banks (i) reduces the probability of a banking crisis, (ii) improves the efficiency of domestic banks, and (iii) boosts economic growth indirectly by improving domestic bank efficiency. Further, the effects of foreign bank operations relate to the number of foreign banks and not to the asset size of their operations. In Korea, the number of foreign banks exceeded the number of domestic Korean banks in each year of the sample (see Table 2), although foreign banks represent a small share of scale in the Korean banking market. One can conjecture that the relative success of foreign bank operations in Korea provided an important “demonstration effect,” which encouraged the Korean government to restructure its own banking industry. We leave that conjecture for future investigation.

Finally, did the government implement a successful program to stem the tide of the Asian financial crisis and develop a more stable domestic banking industry? We must answer this question in the affirmative. While the cost proved substantial, the quick actions by the government prevented a crisis from spiraling out of control. Korean banks went through a dramatic period of government-aided restructuring and emerged with significantly higher profitability. Moreover, while the number of domestic banks fell, that process stabilized in 2002 with 14 nationwide and 6 regional banks. The future of foreign banks in Korea remains an open question. Foreign bank profitability and the number of foreign banking institutions continue to fall, although no changes occurred in the number between 2004 and 2005 with 37 foreign banks.

Only time will provide an answer to the question of future foreign bank involvement in the Korean banking industry.

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**Table 1: Return on Equity – Unweighted Average**

Year	All Banks		Foreign Banks		All Korean Banks		Korean Regional Banks		Korean Nationwide Banks	
	ROE	No	ROE	No	ROE	No	ROE	No	ROE	No
1994	0.06	76	0.08	52	0.06	24	0.06	10	0.06	14
1995	0.05	77	0.08	52	0.04	25	0.06	10	0.04	15
1996	0.05	74	0.11	49	0.04	25	0.05	10	0.03	15
1997	-0.08	79	0.30	53	-0.14	26	-0.15	10	-0.14	16
1998	-0.39	72	0.09	51	-0.52	21	-0.87	8	-0.49	13
1999	-0.15	63	0.06	46	-0.20	17	-0.02	6	-0.21	11
2000	-0.06	60	0.12	43	-0.09	17	-0.22	6	-0.09	11
2001	0.12	57	0.11	42	0.12	15	0.09	6	0.13	9
2002	0.09	55	0.06	41	0.10	14	0.20	6	0.09	8
2003	0.03	53	0.08	39	0.02	14	0.15	6	0.01	8
2004	0.16	51	0.06	37	0.18	14	0.15	6	0.18	8
2005	0.18	51	0.02	37	0.21	14	0.18	6	0.21	8

**Note:** The numbers (percent) mean the number of banks entering the average return on equity reported.

**Table 2: Number of Staying, Entering, and Exiting Banks**

Year	All Banks			Foreign Banks			Korean Banks			Korean Regional Banks			Korean Nationwide Banks		
	Stay	Entry	Exit	Stay	Entry	Exit	Stay	Entry	Exit	Stay	Entry	Exit	Stay	Entry	Exit
1994-1995	76	1	0	52	0	0	24	1	0	10	0	0	14	1	0
1995-1996	74	0	3	49	0	3	25	0	0	10	0	0	15	0	0
1996-1997	73	6	1	48	5	1	25	1	0	10	0	0	15	1	0
1997-1998	71	1	8	50	1	3	21	0	5	8	0	2	13	0	3
1998-1999	62	1	10	45	1	6	17	0	4	6	0	2	11	0	2
1999-2000	60	0	3	43	0	3	17	0	0	6	0	0	11	0	0
2000-2001	55	2	5	40	2	3	15	0	2	6	0	0	9	0	2
2001-2002	54	1	3	40	1	2	14	0	1	6	0	0	8	0	1
2002-2003	53	0	2	39	0	2	14	0	0	6	0	0	8	0	0
2003-2004	50	1	3	36	1	3	14	0	0	6	0	0	8	0	0
2004-2005	49	2	2	35	2	2	14	0	0	6	0	0	8	0	0

**Note:** Staying banks exist in both years. Entering banks exist in the second, but not the first, year. Exiting banks exist in the first, but not the second, year. For example, Korea saw one bank enter and 3 banks exit in 1996. See the 1995-1996 and 1996-1997 columns under the All-Banks category for entry and exit. As another example, Korea saw 6 banks enter and 8 banks exit in 1997.

**Table 3: A Bennet Dynamic Decomposition of Industry Dynamics (percent)**

	Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
		-1995	-1996	-1997	-1998	-1999	-2000	-2001	-2002	-2003	-2004	-2005
<b>All Banks</b>	<b>Within</b>	-1.94	-0.21	-14.54	-38.10	0.12	12.01	17.50	-2.76	-7.38	11.16	2.09
	<b>Reallocation</b>	0.10	0.28	1.28	7.61	16.04	-2.39	1.12	-0.12	1.33	1.71	0.20
	<b>Entry</b>	0.12	0.00	0.37	0.05	0.03	0.00	0.02	0.01	0.00	-0.02	-0.05
	<b>Exit</b>	0.00	0.01	0.00	0.14	-7.24	0.08	0.71	0.04	-0.06	-0.07	-0.09
	<b>ΔR</b>	-1.71	0.06	-12.89	-30.59	23.42	9.54	17.93	-2.92	-6.00	12.93	2.34
<b>Foreign Banks</b>	<b>Within</b>	-0.50	2.19	20.36	-19.32	-2.88	5.06	-2.11	-4.84	1.66	-2.42	-3.34
	<b>Reallocation</b>	0.20	0.02	0.11	-0.31	-0.50	0.67	0.08	0.25	0.12	0.65	-0.28
	<b>Entry</b>	0.00	0.00	-1.88	-0.16	0.01	0.00	0.07	0.05	0.00	-0.12	-0.15
	<b>Exit</b>	0.00	-0.52	-0.29	0.41	-0.31	-0.11	-0.44	0.06	-0.44	-0.11	0.41
	<b>ΔR</b>	-0.30	2.73	18.88	-20.20	-3.07	5.83	-1.52	-4.59	2.21	-1.78	-4.18
<b>All Korean Banks</b>	<b>Within</b>	-2.14	-0.56	-20.00	-42.16	0.23	13.43	21.47	-2.39	-8.81	13.23	2.83
	<b>Reallocation</b>	0.07	0.18	1.05	4.47	23.92	-3.29	1.54	-0.28	1.51	1.90	0.16
	<b>Entry</b>	0.16	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	<b>Exit</b>	0.00	0.00	0.00	0.61	-8.71	0.00	1.11	0.04	0.00	0.00	0.00
	<b>ΔR</b>	-1.90	-0.39	-17.99	-38.30	32.86	10.14	21.91	-2.72	-7.30	15.13	2.99
<b>Korean Regional Banks</b>	<b>Within</b>	-0.11	-0.39	-20.74	-89.50	66.59	-21.62	29.93	10.85	-5.04	-0.29	2.78
	<b>Reallocation</b>	0.01	0.17	0.54	22.17	0.31	1.88	0.63	0.59	0.01	0.08	0.04
	<b>Entry</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	<b>Exit</b>	0.00	0.00	0.00	5.17	-18.12	0.00	0.00	0.00	0.00	0.00	0.00
	<b>ΔR</b>	-0.10	-0.22	-20.19	-72.50	85.03	-19.75	30.56	11.44	-5.04	-0.21	2.82
<b>Korean Nationwide Banks</b>	<b>Within</b>	-2.56	-0.60	-19.89	-35.61	-6.00	15.86	20.84	-3.38	-9.10	14.48	2.84
	<b>Reallocation</b>	0.09	0.18	1.18	1.51	26.05	-3.68	1.56	-0.31	1.43	2.02	0.15
	<b>Entry</b>	0.20	0.00	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	<b>Exit</b>	0.00	0.00	0.00	0.39	-7.79	0.00	1.08	0.05	0.00	0.00	0.00
	<b>ΔR</b>	-2.26	-0.41	-17.58	-34.50	27.84	12.18	21.32	-3.75	-7.67	16.50	2.98

**Note:** Numbers measured in percent. The within-effect measures the increase in average return on equity due to higher return on equity in each bank. The reallocation effect measures the increase in average return on equity due to reallocation (restructuring) of equity between banks. And the entry and exit measure the increase in average return on equity due to entry and exit of banks. Remember that the exit effect enters with a negative sign so that a positive (negative) exit effect reduces (increases) overall average return on equity.

**Table 4: Summaries - A Bennet Dynamic Decomposition for Korean Banks (percent)**

		Accumulation					Average within each period				
		whole period	1994 -1996	1996 -1998	1998 -1999	1999 -2005	whole period	1994 -1996	1996 -1998	1998 -1999	1999 -2005
All Banks	Within	-22.04	-2.15	-52.64	0.12	32.63	-2.00	-1.08	-26.32	0.12	5.44
	Reallocation	27.15	0.38	8.89	16.04	1.65	2.47	0.19	4.45	16.04	0.33
	Entry	0.52	0.12	0.42	0.03	0.00	0.05	0.06	0.21	0.03	0.00
	Exit	-6.48	0.01	0.14	-7.24	0.70	-0.59	0.01	0.07	-7.24	0.14
	$\Delta R$	12.11	-1.65	-43.48	23.42	31.48	1.10	-0.83	-21.74	23.42	6.30
Foreign Banks	Within	-6.14	1.69	1.04	-2.88	-2.66	-0.56	0.85	0.52	-2.88	-0.53
	Reallocation	1.02	0.22	-0.20	-0.50	1.77	0.09	0.11	-0.10	-0.50	0.35
	Entry	-2.18	0.00	-2.04	0.01	0.00	-0.20	0.00	-1.02	0.01	0.00
	Exit	-1.33	-0.52	0.12	-0.31	-1.04	-0.12	-0.26	0.06	-0.31	-0.21
	$\Delta R$	-5.98	2.43	-1.32	-3.07	0.15	-0.54	1.22	-0.66	-3.07	0.03
All Korean Banks	Within	-24.87	-2.70	-62.16	0.23	36.93	-2.26	-1.35	-31.08	0.23	7.39
	Reallocation	31.24	0.25	5.52	23.92	1.38	2.84	0.13	2.76	23.92	0.28
	Entry	1.12	0.16	0.96	0.00	0.00	0.10	0.08	0.48	0.00	0.00
	Exit	-6.95	0.00	0.61	-8.71	1.15	-0.63	0.00	0.31	-8.71	0.23
	$\Delta R$	14.43	-2.29	-56.29	32.86	37.16	1.31	-1.15	-28.15	32.86	7.43
Korean Regional Banks	Within	-27.54	-0.50	-110.24	66.59	13.82	-2.50	-0.25	-55.12	66.59	2.76
	Reallocation	26.43	0.18	22.71	0.31	3.20	2.40	0.09	11.36	0.31	0.64
	Entry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Exit	-12.95	0.00	5.17	-18.12	0.00	-1.18	0.00	2.59	-18.12	0.00
	$\Delta R$	11.85	-0.32	-92.69	85.03	17.01	1.08	-0.16	-46.35	85.03	3.40
Korean Nationwide Banks	Within	-23.13	-3.16	-55.50	-6.00	38.69	-2.10	-1.58	-27.75	-6.00	7.74
	Reallocation	30.18	0.27	2.69	26.05	1.02	2.74	0.14	1.35	26.05	0.20
	Entry	1.33	0.20	1.13	0.00	0.00	0.12	0.10	0.57	0.00	0.00
	Exit	-6.26	0.00	0.39	-7.79	1.14	-0.57	0.00	0.20	-7.79	0.23
	$\Delta R$	14.65	-2.67	-52.08	27.84	38.58	1.33	-1.34	-26.04	27.84	7.72

Note: See Table 3.