

# **Empirical Study on the Performance of State-owned-enterprises and the Privatizing Pressure: The Case of Korea**

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## **Abstract**

Over the last 30 years, the performance of state-owned-enterprises (SOEs) has been disappointing while the privatization of SOEs has been treated with doubts. Policy makers around the world were left with few SOE policy options at a time when their performance caused not only administrative headaches but also political nightmare. The situation in Korea is similar where a sizeable SOE sector has underperformed and the government has been hard pressed to find solutions to enhance their performances prior to the privatization program. In this paper, we examined whether the government imposition of hard budget constraint on SOEs has affected the operations of SOEs. We made a performance comparison of 22 Korean SOEs between periods when they were under the privatization pressure during 1998-2002 and a period under which they were subject to little privatization pressure. After conducting time-series and cross-sectional (TSCS) regression analysis with a dataset from 22 Korean SOEs, we found there existed a statistically significant positive relationship between the privatization pressure and the operating efficiency of SOEs. This implies that while finding ways to privatize SOEs, policymakers need to continually apply privatization pressures on SOE managers in order to impose hard budget constraints on SOEs.

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Keyword: privatizing pressure, privatization policy, soft budget constraint, operating performance, state-owned enterprise

## **I. Introduction**

Over the last 30 years, many researchers have asserted that state-owned-enterprises (SOEs) should be privatized while others have favored more gradual reform approaches. At the early stage of this debate, researchers were interested in (governance) ownership structure which they believed was the cause of SOEs' inefficiency. However, following decades of research, both advocates and opponents of privatization have come to realize that the importance of managerial objectives and market structure. Accordingly, some argued that we need to pay closer attentions to how we could enforce performance-oriented goal and competitive market conditions on SOEs. While supporters of privatization argue that privatization is the only way to bring about changes in managerial goals and towards competitive environment, others maintain that it can be accomplished by more gradual approaches. Stuck in the controversy, policy makers were often left with little policy options but to continue with traditional SOE policies.

The situation in Korea is similar where a sizeable SOE sector has been criticized for its performance and the government has been hard pressed to find solutions to enhance their performances prior to the privatization program. We made a performance comparison of 22 Korean SOEs between periods when they were under the privatization pressure during 1998-2002 and a period under which they were subject to little privatization pressure. After conducting time-series and cross-sectional (TSCS) regression analysis with a dataset from 22 Korean SOEs, we found there existed a statistically significant positive relationship between the privatization pressure and the operating efficiency of SOEs. During 1998 and 2002 when the government imposed more tight fiscal control on SOEs while implementing privatization program SOE performance tended to be better than a period under which SOEs were rarely subject to restructuring programs. Although, according to a previous study in Korea (Kim, 2007), the degree of improvement in SOEs' performance is smaller than that of the already privatized companies, this phenomenon gives us significant insights on the behavior of SOEs and the strategic approach to SOEs policy.

To analyze the relationship between privatization pressure and SOEs' performance in Korea, this study used a panel dataset of Korean SOEs in the last 10 years

(1998-2007), in which the two administrations (Kim and Roh) showed distinctly different attitudes toward privatization policy. In the Kim Dae Jung administration (March, 1998 - March, 2003), nine large SOEs were privatized while others were scheduled to be privatized. In contrast, the Roh Moo Hyun administration (March, 2003 - March, 2008) committed to more gradual approaches including systematic reform and virtually ceased privatization process. Thus, the former is defined as a period under which SOEs were subject to privatization pressure while the latter was subject to none of the pressure.

In terms of the organization of the paper, Section II describes the status of the Korean SOEs and privatization policies over the last decade, and Section III reviews previous studies in this topic. Section IV outlines the hypothesis, methodology, data and preliminary results. In Section V, the econometric analysis is laid out including the panel regression output. Section VI interprets the statistical output with soft budget constraint theory (Kornai, 1979, 1980, and 1992), and the last Section VII summarizes the paper and underlines the theoretical and practical implications of this study.

## II. Korean SOEs and privatization policy in the last decade

South Korea has heavily relied on SOEs as part of its economic policy to complement the market system (Kim, 2002). Currently, the Korean SOEs employs a total of 258,982 workers (about 86% of government employees) and spent 255 trillion KRW (about 162% of annual expenditure) in 2007 (Table 1).

Table 1. The Size of SOEs Compared with the Korean Government in 2007

	Total Expenditure Budget (A)	State-owned Enterprises (B)	Ratio (B/A) (%)
Budget	156,518	254,988	162.91328
Employment	298,113	258,982	86.873769

Unit: billion KRW

Source: Digital Budget and Accounting System, Korea. ([www.digitalbrain.go.kr](http://www.digitalbrain.go.kr))

However, in spite of the same performance-oriented goal of SOE policy, the Kim Dae Jung administration and the Roh Moo Hyun administration practiced different SOE policies. Though President Kim decisively encouraged privatization, President

Roh called off some privatization plans and did not privatize any SOEs. During the Kim administration, the unprecedented economic challenges (due to 1998 economic crisis) left Korean government with no other choice but to sell off its stakes in SOEs (Ahn and Kim, 2000). The government initially proposed to drastically reduced the number of SOEs from a total of 108 firms in 1998 down to 13 major SOEs and 8 subsidiaries at the end of 2002 (Privatization Plan, Aug. 1998). The Kim administration has systematically and successfully executed most of its privatization plan. By 2002, major SOEs including Korea Telecom(KT), Pohang Iron and Steel Corporation(POSCO), Korea Tobacco and Ginseng Corporation(KT&G), Korea Heavy Industries and Construction Corporation were fully privatized (Kim, 2007).

The Roh administration, on the other hand, suspended all previously committed privatization plans. While the Kim administration planned to restructure most of network industries including electricity and railways, President Roh called off most of these plans. For example, the electricity industry was supposed undergo privatization of its to generation units but the scheme was withdrawn by the Roh administration. The natural gas industry as well as railway industry stopped their restructuring for market competition. During his tenure, President Roh introduced managerial reform measures including programs geared for strengthening customer satisfaction and better assessing SOE performances. The government also legislated <Law of Government-affiliated SOEs> in 2003 and reformed management control system in 2004. In the next section, we compare how SOEs fared during the two distinct periods: one under privatization pressure and the other under the gradual reform.

### **III. Literature review: Paradigms of Studies on SOEs**

#### **1. Establishment and Function of SOEs**

There are numerous reasons for establishing or retaining public enterprises. Jones and Mason(1982) categorized as follows: ideological predilection, acquisition or consolidation of political or economic power, historical heritage and inertia, and pragmatic response to economic problems. Friedmann and Garner(1970) also used four categories: promotion and acceleration of economic development, defensive reasons, controlling monopoly industries, and political ideology. Peterson (1985)

argued that SOEs are established to pursue national goals, economic efficiency, weakness of the POEs, and political ideology. Yu(1985) also explained the birth of Korean SOEs with five factors: for economic development, for controlling monopoly industries, for fulfilling the public need, for covering the fiscal need and for historic legacy of Japanese colonialism. Many early studies described factors behind the establishment SOEs and most of them addressed public interest rationales. According to these studies, when SOEs were first established, there was social consensus on the need of SOEs.

SOEs served many countries well. In particular blue chip companies in the Korean SOE sector performed relatively well over the years and they include Pohang Iron and Steel Company, Korea Electronic Cooperation, Korea Tobacco and Ginseng, and KT. However, in the realm of public policy, one of the most unprecedented global features in the last quarter of the twentieth century has been privatization. During the period, governments all over the world introduced various forms of privatization irrespective of their economic context, political orientation and ideological position (Haque, 2000).

## **2. Criticism on SOEs: Theoretic and Empirical Pro-privatization Studies**

This denationalization process, given its current title of “privatization” by the conservative government of Margaret Thatcher in 1979, has transformed the role of the state in the economy of industrialized nations such as Britain and France and of developing countries as diverse as Singapore, Chile, and Mexico (Magginson et al., 1994). Kikeri et al. (1992) reported that more than 80 countries launched ambitious programs to privatize their SOEs. What makes this privatization wave, in spite of the contribution of SOEs in developing nations, unique? There are historical reasons and theoretical findings. The welfare programs have often forced many nations into huge deficit balance, low economic growth and high unemployment rate. Moreover, the success of Thatcher administration and theoretical support made the denationalization boom around world.

### **1) Theoretical Background**

There are three main theories which support privatization of SOEs: property rights (Alchian and Demsetz, 1973), public choice (Niskanen, 1971; Tullock, 1976), and

agency theory (Jensen and Meckling)<sup>1</sup> Based on the tradition of neo-classical economies, these theories support the case of the superior performance of the private enterprises.

Bozec et al. (2002) summarized each theory. The agency theory assumes that managers seek to maximize their own advantage rather than that of the owners of the firm or the firm itself. However, managers in private firms are disciplined by a number of external control mechanisms, such as the market for managers, and also by internal control mechanisms, such as compensation and rewards incentives (Cuervo and Villalonga, 2000). The property rights theorists also argue that 'under state ownership property rights are poorly defined' (Ramamuriti, 2000). They focus on the marketability of property rights (through securities markets), threat of bankruptcy, and prevention of the managers from seeking their own advantages. The managers in SOEs are not constrained by these types of control; it is, thus, stressed that they are less inclined to maximize profits. On the other hand, the public choice school underlines problems in the functioning of governments. Managers of the SOEs are more concerned with maximizing their own power, their prestige, and the amount of resources under their control. (Niskanen, 1971)

Vickers and Yarrow (1995) also examined some of the implication of different types of ownership in terms of managerial incentive structures and enterprise performance. They argued that "it can be concluded that "ownership matter" in the sense that changes in the structure of property rights are likely to have significant effect upon behavior." Theoretically, SOEs lacked control mechanism and incentive structure (related with the management goal). Without the change in ownership structure it is said that gradualism cannot provide the same effect as shock therapy of privatization (Kim, 1999).

## 2) Empirical Evidence

As well as the theoretic studies, many empirical studies also support privatization policy. Most empirical researches can be categorized in two groups: the first one compares the relative performances of private and public firms, while the second group compares the performance of the public firms before and after privatization.

Kim (2007) summarized these studies well. After reviewing current literature on the relative performances of private and public firms, he concluded that performances

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<sup>1</sup> Interestingly, the three theories were suggested before the reform of Thatcher administration. We can verify the sequence of social problem, ideology and policy.

of POEs are generally much better than those of SOEs and partially privatized enterprises. These previous studies employed various sample data sets: from one country (e.g. Canada, India, Poland, China etc), from one industrial sector (e.g. aviation industry, financial industry, etc), or from many countries. In spite of the difference in the data set, the result is very robust and enough to generalize: SOEs tend to perform worse than POEs.

The studies in the second group were surveyed by Magginson and Netter (2001). They reviewed numerous empirical studies on this topic. They categorized the papers into several criteria: region, characteristic of nations, and technique to privatize. It supported the proposition that privately owned firms are more efficient and more profitable than otherwise comparable state-owned firms. They explained the limitation from the Chinese government case; the current gradual reform shows a good performance, yet they would become more profitable and efficient if coupled with privatization.

## **2. The Critics of Privatization**

Nakagane (2000) reported that the current environment generally tend to favore the gradual approach with regard to SOE reform. It is often said that ownership of property rights does not matter. The economic growth in transition countries, especially China and Russia, supports critical opinions on privatization. SOEs in China performed well with gradual reform programs, while privatized firms in former Soviet Union and Central and Eastern European countries have performed well. At the same time, empirical studies on China case repeatedly document little relationship between ownership and performance (Chen and Jiang, 2000; Nakagane, 2000). However, without a statistical consideration of China's unparalleled economic boom, the result cannot be well documented.

Within this context, Bozec and his colleagues produced two papers with the Canadian SOE data set. In Bozec et al. (2002), they sought to clarify the goal of SOEs. They found that there was no significant difference in performance of SOEs and POEs when controlling for managerial goals.<sup>2</sup>

Bozec et al. (2006) analyzed the bias in selection of performance measures for

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<sup>2</sup> When they did not control the goals, the result is the same as the traditional papers. When they controlled the goal difference, they found that the SOEs achieve significantly better performance, interestingly. When they also controlled monopoly, however, there is no significant difference.

ownership comparison, which depend on the specific objectives of the firms being compared. To replace profitability measures and reduce the biases, they propose the use of technical efficiency, and the result demonstrated that there is no empirical evidence to support the effect of privatization except for the change of goals.

Appendix1 presents a wide review of previous studies including the papers mentioned above. Studies before 2001 are from Magginson and Netter (2001), which documented intensive literature review on empirical studies on SOEs and we added more recent studies on SOE after 2001.

## **IV. Empirical Test**

### **1. Testable hypothesis**

As mentioned above, the correlation between performance and privatizing pressure is found in several SOEs. To test the correlation between the performance of SOEs and privatization pressure, this paper supposes some hypotheses (H1-H4).

SOEs' managers and employees prefer their company to stay in the public sector because there exist rent: long tenure, lower work intensity, and better pay. When they are faced privatization pressure, they are subject to hard budget constraint. In addition, they are pressed to improve financial and operating efficiency in order to maximize sales proceeds. That is, when people show interests in the efficiency of SOEs, social (and economic) monitoring is strengthened and this, in turn, hardens the budget constraint, having an influence on SOE's efficiency. Hence, we expect that the privatization pressure to have positive influence on several efficiency variables.

H1: Privatizing pressure improves profitability.

H2: Privatizing pressure improves operating performance.

H3: Privatizing pressure reduces employment.

H4: Privatizing pressure reduces leverage level.

### **2. Data**

To test these four hypotheses, we collected panel data of 22 SOEs over a 10 year period between 1998 and 2007. The observed companies contain most large-sized SOEs in Korea. The data include annual financial statements and employment statistics, most of which were made available on the websites of SOE. Summary statistics of dependant variables by each year are presented in Appendix2, and Table2 shows the average statistics for the year 2007. Other variables including macroeconomic ones were acquired from the Korea National Statistics Office.

Table 2. Summary Statistics of dependant variables in 2007

Year	Proxy	N	Mean	Median	SD	Min	Max
2007	ROS	22	0.007117	0.04269	0.172476	-0.54025	0.18877
	ROE	22	0.062191	0.0485	0.102089	-0.18403	0.36305
	ROA	22	0.020048	0.01283	0.053569	-0.13266	0.15133
	SAEFF	22	1111.63	435.5505	1824.8	1.29771	7483.45
	NIEFF	22	49.99536	12.60144	114.0151	-229.613	352.0596
	SAL	22	29938.11	3566.81	59462.84	9.57422	257634.5
	EMPL	22	2776.68	1156.5	4402.11	80	21174
	LEV	22	0.607928	0.611655	0.359654	0.137	1.74698

### 3. Variables

Variables ‘profitability’, ‘operating efficiency’, ‘employment’ and ‘leverage’ use the same definition as in most papers on SOE performance, including Magginson et al. (1994), Wei et al. (2003), and Kim (2007), (Table 3). The dependent variable, ‘privatization pressure’, is defined as a dummy variable related with the type of administration: the Kim administration ‘with’ privatization pressure is defined as 1, and the Roh administration ‘without’ privatizing pressure as 0.

### 4. Regression Analysis

To control the macroeconomic factors and other company characteristics, time series and cross section (TSCS) regression is needed. The regression analyzed panel data which vary through time and place. It is very important to understand the

dynamics that the two dimensions of the data are analyzed at once. The TSCS regression is one of the best ways to estimate the causality of variables, and this paper also uses this methodology. The regression model is as follows.

$$DV_{it} = PP_t + ME_t + EC_{it} + e$$

$DV_{it}$  demonstrates dependent variable of SOE  $i$  in year  $t$ .  $PP_t$  is the experimental variable, the privatizing pressure dummy in year  $t$ .  $ME_t$  demonstrates macroeconomic control variables in year  $t$ . And  $EC_{it}$  control for enterprise characteristics in year  $t$ .

Table 3. Variable Description and Testable Prediction

Characteristics	Proxies	Predicted relationship
Profitability	Return on Sales (ROS) = Net income / Sale	$ROS_{Kim} > ROS_{Rho}$
	Return on Assets (ROA) = Net income / Total Asset	$ROA_{Kim} > ROA_{Rho}$
	Return on Equity (ROE) = Net income / Equity	$ROE_{Kim} > ROE_{Rho}$
Operating Efficiency	Sales Efficiency (SALEFF) = Real Sale / Employment	$SALEFF_{Kim} > SALEFF_{Rho}$
	Net income efficiency (NIEFF) = Net income / Employment	$NIEFF_{Kim} > NIEFF_{Rho}$
Output	Real Sales (SAL) = Nominal Sale / GDP Deflator	$SAL_{Kim} > SAL_{Rho}$
Employment	Total Employment (EMPL) = Total Number of Employment	$EMPL_{Kim} < EMPL_{Rho}$
Leverage	Debt to Asset (LEV) = Total Debt / Total Asset	$LEV_{Kim} < LEV_{Rho}$

\* This variable description mainly modified Magginson et al. (1994) and Kim (2007).

## VI. Results

### 1. Profitability

Profitability is defined in three popular terms, return on sales (ROS), return on assets (ROA), and return on equity (ROE). This paper estimated causality with 3 models for each proxy, 9 models total.

According to the analysis, we found that there is no statistically significant relationship between privatization pressure and profitability (Table5). As you can see

from the equation, there are two ways to improve profitability; i) increase net income and/or ii) reduce sales, asset or equity. But it is very difficult to increase net income without technical advances or exogenous factors and to reduce the equity or assets because of institutional constraints. Accordingly, although the privatization pressure hardened budget constraint, SOEs rarely have time and methodology to improve profitability in short term.

Table 5. TSCS Regression Output 1: Profitability

Dependent Variable	Profitability								
	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9
Intercept	0.4344 (0.7074)	0.4512 (0.6989)	0.3828 (0.7423)	27.5051 7 (0.1501)	28.0735 2 (0.1441)	27.924 2 (0.1458)	-0.3631 (0.2088)	-0.3547 (0.2236)	-0.3631 (0.2118)
Privatizing Pressure	0.0280 (0.7874)	0.0268 (0.7969)	0.0280 (0.7885)	-0.9667 (0.5730)	-0.9742 (0.5709)	-0.9721 (0.5722)	0.0255 3 (0.3253)	0.0253 (0.3309)	0.0255 (0.3279)
GDP Deflator	-0.0050 (0.6508)	-0.0052 (0.6394)	-0.0045 (0.6870)	-0.2721 (0.1377)	-0.2776 (0.1321)	-0.2760 (0.1337)	0.0036 (0.1927)	0.0035 (0.2082)	0.0036 (0.1948)
GDP	0.0000 (0.5470)	0.0000 (0.6098)	0.0000 (0.6425)	0.0003 (0.3214)	-0.0004 (0.2995)	0.0004 (0.3045)	0.0000 (0.6122)	0.0000 (0.6202)	0.0000 (0.9615)
Asset		0.0000 (0.4378)			0.0000 (0.9050)			0.0000 (0.7110)	
Employment			0.0000 (0.8877)			0.0000 (0.9761)			0.0000 (0.9615)
Debt		0.0000 (0.7430)	0.0000 (0.4863)		0.0000 (0.7627)	0.0000 (0.7400)		0.0000 (0.7589)	0.0000 (0.9494)
N	220	220	220	220	220	220	220	220	220
Adjusted R <sup>2</sup>	0.0049	0.0108	0.0081	0.0132	0.0145	0.0144	0.008	0.0087	0.0081

## 2. Operating Efficiency

Operating efficiency is defined in two terms: sales efficiency and net income efficiency. These are similar with labor productivity often used in economics. This paper estimated causality with 3 models for each proxy, 6 models total.

According to the models 1, 2, 3 in Table 6, operating efficiency (sales efficiency) is significantly higher under the privatization pressure. Sales efficiency is defined as sales per employee, and the two components are under the control of SOE managers. In the Korean SOE sector, it is hard to lay off workers but recommending

or giving incentives to voluntary retirement works as a good tool for managers. Sales can also increase when managers and employees work harder and provide better services. That is, under the privatization pressure, smaller organization with more intensive labor produces more output.

Labor unions and some experts assert that restructuring reform often deteriorates the quality of products and services, stability and safety, but people as taxpayers want to tighten the slack. Moreover, if most products and services are provided as before, people would naturally prefer privatization and smaller SOEs. This is the basis for the current privatization argument in Korea. Thus, we can verify that the privatization pressure had a positive influence on the operating performance of SOEs.

Moreover, although it is not statistically significant, net income efficiency is also higher under privatization pressure. It supports the general hypothesis on the budget constraint (Kornai: 1980, 1992).

Table 6. TSCS Regression Output 2: Operating Efficiency

	Operating Efficiency					
	Model1	Model2	Model3	Model4	Model5	Model6
Dependent Variable	SALEFF	SALEFF	SALEFF	NIEFF	NIEFF	NIEFF
Intercept	-4998.96 (0.0092)***	-4900.31 (0.0089)***	-4675.65 (0.0128)**	-277.206 (0.5521)	-298.992 (0.5210)	-294.854 (0.5239)
Privatizing Pressure	450.692 (0.0081)***	443.1822 (0.0071)***	427.286 (0.0094)***	45.9028 (0.2737)	45.6854 (0.2731)	44.0508 (0.2884)
GDP Deflation	51.1486 (0.0048)***	49.8501 (0.0049)***	49.2135 (0.0053)***	2.5552 (0.5674)	2.7427 (0.5393)	2.8446 (0.5207)
GDP	0.0350 (0.3438)	0.0229 (0.5339)	0.0251 (0.4930)	0.0036 (0.6913)	0.0016 (0.8628)	0.0004 (0.9630)
Asset		0.0000 (0.1181)			0.0000 (0.4580)	
Employment			-0.0452 (0.0664)*			-0.0045 (0.2277)
Debt		0.0000 (0.3342)	0.0000 (0.1299)		0.0000 (0.9181)	0.0000 (0.0442)**
N	220	220	220	220	220	220
Adjusted R <sup>2</sup>	0.093	0.1104	0.1144	0.0058	0.0204	0.0247

### 3. Output, Employment, and Leverage

Many previous studies also studied the impact on output, employment, and leverage. But in our TSCS regression output we found no statistically significant results. Although it is not significant, real sales (SAL) is fairly higher under the Kim administration.

Table 7. TSCS Regression Output 2: Output, Employment, and Leverage

	Output, Employment, and Leverage						
	Model1	Model2	Model3	Model4	Model5	Model6	Model7
Dependent Variable	SAL	SAL	SAL	EMPL	EMPL	LEV	LEV
Intercept	-39526.4 (0.3067)	-12040.8 (0.6944)	-17148.3 (0.6599)	14471.24 (0.0174)**	7145.846 (0.1324)	1.1547 (0.0056)***	1.0512 (0.0122)
Privatizing Pressure	4792.54 (0.1557)	3646.364 (0.1778)	3433.967 (0.3166)	-588.999 (0.2718)	-445.799 (0.2871)	-0.0054 (0.8833)	-0.0012 (0.9745)
GDP Deflator	4292925 (0.2326)	117.5364 (0.6857)	280.3805 (0.4458)	-113.335 (0.0480)**	-38.8286 (0.3884)	-0.0055 (0.1610)	-0.0047 (0.2336)
GDP	2.1241 (0.0043)***	1.1421 (0.0621)*	1.7512 (0.0235)**	0.1063 (0.3649)	-0.0394 (0.6762)	0.0000 (0.3566)	0.0000 (0.4063)
Asset		0.0035 (<.0001)			-0.0003 (<.0001)		
Employ			-2.5461 (<.0001)** *				0.0000 (0.1224)
Debt		-0.0036 (<.0001)	0.0001 (0.0017)***		0.0006 (<.0001)		
N	220	220	220	220	220	220	220
Adjusted R <sup>2</sup>	0.1567	0.5197	0.2315	0.0215	0.4336	0.0227	0.0336

## VI. Interpretation of the Result with Soft Budget Constraint Perspective

### 1. Soft Budget Constraint

Why did Operating Efficiency Improve under Privatizing Pressure? There can be many answers, but this paper suggests an explanation based on the hardening of budget constraint. The key concept, 'Soft budget constraint' comes from the studies on transition economies. Before the change, the fundamental feature of a centralized (planned) economy is the dominance of the state sector. A large body of evidence documents that a major problem in socialist transition economies has been a lack of financial discipline in this sector.<sup>3</sup> The lack of discipline stems from the unenforceability of bankruptcy threats, together with various subsidies, credits, and price-supports, implying, as Kornai (1979, 1980, 1992) recognized, that state firms are subject to soft budget constraints. It directly influences the efficiency of the state sector through their effect on the expectations of SOEs managers. (Maskin and Xu)

Kornai suggested four different means to soften budget constraint of the firm.<sup>4</sup>

- (1) 'Soft subsidies' granted by national or local governments. The subsidy is soft if it is negotiable, subject to bargaining, lobbying, etc. The subsidy is adjusted to past, present or future cost overruns.
- (2) 'Soft Taxation.' The attribute soft does not refer to the rate of taxation. Even with a low tax rate the taxation system can be hard, if rules are uniform, fixed for a long period and the payment of taxes rigorously enforced. In contrast taxation is soft, even with a high tax rate, if the rules are negotiable, subject to bargaining, political pressures. The tax rates are not uniform, but almost tailor-made according to the financial situation of different sectors or different regions or different forms of ownership. The fulfillment of tax obligations is not strict; there are leaks, ad hoc exemptions, postponements, etc.
- (3) 'Soft credit.' Again softness does not refer to the magnitude of the interest rate. The credit system can be hard even with a low interest rate (provided that the credit market generates a low rate), if the fulfillment of credit contracts is strictly enforced. The creditor lends money expecting discipline in debt service and not for the sake of assistance to an ailing firm which will not be able to service its debt. Enforcement of the credit

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<sup>3</sup> Janos Kornai (1979, 1980, and 1992) has in particular shown the role of soft budget constraints in explaining the emergence and reproduction of shortages in socialist economies.

<sup>4</sup> <http://faculty.vassar.edu/kennett/Kornai.htm>

contract continues to the bitter end; harsh sanctions in the case of insolvency, including receivership, bankruptcy, forced merger, sell-out or other similar legal means. In contrast, the credit system can be soft even with high interest rates, if the fulfillment of a credit contract is not enforced, unreliable debt service is tolerated and postponement and rescheduling are in order. Soft credit is used to assist firms in great and chronic financial trouble, without real hope of repayment of the debt.

- (4) 'Soft administrative prices.' This can be applied in the case when the price is not set by a free contract seller and buyer, but by some bureaucratic institution. The administrative price is hard if, once set, it restricts expenditure and does not automatically adjust to cost increases. An administrative price is soft if it is set according to some permissive "cost plus" principle that automatically adjusts prices to costs.

## **2. Privatization Pressure Hardens the Budget Constraint**

The Korean SOEs were previously faced with soft budget constraints, and as a result, the inefficiency of the company was embedded in the structure. However, we found that privatization pressure improved operating performance significantly. Thus, it is possible that the privatization pressure hardened the budget constraint and it affected SOEs' economic performance. Managers perceive privatization pressure as a threat which can block all sources of the soft budget constraint.<sup>5</sup> The sources can be interpreted as the rent of SOEs, and the interest groups struggle to maintain it. These rent-seeking behaviors generally brought corruption or illegal activities in the past, but it can also be a great incentive to perform efficiently in good anti-corruption and court system, and this incentive strongly activates under the privatizing pressure.<sup>6</sup>

## **VII. Conclusion**

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<sup>5</sup> In this case, the threat has lower probability but high penalty. When it is expensive or impossible to monitor and uncover the bad, authority have an alternative to increase the penalty to prevent the bad.

<sup>6</sup> However, as mentioned in the Chapter I, this pressure can not improve their performance to the privately-owned enterprises level because small amount of rent can not disappear because it works as an incentive.

According to the statistical analysis, operating performance is significantly higher under the privatization pressure. It means privatization pressure improved operating performance without demanding any costs on SOEs' profitability, output, etc. And the result was interpreted along the budget constraint perspective. Theoretically, this study provided policy makers with a new perspective. Most previous studies investigated the effectiveness of privatization and of gradual reform, but the two events affect each others' effect. The new concept 'privatization pressure' can link between the two.

To the policy makers, this paper suggests important implications with regard to SOE and privatization policy. First, maintaining privatization pressure should be the core of the SOE policy. When SOE managers find ways to avoid the privatization pressure, their budget constraints soften and their economic performance will likely to decline. Second, the pressure comes from actual privatization threats. This paper defined the Kim administration as a period when the government planned privatization programs, announced issues concerning SOEs repeatedly, and executed privatization in 1998-2002. These actual programs made most SOE managers worry about their performances. Third, it is preferable that privatization pressure be more intensive at the beginning. The degree of intensity of budget constraint is a function of managers' perception. It is important that the government maintains the constant pressure on SOEs by announcing systematic reform programs and privatization schedules and be committed to it. In other words, it is crucial that government alter the rents of manager and employees of SOEs. Thus, to renew the perception of managers, continuing pressure is needed.

When this policy is implemented, most of the social costs (disorder and opposition) would occur at the early stages, while the social benefits (efficient public sector) will occur over a long period of time. The role of policy entrepreneurs and leaders is to overcome short-term pain and utilize the long-term gain which tend to be much larger in eth case of SOE reform.

## Appendix1. Review on Previous Studies

	Sample description and Methodology	Empirical findings and Conclusions
Boardman and Vining (1989)	Examine the economic performance 500 largest non-US firms in 1983, classified by ownership structure as state-owned, privately owned, or mixed ownership enterprises (ME). Employ four profitability ratios and two measures of X-efficiency.	Find that state-owned and mixed ownership firms are significantly less profitable and productive than privately-owned companies. Also find mixed ownership firms are no more profitable than pure state-owned companies—so full private ownership required to gain efficiency.
Vining and Boardman (1992)	Asks whether ownership “matters” in determining the efficiency of SOEs, or if only the degree of competition is important. Estimate performance model using 1986 data from 500 largest non-financial Canadian companies including 12 SOEs and 93 mixed enterprises.	After controlling for size, market share and other factors, private firms are significantly more profitable and efficient than are MEs and SOEs, though now find that MEs out-perform Crown corporations (SOEs). Thus, ownership has an effect separable from competition alone.
Pinto, Belka and Krajewski (1993)	Test whether privatization is required to improve performance of SOEs by examining how Polish state sector responded in the three years following the “Big Bang” reforms of 1990. These liberalized prices, tightened fiscal & monetary policy and introduced competition but did not include privatization.	Verify significant performance improvement due to macroeconomic stabilization package, even without privatization. Improvements mostly due to imposition of hard budget constraints, tight bank lending policies, and enhanced credibility about government’s “no bailout” pledge.
Megginson, Nash, and van Randenborgh (1994)	Compare 3-year average post-privatization financial and operating performance ratios to the 3-year pre-privatization values for 61 firms from 18 countries and 32 industries from 1961-1989. Tests significance of median changes in post versus pre-privatization period. Also binomial tests for % of firms changing as predicted.	Document economically & statistically significant post-privatization increases in output (real sales), operating efficiency, profitability, capital investment spending, and dividend payments, as well as significant decreases in leverage. No evidence of employment declines after privatization, but significant changes in firm directors.
Ehrlich, Gallais-Hamonno, Liu and Lutter (1994)	Examine impact of state ownership on the long-run rate of productivity growth and/or cost decline for 23 international airlines over the period 1973-1983.	Find that state ownership can lower the long-run annual rate of productivity growth by 1.6-2.0% and the rate of unit cost decline by 1.7-1.9%. Ownership effects not affected by degree of competition.
Macquieira and Zurita (1996)	Compare pre- versus post-privatization performance of 22 Chilean companies privatized from 1984 to 1989. Use Megginson, Nash and van Randenborgh (MNR) methodology to perform analysis first without adjusting for overall market movements (as in MNR), then with an adjustment for contemporaneous changes.	Unadjusted results virtually identical to MNR: significant increases in output, profitability, employment, investment, and dividend payments. After adjusting for market movements, however, the changes in output, employment, and liquidity are no longer significant, and leverage increases significantly.
Majumdar (1996)	Using industry-level survey data, evaluates the performance differences between SOEs, MEs, and privately-owned Indian companies for the period 1973-1989. SOEs and MEs account for 37% of employment and 66% of capital investment in India in 1989.	Document efficiency scores averaging 0.975 for privately-owned firms, which are significantly higher than the average 0.912 for MEs and 0.638 for SOEs. State sector efficiency improves during concerted “efficiency drives” but declines afterwards.
Kole and Mulherin (1997)	Test whether postwar performance of 17 firms partly owned by US government due to seizure of “enemy” property during WWII differs significantly from performance of private US firms.	Though these firms experience abnormally high turnover among boards of directors, tenure of managers is stable, and SOE performance is not significantly different from privately-owned firms.
Boubakri	Compare 3-year average post-privatization	Document economically & statistically

and Cosset (1998)	financial and operating performance ratios to the 3-year pre-privatization values for 79 companies from 21 developing countries and 32 industries over the period 1980-1992. Tests for the significance of median changes in ratio values in post versus pre-privatization period. Also binomial tests for percentage of firms changing as predicted.	significant post-privatization increases in output (real sales), operating efficiency, profitability, capital investment spending, dividend payments, and employment--as well as significant decreases in leverage. Performance improvements are generally even larger than those documented by Megginson, Nash, and van Randenborgh.
D'Souza and Megginson (1999)	Document offering terms, method of sale, and ownership structure resulting from privatization of 78 companies from 10 developing and 15 developed countries over the period 1990-94. Then compare 3-year average post-privatization financial and operating performance ratios to the 3-year pre-privatization values for a subsample of 26 firms with sufficient data. Tests for the significance of median changes in ratio values in post versus pre-privatization period. Also binomial tests for % of firms changing as predicted.	Document economically & statistically significant post-privatization increases in output (real sales), operating efficiency, and profitability, as well as significant decreases in leverage. Capital investment spending increases--but insignificantly, while employment declines significantly. More of the firms privatized in the 1990s are from telecoms and other regulated industries.
Dewenter and Malatesta (2000)	Test whether profitability, labor intensity, and debt levels of SOEs in the lists of the 500 largest non-US firms during 1975, 1985, and 1995 differs from privately-owned firms in the same lists.	After controlling for business cycles, find private firms are significantly (often dramatically) more profitable than SOEs. Private firms also have significantly less debt and less labor intensive production processes.
LaPorta, Lopez-de-Silanes, Shleifer (2000)	Using data from 92 countries, examine whether government ownership of banks impacts level of financial system development, rate of economic growth, and growth rate of productivity.	Find government ownership is extensive, especially in poorest countries, that these holdings retard financial system development, and restrict economic growth rates, mostly due to impact on productivity.
Tian (2000)	Studies relation between state shareholding and corporate performance of 825 publicly-traded Chinese companies in 1998. 413 of these had some government ownership, 312 had none.	Find performance of "private" enterprises to be significantly superior to that of "mixed" enterprises. Also find corporate value generally declines with state ownership, but then increases after state share passes 45%.
Wallsten (2000)	Performs an econometric analysis of the effects of telecommunications reforms in developing countries. Using a panel dataset of 30 African and Latin American countries from 1984 to 1997, explores the effects of privatization, competition and regulation on telecommunications performance.	Competition is significantly associated with increases in per capita access and decreases in cost. Privatization alone is not helpful, unless coupled with effective, independent regulation. Increasing competition the single best reform, competition with privatization is best, but privatizing a monopoly without regulatory reforms should be avoided.
Laurin and Bozec (2000)	Compares productivity and profitability of two large Canadian rail carriers, before and after the 1995 privatization of Canadian National (CN). Compares accounting ratios for entire 17-year period 1981-1997 and for three sub-periods: the fully state-owned era (1981-91), the pre-privatization period (1992-95), and the postprivatization era. Also compares stock returns from 1995-98. Creates a six-firm comparison group of Canadian privatizations, and computes accounting ratios and stock returns for these firms as well.	Total factor productivity of CN much lower than that of privately owned Canadian Pacific (CP) during 1981-91 period, but became just as efficient during pre-privatization (1992-95) period, then exceeded it after 1995. CN stock price out-performed CP, the transportation industry, and the Canadian market after 1995. Both firms shed workers after 1992, but CN's employment declined by more (34% vs 18%) as average productivity almost doubled (97% increase). CN's capital spending increased significantly, though CP increased more. Six-firm Canadian privatization comparison group also experienced significant increases in

		investment spending and productivity, and a significant decline in employment.
Boylaud and Nicoletti (2000)	Uses factor analysis and a database on market structure and regulation to investigate the effects of liberalization and privatization on productivity, prices and quality of long-distance and cellular telephony services in 23 OECD countries over the 1991-97 periods.	Prospective and actual competition both bring about productivity and quality improvements—and lower prices—in telecom services, but no clear effect could be found for privatization.
Verbrugge, Megginson and Owens (2000)	Study offering terms and share ownership results for 65 banks fully or partially privatized from 1981 to 1996. Then compare pre and post-privatization performance changes for 32 banks in OECD countries and 5 in developing countries.	Document moderate performance improvements in OECD countries. Ratios proxying for profitability, fee income (non-interest income as fraction of total), and capital adequacy increase significantly; leverage ratio declines significantly. Document large, ongoing state ownership, and significantly positive initial returns to IPO investors.
Boubakri and Cosset (1999)	Examine pre- versus post-privatization performance of 16 African firms privatized through public share offering during the period 1989-1996. Also summarize findings of three other studies pertaining to privatization in developing countries.	Document significantly increased capital spending by privatized firms, but find only insignificant changes in profitability, efficiency, output and leverage.
D'Souza and Megginson (2000)	Examine pre- versus post-privatization performance changes for 17 national telecommunications companies privatized through share offerings during 1981-94.	Finds that profitability, output, operating efficiency, capital spending, number of access lines, and average salary per employee all increase significantly after privatization. Leverage declines significantly; employment declines insignificantly.
Dewenter and Malatesta (2000)	Compare pre- versus post-privatization performance of 63 large, high-information companies divested during 1981-94 over both short-term [(+1 to +3) vs (-3 to -1)] and long-term [(+1 to +5) vs (-10 to -1)] horizons. Also examine long-run stock return performance of privatized firms and compare the relative performance of a large sample (1,500 firm-years) of state and privately-owned firms during 1975, 1985, and 1995.	Document significant increases in profitability (using net income) and significant decreases in leverage and labor intensity (employees/sales) over both short and long-term comparison horizons. Operating profits increase prior to privatization, but not after. Document significantly positive long-term (1-5 years) abnormal stock returns, mostly concentrated in Hungary, Poland, and the UK. Results also strongly indicate that private firms out-perform state-owned firms.
Boardman, Laurin and Vining (2000)	Compare 3-year average post-privatization financial and operating performance ratios to the 5-year pre-privatization values for 9 Canadian firms privatized from 1988 to 1995. Also computed long-run (up to 5 years) stock returns for divested firms.	Find that profitability, measured as return on sales or assets, more than doubles after privatization, while efficiency and sales also increase significantly (though less drastically). Leverage and employment decline significantly, while capital spending increases significantly. Privatized firms also significantly out-perform Canadian stock market over all long-term holding periods.
Magginson and Netter (2001)	Survey empirical studies on privatization widely. Investigate empirical results with profitability, efficiency, investment, leverage, employment and initial return of share issue privatization with intensive meta analysis.	Document significant increases in financial and operating efficiency of privatized enterprises are a general phenomenon around world except China.
Bozec, Breton and Cote (2002)	Using a sample of state-owned enterprises and private firms for the period 1976-1996, present empirical evidence that the state-owned enterprises, when their main goal is to	The alleged under-performance of the state-owned enterprises may only be the result of pursuing other goals while the poor quality of public managers may be another urban myth.

	maximize profit, perform as well as the privately owned enterprises.	
Wei, Varela, D'Souza, and Hassan (2003)	Examines the pre- and post-privatization financial and operating performance of 208 firms privatized in China during the period 1990-97 with MNR methodology and regression analysis.	The full sample results show significant improvements in real output, real assets, and sales efficiency, and significant declines in leverage following privatization, but no significant change in profitability. Further analysis shows that privatized firms experience significant improvements in profitability compared to fully state-owned enterprises during the same period.
Dockner, Mosburger and Schaffhauser-Linzatti (2005)	Studies the change in operating and financial performance of Austrian firms that were either partly or fully privatized during the period of 1985-1995 with two different methods to empirically evaluate the performance of privatized firms. Using accounting data prior to and after the privatization, measure the operating performance of privatized firms, and since all the firms in the sample were privatized using an IPO, use a return based event study to measure the financial performance of these privatizations and compare it to the rest of IPOs that were launched in the same period.	Find that there is no significant difference between state ownership and privatization and that the cumulative returns for the privatized firms are significantly different to private firms. Thus, conclude that the privatization program in Austria was not that successful as compared to other international experience.
Bozec, Dia and Breton, (2006)	Analyses the bias in the selection of performance measures for ownership comparisons, which depends on the specific objectives of the firms being compared. Sample includes 13 Canadian SOEs, commercialized and/or privatized between 1976 and 2001. To replace profitability measures and reduce biases, propose the use of technical efficiency, which provides for SOEs' specificities.	The results clearly support the view that privatization has no impact on a firm's technical efficiency, the only positive impact being related to a change in the objectives of the firm while using profitability measures. The results of this study raise the question of the validity of comparisons between SOEs and private firms when using profitability indicators.
Kim (2007)	Studies the change in operating and financial performance of Korea firms that were either partly or fully privatized during the period of 1997-2002. Using accounting data prior to and after the privatization, measure the operating performance of privatized firms.	Document significant increases in financial and operating efficiency of privatized enterprises in Korea. Moreover, emphasized the significant benefit for the national economy.

Source: Edit some review on studies before 2001 in Megginson and Netter (2001) and supplement our review on recent papers.

Appendix2. Summary Statistics

Year	Variable	N	Mean	Median	SD	Min	Max
1998	ROS	22	0.00313 5	0.03431 5	0.20889 2	-0.84392	0.25703
	ROE	22	0.10410 9	0.01803	0.29715 8	-0.17816	1.24171
	ROA	22	0.01599 5	0.0068	0.07516 8	-0.16363	0.2286
	SALEFF	22	534.273 2	282.629 8	841.638 8	1.23994	3912.48
	NIEFF	22	20.1702 6	11.0734 3	43.1909 5	-47.9641	171.2796
	SAL	22	14530.9 3	2262.62	30764.6 8	12.2746 5	141669.2
	EMPL	22	3219.95	1114.5	7366.53	157	35689
	LEV	22	0.63219 2	0.65178 5	0.25756 3	0.12684	1.13178
1999	ROS	22	0.01051 1	0.04057	0.14480 8	-0.47557	0.30882
	ROE	22	0.11536 8	0.04453 5	0.29549 4	-0.21202	1.27881
	ROA	22	-0.00844	0.00657	0.11575	-0.4685	0.16541
	SALEFF	22	659.532 3	357.071 1	1034	1.15755	4707
	NIEFF	22	32.5993 6	17.6814 5	51.5336 9	-26.3454	208.8703
	SAL	22	16547.7 2	2893.31	34295.9 6	8.95267	156257.9
	EMPL	22	3026.27	1087.5	7198.53	126	34850
	LEV	22	0.64736 5	0.62313	0.31556 8	0.08482	1.36635
2000	ROS	22	0.01596 1	0.05368 5	0.22689 2	-0.78062	0.27158
	ROE	22	3.34757 9	0.04871	15.5606	-1.34557	73
	ROA	22	0.01525	0.01761	0.16556	-0.62029	0.31487
	SALEFF	22	817.453 3	409.633 6	1411.31	0.7875	6483.43
	NIEFF	22	46.939	18.5812 7	91.8381 6	-77.3452	351.4945
	SAL	22	19595.3 3	3401.91	40167.6 2	5.985	182528
	EMPL	22	3120.77	1105	7110.94	110	34306
	LEV	22	0.62544 4	0.6675	0.33228 6	0.05829	1.234
2001	ROS	22	0.01196 5	0.0542	0.20749 4	-0.51587	0.30536
	ROE	22	-0.33733	0.06947 5	2.22047 6	-10.2267	0.97387
	ROA	22	0.02402	0.02398	0.09807	-0.27547	0.21531

					3		
	SALEFF	22	962.595	410.666 7	1840.04	0.94833	8547.29
	NIEFF	22	52.6724	31.5038	112.919 7	-106.221	428.069
	SAL	22	20985.9 1	2955.39	42800.7 5	6.02899	191503.2
	EMPL	22	2433.59	1105	4019.71	109	19234
	LEV	22	0.62171 9	0.67303 5	0.34630 6	0.07083	1.28286
2002	ROS	22	0.03556 5	0.06537 5	0.23660 4	-0.85316	0.30258
	ROE	22	-0.24824	0.08656 5	1.97770 7	-8.99592	1.3991
	ROA	22	0.03293 1	0.02334	0.09227 9	-0.21992	0.23273
	SALEFF	22	1120.53	442.711 1	2262.08	1.07751	10602.13
	NIEFF	22	75.8213 3	31.2328 2	126.005 3	-58.2695	526.2851
	SAL	22	22587.9 8	3171.83	44686.1 7	6.83944	197632.6
	EMPL	22	2435	1105.5	4026.27	109	19306
	LEV	22	0.60030 1	0.62642 5	0.34023 4	0.09626	1.4671
2003	ROS	22	0.05118 4	0.06236	0.17657 6	-0.66375	0.27032
	ROE	22	0.16006	0.04469 5	0.30632 1	0.00406	1.26142
	ROA	22	0.02540 4	0.02382	0.06927 8	-0.20838	0.18405
	SALEFF	22	979.104 1	412.909 6	1765.06	1.19426	8088.49
	NIEFF	22	67.1915 9	16.6503 4	100.825 1	-51.2427	344.4862
	SAL	22	22112	2811.11	45574.3 8	7.42322	204730.3
	EMPL	22	2504.91	1114.5	4073.52	109	19547
	LEV	22	0.58990 4	0.60003 5	0.34558 5	0.11704	1.64138
2004	ROS	22	-0.14286	0.03745 5	0.88268 2	-4.06467	0.34096
	ROE	22	0.04033 6	0.03736	0.20841 6	-0.74706	0.49733
	ROA	22	0.01199 1	0.01578 5	0.04457 7	-0.10819	0.10039
	SALEFF	22	903.170 3	407.932 1	1541.66	1.27434	6906.31
	NIEFF	22	-6.30456	7.66165 5	315.051 5	-1361.99	294.3435
	SAL	22	22239.6 1	3073.65	46601.9 9	8.53339	210150.6
	EMPL	22	2609.05	1142	4266.34	88	20518
	LEV	22	0.59230 8	0.58381 5	0.35450 7	0.12154	1.6774
2005	ROS	22	0.00599	0.03420	0.20077	-0.72764	0.2921

			1	5	2		
	ROE	22	0.06468 6	0.04366 5	0.11534 4	-0.15043	0.37349
	ROA	22	0.01469 9	0.01642	0.04518 4	-0.12788	0.08952
	SALEFF	22	932.234 7	436.657 6	1540.79	1.26733	6601.16
	NIEFF	22	40.4976 5	12.4049	103.697 4	-240.75	274.8083
	SAL	22	24262.6 1	3133.19	50337.8 4	9.1347	224017.2
	EMPL	22	2677.41	1148	4328.55	88	20821
	LEV	22	0.60116 4	0.60473	0.35901 4	0.14362	1.74475
2006	ROS	22	-0.01196	0.03887 5	0.20261 4	-0.68249	0.20173
	ROE	22	0.05736 5	0.04628 5	0.11245 1	-0.19773	0.38342
	ROA	22	0.01161 6	0.01558	0.05417	-0.15806	0.11623
	SALEFF	22	998.512 3	431.120 2	1656.51	1.33213	6860.2
	NIEFF	22	31.7393 8	15.8857 4	93.8062 6	-264.216	218.4713
	SAL	22	27003.0 2	3350.19	55159.2 6	9.61235	241531.2
	EMPL	22	2731.27	1150.5	4346.01	88	20898
	LEV	22	0.61088 7	0.64624 5	0.37381 5	0.13783	1.81001
2007	ROS	22	0.00711 7	0.04269	0.17247 6	-0.54025	0.18877
	ROE	22	0.06219 1	0.0485	0.10208 9	-0.18403	0.36305
	ROA	22	0.02004 8	0.01283	0.05356 9	-0.13266	0.15133
	SALEFF	22	1111.63	435.550 5	1824.8	1.29771	7483.45
	NIEFF	22	49.9953 6	12.6014 4	114.015 1	-229.613	352.0596
	SAL	22	29938.1 1	3566.81	59462.8 4	9.57422	257634.5
	EMPL	22	2776.68	1156.5	4402.11	80	21174
	LEV	22	0.60792 8	0.61165 5	0.35965 4	0.137	1.74698



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