The Emergence of Private Coal Mines and DHCC's Management Stabilization in the 1950s

Lim Chaisung

Dae Han Coal Corporation (DHCC) established a five-year plan for developing coal with the dispatch of military personnel as momentum and put it into practice. The opening of the railroad for this plan accelerated production at DHCC and brought about a sudden rise of privately managed coal mines. Though they were very small-scale mines under their management, privately managed coal mines excelled against state-run coal mines in their managerial incomings and outgoings and productivity. Meanwhile, DHCC didn't get out of deficit operation and managed coal mines by obtaining a short-term loan. Therefore, under the conditions of privatization, the government appointed a civilian as the president of DHCC and tried business rationalization. DHCC decreased the production plan in accordance with an oversupply at the market and escaped from loaning management by establishing a plan for self-supporting finances. Also, in productivity, DHCC pushed for the advancement of drilling speed and intensive coal mining and increased the quality of coal by constructing the lots of mechanical sorting. In sales, DHCC established selling agencies in important cities, distributed agents, and tried to increase civilian consumption of coal. Owing to such business rationalization, better management, the increase of real wages and better treatment of miners, DHCC exceeded the objectives of its coal development plan that was integrated by the five-year economic development plan by the 1960s. At an individual industrial level called coal industry, the take-off for economic development had already begun in the 1950s.

Keywords: Dae Han Coal Corporation, private coal mines, the coal development plan, management rationalization, high-speed drilling

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1. Preface

This paper analyzes how Dae Han Coal Corporation (DHCC) achieved managerial stabilization together with the development plan while competitive conditions were formed with the emergence of privately managed coal mines in the second half of the 1950s. It reveals that the coal industry had already taken off in the 1950s and that the stabilized energy supply which was essential to the economic development during the 1960s had already begun in the second half of the 1950s.

After Korea's liberation, its economy was forced to produce new economic relations owing to the collapse of Japanese imperialism and the division of the Korean Peninsula. To do this, the Korean government pushed for economic development plans under the support of the United States of America but suffered from substantial losses from the Korean War. Afterwards, the Combined Economic Board pushed for new aid plans for economic revival. The Korean economy recovered its 1949 economic level by the mid-1950s. As America's foreign policies began to emphasize economic development of the Third World, the Korean government planned and promulgated a three-year economic development plan, modeled after India, with control by the Ministry of Reconstruction. The first economic development plan was put into practice on the basis of this plan in the 1960s (Kim 2003: Park 2007). Gong Je-uk (1993) already indicated that the conglomerates in charge of capital accumulation during the 1960s and 1970s had been formed in the 1950s and also suggested the dynamics of the 1950s. Thus, there existed considerable continuity of policies from the second half of the 1950s till the first half of the 1960s, and the 1950s became a historical premise of the 1960s.

Can't such dynamics be confirmed at the industrial level? Weren't there any individual industrial sectors that took off during the 1950s with the political support of the state and the nurture of civilian capitalists? Lee Dae-geun maintained that industrialization during the 1950s was on a higher level than what we generally understand and the industrial structure during the 1950s continued 'as it was' throughout the 1960s (Lee 2002:435-43). In relation to this, the reconstruction of state-owned railroads and the investment in new railroads contributed not only to the economic recovery but also economic development during the 1960s (Im 2005). Above all, the construction of a railroad network for coal transportation completed in the mid-1950s contributed to easing the domestic shortage of coal. Considering that coal was the major domestic source of energy for a long

time before the use of crude oil, reviewing the recovery and growth of the coal industry will be of great significance to understanding economic growth.

Naturally, coal development was presented as one of the most important projects in the ECA Aid Program and Tasca Report, key economic policies of the United States toward Korea. In particular, the development of a coalfield in Gangwon Province, the largest in South Korea, was a core task for economic recovery. The executive organ was Dae Han Coal Corporation, established in 1950 by uniting government-vested coal mines. Though DHCC established the Three-Year Postwar Rehabilitation Plan (1951-1953) and put it into practice, facility recovery made little progress due to the lack of invested finances and strikes that occurred at major coal mines because of delayed payment of wages. To cope with this, the government decided to dispatch the army.

There were many problems in management stabilization even though the Five-Year Coal Development Plan (1956-1960) was established cooperatively between Korea and the United States (Im 2007). Because the rate of prices increase had to be kept down, within 25%, to maintain the fixed exchange rate (August 1955) of 500:1 and an extremely reduced budget was enforced, a supply of finances to DHCC and an increase in coal prices did not follow. Therefore, deficit operation was continued and secured operation funds were used for investment due to the delayed payment of wages. It was natural that the relations between labor and capital were not stabilized.

A financial stabilization plan had been strongly pursued since 1957, and management deficit was also a burden to the government. In contrast to DHCC's management, private coal mines achieved high profits and developed during the second half of the 1950s. This caused continuous criticism and demand for the privatization of DHCC in and out of Parliament. Though a production increase policy was still important from the viewpoint of the supply of energy to the Korean economy, the management stabilization of DHCC emerged as a significant political goal. With the growth of private coal mines that became a criterion for management evaluation, the character of DHCC's enterprise attracted attention. What counterplan did the government prepare to cope with the situation?

First, on condition that DHCC would privatize its subsidiary coal mines, the government arranged the unit cost of production and tried to introduce the managerial know-how of private coal mines by appointing the president of Gangwon Coal Mine Co. as the president of DHCC. With a new board of directors, DHCC pushed forward a series of structural reforms, accomplished management stabilization, and achieved a coal development plan. By introducing the managerial

know-how of private coal mines, DHCC established a new managerial system to cope with market fluctuations together with the betterment of labor productivity. Though such management stabilization of DHCC was a precedent showing the dynamics of industrial development through competition among enterprises, the existing studies didn't pay attention to the fact. However, owing to the character of corporation history, the introduction of know-how of private coal mines wasn't clearly specified and it wasn't evaluated quantitatively that the results of such structural readjustment brought about both management improvement and the increase of real wages (DHCC 2001).

Therefore, this paper looks at the emergence of private coal mines, the supply-demand structure of coal markets, the rationalization of management of coal mines, and the strengthening of market competitiveness. The structure of this paper is as follows. Section 2 analyzes the supply-demand structure of coal markets during the 1950s and surveys the actual conditions of private coal mines. Section 3 compares and analyzes the managerial results of DHCC and private coal mines from the viewpoint of management incomes and expenses as well as productivity, and surveys the details of establishing the management rationalization plan of DHCC. Section 4 reviews the measures for efficient mining and sorting of coal, transportation and sales and surveys the managerial results by analyzing the cost of production and finances. Through this study, the role that the economic recovery during the 1950s played in the 'development period' will be revealed.

2. Supply-Demand Structure of Coal Markets and the Emergence of Private Coal Mines

1) Supply-Demand Structure of Coal Markets during the 1950s

In analyzing the coal industry during the 1950s, it is essential to survey the influence the Korean War had on the coal industry and its revitalization process. Above all, the Korean War devastated the coal industry. In April 1946, just after liberation, the monthly output of coal was 24,000 tons. But owing to the government's direct management system of coal mines, sales through Chosen Coal Distribution Company and the financial system for the coal industry, the output exceeded 100,000 tons per month and amounted to 1,043,000 tons in 1949. However, the Korean War caused the loss of two-thirds of human resources and

more than half the gangways in the major government-vested coal mines. For this reason, as shown in Table 1, the output of domestic anthracite coal dropped to 78,000 tons by DHCC, 84,000 tons by private coal mines for a total of 162,000 tons in 1951. Accordingly, domestic coal consumption dropped to 163,000 tons and 945,000 tons of bituminous coal was imported mainly from Japan to cover the coal shortage.

Meanwhile, Dae Han Coal Corporation was established, drew up a Three-Year Postwar Rehabilitation Plan (1951-1953), and tried prompt recovery of facilities and production; but they only produced 683,000 tons, which was far less than the 920,000 tons goal in 1953. In the case of private coal mines, the output of coal was below expectations. At this time, most of the state-produced coal was used for civilian consumption, the generation of electricity, and military consumption. On the other hand, part of the output was used for government consumption, transportation (railroads) and industrial consumption (Table 2). However, privately produced coal was used for civilian consumption and was sold not at legal prices but at market prices. Part of the output was exported abroad since 1954. Naturally, 949,000 tons of bituminous coal (1952) was imported through DHCC and was used for transportation that needed the high heat value (695,000 tons in 1952) and the generation of electricity.

Table 1 Domestic Output of Anthracite and Import of Bituminous Coal in the 1950s

(Unit: 1,000 tons, %)

Year	DHCC (1,000 tons, Component Ratio by Mines %)							Private Mines	Total	Bituminous Coal Import
	Subtotal	Jangseong	Dogye	Hambaek	Yeongwol	Hwasun	Eunseong			
1951	78	3	26	1	30	10	30	84	162	945
1952	444	32	20	-	28	9	11	133	577	949
1953	683	45	18	-	20	8	8	184	867	852
1954	668	42	19	-	21	9	9	221	889	1,131
1955	959	43	18	1	19	10	10	349	1,308	1,337
1956	1,262	41	17	4	17	11	10	553	1,815	1,221
1957	1,520	45	17	4	15	10	8	921	2,441	931
1958	1,461	48	17	5	10	9	10	1,210	2,671	878
1959	2,163	47	17	8	8	10	9	1,973	4,136	72
1960	2,576	50	19	6	6	10	8	2,774	5,350	173

Source: Department of Fuel, Ministry of Commerce and Industry 1963; DHCC 1963a.

Note: Besides anthracite coal consumption, bituminous coal consumption was also imported.

Table 2 Changes of Domestic Consumption of Anthracite in the 1950s

(Unit: 1,000 tons, %)

Year	Operation	Component Ratio (%)							Total (1,000 tons)
		Military	Government	Transportation	Generation Of Electricity	Industrial	Civilian	Export	
1952	DHCC	18	2	3	40		37		357
	Private						100		87
	Total	14	2	2	32		49	4	444
1954	DHCC	19	8	2	20	5	42	17	670
	Private						83	7	210
	Total	15	6	2	15	4	52		880
1956	DHCC	14	5	10	29	13	30		1,328
	Private			11	1		88		526
	Total	10	3	10	21	9	47	0.04	1,853
1958	DHCC	23	4	8	28	10	26		1,495
	Private			8	17		75	0.02	1,007
	Total	14	2	8	24	6	46		2,502
1960	DHCC	16	4	7	20	9	44	4	2,241
	Private			8	13		74		2,581
	Total	7	2	7	16	4	60	2	4,822

Source: Ministry of Commerce and Industry 1962.

Note: Besides anthracite coal consumption, bituminous coal consumption was also imported.

Though the armistice agreement was concluded, state-run coal mines were not well operated despite the intention of policymakers. For lack of proper supply of finances and materials, the recovery of coal mines was delayed. Finally, coal miners protested against the delayed payment of wages and walked out for the first time since the establishment of a labor union. For these reasons, DHCC's output in 1954 amounted to 668,000 tons, which was 683,000 tons less than in 1953, and more bituminous coal than the previous year had to be imported. Syngman Rhee's government decided to dispatch the army, which had grown to 600,000 personnel and used half the budget of the government (Im 2007).

Thus, with the backing of the military for two years and nine months, army regulations and know-how were transplanted to DHCC operations. Also, the Korea-U.S. Joint DHCC Management Measure Committee was established. The committee made the Five-Year Coal Development Plan (1956-1960) to increase the domestic output of coal to more than four million tons by 1960 and made a financial program that was put into practice (Korea-U.S. Joint DHCC

Management Measure Committee 1955:4). The joint military-government-civilian Production Increase Measure Committee and the Operation Measure Committee were established by coal mines and produced coal by a working plan; the efficiency of coal mining and the rate of operation were greatly increased. In transportation, the transport capacity by sea and land was secured mainly centering on the transportation subcommittee. In particular, owing to the 'Three Industrial Lines', DHCC was able to increase the volume of traffic and decrease the cost of transportation (Army Dispatch Team to DHCC 1956:53-4; Ju 1956:44-5). As a result, the output of coal by state-run mines exceeded the volume of the prewar production in 1956 and accomplished the target output.

The output of private coal mines also increased greatly and domestic output reached 1,815,000 tons in 1956 owing to the five-year plan, exceeding the goal by 112%. The Ministry of Commerce and Industry reviewed the five-year plan, established the Ten-Year Coal Development Plan (1957-1966), as shown in Table 3, and put it into practice beginning July 1957 (Dong-A Ilbo, June 8, 1957). According to the long-term coalfield development plan, including the privatization of DHCC, it was scheduled that the domestic output of coal would

Table 3 Ten-Year Coal Production Plan (Unit: 1,000 tons)

Province	Possible Amount of Mining	Life of Mine	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
Jangseong	192,000		939	1,226	1,554	1,764	2,320	3,125	3,650	4,175	4,450	4,600
Hwacheon	112,000		334	434	495	915	1,100	1,300	1,800	2,100	2,200	2,300
Hambaek	202,000		70	245	340	510	730	1,025	1,350	1,775	2,200	2,500
Gangneung	1,000	10	50	50	50	50	60	70	80	90	100	100
Yeongwol	38,000	42	420	450	500	550	600	650	700	900	900	900
Chungnam	6,000	12	122	175	200	220	250	300	360	500	500	500
Danyang	15,000	300	10	15	24	36	40	45	50	50	50	50
Hwasun	25,000	42	220	260	300	340	380	420	460	500	600	600
Jeonbuk	6,000	70	40	45	50	55	60	65	70	75	85	85
Gyeongbuk	18,000		160	171	185	210	210	220	220	370	370	370
Yeoncheon	5,000	120	36	36	40	40	40	40	40	40	40	40
Total	620,000		2,401	3,107	3,738	4,690	5,790	7,260	8,780	10,575	11,495	12,045
Rate of Increase				29	20	25	23	25	21	20	9	5

Source: Sibray and Hyde 1958:123.

increase from 2,401,000 tons in 1957 to 12,045,000 tons in 1966 (Sibray and Hyde 1958:66). As a result, it was natural that the increase of production should be continued. The ten-year plan was revised to an eight-year plan (1959-1966), which was included and completed in the Five-Year Economic Development Plan (1962-1966) after the emergence of the military regime.[1] The substitution plan for imported coal for railroad transportation was pushed forward and the consumption of domestic coal for transportation increased in the second half of the 1950s. Additionally, civilian consumption greatly increased after 1959 and domestic coal accounted for the highest portion.

Meanwhile, such an industrial policy brought about a new change at the supply structure of coal markets. Privately produced coal advanced into the monopolistic market of state-produced coal. In particular, the Yeongam Railroad, which opened in 1956 under military support, accelerated the development of coalfields in Samcheok County and merchandized low-cost quality anthracite coal, which triggered a reform of the coal industry (Kim 1957b: 1-3). Beginning in 1956, private coal mines began to rapidly enlarge their output. Private coal mines produced quality coal and enlarged their markets that had been confined to civilian consumption to include consumption for the generation of electricity and transportation. In civilian consumption, the market share increased from 38% in 1954 to 55% in 1955, and 66% in 1958. In 1960 private coal mines recorded an output of 2,774,000 tons of anthracite coal and 2,581,000 tons in consumption and exceeded DHCC's 2,576,000 tons and 2,241,000 tons, respectively.

2) Situation and Growth Factor of Private Coal Mines

What brought about the change in the supply-demand structure for private coal mines and what caused the rapid growth? First of all, this paper will review the situation and the background of growth of private coal mines since the mid-1950s using a series of *Final Report: Census of Mining and Manufacturing.* Table 3 shows that the number of mines increased from fifty-one in 1953 to fifty-seven in 1955, to seventy-six in 1958, and to ninety-five in 1960. There

1. The plan was to increase production by over one million tons per year. To realize this, it was necessary to secure a large amount of funds: domestic funds in the amount of $1,650,000 to $13,062,500 and foreign funds in the amount of $1,350,000 to $13,290,000.

Table 4 Number of Coal Mines and Employees by Province (Unit: Mine, Person)

Province	1953						1955					
	DHCC		Private		Total		DHCC		Private		Total	
	M	P	M	P	M	P	M	P	M	P	M	P
Seoul							1	146	6	77	7	223
Gyeonggi			3		3				2	245	2	245
Gangwon	4		9		13		4	5,356	22	3,171	26	8,527
Chungbuk	1		2		3				3	122	3	122
Chungnam			14		14				10	763	10	763
Jeonbuk			3		3				3	288	3	288
Jeonnam	1		7		8		1	1,045	5	317	6	1,362
Gyeongbuk	2		13		15		1	901	6	284	7	1,185
Gyeongnam												
Jeju												
Total	8		51		59		7	7,448	57	5,267	64	12,715

Province	1958						1960					
	DHCC		Private		Total		DHCC		Private		Total	
	M	P	M	P	M	P	M	P	M	P	M	P
Seoul	1	148	8	2,141	9	2,289	1	254	11	4,877	12	5,131
Gyeonggi									3	88	3	88
Gangwon	4	5,857	35	5,736	39	11,593	4	7,594	38	8,591	42	16,185
Chungbuk			3	126	3	126			9	357	9	357
Chungnam			10	744	10	744			8	651	8	651
Jeonbuk			4	60	4	60			4	221	4	221
Jeonnam	1	940	4	216	5	1,156	1	1,157	9	-649	10	508
Gyeongbuk	1	834	12	615	13	1,449	1	934	13	586	14	1,520
Gyeongnam												
Jeju												
Total	7	7,779	76	9,758	83	17,537	7	9,939	95	14,722	102	24,661

Source: Korea Chamber of Commerce and Industry 1953; Bank of Korea 1955; Korea Development Bank 1958a; Ministry of Commerce and Industry and the Korea Development Bank 1960.

Note: 1. Due to a lack of information on private coal mines, the number of private coal mines equals the entire industry minus DHCC. The same shall apply hereinafter.

2. Regarding the number of employees, (1) private coal mines in 1958 included fifty-one persons of an unpaid employer and his family employees; (2) 426 persons belonging to unidentified mines at DHCC in 1960 were not included in the total 9,939; (3) private coal mines in 1960 included 125 persons of an unpaid employer and his family employees; and (4) Jeonnam in 1960 had an error in calculation but was quoted with the error.

was an increase of twelve mines from 1955 to 1958 in Gangwon Province, and Gangwon Province became the center for coal mines. Gangwon Province had 60% of the coal mines and 80% of the output from private coal mines.

Table 4 looks at coal mines by size. A trend cannot be established during the first half of the 1950s because of a lack of resources. However, in the case of private coal mines, the average number of employees by coal mine increased from eighty-seven persons in 1955 to 128 persons in 1958 and to 155 persons in 1960. Moreover, the number of coal mines that were most numerous by size changed

Table 5 Number of Coal Mines by Employee Size (Unit: Mine, Person)

Size (Persons)	1955						1958						1960					
	DHCC		Private		Total		DHCC		Private		Total		DHCC		Private		Total	
	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P
5 - 9			7	46	7	46			6	38	6	38			4	26	4	26
10 - 19			6	114	6	114			11	161	11	161			12	163	12	163
20 - 29			5	146	5	146			10	244	10	244			9	195	9	195
30 - 49			14	556	14	556			10	392	10	392			15	727	15	727
50 - 99			13	687	13	687			14	1,039	14	1,039			16	1,224	16	1,224
100 - 199	2	274	6	1,330	8	1,604	1	148	17	2,208	18	2,356			24	3,064	24	3,064
200 - 499			6	2,062	6	2,062			7	2,266	7	2,266	7	9,939	15	9,323	22	19,262
500 - 999	1	901			1	901	2	1,477	2	2,099	4	3,576						
Over 1000	4	6,273			4	6,299	4	6,154	1	1,311	5	7,465						
Total	7	7,448	57	4,941	64	12,415	7	7,779	76	9,758	83	17,537	7	9,939	95	14,722	102	24,661

Source: Korea Chamber of Commerce and Industry 1953; Bank of Korea 1955; Korea Development Bank 1958a; Ministry of Commerce and Industry and the Korea Development Bank 1960.

Note: 1. With regard to the number of coal mines, (1) in 1955, three mines with less than four persons are included in the size of 5-9 persons of private coal mines; (2) in 1960, the average for 200-499 persons is over 200; and (3) among the private coal mine corporations, there are two groups between 10-19 persons, one group between 20-29 persons, and one group between 50-99 persons.

2. With the number of employees, (1) in 1955, three mines with fewer than four persons in the size of 5-9 persons of private coal mines are included; (2) in case of private coal mines in 1958, there are fifty-one unpaid employers and family employees; (3) the size of 200-499 in 1960 is over 200 persons; (4) in the case of DHCC in 1960, the workplaces of 426 persons are unknown and they aren't included in the total of 9,939 persons; and (5) in the case of private coal mines in 1960, there were 125 unpaid employers and family employees.

from fourteen mines with 30-49 persons in 1955 to seventeen mines with 100-199 persons in 1958 and to twenty-four mines of the same size in 1960. There was even a private coal mine with over 1,000 persons in 1958. Mines with over 200 persons accounted for the greatest part and the ratio increased from 41.7% to 58.1% in 1958 and to 63.3% in 1960. Thus, during the 1950s, many private coal mines centering in Gangwon Province went into coal markets and developed new business activities (Jeong 1958:65-6).

What caused the emergence of the large number of private coal mines? One was the disposal of government-vested coal mines. After the Korean War, the Korean government pushed forward a privatization policy to reduce its financial burdens by selling state-run enterprises to civilians and to aim for the increase of production and management rationalization by mobilizing civilian funds (Im 1956:1; Dae Han Coal Corporation 2001:74-5). According to the May 8, 1954 official announcement number 15 of the State Council and announcements numbers 12 and 13 that nationalized coal mines and abolished Japanese ownerships of mines from November 26, 1954, coal mines such as Mungyeong, Danyang, Ulsan, Gilwon, Yeongil, and Dongseon became independent of existing enterprises. Also, the government pushed forward the selling of mining rights and facilities simultaneously with Presidential Decree No. 1135 dated March 6, 1956 and Decree of the Ministry of Commerce and Industry No. 38 dated March 17, 1956. Accordingly, in the second half of 1956, the government-vested coal mines were disposed of to the previous administrators.[2] However, all of these coal mines except Gangwon Coal Mine were situated in Gyeongbuk and Chungbuk provinces and it cannot be viewed that they led to a sudden rise in the number of coal mines in Gangwon Province.[3]

Another cause was the effect of the opening of the industrial railroads (Jeong 1960:17). Small- and medium-sized coal mines that couldn't make ends meet owing to the high transportation fares by sea and land received a government subsidy in the form of below real fares on transportation and were rapidly devel-

2. The disposal date of the coal mines was as follows: Gyeongju on October 8, 1956; Seongam on January 11, 1957; Dongseon on May 13, 1957; Mungyeong on August 6, 1957; Maseong on August 8, 1957; Maro on November 1, 1957; Yongdu on August 14, 1958; and Gangwon on September 20, 1958.

3. Though the disposal and privatization of coal mines happened at a public sale and the disposal of 250 medium-size coal mines was planned within the year, the plan was delayed and only forty-eight bids were successful (Im 1956:1).

oped after the construction of industrial railroads. In particular, the opening of the Yeongam line, connecting the abundant coalfield of Samcheok of the Yeongdong district with metropolitan areas, decreased transportation fares from 3,000 *hwan* to 500 *hwan*.[4] As a result, the profitability of private coal mines improved and it became possible to enter the Seoul and Incheon markets. Because these mines were almost new coalfields, except the subsidiary coal mines of DHCC, they could produce quality coal and decrease production costs with outcrop mining.

Also, the free business operations of private coal mines in comparison with DHCC are worth noting. To cope with the seasonal changes of coal demand, private coal mines concentrated mining in winter when the demand increased and controlled coal production within the limit of possible merchandizing. They could make considerable profits, and flexible management became possible in contrast to state-run coal mines. In the process of mining, the subcontract system of *deokdae* (mining subcontractor) was put into practice and aimed for a flexible increase of production.[5] Private mines could sell their coal freely when state-run

Table 6 Legal Price and Free Market Price of Coal (Unit: *hwan*)

	Legal Price	Free Market Price		
	Anthracite of DHCC	Wholesale of Anthracite	Wholesale of Briquette	Retail of Briquette
1950	90			229
1951	117	660	1,090	1,135
1952	728	959	1,620	2,063
1953	1,451	1,810	2,380	3,459
1954	5,017	4,540	5,740	7,058
1955	5,100	8,850	10,940	12,722
Jan-Aug 1956	5,100	7,971	11,000	11,693

Source: Lee 1956: 42.

Note: 1. The free market price between 1950-1952 was the price in Busan and the other is the Seoul price.

2. The legal price of coal was calculated by averaging the monthly price.

4. *Hwan* is the currency unit used from February 1953 to May 1962. The value of the *hwan* is 1/10 of the present *won*.

5. The Deokdae system brought about two effects: (1) a safety valve in case of business fluctuations and (2) economy of labor management cost (Baek 1984).

mines had to sell at a legal price. The legal price was fixed by the proposal of the chief of the Ministry of Commerce and Industry in accordance with the selling price of DHCC, the vote of the State Council (the Law of DHCC), and the agreement of the National Assembly. Meanwhile, the free market price was decided in the process of dealing in privately produced coal or DHCC's coal brokers bought and sold. As shown in Table 6, in the case of the existence of excessive demand at the coal market, it was natural that the free market price was higher than the legal price. In fact, the high profit rate of private coal mines was accepted by the government.

In addition, the elements of demand should be considered. The consumption of privately produced coal was concentrated on civilian consumption unlike state-produced coal. Household consumption of coal in the cities contributed to the forestation policy (Kim 1957b: 2). By controlling the price of state-produced coal under the cost price, the policy to substitute coal for firewood, protect forests, and revive the land was pushed forward. As a result, firewood was ousted from the cities and household consumption of coal increased. Moreover, the policy of substituting domestic coal for imported coal was seriously pushed forward beginning in 1956, and even in the consumption of imported high-heat bituminous coal for transportation and the generation of electricity, privately produced anthracite coal came to be used. Of course, such an increase in coal consumption was due to the considerable increase in domestic coal consumption in accordance with rapid economic development.

Thus, private coal mines appeared in considerable numbers in the second half of the 1950s, grew to large-scale mines though there were also small coal mines, and enlarged the market share.

3. Comparison of Management between State-Run and Private-Run Coal Mines and the Establishment of the Management Rationalization Policy of DHCC

1) Comparison of Management Between State-Run and Private-Run Coal Mines

The appearance of private coal mines brought about a competitive structure to the managerial environment of DHCC. Then, how much better were the managerial results of private coal mines than those of state-run coal mines? To

understand this, this paper compares the management of private coal mines to state-run ones from the viewpoint of management incomes and expenses and productivity.

First, this paper compares the balance sheets and the statements of profit and loss of DHCC and Seongju Coal Mine. Table 7 shows that the ratio of DHCC's fixed assets increased from 9.9% in 1954 to over 20% in 1955, and the investment in facilities was accomplished to a certain degree. However, considering that the assets of coal mines were fixed, we must say it lay still at a lower level. On the contrary, the higher rate of floating assets meant commodity inventory and bonds increased, which was caused by the inactivity of coal sales, transportation difficulties, and the stagnation of coal capital turnover. This situation improved more or less in 1957, but the ratio of commodity inventory, stores, and

Table 7 Balance Sheet of DHCC (Unit: million *hwan*, %)

Debit					Credit				
Major Items	July 1, 1955-Dec. 30, 1956		Jan. 1, 1957-Aug. 31, 1957		Major Items	July 1, 1955-Dec. 30, 1956		Jan. 1, 1957-Aug. 31, 1957	
Fixed Assets	1,409	22.9	2,988	27.1	Debt	6,322	102.9	10,473	95
Industrial Expenses	631	10.3	1,026	9.3	(Loan)	2,275	37.0	4,220	38.3
Commodities	1,339	21.8	1,686	15.3	Sundry Debt	25	0.4	39	0.4
Stored Goods	1,042	17.0	1,712	15.5	Capital	-342	-5.6	-832	-7.5
Stock	1,561	25.4	2,017	18.3	(Capital)	600	9.8	600	5.4
Capital	68	1.1	830	7.5	(Balance for This Term)	-942	-15.3	-1,432	-13
Sundry Assets	97	1.6	201	1.8	Net Profit for This Term	-8	-0.1	140	1.3
Accounts Brought Forward			75	0.7	Allowance Reserve	165	2.7	1,204	10.9
Adjusting Accounts			490	4.4					
Total	6,146	100.0	11,024	100.0	Total	6,162	100.0	11,024	100.0

Source: Korea Development Bank 1958b: 81-4.

Note: Though the totals of debit and credit in 1955 are not the same, they are quoted as they were.

bonds amounted to 50%. In fact, this impeded the turnover of capital and exerted a vital influence on the management of DHCC.

As shown in Table 7, though the coal industry had a higher ratio of borrowed capital than other industries, DHCC's deficit operation continued and the ratio of equity capital decreased each year. In short, because DHCC depended on debts, almost over 100% of its capital was borrowed and this was possible because DHCC was a public corporation. Due to the adjustment of coal prices in January 1957, the management of DHCC could have posted a profit. However, the substantial amount of borrowed money increased financial expenses and arrears like delayed payment of material costs and wages shrank productivity.

In DHCC's statement of profit and loss (Table 8), production costs nearly amounted to 60-70% and didn't show a significant change. But operation and transportation costs rapidly decreased in 1957 owing to the opening of railroad transportation. Besides, as general administration expenses changed each year, it

Table 8 Statement of Profit and Loss of DHCC (Unit: million *hwan*, %)

Loss					**Profit**				
Major Items	July 1, 1955-Dec. 30, 1956		Jan. 1, 1957-Aug. 31, 1957		Major Items	July 1, 1955-Dec. 30, 1956		Jan. 1, 1957-Aug. 31, 1957	
Production Cost	4,048	60.3	5,395	68.6	Operating Revenue	6,637	98.8	7,753	98.6
Manufacturing Cost	69	1.0	133	1.7	Sundry Profit	70	1.0	110	1.4
Operation Cost	336	5.0	311	4.0	Loss for This Term	8	0.1		
Transportation Cost	1,641	24.4	1,173	14.9					
General Administrative Expenses	588	8.8	448	5.7					
Commodity Loss	34	0.5	263	3.3					
Profit for This Term			140	1.8					
Total	6,715	100.0	7,863	100.0	Total	6,715	100.0	7,863	100.0

Source: Korea Development Bank 1958b: 86-9.

showed that DHCC had no capacity to make a budget systematically and put it into practice. The loss of coal decreased until 1956 and afterwards began to increase again. The absolute sum amounted to twice the profit for the period; thus there was a problem with DHCC's capacity for storing coal.

Next, as shown in the Balance Sheet of Seongju Coal Mine Co., Ltd. (Table 9), which was situated in Boryeong County, Chungnam Province and had about 400 employees at all times, the ratio of fixed assets decreased from 24.4% in 1955 to 18.3% in 1956, almost the same ratio as DHCC. Having the ratio of 22.4% in commodity inventory and 46.4% in funds, the company had relatively sound finances and higher liquidity and credibility. However, the ratio of commodity inventory increased but the ratio of funds decreased to 36.7% in 1956. The increase of coal stock caused liquidity of funds to decrease. But compared to DHCC, the ratio of the stock of coal was low and credibility was rather high.

The component ratio of capital (Table 9) amounted to 11.4% and the equity capital rate was very low. The ratio of long-term loans decreased from 17.5% to 9.1%. While the long-term loan rate was low, the short-term loan rate of suspense receipt and arrears was relatively high. There was scantiness of the capital structure. Considering 23.1% of surplus and 4.4% of depreciation reserve in 1955, it shows that the company was superior to DHCC in quality. In other words, in the capital composition of Seongju Coal Mine, equity capital including

Table 9 Balance Sheet of Seongju Coal Mine (Unit: million *hwan*, %)

Debit	End of 1955		End of 1956		Credit	End of 1955		End of 1956	
Fixed Assets	28,894	24.4	16,007	18.3	Capital	10,000	8.4	10,000	11.4
Floating Assets	8,150	6.9	5,246	6.0	Loan	20,740	17.5	8,000	9.1
Commodity inventory	26,492	22.4	32,119	36.7	Suspense Receipt	16,813	14.2	28,287	32.3
Funds	54,966	46.4	31,521	36.0	Arrears	28,425	24.0	16,698	19.1
Loss for This Term			2,739	3.1	Balance Brought Over From the Last Account	9,900	8.4	24,648	28.1
					Surplus	27,391	23.1		
					Depreciation Reserve	5,234	4.4		
Total	118,503	100.0	87,633	100.0	Total	118,503	100.0	87,633	100.0

Source: Korea Development Bank 1958b: 98-9.

balance brought over from the last account, surplus and depreciation reserve reached about 50% in 1955 and about 40% in 1956. In contrast, in DHCC, the long-term loan ratio reached about 30% and the other 70% was composed of short-term loans. The equity capital rate amounted to less than one- one hundredth.

Next, as shown in the Statement of Profit and Loss (Table 10), the general production costs including expenses for business activities, mine investigations, mining, generation of electricity, and others amounted to about 65%, the general management cost including depreciation reserve about 4.5%, sorting cost about 3%, and transportation cost about 25%. In comparison with DHCC, such com-

Table 10 Statement of Profit and Loss of Seongju Coal Mine (Unit: million *hwan*, %)

Loss	Jan. 1-Dec. 31 1955		Jan. 1-Dec. 31 1956		Profit	Jan. 1-Dec. 31 1955		Jan. 1-Dec. 31 1956	
Stock of Coal Brought Over From the Last Account	20,297		19,478		Operating Revenue	142,374	85.0	294,608	95.7
Business Expenses	24,384	16.6	43,400	15.0	Stock of Coal	19,478	11.6	10,524	3.4
Prospecting Cost	20,363	13.8	47,107	16.3	Sundry Profit	5,668	3.4	79	0.03
Mining Cost	30,622	20.8	74,900	26.0	Loss for Current Term			2,739	0.9
General Administration Cost	1,268	0.9	2,007	0.7					
Generation of Electricity Cost	4,229	2.9	19,062	6.6					
Sorting Cost	3,050	2.1	10,437	3.6					
Transportation Expenses	30,007	20.4	80,832	28.0					
Sundry Loss	675	0.5	120	0.04					
Surplus	27,391	18.6							
Depreciation Reserve	5,234	3.6	10,608	3.7					
Total	167,521 (147,223)	100.0	307,950 (288,473)	100.0	Total	167,521	100.0	307,950	100.0

Source: Korea Development Bank 1958b: 99.

Table 11 Comparison of Labor Composition & Labor Productivity p.p. between DHCC and Gangwon Coal Mine Co.

		DHCC (Nov. 1956)			Gangwon Coal Mine Co. (Aug. 1957)		
		No. of Personnel (person)	Component Ratio (%)	Monthly Labor Productivity p.p. (ton)	No. of Personnel (person)	Component Ratio (%)	Monthly Labor Productivity p.p. (ton)
Total Persons		8,786	100.0		544	100.0	
Office Workers		1,004	11.4		21	3.9	
Workers	Underground	5,443	62.0	22.4	361	66.4	40.0
	Surface	2,339	26.6	13.4 (All Pits)	137	25.2	25.0 (All Pits)
	Others				25	4.6	

Source: DHCC 1957; Korea Development Bank 1958b: 101.

ponent rates were almost the same, if not precise in detail. It is remarkable that a certain amount of surplus could be secured. As stated above, in the case of Seongju Coal Mine, the management situation was not very good but the company showed excellent management compared with DHCC.

Table 11 contains the personnel allotment and productivity of DHCC and Gangwon Coal Mine. Of the 544 employees of Gangwon Coal Mine Co., workers amounted to 96% and office workers were never more than 4%. Among workers, underground workers reached an overwhelming 66% and surface workers accounted for only one-third. Compared to DHCC, there was little difference in the ratio of underground workers, but Gangwon Coal Mine Co. held a lower rate of office workers than DHCC, nothing more than one-third. Private coal mines emphasized management rationalization in labor composition from the viewpoint of maximizing profits. Meanwhile, labor productivity per person reached twice that of DHCC. Considering the support of the army dispatch to DHCC until then, one must note the high productivity of private coal mines. Granted DHCC had mined coal since the colonial period, but its efficiency of mining was very low and the superiority of private coal mines was relatively evident. This resulted from the fact that Gangwon Coal Mine Co. pursued a 'scene of labor first' policy: it had a simple organization for its labor management, and it emphasized the management of materials and commodities at the

same time. Such superiority of private coal mines caused a basic review of DHCC's management.

2) Policy of Management Rationalization of DHCC

Though the army dispatch had a considerable influence on the increase of production after 1955, the security of investment funds and the betterment of management incomes and expenses were not properly accomplished. For this reason, in the 1956 plenary session, the National Assembly agreed to increase coal prices from 5,100 *hwan* to 7,800 *hwan* in January 4, 1957, and requested a review of the coal industry on condition that DHCC be disposed of within the year and a self-supporting accounting system be adopted through the reports of parliamentary inspection of the administration (Dong-A Ilbo, March 28, 1957; August 13, 1957; Kim 1957a: 3). That is, because restrictions on the mobility of state-operated businesses caused an independent lack of enterprise, an increase in production brought about an increase of operating funds and was a burden on the central government's finances (Jeong 1958:65). C. Tyler Wood, ex-coordinator of economy severely criticized for his Rotary Club address delivered in March 1956, said that state-run enterprises showed a loss of about 20 billion *hwan* and this would bring about inflation (Kim 1957:32). Therefore, the Ministry of Commerce and Industry expected that management rationalization would bring about brilliant accomplishments if the DHCC coal mines were privatized and the responsibility of management became clear. DHCC prepared a plan to dispose of all the subsidiary coal mines except Samcheok and Hambaek coal mines. The revised legislative bill of the Law on DHCC for privatization was presented to the State Council by the Ministry of Commerce and Industry in August 1957 (Dong-A Ilbo, November 22, 1956; April 14, 1957; August 13, 1957; February 12, 1958). DHCC was placed in the situation where it received advice on management improvement from the National Assembly, the government, and aid program institutions.

In accordance with the withdrawal of the army dispatch on August 8, 1957, the Ministry of Commerce and Industry listened to Chung In Wook, president of Gangwon Coal Mine Co. as a person who could realize DHCC's management rationalization.[6] As president of Gangwon Coal Mine Co., Chung In Wook

6. Chung In Wook graduated from the Department of Mining and Metallurgy, Waseda University

developed the mine and the mine had 544 employees by August 1957. In spite of unfavorable natural conditions, Gangwon Coal Mine Co. had double the labor productivity than DHCC (Korea Development Bank 1958b: 101). Kim Il-hwan, ex-chief of the Army Dispatch and minister of the Ministry of Commerce and Industry, recognized his achievements and appointed him as president of DHCC in September 1957 (Dong-A Ilbo, September 6, 1957). His acceptance was conditional on the government's nonintervention into DHCC management and personnel affairs and the exclusion of outside intervention for inside rationalization (Compilation Committee of the Biography of Chung In Wook 2000:200).[7] The United States praised him and said, "The new Governor, Chung In Wook, is a very experienced and practical mining man and much admired by our mining division" (Sibray 1957).

What policy did President Chung prepare for management rationalization? First of all, he carried out an independent adjustment of investment to improve management by establishing a balanced budget policy and putting an emphasis on technology and management (Jeong 1959a: 3-4). Concentrating his energies on management rationalization, he strongly curtailed expenditures through cost reduction, increase of production by focusing on readjustment of facilities, betterment of coal quality by enlarging sorting facilities, and allotment of sales responsibility by the system of business in charge. So to speak, the management staff aimed to curtail expenditures throughout the entire organization and to make management profitable by strengthening the competitiveness of state-produced coal. Meanwhile, structural reforms met opposition from the inside. Coping with opposition from directors on the board, he carried out his changes by hinting at his resignation (Dong-A Ilbo, December 9, 1957).

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and worked part-time in the Department of Steel, Japanese Government-General of Joseon in 1939 and as chief of the Section of Coal Mines, Office of Jeonbuk Province in 1940. After liberation, he was appointed as a director of the Department of Coal, Bureau of Commercial Affairs, U.S. Military Government Office in February 1946, and as a director of the Department of Coal, Ministry of Commerce on March 10, 1947. He worked as a production director on the DHCC board between May 1950 and October 1951, established Gangwon Coal Mine Co. after retirement in June 1952, was recognized for his managing ability by the government, and was president of DHCC between September 1957 and December 1959 (Compilation Committee of the Biography of Chung In Wook 2000).

7. Due to a possible lack of objectivity in the private biography, it was used minimally. Its use was limited, when the contents were corresponding to newspapers, magazines, domestic documents, NARA, and interviews.

This paper will review facility investment and curtailment of expenditures. First of all, an independent raising of development funds was pursued to establish a system for self-supporting management. In 1957, an oversupply of coal occurred for the first time in the history of the coal industry. As a result of the economy stabilization plan of the Combined Economic Board, the purchasing power and the consumption of coal for civilian and industrial use decreased temporarily. There were some industries where the consumption of coal decreased because of business fluctuations, the development of the petrochemical industry, and the supply of oil (Park 1958:89). To deal with the situation, DHCC changed its coal production plan from 2,055,000 tons to 1,363,000 tons in 1958 and tried to rearrange the system to increase coal production in response to the increased demand afterwards (Hwang 1958:33; Dong-A Ilbo, July 5, 1959). DHCC could prevent overcapitalization by reducing facility investment from 1.8 billion *hwan* in 1957 to 1.4 billion *hwan* in 1958. Considering the burden of interest on borrowed money and the economic efficiency of investment, DHCC decided the investment policy by the internal reserves and tried to realize general facility investment within the scope of about 1.6 billion *hwan* yearly, a reserve fund of depreciation cost.[8]

On this principle, a policy of using aid funds on an installment plan was established. Eleven million dollars of foreign aid capital was allotted as of September 1958 and seven million dollars including 1.249 million dollars of technical aid was introduced. Because the release of a great amount of the remaining aid funds at one time would increase the difficulties of balancing business incomes and expenses, the use of aid funds on an installment every year was decided (Kim 1958:9). Accordingly, it was planned that the order of technical aid and aid facilities would be minutely divided and put into practice in ordering facilities by year among the reserved funds, 1.6 billion *hwan* in accordance with the progress. Thus, not dependent on the increase of capital from the government, DHCC could lessen an additional burden of the expenses of capital and raise a repayment of borrowed money, depreciation cost and refunding of government-vested property with the coal price of 7,800 *hwan.*

Next, by curtailing various expenditures, DHCC tried to reduce production costs. What President Chung paid attention to was the wasteful expenditures of various engineering works. As the interest caused by credit purchase for several

8. Table 14 confirms that the amount and rate of depreciation costs rose.

months was included in the price tendered, the costs of construction and supply of materials were over 50% higher than those of private coal mines, especially Gangwon Coal Mine Co. (Dong-A Ilbo, November 22, 1956). In spite of opposition relating to concessions in and out of the corporation, President Chung repealed all the contracted and ordered constructions (Compilation Committee of the Biography of Chung In Wook 2000:204-5). By investigating the economic efficiency and technical characteristics relating to the corporation's contracts, he decided to stop the appropriated construction when it was nonessential. Also, when there were materials left after taking account of stock at each coal mine, he stopped the purchase of the appropriated materials until they were consumed. Through the betterment of such ordering and inventory control, he curtailed a considerable amount of expenditure, eradicated various interest relations, and strengthened the discipline at the corporation.

The stabilization of relations between labor and capital was essential to the practice of a series of reform programs. First of all, with the funds gained by repealing all the contracted and ordered construction, he paid all of the wages that had been delayed for six months and prepared a system for labor conditions, activities of the labor union, the committee of labor and capital and safety supervision (Labor Union of Nationwide Coal Mines 1969:72-3). As shown in Table 12, coal mines with personnel over 1,000 were reduced between 1957 and 1958, and the total number of employees decreased from 9,493 to 8,032. Severe reductions were made at Yeongwol Coal Mine Co., which had been developed to sup-

Table 12 Number of Employees of DHCC by Coal Mine (Unit: person)

	1954		1955		1956		1957		1958		1959		1960	
	Staff	Laborer	Staff	Laborer	Staff	Laborer	Staff	Laborer	Staff	Laborer	Staff	Laborer	Staff	Laborer
Jangseong	124	2,035	236	1,986	262	2,068	246	2,665	214	2,650	209	3,563	246	3,650
Dogye	59	1,361	140	1,199	154	1,171	147	1,278	107	935	106	1,111	122	1,259
Hambaek			41	110	72	355	83	613	64	579	88	1,287	107	1,163
Yeongwol	76	1,815	238	1,786	264	1,783	234	1,741	123	1,185	107	991	116	931
Hwasun	86	711	111	1,003	133	1,040	125	1,044	101	839	98	1,056	108	989
Eunseong	78	675	105	860	106	920	98	845	82	752	74	819	93	839
Main Office	132		162		125		121		126	30	193	22	217	22
Place of Business	287		291		286		253		229	16	250	157	252	174
Total	842	6,597	1,324	6,944	1,402	7,337	1,307	8,186	1,046	6,986	1,125	9,006	1,261	9,027

Source: DHCC 1963a.

ply coal for Yeongwol Thermoelectric Power Plant in spite of economic inefficiency (Dong-A Ilbo, January 22, 1955; November 21, 1956). He also reduced 'general affairs and the business side' and strengthened the manpower in production and facilities (Dong-A Ilbo, December 9, 1957).

4. Strengthening of Production and Sales and Management Rationalization of DHCC

1) Making Coal Production Efficient and the Strengthening of Market Sales

Meanwhile, DHCC aimed for an increase of mining speed and concentration mining plan in coal mining management (Lee 1960:47).[9] While displaying efficiency of electric powers, materials and facilities, securing the safety and sanitation of laborers by strengthening ventilation, saving expenses for supporting tunnels and increasing OMS (output per man shift), DHCC tried to realize economy of a unit price per person and the development of mining technology. As the principle of a concentration mining plan would decide the frame of production position, the technical staff including the president kept the increase of OMS in mind, decided the size, location and direction of the major tunnels and chose the proper size of incidental facilities (Lee 1960:45-9).

Next, the quantity of coal mining and transportation were made uniform. If the quantity of production per hour was not uniform, transporting and sorting facilities would bear the burden, suffer from suspension or fatigue and be stopped occasionally. The point was to make the work load per hour uniform from exploitation work to loading work. Because of the improvement of drilling speed, preparatory blind ends in a mine gallery were made and the quantity of

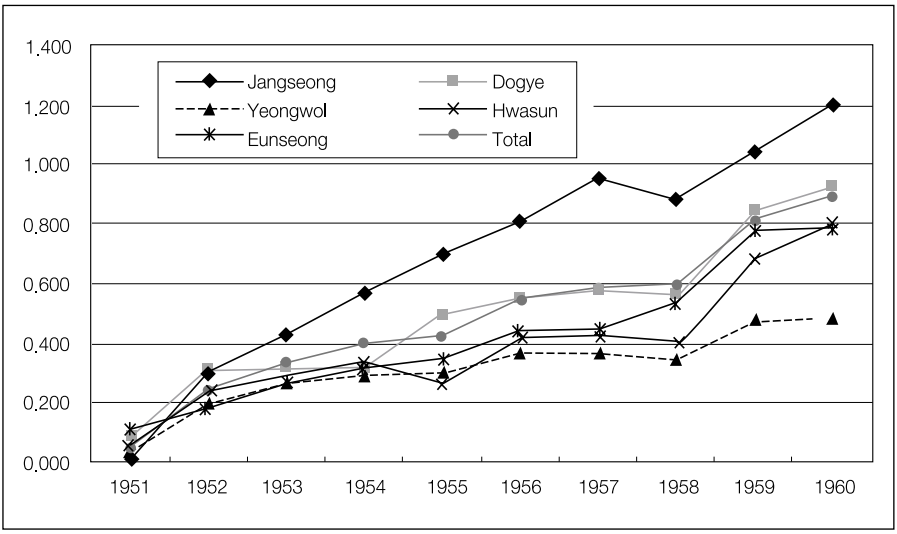
9. According to the conditions of the coal beds, DHCC selected the slant chute block caving method as the an raise drilling method and the sublevel caving method as the successive bed mining method until the middle of the 1970s. Since Jangseong and Dogye coal mines had a relatively regular developing direction of coal beds, and easy slopes and coal beds thick in width, the raise drilling and successive bed mining methods were used together. Meanwhile, in the case of Eunseong and Hwasun coal mines that had irregular developing directions, rapid slopes and coal beds swollen partially, a successive bed mining method was used. In the case of Hambaek and Yeongwol coal mines that had narrow coal beds, the an raise drilling method was used (DHCC 2001:267-71).

Table 13 Comparison of OMS (Output per Man Shift) in Specific Departments

	1957 (30m Monthly)			1960 (120m Monthly)		
	Work Load	**Man-Day per Unit**	**Total Miners**	**Work Load**	**Man-Day per Unit**	**Total Miners**
Drilling	5,175m	15	77,625	4,895m	5	24,475
Timbering	6,225	2	12,450	4,236	2	8,472
Raise Drilling	21,500	1	21,500	43,000	1	43,000
Raise Maintenance	32,000	0.8	25,600	31,800	0.8	25,440
Caving			3,750			7,500
Coal-Chuting Worker			7,500			22,500
Coal-Carrying Worker	200,000m	0.2	40,000			3,000
Total			188,425			134,387
OMS	200,000 tons /188,425 man-day ≒ 1.06			400,000 tons /134,387man-day ≒ 2.98		

Source: Lee 1960:47.

Figure 1 Daily Output per Man Shift of DHCC by Year



Source: DHCC 1963a

production per tunnel was increased. The increase of drilling speed enabled a lot of coal mining in each tunnel within a short time, saved on tunnel repairs, increased OMS, and created higher efficiency of investment by recycling facilities. Accordingly, in every mine including Jangseong Coal Mine, the mining works in the tunnels were modernized together with the transportation of coal (Sibray and Hyde 1958:86).

To introduce the new high-speed drilling system, university graduates from the mining department were posted, drew up a plan and progress schedules of explosion, mining and transportation, held study meetings, and made progress repeatedly (Compilation Committee of the Biography of Chung In Wook 2000:209-12). At times, a contest for high-speed drilling was held. A contract system[10] was adopted as an incentive to increase coal production. It determined the standard cost per payment unit and paid wages in proportion to the work load of mining quantity or producing quantity. Those who exceeded the daily production goal were given a bonus. By paying a bonus to a person who had not missed a day, working days increased from twenty to twenty-five per month.

Then, how efficient was the new mining method? As shown in Table 13, the drilling speed between 1957 and 1959 increased from 30m to 120m per month. The working period was shortened by almost half and the efficiency of investment in rails, iron pipes, stored electricity locomotives, coal wagons, and winches was more than doubled. The mining quantity per 100 tons doubled and the number of supporting mine frames increased about three times. Not to speak of the curtailment of material consumption, the working efficiency increased conspicuously. Though manpower was the transportation method in the lower tunnels and the drilling speed was 30m per month, the speed increased to 120m per month owing to stored electricity locomotives in 1959. As a result, the OMS of the direct departments improved by three times compared with 1957. As shown in Figure 1, the OMS of all the tunnels per day increased at an unprecedented speed and contributed to controlling the increase of production costs. While the productivity at Jangseong and Dogye coal mines was higher, the productivity at Yeongwol Coal Mine, which had continued its unreasonable mining under the

10. The wage system was largely composed of a contract system for the departments of mining, exploitation and repair. The day-rate system was used for the departments indirect and outside the tunnel, and the monthly pay system for administrative positions. In the case of the contract system, all were not pieceworkers, but individual wages were decided according to basic wages plus various allowances including a mining allowance.

increased production policy during the first half of the 1950s, was very poor.

Though coal production increased, it wouldn't be valuable at the markets until the realization of merchandising. Therefore, DHCC improved the separation process of coal and heightened the value of coal commodities. DHCC's monthly capacity of sorting coal was 50,000 tons at Jangseong Coal Mine, 10,000 tons at Dogye Coal Mine, and 20,000 tons at Yeongwol Coal Mine. The other coal mines sorted coal manually. Since the coal produced at Eunseong and Hambaek was of poor quality, it was not competitive in comparison with privately produced coal (Lee 1956:32). Even at Jangseong Coal Mine with its better sorting facilities, big lumps of coal over 50mm and medium-size lumps of coal between 25mm and 50mm accounted for 5-6% of coal commodities and the slack below 25mm amounted to 94-95% of all forwarding coal. Accordingly, every coal mine constructed and enlarged its sorting facilities, which brought about an epoch-making improvement in quality. Moreover, DHCC subdivided its coal prices from three grades to five grades according to its quality and increased its earning rate (Compilation Committee of the Biography of Chung In Wook 2000:206-7).

At the same time, the transportation capacity by sea and land from coalfields to consumption areas was strengthened. As the first strengthening of transportation capacity of the Yeongam Line was finished in June 1959, the daily capacity of transporting coal increased from 100 to 230 freight cars (DHCC 1959:37). What is more, together with the strengthening of the Hambaek Line, the yearly plan for enlarging the Yeongam Line was due to be pushed forward and would carry 400 freight cars daily after its completion. In addition, the enlargement of collection and forwarding facilities at Mukho Port, the enlargement of clearance at every station of the industrial lines and the establishment of the Hwangji Line were realized by degrees. At the beginning of 1960, 91% of coal transportation was provided by the low cost railroad-centered system (DHCC 1963a).

DHCC also focused its efforts on sales. Aiming for a marketing survey, a seasonal policy on demand and the equalization of yearly transportation, DHCC tried to equalize business revenues throughout the year. The legal price was applied to state-produced coal and was unable to compete with privately produced coal sold at free market price. For example, private coal mines could deal in a stock of coal below the price of production cost, but DHCC had to stick to the legal price. In the summer of 1958, DHCC had a stock of coal: 450 thousand tons of state-produced coal, 150 thousand tons of bituminous coal, totaling 600 thousand tons (Lee 1958:14-5; Hwang 1958:33). For this reason, DHCC tem-

porarily halted the planned increase of production in 1958 and maintained its production base in 1957. In this situation, DHCC had to move the emphasis of management from production to sales.

As private coal mines made inroads into the coal market for transportation and the generation of electricity, DHCC lost its market share and presented the Plan for Accelerating the Sales of Coal for Government Use to the State Council on May 29, 1958 (Dong-A Ilbo, May 30, 1958). During the same year, a small amount of state-produced coal was exported to Japan (Table 2; Dong-A Ilbo, December 28, 1957). To open up the market for civilian use where privately produced coal had an advantage, DHCC established selling agencies in twenty cities and stationed agents of the business department (DHCC 1959:35-6). As a means of opening up the market, DHCC advertised the consumption of coal to citizens and had the government take proper steps to prohibit the use of firewood. Above all, DHCC noted the consumption of coal in large cities such as Seoul, Daegu, Busan, and Incheon.

Consequently, at the beginning of 1959, household coal consumption for nine months of 1958 increased to 250%. To respond to the rapid increase of civilian use, DHCC increased its production capacity in December 1959 from the original plan of 189,000 tons to 250,000 tons. Nevertheless, as domestic production capacity was no more than 3,800,000 tons compared to the yearly demand of 4,400,000 tons as of July 1959, the government's Countermeasure Committee for Demand and Supply of Coal tried to solve the problem by importing 600,000 tons of heavy oil and using diesel locomotives (Dong-A Ilbo, July 19, 1959; July 22, 1959). For this reason, the consumption of heavy oil by power plants and railroads made the increase of state-produced coal by civilian use possible. Thus, DHCC was able to open up a new market and establish a sales and marketing system.

2) Realization of Management Stabilization and the Increase of Wages of Miners

Table 14 shows the effect of profitability caused by management rationalization through the analysis of production cost. Considering the changes of constituent items of production cost between 1957 and 1959, a substantial decrease of labor expenses was remarkable. However, the curtailment of personnel expenses per ton never affected the wages of the miner. On the contrary, the average monthly

Table 14 Composition of Production Cost per Ton of DHCC (Unit: *hwan*, %)

Year		1957		1959	
		Hwan	**%**	***Hwan***	**%**
Total Cost		7,988	100	7,892	100
Production Cost	Subtotal	5,967	75	5,837	74
	Personnel Expenses	3,406	43	2,886	37
	Material Expenses	1,598	20	1,517	19
	Power Rates	334	4	278	4
	Health & Welfare Expenses	146	2	119	2
	Traveling Expenses	0	0	19	0
	Sundry Expenses	121	2	160	2
	Depreciation Cost	362	5	858	11
Manipulation Cost	Subtotal	1,181	15	1,236	16
	Transportation	823	10	1,040	13
	Loading Expenses	358	4	196	2
General administration expenses	Subtotal	633	8	734	9
	Operational Expenses	233	3	274	3
	Interests & Public Charges	260	3	293	4
	Distribution Cost	140	2	167	2
Depletion		207	3	86	1

Source: DHCC 1963a.

wages per miner in 1959 increased to 43,000 *hwan*, a 43.3% increase compared with January 1957.[11] Considering that prices were stabilized in the second half of the 1950s, this level accompanied a 43% increase in real wages. Compared with the average wage indexes of other industries, the 193 wage index of DHCC was higher than the 100 of the manufacturing industry, the 112 of the metalworking industry, and the 147 of the whole mining industry (DHCC 1959:43).

When there was a problem of increasing wages in the past, DHCC tried to absorb the increase by increasing the legal price. However, because of the heavy competition with privately produced coal, DHCC increased the price of state-produced coal in January 1957 and withheld an additional increase of coal prices

11. The personnel expenses of miners between January 1957 and 1959 were as follows: from 36,100 to 50,100 *hwan* for coal-cutters; from 23,000 to 36,700 *hwan* for coal-carrying workers; from 23.000 to 31,000 *hwan* for surface workers; and 30,000 to 43,000 *hwan* the average for all miners (DHCC 1959:43).

Table 15 DHCC's Balance Sheet in the 1950s (Unit: million *hwan*)

Month/Year		March '52	March '54	Dec. '56	Dec. '57	Dec. '58	Dec. '59	Dec. '60	Dec. '62
Assets	Subtotal	260	1,184	7,607	12,743	16,716	17,066	21,332	32,024
	Liquid	198	947	4,685	8,078	9,905	8,749	11,692	16,440
	Fixed	32	189	2,251	3,989	5,421	7,166	8,580	13,840
	Invested	-	-	-	-	-	-	-	289
	Accounts Brought Forward	30	48	670	676	1,390	1,152	1,060	1,454
Total of Debt & Capital		260	1,184	7,607	12,743	16,716	17,066	21,332	32,024
Debt	Subtotal	220	1,178	8,438	12,996	14,577	14,303	18,236	19,289
	Floating	220	1,178	7,672	10,341	11,335	8,236	9,026	8,790
	Fixed	-	-	766	2,655	3,242	6,067	9,209	10,498
Capital	Subtotal	40	6	-832	-253	2,139	2,764	3,096	12,735
	Capital	40	600	600	600	600	600	600	6,285
	Surplus	-	-351	-942	-1,432	1,518	1,600	2,164	4,457
	Net Profit for This Term	0	-243	-489	578	21	564	333	1,993

Source: DHCC 1963a: 40-1

Table 16 Profit-Loss Statement (Unit: million *hwan*)

Year	1952	1954	1955	1957	1958	1959	1960	1962
Net Sales	539	3,370	9,207	12,220	12,324	17,675	21,398	36,256
Selling Cost	796	3,379	9,071	10,868	11,182	15,362	19,663	33,169
Selling & General Administrative Expenses	70	266	758	933	960	1,344	1,539	1,618
Operating Profit	-327	-275	-622	419	183	968	196	1,469
Non-Operating Profit	1	31	516	502	261	33	717	1,107
Non-Operating Expenses	26	104	384	343	423	437	581	583
Net Profit for This Term	-351	-348	-490	578	21	564	332	1,993
Total of Profit & Loss	-351	-942	-1,432	-853	-832	-268	64	3,881

Source: DHCC 1963a: 42-3.

Note: The fiscal year 1952 includes twelve months from April 1952 to March 1953; the fiscal year 1954 includes fifteen months from April 1954 to June 1955; the fiscal year 1955 includes eighteen months from July 1955 to December 1956. Fiscal years after 1956 include twelve months and consist of January through December of that year.

for two years and nine months. Instead, DHCC realized the actual increase of wages through various allowances without arranging coal prices by enhancing labor productivity. In addition, President Chung prepared a retirement allowance system and 250 *hwan* per ton was reserved through a collective agreement (DHCC 1959:41-3).[12] The company's housing quarters, electricity, water service, and fuel coal were provided for miners, and medical services including the construction of the modern Jangseong Hospital and the center for black lung disease were enlarged (Choi 1959:100-5, 1960:77-80). At the beginning of 1959, DHCC established a safety supervision organization and paid attention to safety by appointing a safety engineer (Masterton 1959:7). Owing to these measures, the rate of accidents per 1,000,000 tons of product began to decrease rapidly: 1,532 accidents in 1957; 1,425 accidents in 1958; 980 accidents in 1959; and 955 accidents in 1960 (DHCC 1963b).

Owing to the improvement of operations including purchasing supply and inventory control, the cost of materials and general administration expenses decreased. However, because of depreciation costs and railroad fares, the expenses at producing centers and general administration expenses increased. Nevertheless, the production cost per ton decreased a little from 7,988 *hwan* in 1957 to 7,892 *hwan* in 1959. The production cost of coal for generating electricity rose over 10,000 *hwan* because Yeongwol Coal Mine coal supply to Yeongwol Power Plant was extremely bad. However, the management rationalization at the other coal mines covered this bad situation. Improved labor productivity and cost-cutting made possible because of increased production absorbed any cost increases and controlled any increase in production costs.

Thus, because of the considerable improvement in production and business management, DHCC's administration improved tremendously. As shown in Table 15, in the composition of assets, the rate of liquid assets decreased from 62% in December 1956 to 51% in 1959 and the rate of fixed assets increased from 30% to 42% during the same period. Considerable investment in facilities was made during the mid-1950s. The ratio of owned capital went from -11% in December 1956 to 16% in December 1959. Thus the principle of investment

12. However, when the wages of officials increased twice, the labor union proposed a 50% increase of basic wages in August 1959. In response to this, DHCC rejected the request saying that a 43% increase in basic wages had already happened in January 1957, that DHCC wages were higher than other industries, and that DHCC had accumulated 12% of retirement allowances (DHCC 1960:38-9; Dong-A Ilbo, August 28, 1959).

with the internal reserves that followed the self-supporting managerial policy of President Chung was realized. Moreover, the ratio of borrowed capital decreased from 111% in December 1956 to 84% in December 1959. In particular, the fixed debt increased remarkably and amounted to 36% of the total of debt and capital in December 1959. This meant that an inflow of long-term development funds was substituted for short-term funds with a higher interest rate.

Next, as shown in the Profit-Loss Statement (Table 16), the operating profit and net profit for this term turned into the black beginning 1957. Accordingly, the total loss began to decrease and kept the balance in the black beginning in 1960. Of course, it cannot be overlooked that the gap between the legal price of coal and general prices were not widened owing to the stabilization of macro-economic indexes in the second half of the 1950s. Nevertheless, DHCC turned a profit unlike other public enterprises in the second half of the 1950s as a result of the efficiency measures pursued throughout the corporation, such as investment, expenditures, coal mining, transportation, and sales. Even the American Office of the Economic Coordinator believed that "the company now has sufficient working capital to pay its own way and to also put some money aside for capital investment, i.e., for machinery and equipment" (Sibray 1959).

Thus, DHCC realized a self-supporting management through the formation of a competitive structure of coal markets in the second half of the 1950s and broadened the stabilized supply of coal together with private coal mines in accordance with the increased demand during the 1960s.

5. Conclusion

Recovering from the damage of the Korean War, the coal industry established the Five-Year Plan for Coal Development and put it into practice with the dispatch of the army. While the opening of 'industrial lines' and the buildup of thermoelectric power plant facilities accelerated the increase of DHCC's production, it also brought about a sudden increase in the number of private coal mines. Private coal mines concentrated on mining in accordance with the seasonal changes of the demand of coal and controlled mining within the possible limit of merchandising. At the same time, private coal mines controlled coal prices through the free sales system and had an advantage over state-produced coal at market competition.

Accordingly, private coal mines naturally increased their market share rapidly. In spite of small coal mines under their management, the private coal mines were superior to state-run coal mines in managerial incomes and expenditures. Meanwhile, regardless of the considerable increase of coal production and the plan for coal development, DHCC didn't escape from its deficit operations and was operated with an inflow of short-term loans. This caused a delay of payment of wages to the miners and the relations between labor and capital was unstable.

Therefore, the government aimed for management rationalization by appointing a president from a private coal mine as DHCC president on the condition of privatization.[13] DHCC decreased the target production in accordance with the market situation and escaped from the borrowing management by establishing a policy of securing independent finances with internal reserves. DHCC reexamined every construction work order, renegotiated the contract at a reasonable price, paid the back wages with the raised funds, contracted a collective agreement, and stabilized relations between labor and capital. On its basis, DHCC made the necessary employment adjustments.

In managing the mining of coal, DHCC improved its drilling speed and concentrated on coal mining. To do this, DHCC stationed college engineering graduates at exploitation works, made a progress schedule and a blueprint, and did mining works. Moreover, DHCC created an incentive system with its contract system and bonus. Therefore, there was a curtailment of production costs and an increase of mining skill. At the same time, DHCC constructed mechanical sorting lots and increased the quality of coal. In sales, DHCC established selling agencies in twenty major cities to open up new markets, stationed selling agents, and tried to increase civilian consumption of coal.

Due to such internal rationalization, production costs were controlled and management improvement was achieved without additional adjustments to the coal price. During this time the macroeconomy was relatively stable. The rate of fixed assets and the rate of owned capital increased and deficit operation ended. As a result of such management rationalization, miners were treated better and there was an increase of labor productivity.

Meanwhile, the plan for coal development exceeded its goal, brought about the structure of supplying energy, and the rate of energy independence increased

13. The policy of privatizing DHCC wasn't fulfilled during the turmoil of the Election Malpractice of March 15, 1960 and the military coup of May 16, 1961.

from 48.9% in 1955 to 78.1% in 1960 (DHCC 1962:4). From a technological point of view, Jangseong Coal Mine Co. planned to use the technical support of the American technical advisory corporation, Pierce Management Corporation, and put shaft sinking into practice for developing the deep coalfields (Park 1960:65-6; Weysser 1962:13-5). The coal development plan during the 1950s was combined into the Five-Year Economic Development Plan and put into practice. As seen in the coal industry, economic development had already begun in the 1950s.

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Dr. Lim Chaisung is interested in the outbreak of wars, such as the Sino-Japanese War, the Pacific War and the Korean War in Northeast Asia, and the establishment of the Cold War system as a result of the wars. He studied the development of Korea's wartime economy and its economic recovery focusing on railroads and the coal industry. His major achievement is *A Wartime Economy and Railroad Management: The Historical Path from Colonial Korea to Divided Korea* (University of Tokyo Press, 2005). He is a professor at the Foreign Studies College, PaiChai University.