

**STATE AND ECONOMIC SEGMENTATION:
ANALYSIS OF EFFECTS OF EXPORT-PROMOTION
STRATEGY ON WAGE DIFFERENTIALS IN KOREA'S
MANUFACTURING INDUSTRIES***

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The purpose of this paper is to analyze the effects of economic differentiation on worker earnings in Korea. We argue that the export-promotion policies of the state have substantially reduced segmentation of labor markets. The export promotion strategy functions to counteract industry and size effects on worker earnings and flattens wage differentials between the core and the periphery economic sectors. This result reflects the state's objective of removing the impact of institutional non-market forces on the process of earnings determination and preserving the market-pricing mechanism in labor markets. This does not mean that all forms of segmentation have been eliminated. The export promotion policy has led to a new structural inequality based on the division of the economy into a sector oriented toward production for export and a sector oriented toward production for domestic consumption. This is an inevitable outcome of an export-promotion policy designed to maximize labor productivity.

INTRODUCTION

The South Korean (henceforth, Korea) state has emphasized scale economy and strategic industries since its radical transition to the export-promotion strategy (henceforth, export strategy) in the middle of the 1960s. The development-oriented state has treated employers unequally, allocating economic resources and deciding the access to policy benefits under the banner of maximizing 'plan-rationality' (Johnson 1982). As a result, product markets have been sharply divided in multiple ways: light vs. heavy industries, large vs. small firms, strategic vs. nonstrategic industries, and so on. Particularly in the late 1970s, Korea reached the same level of industrial concentration as that of Japan. In theory, the high degree of segmentation in product markets gives rise to a sharp division in labor markets.

According to theorists of labor segmentation (see Averitt 1968; Edwards

*This paper was presented at the ASA meeting, San Francisco, 1989.

1979; Gordon, Edwards, and Reich 1982), economic growth advances structural segmentation in labor markets along with economic dualism. Monopoly capitalism has been firmly based on the process of generating worker divisions with the increasing trend to bureaucratization of industrial organizations. Interestingly, however, the multiple division of product markets led to less structural segmentation of labor markets than was expected. On the contrary, structural segmentation in labor markets¹ has been markedly reduced during the period of high-speed growth. Thus, the Korean experience is quite the opposite to this growing trend toward labor segmentation in advanced capitalism: size wage effects have steadily declined and industry wage effects have also been reduced throughout the past two decades of economic expansion.

The central aim of this paper is to account for the decreasing effects of economic segmentation on worker earnings in the presence of the sharp and persistent divisions of product markets. It is argued that the state has substantially reduced economic segmentation of labor markets by carrying out export-promotion policies. The export strategy functions to counteract industry and size effects on worker earnings and flattens wage differentials between the core and the periphery economic sectors. Particularly for semi-skilled workers, who form the main work force in manufacturing industries in Korea, the wage effects of economic segmentation are entirely eliminated, and thus worker wages are totally dependent upon personal endowments. This result is congruent with the state goal of removing institutional nonmarket forces in the process of earnings determination and preserving the market-pricing mechanism in labor markets. However, the export strategy has led to a new structural inequality based on market division, which is an inevitable outcome of the export strategy *per se*, which is designed to maximize labor productivity.

EXPORT STRATEGY AS A STRUCTURAL DETERMINANT OF LABOR MARKETS

Most sociological research on labor markets has focused on structural effects on individual socioeconomic attainment. The so-called paradigmatic shift (Sørensen 1986) of the sociology of labor markets is the theoretical and

¹In this study, economic segmentation refers to the dualism of core-periphery economic sectors (see Bibb and Form 1977; Beck, Horan, and Tolbert 1978; Hodson 1979; Tolbert, Horan, and Beck 1980).

methodological attempt to highlight structural agents and to measure their effects on labor market outcomes. Kalleberg and Berg (1987) recapitulate the multivariate approaches of "the new structuralism," classifying structural factors into six broad categories: state, class, occupation, industry, business organization, and union. Surprisingly, studies on the role of the state in labor markets are quite rare.²

Dealing with economic segmentation in an attempt to elaborate Averitt's concept of the dual economy (Averitt 1968), a few studies introduce transactions between firms and the state as a proxy for state intervention (see Kalleberg, Wallace, and Althausen 1981; Baron and Bielby 1984; Wallace and Kalleberg 1981). A limitation of these efforts is that firms's transactions with the state reveal only a minor part of the whole relationship between firms and the state. The role of the state has never been fully treated as a strong independent variable in most multivariate regression models, in which state-related variables appear only as part of a grouping of economic variables.

The central aim of the present analysis is to bring the state into the earnings process of industrial workers. The Korean state as a central institution of export-promotion policy has exerted an enormous influence on labor market outcomes for the past two and a half decades. In order to achieve rapid economic growth through exploring the world export market, the state monopolizes political and economic power to allocate economic resources unevenly to industries and firms. The prosperity of enterprises and the growth and decline of industries are completely dependent upon the state's discretionary power because the state lays out and decides firms' access to subsidies and institutional protection. In short, the state has favored exporting industries and firms in allocating economic and institutional benefits to a greater extent than those manufacturing goods for domestic consumption. Owing to these diversified benefits from the state, exporting firms are far more dynamic than domestic-market-oriented firms in Korea. Exporting firms are in an advantageous position to attract advanced technology and update their information, thus exceeding otherwise comparable firms in productivity and profits. These advantages might logically be linked and transferred to better working conditions of the labor force in exporting firms. Surprisingly, however, these advantages result in worse working conditions compared to domestic-market-oriented firms. From the neoclassical point of view it is difficult to explain how the advantageous position of exporting firms in Korea turns out to be detrimental to worker earnings. These phenomena result in an unique struc-

²Theories of social insurance programs and welfare policy seem to provide valuable insights for studies on the role of the state in labor markets (see Flora and Heidenheimer 1984; Erikson, Hansen, Ringen, and Unsitalo 1987; Jacobs, Kohli, and Rein 1987).

ture of labor markets compared to what has been described regarding economic segmentation in advanced capitalism.

Most studies of labor markets take industry and size as structural elements of dualism, e.g., of the dual economy and dual labor markets in industrial society. Inter-industry wage differentials have been fairly stable over a long span of time, promoting a sharp division between high-wage and low-wage industries in both advanced and developing capitalist countries (Lang and Leonard 1987). In a similar vein, many studies suggest that income inequality and job tenure are strongly related to economic scale and establishment size. These two economic variables are widely used to define economic segmentation. There has been a growing literature on taxonomies of the core-periphery economic sectors to capture the structural impacts on labor market process (Bibb *et al.* 1977; Beck *et al.* 1978; Hodson, 1979; Tolbert *et al.* 1980; Hodson and Kaufman 1981; Zucker and Rosenstein 1981).

In this regard, of many structural factors generating economic segmentation, the present analysis concerns two economic variables, *industry* and *firm size*, in the context of 'the export-promotion policy' in Korea. The analysis will estimate the effects of economic segmentation on worker earnings and compare them with those in the United States. The analysis provides empirical evidence for the main argument that the export strategy has substantially suppressed the wage effects of economic segmentation, while constructing a new structural inequality by market division in the working-class labor market.

RESEARCH DESIGN AND VARIABLES

Models of Earnings Equations

The analysis of this section focuses on measuring the effects of the export strategy on wage determination. To this end, we construct a basic model of the earnings equation, containing four variables of individual endowments and three structural variables as follows:

$$\ln(\text{Earnings}) = f(\text{PE}, \text{I}, \text{ES}, \text{MV}), \text{ where,}$$

$\ln(\text{Earnings})$: Natural logarithm of hourly earnings,

PE: Personal endowments, such as schooling, firm-specific experience, sex, and job skill,

I: Industry,

ES: Establishment size in terms of number of employees,

MV: 'Market division' is used as a proxy for the state's export strategy.³ 'Market division' refers to the division of firms by market types between domestic-market-oriented firms and export-market-oriented firms according to the 'extent of firm involvement in export markets.'⁴

This basic model is the foundation of a three-fold analysis. First, the pooled model explains the relative importance of each variable in earnings determination, indicating the percentage change of worker earnings for a unit change of independent variables in the equation. Human capital is contrasted to structural variables in terms of the variance explained and the regression coefficients. The first analysis shows that human capital, rather than structural variables, becomes predominant in wage determination. The preponderance of human capital in wage determination is an intended consequence of the export strategy.

The second stage of analysis measures the effects of economic segmentation on worker earnings, in order to examine the patterns and structural sources of earnings inequality. It will focus on the varying size and significance levels of regression coefficients of industry and firm-size variables, with control for the wage effects of the extent of firm involvement in the export market. The analysis then proceeds to highlight the function of the export strategy in suppressing the impacts of economic segmentation.

The third stage of analysis demonstrates the emergence of a new structural segmentation due to the export strategy. It will show that, instead of suppressing the effects of economic segmentation, the export strategy makes the market division the predominant structural source of earnings determination.

Data Sources

This analysis uses the *Survey of Labor Demand Behavior of Korean Manufacturing Firms* (henceforth, SLDB), which the Economic Institute of Seoul National University conducted in cooperation with the International Labor Organization (ILO) in 1976. This survey data contains all information required for our pooled model. The SLDB investigates working conditions and job-related information in manufacturing industries in the *Kyong-In* Industrial Belt. This industrial belt, located around metropolitan Seoul and built up since the Japanese colonial period, is best suited for analyses of the development pattern of the Korea economy due to its amalgamated structure of old

³Simply put, the export strategy is characterized by the state effort to push capitalists to the forefront of export. The Korean government rigidly defined 'firm's export record' as a major criterion of allocating economic and institutional benefits (see Krueger, 1979, pp. 185-190).

⁴In the present analysis, this term refers to 'the ratio of firm exports to total production.'

and new, and small- and large-scale firms. The SLDB contains 1,115 respondents selected from 271 firms.

Defining Variables

Variables in the analysis are defined and operationalized as follows. The logarithm of hourly earnings is used as the dependent variable in all equations. Hourly earnings are obtained by dividing regular monthly earnings by total hours worked. Regular monthly earnings for production-line workers are mainly composed of base pay and overtime pay.⁵ In addition, there are three groups of independent variables, as described below.

The first group of independent variables is that of personal endowments. In consideration of the importance of credentialism in a meritocratic society such as Korea, years of schooling are classified into four categories, elementary school, middle school, high school, and college. Firm-specific experience is also defined as a categorical rather than a continuous variable, divided into one- or two-year intervals. Sex is scored 0 for males and 1 for females. The level of skill and kinds of licenses are used to define job skill, yielding five categories: unskilled laborers, apprentices, semi-skilled workers, skilled workers, and craftsmen.

Regarding the economic variables of industry and size, industries are first grouped into two categories, durables and nondurables, on the basis of the three-digit classification in the SLDB dataset.⁶ Establishment size is measured by the number of employees, categorized and scored 1=5-49, 2=50-199, 3=200-499, 4=500 and so on. Actual analyses, however, use a dichotomous variable between large and small firms, since the preliminary regression analysis shows no significant wage gaps between the former two categories of firms on the one hand, and between the latter two categories of firms on the other. The small-firms variable combines 1 and 2 above, including firms with 199 or fewer employees, while that for large firms combines 3 and 4, including firms with 200 or more employees. The industrial groupings and size categories are used to create a core-periphery dichotomy similar to the tax-

⁵Regular monthly earnings in the SLDB data refer to total monthly earnings as of June 1976, when the survey was conducted. Although the payment scheme in Korea is extremely complicated, the relative simplicity of the payment scheme for production-line workers relieves the difficulty.

⁶The durables are basic metal, machinery, chemicals and petroleum, and non-ferrous and non-metallic minerals; the remaining five industries are classified as nondurables, e.g., textile and apparel, wood and furniture, paper and printing, food and beverage, and other miscellaneous manufacturing industries.

onomies of economic segmentation (cf. Tolbert *et al.* 1981).⁷

The market division is based on a continuous variable for the extent of firm involvement in export market or the ratio of firm exports to total production. For analytical purposes, there are three kinds of firms, as defined by their sales markets: firms producing goods only for domestic consumption (DC), firms producing goods for both domestic and export markets at similar proportions (DE), and firms producing goods mainly for export markets (EX). Although international trade economists use a slightly different definition, our conceptualization is rather well suited to investigating the impact of the export-promotion strategy on labor markets, since firms' export ratios are a more useful indicator of *their relatedness* to the state.⁸ The first two kinds of firms share many similarities but are very distinguishable from export-concentrating firms in many respects. For this reason, the present analysis mainly uses a *dichotomous market division*, contrasting the domestic-market-oriented (DMO) firms to the export-market-oriented (EMO) firms.⁹

⁷The SLDB used in this analysis has limitations in measuring the core-periphery wage dispersion because of insufficient industrial categories and the lack of firm-related information. The analysis of the core-periphery wage dispersion requires a greater than four-digit industrial classification, which no survey in Korea uses. Because of such limits, an intermediate sector is posited between the core-periphery dichotomy. This initial procedure yields a *three-sector model* drawn from cross-groupings of durables-nondurables and big-small firms: *the core* refers to firms of durables with 200 or more employees, *the periphery* contains those of nondurables with 199 or fewer employees, and *the intermediate* refers to those of durables with 199 or fewer (intermediate I) and of nondurables with 200 or more employees (intermediate II). However, preliminary analyses yielded statistically meaningless coefficients of these intermediate sectors in multivariate regression equations, which used the periphery sector as a dummy with controls for individual endowments. Therefore, the final product is a *two-sector dichotomy* between the core and the periphery, with the intermediate sectors classified as part of the periphery.

⁸Economic studies use kinds of commodities instead of firms for such a classification: import-substitution refers to commodities supplying over 90% of domestic consumption; import-competition indicates industrial goods, which permit above 10% of market share to foreign products; and export goods refer to those for export markets rather than domestic consumption (see Krueger *et al.* 1978; Bhagwati 1978; Frank Jr., Kim, and Westphal 1975).

However, commodities are not an adequate criterion to classify firms between domestic and export markets because a reasonable firm tends to diversify its products to meet with the rapid changes of consumers' taste and market instability. Thus, *firm should be an analytical unit of the market division*. This analysis uses the ratio of firms' exports to total production to identify firms' sales markets, referring to industrial export ratios(e). The intra-industry distribution of firms by export ratios shows a clustering pattern. The dividing points are selected as follows: food and beverage (0%, 5%), textile (40%, 90%), wood (0%, 50%), paper and printing (0%, 50%), machinery (10%, 50%), chemical and petroleum (0%, 30%), non-metallic mineral (0%, 50%), basic metal (0%, 50%), and others (0%, 70%) in SLDB. DC firms corresponds to the first partition, DE firms to the second partition, and exporting firms (EX) to the third.

⁹For the purpose of convenience, 'domestic-market-oriented (DC and DE combined)' will be abbreviated as DMO, and 'export-market-oriented (EX)' as EMO. DMO designates concentration on domestic markets, while EMO means an emphasis on export markets.

RESULTS OF ANALYSIS

Suppressed Economic Segmentation

1. Comparing the Effects of Human Capital and Structural Variables

In order to control wage variations by hours or weeks worked,¹⁰ log hourly earnings are used as a common dependent variable in the earnings equations presented in Table 1.

The two sets of earnings equations correspond to different groupings of control variables. The first set of earnings equations (panel I) displays the relative importance and changing rates of marginal effects of selected variables in additive, dummy terms. The four models in panel I compare the importance of human capital and structural variables in earnings determination. On the basis of the multivariate regression analyses in panel I, the second set (panel II) displays the changing effects of economic segmentation on earnings by controlling for the market division. The second set demonstrates the extent to which the market division suppresses wage differentials by economic segmentations relative to what might exist in the absence of export-promotion strategy.

The first set allows us to assess the explanatory power of each model in terms of the R^2 increment. The variance explained by human capital variables (model B) amounts to 60.3%, which suggests the predominance of individual attributes in earnings determination in Korean labor markets. Adding the three structural variables to model B does not yield a sizable increment of the variance explained. The overall increment in the full-fledged model D is only 1.4% compared to the variance explained by the four personal characteristics in model B. The preponderance of human capital in earnings equations stands in sharp contrast to the U.S. case. For instance, Bibb and Form reported that only 18.3% of wage variation in the U.S. is explained by human capital variables such as education, age, and work experience; but structural variables (i.e., industry, firm size, firm location, and unionization) account for over two-thirds of the variance explained (Bibb *et al.* 1977). In

¹⁰Major studies of earning functions tend to ignore the effects of hours worked, which may bring about misinterpretation (cf. e.g., Bibb and Form 1977; Beck *et al.* 1978; Wallace and Kalleberg 1981; Tolbert *et al.* 1978; Hodson 1977; Wright 1979). Pointing out this common failure, Sørensen argues that "earnings are function of wages per unit time and amount of time worked and are therefore heavily influenced by variations in hours and weeks worked" (Sørensen, 1983, p. 264).

TABLE 1. EARNINGS FUNCTIONS OF LOG HOURLY EARNINGS

Models Ind. Var.	Panel I			Panel II		
	[A]	[B]	[C]	[D]	[E]	[F]
<i>Human Capital</i>						
Education						
12 yrs		.239** (.038)	.197** (.039)	.189** (.039)	.194** (.039)	.187** (.039)
14 & over		.594** (.082)	.554** (.083)	.541** (.085)	.552** (.082)	.544** (.084)
Tenure						
5-7 yrs		.448** (.046)	.420** (.046)	.406** (.046)	.427** (.045)	.416** (.046)
Sex						
Female		-.339** (.027)	-.321** (.028)	-.307** (.029)	-.326** (.027)	-.308** (.028)
Job Skill						
Craftsmen		.567** (.086)	.586** (.085)	.595** (.088)	.585** (.085)	.593** (.088)
Semi-skilled		.095** (.035)	.118** (.036)	.118** (.036)	.126** (.036)	.127** (.036)
<i>Economic Segmentation</i>						
Industry						
Durables ^a			.091* (.026)	.107** (.026)		
Firm Size						
Large ^b			.048 (.027)	.078* (.029)		
Core Sector ^c					.123* (.027)	.160** (.028)
<i>Policy</i>						
Market Division ^d	-.321** (.039)			-.097** (.028)		-.095** (.027)
Constant	7.38	7.08	7.03	6.97	7.05	7.01
R	6.10	60.34	61.07	61.76	61.24	62.05
F stats.	68.70	104.57	93.91	87.60	101.09	94.34

*p < 0.05, **p < 0.01.

Note: Based on the earnings equation model. All variables are used in dummy terms in reference to basic categories. Figures in parentheses are standard errors.

^a Durables dummy.^b Larger firm dummy.^c Based on the core-periphery dichotomy. Refer to footnote 8.^d The market division is the dichotomy between DMO and EMO firms. Refer to footnote 10.

contrast, models B and D in Table 1 suggest that human capital accounts for about 98% of the variance explained, with the remaining 2% explained by the three structural variables in Korea labor markets. This result is supportive of the fact that Korea's working-class labor market shares many similarities to an open market, in which worker wages are determined largely by personal endowments (see Sørensen 1983).

This result is consistent with the state goal to strengthen the market-pricing mechanism for labor through maintaining a system of maximizing labor productivity. Firms' internal labor markets in Korea have been organized in ways which promote turnover and interfirm mobility, in short, a high degree of market openness. The export strategy worked to reduce institutional barriers to turnover and mobility, such as interfirm and interindustry differences, while raising the importance of personal endowments in labor markets. This trend augmented the influence of social distinctions in job promotion and payment, which in a meritocratic social setting such as Korea is closely associated with the unequal distribution of individual endowments.

In another respect, the preponderance of human capital in Korea is historical, because it reflects industrial customs and rules of payment schemes, particularly for production-line workers, which have existed since the colonial period. Wage determination in Korea's period of colonial industrialism prior to 1945 was firmly based on schooling and general skill, regardless of worker contributions to productivity. The lasting influence of colonial industrialism is enormous in this respect. More interestingly, however, Korean capitalists strengthened the importance of personal endowments even further in determining worker wages from the beginning of export-oriented industrialization. Korean capitalists apparently considered a payment scheme completely based on personal endowments as most profitable, unless labor shortages were to disturb it.

Panel I displays three sources of structural earnings inequality: industry, firm size, and the market division. Two points are worth mentioning for a careful interpretation: the regression coefficients of industry and firm size are far smaller than those of individual endowments, and the statistical significance of industry and firm size changes substantially with control for the market division. The latter point will be fully discussed later. Let us first consider the magnitude of industry and size effects on earnings.

Industry has statistically significant (at .05 level) earnings effects in model C when firm size is controlled. However, its effect reaches only a 9.1% level, amounting to just one-third of the sex effect. This magnitude of industry earnings effects is also quite small contrasted to such effects in U.S. labor markets. In Lawrence and Lawrence's research, for instance, industry

accounts for 21.2% of the differentials in U.S. worker earnings, and it accounts for up to 30% in a study by Dickens and Katz. Both of these studies control individual characteristics and locational variables in their multivariate regression analyses (Lawrence and Lawrence 1985; Dickens and Katz 1987).

Industry wage differentials are ubiquitous, and Korea is no exception (see Lang *et al.* 1987). However empirical evidence supports the idea that the importance of industry in earnings determination is problematic in the Korean context. For one thing, only a meager increment of the variance (total increment of $R^2 = 0.44\%$) is explained by adding the industry variable to human capital. In fact, many studies on Korea's interindustry wage effects have reported that there were no substantial wage gaps between the heavy and light industries (Lee 1987; Park and Park 1982), and that interindustry wage differentials did not show a consistent pattern with dual economists' industrial taxonomies (Lee 1984; Song 1986). For instance, in 1976 the wooden goods industry paid higher wages than the basic metal and chemical industries, and Korean food and beverage makers offered average wages equal to those in the machinery industry. This evidence strongly supports the argument that industrial differences are not a very important determinant of wage variation in Korea's highly open working-class labor market.

Firm size is also weakly associated with worker earnings, generating about 7.8% of relative advantage for large firms in the pooled model D with controls for all variables used. This result needs more explanation. First, firm size turns out to be effective only between two size categories with controls for personal endowments: smaller and larger firms (see details in Appendix-Models C and D of Table 4). More specifically, size wage effects do not exist between medium-size firms with 200 to 500 employees and larger firms with 500 or more employees. Similar wage homogeneity exists among smaller firms employing less than 200 workers. It is surprising that the largest category of firms employing more than 500 workers, which absorbs over half of the total industrial work force in Korean manufacturing industries, does not bring *sizable* earnings advantages relative to the smallest category of firms with 99 or fewer employees. The magnitude of size wage effects is much smaller than in the Japanese case, for example, in which enterprise size is a primary source of structural inequality of worker earnings (Dore 1973; Koike 1983).

It is noticeable that the market division has *negative coefficients* throughout earnings models A, D, and F. In addition, the magnitude is approximately equal to that of industry and firm size wage effects in model D of Table 1, but the effect tripled in model A, accounting for a 32.1% differential. These results mean that a modest earnings loss is predicted with horizontal mobility from domestic-market-oriented firms to export-market-oriented firms, other

things held constant.¹¹

Before estimating the wage effect of economic segmentation on the basis of the observation on changes of the significance levels and magnitudes of inter-firm and interindustry wage effects, let us recapitulate our observations as to earnings functions in the working-class labor market as follows:

- [A] Earnings are dependent upon individual endowments to a far greater extent than in advanced capitalist countries. Structural effects account for only a meager portion of earnings variation in terms of R^2 increment. These results are consistent with our argument that most industrial workers in Korea belong to a highly open labor market.
- [B] Three structural sources of earnings inequality are observed: industry, size, and market division. Industry and size effects, though statistically meaningful, are not very strong, compared to advanced countries such as the United States and Japan. The effects of market division are persistently found almost equivalent to industry and size effects in their magnitude but negative.

2. The Market Division: Suppressing Economic Segmentation

Our focus of analysis is now to measure the wage effects of economic segmentation, i.e., the earnings gaps between the core and periphery industrial sectors. Earnings models C and D provide valuable information on suppressed economic segmentation, i.e., our main theme.

Firm size is associated with 7.8% wage gains in the absence of policy impacts on labor markets in model D, but it becomes statistically meaningless in the presence of policy impacts in model C in Table 1. The changes of significance levels indicates that the market division completely eliminates the wage effects of firm size in Korean labor markets. Firm size wage effects are found nearly everywhere in the world (Bell and Freeman 1985) but these wage effects are completely eliminated in Korea by the market division, i.e., the labor-market outcome of export-promotion policies. In other words, *Korea's export strategy has blurred the institutional boundaries of labor markets between large and small firms.* The institutional boundary by firm-size is detrimental to the expansionist goal of large employers because it pressures them to pay workers above-market rates, particularly in recruiting new employees. Thus, large employers have benefitted from the absence of an institutional boundary by firm size, which has facilitated a unitary labor pool both

¹¹In monetary terms, the pure loss of monthly earnings amounts to a maximum of 20,000 Won (32.1% of the mean wages in DMO firms) in 1976.

for large and small firms. A unitary labor market also attenuated the disadvantage of small manufacturers by flattening wages for high-quality workers across firms. As a consequence, the absence of size wage differences has contributed to removing relative wage gains and thus has aided employers to hold down labor costs.

Industry wage effects, though they do not change markedly, show a similar pattern. Control of policy impacts in model D increases the regression coefficient of the industry dummy by 1.6% and improves the significance level substantially. It was already argued in the previous analysis that the relatively small wage effects of industry (9.1% in model C) were attributable to export-promotion policies. In addition, the market division suppresses the magnitude of industrial wage effects by 15 percent.¹² In a similar perspective, the export strategy allowed employers in manufacturing industries to avoid paying workers above-market rates by flattening industrial wage differentials to a substantial degree.

On the basis of these results, earnings models E and F in panel II estimate the extent to which the market division suppresses the core-periphery wage differentials. When wage effects of market division are eliminated in model F, economic segmentation produces a 16% wage differential between the core and the periphery sectors in Korea. A 16% wage differential is still very small as compared to those in other countries. In addition, it is noticeable that the core-periphery wage differentials are reduced by a substantial 25% under the influence of the market division in model E.¹³ In sum, these results lead us to contend that *the export strategy has contributed to weakening institutional nonmarket forces such as economic segmentation, while preserving the preponderance of personal endowments in wage determination*. Simply put, the export strategy has reinforced the market-pricing mechanism.

If one compares the varying extent of institutional wage differentials by skill groups, the suppressed wage effects of economic segmentation are striking. Table 2 displays variations in the core-periphery earnings differentials under the influence of the wage effects of market division, as compared to the U.S. case. The market-pricing mechanism has dominated wage determination, particularly for semi-skilled assembly-line workers, who have composed over four-fifths of the total work force in Korea's manufacturing industries during the past two decades of economic expansion. In other words, structural effects are completely eliminated and thus economic segmentation has no wage effect for the group of operatives, who make up the main work force in manufacturing industries.

¹²Calculated from $(10.7\% - 9.1\%) / 10.7\% = 15\%$.

¹³Calculated from $(16\% - 12.3\%) / 16\% = 14.9\%$.

TABLE 2. EARNINGS DIFFERENTIALS BY ECONOMIC SEGMENTATION, SKILL GROUPS, AND COMPARISON WITH THE U.S. LABOR MARKET (%)

Category Skill groups ^f	Korea				U.S.	
	Size ^a	Industry ^b	Economic Segmentation ^c		Bibb & Form ^d	Hodson ^e
	Rel. ^g	Rel.	Rel.	Abs. ^h	Abs.	Abs.
Managerial Workers						
Craftsmen	15	0	23	30	20	34
Production Workers						
Operatives	0	0	0	16	38	32
Laborers	13	12	18	30	101	129
Total	7.0	9.7	12.3 ⁱ	28.0		

Note: All individual variables are controlled when regression equations based on the proposed equation are operated separately for each demographic groups from the second to fourth columns. Zeros indicate cases in which regression coefficients fail the significant test. All other coefficients are statistically significant at 0.01 level.

^a Size dichotomy between large firms with 200 or more employees and small firms with 199 or less employees.

^b Industry dichotomy between durables and nondurables.

^c The core-periphery differentials.

^d Ratios of core to periphery earnings in absolute terms using 1972-73 QES (Bibb and Form, 1977).

^e Ratios of monopoly to competitive earnings in absolute terms using 1973 CPS (Hodson, 1979).

^f The division between managerial and production-line workers is common in Korea. Managerial workers have a supervisory power which production-line workers lack.

^g Relative earnings advantages.

^h Absolute earnings advantages.

ⁱ The total earnings differential between the core-periphery.

The first three columns demonstrate that, first, large firms show a 7% wage gain without controls for industry; second, the core sector shows a 9.7% wage gain without control for firm size; finally, economic segmentation engenders only a 12.3% earnings difference between the core and the periphery sectors. This magnitude contrasts with the 70% advantage of the core in absolute terms reported by Tolbert *et al.* (1980), and with the 40% advantage with controls for personal characteristics reported by Hodson (1979). Comparison of the absolute earnings gaps between Korea and the United States in the latter three columns also indicates that Korea's economic segmentation has had far smaller impacts on worker earnings, except for the craftsmen group which belongs to a relatively closed market. The craftsmen group shows almost an equivalent earnings gap as in the U.S. case because Korea's FILMS

clearly defines craftsmen as managerial workers. However, the impact on production-line workers, i.e., laborers and operatives, is negligible as compared to the U.S. case: Korea's economic segmentation generates absolute wage differences at no more than half the U.S. level for operative workers and at less than one-fourth the U.S. level for laborers (5th and 7th columns). It is noticeable that earnings for operatives have no relationship with structural effects in earnings determination in relative terms (2nd to 4th columns for operatives). Indeed, the total 12.3% gain of the core sector is composed entirely of the relative advantages for craftsmen and laborers. *This pattern indicates that worker earnings are determined completely by personal endowments in the labor market for operatives.* If 'going market rates' are defined as such a market condition with no structural effects, earnings of operative workers tend to be decided at market rates. In other words, the market division significantly weakens the impact of economic segmentation on earnings determination in general, leading to 'market rates' in the operatives' labor market in particular.

In sum, the export-promotion policy makes economic segmentation uninfluential in earnings determination in spite of the persistent, sharp divisions in product markets. However, it should be noted at this point that the export strategy has substituted the market division for economic segmentation as the leading source of earnings differentials in the Korean manufacturing industries. This represents a new pattern of structural inequality by the interventionist state. We will turn to this newly emerging pattern of structural segmentation of labor markets.

The Export Strategy: Generating A New Structural Segmentation

1. Differentiation of Labor Markets

For the past two decades of economic expansion, Korea's export strategy has restructured the working-class labor market in various ways. It significantly affected the distributional structure of industries and firms by the market division, promoting worker mobility in accordance with differing job opportunities. Consequently, the distribution of industries and firms, as well as the composition of the labor force, differ substantially according to the division between domestic and export markets. This is not so surprising when we consider that the export strategy was the engine of creating employment and a favorable environment for expansion of firms.¹⁴ Table 3 presents a broad

¹⁴Using the market division between the domestic and the export sectors, Cole and Westphal (1975) estimate that the export sector contributed about 40% of total employment generation during 1966-1970.

TABLE 3. DISTRIBUTION OF LABOR FORCE, INDUSTRY, AND FIRM SIZE BY MARKET DIVISION (%)

Data & Year Market Division ^a Category	1976 SLDB		
	Domestic Market DC	DE	Export Market EX
<i>Individual Variables</i>			
<i>Education (cum.)</i>			
Elementary	13.5	10.2	19.1
Middle	45.5	46.4	64.2
High	88.8	88.9	96.2
College	100.0	100.0	100.0
<i>Age (cum.)</i>			
below 20	17.1	21.2	32.6
below 25	41.9	55.6	76.2
below 30	65.9	75.6	89.2
<i>Sex</i>			
Male	79.1	61.4	43.2
Female	20.9	38.6	56.8
<i>Job Skill</i>			
Laborer	13.2	18.9	15.9
Apprentice	14.0	19.7	21.2
Semi-skilled	39.2	31.5	43.9
Skilled	19.3	17.7	15.2
Craftsmen	14.3	12.2	3.9
<i>Structural Variables</i>			
<i>Size</i>			
5-199	50.6	34.7	22.7
over 200	49.4	65.3	77.3
<i>Industry^b</i>			
Nondurables	50.5	43.3	64.4
Durables	49.5	56.7	35.6
<i>Working Conditions</i>			
<i>Mean Monthly</i>			
Wage ^c	62,338	57,907	43,624
Median Wage	55,000	45,000	37,000
<i>Hours Worked</i>			
(month)	252.7	253.1	267.2

^a Refer to footnote 10 for the definition of DC, DE, and EX.

^b Refer to footnote 8 for the industrial categorization.

^c Wage unit is the Korean Won; 1 U.S. Dollar equaled 485 Won in 1976.

picture of the differentiation of labor markets by demographic groups, industry, and firm types.

First of all, the distribution of individual endowments according to the market division shows a regular pattern (see 'individual variables' in Table 3): as one moves from the domestic market (DC) to the export market (EX), workers' personal endowments become poorer. Exporting firms tend to employ less educated, younger, and less skilled workers, as compared to firms in the domestic market (fourth column). Simply put, exporting firms absorb workers who are positioned at the lower bottom of the labor-market pyramid. The proportion of college graduates is quite small (3.8%) and high-skilled workers (craftsmen) are meager (3.9%) in exporting firms. In contrast, firms concentrating on the domestic market (DC) tend to employ more educated, experienced, and skilled workers, who are positioned in the middle or upper strata of the labor-market pyramid (second column). Also surprising is the domination of females in export-concentrating firms (57%) in contrast to the domination of male workers in domestic-market-oriented firms (79% in DC). In a word, *the export strategy has played a crucial role in distributing workers unevenly by market division in terms of personal endowment*. As one moves to the export market, we observe that the profiles of individual endowments become poorer and female workers are overrepresented.

Regarding the distribution of industry and firm size (see 'structural variables' in Table 3), it is noteworthy that the durables industry tends to be associated with domestic consumption as opposed to the nondurables industry, which is associated with the export market; in addition, large firms are concentrated in export-related markets, whereas small firms tend to produce goods for the domestic market. Thus, the pattern of industrial and firm-size distribution is also explained by the export strategy.

Since the state has strategically encouraged nondurable industries to compete with foreign manufacturers in international markets from the outset, it is natural that the nondurables tend to be export-market oriented. The state also allows the nondurables to enjoy a greater opportunity for enterprise expansion. In contrast, the durables have developed a close linkage to the domestic market in parallel with policies of restricting domestic consumption. This dichotomy has resulted in a unique association between industry and firm size, as Figure 1 displays.

Figure 1 expresses the ratios of large to small firms, and of durable to nondurable industries by the extent of firm involvement in the export market. With increases of the export ratio the proportion of large firms also increases but the level of durable industries declines. The two distribution lines cross around the mid-point, meaning that large firms are more likely to manufac-

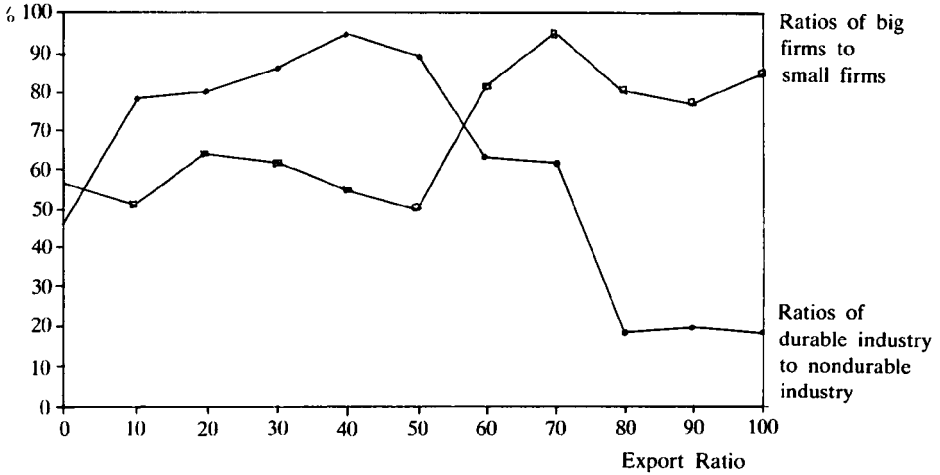
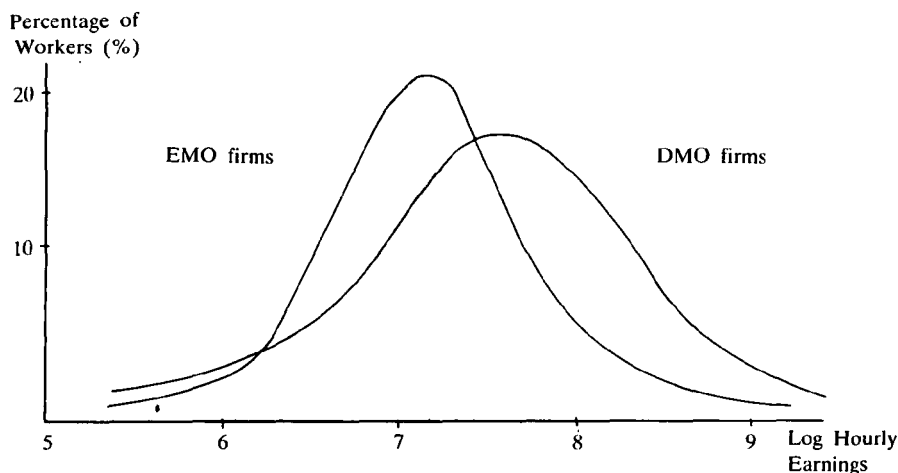


FIGURE 1. DISTRIBUTION OF INDUSTRY AND ESTABLISHMENT SIZE BY EXPORT RATIOS, 1976

ture nondurables, and small firms are more related to durable goods. When market types are considered, small firms producing durable goods are domestic-market oriented in nature, while large firms producing nondurable goods are oriented toward the export market. It is important to note that this unique associating of industry and size levels out the relative earnings advantages. In other words, the export strategy makes structural earnings effects *counteract each other* by associating larger firms with the nondurables and smaller firms with the durables. Such a unique association explains the suppressed economic segmentation, as demonstrated in the previous analysis. What has been described so far can be summarized as follows:

- [A] Firms producing only for domestic consumption (DC) and firms producing for both domestic and export markets (DE) are relatively similar, making a sharp contrast to export-concentrating firms (EX) in terms of the distribution of their labor force, industry, and firm size.
- [B] Specifically, the labor force employed in DMO firms has a relatively higher quality, while export-concentrating firms employ lower-quality workers on the average.
- [C] Small firms producing durable goods tend to be overrepresented in the domestic market, while large firms producing nondurable goods tend to be positioned in the export market.

Consequently, the market division has a significant influence on working



- (1) DMO firms: Mean 7.647, Median 7.622, Standard dev. .614.
 EMO firms: Mean 7.268, Median 7.286, Standard dev. .566.
- (2) The dependent variable is the log hourly earnings. The sample for domestic-market-oriented firms includes 630 workers, while 433 workers belong to the sample for export-market-oriented firms.

FIGURE 2. COMPARISON OF THE DISTRIBUTION OF LOG HOURLY EARNINGS BETWEEN DOMESTIC-MARKET- AND EXPORT-MARKET-ORIENTED FIRMS, 1976

conditions as well. The bottom three lines in Table 3 clearly show the differences in labor market outcomes by the firms' market affiliation. As expected, working conditions become worse with an increasing emphasis on export production. Wages of export-concentrating firms equal to only 70% of those of firms producing goods for domestic consumption (DC). Employees in exporting firms work almost 15 hours more than otherwise comparable workers per month. Simply put, *workers of exporting firms have the longest work week and the lowest wages.*

Figure 2 displays two distinct patterns of earnings distribution according to the market division between the domestic and export markets in terms of log hourly earnings, showing the percentages of workers paid different amounts. Earnings differentials are quite noticeable in absolute terms, amounting to 46% gains for workers in DMO firms opposed to otherwise comparable EMO workers.¹⁵ The more concentrated and steeper the curve, the greater the

¹⁵The ratio is from W_d/W_e , where W_d is the average wage of domestic-market-oriented firms and W_e is that of export-market-oriented firms. $\log W_d/W_e = \log W_d - \log W_e = 7.647 - 7.268 = 0.379$. $W_d/W_e = 1.46$, i.e., 46% differential.

earnings equality: workers in EMO firms are more concentrated around the average wage than those in DMO firms. In terms of the standard deviation, earnings inequality among workers of EMO firms is 8% lower.¹⁶

From the neoclassical point of view, the larger payment and greater inequality in DMO firms would be ascribed to differences in personal characteristics, e.g., the higher proportion of educated, male skilled workers and, accordingly, the wider spectrum of job differentiation in DMO firms. According to our observation on labor force composition by the market division in Table 3, the neoclassical approach is adequate to interpret this earnings inequality. However, the neoclassical approach fails to explain the differences of labor market outcomes, since we also demonstrated *the negative earnings effects of the market division per se* with controls for diverse sources of individual endowments in multivariate regression analyses. The market division itself is a structural factor of earnings inequality, which is not endogenous but exogenous to the earnings process. This means that *the market division has emerged as an exogenous force generating structural segmentation of labor markets in Korea*. In fact, the export strategy has allowed a new pattern of structural segmentation of labor markets along with that exogenous force, while weakening the effects of economic segmentation substantially.

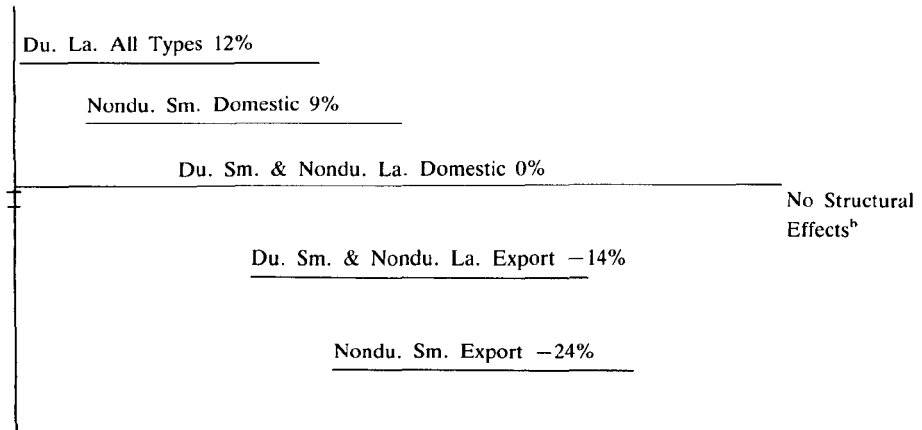
2. The Predominance of the Market Division As a Structural Source of Inequality

As described above, economic segmentation is not important as a structural source of inequality in the Korean setting. As Figure 2 clearly shows, industry and size wage effects are extremely intertwined. Instead, *the market division emerges as a leading factor in determining the relative gains for economic sectors created by the three-way combination of industry, size, and market types*. Consequently, the combined structure of industry and firm size, the two essential elements for economic segmentation in the present analysis, yields quite a different pattern of earnings differentials from what has been reported by major studies on this subject (cf. Beck *et al.* 1978; Tolbert *et al.* 1980; Hodson and England 1985; Lawrence *et al.* 1985). Instead, the market division between the domestic and export markets has a decisive influence on the overall pattern of earnings advantages. There is one exception, however: the case of large-sized firm producing durable goods.

Figure 3 displays a new pattern of earnings differentials among economic sectors. The earnings gains for durable industries and larger firms are so disrupted with control of market division as to virtually invalidate economic

¹⁶Calculated from $(.614 - .566) \times 100 / .614$

Relative Earnings
Differential (%)



^a Earnings differentials are based on the pooled model F in Table 1. The relative earnings gaps are obtained from comparison of three sets of regression coefficients for eight economic sectors. The first and second sets are obtained from regression analyses concerning earnings gaps among domestic-market-oriented firms and analysis of earnings gaps between DMO and EMO firms provides the third set of coefficients. Each sector is used as a dummy term in reference to the sector of large-size firm of the nondurables. Regression equations control schooling, sex, job skill, and tenure dummies. All coefficients are statistically significant at 0.01 level except for two economic sectors (small firms of the durables and large firms of the nondurables, both of which belong to the domestic market), in which the structural effects are not existent (0%).

^b The regression analysis finds two segments, in which worker earnings are completely dependent upon individual endowments. This means that structural effects are nonexistent.

FIGURE 3. EARNINGS DIFFERENTIALS BETWEEN ECONOMIC SECTORS OF THE THREE-FACTOR COMBINATION,^a 1976

segmentation by industry and size in the Korean context. For instance, the market division generates about 33% wage differentials within small firms producing nondurables, and 14% wage differentials within large firms producing nondurables. Instead, earnings differentials, though somewhat irregular in case of larger firms producing durables, are rather consistent with the division between the domestic and the export markets. The new pattern of structural segmentation has been caused by the dual functions of market division *per se*: its negative earnings effects and its strong impacts on the distributional structure of the labor force, industry, and firm size.

SUMMARY AND CONCLUSION

By specifying the dual functions of the market division in earnings determination, the present analysis has illuminated how the market division through export promotion suppresses economic segmentation in terms of worker earnings. It has been argued that the market division is negatively associated with worker earnings and strongly correlated with other types of variables considered in earnings equations. The market division also has a decisive impact on differentiation of the labor force, industry and firm size. These two functions intrinsic to the export strategy in Korea make industry and size wage effects counteract each other to a large extent, which reduces and weakens the effects of economic segmentation. In addition, the analysis highlights the emergence of a new pattern of structural segmentation of labor markets, which is an outcome of the export strategy itself.

It should be emphasized that the export strategy in the earnings process leads to a highly open market, in which worker earnings are dependent upon personal endowments and structural effects are largely eliminated, particularly in the operatives' labor market. These results support our main argument that the export-promotion policy has contributed to removing institutional nonmarket forces in wage determination, such as economic segmentation, but instead strengthened the trend toward wage competition. Maintaining the predominance of personal endowments in earnings process and curbing structural wage advantages in labor markets are the structural imperative of the export strategy that the state assures the adaptability of the national economy to the world export market. The unlimited labor supply in Korea supported this state goal of weakening institutionalization of labor markets which is detrimental to the adaptive capacity. In fact, the Korean state achieved its goal to suppress the trend toward economic segmentation to which capitalist development is prone. However, the state allowed a new pattern of structural inequality, though small in its magnitude (about 10% of wage differences), by the export strategy itself, i.e., a structural segmentation between the domestic and the export markets.

[APPENDIX]

TABLE 4. THE PRELIMINARY ANALYSIS: MODELS OF EARNINGS EQUATION, 1976 SLDB

Models	Model A	Model B	Model C	Model D
Ind. var.				
Schooling				
middle		.1007(.0368)**	.0664(.0372)	.0647(.0373)*
high		.1843(.0389)**	.1212(.0409)**	.1166(.0410)**
college		.4948(.0498)**	.4211(.0689)**	.4084(.0718)**
Tenure				
1-2		.1912(.0374)**	.1742(.0371)**	.1750(.0375)**
2-3		.2420(.0402)**	.2221(.0400)**	.2129(.0402)**
3-5		.3284(.0395)**	.2956(.0400)**	.2871(.0402)**
5-7		.4142(.0453)**	.3795(.0478)**	.3665(.0467)**
7-9		.4994(.0525)**	.4540(.0531)**	.4342(.0542)**
over 9		.6634(.0535)**	.6241(.0536)**	.5958(.0560)**
Sex				
female		-.3736(.0279)**	-.3200(.0431)**	-.3120(.0305)**
Job Skill				
apprentice		-.2239(.0422)**	-.2043(.0431)**	-.2275(.0434)**
semi-skilled		.1011(.0372)**	.3259(.0462)**	.3271(.0469)**
skilled		.2775(.0448)**	.3259(.0462)**	.3271(.0469)**
technician		.4995(.0648)**	.5409(.0649)**	.5212(.0667)**
Industry				
food & bev.			.3393(.0636)**	.2335(.0676)*
textile			.1935(.0514)**	.1914(.0511)**
wood			.4068(.1437)**	.3968(.1429)*
paper & printing			.2551(.0652)**	.1723(.0669)*
chemicals			.2980(.0593)**	.2727(.0606)**
minerals			.2748(.0822)**	.2522(.0819)*
basic metal			.3129(.1211)**	.3511(.1210)**
machinery			.3202(.0547)**	.2801(.0552)**
Size				
50-199			.0719(.0493)*	.1274(.0503)
200-499			.0981(.0499)	.1832(.0523)**
over 500			.0938(.0478)	.1764(.0509)**
Market				
Division ^a	-.2177(.0209)			-.0819(.0171)**
Constant	7.94	7.15	6.82	6.97
R ²	9.23	60.99	62.57	62.99
F Stats.	108.26	122.44	75.55	66.52

*p < .05, **p < .01.

Standard errors are in parentheses.

^a Triple dichotomy: DC, DE, and EX. Refer to Footnote 8.

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