

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

WAGE DIFFERENTIALS BETWEEN FOREIGN MULTINATIONAL
ENTERPRISES AND DOMESTIC FIRMS IN KOREA

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF
THE UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN

ECONOMICS

MAY 1996

By

Sungsoo Eun

Dissertation Committee:

Chung H. Lee, Chairperson
Hugh Folk
Gerard Russo
Eric I. Im
Byron Gangnes

UMI Number: 9629822

UMI Microform 9629822
Copyright 1996, by UMI Company. All rights reserved.
This microform edition is protected against unauthorized
copying under Title 17, United States Code.

UMI
300 North Zeeb Road
Ann Arbor, MI 48103

©Copyright 1996
by
Sung-Soo Eun

Acknowledgements

This dissertation was completed with the help of many individuals. I would like to express my greatest appreciation to Professor Chung H. Lee, chair of the dissertation committee, who gave me the opportunity to study economics in Hawaii by first recruiting me as a research intern. He also provided invaluable advice, guidance, and encouragement as a dissertation advisor. Special thanks also goes to the other committee members. Professor Eric I. Im kindly responded to continuing questions about the empirical aspects of this study. I also thank Professors Gerald Russo, Byron Gangnes, and Hugh Folk for their detailed and insightful comments and suggestions on various drafts of my dissertation.

I am grateful for the financial support of the East-West Center during my studies in Honolulu. Program officer Mendl Djunaidy has kindly helped me in dealing with all kinds of difficulties. I also express my great appreciation to the Ministry of Finance and Economy (MOFE) of Korea for giving me the chance to study at the University of Hawaii.

Many Korean Professors and graduate students in the Economics Department helped me in various ways. I am grateful to Professor Un-chan Chung of Seoul National University in Korea for creating the opportunity for me to study in Hawaii with Professor Chung H. Lee, and for encouraging me through the entire period of the project. I would also like to thank

my two friends, Professor Kwang-soo Cheong of University of Hawaii and Professor Chang-yong Rhee of Seoul National University in Korea, for their insightful advice in the early stages of my dissertation. My heartfelt appreciation also goes to Director Kyung-taik Han of MOFE of Korea for his critiques and valuable suggestions in every stage of the dissertation. I extend my thanks to Mr. Hee-sik Kim for his help with the computer skills that were necessary in the estimation of regressions. Thanks also go to Directors Joong-kyung Choi and Dong-soo Kim of MOFE of Korea for invaluable advice and encouragement during their stay in Hawaii as graduate students. I am thankful to Dr. Janis Togashi for her editing and proofreading of this dissertation.

Throughout my research, God was always there to guide and encourage me and my family. My mother, mother-in-law, and father-in-law deserve my deepest thanks for their endless love and encouragement. My warmest thanks go to my two sons, Dong-joon and Dong-ook for their long patience with a father who was often busy as a student. Finally, deepest thank goes to my wife, Hei-won, for her support and the many sacrifices. In spite of the difficulties she encountered, she has shown great patience and unwavering love throughout the study.

Abstract

The primary research questions addressed here are whether or not multinational enterprises (MNEs) pay higher wages than domestic firms for equally skilled workers, and if so, why. This dissertation builds a theoretical framework to explain the wage differential between MNEs and domestic firms. MNEs, which have certain characteristics such as a lower ability to monitor workers, and less employment stability and job prestige, will pay higher wages in order to elicit effort from their workers. Our empirical examination and tests for the hypotheses support this theoretical explanation.

This study uses a human capital earnings equation to investigate the existence of the wage differential for equally skilled workers between MNEs and domestic firms, and to test several hypotheses. Estimated earnings equations show that there exist significant and substantial wage differentials between MNEs and domestic firms in Korea. Even when workers are grouped by industry, occupation, collar color, or firm size, those who work for MNEs receive higher wages than those in domestic firms. These findings differ from those of most studies which have argued that differences in industry, occupation, and firm size cause the wage differential.

Several hypotheses for explaining the wage differential are empirically tested using two test methods. Empirical tests support the information hypothesis, the job stability

hypothesis, and the job prestige hypothesis which are drawn from the model. That is, the wage differential is greater, (i) the lower is the ability of MNEs to monitor their workers, (ii) the higher is the job loss risk from MNEs, and (iii) the lower is the prestige associated with a job in MNEs.

However, three alternative hypotheses--the union avoidance hypothesis, the labor quality hypothesis, and the fair wage hypothesis--are rejected.

Table of Contents

Acknowledgements.....	iv
Abstract.....	vi
List of Tables.....	xi
List of Figures.....	xiii
Chapter 1: Introduction.....	1
1.1 Background.....	1
1.2 Objective of the Study.....	3
1.3 Organization of the Study.....	5
Chapter 2: Review of the Literature.....	7
2.1 Theory of Multinational Enterprises (MNEs).....	7
2.1.1 Study of the Determinants of MNEs.....	8
2.1.2 Wage Determination of MNEs.....	10
2.1.3 Employment Effect of MNEs.....	13
2.2 Theory of Wage Determination.....	15
2.2.1 The Neoclassical Model.....	15
2.2.2 The Efficiency Wage Theory.....	17
2.2.3 Union Wage Determination.....	20
2.3 An Empirical Model for Wage Determination.....	22
2.4 Previous Studies on the IOWD in the Korean Context.....	25
Chapter 3: Theory of the Inter-Ownership Wage Differential.....	27
3.1 Characteristic of MNEs in a Labor Market.....	27
3.2 The Model.....	33

	ix
3.2.1 Agents.....	33
3.2.2 Firms.....	35
3.2.3 Wage Determination in an Individual Firm.....	38
3.2.4 Market Equilibrium.....	42
3.2.5 Comparative Analysis.....	48
3.3 Hypotheses about the Inter-Ownership Wage Differential.....	49
3.3.1 Hypotheses that Arise from the Model.....	49
3.3.2 Alternative Hypotheses.....	51
 Chapter 4: Estimation of the Inter-Ownership Wage Differential in Korea.....	 57
4.1 Description of the Data.....	57
4.2 Empirical Model.....	60
4.2.1 Model Specification.....	60
4.2.2 Explanatory Variables.....	62
4.3 Empirical Results.....	66
4.3.1 The Regression Model.....	66
4.3.2 Evidence of the Inter-Ownership Wage Differential.....	67
4.4 Conclusion.....	79
 Chapter 5: Hypotheses Testing of the Inter-Ownership Wage Differential.....	 81
5.1 Data and Test Method.....	81
5.1.1 Data.....	81
5.1.2 Test Method.....	82
5.2 Hypotheses Testing of the IOWD.....	84
5.2.1 The Information Hypothesis.....	84

5.2.2 The Job Stability Hypothesis.....	87
5.2.3 The Job Prestige Hypothesis.....	91
5.2.4 The Union Avoidance Hypothesis.....	94
5.2.5 The Labor Quality Hypothesis.....	97
5.2.6 The Fair Wage (Wage Equalization) Hypothesis.....	101
5.3 Conclusion.....	103
Chapter 6: Conclusions.....	105
6.1 Summary of the Study.....	105
6.2 Concluding Remarks.....	109
Appendix A: Estimated Wage Equations.....	111
Appendix B: Sampling Design.....	130
Bibliography.....	132

List of Tables

<u>Table</u>	<u>Page</u>
3.1 Comparison of Utility and Probability of Unemployment.....	39
4.1 Industrial Distribution of MNEs in Korea, Based on the OWS.....	59
4.2 Mean Values of Variables.....	61
4.3 Estimated Wage Equations.....	69
4.4 The Inter-Ownership Wage Differential by Industry, 1988-1992.....	71
4.5 The Inter-Ownership Wage Differential by Occupation, 1988-1992.....	73
4.6 Occupation Groups in MNEs and Domestic Firms, 1988-1992	74
4.7 The Inter-Ownership Wage Differential by Collar Color, 1988-1992.....	75
4.8 The Inter-Ownership Wage Differential by Firm Size, 1988-1992.....	77
4.9 The Inter-Ownership Wage Differential by Home Country, 1988-1992.....	78
5.1 Estimated Wage Equation, 1988-1992.....	86
5.2 Estimated Wage Premium Equation, 1988-1992.....	88
5.3 Inter-Ownership Wage Differential of Primary and Secondary Workers, 1988-1992.....	92
5.4 Inter-Ownership Wage Differential of Unionized and Non-unionized Workers, 1988-1992.....	96
5.5 Extent of Unionization in Korea.....	97
5.6 Inter-Ownership Wage Differential with and without Labor Quality Variables, 1988-1992.....	100
5.7 Comparison of the Inter-Ownership Wage Differential and Wage Level of Home Country.....	102
A.1 Estimated Wage Equations.....	111

A.2	Estimated Wage Equations by Industry, 1988-1992.....	114
A.3	Estimated Wage Equations by Occupation, 1988-1992....	118
A.4	Estimated Wage Equations by Collar Color, 1988-1992.....	121
A.5	Estimated Wage Equations by Firm Size, 1988-1992....	122
A.6	Estimated Wage Equation by Home Country, 1988-1992.....	125
A.7	Estimated Wage Equation, 1988-1992.....	126
A.8	Estimated Wage Equations by Type of Worker, 1988-1992.....	127
A.9	Estimated Wage Equations by Union Status, 1988-1992.....	128
A.10	Estimates of Wage Equation with and without Labor Quality Variables, 1988-1992.....	129
B.1	Method of Worker Extraction.....	131

List of Figures

<u>Figure</u>	<u>Page</u>
3.1 Aggregate NSC for MNEs and Domestic Firms.....	45
3.2 Wage Determination of MNEs and Domestic Firms.....	47

CHAPTER 1

Introduction

1.1 Background

From the early phases of the country's economic development in the 1960s, South Korea (henceforth called Korea) has actively encouraged foreign investment in order to supplement scarce investment funds and to acquire advanced technology. To a large extent, Korea has succeeded in this effort with foreign capital contributing to the nation's economic development in a variety of ways, and positively influencing labor markets.

However, there has been some controversy about the wages paid by foreign-invested firms.¹ Some studies show that foreign-invested firms' wages per worker are generally higher than those of domestic firms (Dunning 1985; Rodgers 1993). Yet, on the other hand, the existence of low wages in foreign-invested firms in labor-intensive industries has been used as

¹ The definition of a foreign-invested firm varies across countries and studies. For example, Lipsey (1994) defined a firm as foreign if foreigners owned 10 percent or more of the enterprise; in studies by Blomstrom (1988) and Mahmood and Hussain (1991), a 15 percent and 25 percent criterion was applied, respectively. In this study, a firm is regarded as "foreign" if more than 10 percent of the firm's ownership is foreign; this takes into account the fact that the Korean government allows foreigners to own at most 10 percent of a firm's share through portfolio investment.

evidence of wage exploitation by foreign-invested firms and justifies the objection to foreign investment liberalization.

With respect to these controversies, studies of other countries suggest that foreign-invested firms operating in host countries pay higher wages than do domestic firms (Dunning and Morgan 1980; Leonard 1987; Lim 1977; Lipsey 1994; Little 1985; Whichard 1978; and Willmore 1986). This phenomenon has been found in both developed and developing host countries. Yet, little information exists about this wage differential and a number of important questions remain. For example, does a wage differential exist between foreign and domestic firms for equally skilled workers? Or in other words, does the wage differential stem from the characteristics of workers, such as years of education and job experience, or the characteristics of firms, such as differences in ownership? And if there is a wage differential between foreign and domestic firms for labor that appears to be homogeneous (henceforth the term "inter-ownership wage differential" will be used), what factors explain the inter-ownership wage differential?

Previous studies on this topic simply compared the average wage rate (i.e., the total wage bill divided by the number of hours worked) of employees in foreign and domestic firms without controlling for the employees' human capital characteristics such as schooling and job experience, or for differences in the industry distribution and firm size.

Consequently, these studies are silent about whether the wage differential is due to the foreign firms' specific behavior or due to differences in employees' human capital, industrial distributions, or firm size.

Furthermore, existing theories of wage determination cannot explain the questions that are asked in this study. Neoclassical models assume a perfectly competitive labor market and predict that workers should be paid their value of the marginal product of labor. Thus, the neoclassical approach postulates the law of one wage. However, in reality, there has been observed a pattern of persistent and stable wage differentials for homogeneous labor, which cannot be explained by standard competitive theories (e.g., Krueger and Summers 1988).

Studies of multinational enterprises (MNEs) have suggested that several factors such as information and management behavior of MNEs may be responsible for inter-ownership wage differentials (Caves 1982; Dunning 1981; Kujawa 1975; Lim 1977; and Lipsey 1994). But a theory that can fully explain the inter-ownership wage differential has yet to be developed.

1.2 Objective of the Study

The objective of this study is to develop a theoretical framework to explain the inter-ownership wage differential and

to test the model's ability to explain the inter-ownership wage differential. It thus investigates whether or not the inter-ownership wage differential exists once differences in human capital and demographic variables are accounted for and whether the wage differential is pervasive and persistent or not.

The empirical section of this study will show that there does, in fact, exist wage differentials for equally skilled workers in Korea. This wage differential is particularly interesting because it is inconsistent with the neoclassical wage model in which wages are equal to workers' marginal product. The results also indicate that the inter-ownership wage differential exists even when taking into account the same industry, occupation, and firm size. This finding is very important since most empirical studies have explained the inter-ownership wage differential to be the result of differences in industry distribution, occupation, and firm size (Dunning 1985; Lipsey 1994; U.S. Department of Commerce 1993; and Whichard 1978).

The empirical findings of this study will also be useful in obtaining a better understanding the role of foreign direct investment on the Korean economy and can be used to assess the concern that foreign-invested firms may exploit their workers, especially in low-wage developing countries. Previous studies on the effect of foreign direct investment on the Korean economy focused on the macroeconomic issues such as GNP, the

balance of payments, and employment. The microeconomic analysis employed in this paper will not only complement these macroeconomic studies, but will also be useful for policymaking surrounding foreign direct investment.

The theoretical framework on the causes of the inter-ownership wage differential is influenced by the efficiency wage approach. The efficiency model argues that some firms pay a noncompetitive wage (that is, more than the going wage) in order to increase work effort (and thus productivity), reduce the incidence of workers quitting their jobs (and thus save on hiring and training costs), or hire higher-quality workers. Since firms vary in the costs of turnover and measurement of labor quality, the optimal wages vary (Krueger and Summers 1988).

The model developed in this study will explain why foreign-invested firms pay higher wages than domestic firms. This theoretical framework is important because it is a first attempt to theoretically explain the inter-ownership wage differential. The paper will test three hypotheses that arise from the model and three alternative hypotheses on the inter-ownership wage differential.

1.3 Organization of the Study

The dissertation consists of six chapters. Chapter 2 discusses the theories of multinational enterprises (MNEs) and

wage determination, and reviews the empirical studies of wage determination and MNEs' wages in the host country. Chapter 3 presents the theoretical framework for the model which is used to explain inter-ownership wage differential. To do this, different characteristics of foreign-invested and domestic firms are examined and how these differences in characteristics lead to the inter-ownership wage differential is analyzed. Chapter 4 estimates a human capital earnings equation and shows the existence of the inter-ownership wage differential. Chapter 5 tests a number of hypotheses to explain the inter-ownership wage differential. A conclusion and policy implications are discussed in the final chapter.

CHAPTER 2

Review of the Literature

This chapter presents an overview of studies on the inter-ownership wage differential and the theories of wage determination. In Section 2.1, studies on multinational enterprises and empirical research on the inter-ownership wage differential are reviewed. Section 2.2 presents the theories of wage determination and discusses the linkage between existing theories and the inter-ownership wage differential. In Section 2.3, empirical models of wage determination are examined. Finally, Section 2.4 presents studies that have been done on the inter-ownership wage differential in the Korean economy context.

2.1 Theory of Multinational Enterprises (MNEs)

Foreign direct investment (FDI) refers to international capital flows in which an investor in one country creates a firm in another. Direct investment (as distinct from portfolio investment) involves not only a transfer of resources, but also the acquisition of control. A multinational enterprise, whose essential element is direct investment abroad, is defined as "an enterprise that controls

and manages production establishments-plants located in at least two countries" (Caves 1982, P.1).²

Since either an individual or an MNE can become a foreign investor, foreign-invested firms is a broader definition which includes the affiliates of MNEs. However, it is assumed that the affiliates of MNEs (henceforth called MNEs) represent foreign-invested firms because FDI is dominated by MNEs. Accordingly, no distinction is made between the theories of MNEs and other studies of the effect of MNEs on employment and wages, and theories on foreign-invested firms (hereafter, the term foreign-invested firms are substituted for MNEs).

2.1.1 Study of the Determinants of MNEs

One well-known theory of MNEs is the product life cycle theory associated with Vernon (1966). This model postulates that investment and trade flows, and thus the location of production, are largely determined by the technological stages through which products evolve. As a product moves from the introductory phase to the standardized phase, an enterprise's strategy for servicing foreign markets will shift from home-country exporting to foreign production for the local market

² An alternative definition of MNEs is transnational corporations (TNCs) which refers to "firms that can no longer be associated with a certain home country but are truly global in nature" (Andersson 1991, P. 177). In this study, focus is given to the behavior of foreign firms in the host country, and the term MNEs is used to refer to these firms.

and, finally, to foreign production for export to third-country markets.

The product life cycle theory has provided a plausible explanation for much of U.S. MNEs activities in developed countries up to the 1970s. However, it is less applicable for developing countries' MNEs investing in developed countries.

The industrial organization literature suggests that firms in oligopolistic industries tend to match each other's investment moves in foreign countries to maintain their competitive edge. A study of FDI activities in the U.S. tire and textile industries has shown that the motivation for FDI in an oligopolistic industry is based on the behavior of rivals as well as host country-related and firm-related factors (Yu and Ito 1988). This approach, however, does not explain how the investment behavior of the initiating firm is to be interpreted.

Dunning's "eclectic theory" of MNEs combines elements of the firm, international trade, industrial organization, and location theory to arrive at what is today the most comprehensive explanation of MNEs (Dunning 1981). A firm's decision to produce overseas is conditioned by firm-specific ownership advantages (tangible and intangible assets, including process and product technology, and managerial and marketing skills), internalization advantages (i.e., access to cheaper inputs, centralized accounting procedures, and administrative experience), and country-specific location

advantages (i.e., factor costs and market size). Dunning's eclectic theory seeks to explain the bases of competition among firms, the choice of FDI over some other form of market servicing, and differences in comparative advantage among countries.

While much of the literature on FDI focused on the microeconomic issues relating to FDI and the behavior of the multinational enterprises, Lee and Ogawa (1995) focused on the relationship between a country's structural change and its FDI. In the study of pattern of profitability for six Japanese manufacturing industries for the years 1960 through 1988, they found that there is a linkage between the loss of profitability at home and outward FDI.

2.1.2 Wage Determination of MNEs

There have been few attempts to explain how MNEs determine their wages. Lim (1977) argued that MNEs tend to pay wages that are considered to be commensurate with the wages that they pay in their home countries and thus pay higher wages than domestic firms in developing host countries. But, Lim did not explain why MNEs have such a tendency. Caves (1982) suggested that MNEs pay higher wages to secure "better workers," meaning workers who are more congenial to accepting responsibility and thus cooperate with others harmoniously within MNEs. Dunning (1981) argued that the multinationality

of firms may affect the wage payments of their employees. That is, a difference in bargaining practices, the presence of pressure for parity in working conditions and wage payments with the parent company, and differences in knowledge of the local labor market determine employee wages in MNEs. However, Dunning did not explain how these characteristics of MNEs affect their wage determination, resulting in the inter-ownership wage differential. The MNEs' ability to pay a higher wage because of their higher productivity as compared to domestic firms was suggested as a cause of the inter-ownership wage differential in the literature (Caves 1982; Dunning 1981; Rodgers 1993).

An alternative approach tries to find an answer to the inter-ownership wage differential from the MNEs' labor relation. On the one hand, a successful MNE generally holds some firm-specific, rent-yielding asset. To the extent that national wage-setting processes permit bargaining at the level of the firm (rather than industry-wide or economy-wide bargaining), employee compensation levels should be elevated where such rents can be appropriated (Caves 1982).

The opposite hypothesis is that the multinational status may carry a variety of advantages in the bargaining process. If the MNE maintains capacity to produce the same goods in different national markets, output curtailed by a strike in one market can be replaced from another subsidiary's plant. The MNE can credibly threaten to close down a given plant and

choose another national market for any additions to output (Caves 1982; Kujawa 1975). Therefore, these hypotheses lead to the opposite prediction about the wage rates that MNEs will pay. To settle the question of which hypothesis is valid, one can only turn to the empirical evidence. Unfortunately, there are only a few empirical studies that address the question of whether foreign ownership matters in wage determination. In the United States in 1992, foreign-owned firms in the manufacturing sector paid, on average, wages that were more than 10 percent higher than domestic firms; wages of foreign-owned firms were 30 percent higher in the non-manufacturing sector in that same year (Lipsey 1994). Similar wage differentials were also found in other studies (Whichard 1978; Leonard 1987; Little 1985).

However, these studies did not control for differences in industrial distribution or human capital characteristics, and simply compared the average wage per employee. In these studies, wage differentials were attributed to the concentration of affiliates' employment in comparatively high-compensation industries, such as chemicals and petroleum, or in professional and related occupations (Lipsey 1994; U.S. Department of Commerce 1993).

In the European Countries, U.S. MNEs' wages are significantly below those of national firms (Dunning and Morgan 1980). Dunning and Morgan controlled for industrial distribution but failed to control for firm size and

individual characteristics. Thus, the study did not consider cases where U.S. MNEs are smaller than the leading national firms in the European countries.

Lim (1977) found that foreign companies pay higher wages than domestic firms in Malaysian manufacturing. Willmore (1986) found a similar result in a study for firms in Brazil. A shortcoming of both studies is that there is incomplete control for differences in human capital characteristics. As in other studies, they simply compared average hourly wage rates between foreign and domestic firms.

In sum, the studies on inter-ownership wage differential generally show that MNEs pay higher wages than domestic firms. However, these studies do not take into account worker's characteristics or differences in industry, firm size, and region. The absence of these variables in models of wage determination makes it impossible to answer the question of why foreign firms pay higher wages than domestic firms.

2.1.3 Employment Effect of MNEs

Another important issue between MNEs and the labor market concerns the impact of MNEs on jobs in both home and host countries. Labor groups in the United States, which was the world's leading country in terms of FDI source in the 1960s and early 1970s, expressed concerns about the exporting of American jobs that was resulting from U.S. MNE investment

abroad. Accordingly, many studies have focused on job losses in the host country. Empirical evidences from these studies show that expansion of foreign investment did, in fact, reduce the demand for production workers, but expanded the number of professional and managerial workers that are required for the MNE undertaking the foreign operation (Dollar 1989; Kujawa 1975).

Foreign investment also changed the composition (in terms of industry, skill, and other aspects) of jobs in the host country and probably in a favorable direction. The International Labor Organization (ILO) has published many working papers and books addressing the effect of foreign investment on the demand for labor, including both the direct and indirect effects that may result from multiplier and linkage effects between the MNE subsidiary and local suppliers. Among these, Bailey et al. (1993) found that the share of employment by foreign firms in terms of total paid employment was 4 percent in all sectors, and 12 percent in the manufacturing sector in the United States in 1990. Of course, some employment by foreign firms was merely the result of a transference to foreign ownership through merges and acquisitions, rather than creation of new jobs in foreign-owned enterprises (Campbell and McElrath 1990).

The influence of MNEs on the labor market in host developing countries appears to be marginal when compared to the large number of underemployed in the agriculture or

informal sectors (Bailey et al. 1993). However, the impact of MNEs can be significant in employment in modern manufacturing activities. In Korea, the direct employment effect of MNEs has been small relative to the total size of the Korean labor force. But in key industries such as electrical and electronics, chemicals, and non-electrical machinery, the share of workers employed by MNEs in 1978 was 35.4 percent, 24.1 percent, and 12.9 percent, respectively (Rodgers 1993). In addition, if we take into account the linkage effects from these industries, the employment effect of MNEs is substantial in the manufacturing sector.

2.2 Theory of Wage Determination

2.2.1 The Neoclassical Model

In a perfectly competitive labor market, workers are paid the value of their marginal product. Since a worker's characteristics such as job experience and schooling represent the potential productivity of the worker, wages are viewed as being dependent on these characteristics. Consequently, competitive theory predicts that wage differences are basically due to differences in the characteristics of workers.

However, in reality, a persistent and stable wage differential has been found for homogeneous labor in different

firms and industries.³ In this case, the neoclassical model explains that any deviation from the law of one wage is due to a lack of information, short-run immobility of labor, differences in working conditions, or unmeasured labor characteristics.

Changes in labor demand or supply could produce transitory wage differentials for homogeneous workers because of a lack of information about wages and job opportunities in the labor market or because of institutional barriers to mobility of workers from one job to another. According to this explanation, wage differentials are transitory and will tend to narrow and disappear over time as the labor market returns to equilibrium.

Wage differentials may also compensate for bad job attributes or poor work environments. Layard and Walters (1978) argue that differences in income between people in different jobs arise partly from differences between jobs and partly from differences between people. When jobs differ in terms of their attractiveness--for example, in pleasantness of work, risk, prospects, and training costs--the wage rates for the jobs will vary from one another. This wage differential is called the compensating wage differential.

³ For example, Brown and Medoff (1989) and Yoon (1991) found an employer-size wage differential in the United States and Korea, respectively. Krueger and Summers (1988) and Lee (1994) found an inter-industry wage differential in the United States and Korea, respectively.

While the compensating wage differential is undoubtedly an important determinant of wages, it clearly cannot explain the pattern of the inter-ownership wage differential. There is no evidence that working conditions of foreign firms are unpleasant and unsafe, and, in fact, it is equally likely that foreign firms provide safe and pleasant working conditions (ILO 1976; Kujawa 1980).

2.2.2 The Efficiency Wage Theory

The Efficiency wage theory suggests that "job attributes should have systematic effects on wage because they influence the optimal wage for firms to choose" (Krueger and Summers 1988, p. 259). According to this theory, at least some employers pay wages above the workers' opportunity cost. This behavior is rationalized in the following way (Yellen 1984). Suppose that effort or productivity, e , is an increasing function of wage; That is, $e = e(w)$, where $e' > 0$ and $e'' < 0$. In addition, it is also assumed that the production function is as follows:

$Y = f(e(w)L)$, where L is the number of employees.

Then the first-order condition for the firm that maximizes profit over w and L is:

$$\frac{de}{dw} = \frac{e(w^*)}{w^*}$$

where e/w (i.e., effort per labor cost) is maximized at w^* . In other words, w^* is the wage which maximizes the effort level per labor cost. When w^* exceeds labor's reservation wage, w^* is chosen as the profit-maximizing wage despite the fact that the firm can employ workers at the lower reservation wage rate.

If the relationship between wages and effort differs across firms, then each firm's optimal wage will also differ, and there will be a wage differential for workers of identical characteristics (Yellen 1984). Several different versions of this efficiency wage model have been proposed, each with a different presumed source of the positive effort-wage relationship. These variations of the efficiency wage model include the shirking model, the turnover model, the adverse selection model, and the fair wage model.⁴

Shirking model

According to this model, the payment of a wage rate in excess of the market clearing rate induces employees to work harder. The basic assumptions are that workers have some discretion concerning their performance, and that there are costs associated with monitoring. Workers who are paid more than their opportunity costs have an incentive to perform well since losing their jobs would be costly. This model predicts

⁴ The following discussion is based on Yellen (1984), Thaler (1989), and Krueger and Summers (1988).

that firms which have a moral hazard problem and have high monitoring costs will pay higher wages than other firms (Krueger 1991; Shapiro and Stiglitz 1984).

Turnover model

The turnover models are basically similar to the shirking model. Turnover is costly to firms through its direct cost (for example, training costs) as well as indirect costs, e.g., lowered productivity during the adjustment process. As a result, firms may wish to pay wages that are in excess of the market clearing wage to reduce costly labor turnover. If turnover costs are high, and if turnover is a decreasing function of wages, firms may be able to decrease the rate at which workers quit their jobs through high wages (Salop 1979).

Adverse selection model

The adverse selection model focuses on the imperfect information that firms have regarding the quality of labor. According to this model, if workers' reservation wages and abilities are positively correlated and if worker ability is not observable, offering a higher wage will lead to a pool of applicants of better quality than the average and may increase profits (Weiss 1980). These models imply that firms that have higher costs associated with measuring quality will offer higher wages.

Sociological model (i.e., the fair wage model)

The basic idea of the sociological model is that each worker's effort depends on work norms (Akerlof 1982). Workers will exert more effort if they believe they are being paid fairly. Therefore, the firm can succeed in raising group work norms and average effort by paying workers more than the market clearing wage whenever their workers' wages, which are perceived by the workers as being fair, exceed the competitive wages.

2.2.3 Union Wage Determination

Trade union models focus on the role of the union in wage determination. There are two prototypical models of union behavior which have been discussed in the recent literature: the monopoly union model and the efficient contract model. In both models, a union has a well-defined utility function, where the combination of higher wages and greater number of jobs give greater utility to the union; the firm is viewed as a profit maximizer. The difference between the two model types lies in the bargaining setting.

In the monopoly union model, both parties bargain only over the wage and the firm is left to determine employment. The monopoly union model postulates that the union maximizes its utility subject to the firm's labor demand curve. The utility-maximizing solution is given by the familiar

condition, marginal rate of substitution = slope of the labor demand curve. In this model, the union is assumed to be strong enough to impose an optimal wage target (w) to the firm. The firm, in turn, takes this wage as given and has the option only to choose the employment level which maximizes profit given w (Dunlop 1944).

In contrast, in the efficient contract model, both parties bargain over both the wage and employment levels (Carruth and Oswald 1989). Thus, there is no room for further utility or profit improvement to either party without harming the other. Additional benefits can only be achieved by maximizing the joint gains of both parties (McDonald and Solow 1981).

The existence of a union will not only affect wages in the unionized sector but also wages in the non-unionized sector. However, the effect on non-union wages is less clear. Ehrenberg and Smith (1988) argue that an increased wage in the unionized sector creates unemployed workers. If these unemployed individuals spill over into the non-unionized sector, wages in the non-unionized sector will decline (i.e., spillover effect). On the other hand, non-union employers may raise wages above the competitive level to reduce the probability of unionization in response to the threat of union entry. This threat effect is likely to be observed in firms with monopoly profits or large plants because such firms make good targets for union organizers (Reynolds et al 1991).

The trade union model shows that a union can affect wage determination in both the unionized and non-unionized sectors. It also suggests the possibility of the existence of a wage differential among unionized firms or between unionized and non-unionized firms according to union objectives or dominance of the spillover and threat effects. However, there is no evidence that unions of MNEs demand higher wages and have greater power to impose this wage than those of domestic firms (Caves 1982). Therefore, the trade union model cannot be an answer to the question on the inter-ownership wage differential.

2.3 An Empirical Model for Wage Determination

As an empirical tool for analyzing the determinants of wages, the Mincer earnings equation has been widely applied to various issues such as discrimination by race and sex (Oaxaca 1973), the inter-industry wage differential (Krueger and Summers 1988), and firm-size wage differentials (Brown and Medoff 1989). The basic notion behind the earnings equation is that to maximize the present value of one's lifetime earnings, a person invests in human capital up to the point where the marginal cost of investment equals its marginal benefit (Mincer 1974). The standard human capital earnings equation is of the form

$$\ln Y = a_0 + a_1 S + a_2 X + a_3 X^2 + u \quad (1)$$

where $\ln Y$ = natural logarithm of annual earnings

S = years of schooling completed

X = years of potential labor market experience

u = random disturbance term.

This basic human capital equation can be expanded to include personal and institutional variables such as marital status, sector of employment, occupation, race, region, and industry. Since this basic human capital equation can control for personal and institutional variables, this study utilizes the human capital earnings equation for the empirical testing.

One group of empirical studies on wage determination focuses on labor market discrimination which is a wage differential unrelated to productivity. These studies on labor market discrimination rely on the earnings equation to factor out other labor characteristics from the gross wage differential and isolate the portion of the wage differential that is due to discrimination (Oaxaca 1973; Taylor 1968; Blinder 1973; Fujii and Mak 1985; Murphy and Welch 1992). In these studies, the residual portion of the wage differential other than the portion which is explained by human capital and demographic variable is attributed to discrimination, that is, due to individualistic differences in region, sex, and race.

There has also been a vast literature on firm-size wage differentials as well as inter-industry wage differentials, which were motivated by development of the efficiency wage

approach. Brown and Medoff (1989), for example, comprehensively estimated the relationship between employer size and wages using various variables representing worker and job characteristics. They found that there is a substantial wage differential associated with establishment size and company size. Their study also found that the pattern of the employer-size wage differential is quite similar across six broad industries.

Krueger and Summers (1988) initially estimated human capital earnings equations using cross-sectional data from the Current Population Survey in order to examine wage differentials across industries. They controlled for human capital and demographic background, and then analyzed the effect of industry dummy variables on relative wages. The industry dummy variables were found to be statistically significant and had a sizable impact on relative wages. Various hypotheses to explain the wage differential within the framework of the competitive labor market including short-run immobility of labor, labor quality explanation, compensating wage differentials, and union threats were tested and rejected.

In order to test the labor quality explanation hypothesis, they also estimated a fixed effects model which controls for constant, unmeasured worker characteristics that might bias the cross-sectional estimates using two

longitudinal data sets. The results are very similar to the cross-sectional estimates.

2.4 Previous Studies on the IOWD in the Korean Context

There are few studies on the wage differential between foreign affiliates and domestic firms in Korea. Dunning (1985) found that foreign firms' remuneration per worker is higher than that of domestic firms. However, Dunning's comparison was based on simple calculations of the average wages of all firms existing in Korea with those of foreign affiliates in 1978, without consideration of the characteristics of an individual workers or the industry distribution. Therefore, Dunning's argument that the relatively larger average size of foreign firms explains the wage differential is not empirically validated in his study.

An interesting fact arising out of Dunning's study is that the value added per capita and profitability between foreign and domestic firms are not statistically different from one another. In other words, foreign firms pay higher wages than domestic firms that have similar value added per worker.

Previous studies on the Korean labor market do not provide enough information on the existence and causes of the inter-ownership wage differential. Rodgers (1993) cited various possible explanations: differences in the ability to

pay, differences in employees' quality, usage of a high wage as an instrument of labor control in MNEs, and compensation for unattractive employers. He concluded that the existing literature does not determine which of these contending explanations are most applicable and thus argued that more than one probably comes into play.

CHAPTER 3

Theory of the Inter-Ownership Wage Differential

This chapter presents a theoretical framework of the inter-ownership wage differential. Section 3.1 describes differences between MNEs and domestic firms in a labor market; these differences are critical in deriving the inter-ownership wage differential in the model. In Section 3.2, how differences between MNEs and domestic forms lead to the wage differentials is explained. Section 3.3 draws hypotheses to be tested, including alternative hypotheses from other literature.

3.1 Characteristics of MNEs in a Labor Market

Although they are interconnected, the labor market for MNEs differs from that for domestic firms. These differences in labor markets stem from a variety of factors such as differences in information about the labor market, stability of employment between foreign and domestic firms (which reflects the possibility of MNEs shifting production to another country), and the legal and cultural environment of labor relations between the home and host countries which, in turn, implies a difference in employer preference with respect to unionization (Dunning 1981; Lipsey 1994).

The literature on MNEs states that MNEs have an inherent

disadvantage in that they face a higher cost in measuring the quality of workers or in monitoring work effort as compared to domestic firms (Caves 1982; Dunning 1981; Hood and Young 1979). These higher costs of MNEs arise from cultural and linguistic differences, and lack of information about local labor market conditions. This asymmetric information poses a principal-agent problem that is likely to reduce the level of effort or an adverse selection problem. Although the principal-agent problem may be reduced by hiring an indigenous manager or vice manager for personnel issues,⁵ MNEs cannot avoid some problems arising from cultural differences.

Besides differences in their ability to access information of the labor market, different incentives faced by managers of MNEs and domestic firms lead to differences in the extent to which workers' efforts are monitored. The managers of MNEs, regardless of their nationality, have incentives that differ from those of domestic firms who typically own and manage their firms.⁶ An owner-manager of a domestic firm has a strong incentive to closely supervise and monitor his workers because he receives the profit generated by the firm. In contrast, a manager of an MNE is usually not paid a share

⁵ Establishment of a joint venture firm is one means of coping with this information problem associated with foreign investment (Tavis 1988). However, MNEs tend to resist joint ventures in cases where the intangible assets are the main basis for foreign investment (Caves 1982).

⁶ This is particularly true, where most firms are managed by their owners (Cho 1990).

of the firm's profit, and his action is not perfectly observed by the parent company. Consequently, it is assumed that MNEs have less information on the labor market, and more specifically, greater difficulty and less incentive in monitoring their workers' efforts than do domestic firms. This is a very critical assumption in the model presented in this study.

Existing studies provide evidence that supports this assumption. Krueger (1991) analyzed the difference in monitoring ability and wages between company-owned and franchised, fast-food restaurants. His study shows that workers are more closely monitored by an owner-manager of a franchise than workers in a company-owned restaurant. In another study, it was found that U.K. MNEs increase their use of joint ventures outside the Commonwealth countries (Caves 1982). This was taken to imply that MNEs usually have less information than domestic firms and resort to joint ventures to cope with this problem in host countries that are unfamiliar to the MNE.

A second characteristic of MNEs is that they are less stable employers than are domestic firms, at least from the perspective of the workers. Because MNEs have no special loyalty to the host country and are not easily subject to social control, MNEs feels less responsible to the society for providing stable employment in the host country (Kujawa 1975). A profit-maximizing MNE will withdraw whenever it does not

make a certain level of profit, regardless of the consequences for employees or the regional and national economy. Thus, it has been claimed that MNEs pose a greater threat to employment stability than do domestic firms.⁷

A third characteristic of MNEs is the identity among workers in the firm. In MNEs, indigenous employees will likely have to work with foreigners--for example, a manager or highly skilled employees--who are dispatched from the parent firm. In a multiracial society like the United States, working with foreigners may not have much of an impact in terms of motivating indigenous workers' effort. In a racially homogeneous society like Korea, however, workers in MNEs may feel uncomfortable working with foreigners or working for a foreign firm. For example, a case study on management of MNEs in Korea shows that the Korean experience of Japanese colonization has made Korean workers sensitive about their national identity (Tavis 1988).

Moreover, top management positions and highly skilled jobs in MNEs are mostly reserved for home-country nationals. Thus, the probability that workers will be promoted to executive positions is lower in MNEs than in domestic firms.

⁷ Studies by the Ministry of Finance (1992) and Bank of Korea (1992) show that domestic firms' jobs are more stable than those of MNEs in Korea. During 1988-1991, the average bankruptcy ratio for domestic firms is 0.05 percent, while the withdrawal ratio of MNEs is 0.28 percent; the higher withdrawal ratio suggests less stability of MNEs although the figures have not been adjusted for differences in industry composition.

In a Confucian culture steeped in the notion of respect for age and position, status generally ranks as a high priority in choosing jobs. Thus, it is generally assumed that the higher the probability of promotion, the higher is the prestige of the job in the society (Tavis 1988). Consequently, it can be said that MNE workers have jobs with lower social prestige than workers in domestic firms. Of course, this situation is not a universal characteristic of MNEs; nevertheless, it could be critical to MNE workers in specific environments.

The fair wage model developed by Akerlof (1982) claims that workers exert more effort if they believe that they are being paid fairly. Because of the presence of foreign nationals in MNEs, the MNE workers' perceptions of a fair wage are likely to be based on the wages paid to the foreign nationals in the MNE or parent firm. At the same time, however, the foreign national expects to be paid at least the same wage he/she would have earned in the parent firm or even a higher wage in order to compensate for the difficulties that arise from foreign residency. In this sense, the wage standard for internal equity in MNEs is higher than domestic firms, especially in developing host countries.

Another issue to be considered is labor relations. While labor peace is an important factor for both domestic firms and MNEs, labor disputes are more serious to MNEs because of the large differences in the legal and cultural environment of labor relations, the remote decision-making system (that is,

decisions require approval from the parent firm in the home country), and hostility toward MNEs in labor disputes. Therefore, MNEs deliberately seek locations where labor is docile and where unionism weak, and strive to avoid labor disputes and strikes (Hood and Young 1979; Jain 1990; Kujawa 1975).

Empirical studies have shown that employers who follow a strategy of positive labor relations to avoid unionism pay higher wages than similar non-union employers (Freeman and Medoff 1984; Thaler 1989). In this sense, the attitude toward unionism will affect wage determination in MNEs.

In sum, the multinational characteristics of MNEs can be outlined as follows:

(i) MNEs have greater difficulty in monitoring their employees than domestic firms due to lack of information about the domestic market and differences in manager's incentives.

(ii) MNEs pose a greater threat to employment stability than domestic firms.

(iii) MNEs workers have lower job prestige (or willingness to work) due to the MNEs' foreignness.

(iv) The workers' perceived fair wage in MNEs is higher than that of domestic firms, especially in developing host countries.

(v) MNEs are more sensitive to labor peace due to differences in the legal and cultural environment of labor relations and hostility toward MNEs in labor disputes.

3.2 The Model

This section explains how the multinational characteristics of MNEs lead to differences in wages between MNEs and domestic firms. The model here is based on the model of involuntary unemployment developed by Shapiro and Stiglitz (1984). In the model, a firm pays more than the "going wage" due to imperfect monitoring of an economy with homogeneous workers and firms. Their model is modified in this study to explain the inter-ownership wage differential. In the revised model, there are two groups of firms: MNEs with the characteristics discussed above and domestic firms. Not only does the model allow for differences in the ability to monitor workers' effort and differences in employment stability between MNEs and domestic firms, but it also assumes that workers care about job prestige.

3.2.1 Agents

For simplicity, it is assumed that all N workers are identical and, thus, adverse selection plays no role. Each worker chooses a certain level of consumption and working effort (b), and consumption of goods is enjoyable but putting forth effort is not. Furthermore, the utility function is modified by including job prestige. As discussed in Section 3.1, MNE workers have lower job prestige than those of

domestic firms. This lower prestige directly affects their utility and indirectly affects the level of work effort. Thus, in the case of Korea, it is important for the model to take job prestige into account.⁸ Now, the worker's instantaneous utility function can be written as

$$U = U(w, b, p) \text{ where } U_w > 0, U_b < 0, U_p > 0 \quad (2)$$

where w is the wage rate received, b is the level of effort expended on the job, and p is the prestige attained from the job compared to an alternative job.⁹ Following the Shapiro and Stiglitz model, the utility function is written as

$$U = w - bs + p, \quad (3)$$

where s is an indicator variable that is equal to one when the worker does not shirk and is equal to zero when he/she does shirk. Thus, it is assumed that only two levels of work effort are possible.

Each worker will retain his/her job until exogenous factors cause a separation if he/she does not shirk. If the worker shirks, he/she is assumed to produce no output and there is some probability, d , per unit of time, that the worker will be detected and consequently fired. Workers have perfect information about all job opportunities and in

⁸ Lower job prestige may not be a common characteristic of all MNEs. In this case, this characteristic can be excluded from the model for MNEs in host countries where workers do not appear to relate employment in MNEs with lower prestige.

⁹ Thus, p is a relative concept such as $p_M = f(\text{job}_M, \text{job}_D)$.

equilibrium, no workers shirk. There is also a probability, q , that a worker will be separated from the job due to relocation; this probability is assumed to be exogenous and the same for all firms.

If a worker is detected of shirking or exogenous separation occurs, he/she will enter the unemployment pool. There is a probability, k , that an unemployed person will acquire a job; this probability determines the expected length of the unemployment span and is assumed to be exogenous. When a worker is unemployed, he/she does not receive any unemployment benefit (and $b=0$).¹⁰ Agents are assumed to live infinitely. Workers thus select the effort level that maximizes the expected present discounted value of utility with a discount rate r , where $r > 0$

$$\max_s U = E \int_0^{\infty} (w - bs + p) e^{-rt} dt \quad (4)$$

3.2.2 Firms

It is assumed that there are two groups of firms: M identical MNEs and D identical domestic firms. This assumption represents a minor but key difference between the Shapiro and Stiglitz model and the model used in this study.

¹⁰ In the Shapiro and Stiglitz model, the unemployed receive unemployment benefits. However, since unemployment benefits are not available in Korea, it is ignored in the model.

In the Shapiro and Stiglitz model, there is only one group of firms which are identical with one another. Because of the one-group assumption, the Shapiro and Stiglitz model is not detailed enough to explain the existence of the inter-ownership wage differential. To overcome this limitation, this study divides firms into two groups and analyzes how the multinational characteristics of MNEs lead to a wage gap between MNEs and domestic firms.

The eclectic theory of MNEs suggests that a MNE possesses some ownership advantages in order to invest in a foreign country and compete successfully with indigenous firms which have the advantage of better knowledge of consumer and labor markets (Dunning 1981). MNEs are, therefore, believed to have superior technology over domestic firms.

However, besides ownership advantages, locational factors such as cheaper labor in the host country and trade barriers are also important determinants of foreign production (U.S. Department of Commerce 1993). Yet, a case study of MNEs in France showed that foreign subsidiaries recorded lower productivity than domestic firms between 1974 and 1980 (Dunning 1985). Lee and Chung (1980) examined the capital-labor and capital-output ratios for nine matched pairs of U.S. and Korean firms and eight matched Japanese and Korean firms. They found no statistically significant difference in production techniques between MNEs and domestic firms in

Korea. Given this contradictory evidence, we assume that MNEs and domestic firms have the same production function.¹¹

$$\begin{aligned} Q_i^M &= f^M (L_i),^{12} \quad i=1, \dots, M \quad \text{and} \\ Q_j^D &= f^D (L_j), \quad j=1, \dots, D, \end{aligned} \quad (5)$$

assuming $f^M (L_0) = f^D (L_0)$ for all L_0 .

As discussed in the preceding section, the literature on MNEs suggests that MNEs have greater difficulty than domestic firms in monitoring employees due to differences in their knowledge of the domestic labor market and managers' incentives. Thus, the detection of shirkers is assumed to be more difficult in MNEs than domestic firms. That is, $d_M < d_D$. Following the conclusion in Section 3.1, it is assumed that there is a probability of c per unit of time that a MNE will cease its operations and leave the country; this will depend on the host country's business environment and the MNE's worldwide management strategy. This probability is taken as exogenous and positive. The probability of closure is assumed to be zero for domestic firms.

¹¹ As discussed above, if MNEs have superior technology to domestic firms, the difference in productivity will be an alternative hypothesis to explain the inter-ownership wage differential. In this case, the MNEs' superiority in technology would not change the results but would lead to an increase in the wage differential in this model.

¹² In this model, labor supply for an MNE, L_i , is in the form of $L_i * b$. Thus, $L_i = L_i$ for a nonshirker and $L_i = 0$ for a shirker. This relationship is applied to the labor supply to domestic firms, L_j .

An individual firm pays wages that are sufficient to induce employee's effort. Both MNEs and domestic firms are assumed to produce the same product and face a perfectly competitive output market at a price equal to one (i.e., the numeraire). The firm's labor demand is given by equating the marginal product of labor to the cost of hiring an additional employee. That is,

$$f_M' (L_i) = w_M \text{ and } f_D' (L_j) = w_D. \quad (6)$$

In a perfectly competitive market, $w_M = w_D$ since $f_M' = f_D'$. However, due to imperfect information, w_M may differ from w_D .

We can derive the market demand curve for labor by horizontally adding the individual firm's demand schedules.¹³ $w_M = F_M' (L_M)$ and $w_D = F_D' (L_D)$ where $F_M' (L_M) = \Sigma f_i' (L_i)$, $F_D' (L_D) = \Sigma f_j' (L_j)$, $L_M = \Sigma L_i$, and $L_D = \Sigma L_j$.

3.2.3 Wage Determination in an Individual Firm

Table 3.1 compares the utility of a shirker and a nonshirker and the probability of unemployment of these two worker in MNEs and domestic firms. V_M^S is defined as the expected lifetime utility of an MNE-employed shirker, V_M^N is

¹³ When firms produce the same product, a wage change, by changing employment and output, will also change the price of the product, which will shift each firm's marginal revenue product schedule. In this case, the market demand curve may not be the horizontal addition of the individual firm's demand schedules. For simplicity, however, we assume horizontal addition is valid.

Table 3.1

Comparison of Utility and Probability of Unemployment

Firm	MNE	Domestic	Un-employment
Utility of Each Case	Shirker (V_M^S) $w + p_M$ ----- Nonshirker (V_M^N) $w - b + p_M$	Shirker (V_D^S) $w + p_D$ ----- Nonshirker (V_D^N) $w - b + p_D$	V_u (b=0)
Unemployment Probability			
* closure	$c > 0$	$c = 0$	
* detection	d_M	d_D ($d_D > d_M$)	
* separation	q	q	

note: $p_M / p_D < 1$

the expected lifetime utility of an MNE-employed nonshirker, V_D^S is the expected lifetime utility of a domestic firm-employed shirker, V_D^N is the expected lifetime utility of a domestic firm-employed nonshirker, and V_u is the expected lifetime utility of an unemployed individual. When a person is unemployed, his/her utility is $U(0,0,0) = 0$. But there is a probability k that he/she will acquire a new job from MNEs and domestic firms. Let us now assume that his/her new job is independent of his/her previous employer, and the chance of being employed is the same between MNEs and domestic firms. Then, V_u is the same for all workers from both MNEs and domestic firms. Since in equilibrium no worker shirks and workers are indifferent between MNEs and domestic firms, the expected lifetime utility of an employed person (V_E) is the same as V_M^N and V_D^N (that is, $V_E = V_M^N = V_D^N$ in equilibrium. If not, workers will move from their jobs to seek higher utility until $V_M^N = V_D^N$).

It is assumed that there are only two levels of work effort by a worker. Each agent's selection of effort level is based on a comparison of the utility obtained from shirking and the utility obtained from nonshirking. That is, if the utility from shirking is greater than the utility from nonshirking, a worker will shirk.

First, the expected lifetime utility of an MNE-employed

shirker is¹⁴

$$V_M^S = \frac{w_M + P_M + (c + d_M + q) V_u}{r + c + d_M + q} \quad (7)$$

The expected lifetime utility of an MNE-employed nonshirker is derived in the same manner and is

$$V_M^N = \frac{(w_M - b + P_M) + (c + q) V_u}{r + c + q} \quad (8)$$

A worker will not shirk if and only if

$$V_M^N \geq V_M^S \quad (9)$$

Therefore, the no-shirk condition (NSC) can be written as

$$\frac{(w_M - b + P_M) + (c + q) V_u}{r + c + q} \geq \frac{w_M + P_M + (c + d_M + q) V_u}{r + c + d_M + q} \quad (10)$$

Consequently, the critical wage that prevents employees from shirking in MNEs is as follows

¹⁴ To derive the expected lifetime utility of an MNE-employed shirker, the time horizon is divided into short periods of length, t . The value of V_M^S must satisfy the following equation:

$$V_M^S = \int_0^t (w_M + P_M) e^{-rt} dt + [(c + d_M + q) t V_u + [1 - (c + d_M + q) t] V_M^S] e^{-rt}$$

The first term on the right-hand side is the utility occurred during the period t . The second term is the lifetime utility for all future periods, and is equal to the discounted value of the sum of the expected utility of becoming unemployed and the expected utility of keeping the job. If we take the limit as $t \rightarrow 0$ later, the expression will be same as the utility expected at period 0. Solving for V_M^S and taking the limit, we obtain equation (7).

$$\bar{w}_M = rV_u - P_M + \frac{(r+c+d_M+q)b}{d_M} \quad (11)$$

Equations (10) and (11) imply that if an MNE pays a sufficiently high wage, then its workers will not shirk. In the same manner, no-shirk condition for domestic firms can be derived,

$$V_D^S = \frac{w_D + P_D + (d_D + q)V_u}{r + d_D + q} \quad (12)$$

$$V_D^N = \frac{(w_D - b + P_D) + qV_u}{r + q} \quad (13)$$

$$\bar{w}_D = rV_u - P_D + \frac{(r+d_D+q)b}{d_D} \quad (14)$$

Unlike the Shapiro and Stiglitz model, this model shows that MNEs and domestic firms have their own critical wages which induce workers not to shirk.

3.2.4 Market Equilibrium

To meet the NSC, each firm in the two groups, MNEs and domestic firms, must offer at least the critical wage, w_M and w_D , respectively. We can use the utility of an unemployed individual, V_u , to express the critical wage as a parameter term. Following the method of deriving equation (7), we obtain

$$V_u = \frac{kV_E}{r+k} \quad (15)$$

where k is the job acquisition rate.

From equation (8) and (15), we derive

$$rV_u = \frac{(w_M - b + P_M)k}{k+q+r+c} \quad (16)$$

By substituting equation (16) into equation (11), the critical wage for MNEs becomes

$$\bar{w}_M = b - P_M + \frac{(r+c+q+k)b}{d_M} \quad (17)$$

In the same manner, the critical wage for domestic firms is

$$\bar{w}_D = b - P_D + \frac{(r+q+k)b}{d_D} \quad (18)$$

In a steady state situation, the unemployment rate is constant which means that the flow into the unemployment pool is equal to the flow out from the unemployment pool. Thus, the job acquisition rate k can be converted into other parameters of the model. The inflow into the unemployment pool is $q(L_M + L_D) + cL_M$, where L_M and L_D refer to an aggregate employment in MNEs and domestic firms, respectively. The outflow is $k(N - L_M - L_D)$. So,

$$k = \frac{q(L_M+L_D)+cL_M}{N-L_M-L_D} \quad (19)$$

Substituting equation (19) into equation (17) and (18), the aggregate no-shirk conditions for MNEs and domestic firms are,

respectively,

$$\begin{aligned}\bar{w}_M &= b - P_M + \left(\frac{b}{d_M}\right) \left(c+r+\frac{qN+cL_M}{N-L_M-L_D}\right) \\ &= b - P_M + \left(\frac{b}{d_M}\right) \left(c+r+\frac{q}{u}+\frac{c}{m}\right)\end{aligned}\quad (20)$$

$$\bar{w}_D = b - P_D + \left(\frac{b}{d_D}\right) \left(r+\frac{q}{u}+\frac{c}{m}\right)\quad (21)$$

where $u = (N-L_M-L_D)/N$ or the unemployment rate, and $m=(N-L_M-L_D)/L_M$ or the ratio of unemployed to employed in the MNE sector.

As firms increase employment, any shirking worker will be easily rehired. So, firms would raise wages to induce workers not to shirk in a tight labor market. Consequently, the aggregate NSC schedules for both MNEs and domestic firms are upward-sloping as depicted in Figure 3.1.¹⁵ It is evident that the intercept of NSC for MNEs is different from that of domestic firms.¹⁶ In addition, NSC for MNEs is steeper than NSC for domestic firms since $\partial w_M / \partial L_M > \partial w_D / \partial L_D$ (see footnote 15).

Equilibrium occurs where the market demands for labor by MNEs and domestic firms intersect the aggregate NSC for each

¹⁵ The slopes for these curves are,

$$\frac{\partial w_M}{\partial L_M} = \frac{b}{d_M} \left[\frac{c(N-L_D)+qN}{(N-L_M-L_D)^2} \right] > 0, \quad \frac{\partial w_D}{\partial L_D} = \frac{b}{d_D} \left[\frac{qN+cL_M}{(N-L_M-L_D)^2} \right] > 0$$

¹⁶ If $L_M = 0$ and $L_D = 0$, $w_M = b - P_M + b(c+r+q)/d_M$ and $w_D = b - P_D + b(c+r)/d_D$. Since $P_D > P_M$ and $d_D > d_M$, $w_M > w_D$.

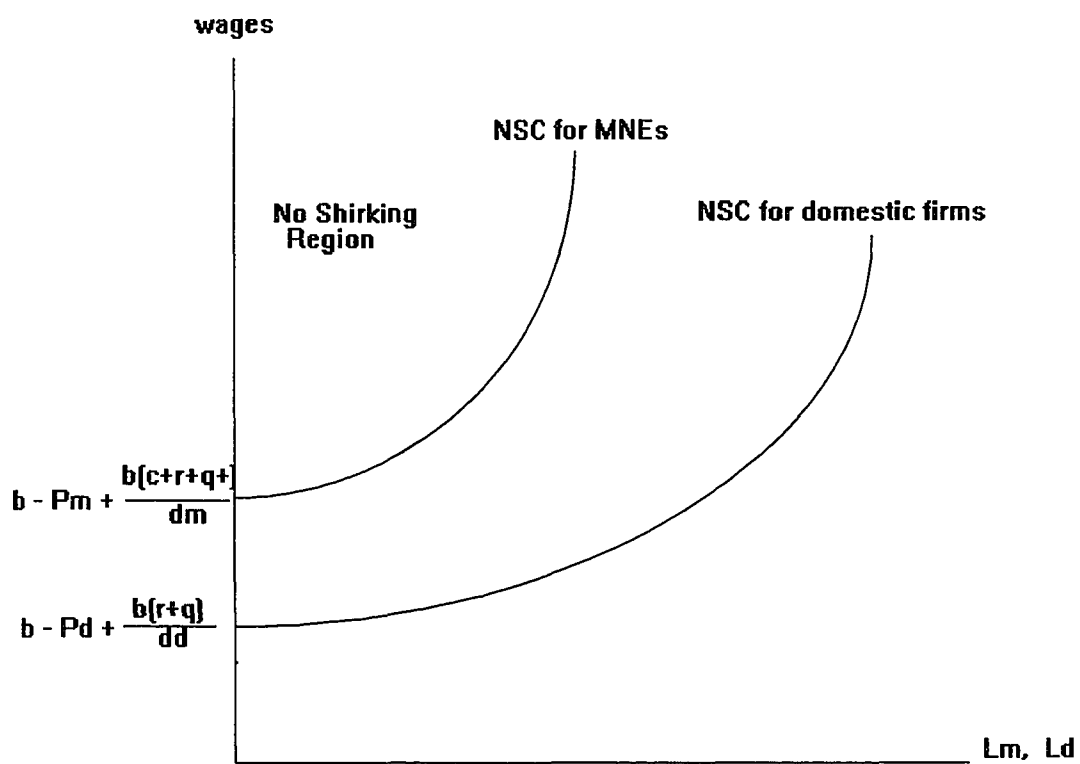


Figure 3.1

Aggregate NSC for MNEs and Domestic Firms

group, respectively. Thus, the market equilibrium employment level, L_M^* and L_D^* are determined simultaneously by solving the following two equations.

$$F'_M(L_M) = \bar{w}_M = b - P_M + \frac{b}{d_M} \left(\frac{qN + cL_M}{N - L_M - L_D} + c + r \right) \quad (22)$$

$$F'_D(L_D) = \bar{w}_D = b - P_D + \frac{b}{d_D} \left(\frac{qN + cL_M}{N - L_M - L_D} + r \right) \quad (23)$$

The market equilibrium wages for MNEs and domestic firms are

$$w_M^* = b - P_M + \frac{b}{d_M} \left(\frac{qN + cL_M^*}{N - L_M^* - L_D^*} + c + r \right) \quad (24)$$

$$w_D^* = b - P_D + \frac{b}{d_D} \left(\frac{qN + cL_M^*}{N - L_M^* - L_D^*} + r \right) \quad (25)$$

Figure 3.2 shows the wage determination for MNEs and domestic firms. The points E_1 and E_2 represent equilibria. At that point, workers are providing full labor service at w^* and firms do not need to raise wages. Lowering wages would induce shirking, and thus firms would not lower wages. From the worker's point of view, higher wages in MNEs may attract workers into the MNE sector, but some workers will prefer stable employment to high wages, and thus work for domestic firms.

Then, the wage differential is found to be

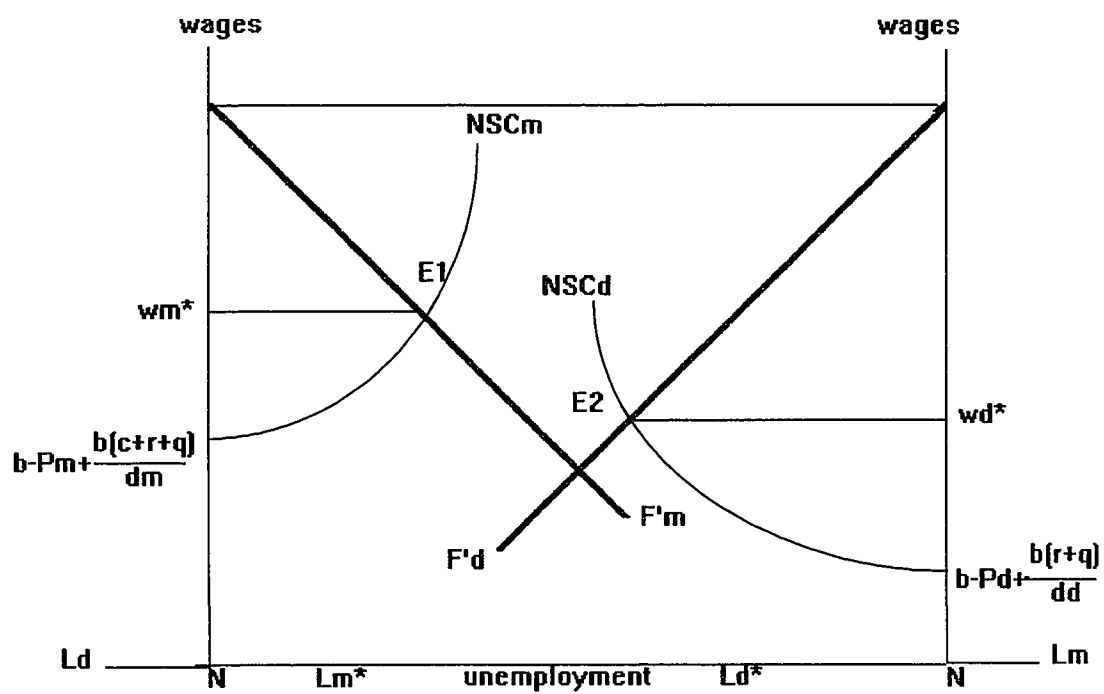


Figure 3.2

Wage Determination of MNEs and Domestic Firms

$$w_M^* - w_D^* = \frac{[(r + \frac{q}{u} + \frac{c}{m})(d_D - d_M) + cd_D]b}{d_M d_D} + (P_D - P_M) \quad (26)$$

Since $P_D > P_M$ and $d_D > d_M$, it must be that $w_M^* - w_D^* > 0$. That is, in equilibrium, MNE's wages will exceed wages of domestic firms for identical workers. In this model, the inter-ownership wage differential is expressed by various parameters that can be tested. This is a major contribution of this study.

3.2.5 Comparative Analysis

Equation (26) shows that the inter-ownership wage differential exists due to various factors. The inter-ownership wage differential is greater,

- (i) the higher is the exogenous job loss risk from MNEs (c),

$$\frac{\partial(w_M - w_D)}{\partial c} = \frac{[\frac{1}{m}(d_D - d_M) + d_D]b}{d_M d_D} > 0$$

- (ii) the higher the probability of being detected of shirking in domestic firms (d_D),

$$\frac{\partial(w_M - w_D)}{\partial d_D} = \frac{(r + \frac{q}{u} + \frac{q}{m})b}{d_D^2} > 0$$

(iii) the lower is the ability of MNEs to observe workers' effort (d_M),

$$\frac{\partial (w_M - w_D)}{\partial d_M} = \frac{-(r + \frac{q}{u} + \frac{q}{m} + c)b}{d_M^2} < 0$$

(vi) the lower the job prestige from MNEs (P_M).

$$\frac{\partial (w_M - w_D)}{\partial P_M} = -1 < 0$$

3.3 Hypotheses about the Inter-Ownership Wage Differential

3.3.1 Hypotheses that Arise from the Model

The model shows that MNEs pay higher wages than domestic firms for equally productive workers. It also provides some hypotheses for explaining the inter-ownership wage differential. While the factors of information and employment stability can be applied to all MNEs, job prestige may be applicable only to some MNEs in developing host countries.

(i) IOWD will decrease as MNEs obtain more information.

The model shows that the inter-ownership wage differential exists because of MNE's possession of less information about the domestic labor market, and the MNE's

difficulty in monitoring its workers' effort. As a result, the inter-ownership wage differential will decrease as MNEs gain access to more information and improve their monitoring ability which will depend on ownership patterns and production methods. Consequently, the model suggests that the inter-ownership wage differential might be smaller in foreign firms which are involved through a joint venture, are minority-owned, or are in industries where workers' effort is easily monitored (such as the electronic assembly industry).

(ii) The inter-ownership wage differential is large for workers who have a long time horizon for working.

The inter-ownership wage differential also exists due to the lower employment stability in MNEs than domestic firms. If employment is not stable, the firing penalty that is associated with shirking is not taken seriously by workers. Therefore, to the extent that this fear of being fired is not as strong, MNEs need to increase their wage in order to induce workers not to shirk.

The seriousness of unstable employment varies across workers and their time horizon (i.e., expected tenure). Employment stability may not be critical to those who have a short working period, for example, female workers. In Korea, women tend to quit their jobs upon marriage due to either cultural tradition or in compliance with the firm's forced agreement (Bauer and Lee 1989). Consequently, the model

implies that the relationship between ownership and wages is stronger for workers who are expected to have longer tenures.

(iii) The inter-ownership wage differential will be larger in MNEs whose managers are foreigners.

The model reveals that because of the lower job prestige associated with MNEs, higher wages are needed in MNEs. However, it is very difficult to measure "job prestige". Instead, we imagine that if an MNE's top management positions are foreigners, the opportunity or probability that indigenous employees are promoted to be executive is lower than otherwise. In that case, the prestige from job may be lower than otherwise.

In addition, as was noted earlier, working with a foreign supervisor may make indigenous workers feel uncomfortable. As a result, job prestige in a MNE with a foreign manager is again lower than that of other MNEs with indigenous managers. Consequently, the model predicts that the inter-ownership wage differential is larger in MNEs with foreign managers than in MNEs with indigenous supervisors or domestic firms.

3.3.2 Alternative Hypotheses

There have been other tentative hypotheses that have been

offered to explain the inter-ownership wage differential.¹⁷ Here three plausible hypotheses are introduced: union avoidance, equal wage, and labor quality.

(i) To avoid undesirable unions, MNEs pay higher wages than domestic firms. Therefore, the inter-ownership wage differential will be much smaller for workers who are already organized as compared to non-union workers.

The union avoidance hypothesis argues that to avoid unionism, employers will pay higher wages than otherwise for similar non-unionized employers. This hypothesis can be applied to the explanation of inter-ownership wage differential. One of the observations found in Section 3.1 is that MNEs are more sensitive to collective action, and that MNEs strive to avoid strikes and thus union organization (Hood and Young 1979; Jain 1990; Kujawa 1975). Consequently, the union avoidance hypothesis predicts that MNEs' wages will be above those of domestic firms due to the effort made to avoid unionism, and thus, the inter-ownership wage differential is much smaller for already-organized workers.¹⁸

¹⁷ For example, there is the union avoidance explanation, the equal wage explanation, the labor quality explanation, and the market power explanation. See Dunning (1981), Lim (1977), and Rodgers (1993).

¹⁸ There is, however, an opposing possibility that the inter-ownership wage differential is much larger for already-organized workers if union bargaining power in MNEs is stronger than that in domestic firms (Caves 1982; Krueger and Summers 1988).

This hypothesis has been used to explain the inter-industry wage differential and the size-wage differential. Some of the evidence regarding the inter-industry wage differential is consistent with the union avoidance model in the sense that high wages in the United States are correlated with union density (Thaler 1989). However, counter evidence is also found. Using time-series and cross-section data for the United States, Krueger and Summers (1988) found no support for the union threat explanation of inter-industry wage differentials. Brown and Medoff (1989) also tested the union avoidance hypothesis for the size-wage differential and found that union avoidance effort may be important for large non-union employers, but are not an important explanation of the size-wage differential.

(ii) MNEs have a tendency to pay the same wages as their parent firms. Therefore, the inter-ownership wage differential will be larger in MNEs from high-wage, host countries than MNEs from low-wage, host countries.

The wage equalization hypothesis argues that MNEs pay wages that are commensurate with wages that paid in their parent firms. Considering that the average wage level of developed home countries is higher than that of developing host countries, the attempt to achieve wage parity leads to a wage differential between MNEs and domestic firms (Lim 1977; Dunning 1981). However, the wage equalization hypothesis'

ability to explain the inter-ownership wage differential that is observed in developed host countries is limited.

The rationale for wage parity in MNEs is not suggested in the literature on MNEs. However, Akerlof's fair wage theory may be a plausible explanation for MNE wage parity. According to the fair wage model, workers are assumed to exert more effort when they are paid fairly. Thaler (1989) explains that the higher salaries of economists in business and law schools as compared to those in economic departments are due to internal equity considerations in the business and law schools. Bulow and Summers (1986) point out that businessmen and union leaders regard equitable and fair wage policies as very critical factors that motivate workers.

As explained by Thaler (1989), if the workers' perceived fair wage is based on wages of their foreign colleagues in MNEs or wages of parent firms' workers, then MNEs would have to pay the same wage as their parent firms in order to raise their employees' work norm or effort. Therefore, the equal wage hypothesis predicts that the inter-ownership wage differential is larger in MNEs from high-wage, host countries than MNEs from relatively low-wage countries.

(iii) To employ higher-quality workers, MNEs pay higher wages than domestic firms. Therefore, the inter-ownership wage differential will be substantially reduced if labor quality can be fully controlled.

The neoclassical explanation for the inter-ownership wage differential is that there are differences in unmeasured aspects of the quality of workers in MNEs and domestic firms. MNEs pay higher wages than domestic firms because they employ higher-quality workers. In other words, the inter-ownership wage differential is due to differences in unmeasured labor quality. The limited human capital variables in most empirical work may not adequately control for labor quality.

There are several reasons why MNEs may employ higher-quality workers. One explanation is that MNE employees tend to operate capital- and technology-intensive production processes, requiring a high level of employee skill (U.S. Department of Commerce 1993). MNEs also need bilingual individuals and high-quality workers that are able to cooperate harmoniously with foreign employees.

Differences in labor quality has been found to be an important determinant of the inter-industry wage differential and the size-wage differential. Using cross-sectional data, Brown and Medoff (1989) find that almost half of the total size-wage differential can be explained by differences in labor quality, but differences in labor quality do not support the size-wage differential in a longitudinal analysis. Krueger and Summers (1988) conclude that unmeasured worker characteristics cannot explain the inter-industry wage differential because the industry wage differential is sizable

and robust even after controlling for unmeasured labor ability by a fixed effects model.¹⁹

¹⁹ See Section 5.1.2 for a fixed effects model.

CHAPTER 4

Estimation of the Inter-Ownership Wage Differential in Korea

The purpose of this chapter is to determine whether or not there exist inter-ownership wage differentials in MNEs in Korea and domestic Korean firms and, if so, how pervasive and persistent the differentials are. Section 4.1 describes the data used in the estimation of the inter-ownership wage differential. In Section 4.2, the empirical model used in this study is introduced and the explanatory variables are discussed. Section 4.3 analyzes the empirical results, and in Section 4.4, several conclusions are drawn.

4.1 Description of the Data

The empirical analysis of the inter-ownership wage differential is based on cross-sectional data from the Occupational Wage Survey (OWS). This survey, which has been conducted annually by the Ministry of Labor of Korea since 1968, is the country's basic source for micro labor-related data. Included in the survey are all regular workers employed in establishments with 10 or more workers that were selected by a stratified random sampling method for all industries except agriculture, forestry, and fishing (see Appendix B for sampling design). Not included are central and local government agencies, the military and police forces, and

national and public education agencies.²⁰ Major variables included in the OWS are sex, age, marital status, schooling, job experience, job tenure, monthly total payments, bonuses, monthly working hours, type of worker, skill level, rank in the job hierarchy, location of establishment, unionization status of establishment, industry, and firm size. OWS data from 1988 to 1992 were used in this study to investigate the change in the wage gap over time.

To examine MNE earnings, all data on workers of MNEs located in Seoul, the capital of the country, were selected in each year.²¹ The sample size and industrial distribution of MNEs are presented in Table 4.1. Comparable observations were selected from the remaining observations to compare domestic firms with MNEs. The number of observations and other information for domestic firms are presented in Table 4.2. The industrial distribution, firm size, and location of observations from domestic firms are matched to MNEs.

Table 4.2 also shows the mean values of variables for both group samples. The average monthly earnings of workers of domestic firms, 382,000 won, is 15 percent less than that of MNEs in 1988. The average earnings of workers in domestic

²⁰ For example, the 1991 OWS, conducted in July 1991, included 458,687 workers in 4,100 establishments.

²¹ The data are confined to firms located in Seoul to control for differences in the wage gap due to regional differences. Seoul had one-fourth of the total population of the country, and 65 percent of foreign-invested firms as of June 1992.

Table 4.1

Industrial Distribution of MNEs in Korea, Based on the OWS

Year	1988	1989	1990	1991	1992
Number of Firms	52	54	57	58	58
Manufacturing					
Food	2	2	2	2	2
Textiles	4	4	3	3	3
Paper	1	1	1	1	1
Chemicals	5	6	4	4	4
Petroleum Refineries	0	0	2	2	2
Plastic Products	0	0	1	1	1
Glass	1	1	0	0	0
Fabricated Metal	0	0	1	1	1
Electrical Machinery	17	17	14	14	15
Transport Equipment	1	1	1	1	0
Measuring Equipment	1	1	2	2	2
Wholesale Trade	3	3	4	4	5
Retail Trade	0	0	2	2	2
Restaurants and Hotels	10	10	5	6	6
Air Transport	1	1	1	1	1
Financial Institutions	2	3	9	9	9
Insurance	3	3	2	2	1
Business Services	1	1	3	3	3
Number of Observations	15,575	17,669	12,327	14,814	13,231

Sources: Ministry of Labor of Korea (various years) and
Ministry of Finance of Korea (1991).

firms is 8 percent lower than that of MNEs in 1989, 9 percent lower in 1990, and 14 percent lower in 1991 and 1992. Previous studies compared this kind of average earnings without taking into account the earnings-related characteristics of the workers, making the comparison less useful.

From Table 4.2, it appears that workers in MNEs and domestic firms are remarkably similar. For instance, employees of MNEs and domestic firms have almost an identical average number of years of schooling and very similar sex and marital compositions. At least on the basis of these observable characteristics, the difference in earnings between MNEs and domestic firms seems to be due to other factors, rather than differences in earnings-related characteristics.

4.2 Empirical Model

4.2.1 Model Specification

Equation (1) in Chapter 2 is used to examine the determinants of earnings of workers across ownership. It is postulated that a worker's earnings are dependent not only on his/her human capital factors, but also on his/her affiliation with a particular occupation and industry. In this study, therefore, the basic human capital equation is expanded to include several explanatory variables.

Table 4.2
Mean Values of Variables^a

Year	1988	1989	1990	1991	1992
Wage	439000	502000	624000	746000	799000
(Korean Won)	382000	465000	571000	654000	703000
Wage Ratio (MNEs/dom)	1.15	1.08	1.09	1.14	1.14
-----	-----	-----	-----	-----	-----
Schooling ^b	12.81	12.96	13.11	13.38	13.21
(years)	12.67	12.64	13.08	13.09	13.08
Job Tenure	3.93	4.38	4.43	4.62	4.74
(years)	3.91	4.21	4.34	4.61	4.81
Experience ^c	9.79	10.07	10.46	10.93	10.91
(years)	9.79	10.64	11.81	12.49	13.11
Working Hours	205	203	201	185	197
per Month	214	212	200	192	203
Sex (male=1)	0.53	0.55	0.59	0.65	0.61
	0.54	0.56	0.71	0.72	0.69
Marital Status	0.41	0.44	0.47	0.53	0.51
(single=1)	0.42	0.45	0.52	0.54	0.56
-----	-----	-----	-----	-----	-----
Number of	15,575	17,669	12,327	14,814	13,231
Observations	13,151	14,819	14,782	16,845	9,175

Sources: Ministry of Labor of Korea (various years).

Note: a. For each variable, the numbers in the first row represents the mean values for MNEs while the numbers in the second row represents domestic firms.

b. The data are reported by category rather than years. Since dropout rates are very low within a schooling level, individuals in each category are assigned the number of years required to complete the degree.

c. The data are reported by category rather than years. Experience years are calculated as age minus years of schooling minus 7.

The natural logarithm of total hourly income in Korean Won ($\ln w$) is regressed against a set of explanatory variables in the following specification,

$$\ln w = \alpha_0 + \alpha_1 S + \alpha_2 X + \alpha_3 X^2 + \alpha_4 \text{Sex} + \alpha_5 MS + \sum \beta_k OD_k + \sum \gamma_l ID_l + u \quad (27)$$

where $\ln w$ = natural logarithm of hourly earnings (total monthly earnings divided by working hours per month)

S = years of schooling completed

X = years of potential labor market experience (that is, age minus schooling minus 7 years)

Sex = one if the respondent is male, zero otherwise

MS = one if the respondent is single, zero otherwise

OD = occupation dummy

ID = industry dummy

u = error term

The dependent variable--hourly earnings--includes regular payment and overtime payment, as well as bonuses estimated by dividing the annual bonuses by annual working hours.

4.2.2 Explanatory Variables

(i) Schooling

The human capital model postulates that skills learned at school increase a worker's productivity. Alternatively, the

signaling model views schooling as a sorting mechanism used by firms in selecting workers. In any case, it is generally accepted that schooling increases earnings. In Korea, educational attainment plays a crucial role in determining wage at entry level and, later, promotion in the hierarchy of job ladder (Lee 1994). Thus, schooling is a basic but powerful explanatory variable in determining wages. The coefficient of schooling can be interpreted as the rate of return to schooling and is expected to be positive.

(ii) Job Experience

Although formal education provides background skills and enhances learning ability, much of the specific skills related to productivity is acquired after graduation (that is, on the job training). Labor market experience is captured in the variable X and X^2 . The quadratic term X^2 is included to capture the concavity of the age-earnings profile. Incomes typically rise initially with experience, peak, and then fall. The coefficient of X is expected to be positive and that of X^2 is negative, which reflects the extent to which accumulation of human capital by on-the-job training tends to decrease over time.

(iii) Gender

The average woman earns a considerably lower wage than

the average man in Korea.²² This large wage differential by gender is observed in all occupations (Bauer and Lee 1989). Inequality in earnings by gender would result from the fact that female workers are segregated into low-paying employment and are more likely employed in temporary jobs and in the family business (Bauer and Lee 1989; Park and Park 1984). Consequently, the coefficient for the sex variable (male worker=1) is expected to be positive.

(iv) Marital Status

The living costs of a worker is also an important factor in determining wages in Korea (Park and Park 1984; Lee 1994). Generally, a married worker receives a dependent allowance because the worker needs more money to support dependents. Therefore, the coefficient of MS (single worker=1) is expected to be negative.

(v) Occupation

As in most countries, earnings vary by occupation in Korea. For example, administrative and technical workers receive much higher salaries than productive workers.²³ To

²² For example, the average earnings of a female worker were only 67.8 percent of the earnings of a male worker in 1990 (Ministry of Labor of Korea various years).

²³ When the average wage of productive workers was set at 100.0, for example, professional or technical workers received 152.2, administrative and managerial workers 266.8, and clerical workers 117.8 in 1991 (Ministry of Labor of Korea various years).

control this effect on wages, occupation dummy variables were included in equation (27). The occupations are grouped into five categories and the occupation dummy variables are defined as follows:

OD1 = one if a worker is in a professional or technical-related job; zero otherwise

OD2 = one if a worker is in an administrative or managerial-related job; zero otherwise

OD3 = one if a worker is in a clerical-related job; zero otherwise

OD4 = one if a worker is in sales or a service related job; zero otherwise

reference group = workers who are in productive-related jobs.

(vi) Industry

The inter-industry wage differential is broadly observed in many empirical studies (Krueger and Summers 1988; Lee 1994). To capture the effect of each industry on wages, industry dummy variables were included in the regressions. According to the Korean Standard Industrial Classification (KSIC, three-digit code), industry dummy variables are defined as follows:

ID1 = one if industry is engaged in the manufacture of textiles, food, or paper; zero otherwise

ID2 = one if industry is engaged in the manufacture of

chemicals, equipment, machinery, or petroleum refineries; zero otherwise

ID3 = one if the industry is wholesale and retail trade; zero otherwise

ID4 = one if the industry is restaurants and hotels; zero otherwise

ID5 = one if the industry is financial institutions; zero otherwise

ID6 = one if the industry is business services; zero otherwise

reference group = electrical machinery.

4.3 Empirical Results

4.3.1 The Regression Model

Equation (27) is estimated for both groups together in the same equation using the ordinary least squares method (OLS). In the pooled equation, foreign dummy variables are added to examine the inter-ownership wage differential. The domestic firms' workers are treated as the reference group. F-test for the wage equation on pooled data for the five years 1988-1992 permits us to reject the null hypothesis that all coefficients are jointly equal to zero at almost the zero

percent significance level. However, the equation does not pass the test of homoskedasticity.²⁴

If the disturbance variance is not constant across observations, ordinary least squares estimators are unbiased and consistent, but they are not efficient (Green 1993). This causes the ordinary least squares estimates of the parameter variances to be biased. This, in turn, leads to unreliable t and F tests of parameters. To correct for the heteroskedasticity problem, the variance of error terms from the ordinary least squares residuals is estimated first. Then, the model is transformed by dividing all variables by the square root of the estimated variance of error terms.

4.3.2 Evidence of the Inter-Ownership Wage Differential

The generalized least squares (GLS) estimates are presented in Table 4.3.²⁵ All of the estimated coefficients of the explanatory variables are statistically significant at the 1 percent level and all have the same sign as predicted by the previous empirical studies of similar nature. The major findings are summarized as follows.

²⁴ White test statistic for heteroskedasticity is $\chi^2(60) = 9,550$, which rejects the null hypothesis of constant variance [$\chi_{0.05}^2(60) = 67.22$].

²⁵ The estimated signs, magnitudes, and significance of coefficients of explanatory variables in the GLS regression model are almost the same as those in the OLS regression model.

(i) Large inter-ownership wage differentials exist.

The foreign dummy variables have positive and substantial coefficients in the pooled regression equation for each year (Table 4.3). The coefficient for the foreign dummy for 1992, for example, implies that on average, workers in foreign firms earn wages that are about 17 percent higher relative to the workers in local firms even after controlling for variables in human capital, demographic characteristics, occupations, and industries.

The neoclassical theory states that a wage differential occurs due to the short-run immobility of labor and the effect of transitory demand shock. However, as Table 4.3 shows, the inter-ownership wage differentials persist and their magnitudes are sizable throughout the five years. The stability of the inter-ownership wage differential is, therefore, inconsistent with the neoclassical view. This paper is meaningful in the sense that the theoretical framework in Chapter 3 explains the phenomenon that the neoclassical approach cannot.

(ii) Inter-ownership wage differentials exist within industries.

The transformed equation was also estimated for seven broad industries. As in the aggregate equation, the foreign dummy variable is added to examine the inter-ownership wage differential. A 10 percent random sample (i.e., 14,257

Table 4.3
Estimated Wage Equations^a

Year	1988	1989	1990	1991	1992
S	0.088 (220)	0.081 (270)	0.101 (268)	0.082 (225)	0.085 (182)
X	0.053 (160)	0.053 (187)	0.061 (186)	0.052 (178)	0.060 (185)
X ²	-0.001 (-90)	-0.001 (-116)	-0.001 (-144)	-0.001 (-146)	-0.001 (-177)
Sex (male=1)	0.157 (90)	0.170 (121)	0.128 (69)	0.112 (67)	0.075 (36)
MS (single=1)	-0.084 (-45)	-0.079 (-44)	-0.081 (-47)	-0.094 (-52)	-0.097 (-44)
FD ^b	0.159 (141)	0.102 (125)	0.099 (79)	0.115 (93)	0.168 (103)
Adj-R ²	0.75	0.74	0.72	0.71	0.72
F value	5,424	5,826	4,418	4,769	3,719
N	28,726	32,488	27,109	31,659	22,406

Sources: Ministry of Labor of Korea (various years).

Notes: a. Other explanatory variables are the four occupational dummy variables and six industry dummy variables. The t-values are in parentheses. All coefficients are statistically significantly different from zero at the 0.01 significance level.

b. Foreign dummy variables (domestic firms are omitted).

observations) is selected from the pooled data of the five years to analyze the inter-ownership wage differential within industry, occupation, and firm size.²⁶

Table 4.4 reports that the coefficients of the foreign dummy variables in all industries are significantly positive, indicating that MNEs pay higher wages than domestic firms within the same industry. Studies by Lipsey (1994), the U.S. Department of Commerce (1993), and Whichard (1978) have suggested that the inter-ownership wage differential is due to the concentration of MNEs in high-compensation industries. In this study, however, inter-ownership wage differentials are found in all industries (see Table A.2 for the full equation). This implies that the inter-ownership wage differential does not result from the industrial distribution of MNEs, but is due to other factors as was noted in Chapter 3.

The magnitudes of the inter-ownership wage differential vary by industry. MNEs in the wholesale and retail trade industry pay 63 percent higher wages than domestic firms in the same industry. In contrast, the inter-ownership wage differential is minimal in the electrical machinery industry (which mainly consists of light assembly firms). The difference in magnitude of the inter-ownership wage differential among industries is considered to be related with

²⁶ For computational convenience, the 10 percent random sample is used hereafter. The empirical results of a random sample are almost the same as those of the original sample (142,388 observations) for the total pooled equation and the seven sub-industry equations.

Table 4.4
The Inter-Ownership Wage Differential by Industry^a,
1988-1992

KSIC	Industry	Coefficient of Foreign Dummy	Adj-R ²
311, 321, 341	Textiles, Food, Paper	0.194 (24.42)	0.69
383	Electrical Machinery	0.039 (14.67)	0.68
351, 352, 353, 356, 362, 381, 384, 385	Chemicals, Equipment, Petroleum Refineries Fabricated Metal	0.161 (28.64)	0.61
610, 620	Wholesale Trade Retail Trade	0.629 (41.75)	0.72
630	Restaurants and Hotels	0.335 (39.27)	0.35
810, 820	Financial Institutions	0.074 (7.08)	0.56
840	Business Services	0.175 (18.50)	0.78

Sources: Ministry of Labor of Korea (various years).

Note: a. Other explanatory variables are schooling, experience, experience squared, sex, marital status, and four occupational dummy variables. The t-values are in parentheses. All coefficients are statistically significantly different from zero at the 0.01 significance level. Sample sizes for rows (1) through (7), respectively, are 1,435, 5,601, 2,094, 639, 1,838, 1,291, and 1,258. Adjusted R² and F values are those of the untransformed model because the R² of the transformed equation is not a useful measure of the goodness of fit of the original relationship.

the job characteristics of each industry. For example, employers have less incentive to pay high wages to workers who can be easily monitored in the light assembly industry (Bulow and Summers 1986).

(iii) Inter-ownership wage differentials are found in all occupations and blue- and white-collar workers.

Lipsey (1994) argued that the wage differential between foreign and domestic firms in the United States is partly due to the difference in occupational distribution. He found that foreign firms use a higher proportion of professional and technical workers than domestic firms by a margin of almost 10 percent, and that this difference in occupational distribution lead to the wage differential between foreign and domestic firms.

However, in Korea, inter-ownership wage differentials exist for subsets of workers grouped by occupation. That is, those who work for foreign firms in all occupations receive higher wages (see Table 4.5 and Table A.3). Therefore, difference in occupation distribution between foreign and domestic firms cannot be an answer to explain the inter-ownership wage differential. By contrast, MNEs employ fewer high paid workers relative to their total labor force than do the domestic firms (refer to footnote 23 about high paid workers).

Table 4.5
The Inter-Ownership Wage Differential by Occupation^a,
1988-1992

Occupation	Coefficient of Foreign Dummy	Adj-R ²	N
Professional or Technical	0.106 (15.89)	0.51	1,398
Administrative or Managerial	0.298 (20.40)	0.35	681
Clerical-related	0.104 (28.88)	0.54	5,905
Sales or Service-related	0.261 (32.80)	0.36	2,100
Productive-related	0.159 (36.46)	0.55	4,173

Sources: Ministry of Labor of Korea (various years).

Note: a. Other explanatory variables are schooling, experience, experience squared, sex, marital status, and six industry dummy variables. The t-values are in parentheses. All coefficients are statistically significantly different from zero at the 0.01 significance level. Sample sizes for rows (1) through (7), respectively, are 1,435, 5,601, 2,094, 639, 1,838, 1,291, and 1,258. Adjusted R² and F values are those of the untransformed model because the R² of the transformed equation is not a useful measure of the goodness of fit of the original relationship.

Table 4.6 shows that MNEs use a higher proportion of productive, sales and service related workers than domestic firms and a fewer proportion of professional, managerial and clerical-related workers (that is, relatively high-paid workers).

Table 4.6
Occupation Groups in MNEs and Domestic Firms, 1988-1992

Occupation	MNEs	Domestic
Professional or Technical	9.2	10.2
Administrative or Managerial	4.9	5.1
Clerical-related	38.5	42.4
Sales or Service-related	15.3	14.8
Productive-related	32.1	27.5

Sources: Ministry of Labor of Korea (various years).

The inter-ownership wage differential is also found in both white-collar and blue-collar workers. As seen in Table 4.7, blue-collar workers in MNEs earn wages that are 15.5 percent higher relative to blue-collar workers in domestic firms. For the white-collar group, workers in MNEs earn wages that are 11.9 percent higher than their counterparts in domestic firms (see Table A.4 for the full equation).

Table 4.7

The Inter-Ownership Wage Differential by Collar Color^a,
1988-1992

Work Status	Coefficient of Foreign Dummy	Adj-R ²	N
Blue Collar	0.155 (59.77)	0.77	10,187
White Collar	0.119 (11.16)	0.63	4,038

Sources: Ministry of Labor of Korea (various years).

Note: a. Other explanatory variables are schooling, experience, experience squared, sex, marital status, four occupational dummy variables and six industry dummy variables. T-values are in the parentheses. All coefficients are statistically significantly different from zero at the 0.01 significance level. Adjusted R² and F values are those of the untransformed model because the R² of the transformed equation is not a useful measure of the goodness of fit of the original relationship.

(iv) Inter-ownership wage differentials are found regardless of firm size.

Dunning (1985) asserted that the relatively larger average size of foreign firms explains the inter-ownership wage differential in Korea. Similarly, Lipsey (1994) argued that higher wages in foreign firms are associated with the larger scale of foreign firms in the United States; and he went further to say that foreign and domestic firms of the same size would pay about the same wages.

However, these studies are inconsistent with our estimation of the inter-ownership wage differentials (Table 4.8). Controlling for firm size, we found that MNEs pay higher wages than domestic firms. For example, MNEs with 10-99 workers pay 43.3 percent higher wages than domestic firms of the same size. In large firms, wages of MNEs are 17 percent higher than those of domestic firms (see Table A.5 for full equation).

(v) MNEs from the United States pay much higher wages than MNEs from other countries.

We also estimated the transformed equation which included three dummy variables for Japan, the United States, and the European Community (EC) as the home country. The results are shown in Table 4.9. The earnings of workers of U.S. MNEs is 26.9 percent higher than those of domestic firms, 20.3 percent

Table 4.8
The Inter-Ownership Wage Differential by Firm Size^a,
1988-1992

Firm Size	Coefficient of Foreign Dummy	Adj-R ²	N
10 - 99	0.433 (14.49)	0.75	322
100 - 299	0.303 (32.44)	0.82	1,245
300 - 499	0.078 (9.31)	0.73	1,411
500 - 999	0.077 (16.88)	0.66	3,985
1000 ⁺	0.170 (49.89)	0.74	5,861

Sources: Ministry of Labor of Korea (various years).

Note: a. Other explanatory variables are schooling, experience, experience squared, sex, marital status, four occupational dummy variables, and six industry dummy variables. T-values are in parentheses. All coefficients are statistically significantly different from zero at the 0.01 significance level. Adjusted R² and F values are those of the untransformed model because the R² of the transformed equation is not a useful measure of the goodness of fit of the original relationship.

Table 4.9

The Inter-Ownership Wage Differential by Home Country^a,
1988-1992

Country Dummy Variable	Coefficient of Dummy Variables
United States (FD1)	0.269 (75.4)
European Community(FD2)	0.203 (45.3)
Japan (FD3)	0.113 (48.4)

R ²	0.68
F value	1,708
N	14,257

Sources: Ministry of Labor of Korea (various years).

Note: a. Other explanatory variables are schooling, experience, experience squared, sex, marital status, four occupational dummy variables, and six industry dummy variables. T-values are in parentheses. All coefficients are statistically significantly different from zero at the 0.01 significance level. Adjusted R² and F values are those of the untransformed model because the R² of the transformed equation is not a useful measure of the goodness of fit of the original relationship.

for workers in European MNEs, and 11.3 percent for workers in Japanese MNEs.

Interpretation of this evidence is that cultural and regional closeness between Japan and Korea induces Japanese MNEs to pay lower wages than MNEs from far-away countries. This finding is one example supporting the relationship between the ability to access local information and the inter-ownership wage differential that was discussed in Chapter 3.

4.4 Conclusion

In this chapter, estimates of the magnitude of the inter-ownership wage differential were made for workers in Korea. These estimates which were made from various different perspectives, provide consistent evidence of the existence of inter-ownership wage differentials in Korea. This finding is particularly meaningful since the wage differential between MNEs and domestic firms was found for labor that appears to be homogeneous.

The inter-ownership wage differentials are sizable and persistent. The results also show that MNEs pay higher wages than domestic firms for identical workers within the same industry, occupation, and firm size. Consequently, differences in industrial distribution, occupational distribution, and firm size that were suggested in previous studies cannot fully explain the inter-ownership wage

differential in Korea. The explanation of the inter-ownership wage differential that were proposed in Chapter 3 will be tested in the next chapter.

CHAPTER 5

Hypotheses Testing of the Inter-Ownership Wage Differential

In the preceding chapter, significant and substantial inter-ownership wage differentials were found in Korea. In analyzing the causes of the inter-ownership wage differential, Chapter 3 proposed three hypotheses from the model and three alternative hypotheses. This chapter tests these hypotheses. Section 5.1 describes the test methods and data used. In Section 5.2, various hypotheses are tested. These are the information hypothesis, the job stability hypothesis, the job prestige hypothesis, the union avoidance hypothesis, the labor quality hypothesis, and the fair wage hypothesis. Section 5.3 summarizes the main findings of the tests.

5.1 Data and the Test Method

5.1.1 Data

Two different types of data were used to test the hypotheses. First, data from the Occupational Wage Survey (OWS) provided information on each worker. A 10-percent random sample from the pooled data of the five-year period, 1988–1992, was used. Second, firm-level data published by the Ministry of Finance of Korea were used to provide firm-specific characteristics. Since the model in Chapter 3 argues

that MNE's firm-specific characteristics lead to inter-ownership wage differentials, ideally, basic information on each MNE should be used. Fortunately, because foreign investment in Korea was based on an approval system until 1992, it was possible to obtain basic data on each MNE including the foreign equity ratio, the home country, manager's nationality, existence of a union, and industry for each firm.

5.1.2 Test Method

Two test methods were employed. The first test method is to estimate the sign and magnitude of the coefficients of explanatory variables, where the explanatory variables are drawn from the hypotheses. This method has been widely employed in the labor literature. The model specification is as follows:²⁷

$$\begin{aligned} \ln w = & \alpha_0 + \alpha_1 S + \alpha_2 X + \alpha_3 X^2 + \alpha_4 Sex + \alpha_5 MS + \alpha_6 FD + \alpha_7 FER \\ & + \alpha_8 MANAGER + \alpha_9 UNI*FD + \alpha_{10} WOR*FD + \alpha_{11} S*FD + \alpha_{12} X*FD \\ & + \alpha_{13} X^2*FD + \sum \beta_k OD_k + \sum \gamma_l ID_l + u \end{aligned} \quad (28)$$

where FD = ownership dummy equal to 1 if a worker is employed by an MNEs

²⁷ We here use the generalized least squares estimation to correct for possible heteroskedasticity problem. So, we again transform equation (28) by dividing all the variables by the square root of the estimated variance of error terms.

FER = foreign equity ratio

MANAGER = manager dummy equal to 1 if manager is a
foreigner

UNI = union dummy equal to 1 if a union is organized

WOR = worker dummy which is equal to 1 if the worker is
a primary worker.

Other variables are the same as those in equation (27) in Chapter 4.

These variables were included in order to test the various hypotheses: FER to test the information hypothesis; MANAGER, the job prestige hypothesis; UNI*FD, the union avoidance hypothesis; WOR*FD, the job stability hypothesis; S*FD, X*FD and X²*FD, the labor quality hypothesis. Detailed explanation of these variables and their relationship with each hypothesis are discussed in the following section. The explanatory variable related with the fair wage hypothesis is excluded in the pooled equation (28) because data are not available before 1990. Consequently, the fair wage hypothesis is tested using an other regression.

The second method is a two-step approach that was adopted by Lee (1994). In the first step, the coefficients of each MNE's wage premium variable is estimated relative to the wage of the average domestic firm. Then, in the second step, the estimated coefficient of each MNE's wage premium variables is regressed on MNE characteristics. This method directly examines the relationship between the wage differential and

the firms' characteristics. The model specification is as follows:

$$H = a_0 + a_1 FER + a_2 MANAGER + a_3 UNI + \sum \gamma_1 ID_1 + u \quad (29)$$

where H = the coefficient of the MNE's dummy variable that was estimated in the first step

and other variables are the same as those in equation (28).

An independent variable related with the job stability hypothesis is excluded because information on each MNE's employment stability is not available. The explanatory variable related with the fair wage hypothesis is also excluded for the same reasons that it was excluded in the first test method.

5.2 Hypotheses Testing of IOWD

5.2.1 The Information Hypothesis

This hypothesis asserts that MNEs pay higher wages than domestic firms because they have less information about the local labor market; for example, MNEs are less able to monitor workers. The lower monitoring ability causes MNEs' workers to have a reduced incentive to exert effort. Therefore, MNEs need to increase wages so as to induce employees not to shirk.

However, it is not easy to evaluate the monitoring ability. Therefore, as was reviewed in Section 1 of Chapter 3, I argue that the monitoring ability depends on ownership

pattern (i.e., foreign equity ratio). In other words, whether or not a MNE has a domestic partner, or the extent to how a MNE relies on a domestic partner, determines the MNE's ability to access information. The literature on MNEs suggests that the higher the foreign equity ratio, the lower is the monitoring ability (Caves 1982; Tavis 1988). Consequently, if the information hypothesis is correct, the inter-ownership wage differential should be positively related to the foreign equity ratio (FER).

To examine this relationship, a transformed equation (28) is estimated by GLS. The pooled equation passes the F-test at almost zero percent significance level. Table 5.1 shows that the inter-ownership wage differential is positively related with the foreign equity ratio as predicted by the model (see Table A.7 for full equation). The estimated coefficient of the foreign equity ratio is significant and positive at the 1 percent significance level. This implies that the inter-ownership wage differential increases as the monitoring ability falls; thus, the information hypothesis explains a part of the inter-ownership wage differential in Korea.

For the two-step approach, wage equation (29) is estimated using OLS. The wage equation passes the F-test and homoskedasticity test at the 1 percent significant level.²⁸

²⁸ The equation passes the F-test at the 1 percent significance level and the test of homoskedasticity. White test statistic is $\chi^2(17) = 7.15$, which would not reject the null hypothesis of homoskedasticity [$\chi_{0.01}^2(17) = 33.41$].

Table 5.1
Estimated Wage Equation^a, 1988-1992

Variable	Coefficient	T-value
Schooling	0.087	92.3
Experience	0.057	86.4
Experience Squared	-0.001	-67.4
Sex (male=1)	0.151	46.0
Marital status (single=1)	-0.093	-25.7
FD (ownership dummy)	0.157	9.4
Foreign Equity Ratio	0.001	8.1
MANAGER (foreigner=1)	0.288	47.3
UNI*FD (union=1)	-0.061	-17.3
WOR*FD (primary=1)	0.045	7.5
S*FD	-0.007	-5.6
X*FD	-0.002	-2.0
X ² *FD	0.0002	8.8
Adj-R ²	0.69	
F value	1,387	
N	14,210	

Sources: Ministry of Labor of Korea (various years),
Ministry of Finance of Korea (1991).

Note: a. Other explanatory variables are four occupational dummy variables and six industry dummy variables. Adjusted R² and F values are those of the untransformed model because the R² of the transformed equation is not a useful measure of the goodness of fit of the original relationship.

The empirical results are presented in Table 5.2. The estimated coefficient of the foreign equity ratio has a positive sign as predicted by the model, but the coefficient is insignificant.

On balance, it can be concluded that the information hypothesis holds although the empirical result from the two-step approach is not significant.

5.2.2 The Job Stability Hypothesis

The job stability hypothesis argues that MNEs pay higher wages than domestic firms in order to compensate workers for a less-stable job status. As was discussed in Chapter 3, MNEs are characterized by less employment stability than domestic firms. Therefore, an individual will prefer to work for a domestic firm rather than a MNE if everything including wages was equal. Thus, if the job stability hypothesis is correct, MNEs that have a higher probability of withdrawal will be found to pay higher wages than others.

Alternatively, evidence that supports the job stability hypothesis can be found from looking at worker characteristics. Employment stability is more critical to those workers who have a long time horizon for working (for example, the primary worker of the household).²⁹ In Korea,

²⁹ The primary worker is defined as male workers of age 30 or older. Secondary workers are females between the ages of 14 and 29.

Table 5.2
 Estimated Wage Premium Equation^a, 1988-1992

Variable	Coefficient	T-value
Foreign Equity Ratio	0.001	0.50
MANAGER (foreigner=1)	0.417	4.33
Industry Dummy		
IND1	0.217	2.64
IND 2	0.204	2.86
IND 3	0.009	0.94
IND 4	0.374	4.12
IND 5	0.163	2.07
IND 6	-0.036	-0.28
UNION	0.041	0.72
<hr/>		
R ²	0.26	
F value	4.91 [F _{0.01} (9, 93)=2.6]	
N	103	

Sources: Ministry of Labor of Korea (various years),
 Ministry of Finance of Korea (1991).

Note: a. White test statistic for homoskedasticity : χ^2 (17)
 = 7.15, $\chi_{0.01}^2$ (17) = 33.41.

female workers tend to quit their job upon marriage due to either cultural tradition or in accordance with firms' forced agreement (Bauer and Lee 1989). Consequently, the job stability hypothesis predicts that the relationship between ownership and wages is stronger for the primary worker than for the secondary worker.

Two methods can be used to test the job stability hypothesis. The first method is to directly examine the relationship between the inter-ownership wage differential and concerns about unstable employment by using time-series data. Variables reflecting the political or national security and the business cycle can be used as proxy variables for unstable employment or the probability of MNE withdrawal since MNEs are more likely to withdraw their businesses in such situations. Alternatively, wage equation (29) can be estimated with the inclusion of a job stability variable such as the probability of MNEs' withdrawal in a cross-sectional data set. However, for both cases, time-series and cross-sectional data are not available in Korea.

The second method is to compare the inter-ownership wage differential between primary and secondary workers. If the job stability hypothesis is correct, the inter-ownership wage differential for primary workers is substantially larger than that of secondary workers. That is, due to this additional payment by MNEs to the primary worker, the inter-ownership wage differential exists.

As shown in Table 5.1, the primary worker received a wage rate 4.5 percentage higher than that for the secondary worker in MNEs. However, this result is not sufficient to test the relative size of the inter-ownership wage differential between the primary and secondary workers. For example, suppose that the primary worker's wage in MNEs is 104.5 and the secondary worker's wage is 100.0. At the same time, wages of primary and secondary workers in domestic firms are 94.5 and 90.0, respectively. Then, the coefficient of WOR*FD in equation (28) will be 0.045 as in Table 5.1. In this case, however, the roughly 10 percent inter-ownership wage differential cannot be explained by the job stability hypothesis because a higher payment to the primary worker also occurs in domestic firms. Since the inter-ownership wage differential for both primary and secondary workers is around 10 percent, the differential is explained by other factors rather than job stability. On the other hand, if wages of primary and secondary workers in domestic firms are both 90.0, the inter-ownership wage differential can be attributed to a 4.5 percentage wage premium paid to the primary worker in MNEs.

To find evidence for this phenomena, regressions were estimated for two groups separately: (i) male workers whose age is 30 or older and (ii) female workers whose age is between 14 and 29. In the regressions, the dependent and independent variables are exactly the same as in equation (28) except for the WOR*FD variable. If the inter-ownership wage

differential is due to differences in job stability, then we can expect the inter-ownership wage differential to be more significant for the primary worker than the secondary worker.

As shown in Table 5.3, the inter-ownership wage differential for male workers with age 30 or older was, in fact, found to be larger than those for young female workers. The coefficient of the inter-ownership wage differential in the regression for the primary worker (0.21) is almost twice than that in the regression for young female workers (0.11).³⁰ Although I do not explain the cause of the inter-ownership wage differential for young female workers (0.11), the gap between the coefficients of the two groups, 0.21 and 0.11, is due to workers' sensitivity toward employment stability.³¹ Accordingly, the empirical results from Table 5.1 and Table 5.3 support the job stability hypothesis.

5.2.3 The Job Prestige Hypothesis

The job prestige hypothesis asserts that higher wages of

³⁰ This setup has the limitation of not being able to statistically test for coefficient equality between the two regression equations. For this setup, see Brown and Medoff (1989) and Krueger and Summers (1988).

³¹ Sex discrimination may affect IOWD. For example, if MNEs are more willingly to employ male workers, wages for male workers in MNEs will be higher than those of domestic firms. In this case, the wage gap between the coefficients of the two groups, 0.21 and 0.11, is attributed to sex discrimination and not employment stability. However, female/male worker ratio is slightly higher in MNEs than domestic firms (see Table 4.2), which strengthens our result.

Table 5.3
Inter-Ownership Wage Differential
of Primary and Secondary Workers^a, 1988-1992

Variable	Primary Workers (males, 30 ⁺)	Secondary Workers (females, 14-29)
FD (MNEs=1)	0.210	0.105
T-value	(4.71)	(4.62)
Adj-R ²	0.58	0.49
F value	385.1	214.7
N	5,331	4,668

Sources: Ministry of Labor of Korea (various years),
Ministry of Finance of Korea (1991).

Note: a. The dependent variable in each regression is total hourly income. Independent variables include schooling (S), experience (X), experience squared (X²), marital status, the foreign equity ratio, a manager dummy, a union dummy, S*FD, X*FD, X²*FD, four occupational dummies, six and industry dummies. Adjusted R² and F values are those of the untransformed model because the R² of the transformed equation is not a useful measure of the goodness of fit of the original relationship.

workers in MNEs are due to the lower job prestige associated with employment at MNEs. In a homogeneous society such as Korea, working for foreign firms' interests or working under a foreign supervisor may lower an employee's job prestige.

This job prestige issue will be more sensitive in MNEs whose managers are foreigners. The reasons for this may be that working under a foreign supervisor causes indigenous workers to feel uncomfortable, or the opportunities for promotion to a top manager position are fewer than at domestic firms. Therefore, if lower job prestige affects wage determination at MNEs, MNEs whose managers are foreigners will tend to pay higher wages than other MNEs with indigenous managers and domestic firms.

To test the job prestige hypothesis, the transformed equation (28) can be used as before. The figures on Table 5.1 show that the managers' nationality did, in fact, affect the magnitude of the inter-ownership wage differential. The coefficient of the foreign manager dummy variable is significant and has a positive sign as predicted. The empirical result states that MNEs' workers whose manager is a foreigner receive 28.8 percent higher wages than other MNE workers under indigenous managers.

In the two-step approach, the manager variable was found to strongly explain the inter-ownership wage differential. As seen in Table 5.2, the estimated coefficient of the manager variable is significant at almost the zero percent level and

has a positive sign. The magnitudes of the coefficient is, in fact, the largest of all variables in both the first and second test methods which suggests that the empirical results strongly support the job prestige hypothesis.

5.2.4 The Union Avoidance Hypothesis

The union avoidance hypothesis argues that MNEs are more sensitive to union organization than domestic firms, and thus, MNEs will pay higher wages than domestic firms in order to avoid union formation. If efforts toward union avoidance are an important explanation of the inter-ownership wage differential, IOWD should be smaller for workers in MNEs which already have a union.

There are two methods for testing this hypothesis. The first approach is to estimate the wage regressions for non-unionized employees and already-organized workers or workers for whom the threat of unionization is minimal, and then examine the relative size of the inter-ownership wage differential between nonunion and union employees (Brown and Medoff 1989, Krueger and Summers 1988). The second approach is to directly examine the relationship between the inter-ownership wage differential and unionism in the two-step approach described earlier.

As shown in Table 5.1, non-unionized MNEs pay wages that are 6.1 percent higher than unionized MNEs, as predicted by

the union avoidance hypothesis. However, this result is not sufficient evidence to support the union avoidance hypothesis for the same reasons that were given for the job stability hypothesis. Thus, further comparison of the inter-ownership wage differential between nonunion workers and union workers is necessary to test the union avoidance hypothesis.

Regressions for non-unionized employees and unionized employees were estimated separately. The results do not support the union avoidance hypothesis. The inter-ownership wage differential for workers for whom the threat of unionization is minimal is about as strong as that for non-unionized workers (Table 5.4). Substantial inter-ownership wage differentials exist in both non-unionized MNEs (0.127) and unionized MNEs (0.112), and the difference is minimal. It is reasonable to interpret these results as evidence for the argument that the union avoidance hypothesis cannot explain the inter-ownership wage differential. Krueger and Summers (1988) also observed strong inter-industry wage differentials for both nonunion employees (0.144) and union employees (0.137), and rejected the union avoidance hypothesis in explaining the inter-industry wage differential. Yoon (1991), however, did not reject this hypothesis in his study of size-wage differentials in Korea. In his study, the size-wage differential for non-unionized employers is almost 50 percent larger than that of unionized employers.

The results in Table 5.2 also provide evidence for

Table 5.4
Inter-Ownership Wage Differential
of Unionized and Non-unionized Workers^a, 1988-1992

Variable	Non-unionized Workers	Unionized Workers
FD (MNEs=1)	0.127	0.112
T-value	(4.3)	(2.3)
Adj-R ²	0.70	0.72
F value	558	1,050
N	5,345	8,865

Sources: Ministry of Labor of Korea (various years).

Note: a. The dependent variable in each regression is total hourly income. Independent variables include schooling (S), experience (X), experience squared (X²), sex, marital status, the foreign equity ratio, a manager dummy, a worker dummy, S*FD, X*FD, X²*FD, four occupational dummies, and six industry dummies. Adjusted R² and F values are those of the untransformed model because the R² of the transformed equation is not a useful measure of the goodness of fit of the original relationship.

rejecting the union avoidance hypothesis. The union variable is positive and insignificant (the probability that the coefficient of the union is different from zero is 47 percent). In fact, both MNEs and domestic firms do not have much of an incentive to avoid unionism in Korea. Unions are already organized in almost 60 percent of all MNEs and 70 percent of domestic firms (Table 5.5).

Table 5.5

Extent of Unionization in Korea
(As a percent of total MNEs and domestic firms)

	1990	1991	1992
MNEs	55	57	61
Domestic firms	67	68	71

Sources: Ministry of Labor of Korea (various years).

5.2.5 The Labor Quality Hypothesis

The labor quality hypothesis argues that MNEs pay higher wages than domestic firms because they hire better-quality workers. The plausible reasons as to why MNEs need to hire high-quality workers were discussed in Chapter 3. According to this hypothesis, the inter-ownership wage differential are due to differences in unmeasured labor quality such as motivation and innate ability. However, it is very difficult

to evaluate unobserved labor quality, and thus to test this hypothesis.

Two test methods have been used in previous studies. The first approach is to compare the wage regression with and without observed labor quality variables using cross-sectional data. The basic assumption of this method is that observed and unobserved characteristics are correlated. Therefore, if the wage differential is substantially reduced after adding observed labor quality variables to the wage regression, then it is argued that the unobserved labor quality explains the wage differential (Brown and Medoff 1989, Krueger and Summers 1988, Yoon 1991).

The second approach is to compare the wage of the same person as he/she switches employers between MNEs and domestic firms using longitudinal data (i.e., the fixed effects model). In this model, it is assumed that unobserved labor quality does not change over time (Krueger and Summers 1988). Then, the first-difference equation ($\Delta \ln w_i = \beta' \Delta X_i + \Delta u_i$ where $\Delta \ln w_i = w_{it+1} - w_{it}$ and $\Delta X_i = X_{it+1} - X_{it}$) takes unobserved labor quality into account by subtracting the time-invariant labor quality. However, this method is not possible in this paper because longitudinal data are not available for Korea.

Therefore, first test method is employed. Two equations are estimated and compared. The first equation includes schooling and job market experience and its square, and the second equation omits these variables. If differences in

unmeasured labor quality explain the inter-ownership wage differential, then adding observed labor quality variables to the wage regression should substantially reduce the inter-ownership wage differential since it is assumed that observed and unobserved characteristics are correlated.

The empirical result does not support the labor quality hypothesis. As shown in Table 5.6, the coefficients of the inter-ownership wage differential are almost identical when the labor quality variables are added. The empirical result makes it difficult to attribute the inter-ownership wage differential to differences in labor quality. Krueger and Summers (1988) rejected the labor quality explanation of industry wage differentials because the addition of human capital controls resulted in only a one percentage point drop in the weighted industry wage differential. In contrast, according to Brown and Medoff (1989), labor quality provides a partial explanation of the size-wage differential as a roughly one-half reduction in the size-wage effect is found after adding labor quality variables.

There is, however, limitation in this test method because measured labor quality variables may not be correlated with unmeasured labor quality. Test methods using both cross-sectional and longitudinal data are necessary for a better test of this hypothesis.

Table 5.6

Inter-Ownership Wage Differential
with and without Labor Quality Variables^a, 1988-1992

Variable	Without Labor Quality Variables	With Labor Quality Variables
FD (MNEs=1)	0.18	0.16
T-value	(76.52)	(9.4)
Adj-R ²	0.61	0.69
F value	1,705	1,387
N	14,257	14,257

Sources: Ministry of Labor of Korea (various years).

Note: a. The dependent variable in each regression is total hourly income. Independent variables, except the labor quality variables (schooling, experience, and experience squared) include sex, marital status, four occupational dummies, and six industry dummies. Adjusted R² and F values are those of the untransformed model because the R² of the transformed equation is not a useful measure of the goodness of fit of the original relationship.

5.2.6 The Fair Wage (Wage Equalization) Hypothesis

The main idea behind the fair wage hypothesis is that MNEs pay its workers wages that are perceived as fair relative to the wages of workers at parent firms in order to maintain workers' effort. Under the assumption that the average wage level of the home country exceeds that of the host country, the fair wage hypothesis argues that the tendency to pay "fair" wages leads MNEs to pay higher wages than domestic firms for the same labor.

There are several methods that can be used to test this hypothesis. The first, direct method is to compare wages of workers in the parent firm and the affiliate. A second approach is to compare the wages of indigenous workers with those of foreign workers who have the same human capital. Unfortunately, data for testing the hypothesis with these two approaches are not available.

Alternatively, the relationship between each MNE's inter-ownership wage differential and the ratio of the home countries' average wage to that of the host country can be examined to test the hypothesis. The relative compensation cost for production workers of the home country is used as a proxy variable for parent firm's wage level.

To test this relationship, equation (29) is estimated. Since information on the home country is available only for 1990 OWS data, equation (29) is estimated using the 1990 data.

The dependent variable is the estimated coefficient of each MNE's wage differential. Independent variables include the foreign equity ratio, a manager dummy, a union dummy, industry dummies, and the ratio of hourly compensation costs for production workers of the home country to the host country (HCC). However, evidence to support the fair wage hypothesis could not be found.³²

Table 5.7 shows that each MNE's wage differential is not related to the wage level of the home country. That is, the magnitude of the inter-ownership wage differential does not depend on the home country's wage level, but rather depends on each firm's conditions in the local labor market.

Table 5.7

Comparison of the Inter-Ownership Wage Differential and Wage Level of Home Country

	Ger- many	Switzer- lands	United States	Japan	United Kingdom	Hong Kong
Hourly ^a Costs (1990, \$)	21.5	20.9	14.7	12.6	12.4	3.73
IOWD ^b (1990)	0.01	0.08	0.28	0.10	0.16	0.34

Source: Korea labor Institute (1992).

Notes: a. Data originated from U.S. Bureau of Labor Statistics.

b. Calculated from the 1990 Occupational Wage Survey.

³² The estimated coefficient for HCC is insignificant at the 0.10 significance level (t-value is 0.20).

5.3 Conclusion

This chapter examined how important each hypothesis is for understanding the inter-ownership wage differential in Korea. Six hypotheses on the causes of the inter-ownership wage differential were econometrically tested. According to the results, the information hypothesis, the job stability hypothesis and the job prestige hypothesis which are drawn from the model in Chapter 3 could not be rejected. However, the union avoidance hypothesis, the labor quality hypothesis, and the fair wage hypothesis were rejected.

Since most of these tests are indirect, however, careful attention should be paid in interpreting the results. For example, the difference in the inter-ownership wage differential between MNEs with foreign and indigenous managers is most distinct, implying that the job prestige hypothesis has strong support. But differences between foreign and indigenous managers may be related with the information hypothesis as well as the job prestige hypothesis. In other words, MNEs with foreign managers may have less information about the local labor market than other MNEs with indigenous managers. If so, the result that MNEs with foreign managers pay much more than MNEs with indigenous managers also support the information hypothesis.

In fact, since the hypotheses derived from the model may be interrelated, the question of which hypothesis has the

strongest explanatory power cannot be answered. Instead, we may conclude that no single hypothesis can explain the inter-ownership wage differential in Korea, and that each of these three hypotheses derived from the model explains a part of the inter-ownership wage differential.

CHAPTER 6

Conclusions

6.1 Summary of the Study

This study began with the question of whether wage determination at MNEs is different from that of domestic firms. The model in Chapter 3, which is based on the need to motivate workers, provided an answer to this question.

The model shows that since the characteristics of MNEs differ from those of domestic firms--for example, in terms of the ability to monitor workers, employment stability, and job prestige--MNEs' optimal wages differ from domestic firms for identical workers, resulting in the inter-ownership wage differential. In the model, equilibrium occurs at the intersection of the labor demand curve and the supply of work effort schedule (i.e., the nonshirking constraint). The nonshirking constraint follows from two assumptions. First, workers will shirk if the wage they receive is less than some critical value. Second, this critical value depends on the probability of being caught shirking, employment stability, job prestige, and the probability of reemployment in case of layoff.

Since MNEs have greater difficulty monitoring their workers' efforts than domestic firms, the critical wage value at MNEs is higher than that of domestic firms, resulting in

the inter-ownership wage differential. The relatively unstable employment and low job prestige at MNEs enlarges the difference in critical wages between MNEs and domestic firms.

Three hypotheses on the inter-ownership wage differential were derived from the model: the information hypothesis, the job stability hypothesis, and the job prestige hypothesis. In addition, three alternative hypotheses were introduced: the union avoidance hypothesis, the labor quality hypothesis, and the fair wage hypothesis.

Estimated earnings equations provided consistent evidence for the existence of the inter-ownership wage differential in Korea. To examine its existence, earnings were regressed on several individual characteristics using cross-sectional data and an ownership dummy variable. The 1988, 1989, 1990, 1991, and 1992 occupation wage surveys (OWS) provided information on individual worker's human capital factors and demographic attributes. By controlling for employee's human capital characteristics, occupation, and industry distribution, this study examined the wage differential for equally skilled workers in MNEs and domestic firms for the first time.

The major findings and their implications are as follows. First, there are significant and substantial inter-ownership wage differentials in Korea. These inter-ownership wage differentials have persisted and their magnitudes are sizable throughout the five years. This result is inconsistent with the neoclassical view that suggests identical wages for

equally productive workers and regards the wage differential as a short-run or transitory phenomenon. Second, those who work for MNEs receive higher wages than do workers in domestic firms even for subsets of workers grouped by industry, occupation, blue- or white-collar, or firm size. This finding differs from those of most studies which have argued that the inter-ownership wage differentials are due to differences in industry, occupation, and firm size.

Comprehensive tests for the hypotheses are conducted using two different test methods. The first method, which is widely employed in the labor literature, is to compare the coefficients of foreign dummy variables for subsets of workers grouped according to the hypothesis being tested. The second method is to directly examine the relationship between the inter-ownership wage differential and the explanatory variables arising from the hypothesis.

The information hypothesis is supported by the empirical tests. The coefficient of the foreign equity ratio variable is significant and positive in the first test method. If it is assumed that the monitoring ability is inversely related to the foreign equity ratio, which is in accordance with the literature on MNEs, the results support the information hypothesis.

The job stability hypothesis is also supported by the empirical tests. The coefficients of the foreign dummy variables among primary workers are almost two times larger

than those of secondary workers. Under the assumption that primary workers are more sensitive to employment stability than are secondary workers, this result implies that the job stability hypothesis holds.

There is also strong support for the job prestige hypothesis. The empirical test shows that MNEs with foreign managers pay much higher wages than do other MNEs with indigenous managers. This is interpreted as follows: the lower job prestige arising from the foreign manager leads to relatively high wages in MNEs with foreign managers.

In contrast, the union avoidance hypothesis, the labor quality hypothesis, and the fair wage hypothesis are rejected. The inter-ownership wage differential for workers who seem very unlikely to seek unions is about as strong as that for non-union workers. A positive and insignificant coefficient of the union dummy variable in the second test method confirms the empirical result of the first method.

When observable labor quality variables are added into the equation, the ownership coefficient does not change. Under the assumption that unmeasured labor quality is correlated with measured quality, this result implies that the labor quality hypothesis does not hold. Finally, it was found that the home country's wages are not related with MNEs' wage premium, suggesting that the fair wage hypothesis does not hold.

The importance of this study is that for the first time,

various hypotheses on the causes of the inter-ownership wage differential are empirically tested. Further studies that compare data from other countries, especially developed host countries, will deepen our understanding on this subject.

6.2 Concluding Remarks

This study provides evidence of the existence and causes of the inter-ownership wage differential in Korea. Its existence helps us understand the positive role of foreign direct investment on the Korean economy and provides a rationale for liberalization of foreign direct investment.

The theoretical framework and empirical exercises in this study have some implications for wage policy. Workers sometimes in domestic firms insist on increasing wages by citing the higher wages of their counterparts in MNEs. However, the model shows that the wage differential between MNEs and domestic firms cannot be used as a rationale for domestic firms to increase wages since the differential is due to an inherent disadvantage of MNEs.

While this study has contributed substantially to the study of wage determination in Korea, it also has some limitations. In comparing wages of identical workers in MNEs and domestic firms, variables were controlled for human capital, industry, occupation, and other. However, there remained no control for unobserved characteristics.

Therefore, a wage differential may occur among heterogeneous workers. Longitudinal data may reduce this limitation by controlling for unobserved characteristics; unfortunately, there is no longitudinal data set available in Korea. In addition, the empirical results are not based on full compensation because the OWS data include only cash wages and do not provide any information on fringe benefits.

Another limitation of this study is that a key alternative hypothesis--that is, the wage differential arises from differences in productivity between MNEs and domestic firm--cannot be tested since information on each firm's productivity is not available. Finally, the hypotheses are mainly tested indirectly because of data limitations. Use of longitudinal data sets or additional studies for developed host countries will address these deficiencies.

Appendix A: Estimated Wage Equations

Table A.1

Estimated Wage Equations

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	1988	1989
Intercept	5.933 (1019.0)	6.238 (1304.0)
Schooling	0.088 (220.0)	0.081 (270.0)
Exp (age-s-7)	0.053 (160.0)	0.053 (187.0)
Exp ²	-0.001 (-90.0)	-0.001 (-116.0)
Sex	0.157 (90.0)	0.170 (121.0)
Marital	-0.084 (-45.0)	-0.079 (-44.0)
Occ1	0.221 (94.9)	0.200 (104.9)
Occ2	0.551 (159.8)	0.558 (138.9)
Occ3	0.189 (113.7)	0.215 (135.4)
Occ4	0.043 (16.5)	0.052 (23.1)
Ind1	-0.032 (-17.3)	-0.048 (-27.8)
Ind2	0.111 (57.9)	0.089 (51.0)
Ind3	0.100 (34.8)	0.153 (62.2)
Ind4	0.084 (33.9)	-0.056 (-26.1)
Ind5	0.161 (63.4)	0.235 (117.5)
Ind6	0.457 (152.1)	0.520 (123.6)
FD	0.159 (141.0)	0.102 (125.0)
Adj-R ²	0.750	0.740
Observation	28,726	32,488

Note: T-values in parentheses.

Table A.1 (Continued)
 Estimated Wage Equations

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	1990	1991
Intercept	6.119 (1032.0)	6.547 (1160.0)
Schooling	0.101 (268.0)	0.082 (225.0)
Exp (age-s-7)	0.061 (186.0)	0.052 (178.0)
Exp ²	-0.001 (-144.0)	-0.001 (-146.0)
Sex	0.128 (69.0)	0.112 (67.0)
Marital	-0.081 (-47.0)	-0.094 (-52.0)
Occ1	0.279 (121.8)	0.303 (130.9)
Occ2	0.607 (148.5)	0.712 (228.5)
Occ3	0.241 (136.8)	0.289 (161.0)
Occ4	-0.119 (-42.8)	-0.135 (-59.5)
Ind1	0.010 (5.1)	0.064 (33.2)
Ind2	0.076 (43.2)	0.108 (68.6)
Ind3	0.204 (46.9)	0.318 (115.1)
Ind4	0.188 (73.8)	0.237 (130.8)
Ind5	0.266 (121.7)	0.321 (141.8)
Ind6	0.086 (36.4)	0.115 (62.4)
FD	0.099 (79.0)	0.115 (92.5)
Adj-R ²	0.720	0.710
Observation	27,109	31,659

Note: T-values in parentheses.

Table A.1 (Continued)
 Estimated Wage Equations

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	1992	
Intercept	6.511	(999.0)
Schooling	0.085	(182.0)
Exp (age-s-7)	0.060	(185.0)
Exp ²	-0.001	(-177.0)
Sex	0.075	(36.0)
Marital	-0.097	(-44.0)
Occ1	0.247	(80.0)
Occ2	0.648	(177.7)
Occ3	0.186	(88.9)
Occ4	-0.241	(-68.7)
Ind1	0.122	(54.2)
Ind2	0.174	(63.8)
Ind3	0.316	(84.2)
Ind4	0.296	(81.1)
Ind5	0.414	(170.3)
Ind6	0.186	(67.6)
FD	0.168	(103.0)
Adj-R ²	0.720	
Observation	22,406	

Note: T-values in parentheses.

Table A.2

Estimated Wage Equations by Industry, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	Textile, Food, Paper	Electrical Machinery
Intercept	6.027 (174.0)	6.025 (351.8)
Schooling	0.095 (40.6)	0.100 (79.7)
Exp (age-s-7)	0.056 (23.2)	0.060 (75.0)
Exp ²	-0.001 (-13.5)	-0.001 (-43.9)
Sex	0.098 (7.0)	0.175 (33.1)
Marital	-0.108 (-9.0)	-0.020 (-3.7)
Occ1	0.343 (22.0)	0.221 (34.5)
Occ2	0.750 (34.6)	0.580 (42.1)
Occ3	0.329 (32.9)	0.254 (50.5)
Occ4	0.346 (24.9)	0.033 (2.4)
FD	0.194 (24.4)	0.039 (14.7)
Adj-R ²	0.691	0.680
Observation	1,435	5,601

Note: T-values in parentheses.

Table A.2 (Continued)

Estimated Wage Equations by Industry, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	Chemical, Equipment	Wholesale & Retail Trade
Intercept	6.534 (264.7)	6.361 (85.1)
Schooling	0.073 (44.3)	0.091 (24.5)
Exp (age-s-7)	0.043 (29.9)	0.066 (16.2)
Exp ²	-0.001 (-18.6)	-0.001 (-11.2)
Sex	0.199 (23.9)	-0.009 (-0.4)
Marital	-0.136 (-18.8)	-0.149 (-6.4)
Occ1	0.301 (21.1)	0.078 (1.8)
Occ2	0.674 (45.2)	0.718 (21.0)
Occ3	0.327 (38.5)	0.136 (3.7)
Occ4	0.038 (3.5)	0.068 (1.7)
FD	0.161 (28.6)	0.629 (41.7)
Adj-R ²	0.617	0.720
Observation	2,095	639

Note: T-values in parentheses.

Table A.2 (Continued)

Estimated Wage Equations by Industry, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	Restaurant & Hotel		Financial Institution	
Intercept	6.767	(166.2)	6.906	(150.1)
Schooling	0.053	(22.3)	0.087	(33.1)
Exp (age-s-7)	0.039	(20.0)	0.068	(27.8)
Exp ²	-0.001	(-15.4)	-0.001	(-15.0)
Sex	0.141	(17.5)	-0.071	(-5.0)
Marital	-0.146	(-13.1)	-0.154	(-13.4)
Occ1	0.136	(6.6)	0.078	(1.9)
Occ2	0.453	(12.2)	0.404	(12.4)
Occ3	0.071	(4.1)	0.030	(0.9)
Occ4	-0.043	(-2.7)	-0.329	(-4.9)
FD	0.335	(39.3)	0.074	(7.1)
Adj-R ²	0.352		0.565	
Observation	1,838		1,291	

Note: T-values in parentheses.

Table A.2 (Continued)

Estimated Wage Equations by Industry, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	Business Service	
Intercept	6.648	(191.8)
Schooling	0.077	(33.7)
Exp (age-s-7)	0.073	(45.3)
Exp ²	-0.002	(-45.5)
Sex	0.067	(5.5)
Marital	-0.110	(-9.9)
Occ1	0.397	(24.2)
Occ2	0.595	(29.2)
Occ3	0.251	(15.1)
Occ4	-0.608	(-35.5)
FD	0.175	(18.5)
Adj-R ²	0.777	
Observation	1,258	

Note: T-values in parentheses.

Table A.3

Estimated Wage Equations by Occupation, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	Professional or Technical	Managerial
Intercept	6.504 (166.3)	7.565 (58.9)
Schooling	0.093 (39.1)	0.065 (10.9)
Exp (age-s-7)	0.061 (33.7)	0.012 (2.4)
Exp ²	-0.001 (-16.0)	0.001 (1.0)
Sex	-0.014 (-0.7)	0.128 (1.9)
Marital	-0.080 (-11.4)	0.036 (1.1)
Ind1	0.020 (1.1)	0.021 (0.8)
Ind2	0.111 (12.6)	-0.001 (-0.1)
Ind3	0.318 (12.0)	0.461 (13.2)
Ind4	-0.083 (-3.4)	-0.366 (-14.4)
Ind5	0.331 (11.1)	0.301 (12.4)
Ind6	0.438 (55.1)	0.279 (10.9)
FD	0.106 (15.9)	0.298 (20.4)
Adj-R ²	0.511	0.346
Observation	1,398	681

Note: T-values in parentheses.

Table A.3 (Continued)

Estimated Wage Equations by Occupation, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	Clerical	Sales & Service
Intercept	6.369 (339.2)	6.773 (195.1)
Schooling	0.102 (90.0)	0.057 (30.0)
Exp (age-s-7)	0.070 (63.1)	0.038 (28.8)
Exp ²	-0.001 (-37.9)	-0.001 (-28.3)
Sex	0.015 (2.6)	0.140 (19.6)
Marital	-0.141 (-26.3)	-0.125 (-11.4)
Ind1	-0.026 (-4.5)	0.183 (6.7)
Ind2	0.112 (21.6)	0.071 (3.3)
Ind3	0.160 (17.9)	0.287 (12.9)
Ind4	-0.139 (-16.6)	-0.003 (-0.1)
Ind5	0.299 (72.3)	0.379 (5.8)
Ind6	0.285 (43.8)	-0.212 (-9.9)
FD	0.099 (28.9)	0.261 (32.8)
Adj-R ²	0.543	0.359
Observation	5,905	2,100

Note: T-values in parentheses.

Table A.3 (Continued)

Estimated Wage Equations by Occupation, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	Productive	
Intercept	6.158	(280.4)
Schooling	0.078	(52.5)
Exp (age-s-7)	0.055	(52.2)
Exp ²	-0.001	(-32.1)
Sex	0.243	(39.9)
Marital	0.031	(4.4)
Ind1	-0.084	(-11.6)
Ind2	0.090	(13.2)
Ind3	0.312	(24.4)
Ind4	0.112	(11.2)
Ind5	0.631	(19.2)
Ind6	0.355	(38.3)
FD	0.159	(36.5)
Adj-R ²	0.550	
Observation	4,173	

Note: T-values in parentheses.

Table A.4

Estimated Wage Equations by Collar Color, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	Blue Collar		White Collar	
Intercept	6.137	(497.0)	6.292	(321.0)
Schooling	0.091	(108.9)	0.078	(72.7)
Exp (age-s-7)	0.061	(111.9)	0.055	(59.8)
Exp ²	-0.001	(-89.2)	-0.001	(-38.4)
Sex	0.132	(39.1)	0.176	(34.5)
Marital	-0.086	(-23.0)	-0.106	(-19.7)
Occ1	0.445	(95.7)	0.115	(10.4)
Occ2	0.813	(133.8)	0.447	(34.8)
Occ3	0.421	(116.1)	0.090	(8.7)
Occ4	-0.012	(-2.1)	-0.058	(-5.7)
Ind1	0.030	(7.6)	-0.005	(-0.9)
Ind2	0.126	(31.0)	0.103	(17.7)
Ind3	0.354	(54.2)	0.120	(13.6)
Ind4	0.272	(39.8)	0.001	(0.2)
Ind5	0.361	(81.4)	0.167	(22.9)
Ind6	0.163	(36.8)	0.436	(64.6)
FD	0.155	(60.0)	0.119	(11.2)
Adj-R ²	0.770		0.630	
Observation	10,187		4,038	

Note: T-values in parentheses.

Table A.5

Estimated Wage Equations by Firm Size, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	10 - 99		100 - 299	
Intercept	6.676	(53.4)	5.972	(142.6)
Schooling	0.053	(7.9)	0.075	(26.1)
Exp (age-s-7)	0.070	(16.6)	0.058	(26.5)
Exp ²	-0.001	(-9.2)	-0.001	(-17.4)
Sex	-0.127	(-4.1)	0.196	(14.6)
Marital	-0.133	(-4.5)	-0.121	(-8.8)
Occ1	0.274	(4.8)	0.318	(17.9)
Occ2	0.777	(12.7)	0.547	(27.2)
Occ3	0.193	(4.8)	0.264	(17.0)
Occ4	0.171	(3.6)	-0.023	(-1.2)
Ind1	-0.169	(-1.5)	0.413	(23.4)
Ind2	-0.204	(-1.8)	0.221	(15.2)
Ind3	0.193	(1.8)	0.673	(14.0)
Ind4	-0.613	(-5.2)	-0.145	(-8.2)
Ind5	0.182	(1.6)	0.940	(64.7)
Ind6	0.290	(2.0)	0.639	(41.9)
FD	0.433	(14.5)	0.303	(32.4)
Adj-R ²	0.750		0.820	
Observation	322		1,245	

Note: T-values in parentheses.

Table A.5 (Continued)

Estimated Wage Equations by Firm Size, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	300 - 499		500 - 999	
Intercept	6.133	(157.5)	6.359	(303.8)
Schooling	0.104	(42.3)	0.080	(55.4)
Exp (age-s-7)	0.054	(25.2)	0.060	(57.7)
Exp ²	-0.001	(-19.4)	-0.001	(-49.8)
Sex	0.181	(17.1)	0.072	(14.9)
Marital	-0.142	(-10.8)	-0.111	(-17.4)
Occ1	0.278	(17.2)	0.269	(33.8)
Occ2	0.544	(25.0)	0.631	(49.0)
Occ3	0.129	(11.0)	0.144	(21.1)
Occ4	-0.253	(-16.4)	-0.135	(-13.8)
Ind1	0.008	(0.5)	0.309	(33.2)
Ind2	0.052	(4.4)	0.230	(28.8)
Ind3	-0.003	(-0.1)	0.153	(14.8)
Ind4	0.043	(2.2)	0.302	(33.2)
Ind5	0.615	(39.8)	0.150	(13.3)
Ind6	0.211	(11.5)	0.317	(31.5)
FD	0.078	(9.3)	0.077	(16.9)
Adj-R ²	0.730		0.660	
Observation	1,411		3,985	

Note: T-values in parentheses.

Table A.5 (Continued)

Estimated Wage Equations by Firm Size, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	1000+	
Intercept	6.222	(359.5)
Schooling	0.083	(70.5)
Exp (age-s-7)	0.054	(64.4)
Exp ²	-0.001	(-36.9)
Sex	0.172	(43.5)
Marital	-0.089	(-18.1)
Occ1	0.248	(38.9)
Occ2	0.662	(74.0)
Occ3	0.228	(46.2)
Occ4	0.032	(4.8)
Ind1	-0.069	(-11.9)
Ind2	0.264	(48.2)
Ind3	0.471	(48.1)
Ind4	0.118	(16.3)
Ind5	0.289	(41.7)
Ind6	0.312	(54.8)
FD	0.170	(49.9)
Adj-R ²	0.740	
Observation	5,861	

Note: T-values in parentheses.

Table A.6

Estimated Wage Equation by Home Country, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	Coefficient	
Intercept	6.243	(586.7)
Schooling	0.082	(112.3)
Exp (age-s-7)	0.060	(95.7)
Exp ²	-0.001	(-68.5)
Sex	0.159	(47.2)
Marital	-0.091	(-25.5)
Occ1	0.346	(66.8)
Occ2	0.699	(94.5)
Occ3	0.302	(90.9)
Occ4	-0.011	(-2.1)
Ind1	0.022	(6.2)
Ind2	0.122	(35.7)
Ind3	0.169	(24.1)
Ind4	0.023	(4.0)
Ind5	0.348	(56.1)
Ind6	0.201	(42.8)
FD1	0.269	(75.4)
FD2	0.203	(45.3)
FD3	0.113	(48.4)
Adj-R ²	0.680	
Observation	14,257	

Note: T-values in parentheses.

Table A.7
Estimated Wage Equation, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	Coefficient
Intercept	6.210 (476.3)
Schooling	0.087 (92.3)
Exp (age-s-7)	0.057 (86.4)
Exp ²	-0.001 (-67.4)
Sex	0.151 (46.0)
Marital	-0.093 (-25.7)
Occ1	0.313 (67.3)
Occ2	0.681 (100.9)
Occ3	0.273 (80.6)
Occ4	-0.010 (-2.0)
Ind1	0.031 (7.7)
Ind2	0.147 (47.6)
Ind3	0.248 (37.0)
Ind4	0.085 (17.8)
Ind5	0.357 (80.1)
Ind6	0.219 (50.2)
FD	0.157 (9.4)
FER	0.001 (8.1)
MANAGER	0.288 (47.3)
UNI*FD	-0.061 (-17.3)
WOR*FD	0.045 (7.5)
S*FD	-0.007 (-5.6)
X*FD	-0.002 (-2.0)
X ² *FD	0.0002 (8.8)
Adj-R ²	0.690
Observation	14,210

Note: T-values in parentheses.

Table A.8

Estimated Wage Equations by Type of Worker, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	Primary Workers		Secondary Workers	
Intercept	6.515	(231.7)	6.176	(74.1)
Schooling	0.086	(61.5)	0.082	(12.7)
Exp (age-s-7)	0.053	(31.1)	0.126	(12.2)
Exp ²	-0.001	(-29.8)	-0.008	(-7.1)
Marital	-0.117	(-13.7)	-0.137	(-5.1)
Occ1	0.258	(31.6)	0.462	(12.5)
Occ2	0.586	(64.6)	0.371	(1.1)
Occ3	0.226	(36.9)	0.307	(20.1)
Occ4	-0.175	(-22.6)	0.236	(9.6)
Ind1	0.037	(4.9)	0.019	(0.9)
Ind2	0.130	(22.9)	0.123	(6.2)
Ind3	0.207	(15.0)	0.163	(5.7)
Ind4	0.139	(17.8)	-0.038	(-1.5)
Ind5	0.370	(44.2)	0.377	(15.8)
Ind6	0.212	(32.6)	0.141	(4.4)
FD	0.210	(4.7)	0.105	(1.0)
FER	0.001	(7.4)	-0.001	(-0.7)
MANAGER	0.476	(35.9)	0.108	(4.3)
UNI*FD	-0.145	(-21.9)	0.005	(0.6)
S*FD	-0.009	(-4.3)	-0.029	(-2.1)
X*FD	-0.006	(-2.1)	0.004	(2.8)
X ² *FD	0.0005	(6.7)	-0.011	(-0.7)
Adj-R ²	0.580		0.490	
Observation	5,331		4,668	

Note: T-values in parentheses.

Table A.9

Estimated Wage Equations by Union Status, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	Non-unionized Workers		Unionized Workers	
Intercept	5.900	(255.5)	6.439	(159.6)
Schooling	0.105	(63.8)	0.074	(26.3)
Exp (age-s-7)	0.058	(46.8)	0.045	(20.9)
Exp ²	-0.001	(-39.7)	-0.001	(-12.9)
Sex	0.157	(22.2)	0.157	(16.3)
Marital	-0.084	(-13.4)	-0.103	(-9.0)
Occ1	0.440	(52.4)	0.261	(17.5)
Occ2	0.748	(54.2)	0.656	(31.1)
Occ3	0.381	(53.7)	0.223	(20.9)
Occ4	0.026	(2.4)	0.038	(2.7)
Ind1	0.017	(2.6)	0.005	(0.4)
Ind2	0.177	(26.1)	0.104	(8.1)
Ind3	0.060	(5.0)	0.325	(17.1)
Ind4	0.159	(16.7)	0.024	(1.7)
Ind5	-0.228	(-3.6)	0.400	(31.2)
Ind6	0.091	(10.8)	0.330	(22.7)
FD	0.127	(4.3)	0.112	(2.3)
FER	0.003	(16.1)	-0.001	(-3.2)
MANAGER	0.431	(26.7)	0.285	(15.6)
WOR*FD	0.101	(9.9)	0.018	(0.9)
S*FD	-0.019	(-10.2)	-0.006	(-1.7)
X*FD	-0.013	(-6.5)	0.013	(3.9)
X ² *FD	0.001	(11.8)	-0.001	(-3.7)
Adj-R ²	0.700		0.720	
Observation	5,345		8,865	

Note: T-values in parentheses.

Table A.10

Estimated Wage Equations with and without
Labor Quality Variables, 1988-1992

Dep. var. : ln (hourly earnings including bonuses)

Indep. Var.	Without Labor Quality Variables	With Labor Quality Variables
Intercept	7.590 (2284.0)	6.210 (476.3)
Sex	0.324 (104.5)	0.151 (46.0)
Marital	-0.330 (-122.6)	-0.093 (-25.7)
Occ1	0.488 (113.5)	0.313 (67.3)
Occ2	1.104 (148.2)	0.681 (100.9)
Occ3	0.417 (128.0)	0.273 (80.6)
Occ4	-0.001 (-0.3)	-0.010 (-2.0)
Ind1	0.013 (2.8)	0.031 (7.7)
Ind2	0.144 (37.5)	0.147 (47.6)
Ind3	0.320 (37.9)	0.248 (37.0)
Ind4	0.100 (21.7)	0.085 (17.8)
Ind5	0.385 (76.4)	0.357 (80.1)
Ind6	0.233 (53.6)	0.219 (50.2)
FD	0.180 (76.5)	0.157 (9.4)
Schooling		0.087 (92.3)
Exp (age-s-7)		0.057 (86.4)
Exp ²		-0.001 (-67.4)
FER		0.001 (8.1)
MANAGER		0.288 (47.3)
UNI*FD		-0.061 (-17.3)
WOR*FD		0.045 (7.5)
S*FD		-0.007 (-5.6)
X*FD		-0.002 (-2.0)
X ² *FD		0.0002 (8.8)
Adj-R ²	0.610	0.690
Observation	14,257	14,257

Note: T-values in parentheses.

Appendix B: Sampling Design

B.1 Sampling Frame and Design

Sample establishments were extracted using a stratified one-stage sampling method by industry and size of establishment. The results of the 1983 Establishment Census served as the frame.

B.2 Stratification

Establishments were classified into five strata by employment size: size 1 (10-29 workers), size 2 (30-99 workers), size 3 (100-299 workers), size 4 (300-499 workers), and size 5 (500 and more workers). Then, the sample sizes for each stratum were determined using Neyman's Optimum Allocation Method. In the case of size 5, all establishments were extracted. The magnitude of the relative sampling error is as follows: size 1, 5%; size 2, 2%; size 3, 3%; size 4, 2%; and size 5, 0%.

B.3 Extraction of Workers from Sample Establishments

The method by which an individual worker was extracted from the sample establishment varied depending on the sizes of the establishment (Table B.1).

Table B.1 Method of Worker Extraction

Size	Percentage	Extraction Method
10 - 99	100%	All workers in list
100 - 299	80%	e.g., 1, 2, 3, 4, 6, 7, 8, 9, 196, 197, 198, 199 in firms with 200 workers.
300 - 499	70%	e.g., 1, 2, 4, 5, 7, 8, 10, 11, 397, 398, 400 in firms with 400 workers.
500 - 999	50%	e.g., 1, 3, 5, 7, 9, 11, 13, 591, 593, 595, 597, 599 in firms with 600 workers.
1,000 - 4,999	30%	e.g., 1, 4, 7, 10, 13, 16, ... 1,489, 1,492, 1,495, 1,498 in firms with 1,500 workers.
5,000 - 14,999	20%	e.g., 1, 6, 11, 16, 21, 26, 31, 5,986, 5,991, 5,996 in firms with 6,000 workers.
15,000 and more	10%	1, 11, 21, 31, 41, 51, 61, 71, 14,981, 14,991 in firms with 15,000 workers.

Bibliography

- Akerlof, G. (1982), Labor Contracts as Partial Gift Exchange, Quarterly Journal of Economics, vol.97, no.4, 543-569.
- Andersson, T. (1991), Multinational Investment in Developing Countries, New York, Routledge.
- Bailey, P., A. Parisotto and G. Renshaw (eds.) (1993), Multinational and Employment, Geneva, International Labor Office.
- Bank of Korea (1992), Economic Statistic Yearbook (in Korean), Seoul.
- Bauer, J.G. and C.H. Lee (1989), Economic Development and Labor Market Segmentation : The Case of Korea, Paper presented at the Universities Research Conference of Labor Markets in the 1990s, 8-9 December, 1989 at Cambridge, Massachusetts.
- Blinder, A.S. (1973), Wage Discrimination: Reduced Form and Structural Estimate, Journal of Human Resources, Fall, vol.53(4), 436-455.
- Blomstrom, M. (1988), Labor Productivity Differences Between Foreign and Domestic Firms in Mexico, World Development, vol. 16, no. 11, 1295-1298.
- Brown, C. and J.L. Medoff (1989), The Employer Size-Wage Effect, Journal of Political Economy, vol.97, no.5, 1027-1059.
- Bulow, J. and L.H. Summers (1986), A Theory of Dual Labor Markets, with Application to Industrial Policy, Discrimination, and Keynesian Unemployment, Journal of Labor Economics, 4, no.3, July, 376-414.
- Campbell, D.C. and R.G. McElrath (1990), The Employment Effects of Multinational Enterprises in the United States and of American Multinationals abroad, International Labor Office working paper no. 64, ILO, Geneva.
- Carruth, A.A. and A.J. Oswald (1989), Pay Determination and Industrial Prosperity, New York, Oxford University Press.
- Caves, R.E. (1982), Multinational Enterprises and Economic Analysis, Cambridge, Cambridge University Press.
- Cho, D.S. (1990), A Study on the Chaebol (in Korean), Seoul, Daily Economic News Paper, Inc.

- Dollar, D. (1989), Employment and Income Effect of Multinational Production by U.S. Computer Firms, International Economic Journal, vol.3, no.4, 1-17.
- Dunlop, J.T. (1944), Wage Determination under Trade Unions, New York, Macmillan.
- Dunning, J. (1981), International Production and the Multinational Enterprises, New York, Praeger.
- _____ (ed.) (1985), Multinational Enterprises, Economic Structure and International Competitiveness, New York, Wiley.
- _____ and E.J. Morgan (1980), Employee Compensation in U.S. Multinational and Indigenous Firms: An Exploratory Micro/Macro Analysis, British Journal of Industrial Relations, vol.18, July, 179-201.
- Ehrenberg, R.G. and R.S. Smith (1988), Modern Labor Economics, 3rd ed. Illinois, Glenview.
- Freeman, R.B. and J.L. Medoff (1984), What Do Union Do?, New York, Basic Books.
- Fujii, E. and J. Mak (1985), On the Relative Economic Progress of U.S. - born Filipino Men, Economic Development and Cultural Change, vol.33, no.3, 557-573.
- Green, W.H. (1993), Econometric Analysis, New York, Macmillan.
- Hood, N. and S. Young (1979), The Economics of Multinational Enterprises, New York, Longman.
- International Labor Organization (1976), Wages and Working Conditions in Multinational Enterprises, Geneva, International Labor Office.
- Jain, H.C. (1990), Human Resource Management in Selected Japanese Firms, Their Foreign Subsidiaries and Locally Owned Counterparts, International Labor Review, vol.129, no.1, 73-89.
- Korea Labor Institute (1992), Overseas Labor Statistics (in Korea), Seoul.
- Krueger, A.B. (1991), Ownership, Agency and Wages : An Examination of Franchising in the Fast Food Industry, Quarterly Journal of Economics, February, 75-101.
- _____ and L.H. Summers (1988), Efficiency Wages and the Inter-Industry Wage Structure, Econometrica, vol.56, no.2, March, 1988.

- Kujawa, D. (ed.) (1975), International Labor and Multinational Enterprises, New York, Praeger.
- _____ (1980), Labor Relations of U.S. Multinationals Abroad, In B. Martin and E. Kassalow (eds.) Labor Relations in Advanced Industrial Societies; Issues and Problems, Washington D.C., Carnegie Endowment for International Peace.
- Layard, R. and A. Walters (1978), Microeconomic Theory, New York, McGraw-Hill.
- Lee, B.J. (1994), Determinants of Inter-Industry Wage Differentials - A case of Korea Labor Market, unpublished Ph.D. Dissertation, University of Hawaii.
- Lee, C.H. and B.S. Chung (1980), The Choice of Production Techniques by Foreign and Local Firms in Korea, Economic Development and Cultural Change, October 1980, 135-140.
- _____ and K. Ogawa (1995), Return on Capital and Outward Direct Foreign Investment: The Case of Six Japanese Industries, Journal of Asian Economics, vol.6.4, Winter, 1995 (forthcoming).
- Leonard, J.S. (1987), Working for Foreign Masters: Wages and Employment in Foreign Direct Investment in the U.S., NBER working paper.
- Lim, D. (1977), Do Foreign Companies Pay Higher Wages Than Their Local Counterparts in Malaysian Manufacturing?, Journal of Development Economics 4, 55-66.
- Lipsey, R.E. (1994), Foreign-Owned Firms and U.S. Wages, NBER Working Paper no.4927.
- Little, J.S. (1985), Foreign Direct Investment in New England, New England Economic Review, March/April, 48-57.
- Mahmood, Z. and J. Hussain (1991), Performance of Foreign and Local Firms in Pakistan : A Comparison, The Pakistan Development Review, Winter, 837-847.
- McDonald, I.M. and R.M. Solow (1981), Wage Bargaining and Employment, American Economic Review, 71, 896-908.
- Mincer, J. (1974), Schooling, Experience and Earnings, NBER, New York.
- Ministry of Finance of Korea (1991), Foreign Invested Firms in Korea (in Korean), Seoul.

- _____ (1992), Trends in Foreign Investment (in Korean), Seoul.
- Ministry of Labor of Korea, Report on Occupational Wage Survey (in Korean), several issues.
- Murphy, K.M. and F. Welch (1992), The Structure of Wages, Quarterly Journal of Economics, February, 285-326.
- Oaxaca, R. (1973), Male-Female Wage Differential in Urban Labor Market, International Economic Review, October, 693-709.
- Park, W.G. and S.I. Park (1984), Wage Structure in Korea (in Korean), Seoul, Korea Development Institute.
- Reynolds, L.G., S.H. Masters and C.H. Moser, (1991), Labor Economics and Labor Relations, 10th ed., Englewood Cliffs, Prentice Hall.
- Rodgers, R.A. (1993), Industrial Relations Policies and Practices in the Republic of Korea in a Time of Rapid Change : The Influence of American-Invested and Japanese-Invested Transnational Corporations, Unpublished Ph.D Dissertation, University of Wisconsin-Madison.
- Salop, S (1979), A Model of the Natural Rate of Unemployment, American Economic Review, vol 69, no.1, 117-125.
- Shapiro, C. and J. Stiglitz (1984), Equilibrium Unemployment as a Worker Discipline Device, American Economic Review, vol.74, no.3, 433-444.
- Tavis, L.A. (ed.) (1988), Multinational Managers and Host Government Interactions, Notre Dame, University of Notre Dame Press.
- Taylor, D.P. (1968), Discrimination and occupational Wage Difference in the Market for Unskilled Labor, Industrial and Labor Relations Review, April, 375-390.
- Thaler, R. (1989), Interindustry Wage Differentials, Journal of Economic Perspective, vol.3, no.2, 181-193.
- U.S. Department of Commerce (1993), Foreign Direct Investment in the United States; An Update, Washington, D.C.
- Vernon, R. (1966), International Investment and International trade in the Product Cycle, Quarterly Journal of Economics, vol.80, May, 190-207.

- Warr, P. (1984), Korea's Free Export Zone : Benefits and Costs, The Developing Economics.
- Weiss, A. (1980), Job Queues and Layoffs in Labor Markets with Flexible Wages, Journal of Political Economy, vol.88, 526-538.
- Whitchard, O.G. (1978), Employment and Employee Compensation of U.S. Affiliates of Foreign Companies, Survey of Current Business, 58 (December), 23-34, 58.
- Willmore, L.N. (1986), The Comparative Performance of Foreign and Domestic Firms in Brazil, World Development, vol. 14, no. 4, 489-502.
- Yellen, J. (1984), Efficiency Wage Models of Unemployment, American Economic Review, vol.74, no.2, 201-205.
- Yoon, D.S. (1991), The Effect of Employer Size on Wage Rates in Korea, unpublished Ph.D. Dissertation, University of Hawaii.
- Yu, C.J. and K. Ito (1988), Oligopolistic Reaction and Foreign Direct Investment: The Case of the U.S. Tire and Textiles Industries, Journal of International Business Studies, Fall, 449-460.