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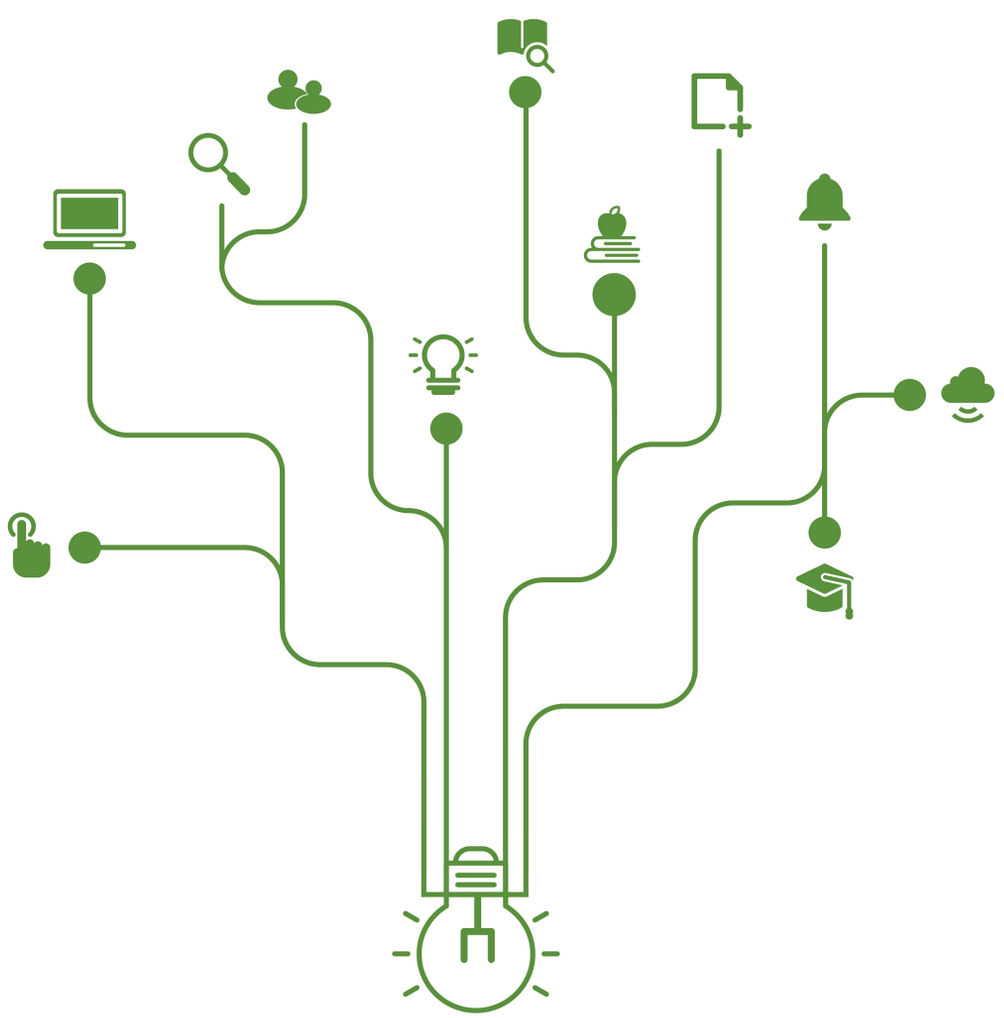
Korean Industrialization, Skill Demand, and Wage Premium

Changkeun Lee



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Korean Industrialization, Skill Demand, and Wage Premium

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Abstract

This paper aims to observe the evolution of skilled labor demand and relative wages during the rapid industrialization period. Although this historic episode has attracted the researchers' attention, the evolution of skill demand and its impact on inequality remained as a black box. To provide first-hand evidence, I construct a 3-digit industry-level dataset that covers 1955-1980 from the Mining and Manufacturing survey. Then I measure skill demand and relative wages following the skill-biased technological change literature.

Analysis results show that Korea experiences drastic skill upgrading during its rapid industrialization. The nonproduction workers' share in wage bill increased throughout the 25 years of 1955-1980. Relative demand rose much faster in industries that were initially less skill-intensive but accumulated capital through investment faster. This implies that there was a strong skill-capital complementarity.

Increasing skill demand and skill-capital complementarity are a force of increasing skill premium in wages and wage inequality. It was so until 1973. However, since then relative wages fell while skill demand kept rising. This is unique to the Korean experience, It also implies that the supply of skilled labor expanded even faster than the skill demand. Although it is possible to connect this to the heavy-chemical industrialization, falling skill premium and inequality was most driven by the "within" or common effect. Furthermore, emerging heavy-chemical industries had greater skill demand, therefore a positive effect on relative wage.

Introduction

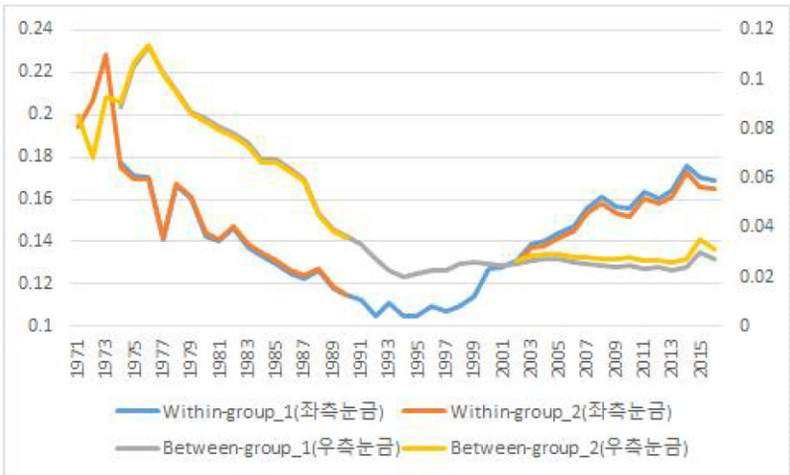
There is a strong relationship between economic development and human capital. Better education and training increases labor quality and productivity. On the other hand, economic development also increases the demand for skilled workers. Development involves structural changes that reallocate labor from less productive sectors to high productive sectors. Growing demand for skilled workers increases the wage premium for high-skill workers. The wage premium serves as a signal for human capital accumulation. If an appropriate supply of skilled labor is made in response to the labor market signal, it will enable sustainable economic growth and development.

The wage premium is also an indicator of labor market inequality. Because there are more unskilled workers than skilled workers, increasing wage premium indicates growing wage inequality. In many developing countries, it is generally observed that both skill demand and wage premium increase together. As the supply of education and skills does not keep up with the growing demand, many workers remain in less productive occupations and firms have difficulty in recruiting well-educated workers.

How does the Korean case fit this frame? South Korea’s rapid industrialization is a well-known and rare historical episode. Although there are several latecomer countries that have grown fast, it is hard to find a case of dramatic change in industrial structure like Korea. Such a rapid transformation would have favored more educated and more skilled workers. However, as many economists and policymakers have noted as a key driver of the nation’s economic success, Koreans were keen on education. If there was a supply of education enough to meet the growing demand in industry, there would have been a downward pressure on the wage premium and wage inequality.

There exists some evidence to support this hypothesis. Mostly examining individual-level data, they commonly find that overall wage inequality and the wage premium decreases in the 1970s. For example, Park (2018) examines the Occupation and Wage Survey (OWS hereafter), an individual-level sample data collected by the Ministry of Labor. Specifically, he decomposes overall inequality measures into between- and within-group differences. [Figure 1-1] plots the decomposition results according to educational attainment. It shows that , the early 1970s was a period of rising inequality between education groups as "between-(education) group" increases. This would reflect the growing demand for more educated worker in the manufacturing sector. In the late 1970s, between inequality declines. Although it is difficult to pin down the exact reason,

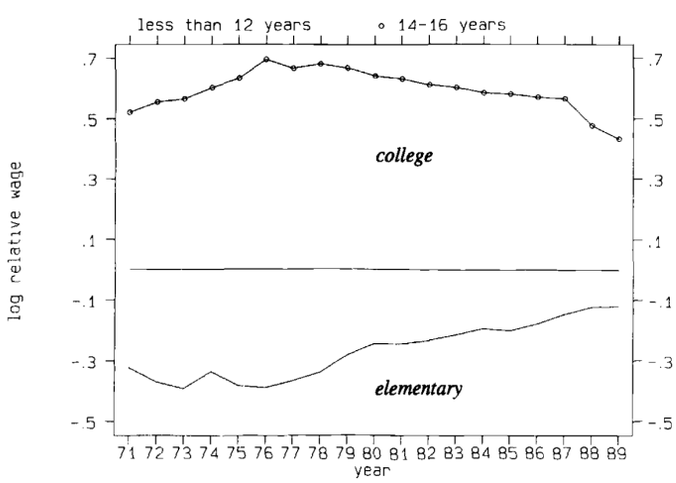
this is likely to reflect the growing supply of education.



Source: Park (2018)

Figure 1-1. Evolution of Wage Inequality in Korea

Kim and Topel (1995) calculate the wage premium from the OWS, defined as the log wage differential between college, high school, and elementary school graduates, and observe the changes in the wage premiums, as illustrated in [Figure 1-2]. They find that wage premiums decreased since 1976 and that the declining trend is not explained by the changes in educational composition. Based on these findings, they suggest that the main driver of the wage compression that continued until 1990 was the price, rather than quantity, of skilled labor. They suspect that "extraordinary increase" in school enrollments would have dominated the increasing demand for skilled labor.



Source: Kim and Topel (1995)

Figure 1-2| Evolution of Wage Premium (log relative wage)

Cha, Hwang, and Lee (2014) extends the time period to cover almost a century

instead of narrowing the scope to the financial sector. As illustrated in [Figure 1-3], they track the relative wage of workers with tertiary and elementary education to those with secondary education. While confirming the results above, the figure showsthe rapid rise and fall in wage premium of the 1970s was a special case in the modern Korean history.[1)]

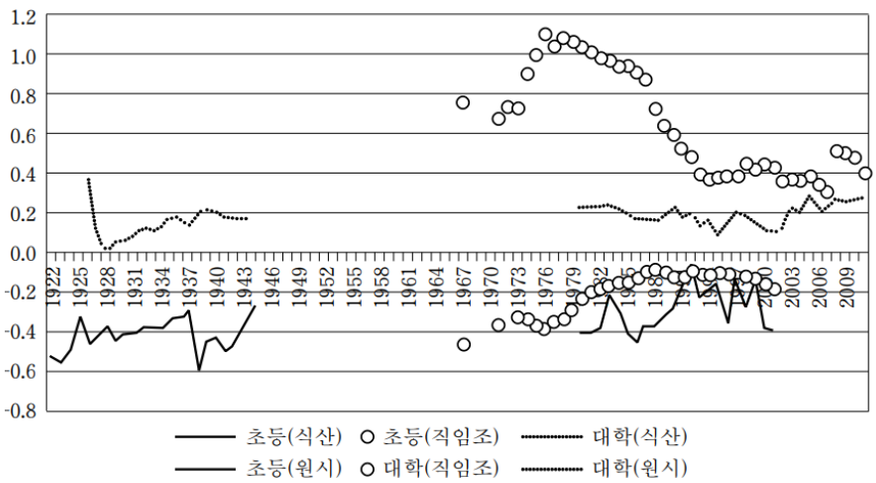


Figure 1-3| Evolution of Wage Premium, Financial Sector

Source: Cha et al. (2014)

While these studies provide useful first-hand evidence about wage inequality in the 1970s, much is yet to be known. First, they do not address the evolution in the labor demand side. They all examine individual-level data, track changes in relative wages, and draw inferences about the underlying changes in skill demand. Relying on individual-level data and not exploiting various industry-side characteristics, such as productivity and export, their investigation does not connect industrialization and labor market changes directly. Moreover, they do not observe what happened in the 1960s. Scholars view that Korea's industrialization began in the early 1960s under the military administration of Park Chung Hee. With the OWS that covers only years since 1971, it is difficult to explore the effects of the early industrialization on skill demand and wage premium.

Using industry data provides a good alternative in all aspects. Statistics Korea and its predecessors have publish the Mining and Manufacturing Survey (MMS hereafter) series since 1958. They contain information about production and employment in very detail. Until the mid-2000s, the MMS series has recorded the number of workers and total wage compensation by worker class, production workers and nonproduction workers.Given

1) They define the wage premium in a different way from Kim and Topel (1995). While Kim and Topel use $\ln w_H - \ln w_L = \ln(w_H/w_L)$, they use $(w_H/w_L)-1$.

this data availability, one can capitalize on the skill approach developed by labor economists that uses worker type as a proxy for skill. If the individual-side outcomes mirror industry-side changes, the inequality between the nonproductionworker and production worker should exhibit a similar trend.

This study constructs an industry-level dataset and observe the evolution of relative demand and skills. Using the employer-side MMS data, I illustrate the long-term trend in relative demand and wage. Taking advantage of different pace of upskilling across industries, I examine the patterns drivers of upskilling. Then I

This paper contributes to the literature

First, I observe the upskilling trend directly from the MMS. In particular, I extend the time coverage to the 1960s.

most dynamic time of the Korean economic history and offers a more broad and deeper understanding about the relationship between industrialization and skill upgrading.

The existing evidence indicates that wage inequality converged only after the mid-1970s.

This advantage leads to another advantage that one can link the change in industrial structure to skill demand. The literature has documented the two phases of the Korean industrialization of the 1960s and 1970s. In the 1960s, light manufacturing industries grew faster as the government pushed the export-oriented policy. By contrast, heavy-chemical industries (HCIs) became the leading sector in the 1970s since the kickoff of the HCI policy drive. This sharp contrast would have affected labor demand.

The remainder of this paper is organized as follows. Chapter 2 explains how I construct the data. In Chapter 3, I review the analytic framework and existing evidence on this topic, which motivates my study. Chapter 4 presents evidence about the evolution of skill demand and relative wage. Chapter 5 concludes.

Analytic Framework

Measuring Upskilling

In the methodological sense, this paper builds on the labor economics literature ofskill-biased technological change. Bound, and Griliches (1994)is a representative study on this subject. They observe the upward trend in the share of nonproduction workers since 1960, which they believe that this reflects increasing demand for skilled labor.

Motivated by the observation, they examine whether the "skill upgrading" or "upskilling"was driven by a universal force or structural change within manufacturing. Finding that the upskilling was a common change, they conduct additional analysis to find the main drivers. They test a version of the skill-biased technological change (SBTC) hypothesis, by examining whether more computer use increased the demand for nonproduction workers.

This paper borrows much of the methodology from Bound et al. (1994). First, to measureskill demand, not only the nonproduction share of employment but also the share of the wage bill is used. They propose the wage bill share because of potential bias. More demand for skilled labor increases would increase their relative wage. But as skilled labor becomes more expensive, this could the demand for them. With this bias, using skilled workers' share in employment would lead to an underestimation of their importance.

The decomposition of upskilling into the common and reallocation effects employs the share-shift analysis. First, the share of nonproduction workers in the total wage bill ($\mathbf{S_n}$) is defined as the sum of nonproduction share of each sector ($\mathbf{S_i}$) times the sector's share in total employment ($\boldsymbol{\theta_i}$).

$$S_n = \Sigma \theta_j S_j$$

Then the change in $\mathbf{S_n}$ is driven by the common change and the change in shares (reallocation):

$$\Delta S_n = \Sigma \bar{\theta}_j \Delta S_j + \Sigma \bar{S}_j \Delta \theta_j$$

The former measures common changes and the latter measures reallocation effects between industries. They find that the "between" component explains only a small part of the skill upgrading trend. In other words, upskilling was not concentrated in growing industries but common to all industries.[2)]

There are a few studies that apply this approach to the Korean data. Ahn and Hur (2015) analyze the MMS at the 3- and 5-digit SIC level to find that skill demand was in an upward trend since 1992 and that it was driven by the "within" effect. Then they

2) While they consider different industry groups (domestic consumption, exports, imports, and defense), it does not affect the main results.

compare the changes in relative demand and relative wages to make an inference about how supply and demand moved in each period. For example, because relative demand was on the rise but relative wage was on the fall until 1997, they guess that the change in relative supply was faster. After 1997, relative wage also rose, which indicates that the demand for skilled workers increased faster than supply.This paper conducts the same analysis for the 1960s and 1970s.

Finding that the "within" factor dominates the "between"factor, the next task is to investigate the common drivers of upskilling. Economists have focused on the role of technology. But testing the SBTC hypothesis requires a well-specified regression equation. Berman et al. (1994) derive one with assumptions of the translog cost function, cost minimization, and constant returns to scale:

$$\Delta S_{njt} = \beta_0 + \beta_1 \Delta \ln\left(\frac{W_{njt}}{W_{pjt}}\right) + \beta_2 \Delta \ln\left(\frac{K_{jt}}{Y_j t}\right) + \varepsilon_{jt}$$

W_{nit}/W_{vit} is the relative wage, measured by the ratio of the salaries of nonproduction workers to the wages of production workers in sector j. However, in practice this ,term is dropped because of the endogeneity concern that cross-sectional differences in relative wage reflect differences in skill demand. Berman et al. (1994) justifies this by assuming that "the price of quality-adjusted labor does not vary across industries."By eliminating relative wages from the equation, focus is given to β_2, which captures capital-skill complementarity. Most of the subsequent empirical analyses that adopt this specification follow the suit.

In their masterpiece, The Race between Education and Technology, Goldin and Katz (2008) also adopts the SBTC framework to analyze how technological innovation in the early twentieth century changed labor demand. They focus on new methods of production, such as batch and continuous processes, and the role of electricity. While there was strong capital-skill complementarity from the beginning of the century, the electrification of factories made the relationship even stronger. Factories that shifted from generated electricity to purchased electricity underwent fundamental changes in factory layout and the type of machinery. These changes required workers better literacy and cognitive skills.

To validate the story econometrically, they employ the same regression specification that drops relative wage, for the same concern of endogeneity, and keeps the

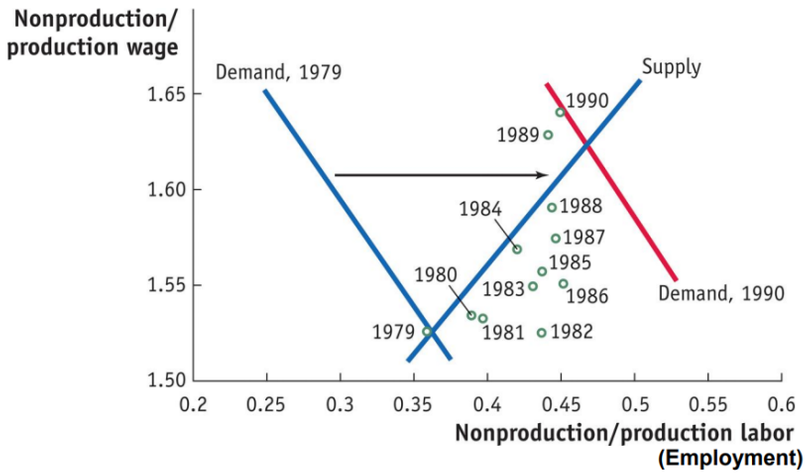
capitalintensity and the fraction of purchased electricity in total horsepower of the beginning period. Because the dependent variables are the share of nonproduction workers in the wagebill, significant and positive coefficients support for capital- and technology-skill complementarity, which is consistent with their results.

For developing countries, trade rather than technology is considered to be the source of labor demand change. For example, Bustos (2011)find that the demand for skilled labor increased in Argentina after trade liberalization. This skill upgrading was driven by not reallocation but within-firm changes. As for the mechanism, she finds that exporters increased skill demand faster, and this skill upgrading is also associated with technology upgrading. In contrast, Pavcnik (2003) examines the role of imported materials and technology in Columbiabut only finds that they are no longer important once plant fixed effects are controlled. This ambiguity calls for more evidence on the trade-skill relationship.

Guessing the Drivers of Upskilling

While there is a little role in the SBTC analysis for the concern of endogeneity, the relative wage has its own significance as it mediates the demand and supply side. It sends a market signal to potential workers for education and training. When skill premium in wages is high, more people would choose to take required education and training. If the supply for education and training is elastic enough, the skillpremium would decrease gradually. What researchers observe is skill premium in equilibrium. To understand the evolution of the labor market comprehensively, one needs to take both wage and employment into account.

Goldin and Katz (2008) does this sort of supply-demand analysis for the entire twentieth century. The idea is simple; if both relative wage and skill demand increase, that would suggest that demand rise faster than supply. If skill demand increases and relative wage decreases, it would indicate that supply rise faster. [Figure 2-1] from Feenstra and Taylor’s textbook (2017) demonstrates the framework.



Source: Feenstra and Taylor (2017)

Figure 2-1. Evolution of Relative Demand and Wage in the US

Because Goldin and Katz assume that skill supply is assumed to be fixed over the short run, they focus on deriving a labor demand equation. Like in the SBTC analysis, they assume a production function with constant elasticity of substitution:

$$Q_t = A_t [\lambda_t S_t^{\rho} + (1-\lambda_t) U_t^{\rho}]^{1/\rho}$$

Where Q_t is output, A_t is total factor productivity, and S_t and U_t are skilled and unskilled labor supply, respectively.Here the elasticity of substitution between skilled and unskilled labor is $1/(1-\rho)$. λ_t measures the share of skilled workers in total labor input.

Solving the profit maximization problem, the relative wage equation is obtained:

$$\ln\left(\frac{w_{s,t}}{w_{u,t}}\right) = \ln\left(\frac{\lambda}{1-\lambda}\right) - (1-\rho)\ln\left(\frac{S_t}{U_t}\right)$$

By estimating this equation for each period and connecting the estimated elasticity, one can track the evolution of labor demand over time.

Observing the long-run time series of college wage premium, Goldin and Katz find that wage premium was in a declining trend in the first half of the century, but in a risingtrend in the second half. Computing the elasticities of the equation above, they conclude that skill supply, rather than demand, determined the trend in wage premium. In other words, skill wage premium declined when supply outpaced demand, and it

increased when demand grew faster. For this reason, they emphasize the role of education in the economic success of the United States in the twentieth century.

Wage premium draws economists attention for another reason; because it is a good measure of inequality. Rising skill wage premium indicates rising overall inequality because unskilled workers outnumber skilled workers. Various factors affect the skillwage premium. While Goldin and Katz emphasize the role of education in inequality of twentieth-century America, many economists focus on trade and globalization for developing countries. As summarized in Goldberg and Pavcnik (2007), a commonly found pattern from various empirical studies is that trade liberalization tends to increase skill premium and inequality.

Data

The purpose of this study is to document the patterns of structural change inmanufacturing. This investigation requires industry data at a finer level. I compile a dataset from various publications by statistics authorities. The annual Mining and Manufacturing Survey (MMS) constitutes the main source of the data. Conducted by the Bureau of Statistics, it aims at measuring economic activities between census years, years ending in five and eight. Before 1963, the MMS was conducted by the Bank of Korea and the Korean Reconstruction Bank.

The MMS collected various information about the input and output of manufacturing establishments. My dataset is based on the aggregated statistics by the industry in the published reports. The reports include the number of establishments, different types of production costs (materials, fuels, electricity, water, and contract work), the value of shipments and production, year-end value and changes in inventory, and changes in the value of fixed assets (investment and disposals). However, the most important information would be the number of nonproduction and production workers, and the compensation paid to each group of workers. Because the MMS contains totals only, proper transformation into per-worker indicators is necessary. Some variables have limited availability. For example, capital stock was collected only in the census years, therefore the year-end capital stock is available only for 1968, 1973, and 1978.

The biggest hurdle in the digitization process is frequent changes of the industry classification system. Reflecting dramatic changes in industrial structure, it was modified in 1963, 1964, 1965, 1968, 1970, and 1975. I performed many crosswalks, setting the

second Korean Standard Industry Classification System (KSIC) in 1963 as the reference. The 1963 MMS was part of the Korean economic census and 1963 world programme of basic industrial inquiriesof the UN. Aided by international experts, the MMS introduced a classification system that meets up the international standards.

Determining the unit of analysis is another challenge. Although working at the four- or five-digit KSIC level is possible, early reports do not distinguish very narrowly-defined industries. For example, a 4-digit industry in the 1958 report is equivalent to a 3-digit industry in reports of the 1970s. Therefore, I determined to construct the dataset at the 3-digit KSIC level to secure consistency in industry classification and variety at the same time. As a result, I have 29 industries and 17 time period: 1955, 1958, 1963, and every year since 1967.

Evolution of Skill Demand and Relative Wages

Overall Trend in Skill Demand

With the constructed data, I first illustrate the evolution of skill demand in the overall Korean manufacturing. [Figure 4-1] presents the overall trend in skill demand. The blue solid line is the share of nonproduction workers in total employment and the red dashed line is the share of nonproduction workers in the wage bill. It can be seen that wage bill share is consistently higher than employment share, though the two series move together over time. As Berman et al. (1994) claimed, this indicates that employment share understates the degree of skill upgrading.

[Figure 4-1] shows that the rapid industrialization of Korea was also a process of skill upgrading. It may not be very surprising given that this positive relationship between development and skill upgrading is commonly found among developing countries. But Two waves are identified from the Figure. The share of nonproduction workers started rising around 1958, just before the nation started industrialization. The upskilling process comes to a halt around 1970. But the share of nonproduction workers rise again since 1974 and the rising trend accelerated even further. It may not be a coincidence that there was a turning point in industrial policy in the middle of the 1970s toward the heavy chemical industries.

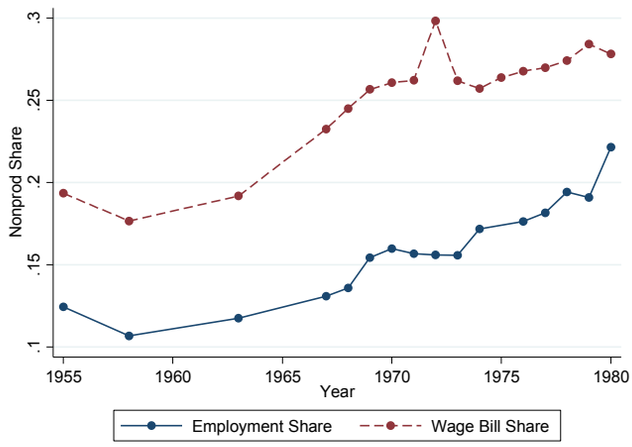


Figure 4-1. Evolution of Skill Demand

Sectoral Differences in Upskilling

As noted above, the timing of upskilling seems to have something to do with industrial policies. Therefore,it would be interesting to explore which industries led skill upgrading. If some industries were particularly faster, then it would also be captured in a decomposition analysis.

First, I examine the relationship between the skill demand at year t-1 and change between t-1 and t to see if the skill demand of industries were persistent throughout the entire industrialization period. [Figure 4-2] illustrates the relationship.

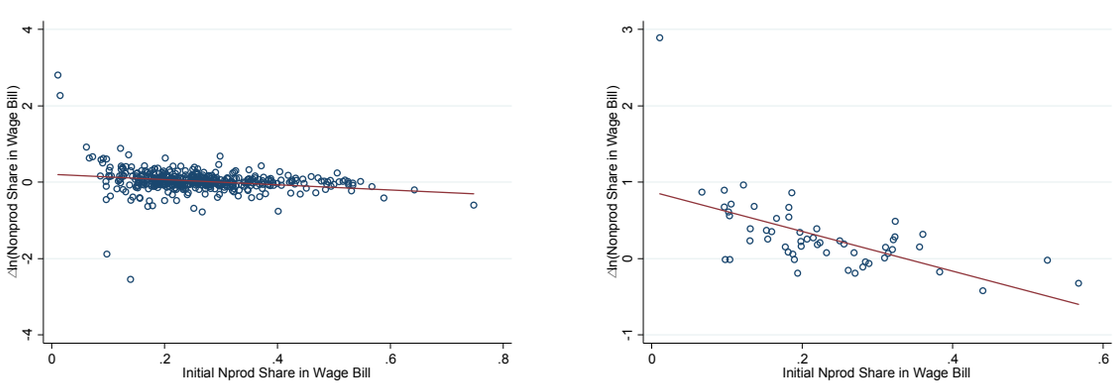


Figure 4-2. Initial Skill Demand and Change in Skill Demand

The left panel plots all observations, and the right panel plots observations of 1958, 1970, and 1980. I do this because one or two years may not be long enough for adjustment. Then the cross-sectional relationship may mask the true relationship. The

Figure suggests that skill upgrading was faster in industries with low initial skill demand. Changing the time interval to about 10 years only strengthens the negative relationship. Therefore, it is not the case that some industries have inherently high skill demand and only changing shares would determine the speed of upskilling.

I also look at the relationship between productivity and skill upgrading. The underlying hypothesis is that high-productivity sectors required more skilled labor. [Figure 4-3] presents the relationship between initial labor productivity, defined as log value added per production worker, and the following skill upgrading. For effective comparisons across time, I demeaned each industry's labor productivity from the average labor productivity of the year.

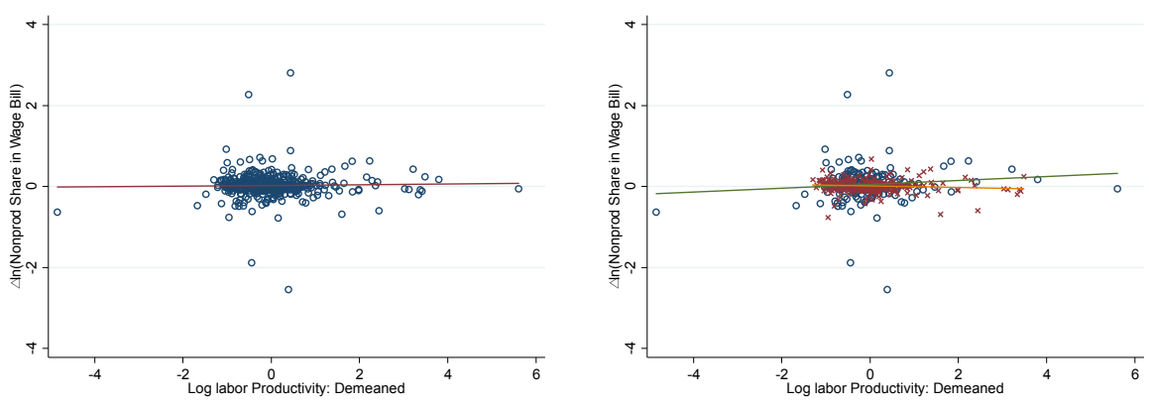


Figure 4-3. Initial Productivity and Change in Skill Demand

In the left panel, no particular relationship is found, which suggest that skill upgrading was not specific to high-productivity industries. The right panel looks at the relationship by each decade, before 1970 and 1970 and after. The blue hollow circle symbol indicates observations for the pre-1970 period and the red x symbol observations for 1970 and after. The right panel shows that the productivity-upskilling relationship has changed in the 1970s. In the 1950s and 1960s, skill demand rose faster in high-productivity industries. However, in the 1970s, low-productivity industries increased their skill demand.

Finally, I look at the relationship between capital intensity and skill upgrading. I expect to get a hint about the skill-capital complementarity from this observation. I measure capital intensity as the fraction of total fixed assets to the value of the shipment, as Berman et al. (1994) did. Then I observe how the change in the nonproduction share in wage bill is associated with the initial capital intensity and the

change in capital intensity. As explained in the data section, the year-end amount of fixed assets were measured only in 1968, 1973, and 1978.

The left panel of [Figure 4-4] shows that skill demand increased faster in industries with initially low capital intensity. But the right panel looks at the relationship between "changes" and suggest a different skill-capital relationship. It appears that the relative demand for nonproduction workers increased more in industries with faster capital accumulation. Berman et al. (1994) and other empirical studies also focus on the coefficient for capital intensity. The right panel indicates that there was strong skill-capital complementarity in skill upgrading during the rapid industrialization period as in other developing countries.

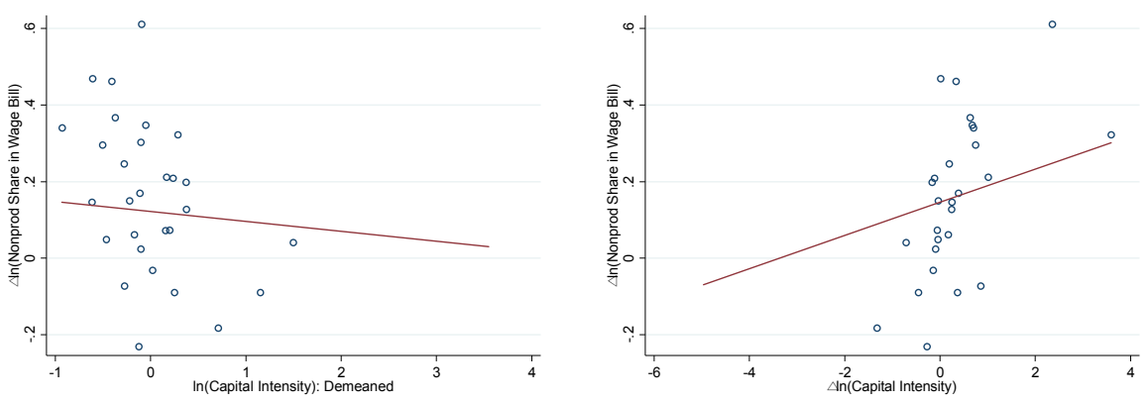


Figure 4-4. Capital Intensity and Change in Skill Demand, 1973-78

[Figure 4-4] reports the capital-skill relationship without considering other industry characteristics. To obtain more reliable results, I also run regressions with the specification below, with industry and fixed effects. To reflect different sizes of industries, I weight the regression with total employment.

$$\Delta S_{nj} = \beta_0 + \beta_2 \Delta \ln\left(\frac{K_j}{Y_j}\right) + \lambda_j + \delta_t + \epsilon_j$$

While it slightly varies depending on the specification and measure choice, the regression results yield $\widehat{\beta_2} \approx 0.114$ consistently. When an industry increases in capital intensity is 1% above the average, relative demand grows 0.114% more than the average. Berman et al. (1994) obtains $\widehat{\beta_2} \approx 0.014 \sim 0.038$ using the same specification. Capital-skill complementarity was much stronger in the Korean case.

Evolution of Relative Wages

So far, relative wages –skill premium in wages has been something to be controlled for. However, the quantity of labor interacts with is the price. By considering both relative wages and demand at the same time, one can understand how the labor market reacts to the fundamental - technological and institutional - changes.

[Figure 4-5] illustrates the trend in skill demand and relative wage. The figure shows two distinct waves in the demand-wage relationship. In the 1960s, relative wage and demand tended to move together. This implies that the skill upgrading in the 1960s was driven by an expansion of demand for skill. By contrast, in the 1970s relative wage declines when skill demand keeps rising. With the supply-demand analytic framework explained in Section 2, one can infer that the supply of skilled labor expanded even faster than its demand.

Expanding relative demand and falling relative wages is unique to the Korean experience. Southeast Asian countries and China experienced rising skill demand and its relative wage during their economic development. Wage inequality widens in the process. Korea was different. As seen in [Figure 2-4], there was a big wave of wage inequality reduction that lasted for twenty years. [Figure 4-5] shows that declining skill premium in wages was a fundamental force of the wage compression.

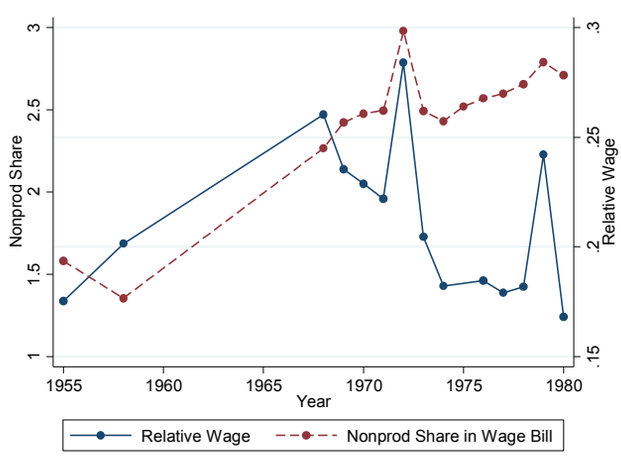
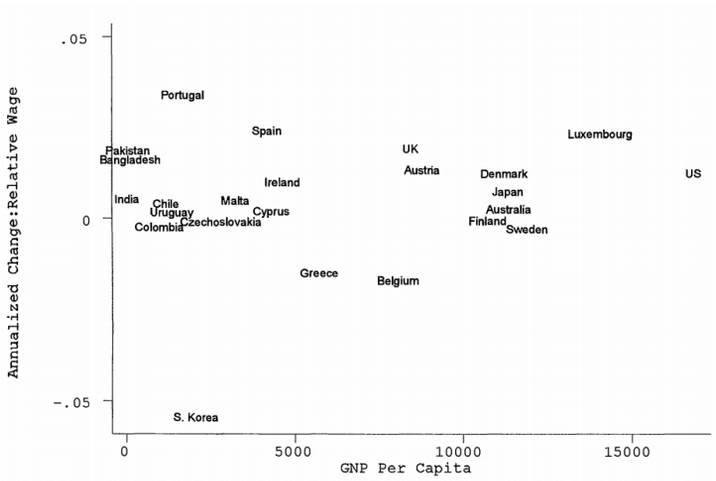


Figure 4-5. Trend in Skill Demand and Relative Wage

This trend continues to the 1980s. [Figure 4-6] is from Berman, Bound, and Machin (1998). It shows that Korea was almost the only country that experienced a falling relative wage of nonproduction workers to production workers in the 1980swhen both advanced and developing countries underwent skill-biased technological change. As

Berman et al. (1998) and Helpman (2017) mentions "the exception of Korea" in their discussion, the Korean case is very unique. It seems certain that the supply of skilled labor increased very fast. It is necessary to find the factors of such a drastic increase. One can suspect that rapid expansion of the secondary and tertiary education would have played a role, but it is beyond the scope of this paper. Instead, I focus on the associations of industrial change and the labor market outcomes.



Source: Berman et al. (1998)

Figure 4-6. Relative Wages and GNP per capita in the 1980s

It is well known that Korea's Industrial policy shifted from the export-led industrialization in the 1960s to the heavy-chemical industrialization (HCI) in the 1970s. There was little industry targeting in the 1960s. Exporting industries were where Korea had a comparativeadvantage. But as the HCI drive kicked off around 1973 for military purposes, the government used various policy tools, such as tariffs and subsidies, targeting at key industries that have a close relationship with military production. This means that the government was willing to select strategic sectors at the expense of short-term productivity and efficiency. Contrasting patterns in skill premium around 1973 may reflect this policy shift and changing composition.

[Figure 4-7] illustrates the changes in relative demand and wages of "exporting industries" and "import-competing industries" in the 1970s. I followed Cheon (1999)to define industry groups.[3] Generally speaking, the "exporting" group represent the main industries in the 1960s with high productivity, whereas the "import-competing"group represent the HCI-related industries. [Figure 4-7] clearly shows that skill upgrading was

3) KSIC codes of Exporting industries: 321, 322, 323, 324, 390, 355, 381, 383, 384
Import-competing industries: 351, 372, 382, 385

faster in exporting industries that had low initial nonproduction share and accumulated capital at a faster pace. Skill demand also increased in exporting industries, but the increase was much smaller than that of import-competing industries. As the supply of skilled labor expanded in the 1970s, relative wage fell in both groups. But the decline was greater in the exporting industries, probably due to weaker skill demand than import-competing industries.

This observation highlights the importance of common changes. Skill demand increased in all industries, it had a positive effect on relative wages. Likewise, because the rapid expansion of supply also affected all industries, skill premium fell in both groups, despite significant differences in skill demand and relative wages. So the common factors dominate the "between"factors. But even if there was a role of changing the industrial structure, it can be said that it did not contribute to reducing wage premium and inequality, because the HCIs had greater skill demand thus paid a higher wage premium.

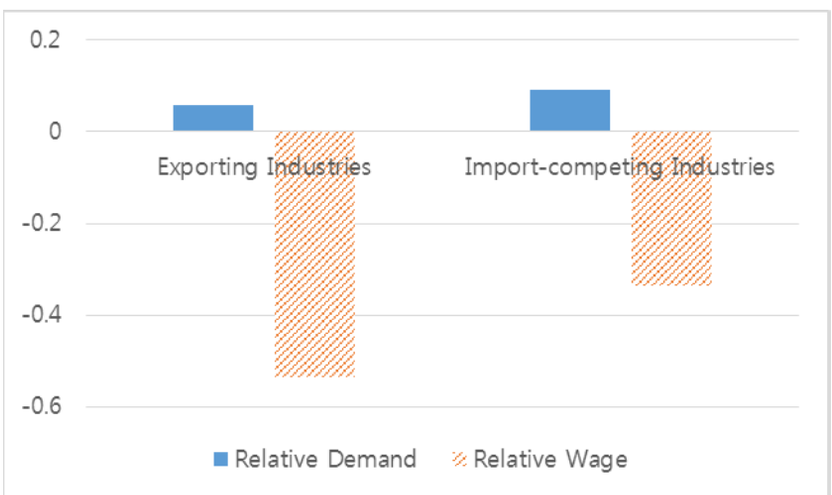


Figure 4-7. Change in Relative Demand and Relative Wage in the 1970s, by Trade Classification

Conclusion

This paper constructed a 3-digit industry-level dataset that covers 1955-1980 to observe the evolution of skilled labor demand, measured by the share of nonproduction workers in the wage bill, and their relative wages.

Analysis results suggest that Korea experiences drastic skill upgrading during its rapid industrialization. The nonproduction workers' share in wage bill increased throughout the

25 years of 1955-1980. Relative demand rose much faster in industries that were initially less skill-intensive but accumulated capital through investment faster. This implies that there was a strong skill-capital complementarity.

Increasing skill demand and skill-capital complementarity are a force of increasing skill premium in wages and wage inequality. It was so until 1973. However, since then relative wages fell while skill demand kept rising. This is unique to the Korean experience, It also implies that the supply of skilled labor expanded even faster than the skill demand. Although it is possible to connect this to the heavy-chemical industrialization, falling skill premium and inequality was most driven by the "within"or common effect. Furthermore, emerging heavy-chemical industries had greater skill demand, therefore a positive effect on relative wage.

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