Analysis of Structure of Korean Female Labor/ Labor Market: The Gender Difference of Wages & Job Trainings

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Abstract

There have been plentiful papers investigated the gender difference of labor market outcomes. Some of experts argued it is historically true that female is weak in the market as their nature. However, the gender differences in labor outputs wouldn’t come from their own decision. Data of job training for Korean female shows strong evidence of this circumstance. Given this evidence lead us to consider market structure and rule of decision making in this market as an institution would render a fine intuition to help understand the puzzle of structure of labor market in Korea with regarding female labor. Through the model I try to incorporate systematic problem of female labor market with decision process of an employee and an employer. In order to do so, I took the child care support as a crucial variable in the model. The model shows interesting result that if employers support female labor then the probability of be in labor market is increase and it affect on wage and profit in positive way. It implicitly explains why Korean female labor has lower proportion of job training and wage compare to male.

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I. Introduction

Investigation of gender difference in labor market and labor market outcomes is one of the substantially important subjects in labor economics. Since 1980s along the decline of gender gap of education and increase of female labor participation rate, many researches on this area have been developed well theoretically and empirically. And most of them have been showing that important factors that used to determine labor market outcome couldn’t explain this gender difference.

Since 1960s, many firms and public institutes have provided job training programs not only to increase labors’ productivities but also to encourage the poor to get jobs. It is true that initially job training itself was not designed in order to fix gender bias in labor market. However, it became a crucial factor that might explain the gender difference in labor market. In other words, female could improve their labor outcomes through the job training. However, since it is offered by the employer, it is also possible that to obtain job training itself could cause the gender difference in a particular way.

In general many experts believe that job training for female could play a significant role for repairing labor market that used to be in favor to male. In this sense we could reappraise job training with different respects from the conventional point of view. That is, increasing job training would not only accumulate human capital but also give them supplements or desired skill that female has been missing in their previous education. Therefore, it could provide more opportunity for getting new job to female, or help her to create new ability in a way that labor market more appreciates. Furthermore this “functionings” of job-training could be more extended in terms of gender aware prospective. However, we shouldn’t hide the fact that job training is the one of instruments that plays along the labor market. In that sense, if the labor market, or society per se, is distorted, then it is possible that functioning of job training would be contaminated as well in the certain manner.

In order to support the functioning of job training based on understanding the possibility of distortion of the direction of job training of female in labor market, we need to reconsider the structure of labor market in Korea more carefully. And this recognition lead us to come up with adequate understanding of Institution and institutional intervention in female labor and labor market in Korea.

In this paper, I scrutinize how Korean female job training is working and what is problem with them so far. Data of job training for Korean female, Korea Labor Income Panel Study (KLIPS: 1998-2005) that I have considered shows strong evidence of circumstance which I have
suspected. Based on theoretical consideration of institution, I come up with micro based model involving the interaction between an employer and an employee, I try to incorporate systematic problem of female labor market with decision process of an employee and an employer, particularly with opportunity of having a job-training. In order to do so, I take the child care support as a crucial component of institutional intervention in the model. The model shows interesting result that if employers support female labor, then the probability of be in labor market is increased and it affects on wage and profit in positive way. It implicitly explains why Korean female labors have lower proportions of job trainings as well as wages compare to male.

In the following session, I will describe the situation of female labor and labor market with descriptive data. Through considering the structure of labor market in Korea, we could better understand the status of job training for Korean female. Simple empirical analysis in third session would help to get strong evidence of the problem of job training in Korean female. Through the theoretical discussion about Institution/ institutional intervention in fourth session, in fifth session I will show the micro economic model to prove alternative why to understand the structure of Korean labor market and job training and also try to give a solution. Lastly I will conclude and bring remain questions at the end of this paper.

II. Structure of Job-Training in Korea

II.-1 The Characteristics of Korean Female labor & labor market

Since industrialization and modernization of Korea in 1960s, the participation rate of Korean female labor has been continuously increased. But the structure of female labor market is still biased and vulnerable in the unfavorable manner to female. Most main reasons are the discontinuity of female labor supply, the characteristics of female’s preferred jobs, gender biased custom of employment and lack of accumulation of human capital of female labor. Following characteristics of Korean Female labor and labor market indicate how female labor market works.

The first, participation rate of high educated female labor is lower than other countries. As we have seen, the participation rate of female labor had been increased since 1960s. The changing structure of industries and market condition, moving from manufacture to services industry, and increasing professional job cooperated with delicate skill, encouraged many female labors to get into labor market. But unfortunately this trend has got slow since 1990s and these days it is sluggish in some point. And it affects current situation of Korea female labor in general. [Table
II-1] shows that the changing the participation rate of female labor are stagnated in some point. About the unemployment rate, it is lower than male’s but it is because many females are still out of labor force.

The second, the discontinuity of female labor supply hasn’t been getting better in labor market. Especially for high educated female labors, the rate of re-enter the labor market is very low. Mainly it is because the child care systems are still very infirm in Korea labor market. Without well-organized child care system, it is hard to find job after having their children. And it prevents accumulating working experience as well. It is hard to expect them to accumulate human capital in this situation. Consequently it influences their future labor activities.

<Table II-1> Changing of Participation rate, Rate of employment and Rate of unemployment by gender

<table>
<thead>
<tr>
<th>Year</th>
<th>Participation rate</th>
<th>Rate of employment</th>
<th>Rate of unemployment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>2000</td>
<td>74.4</td>
<td>48.8</td>
<td>70.7</td>
</tr>
<tr>
<td>2001</td>
<td>74.3</td>
<td>49.3</td>
<td>71.0</td>
</tr>
<tr>
<td>2002</td>
<td>75.0</td>
<td>49.8</td>
<td>72.2</td>
</tr>
<tr>
<td>2003</td>
<td>74.7</td>
<td>49.0</td>
<td>71.9</td>
</tr>
<tr>
<td>2004</td>
<td>75.0</td>
<td>49.9</td>
<td>72.0</td>
</tr>
<tr>
<td>2005</td>
<td>74.6</td>
<td>50.1</td>
<td>71.6</td>
</tr>
</tbody>
</table>

Source: Department of Statistics (Each Year), KOSIS

The third, temporary jobs and irregular jobs have been increased in female labor. Although the proportion of female labor has been increased, but, since many of them are unskilled labor and placed on indecent position in labor market, their final jobs prone to be temporary and irregular jobs. It is getting serious since Financial Crisis in 1997, because many labor policies were changed in order to increase the flexibility of labor market. And many firms took the advantage of this policy change. Obviously temporary job doesn’t guarantee their social security associated with their job it contaminated job securities of Korean labors, especially female labors. It also discouraged female to get out of their home.

<Table II-2> Summary of labor force in Korean labor market

<table>
<thead>
<tr>
<th></th>
<th>total</th>
<th>male</th>
<th>female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population of labor force</td>
<td>24,267(100)</td>
<td>14,101</td>
<td>10,166(41.9)</td>
</tr>
<tr>
<td>Employment</td>
<td>23,484(100)</td>
<td>13,588</td>
<td>9,896(42.1)</td>
</tr>
<tr>
<td>No of employee</td>
<td>15,730(100)</td>
<td>9,075</td>
<td>6,655(42.3)</td>
</tr>
<tr>
<td>Self-employed,</td>
<td>7,754(100)</td>
<td>4514</td>
<td>3,242(41.8)</td>
</tr>
<tr>
<td>employed without payment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No of employees by size of employment ('04)</td>
<td>More than 1(1,382,768)</td>
<td>11,130(100)</td>
<td>6,893</td>
</tr>
</tbody>
</table>
No of employees by size of employment('04) | More than 5(471,033) | 8,874(100) | 5684 | 3,190(35.9)
---|---|---|---|---
Source: in 2006. 5, Number of firms in parenthesis, ( ).
: Department of Statistics (2006), KOSIS DB
Department of Labor (2004), Summary of Employment by firms

<Table II-3> The Changing of wage in Year by gender (Unit: won)

<table>
<thead>
<tr>
<th>Year</th>
<th>Average</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1,313,910</td>
<td>1,473,789</td>
<td>954,292</td>
</tr>
<tr>
<td>2001</td>
<td>1,393,059</td>
<td>1,558,940</td>
<td>1,015,178</td>
</tr>
<tr>
<td>2002</td>
<td>1,532,750</td>
<td>1,716,024</td>
<td>1,112,457</td>
</tr>
<tr>
<td>2003</td>
<td>1,651,100</td>
<td>1,850,106</td>
<td>1,206,802</td>
</tr>
<tr>
<td>2004</td>
<td>1,750,421</td>
<td>1,957,976</td>
<td>1,286,258</td>
</tr>
</tbody>
</table>

Source: Department of Statistics (Each Year), KOSIS

The lastly, female labors tend to have lower quality jobs and lower wage compare to male. As we can see from [Table II-3] female wage has been rising continuously but it is still low even lower than average. Also we can find other facts that many females are working in food services & accommodations, finance & insurance companies, education, health & social services and home care services rather than transportation, construction, trade and international works which are high value added and high skilled jobs. As many labor economists have been pointed out, this job segregation in labor market is the fundamental problem of gender biased labor market. Obviously it affected their wages per se. The wage gab between male and female has been decreased slowly but it sill exists in Korea labor market and get even more serious as job segregation take the solid position in Korean labor market.

In sum, there is no doubt that female labor market and labor in Korea has been changed along industrialization and modernization in Korean society. However, it has still fundamental problems and we could find many evidences that it has been deteriorated after passing Financial Crisis in 1997.

Numerous experts suggest that post training/job training would be one of ways to figure out this gender discrimination in labor market. Based on the accumulation of human capital theory it is possible to fix those problems in a way that post training would give more opportunities to female develop the skills and help them get into labor market and get them higher wage. Fortunately there has been dramatic increasing of job training program in Korea right after 1997. In next section, I will look into the structure of job training in general and try to capture the characteristics of job training especially for Korea female / female labor.

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II.-2 The Situation of Job-Training for Korean Female

Most of job-Trainings in Korea are conducted by Organization of Insurance of employment and public job training institutes. The Organization of Insurance of employment has been launched right after Financial Crisis in 1997 in order to solve the problem of unemployment and labor instability. Their main projects are focusing on job stability & vocational training, insurance of unemployed & partial supporting of temporary rest for child care. The vocational Training is consisted of job training for employed and unemployed. For the employed (OJT), the organization supports employer and emplooyee for job trainings in general (general OJT) or supports partial wage, 150% of minimum wage, for employees in job training. It also supports cash for employees who wish to get job training and it cover 80% of cost of job training. Generally the general OJT takes short time period, less than 1 month, for the complete training and job training with partial wage takes 1-3 months in average. For the unemployed, there are two different supports. First one is for the unemployed who were insured in unemployed insurance and list their name on searching job in certain institutions. Second one is training for preferred jobs in which job trainings under the lack of supplied are trained for mostly young people.

<TableII-4> Participation rate of lifelong education & job training

<table>
<thead>
<tr>
<th></th>
<th>Korea</th>
<th>United State</th>
<th>United Kingdom</th>
<th>Denmark</th>
<th>Average of OECD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation rate of lifelong education</td>
<td>21.6</td>
<td>39.7</td>
<td>43.9</td>
<td>55.7</td>
<td>35.6</td>
</tr>
<tr>
<td>Participation rate of Job training involving related works</td>
<td>14.3</td>
<td>44.3</td>
<td>49.5</td>
<td>52.5</td>
<td>37.1</td>
</tr>
</tbody>
</table>

Source: OECD(2005), Education at a Glance
OECD(2004), Ageing and Employment Polices, Korea

In the case of general OJT and support with partial wage, whether employee could participate in job training depends on decision of employer. [Table II-5] shows the general tendency of these job trainings. As we can see, in the case of general OJT, even the participation rate of female labor was increased from 14.1% in 2001 to 21.1% in 2005 it is still lower than male participation rate. In the case of job training with partial wage, the rate is even much lower, it was 6.8% in 2001 and in 2005 it was only 8.9%. On the contrary, the participation of job training with cash-support depends on individual’s decision. And in this case female participation rage is over 60%, it is quite different from former two cases. More precisely, in 2003 the female
participation rate of this job training was 60.8% and it has been increased more, 62.6% in 2005. Most of job training in this case, it takes less than one month.

<Table II- 5> Transition of job training programs

<table>
<thead>
<tr>
<th>Year</th>
<th>Job Training on the Job (OJT)</th>
<th>Job Training for unemployed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General OJT</td>
<td>JT with partial payment</td>
</tr>
<tr>
<td>2001</td>
<td>Total</td>
<td>754</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>647</td>
</tr>
<tr>
<td></td>
<td>% of total</td>
<td>85.8%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>% of total</td>
<td>14.1%</td>
</tr>
<tr>
<td>2002</td>
<td>Total</td>
<td>1,831,773</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>1,490,867</td>
</tr>
<tr>
<td></td>
<td>% of total</td>
<td>81.3%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>340,906</td>
</tr>
<tr>
<td></td>
<td>% of total</td>
<td>18.6%</td>
</tr>
<tr>
<td>2003</td>
<td>Total</td>
<td>2,029,378</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>1,637,145</td>
</tr>
<tr>
<td></td>
<td>% of total</td>
<td>80.6%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>392,233</td>
</tr>
<tr>
<td></td>
<td>% of total</td>
<td>19.3%</td>
</tr>
<tr>
<td>2004</td>
<td>Total</td>
<td>2,319,339</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>1,854,673</td>
</tr>
<tr>
<td></td>
<td>% of total</td>
<td>79.9%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>464,666</td>
</tr>
<tr>
<td></td>
<td>% of total</td>
<td>20.0%</td>
</tr>
<tr>
<td>2005</td>
<td>Total</td>
<td>2,914,836</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>2,298,465</td>
</tr>
<tr>
<td></td>
<td>% of total</td>
<td>78.8%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>616,371</td>
</tr>
<tr>
<td></td>
<td>% of total</td>
<td>21.1%</td>
</tr>
</tbody>
</table>

Source: Institute of Korean employment information Source, each year.

Based on data, the types of job training seem to have similar tendency in all these cases. That is, proportion of trainees attending ‘office work program’ ranked in the highest for both of male and female, and finance and insurance work was followed it. It implies that the job training in Korea is too much preponderated on general office work or skills of management. Hence we could notice that this unbalanced training type would have been generating a crucial bias of policy of job training in general.

About the job training for the unemployed, general job training for unemployed has high proportion of female trainees compare to job training for the first preferred jobs. Even though the
The proportion of female trainees has been increasing, it is still quite small compared to male trainees. Because of the main purpose of this training, secondary school counts for most of trainees. In general it takes 6-12 months for completing training but it has become to take longer time, more than 1 year. As same as OJT, this job training also has overbalanced on certain type of job training, for instance, male trainees tend to get skill for heavy machine for construction and female trainees tend to get skill for communication & data management.

The second important part of job training is conducted by public job training institutes. These institutes focus on training of manufacture and communication & informational industry. By law, government support all cost of training and expense that related with trainee’s living. Mostly job trainings in these institutes take 1 or 2 years and most of trainees are young people. Similar to job training for the first preferred jobs, the participation rate of female in public job training is very low, less than 20%. And also the type of job training also narrows down to the certain types, applied fine art, design, tourism or office management.

<Table II-6> Summary of participation in public job training (for Multiple skill & technician)
(Unit: person, %)

<table>
<thead>
<tr>
<th>Program of multiple skill</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>9,127</td>
<td>100.0</td>
<td>9,799</td>
</tr>
<tr>
<td>Male</td>
<td>7,831</td>
<td>85.8</td>
<td>8,568</td>
</tr>
<tr>
<td>Female</td>
<td>1,296</td>
<td>14.2</td>
<td>1,231</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6,825</td>
<td>100.0</td>
<td>6,416</td>
</tr>
<tr>
<td>Male</td>
<td>5,934</td>
<td>86.9</td>
<td>5,671</td>
</tr>
<tr>
<td>Female</td>
<td>891</td>
<td>13.1</td>
<td>745</td>
</tr>
</tbody>
</table>

Source: College of Korean Poly-tech. (2006)

From the general characteristics of job training in the above, we could point out the several features of job training for Korea female/ female labor.

First, as we saw, does the more job training rely on individual’s decision, we could see the higher participation rate of female/ female labor in the job training. It implies that we could possibly argue that even if female’s willingness to participate in job training is high but reality of labor market does not support them.

Second, as same as labor market, there are serious segregation of job training between male and female. Even though it is not much serious in job training on the job cases, in the most of job training for unemployed or public job training cases male trainees tend to get value added

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2 College of Korean Poly-tech. (vocational college), Human Resource Development in Korean
and high skilled job training, however female trainees tend to get training of simple services, low skilled and traditional homemaking jobs. It is not difficult to lead us to imagine this segregation could be crucial reason of job-segregation in the labor market in general.

Third, the most favored types of job training for female tend to be short time program. For instance, applied fine art, design, tourism or office management, these trainings can get completed in a short time. It is because most of female face the problem of house works and child care, therefore given their physical and economical constrain, their choice has to be limited. As we could see this is not just a simple personal problem but it is social problem, that is lack of infra structures for female labor due to a lack of appreciating of social reproduction.

From three characteristics, we could clearly see Job training of Korean female is distorted in favor to male as way labor market is. That is, gender blinded job training couldn’t fix the nature of market and their failure of gender biased labor market outputs, even job training is to be designed to fix it. In the next section, I develop and apply the model that comprises the behavior of economic players in labor market. And try to show making effort for institutional/ systematical support of child care/home care would matter to abbreviate the problems in Korean female labor market.

III. Review of Empirical Evidences

Previously I went over the situation of female labor and labor market in Korea with descriptive data. This indicated that there are serious inequalities of labor market outputs between female and male in Korea. Even we noticed that there have been many trials in order to fix this, for instance, encouraging job training on female labors, however it seems that this efforts does not work very well in many ways. The descriptive data might be the useful way to show the big picture of problems when they come out at the surface. However, it doesn’t get into deep inside of consequences or correlation behind them. Often times, empirical analysis carries out convincible evidence, and it might help us make sure in certain relationship. In order to get empirical evidence for job training and labor outcomes between male and female labor, I utilize Korean Labor Income Panel Study (KLIPS) in 1998-2005.

3 Some of the result and methodology in this part partially relies on results from paper “Reappraising the Job-Training Effect on Labor Market Outputs of Korean Women II: with Fixed and Random Effect Models” by Son, Jaehee, 2007. For any further question about other details regarding this part, please refer the paper.
KLIPS is a longitudinal survey of household and individuals mainly residing in urban areas in Korea. It contains economic information of labor market and income activities as well as comprehensive individual information. Since 1998, Korea labor Institute (KLI) has been collecting the survey and generating data set every year. In principle, it has been keeping about 5000 households and 11,000 individual in each year. So far the rate of maintaining original household in this data set is average 79% each year. With comparing with panel data set in other countries, it seems that KLIPS is reasonably reliable as a panel data. Because of the dropouts, the data set is unbalanced in each year. For along with the purpose of this paper, I keep observation in average N=4000 for female of age 15-66 and N=3500 for male with same range of age in each year in this empirical analysis.

KLIPS is extensive and general social & labor market outcome survey data set. Frankly speaking, KLIPS is not a specially designed data set for a specific job training program. In other words, job training itself is just one of any other components, not a key variable in this data set. It, however, has detailed information of various labor activities as well individual & household information, hence we can take the advantage of utilizing useful information in order to control other influences that around job training. Although job training itself is not a main variable in this data set, it provides detail enough source of job training program. For instance, except 3rd year (2000), every year survey has job-training variable as well as other information which related to detailed job-training, such as training’s types, period, main supporters, objective, subjective of cost etc. Therefore, it is reasonable to insist that KLIPS is quite relevant in analyzing the possible impacts of job-trainings on labor market and labor market outcomes.

With this rich data set, I try to measure the effect of job training of male and female on wage rate by using random effect and fixed effect model. In order to make comparable with two models, I modify the random effect model. More precisely, I include group dummy variable in random effect model. The detailed models are following.

\[
\text{Basic Panel Model: } \quad y_{it} = x_{it} \beta + c_i + u_{it} \quad (1)
\]

\[
\text{Fixed Effect Model: } \quad y_{it} = a + d_{it} \delta + x_{it} \beta + c_i + u_{it} \quad (2)
\]

\[
\text{Random Effect Model: } \quad y_{it} = a + g_i \delta + d_{it} \delta + x_{it} \beta + c_i + u_{it} \quad (3)
\]

where \( g_i \) is group dummy variable (if \( g_i = 1 \) then, treated group; if \( g_i = 0 \) then, controlled group), \( d_{it} \) is dummy variable for individual job training in each year.
### Table III-1: The Results from Random effect & Fixed effect Model

<table>
<thead>
<tr>
<th></th>
<th>On the Job Training</th>
<th>Job Training in Public Training Center</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Random Effect</td>
<td>Fixed Effect</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>InWAGERATE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JT_ever^2</td>
<td>0.069**</td>
<td>0.146**</td>
</tr>
<tr>
<td>(Stand. Error) ^4</td>
<td>(0.018)</td>
<td>(0.023)</td>
</tr>
<tr>
<td>JT_current^4</td>
<td>0.079**</td>
<td>0.064**</td>
</tr>
<tr>
<td>(Time)</td>
<td>(0.013)**</td>
<td>(0.019)</td>
</tr>
<tr>
<td>Time_square</td>
<td>-0.016**</td>
<td>0.000</td>
</tr>
<tr>
<td>Age</td>
<td>(0.001)</td>
<td>(0.008)</td>
</tr>
<tr>
<td>Age_sq/100</td>
<td>0.008**</td>
<td>0.006**</td>
</tr>
<tr>
<td>Secondary Edu. ^5</td>
<td>(0.001)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>College Edu.</td>
<td>0.119**</td>
<td>0.046*</td>
</tr>
<tr>
<td>Age</td>
<td>(0.027)</td>
<td>(0.027)</td>
</tr>
<tr>
<td>Upper Col. Edu.</td>
<td>0.304**</td>
<td>0.269**</td>
</tr>
<tr>
<td>Married</td>
<td>(0.041)</td>
<td>(0.056)</td>
</tr>
<tr>
<td>No. of family members</td>
<td>0.107**</td>
<td>0.015</td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
<td>(0.265)</td>
</tr>
<tr>
<td>No. of family members</td>
<td>-0.001</td>
<td>-0.016**</td>
</tr>
<tr>
<td>Child less than year 3</td>
<td>(0.004)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Child less than year 7</td>
<td>-0.011</td>
<td>0.033</td>
</tr>
<tr>
<td>Child less than year 17</td>
<td>(0.012)</td>
<td>(0.021)</td>
</tr>
<tr>
<td>Constant</td>
<td>-3.027**</td>
<td>-2.549**</td>
</tr>
<tr>
<td></td>
<td>(0.103)</td>
<td>(0.115)</td>
</tr>
<tr>
<td>No of Obs.</td>
<td>13866</td>
<td>9248</td>
</tr>
<tr>
<td>No of groups</td>
<td>2923</td>
<td>2452</td>
</tr>
<tr>
<td>No of Obs. in treated group</td>
<td>4063</td>
<td>2040</td>
</tr>
</tbody>
</table>

Note: 1. Each model also includes several covariates, such as dummy variables of regions in Korea, working experience (months), employment type (regular/irregular job), industries, and occupations.
2. I separate the type of job training, therefore each model focus on only On the job training (Job training in the working place) or job training in Public Training Center.
3. “JT_ever” stands for a dummy variable, =1 if one has ever had job training since 1999.
4. “JT_current” stands for a dummy variable, =1 if one took job training in certain year.
5. In the fixed model, the coefficients of education dummy variables show odd results. It is mostly because of the few variation over the time in the data set.
As I mentioned previous session, Job training may be divided two types, Job Training on the working place (On the Job Training) and Job Training in Public Training Center. In this analysis, I measure separately the effect of job training by these two different types. [Table III-1] shows the results from two models. As we can see, both of the effects of on the job training of male and female are positive and statistically significant. The effect of male, however, is much higher than one of female. This difference is even bigger in Fixed Effect model. With Job Training in Public Training Center, the effect of male job training is a statistically significant and positive, however the effect of female job training is quite smaller than one from male and it is not statistically significant.

Besides of effect of job training, we can see interesting results from other covariates. For instance, in random effect we can see large magnitude of marriage premium on wage rate in male case and it is statistically significant. However it is not a case in female. Note that the result from Fixed Effect is quite different from Random Effect Model, but we might need to count on the possible bias from few variations of data with using Fixed Effect Model.

Similarly, number of family members is not substantial in wage rate of male, however it is in wage rate of female. More precisely, for the male wage rate, the number of family members is not a crucial factor, however having many family member affects negatively on female wage rate.

From this simple empirical analysis, we can clearly see the effect of job training is different from male and female labor in the case of On the Job Training as well as in the case of Job Training in Public Training Center. And this difference is getting worse in Public Training even if the proportion of female trainees is higher than male. And these results are not surprising to us since we have already seen several evidences from descriptive data in previous session.

From the result of positive effect of job training of female labor, we can assure that the job training is worthy to improve female wage rate. Therefore it might be true that the differences of effect between male and female is driven by unequal distribution of numbers as well as quality of job training and this consequence is firmly related with the structure of labor market in Korea.

If there is possible way to improve female wage rate but if this way does not work as much as what it is supposed to do, then we got to find the reasons and got to fix it in better way. Descriptive data and empirical analysis provide clue of alternative way to solve this problem. In next session, we will discuss about the sufficient and valid theoretical ground of alternative solutions.

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4 This result also little different between random effect and fixed effect model. We would find the reason for that as same as discussion of effect of marriage status.
IV. Role of Institutions and Institutional intervention in Female Labor Market

Understanding Institutions

For the sake of deep studying on structure of female labor and labor market, we cannot avoid the existence of institutional intervention in the market. Furthermore, if we want to look at the deep inside of labor market and the way it works, it would be helpful to consider the market with different point of views. In fact, it would be more crucial especially for understanding of female labor, because we have to deal with female labor not just as a factor of production process but an important agent for reproducing our society. Often times we ramble in vague market structure that seems to be mixing together. In this sense, better understanding of female labor market with consensus of their unique characteristics and social relationships might require thinking on labor market as an institution. In doing so, we could see the structure of female labor market more clearly and interpret the institutional intervention correctly.

Discussion about institution is not a brand new topic in economics. The history of studying on institution in economics is more than 100 years and there are many different definition of institution has been prevailed in various areas of economics. It would not be hard to see the reason why it has been one of main topics in economics. As Hodgson clearly says, “All long-term economic problems are essentially structural and institutional: Institutions affect not only the framework of economic growth but also the ideology and culture which prevail in society, plus the purposes and goals to which people aspire.” No one could deny the fact that understanding of institutions would be one of the key words in solving difficult questions regarding human development.

In the modern labor, welfare, or even macro economics, however, understanding institution/institutions seems to be quite simple. What they usually do is to consider the institution as an exogenously given factor in certain economy and analyze its effect on economic activities in terms of efficiency matter. Although this unsophisticated understanding of institution, many economic theories have been suggesting that institutional difference should influence economic outcomes because they affect decision about work, saving, investment, innovation, production,

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5 Hodgson, Economics and Institutions, p 271
and exchange. Econometric analysis also supports those factors, and shows that different property right and different rule of raw affect economic outcomes in various ways.

These findings, however, doesn’t shows why those institutions play different roles in different societies and different economies over time. In other words, as Greif pointed out, “understanding the causal mechanism behind these findings requires going beyond identifying correlations between various institutional factors and outcomes of interest”. It is more important if we define institution as a motivations or incentives of the individuals to act and to believe in certain manner. In this sense, it might better to scrutinize how the interacting individuals are motivated and able to behave in a manner that manifests itself in various conditions rather than to reveal the influence of institutions on economic activities.

Although neo-institutionalism has provided the important conceptual and analytical framework of institutions in numerous economic contexts, it is hard to say that it focuses on motivation itself for its understanding of institutions. Often time it reckons economic institution as “political determined rules”. And usually these political determined rules enforced on economic agents by the polity. Some of neo-institutionalists, (Coase and Williamson etc.) have brought the concept of transaction cost, and analyzed institutions, such as political institutions or several interest groups. In their framework, economic agents choose contract with responding to rules and they establish new organizations through those rules in order to minimize the transaction costs. Thus people follow certain rules and contracts based on minimizing transaction costs, because these rules might impose punishment if they do not. In this sense, motivation might be taken as an exogenous in individual behaviors. However, if the rules of behavior are to have an impact, individual must be motivated to follow them. Because motivations, including expectations, beliefs, and even social norms, intimidates between certain social structure and behavior, whether the behavior is rational, imitative, or habitual. Therefore if we understand institutions as a certain rule flowed from the top, it doesn’t help to interpret accurately the role of institutions as a whole. Understanding institutions as a motivation is even more crucial when we count the effectiveness of state-derived rules. Because it strongly depends on motivating agents within the bureaucracy and judiciary in society to force them, therefore evaluating or scrutinizing the impact of the state-derived rules postulates the questioning about individual’s the motivation per se.

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6 Avner Greif, Institutions and the path to the Modern Economy, p 6
7 Blanchard and Wolfers (2000), Nickell (1997), Layard and Nickell(1999), etc. showed that bad employment performance cannot investigated in isolating one particular variable, it is generally associated with the presence of the characteristics of public policy and institutions.
8 Avner Greif, ibid p. 6
9 Avner Greif, ibid p. 8
Then, why does it so essential to understand institutions as the motivation of individual behaviors in labor market, especially for female? In order to answer this question, we have to remind ourselves *what is motivation*. As I mentioned before, motivation of individual behaviors constitutes with expectation, belief, as well as internal norms, such as social norms, in this context. And these expectation, belief, and social norms play a crucial role in female labor market. Female labor market follows the rules not only the profit maximization process but also follows certain game rule, such as certain expectation, belief, and social norms of female along with household, child care, and traditionally divided sexual role in society. And those certain expectation, belief, and social norms are embedded in both of female and male behaviors. These motivations drive economic activities and construct organization, such as labor market, in certain way. Usually, these motivations would be changed by interaction with different environments or some evolutionary process. However, if the society has been closed strongly enough, so that those motivations have been built in such a long period then, it might not easy to change already built-in motivations. For instance, Korean society has been changed quite a lot in several decades. Especially economical development has affected entire society itself. As I referred already in previous session, along this change many female has been encouraged to participate in labor market. However, rule of labor market in Korea still coheres to the certain expectation and belief on female. And those expectations and belief of female in labor market is hard to remove or even hard to adjust. Because those are associated with interest supporting patriarch dominating over Korean society. In this sense, Greif’s comments- institutions contribute to change only to the extent that they alter the interests and knowledge underpinning the prevailing rules - does make sense.

**Institutional intervention**

Indicating labor market as an institution would help to understand the structure and rule of it. And Identifying institution as a motivation of individual behaviors might provide the possibility of change of the rule of the market with various interactions, such as change in economic environments or change in demographics over time. However, as mention before, certain institutions could have the strong inertia to maintain certain rule. In this case, in order to change old one, we might need another motivation, such as institutional intervention. There are numerous debates about institutional intervention. Among them, the way Hodgson asserted the importance of institutional intervention is impressive.

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10 Greif, ibid, p9
More generally, it should be emphasized that institutional intervention has to be both broad and deep, to lead to some basic changes in social relationships and personal goals, if it is to have a chance of success in dealing with the kind of crisis which is affecting some of the stagnating economies of the western world. .....Despite wide differences in ideological viewpoint, remarkably similar conclusions have been reached. They all suggest that change has to be wide and substantial if it is to be effective\textsuperscript{11}.

What he has emphasized at the end of his book is the important role of institutional intervention and the way it has to go. In other words, his understanding of institutional intervention is not just injection of certain law by government but it is possibility of changes in rule in society and individual behaviors. Because as he acknowledged, institution is the rule of the relationship between individuals and individual and society and it is the motivation of making decision, institutional intervention would be one of the most plausible way to change the structure of organization, such as communities, society, or markets.

Interestingly, A. Sen himself also brought up this in his own works that related with women’s capability and human development. Even at the beginning of his book, Sen punctuates significance of the institutional intervention in his idea of human capability especially for developing women’s capability and empowerment.

The freedom of agency that we individually have is inescapably qualified and constrained by the social, political and economic opportunities that are available to us. There is a deep complementarity between individual agency and social arrangements. It is important to give simultaneous recognition to the centrality of individual freedom and to the force of social influences on the extent and reach of individual freedom\textsuperscript{12}.

He even more emphasized the significant role of institutional intervention with remarks on the end of his book.

A variety of social institutions-related to the operation of market, administrations, legislatures, political parties, nongovernmental organizations, the judiciary, the media and the community in general-contribute to the process of development precisely through their effects on enhancing and sustaining individual freedoms. Analysis of development calls for an

\textsuperscript{11} Hodgson, ibid, p 272
\textsuperscript{12} A. Sen, Preface xii.. Development as freedom
integrated understanding of the respective roles of these different institutions and their interactions. The formation of values and the emergence and evolution of social ethics are also part of the process of development that needs attention, along with the working of markets and other institutions\textsuperscript{13}.

Even through his work institution itself is understood in negative way - cultural, social and economic capital are embedded in certain knowledge and this knowledge supports institutional arrangement and female is rocked in this institutional arrangement.\textsuperscript{13}, Sen’s notion of role of institutional intervention would share the essence of institution and institutional intervention with headstone that we have in this paper. In other words, understanding social institutions and its practices with such a way that “are form of cooperative behavior that result in the reproduction of social relation over time”\textsuperscript{14} is enough to support our argument with institution/ institutional intervention in a way that understand them as a motivation of individual behaviors and decisions - main source of change in structure - in this paper. Reappraising institutional intervention based on apprehension of “institution as a motivation” might provide a room for analyzing Korean female labor market and Job training for female. As I mentioned before Female Labor market in Korea is operated by a hardly closed motivation. Any kind of social program could not work well in certain system with solid expectation or belief or social norms. Job training for female in Labor market in Korea is certainly one of those examples. If we understand institutional intervention as a new motivation and source of change in other belief or activity, it could justify the necessity of it in Korean labor market in order to rectify the structure. Following session, I will show these possibilities with using micro economics based model.

V. Analysis of Korean Female Job Training: With the Effect of Institutional intervention on Female Labor Market - A Simple Micro Model Approach

Through the previous session, we could see characteristics of female labor market and the Job training of Korean female. And we can summarize those factors as four following statements:

\textsuperscript{13} A. Sen, Development as freedom, p297
\textsuperscript{14} Marianne T. Hill, Development as Empowerment, Amarty Sen’s work and ideas edited by Bina Agarwal et. P 128
(1) Wage of female labors are lower than one of male in general.
(2) Participation rate of job training is lower in female than in male.
(3) The types of job training that female takes are limited to certain types.
(4) The types of job training that female takes are less market valuable or less value-added compare to one that male takes.

There are many reasons for these features and usually they are related with each other in a complicated way. In this session, however, I simplify the situation and build a very simple micro model in order to show how the problem occurs in job training and labor market for female labor in Korea.

This model is based on John M. Barron, Black, Dan A., and Loewenstein, Mark A.’s work (1993). More precisely, in the first period a newly hired worker completes his/her specific job training and s/he learns some value, \( \alpha \). In the second period, s/he will decide to stay with an employer, leave and try to find other employer who possibly gives more value to a worker, or get out of labor market and engages home products with certain probability, \( \eta \). In their original work, \( \eta \) is constant and exogenously given to model. In my model, however, I introduce an institutional frame into the probability of labor force attachment, \( \eta \). That is, now \( \eta \) is not just a constant and exogenous, but it is a function of institutional frame, for instance the child care system, or other raw for family care for person who necessarily involves with it. Hence in my model the participation rate of labor force depends on how much an employer wants to get this system in their work place with respect with their natural goal, maximizing profit. In the bottom line of my model is to show clearly why few female labors get into job training if it depends on employer’s decision rather than their willingness in the first place and why a female labor got certain specific job training that quit different from male could get and finally why a female labor gets lower wage than male does. As I mention, the reasons that involving these issues would be several, but I would like to point out the institutional frame would crucially matter through my model.

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16 Therefore, in their model they give high value of \( \eta \) because they treat female who tends to commit a low labor force attachment. In my opinion, however, it is very strong assumption. Probability of \( \eta \) really relies on other factors, like wage, social customs, social systems, etc.
Employee’s behavior

In this model, worker take a decision to leave labor force or switch his/her a job (an employer) if the life time utility associated with his/her current job is low relative to what s/he expects to receive elsewhere. Let $\alpha$ be the utility the worker receives each period from a job and certain specific job training. When a worker start to work in his/her first position s/he doesn’t know how much value of $\alpha$ would be, that is $\alpha$ is uncertain at the first period, but at the end of the first period, s/he will reveal the true value of $\alpha$ to him/her. And then before start to the second period, s/he will decide to stay or leave. More precisely $V(\alpha)$ is the worker’s discount lifetime utility when staying in the job after first period and $V(E)$ is the expected value of an alternative job or staying at home for home production. Therefore, if $V(\alpha) > V(E)$ (E is a previous experience), then s/he will stay, but if $V(\alpha) < V(E)$ then s/he will leave. As I mention before, I plays important role in worker’s decision of staying of labor market, that is, if I increases then the probability of leaving labor force, $\eta$ tends to decrease. Therefore in this model I assume that $\frac{\partial \eta}{\partial I} < 0$.

(1) $V(E) = w_1 + b(1-\eta(I))(\int_{\alpha}^\infty V(\alpha) g(\alpha) d\alpha + G(\alpha^*) V(E)) + \eta(I) h(I)$

Where $w_1$ is wage in first period and $h$ is the utility from a home production and it also function of $I$, that is $h$ has a positive relationship with $I$. this assumption is intuitively clear in sense that increasing institutional support not only increase the probability of labor attachment but also increase the utility of home product. $G(\alpha)$ and $g(\alpha)$ are distribution function and density function respectively since $\alpha$ is random variable.

And also we could write about $V(\alpha)$ and if they satisfy the certain condition $V(\alpha) = V(E)$ then we could get the equilibrium $\alpha^*$.

(2) $V(\alpha) = (w_p + \alpha)/(1 - b(1-\eta(I)))$

(3) $\alpha^* = V(E)(1 - b(1-\eta(I)))/w_p$

, where $w_p$ is the wage that a worker gets after job training.

We can rewrite the equation (1) as

---

17 Now we could interpret $G(\alpha)$ as a probability of quit the job. If a worker has high value of $G(\alpha)$, then he has low cost of turnover and an employer has to pay high cost of turnover. In their paper, they argue that “if workers differ in their quit behavior, then employers will match workers with a lower quit probability to positions requiring more extensive training and a greater capital commitment.”, p344.
Employer’s behavior

Once an employer hired a new worker, he can get the $f_1$, marginal product in his first period on a new worker. And if a worker stays with him, then he can get $f_p$, post job training marginal product. And these marginal products depend on a worker’s previous experience ($E$), specific training ($S$), and the capital that associated with job training or certain position ($K$).

(5) $f_1 = f_1(E, S, K)$
(6) $f_p = f_p(E, S, K)$

$\left( \frac{\partial f_1}{\partial E} > 0; \frac{\partial f_1}{\partial S} < 0; \frac{\partial f_1}{\partial K} > 0 \right)$

An employer’s first period profit is now $f_1 - w_1 - C(I)$, difference between marginal product and the cost that he provides first period, wage and cost for supporting home care.

(7) $\pi_1 = f_1 - w_1 - C(I)$ where $\frac{\partial C(I)}{\partial I} > 0$

In doing so, from hiring a new worker, employer would expect following profit,

(8) $\pi = \pi_1 + b\pi_2$
$= f_1 - w_1 - C(I) + b\pi_2$

Finally we could write the expected profit from the second period.

(9) $\pi_2 = (1 - \eta(I))(1 - G(\alpha^*))[(f_p - w_2 - C_2(I)) + b\pi_3] + [\eta(I) + (1 - \eta(I))G(\alpha^*)]\pi$

Wage determination

Based on previous equations, we could get the equilibrium of wages.

(10) $w^*_1 = f_1 - C(I) + b\pi_2$, since $\pi = 0$
(11) $w_p = f_p - M(\alpha^*)$, where $M(\alpha) = 1 - \frac{G(\alpha)}{g(\alpha)}$, $M'(\alpha) < 0$
(12) \( \pi_2 = \beta(f_p - w_p - C(I)) \)

, where \( \beta \equiv \frac{(1-G(\alpha^*))((1-\eta(I))}{1-b(1-\eta(I))} \)

And, maximizing \( \pi_2 \) allows us to drive \( w_p^* \) and \( w_p = w_2 = w_3 = ... \)

Finally we could expect that a general human capital raises the wage of both new and experienced workers, \( \frac{\partial w_i}{\partial E} = \frac{\partial w_p}{\partial E} = \frac{\partial f_i}{\partial E} = \frac{\partial f_p}{\partial E} > 0 \). Further more, job training would generate higher future wage and the returns of them would be higher than wage, as \( \frac{\partial f_p}{\partial S} > \frac{\partial w_p}{\partial S} > 0 \).

Effect of changing Institutional equipment for Child Care in the firm, \( \Delta I \)

Now, we can analyze the change of institutional equipments that an employer would bear a cost of them.

The first, the effect on post training profit would be ambiguous. In other words, if worker with a lower exit probability are more likely to change employer, but still has a longer expected tenure of that job, \( \frac{\partial \beta}{\partial \eta} < 0 \) since the lower \( \eta \), the less is that likelihood that the worker exits the labor market. (Or the higher \( \eta \), the greater is the likelihood that the worker exits the labor market: exit effect.\(^{18}\)) In this model, an employer has to involve with the entire cost of \( I \). Therefore, the effect of post profit is depends on sensitivity of cost that an employer has to pay with respect with \( I \).

\[
\begin{align*}
\left( I \right) \quad \frac{\partial \pi_2}{\partial I} &= \frac{\partial \beta}{\partial I} (f_p - w_p - C(I)) - \beta \frac{\partial C(I)}{\partial I} \\
&= \left( - \right) \left( - \right) \left( + \right) \left( + \right) \left( + \right) \left( + \right) \\
&= \left( - \right) \left( - \right) \left( + \right) \left( + \right) \end{align*}
\]

\(^{18}\) Barron, Black, and Loewenstein explain that there is another effect, shopping effect, a worker with lower \( \eta \) would more likely to change their job in order to seek another job that gives more value so that gives him higher possibility to stay in labor market. But in their paper, they showed exit effect is stronger than shopping effect (1992). In this paper, I take their arguments.
However, if \( \frac{\partial C(I)}{\partial I} \) is small enough then \( \frac{\partial \pi_z}{\partial I} > 0 \). That is, if cost of \( I \) is small enough, increasing of \( I \) would decrease probability of \( \eta \) and decline of \( \eta \) would lead to high profit to employer.

The second, the effect on post wage would be positive as I show below.

\[
(II) \quad \frac{\partial w_p}{\partial I} = -\frac{\partial M(\alpha^*)}{\partial I} = - \frac{\partial M(\alpha^*)}{\partial \alpha^*} \frac{\partial \alpha^*}{\partial \eta(I)} \frac{\partial \eta(I)}{\partial I} = -(-)(-)(-) > 0 \quad \text{since } M'(\alpha) < 0 \text{ and } \frac{\partial \alpha^*}{\partial \eta(I)} < 0
\]

The third, effect on initial wage would be ambiguous as same reason from effect on post profit.

\[
(III) \quad \frac{\partial w_i}{\partial I} = -\frac{\partial C(I)}{\partial I} + b \frac{\partial \pi_z}{\partial I} = -(+)\quad (-)\quad (+)\quad
\]

However, again, if \( \frac{\partial C(I)}{\partial I} \) is small enough, then we could get a positive effect, \( \frac{\partial w_i}{\partial I} > 0 \).

It implies that if an employer increases \( I \) then workers are most likely decrease probability \( \eta \), that is, get a strong commitment with staying labor force, then it turns out increasing wage in the first period.

The lastly, if with having less amount of \( I \) a worker more likely be less attached to the labor force and because workers who are less attached to the labor force have lower expected tenure, the joint gains of employers and workers are maximized when workers with a stronger labor force attachment are matched to jobs that require more specific training and utilize more capital\(^{19}\). In other words, if a worker prone to be out of labor force, an employer likes to place him/her jobs that doesn’t necessarily have job training or more capital. And given assumption of

\[\text{Barren, Black, and Loewenstein 1993, p350. Based on their work, if training and capital are complements, } \beta^2 f(I) K T \dot{S} + \beta \dot{\alpha} f(I) p K T \dot{S} \geq 0 , \text{ then workers with greater labor market attachment will be sorted into jobs with more training and more capital.}\]
model in this paper, the less have the equipment for home care in the work place, the more a worker, more likely female worker, decides to leave from labor force and stay at home.

\[
(IV-a) \quad \frac{\partial \pi}{\partial S} = \frac{\partial \pi}{\partial \eta} \cdot \frac{\partial \eta}{\partial S} = \frac{\partial f_1}{\partial S} + \beta \frac{\partial f_p}{\partial S} \geq 0 \quad \text{therefore,} \quad \frac{\partial \eta}{\partial S} < 0
\]

\[
(IV-b) \quad \frac{\partial \pi}{\partial K} = \frac{\partial \pi}{\partial \eta} \cdot \frac{\partial \eta}{\partial K} = \frac{\partial f_1}{\partial K} + \beta \frac{\partial f_p}{\partial K} \geq 0 \quad \text{therefore,} \quad \frac{\partial \eta}{\partial K} < 0
\]

VI. Implications and Concluding Comments

There have been plentiful papers investigated the gender difference of labor market outcomes. Many empirical papers showed that the gender difference in labor market is still exiting even though controlling other factors, such as age, education levels, working experiences. Some of experts argued it is historically true that female is weak in the market as their nature. And some others insist that female wants to work at home voluntarily in order to maximize their utility. Therefore it is natural that female has lower propensity to involve in labor market. However, as Grounau (1988) asserted, the gender differences in labor outputs wouldn’t be from their own decision. Female may be rationed from decent job with certain reason. Further even if female decide by herself, she might have to do so because of her limited circumstances. Consequently, she makes a decision of occupational choice through maximizing her expectation/utility given her condition. Obviously this decision heads to the job that offer her less investment in human capital and less wage growth along her poor experiences.

Barron, Black, and Loewenstein (1993) works are quite interesting in this matter. They have investigated the reason why employers ration female from decent jobs with employer’s expectation with female’s attachment in labor market and showed it in micro theoretical model. They have thought that if a worker is committed with higher participation rate of labor market then an employer will match a worker with a job that associated with specific job training and capital. Because higher participation rate of labor force is related with the lower turnover rate. In their work, they assume that female labor has tendency of lower participation rate of labor market. Given this assumption, as long as an employer has this belief in their decision, an employer sort out female labor from certain work positions that is expected to provide better future wages when...
they complete a certain job training. Basic micro economic theory support the fact that in order to seek minimizing turnover cost and the maximizing profit rather an employer assign female labor a position where turnover is less costly, that is employer offer her a simple job without using capital.

However, their assumption of participation rate of labor market in female labor doesn’t explain us important questions: why does female labor prone to be out of labor market? What is causal mechanism behind the labor market and female labor. Considering market structure and rule of decision making in this market as an institution would render a fine intuition to help answer this question. In other words, if we understand the institution as a motivation, such as expectation, belief, and social norms, that restrains between market structures and individual behaviors, then we could clearly see why female could behave a certain way and why employers make a certain economic decision in labor market. And we found that this analysis with institution fit very well to explain the puzzle of female labor and labor market in Korea. Further we showed incorporating with institutional intervention give us more plausible idea to change the stubborn institution through bringing up new motivation. And this assertion is also congruous with Sen’s work in empowerment and human development of female.

Based on this theoretical ground, in this paper, I introduced the relationship between institutional intervention such as child care in the firm and tendency of labor force participation rate in the model. The results of my model show that if the employer pays less for his support of child care or house work, then since it has negative relationship with the participation rate of labor market and a worker would have lower wage when s/he is employed and would be placed a job without job training with using more capital. It also affects post wage after job training positively: the less having support the lower post wage.

My model seems to explain well the structure problems in Korean female labor market/labor market outcomes. As we saw in previous part, Korean female labor most likely have less wages compare to male and have less opportunities for attending job training, especially one that non-traditional and involving with value added job. According to data on job training in Korea, if job training depends on applicant’s decision, there is high proportion of female. It implies that it is not true that Korean female does not wish to get into job training. Rather they are forced not to do with an indirect way. They wish to get job training, but because of their constrains, for instance house work, affordable jobs after job training and high pressure from responsibilities of child care, they are screened out from decent jobs. And these constrains take place systematically in Korean labor market. However, if employers support female labor then it
would solve the problems. And it is not just good for female labors but also reasonable for employers as well.

Through the model I try to incorporate systematic problem of female labor market with a decision process of an employee and an employer and I took the child care support as a crucial variable on this matter. However, there are still several problems in the model that I have suggested. The first, I have been discussion about institution as a motivation. Based on this argument, I have tried to find the solution cooperated with the importance of institutional intervention in labor market in Korea. However, I cannot deny that my model basically stands on the static model. Therefore it has an instinct limitation to study motivation itself, especially for its dynamic process. In my model, I gave a try to support the justification and intuition of institutional intervention on job training offering process in labor market. And if we have mutual agreement on the functioning of certain type of institutional intervention it might be easy to become motivation on individual behaviors. Even with this vindication, however, I cannot deny the fact that it does come from central authority initially. As Greif mentions, this type of institution is “in accounting for institutional stability and change, it focuses only on the important, but partial, impact of politics and efficiency”\textsuperscript{20}. When institutional change in the model is considered to result from an exogenous shift in the interests of knowledge or belief of the political authority, the model could not avoid the critique that the model in this paper is still stick with classical static model demonstrates one step economic decision.

In this sense, I could find alternative way in order to involve the characteristics of institutional dynamic through game theory. Classical game theory has been used extensively to expand institutional analysis to the study of endogenous motivation. As many other game theorists believe, this framework seems to enable to endogenously motivate behavior to be considered; motivated by the actual and expected behavior of all other players, each player adopts the equilibrium behavior. Game theory thus allows the relationship between the rules of the game and self-enforcing behavior to be studied\textsuperscript{212223}.

\textsuperscript{20}Avner Greif, ibid, p. 9
\textsuperscript{21}In this line, some of works from Greif 1994a & Aoki 2001, the shared beliefs motivating equilibrium play would be impressive enough to see some other intuition of institution. Ibid, p. 10
\textsuperscript{22}However, classical game theory has problems of asumption in their framework, such as sharing of common information and rational agency. Grief and other scholar have criticized this limitation of classical game theory.
\textsuperscript{23}Even though Greif supported the study of evolution game theory as an alternative way of approach of institution, says “…the evolutionary perspective mitigates the shortcomings of classical game theory in studying institutional dynamics”. Bu he also acknowledged the fundamental difficulty of research on evolutionary game theory. That is “Its analytical framework, however, limits its applicability. The process of experimentation, mutation, and learning that drive the process of institutional change are taken as
The second problem is also extended with the first possible critique. In other words as we all know, decision of participating labor market is not simple in a real world. It is related with many other things and sometimes it doesn’t show their structural forms as we wish to see. For instance, wage that paid at the very beginning itself play an important role in decision of participation rate. Therefore, if we wish to build more accurate the model, it would be better to look at interactions between behaviors of employee and employer at initial points and find function of participation rate that integrates wage itself. It would be my future work in this subject.

exogenous to the analysis. As David(1994) notes, “the exact working of the evolutionary process…has remained sketchy at best.”, ibid, p. 12
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