

Earned Income Tax Credit and Female Labor Supply: Empirical Analysis and Policy Agenda

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Abstract

The purpose of this paper is to analyze the EITC effects on the economic activities of women by employing a labor supply function estimation, whether they are economically active or not and how many hours they work. This paper is based on the Korea Welfare Panel data and has empirical limitations in predicting the EITC effects and presenting various alternatives before it comes into effect.

According to the simulation results, if EITC is implemented, female labor market participation and hours of work would increase. However, when women are divided into groups, there is a tendency that labor market participation and work hours are increased for women with couple's aggregate income under 17 million won while EITC does not have any effect on women with a spouse who do not have any income and on single childless women.

By predicting the effects of EITC and presenting basic models and data in the related fields, this study will provide useful implications for follow-up studies.

Keywords: EITC, participation in the labor supply, labor supply hour, female

1. Introduction

The total number of households eligible for 2009 EITC based on their income in 2008 will be 630,000, and it is estimated that 470 billion won will be required every year. Two primary goals of the Korean tax reform are: on one hand, wider support for economic development and, on the other, increased competitiveness of the taxation system through the introduction of an advanced taxation system. To achieve the former, Earned Income Tax Credit (EITC) has been introduced and implemented with the expectation of promoting economic development, which will lead to stabilizing economic security in the lives of middle and working classes. EITC is a top government taxation policy designed to encourage the labor endeavors of the working poor by increasing the income and to spread out the burdens of social welfare as well as to enhance the efficiency of system operation with the help of building income-data infrastructure.

The rate of women's participation in economic activities decreased dramatically immediately after the financial crisis in 1998. Yet, it gradually increased up to 49.8% in 2004, 50.3% in 2006, and 50.2% as of 2008. It is problematic that the rate remained stagnant in the range of 50% over the past 10 years. However, it will probably reach the 60% range (Netherlands 56%, Canada 62.1%, and Denmark 74.7%; ILO, 2006) if social and policy supports are properly arranged, as there has been steady growth in women's desire to engage in economic activities. After the Asian

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financial crisis, the increasing number of the working poor estimated to be 1.32 million has become a serious social problem. The proportion of women to men in the poor class as a whole is 56.6% (51.2% in the active poor and 53.8% in the working poor).

The issue of female poverty becomes more complicated as it is associated with various forms of discrimination in the social structure. The feminization of poverty is worsening as the consequence of complex issues such as income gaps in the labor market, unequal status in the social welfare system (in a patriarchal family structure), and the devaluation of labor. This is apparent in the cases of female heads of household and elderly women who are income providers. Evidence from the National Statistical Office proves that the poverty ratio among the matriarchs (60 years and older) is 45.4 % while it is 32.4% for counterpart men.

There has been rapid social change in the family structure caused by an increase in dual-earner families and separated ones (divorced), as well as in the demographic structure caused by aging population. Divorce rate has doubled every 10 years from 5.8% in 1975 to 10.3% in 1985, 17.1% in 1995, and 54.8% in 2003. Recently, the problems of female economic independence and status improvement came under a spot light as female responsibility for child support after divorce and the divorce rate among elderly couples continue to grow. The problem is that government taxation and fiscal policies do not effectively address such complications.

However, the introduction of the current EITC faces many problems in connection with other social welfare systems as well as conflicts between efficiency and poverty reduction. In this situation, it is not too much to say that EITC was implemented without sufficient discussion of single childless women, single mothers and its relationship with the female labor market. No study has paid attention to EITC from a gender perspective. Gender variables are almost never considered in most of the studies on the relationship between taxation, fiscal policies, and the labor market. In particular, on women previous studies tend to focus on childcare expenses. There is a strong tendency toward general studies rather than empirical ones regarding work incentives in the lower income brackets.

Since the EITC payments have not yet been generated, this study empirically analyzes the influence of EITC implementation on women's participation in the decision making regarding labor supply and labor supply hours. In this regard, the purpose of this study is to contribute to the establishment of EITC and dealing with structural changes in the labor market induced by increase in women's participation in economic activities by presenting new directions for the successful course of EITC.

2. Literature review

Couples with low levels of education tend to resort to dual-income due to wage disadvantages, and women of lower-educated couples are likely to be the direct beneficiaries of EITC. In addition, EITC does not benefit individual units but families as married women are highly likely to make a decision jointly with families as to whether to earn income or not. Hotz and Scholtz (2004) point to the unexpected results of the EITC effects among dual-earner couples. The following is a review of the previous studies on the relationship between married women and the effect of EITC on lifting poverty and supplying labor.

1) USA (EITC)

Edgerton (2002) and Eissa and Hoynes (1998) maintain that the extension of EITC would slash the rates of married women with lower income in the job market. This is attributed to the distortion of working incentives (Eissa and Hoynes, 1998). For instance, working wives are likely to quit when the family income falls into the gradually-declining category, to make the husband the sole income earner, in order to maximize the benefits from EITC. In the case of the regular income section, there may be no move towards a new employment decision. Such cases show a distortion by work incentives in the controlling effects of EITC on labor supply.

According to Eissa and Hoynes (1998), the introduction of EITC increased the labor supply of single mothers by 2.8% from 73.0% (1985-1987) to 75.8% (1989-1991), which contributed to income improvement with the support of tax cut effects of \$1,331. EITC serves not according to individual income but according to family income. Wives tend not to be free from the influence of husbands in employment decisions, and female labor supply decreased, while the male labor supply is left intact.

Yoo and Jeong (2007) provides a positive analysis on the EITC extension effects of the Clinton Administration (1993-1996) by using the CPS data of March 1991-2002. The results confirm that EITC had a negative influence on the entry of low income married women into the job market. For every one unit increase in the EITC maximum benefit, the possibility of married women with lower educational backgrounds going into the job market declines by 15.4% and the employment rate declines by 19.6%.

2) England (WFTC)

Working Family Tax Credit (WFTC) encourages the participation of single parents and discourages the participation of the other if one of the spouses have a full-time job. In the case of an unemployed wife, it raises the work hours of the husband. **Table 1** summarizes the results.

Table 1. Influence of WFTC on employment

Group	Change in labor market participation	Change in average working hour
Single Parents	2.2%	0.75%
Married women (husband working)	0.57%	0.18%
Married women (husband not working)	1.32%	0.46%
Married men (wife working)	0.30%	
Married men (wife not working)	0.37%	

Source: Blundel, Duncan, and Meghir (1999, 2000)

3) Major studies in Korea

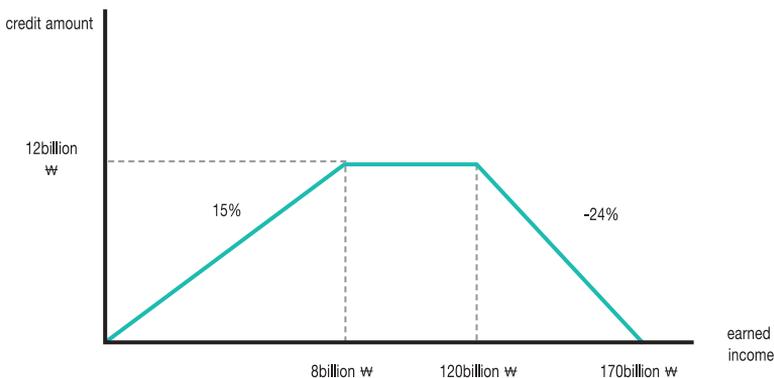
There are discussions over the introduction of EITC as a replaceable means for the National

Basic Livelihood Security System (NBLS) in Korea, which has since 2000 evolved into the question of EITC that would work in Korea. Various studies examine the Korean EITC, NBLS, and related systems including income taxation. These studies fall into five major categories. The first concerns the studies that make general surveys of the EITC operation cases of advanced countries and derive policy issues from them. Representative studies are the works of Ahn (2005), Lim (2006), KLI (2005). The second represents an all-inclusive theoretical analysis or simulation techniques with the consideration of compatibility between the precondition for the introduction of EITC and the related systems. These present modified EITC suitable for Korea, as in the studies of Ahn and Song (2006), and Jeon (2004). The third consists of policy researches done by a Korean EITC promotion team, Kim and Park (2005), and Jeon and Lee (2006). The former researchers justify the need for the introduction of EITC by studying international applications of the EITC system and domestic working poor, to present three scenarios of introducing it, and the latter offers more specific plans for the introduction. The fourth represented by Lee and Jeon (2007) evaluates the effectiveness of the Korea EITC prior to the enforcement and presented the issues to be revised. The last category is characterized as seeking EITC policies relevant to other social welfare programs. Ryu and Park (2007) focus on the connection between EITC policies and rehabilitation programs for workers. They point out that both systems target the second-lowest income bracket and are designed to encourage self-support and work.

3. Korean EITC and women's issues

2009 EITC payment-applicable households based on their income in 2008 account for the total of 630,000 households and it is estimated that 470 billion won will be required every year. **Figure 1** reports the EITC schedule in 2009 for families with children. Much higher maximum credit and much wider range of income over which a substantial subsidy was received led to sharply increased incentives to work.

Figure 1. EITC Schedule schedule in 2009



As was mentioned above, the working poor are a serious social problem for women. Against this background, the introduction of EITC provides working incentives to the working poor. This study will look into the present conditions and characteristics of the female working poor to lay out possible gender issues for discussion after the introduction.

1) The present condition and characteristics of the female led working poor families

A study on the Korean female working poor reveals that the proportion of female among all the poor and the second-lowest income brackets is high. In contrast, the ratio of female participation in economic activities is low among the entire economically active population. The female ratio among the poor and the second-lowest income brackets is also high among all the employed. All these are the evidences of increasing female poverty.

Examining the ratio of poverty among the married, the poverty ratio of the group separated by death or divorce is high. In terms of gender, there is a clear disparity between women and men as the poverty rate of women in the group is 24% whereas it is 10% for men. Comparing the poverty ratios of female and male family heads based on the data from the Family Consumption Condition Investigation of 2000 demonstrates that the poverty ratio among the families headed by women is 24% which is 3 times higher than that of the families headed by men, 7%.

The situation is similar for the poverty rates of families headed by women and men among those 20 years and younger with 9.7% and 10.0%, respectively. Yet the rates are 11.8% and 5.3% for 20_64 year olds, which indicates 2.2 times higher poverty risks for families led by women. This shows the need for gender approaches to self-support and social welfare policies for families headed by women, as the 20_64 age bracket is a working age bracket as well as that of childcare. Looking into the changes in gender poverty differences (before the 1997 financial crisis), the poverty risk for female heads of household was 3.75 times higher than that of the male family heads. The gap gradually balanced out during the crisis. However, the unemployed male family heads entered the job market faster after unemployment following the crisis, but most of women remained in the unemployed and impoverished bracket.

These points to gender resilience differences: women are relatively weak in terms of having the means of overcoming poverty, so once they fall into the impoverished classes, they are trapped. The number of single parent families accounts for 1,193.6 units, 25% of all the families led by women. In addition, 16.6% of single mother families fall into the absolute poverty class. The extent of absolute poverty rises to 150% and the ratio of single mother families suffering from absolute poverty grows to 37.4%.

2) EITC and women's issues

There have been limited gender analyses on the process of Korean introduction of EITC and the following are the issues for discussion.

(i) Minimum wage and poverty reduction

The first issue is an assertion that EITC has not been effective in the overall poverty reduction in the United States except for a limited reduction of children's poverty. The reasoning behind this is that the scope of objectives is too narrow as EITC targets only paid workers while ignoring the non-working poor, which weakens the poverty reduction function.

The main purpose of EITC is to provide a working incentive, so it would be more appropriate to place non-working poor on the National Basic Livelihood Security (NBLIS) programs. The second issue is a question of the amount and the frequency of payment. In Korea, the payment is 1,200,000 KRW once a year. This is equivalent to the monthly payment of 100,000 KRW and is not enough to influence the poverty status. The poor constantly experience poverty and the one time annual payment does not help.

EITC puts downward pressure on the minimum wage. In presenting a study on relationship between EITC salaries and minimum wage, it is argued that the introduction of EITC results in the consistent low-skilled, low-wage, and unstable employment due to EITC's downward pressure on the minimum wage. The International Labor Organization (ILO) reports that EITC could cause a rise in the poverty rate of the US population with the average income or lower, and the minimum wage is an important factor. The implementation of EITC (which does not work for irregular workers) will make it difficult for the minimum wage to rise and could even end the minimum wage system for irregular workers. Another argument is that EITC works only for those capable of working and paralyzes the minimum wage system, resulting in increased poverty.

(ii) Improving income filing

One of the preconditions of EITC is to have a precise estimation of the income of the lower income bracket. Since EITC is based on earned income EITC will not be effective without the precise calculation of the income of the lower income bracket. When they argue that EITC helps to improve the reporting of income, they assume that workers will properly declare their income to receive EITC benefits, but the improvement of income estimation is a precondition of EITC, not a result.

The reasons are as follows. First, high EITC benefits will help improve the rate of income filing because people tend not to go through all the troubles to declare income until the EITC benefits are high enough to compensate them for such troubles. It is doubtful that individuals will declare income for the monthly benefit of 70,000 KRW (Seong, 2005). Second, the introduction of EITC will come with a reduction of the tax exemption limit and the concern is that people will attempt to hide the actual income due to the effects of a reduction in the tax exemption limit that is likely to overwhelm the EITC effects of improving the income filing rate.

(iii) Concerns about the mass production of low-wage workers

This is a line of reasoning that with the expansion of EITC and the Temporary Assistance for

Needy Families (TANF), low-skilled and low-wage women's participation in the job market will rapidly increase. The EITC and TANF assume that the impoverished individuals are capable of working in the unstable lower income bracket. A Wisconsin survey on the people who escaped from poverty shows that the level of earned income is in fact lower than welfare benefits. In spite of this, it is anticipated that EITC will ultimately have positive effects on working incentives and improvement of income filing. It is less likely that EITC will hurt the minimum wage level and produce low-wage labor.

4. Female labor supply effects of EITC

EITC would be initiated with the expectation of effects on work incentives and lessening poverty in the shadow areas outside the social safety net as well as among the beneficiaries of basic livelihood security benefits. However, such issues are not sufficiently considered in conjunction with the characteristics of the female labor market, the behaviors of the female family heads, and additional problems. This section -- by taking into account such omitted factors -- looks into the inquiry of how EITC effects women's participation in economic activities and work hours through the labor supply function.

1) Method of Estimation

How EITC effects labor supply is analyzed in three phases. The first step is to derive the labor supply function from Constant Elasticity of Substitution (CES) utility function. CES utility function meets the Slutsky requirements satisfying the general function of the utility function.

$$\text{Max } U = (I_i, C_i) = [\phi C_i^{1-\lambda} + I_i^{1-\lambda}]^{-\frac{1}{1-\lambda}} \quad (1)$$

$$\text{s.t } C_i = (1-t_i)wh + vy_i$$

$$T = h_i + l_i : \text{leisure,}$$

$$C : \text{consumption,}$$

$$t : \text{tax rate,}$$

$$w : \text{wage rate,}$$

$$h : \text{hours of work,}$$

$$w : \text{non-working income,}$$

$$T : \text{time of economic activity except sleeping hours (assumed 14 hours/day), and}$$

ϕ : coefficient determining individual consumption and leisure taste (assumed it is a function of age, education, and the number of children).

The following equation is drawn after the question of utility maximization and the equations are solved with the elasticity of substitution input:

$$\ln \left(\frac{l_i}{C_i} \right) = -\lambda \ln \phi_i - \lambda \ln [(1-t_i)w_i]; \quad \lambda = \frac{1}{1+\lambda} \quad (2)$$

Also, from the equation (1), h (working hours), E_{lhw} (elasticity of non_compensation income), E_{lhw}^{comp} (elasticity of compensation income) can be deduced.

$$h = \frac{T - \phi^{-\lambda} m w^{\lambda} v y}{1 + \phi^{-\lambda} m w^{-\lambda}} \quad (3)$$

$$E_{lhw} = \frac{\lambda \phi^{-\lambda} m w^{1-\lambda} v y}{m w T - \phi^{-\lambda} m w^{1-\lambda} v y} - \frac{(1-\lambda) \phi^{-\lambda} m w^{1-\lambda}}{1 + \phi^{-\lambda} m w^{-\lambda}} \quad (4)$$

$$E_{lhw}^{comp} = E_{lhw} - m w \frac{\delta y}{\delta v y} = E_{lhw} + \left(\frac{\phi^{-\lambda} m w^{1-\lambda}}{1 + \phi^{-\lambda} m w^{-\lambda}} \right) \quad (5)$$

- $v y$: hypothetical income (in case of zero labor supply, household income), and
 - $m w$: wage rate after tax.

Here, $m w$ denotes wage rate after tax and $v y$ denotes hypothetical income, which means household income in the case of zero labor supply. From this CES utility function, two equations for empirical analysis are compounded as follows:

$$\ln \phi_i = k_0 + k_1 a g e_i + k_2 e d u_i + k_3 k i d_i + e_i \quad (6)$$

(denotes coefficient which determines individual consumption and leisure taste),

$$\ln \left(\frac{l_i}{c_i} \right) = \beta_0 + \beta_1 a g e_i + \beta_2 e d u_i + \beta_3 k i d_i + \beta_4 \ln m w_i + \beta_5 \lambda_i + \varepsilon_i \quad (7)$$

$$\beta_0 = \lambda k_0,$$

$$\beta_1 = -\lambda k_1,$$

$$\beta_2 = -\lambda k_2,$$

$$\beta_3 = -\lambda k_3,$$

$\beta_4 = -\lambda$ (Deriving labor supply function from CES utility function forms a sufficient condition that satisfies the Slutsky requirements.),

λ_i : reciprocal of Mill's ratio, and

β_5 : presumed coefficient of λ_i .

The next is to consider simultaneous equations among a sample selection bias, working hours, and wages in order to draw a labor supply function that can be produced through a two-step estimation model. The estimates of labor supply function and wage function drawn above solve the problems of sample selection and simultaneous equations so the estimates are made constant. Based on the model drawn above, the following is a reduced model of how EITC will affect women's participation in the job market and labor supply hours:

$$\text{Wage (Working income)} = \beta_0 + \beta_1(\text{age}) + \beta_2(\text{age}^2) + \beta_3(\text{yearofeducation}) + \beta_4(\text{age} \times \text{yearofeducation}) + u \quad (8)$$

$$\begin{aligned} \text{Participation in the labor market} = & \alpha_0 + \alpha_1(\text{age}) + \alpha_2(\text{age}^2) + \alpha_3(\text{yearofeducation}) + \alpha_4(\text{No.ofoffspringbelow18yearold}) \\ & + \alpha_5(\text{inworkingwage}) + \alpha_6(\text{inspousewagedummy}) + \alpha_7(\text{incouplewage3}) \\ & + \alpha_8(\text{urbanresidence}) + \alpha_9(\text{sexdummy}) + \varepsilon \end{aligned} \quad (9)$$

$$\begin{aligned} \ln(\text{labor supply hours}) = & \gamma_0 + \gamma_1(\text{age}) + \gamma_2(\text{age}^2) + \gamma_3(\text{inworkingwage}) + \gamma_4(\text{inspousewage}) \\ & + \gamma_5(\text{incouplewage}) + \gamma_6(\text{urbanresidence}) + \lambda + \theta \end{aligned} \quad (10)$$

It is difficult to predict the actual effectiveness of EITC before it comes into effect. The EITC effects are assumed to be equivalent to the effect of a wage rise due to tax cuts and EITC is considered a negative tax. The EITC effects can be also measured by analyzing how a rise in wage effects labor participation rates and labor supply hours.

2) The results of the estimation of labor supply function

(i) Data and used variables

In order to estimate how EITC effects the labor supply, paid workers are selected from the age group of 15 to 64. Since EITC benefits a family unit, this study estimates individual labor supply function by gender as for the whole members of a family with data at a family unit collected separately from 'Type 1' which is a group of families with married couples and 'Type 2' which is a group of families without married couples. This study centers on women.

The following is used as explanatory variables: age, education, residence (dummy variables are applied as Seoul and other metropolitan cities), and wage of the head of household, and the number of children under 18, spousal wage, couple's wage (dummy variables are applied as annual income of 17 million won and below along with that above and the non-working income of family). Response variables are whether to participate in the labor market (the unemployed and not economically active population were excluded), wages (total annual wage), work hours (the legal annual work hours). Basic statistical data on these variables are as follows in **Table 2**.

Table 2. Average value of used variables

(Unit: person, %)

Item	Female	
	Married	Single
Age	42.7	46.2
Year of education	11.3	9.5
Wage (10,000 won)	332.8	908.3

Spousal wage (10,000 won)*	2,070.0	-
Couple's total wage (10,000 won)*	2,402.8	908.3
Non-working income (10,000 won)*	282.3	78.1
Children under 18 years of age	1.0	0.5
Annual working hours*	1,965.2	1,965.2

* respondents only

(ii) Estimation of female labor supply

For the purpose of testing, the study applied “2SLS Method” and “Probit Method.” The Korean welfare panel data are used to analyze the impact of EITC on labor supply responses on the participation and hours worked. Since EITC is provided by a household unit, the cases of spouses without any income and the cases of non-existent spouses are separately analyzed.

In the first stage, the study estimates the wage function dividing women into groups and shows the results (See **Table 3**): Group 1 - female with salaried husbands; Group 2 - husbands with no income; and Group 3 - no husbands. First, the estimated wage function turns out significant to all variables in the nonlinear form that shows a positive relationship between wage and age until wage starts decreasing. It also shows that wage increases as the years of education go up. In Group 2, age is a solely significant variable. As for groups to which single women belong, no variables except an age square are significant.

Table 3. Estimation of female wage function

Dependent Independent variables variables	Log (Wage)		
	Coefficient (Standard Error)		
	Female		
	Group 1	Group 2	Group 3
Invariables	-2.5332*** (0.8815)	-0.9625 (1.0343)	1.7627 (1.2957)
Age	0.1149*** (0.0318)	0.0759** (0.0341)	0.0315 (0.0439)
Age	-0.0009*** (0.0003)	-0.0010*** (0.0003)	-0.00070* (0.0004)
Years of education	0.1211*** (0.0433)	-0.0529 (0.0494)	0.0612 (0.0652)
Age*year of education	-0.0025*** (0.0009)	0.0009 (0.0009)	-0.0003 (0.0012)
Number of used observed value	2,421	728	715
h^2	0.0075	0.0302	0.1813
$Adj. h^2$	0.0059	0.0249	0.1767

*, **, *** are statistically significant by 10%, 5%, 1%, respectively.

Group 1: women with salaried husbands; Group 2: women with husbands with no income; Group 3: women who have no husbands

The labor market participation rate according to household types (See **Table 4**) shows that for women whose husbands earn income, the higher the wages, the better chances of participating in the job market. In addition, it is effective when the total income of a couple is 17 million KRW or less. Assuming the EITC effects to be equivalent to a rise in real income due to a tax cut, EITC may best serve a dual-income family with lower income. This group indicates a positive relationship between the income of the husband and the rate of female participation in the labor market, which proves that EITC on a couple's total income basis best works for this group. Although the direct target of EITC is a lower income family whose total income is 17 million KRW or less, the women in that bracket show a reverse relationship and a lower possibility of labor participation in response to the total family income. The effects of wage on participation in the job market do not appear to be statistically significant to Group 2 (female workers with husbands with no income) or Group 3 (female workers who have no husbands). This shows that EITC is to serve as a working incentive for women in the family where only the husband works.

Group 1 demonstrates that the more there are children aged below 18, the higher is the possibility of women working proving that EITC is designed for a family with 2 or more children under 18 years of age. Lastly, Group 1 and Group 3 reveal that urban women are more likely to work.

Table 4. Probit analysis of women's participation in the labor market

Dependent Independent variables variables	Log (Wage)		
	Coefficient (Standard Error)		
	Female		
	Group 1	Group 2	Group 3
Invariables	-6.9497*** (2.3151)	-13.2251 (12.7523)	-2.3389 (2.6554)
Log (Wage)	1.4301*** (0.4718)	-8.2480 (12.2836)	0.7931 (1.5480)
Age	0.0420 (0.0582)	0.7172 (0.8261)	0.0467 (0.0638)
Age	-0.0006 (0.0007)	-0.0080 (0.0094)	-0.0008 (0.0011)
Year of education	-0.0225 (0.0166)	-0.1229 (0.1581)	0.0044 (0.0426)
Residence (1:Urban 0:Rural)	0.0979** (0.0493)	-0.3254 (0.5071)	0.2558*** (0.0752)
Number of children under 18 years old	0.1926** (0.0976)	0.2643 (0.3807)	0.1174 (0.2391)
Log (Spousal income)	1.8992* (1.0416)	-	-
Log (couple's total income)*D (D=1:17million won or less, D=0:other)	-0.6110** (0.2539)	8.3227 (11.4781)	-0.0092 (0.6110)

*, **, *** are statistically significant by 10%, 5%, 1%, respectively.

The following is the result of estimating working hours by groups (See **Table 5**). As for the women with salaried husbands (Group 1), the more decreased the wages are that her husband can earn, the more hours she works. A woman in a lower income household whose total income is 17 million KRW or less (who belongs to Group 1) shows a tendency to reduce the work hours as the couple's total income increases. Women who live in the urban areas appear to work more. A group of women who have no husbands (Group 3) work more if they live in urban areas. What draws attention is that Group 1 demonstrates that women's hours of work are a function of the spousal income, through higher income and longer working hours. These results are the reverse of previous overseas studies, which proves EITC can have a positive effect on female workers in a dual-earner family. They also suggest that the EITC system focuses on the issues of women for women's policies.

Table 5. Estimates on women's hours of work

Dependent Independent variables variables	Log (Wage)		
	Coefficient (Standard Error)		
	Female		
	Group 1	Group 2	Group 3
Invariables	-4.7675** (2.1241)	4.4547 (5.5960)	0.2468 (1.6334)
log(Wage)	1.3880*** (0.4378)	3.2150 (5.4379)	0.7889 (0.9400)
Age	0.0560 (0.0553)	0.2953 (0.3638)	0.0302 (0.0393)
Age	0.0008 (0.0006)	0.0033 (0.0041)	0.0005 (0.0007)
Year of education	0.0235 (0.0158)	0.0534 (0.0700)	0.0025 (0.0265)
Residence (1:Urban 0:Rural)	0.0896* (0.0467)	0.1423 (0.2249)	0.1640*** (0.0479)
Number of children below 18 years old	0.1717* (0.0916)	0.1117 (0.1686)	0.0834 (0.1462)
Log (Spousal income)	1.6115* (0.9678)		
Log (couple's total income)*D (D= 1:17million won or less, D=0:other)	-0.5507** (0.2356)	3.6515 (5.0815)	-0.0424 (0.3689)

*, **, *** are statistically significant by 10%, 5%, 1%, respectively.

5. Conclusion

As discussed above, this paper examined how EITC effects women's economic activities by employing a labor supply function estimation: whether economically active or not and work hours. The results show that assuming the EITC effects to be equivalent to a rise in real income

due to a tax cut EITC effectively serves a dual-earner family that earns a lower income. Moreover, this group indicates the positive relationship between the husband's income and the rate of female participation in the labor market, which proves that EITC on a couple's total income basis best works for this group.

According to the simulation results, if EITC is implemented, female labor market participation and hours of work would increase. However, after separating female groups as mentioned above, there is a tendency that the women whose aggregated couple's income is under 17 million KRW have high labor market participation and long hours worked, while EITC does not show any effect on women with a spouse does not have any income and single childless women. Therefore, it is desirable that a household unit should be segmented into single childless women, single mothers and two-paycheck couples, and payments should be provided differently for each group.

Contrary to the previous overseas studies on the effects of EITC, this study proves that EITC is not effective to women without husbands or who have husbands with no income. This research is based on the Korea Welfare Panel data and has empirical limitations in predicting EITC effects before it comes into effect and presenting various alternatives. By predicting the effects of EITC and presenting basic models and data in the related fields, this study will contribute to in_depth and follow up studies.

Based on the findings of this study, there is a need to departmentalize the units of beneficiary households into single mother families, single childless women, and dual-earner family to improve the benefit pay-out system by differentiating the amount of benefits according to the units to which a family belongs. In addition, in order to enhance the EITC effects on working incentive for single working mothers, the government supports for childcare and after-school programs should be reinforced.

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