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The Adoption of In-Work Benefit Programs:
An Exploration on International Experiences

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AN EXPLORATION ON INTERNATIONAL EXPERIENCES**

ABSTRACT

With the success of the In-Work-Benefit programs in the UK and the US, the programs are disseminated across countries. Previous studies review and compare major features of the programs in different countries. We extend the literature by empirically examining whether there are any economic factors that could explain the adoption of the program. Our findings suggest that good macroeconomic conditions tend to precede the adoption of in-work benefit programs. Our main findings are robust to controlling for the characteristics of implementation, including the unit of assessment (families or individual) and refundability of the program. The variable having most significant impact on the adoption of In-Work Benefit program is the capita GDP, followed by age dependency, GINI coefficient, unemployment rate, budget balance, and labor force participation.

Keywords: In-Work Benefit programs; Making Work Pay policies; International Comparison

JEL: E6, H2

1. INTRODUCTION

The Making Work Pay (MWP) policies improve in-work benefits relative to out-of-work benefit and hence increase incentives to work. The policy was firstly adopted in the UK in 1971, then in the US in 1975. With the success of the In-Work-Benefit programs in the UK and the US, the MWP policies are disseminated across countries, a process that has been termed policy transfer (Duncan and Greenway 2004; Banks, Disney, Duncan, and Van Reenen 2005). In 2008, Making Work Pay policies have been adopted in 12 countries, namely the United Kingdom, the United States, Canada, Ireland, New Zealand, Finland, Belgium, France, Netherlands, Denmark, Austria, and Singapore. All of them are the OECD countries with the exception of Singapore. In addition to these 12 countries, more countries are considering to adopt the program. Israel is presently on a pilot basis in 2008. In South Korean, the earned income tax credit will start to be paid from 2009. The IMF recommended countries in Eastern Europe, such as Czech Republic and Slovenia, to consider In-Work-Benefit programs to mitigate income inequality in their countries.

With a wide spread of using the MWP policies, previous studies of the international experiences of the programs focus on descriptive evidence (Gradus and Julsing 2001; Duncan and Greenaway 2004; Bank et al. 2005; Leppik 2006). These studies review and compare major features of the programs in different countries. The purpose of this paper is to empirically examine In-Work benefit programs. We focus on empirically examining whether there are any economic factors that could explain the adoption of the program. The findings could be a lesson for countries that are under

consideration of adopting the programs. To understand the likelihood of the program adoption, we apply the 1980-2006 data on the probit and logit models to estimate the choice of program adoption as a function of macroeconomic factors. Our findings suggest that good macroeconomic conditions tend to precede the adoption of in-work benefit programs. Our main findings are robust to controlling for the characteristics of implementation, including the unit of assessment (family or individual income) and refundability of the program. The variable having most significant impact on the adoption of In-Work Benefit program is the capita GDP, followed by age dependency, GINI coefficient, unemployment rate, budget balance, and labor force participation.

The paper proceeds as follows: Section 2 discusses the structure of In work Benefit programs and the main features of the programs in adopting countries. Section 3 reviews literature on Making-Work-Pay policies in international environments and conceptual framework for our empirical analysis. Section 4 describes data and the empirical method and presents our results. And, section 5 concludes.

2. INSTITUTIONAL DETAILS

In-Work-Benefit programs increase incentive to work by improving in-work benefits relative to out-of-work benefits. The In-Work-Benefit programs are also called employment-conditional programs. These benefits are paid only to a low-income person who has a part-time or full-time job, and therefore the programs also improve income distribution.

The benefits of the In-Work-Benefit programs in most of the adopted countries share similar structures. The benefit equals a specified percentage of earned income up to a maximum dollar amount over the “phase-in range.” Over a range of income termed the “flat range,” taxpayers receive the maximum credit. The credit then diminishes to zero over the “phase-out range.”

Table 1 provides a summary of the main features of the currently existing In-Work Benefit programs in 12 countries. All of these countries, except Singapore, are OECD members. Countries are ordered by the year of introduction of the first in-work-benefit program in each country. In some countries, the current program may not have the same name as they were first introduced. For example, the UK in-work-benefit program was called the Family Income Supplement (FIS) when it was introduced in 1971, but now called the Working Tax Credit (WTC).

Due to different national institutions and policy goals, there is variation in the main features of the programs adopted in these countries. For example, while the Earned Income Tax Credit (EITC) in the US aims at reducing poverty, the Employed Person’s Tax Credit (EPTC) in Netherlands aims to tackle the problem of unemployment among low-income people. As a result, the EPTC eligibility is based on individual income. Focusing on the effects in labor force participation, there are two major features across countries worth discussing, namely unit of assessment and whether the benefit is refundable.

The effects of benefits on labor supply may vary by the unit of assessment whether it depends on individual or family income. If the benefits vary by family income,

this may cause an adverse effect of a decrease in the incentive to work for the spouse (Dickert, Houser, and Scholz 1995; Eissa and Hoynes 2004; Stancanelli 2008).

Another feature of the program that may have significant effect on the labor supply is whether the benefit is refundable. If the benefits are refundable, the programs are more relevant to low-income workers because most of them did not have to pay tax at the first place. The effects of non-refundable benefits are limited. For example, in Finland, unlike the refundable tax credits, the effect of the Earned Income Allowance is the product of the deduction and the marginal tax rate.

Moreover, there are several features that vary across countries. For example, in the UK, the benefits are conditional upon a minimum number of hours of work, while in the US, the benefits are not time limited, but depend on household income. The generosity of benefits and eligibility criteria also vary substantially across countries, depending on other components of redistribution policy and institutional features of the social welfare system, for example, out-of-work benefits and minimum wage policies.

A number of micro-level studies support In-Work-Benefit policies as effectiveness employment policies (Holt and Scholz 2003 for a summary of the EITC and labor supply in the US; Brewer and Browne 2006 for the UK; Ochel 2001 for Ireland; Nellissen, Fontein, and Soest 2005 for the Netherlands; Stancanelli 2008 for France). Previous studies also support the policies as an effective anti-poverty instrument (Neumark and Wascher 2000; Adireksombat 2008).

Another upside of the programs is low administration and compliance costs. Most of the countries with In-Work-Benefit program use their tax administrator to operate the

programs, for example, the IRS in the US, resulting in low tax compliance and administration costs because tax payers and tax administrator could save time and money to claim and pay the benefits. However, the programs are costly. In the US, the EITC costs more than \$ 43 billion (U.S. Office of Management and Budget, 2008).

The programs are effectively reaching the targeted groups. Several EITC utilization studies suggest that more than three-quarters of eligible households claim the credit (Scholz 1994; the General Accounting Office 2001). In the UK, the WFTC take up rates are 87% for lone parents and 62% for couples (Brewer et al. 2005). In Ireland, the early years of the program, the take-up rate was only 30%, but the Irish government has undertaken several campaigns to raise awareness of the in-work-benefit programs (Stephens 2005). In France, over 14% of the total population had received the credits in 2005. In conclusion, the take-up rates are very high in the US and UK. For other users, the rate is increasing.

3. RELATED LITERATURE AND CONCEPTUAL FRAMEWORK

To gain further insights on the in-work benefit programs from international data, we outline in this section the key findings in the literature. A strand of the literature on Making-Work-Pay policies in international environments tend to focus on descriptive evidence. Gradus and Julsing (2001) discuss labor market and income-distributional policies in European countries. Moreover, they review and compare Making-Work-Pay policies in six countries, namely, Belgium, Finland, Germany, Ireland, the Netherlands, and the UK. Duncan and Greenaway (2004) use in-work benefit programs in the UK and

the US as a case study of policy transfer. They review the development of the programs and compare the design features of the Working Family Tax Credit (WFTC) and the Earned Income Tax Credit (EITC). Then, they discuss the evidence that the WFTC reform was informed by the US experience of the EITC in the US. In addition, Duncan and Greenaway point out that a successful implementation of the WFTC is monitored closely by other countries. This could result in welfare policy transfer.

Bank et al. (2005) present evidence on the extent of international convergence in labor, welfare, savings, and retirement policies in OECD countries. In their discussion on welfare policy, they summarize and discuss the main features of the MWP programs in these countries. They also review previous studies that examine the effects of the MWP policies in the UK and the US on employment and suggest that these policy studies work as supportive evidence for other OECD countries that consider adopting the MWP policy. Among other OECD countries, the employment effects and cost effectiveness are the major issues of interest. They conclude that an apparent convergence in MWP policy represent a classic case study in policy transfer with adjustment to local conditions. Leppik (2006) reviews the structures of In-Work-Benefit programs in United Kingdom, Ireland, Netherlands, and France. She also summarizes studies that evaluate the programs, such as, take-up rates and the effects on labor supply and income.

This paper extends the existing literature by empirically analyzing the adoption of the in-work benefit programs. To our knowledge, no previous studies consider the international experiences of this program. Our novel contribution is to test whether the successful adoption of the in-work benefit programs by any government depends on the

readiness of macroeconomic conditions. As the in-work benefit programs are one of the most important approach for redistributing income, it is also useful to understand the stylized on their adoption across countries.

While the in-work benefit programs come in a variety of names, from now we dub it “earned income tax credit” or EITC, following the US terminology. Because the EITC is essentially a transfer program that runs through the income tax, the determinants of its successful adoption will depend on the macroeconomic and structural variables influencing government expenditures. Shelton (2007, 2008), for example, finds that inequality and age dependency ratio affect the extent of social insurance expenditures.

Based on the smoking gun from both the microeconomic and macroeconomic literature, we hypothesize that the adoption of EITC is broadly determined by the following factors

- 1) Income distribution
- 2) Incentive to Work
- 3) Government budget constraint

We can write down the probability of EITC adoption as a function of these macroeconomic factors, with the expected sign as the following:

$$\begin{array}{r}
 \text{EITC} \\
 \text{Adoption}
 \end{array}
 = f \left(
 \begin{array}{r}
 \text{Age} \\
 \text{Dependenc} \\
 \text{y}
 \end{array}
 \begin{array}{r}
 \text{Capit} \\
 \text{a} \\
 \text{GDP}
 \end{array}
 \begin{array}{r}
 \text{GINI} \\
 \text{Coeff} \\
 \text{.}
 \end{array}
 \begin{array}{r}
 \text{Budget} \\
 \text{Balanc} \\
 \text{e}
 \end{array}
 \begin{array}{r}
 \text{Labor} \\
 \text{Participatio} \\
 \text{n}
 \end{array}
 \begin{array}{r}
 \text{Unemploymen} \\
 \text{t} \\
 \text{Rate}
 \end{array}
 \right)
 \quad (1)$$

-
+
-
+
+
+

We expect age dependency to have a negative effect on program adoption since a smaller working-age population would tend to reduce the benefits of implementing the program.¹ Capita GDP enters the equation positively as a proxy for the level of economic development. Larger GINI coefficient signifies higher income inequality which would deter the EITC adoption. A government with better budgetary condition would be in a better shape accommodate the program implementation. Higher labor force participation and higher unemployment rate mean that an adoption which could potentially become successful would create a large welfare gain. We note that while there could be reverse causality from EITC adoption to labor force participation and unemployment rate, the net effect of EITC on work incentives is ambiguous empirically.

From macroeconomic perspectives, the likelihood of EITC adoption would also depend on the characteristics of its implementation, including

- a) Unit of Assessment: if EITC is a family unit, it tends to reduce the labor supply of the spouse. Of the countries having EITC in place, Finland, Belgium, Netherlands, Denmark, and Singapore use individual as the unit of assessment.
- b) Refundability: which matters in terms of target group because most of low-income households do not have to pay tax; if the EITC is not refundable, it tends to have smaller impact. To date, the EITC programs in Finland, Netherlands, and Denmark are not refundable.

¹ This also conforms with the notion that the welfare state appears to be shrinking even as the aging population rises. See Razin et al. (2002).

4. DATA AND ESTIMATION

We collect the data for all the countries available from 1980-2006. Most of the macroeconomic data are taken from the World Bank's World Development Indicators (data details are in the appendix Table A1). Years of EITC adoption as shown in Table 1 are documented from various sources, including Gradus and Justling (2001); Person and Scarpetta (2000); Duncan and Greenaway (2004); OECD (Social Policy Division - Directorate of Employment, Labour and Social Affairs, Country Chapter, 2004); Banks et al. (2005); International Monetary Fund (Country Report No. 04/236, 2004 and 08/62, 2008); Ministry of Finance, Singapore (Budget Statement, 2007).

Tables 2 and 3 provide the summary statistics and correlations of variables in the sample, for the entire sample (103 countries) as well as disaggregation into countries with (91) and without (12) EITC programs. Some patterns emerge from these simple statistics. As shown in Table 2, countries that have yet to adopt EITC tend to have higher age dependency, inequality as measured by GINI coefficient, and unemployment rates; lower capita GDP, government budget balance, and labor force participation.

To estimate the probability of EITC adoption (P_i) in equation (1), we proceed as a baseline case with a standard probit and logit estimation given by equation (2) and (3), respectively,

$$P_i = E(Y = 1 | X_i) = F(\beta_1 + \beta_2 X_i) \quad (2)$$

$$P_i = E(Y = 1 | X_i) = \frac{1}{1 + e^{-(\beta_1 + \beta_2 X_i)}} \quad (3)$$

where F is the standard normal CDF.

Table 4 reports the baseline estimation. Columns 1 and 2 use the entire sample, while columns 3 and 4 use the sample of countries that have adopted EITC. For both the entire sample and EITC only sample, most of the explanatory variables have their expected sign. However, coefficient estimates of the age dependency and GINI coefficient have the positive sign, while the budget balance has the negative sign, which are opposite to what we expect from these three variables. Because the income data used to generate the GINI coefficients are before-tax, there could be a reverse effect of EITC, which is ignored in the poverty statistics of most countries. The robustness check of the explanatory variables provided in Table 5 show that for the entire sample and EITC countries, the two variables that appear robust are capita GDP and labor force participation, both of which have the expected, positive sign.

A potential limitation with the probit and logit estimation on 0-1 EITC indicator is that it does not take into account the characteristics of EITC implementation. Since the outcome of EITC program depends on its unit of assessment and refundability, we further test how the probability of EITC adoption differs across these two characteristics. The estimation can be done via the ordered probit and ordered logit model. In Table 6, we provide the results using the ordered probit and ordered logit estimation, based on the EITC unit of assessment in the top panel (No Adoption=0; Unit of Assessment: Families=1; Individual=2) and the EITC refundability in the bottom panel (No Adoption=0; Refundable: Yes=1; No=2). Using the unit of assessment as the key characteristic of EITC implementation, we find that all of the explanatory variables have the expected sign. The exception is the labor force participation for the EITC countries

sample, but its coefficient estimates are insignificant. Using the refundability as the key characteristic, we also find that the effects of our explanatory variables are as expected, except the budget balance variable which is insignificant.

We summarize the impact of our explanatory variables in Figure 1. The figure plots the economic significance of each explanatory variable on the probability of EITC adoption. We calculate how much probability of EITC adoption would increase, if we adjust each variable from the average level of countries without EITC to the average level of countries adopted EITC. For example, the difference of age dependency between countries adopted EITC (50.08) and countries without EITC (69.15) is -19.06. The coefficient from ordered probit estimate based on unit of assessment for the age dependency variable using the entire sample is -.041. The economic significance of age dependency on the probability of EITC adoption is $(-19.06)*(-.041) = +.78$.² We can see in Figure 1 that the variable having most significant impact on the adoption of EITC is

² Our calculation amounts to providing the direct interpretation of the coefficient estimates. For instance, in the logit estimation, the coefficient estimate gives the change in the log of the odds associated with a unit change in that variable, holding all other variables constant. This is also to avoid taking the derivative of the probability function in the case of probit estimation, with respect to some arbitrary values of the explanatory variables. Unlike the linear regression model, our calculation does not map explanatory variables directly into the change in the probability, but provides indicative significance of each variable.

the capita GDP, followed by age dependency, GINI coefficient, unemployment rate, budget balance, and labor force participation.

The results suggest that the eventual adoption of EITC depends on several macroeconomic considerations. The evidence reported here supports the notion that a government contemplating an in-work benefit program would have to take into account the level of income (capita GDP), demographic structure (age dependency), income inequality (GINI coefficient). The EITC adoption would also be significantly driven by less exogenous factors including unemployment, government's balance, and the elasticity of labor supply. Previous micro-level studies highlight the importance of EITC implementation. Interestingly, we also find at a macro-level that how the government would later implement the EITC particularly its refundability and unit of assessment (family vs individual) influences the adoption of the program, after controlling for other macroeconomic factors.

6. CONCLUSION

Using the World Bank's World Development Indicators from 1980 to 2006, we empirically examine the economic factors that could explain the adoption of the In Work Benefit program. Our findings suggest that the capita GDP, followed by age dependency, GINI coefficient, unemployment rate, budget balance, and labor force participation have significant effects on the adoption of the program. To date there are only a handful of countries having the in-work benefit programs in place which make our main results

largely suggestive. Nevertheless, we have shown that the adoption of in-work benefit program cannot be considered in isolation from macroeconomic factors.

By understanding the factors that could explain the adoption of the In Work Benefit program, countries under consideration can learn whether and when they should adopt the policy. In addition to the In-Work-Benefit program, the governments may employ other policies such as the minimum wage to encourage labor force participation and improve income distribution. Compared to a minimum wage policy, an In Work Benefit program has no direct cost on employers. The program is funded by the government budget. Therefore, the program is another tax policy for governments to increase an aggregate demand to stimulate the economy. However, this may result in deepen fiscal deficit. On the other hand, the minimum wage policy pushes the direct cost to employers, but may lead to an unintended consequence of a rising unemployment. However, the upside of minimum wage policy is that the degree of compliance of policy is likely to be higher than that of the In Work Benefit program, especially in developing countries where most of low-income families are not in the tax base.

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Table A1: Data Source.

WDI stands for the World Bank's World Development Indicators database.

Variable	Database Code	Database
Age dependency ratio (dependents to working-age population)	SP.POP.DPND	WDI
CPIA transparency, accountability, and corruption in the public sector rating (1=low to 6=high)	IQ.CPA.TRAN.XQ	WDI
Cash surplus/deficit (% of GDP)	GC.BAL.CASH.GD.ZS	WDI
GDP (current US\$)	NY.GDP.MKTP.CD	WDI
GDP per capita, PPP (constant 2005 international \$)	NY.GDP.PCAP.PP.KD	WDI
GINI index	SI.POV.GINI	WDI
Highest marginal tax rate, individual rate (%)	GB.TAX.IMAR.ZS	WDI
Labor force participation rate, total (% of total population ages 15-64)	SL.TLF.ACTI.ZS	WDI
Unemployment, total (% of total labor force)	SL.UEM.TOTL.ZS	WDI

Table 1: In-Work Benefit Program Adoption.

Sources: Gradus and Justling (2001); Person and Scarpetta (2000); Duncan and Greenaway (2004); OECD (Social Policy Division - Directorate of Employment, Labour and Social Affairs, Country Chapter, 2004); Banks et al. (2005); International Monetary Fund (Country Report No. 04/236, 2004 and 08/62, 2008); Ministry of Finance, Singapore (Budget Statement, 2007).

In-Work Benefit Program Adoption				
<u>Country</u>	<u>Current Program</u>	<u>Year of Introduction</u>	<u>Unit of Assessment</u>	<u>Refundable</u>
UK	Working Tax Credit	1971	Families	Yes
US	Earned Income Tax Credit	1975	Families	Yes
Canada	Working Income Tax Benefit	1978	Families	Yes
Ireland	Family Income Supplement	1984	Families	Yes
New Zealand	Working for Families Tax Credits	1986	Families	Yes
Finland	Earned Income Allowance	1996	Individual	No
Belgium	Earned Income Tax Credit	2001	Individual	Yes
France	Prime Pour l'Empoli	2001	Families	Yes
Netherlands	Employed Person's Tax Credit	2001	Individual	No
Denmark	Earned income tax credit	2003	Individual	No
Austria	Sole Earner (Single Parent) Tax Credit	2005	Families	Yes
Singapore	Workfare Income Supplement	2007	Individual	Yes

Table 2: Summary Statistics.

The sample period is 1980-2006. The entire sample includes 103 countries, of which 12 countries have adopted EITC.

Variable	Obs	Mean	Std. Dev.	Min	Max
<u>All countries</u>					
EITC Indicator	2649	0.06	0.24	0.00	1.00
Age Dependency	2649	66.82	18.86	37.09	116.52
Capita GDP (1,000USD)	2649	10.29	10.66	0.41	72.35
GINI Coeff.	2649	42.88	10.68	24.70	74.33
Budget Balance	2649	2.17	5.58	-7.56	32.06
Labor Participation	2649	68.71	8.91	45.20	90.80
Unemployment	2649	13.42	7.53	0.80	39.30
<u>Countries adopted EITC</u>					
EITC Indicator	324	0.49	0.50	0.00	1.00
Age Dependency	324	50.08	5.14	37.09	70.49
Capita GDP (1,000USD)	324	26.26	6.17	12.64	45.96
GINI Coeff.	324	33.30	4.97	24.70	42.48
Budget Balance	324	3.86	5.81	-1.67	21.23
Labor Participation	324	71.25	5.83	58.40	82.40
Unemployment	324	11.57	3.34	5.20	17.20
<u>Countries without EITC</u>					
EITC Indicator	2325	0.00	0.00	0.00	0.00
Age Dependency	2325	69.15	18.89	38.81	116.52
Capita GDP (1,000USD)	2325	8.07	9.15	0.41	72.35
GINI Coeff.	2325	44.22	10.58	24.85	74.33
Budget Balance	2325	1.94	5.50	-7.56	32.06
Labor Participation	2325	68.36	9.20	45.20	90.80
Unemployment	2325	13.68	7.91	0.80	39.30

Table 3: Correlations.

The sample period is 1980-2006. The entire sample includes 103 countries, of which 12 countries have adopted EITC.

All countries

	ieitc	age_dep	gdc_co~p	_gini	_gov_b~p	lab_par	_unempl
EITC Indicator	1.00						
Age Dependency	-0.21	1.00					
Capita GDP (1,000USD)	0.41	-0.63	1.00				
GINI Coeff.	-0.20	0.55	-0.54	1.00			
Budget Balance	0.02	0.03	0.16	0.10	1.00		
Labor Participation	0.12	0.04	0.03	-0.12	0.03	1.00	
Unemployment	-0.03	0.04	-0.17	0.28	0.03	-0.31	1.00

Countries adopted EITC

	ieitc	age_dep	gdc_co~p	_gini	_gov_b~p	lab_par	_unempl
EITC Indicator	1.00						
Age Dependency	0.26	1.00					
Capita GDP (1,000USD)	0.19	-0.45	1.00				
GINI Coeff.	0.25	-0.11	0.12	1.00			
Budget Balance	-0.22	-0.48	-0.03	0.38	1.00		
Labor Participation	0.30	-0.21	0.31	-0.15	0.04	1.00	
Unemployment	0.25	0.40	-0.24	-0.30	-0.17	-0.14	1.00

Countries without EITC

	ieitc	age_dep	gdc_co~p	_gini	_gov_b~p	lab_par	_unempl
EITC Indicator	.						
Age Dependency	.	1.00					
Capita GDP (1,000USD)	.	-0.57	1.00				
GINI Coeff.	.	0.51	-0.47	1.00			
Budget Balance	.	0.10	0.13	0.14	1.00		
Labor Participation	.	0.08	-0.06	-0.09	0.02	1.00	
Unemployment	.	0.00	-0.13	0.29	0.05	-0.31	1.00

Table 4: Baseline Estimation.

This table reports the estimation, with the dependent variable is 0-1 indicator of EITC adoption. The entire sample includes 103 countries, of which 12 countries have adopted EITC. Standard errors are shown in parentheses, with ***(**,*) signifies statistical significant at 1(5,10) percent level.

	<u>All countries</u>		<u>Countries adopted EITC</u>	
	<u>Probit</u>	<u>Logit</u>	<u>Probit</u>	<u>Logit</u>
	est. (s.e.)	est. (s.e.)	est. (s.e.)	est. (s.e.)
Age Dependency	-.012 (.006)**	-.039 (.013)***	.128 (.029)***	.221 (.051)***
Capita GDP (1,000USD)	.075 (.006)***	.146 (.012)***	.137 (.026)***	.246 (.049)***
GINI Coeff.	.006 (.008)	.024 (.015)	.288 (.035)***	.528 (.071)***
Budget Balance	-.045 (.012)***	-.110 (.024)***	-.124 (.025)***	-.210 (.045)***
Labor Participation	.055 (.008)***	.126 (.017)***	.210 (.027)***	.388 (.055)***
Unemployment	.050 (.009)***	.106 (.017)***	.345 (.052)***	.679 (.111)***
Pseudo R-sq.	.359	.356	.537	.540
Observations	2649	2649	324	324

Table 5: Robustness.

This table provides the robustness checks. The dependent variable is 0-1 indicator of EITC adoption. The entire sample includes 103 countries, of which 12 countries have adopted EITC. Standard errors are shown in parentheses, with ***(**, *) signifies statistical significant at 1(5,10) percent level.

<u>Countries adopted EITC</u>	est. (s.e.)	est. (s.e.)	est. (s.e.)	est. (s.e.)	est. (s.e.)	est. (s.e.)
Age Dependency	.069 (.015)***					
Capita GDP (1,000USD)		.040 (.012)***				
GINI Coeff.			.065 (.014)***			
Budget Balance				-.056 (.015)***		
Labor Participation					.066 (.012)***	
Unemployment						.099 (.022)***
Pseudo R-sq.	.052	.027	.047	.039	.065	.046
Observations	324	324	324	324	324	324
 <u>All countries</u>						
	est. (s.e.)	est. (s.e.)	est. (s.e.)	est. (s.e.)	est. (s.e.)	est. (s.e.)
Age Dependency	-.042 (.005)***					
Capita GDP (1,000USD)		.063 (.004)***				
GINI Coeff.			-.054 (.006)***			
Budget Balance				.007 (.007)		
Labor Participation					.031 (.005)***	
Unemployment						-.011 (.006)*
Pseudo R-sq.	.135	.290	.109	.001	.037	.003
Observations	2649	2649	2649	2649	2649	2649

Table 6: Unit of Assessment and Refundability.

This table reports the estimation, with the dependent variable is 0-1 indicator of EITC adoption. The entire sample includes 103 countries, of which 12 countries have adopted EITC. Standard errors are shown in parentheses, with ***(**,*) signifies statistical significant at 1(5,10) percent level.

No Adoption=0; Unit of Assessment: Families=1; Individual=2				
	<u>All countries</u>		<u>Countries adopted EITC</u>	
	<u>Ordered Probit</u>	<u>Ordered Logit</u>	<u>Ordered Probit</u>	<u>Ordered Logit</u>
	est. (s.e.)	est. (s.e.)	est. (s.e.)	est. (s.e.)
Age Dependency	-.041 (.007)***	-.084 (.013)***	-.123 (.023)***	-.222 (.041)***
Capita GDP (1,000USD)	.054 (.005)***	.099 (.009)***	.038 (.017)**	.088 (.031)***
GINI Coeff.	-.026 (.007)***	-.039 (.013)***	-.066 (.020)***	-.096 (.034)***
Budget Balance	.058 (.008)***	.101 (.016)***	.243 (.046)***	.477 (.088)***
Labor Participation	.026 (.007)***	.064 (.013)***	-.021 (.017)	-.047 (.031)
Unemployment	.057 (.009)***	.109 (.016)***	.169 (.034)***	.309 (.060)***
Pseudo R-sq.	.349	.341	.360	.361
Observations	2649	2649	324	324
No Adoption=0; Refundable: Yes=1; No=2				
	<u>All countries</u>		<u>Countries adopted EITC</u>	
	<u>Ordered Probit</u>	<u>Ordered Logit</u>	<u>Ordered Probit</u>	<u>Ordered Logit</u>
	est. (s.e.)	est. (s.e.)	est. (s.e.)	est. (s.e.)
Age Dependency	-.021 (.007)***	-.051 (.014)***	-.080 (.026)***	-.130 (.046)***
Capita GDP (1,000USD)	.064 (.005)***	.120 (.010)***	.006 (.018)	.020 (.031)
GINI Coeff.	-.054 (.008)***	-.085 (.015)***	-.154 (.025)***	-.262 (.043)***
Budget Balance	-.007 (.011)	-.029 (.020)	.018 (.022)	.041 (.038)
Labor Participation	.065 (.008)***	.136 (.016)***	.216 (.020)***	.382 (.038)***
Unemployment	.086 (.010)***	.160 (.017)***	.474 (.048)***	.822 (.090)***
Pseudo R-sq.	.369	.360	.560	.557
Observations	2649	2649	324	324

Figure 1: Contribution to the Probability of EITC Adoption.

This figure plots the economic significance of each explanatory variable on the probability of EITC adoption. We calculate how much probability of EITC adoption would increase, if we adjust each variable from the average level of countries without EITC to the average level of countries adopted EITC. For example, the difference of age dependency between countries adopted EITC (50.08) and countries without EITC (69.15) is -19.06. The coefficient from ordered probit estimate based on unit of assessment for the age dependency variable using the entire sample is -.041. The economic significance of age dependency on the probability of EITC adoption is $(-19.06) * (-.041) = +.78$. The entire sample includes 103 countries, of which 12 countries have adopted EITC.

