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Comparative Study on Macro Causes of Working Poverty: Focusing on Two-parent Households in OECD Countries

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Comparative Study on Macro Causes of Working Poverty: Focusing on Two-parent Households in OECD Countries

by

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Comparative Study on Macro Causes of Working Poverty: Focusing on Two-parent Households in OECD Countries

Abstract

This study investigates the macro (structural and institutional) factors influencing working poverty by comparing among major OECD countries. A pooled time-series regression analysis with unbalanced panel design was performed on data collected from eligible two-parent households. The supply-side prescription of a mixed capitalist economy produced marginal poverty alleviation. As a result, working poverty has become a pronounced social problem in many developed capitalist countries in recent years. However, rash generalizations regarding poverty convergence are limited because the severity of the problem varies greatly across countries. International differences in working poverty stem from differences in countries' institutional contexts and the roles of actors. Among welfare institution variables, the children and family spending, and the social assistance spending were found to contribute to reductions in working poverty. Among variables reflecting political institutions, the proportional representation, the left seat, and the cumulative left cabinet were found to contribute to reductions in working poverty. Among the labor market variables, the unionization rate, the employment protection for regular workers were also found to contribute to reductions in working poverty. Among CME nations, socialist democratic countries that pursue the high road (i.e., high skills-high wages) were found to have a superior record of reducing working poverty.

Key Words: Comparative Poverty Study, Political and labor market institutions, Welfare institutions, Socio-structural Factors, Unbalanced Panel Design, Pooled Time-series-cross-sectional Regression Analysis, Working Poverty, Korea.

Comparative Study on Macro Causes of Working Poverty: Focusing on Two-parent Households in OECD Countries

I. Introduction

At the end of the 1980s, poverty emerged as a new topic of discussion. Poverty among the working class, in particular, was rediscovered as a social issue. The rising rate of working poverty has created anxiety among researchers and policy makers because, unlike the traditional poor, the working poor are shaped by social forces rather than by individuals' behavioral characteristics and choices. Identifying the social factors contributing to working poverty is thus at the core of current poverty research (Brady, Fullerton and Cross, 2010). In fact, it has been reported that working poverty varies more significantly among countries than does overall poverty, suggesting that the workings of macro factors have a decisive influence on working poverty.

On the other hand, observations of long-term poverty trends and recent poverty research have allowed broader insight into the relationship between poverty and structural/institutional forces (Alderson, 1999; Gustafsson and Johansson, 1999; Alderson and Nielsen, 2002; Brady, 2003a; Brady, 2003b; Moller, Bradley, Huber, Nielsen and Stephens, 2003; Mahler, 2004; Kenworthy and Pontusson, 2005; Brady, 2005; Brady, 2006). According to the findings, poverty convergence through structural changes has not occurred, suggesting that inter-country disparity in working poverty continues because of differences in active government intervention. Governments' roles are being reviewed from a variety of perspectives, including studies of welfare, political, and labor market systems. These studies indicate that, even for working poverty (influenced more by social forces than by individuals' vulnerabilities), inter-country disparity continues to expand rather than converge. Such inequality is suspected to stem from varying degrees of government intervention in welfare systems, political and labor market institutions.

Unfortunately, research on the macro causes of working poverty has been riddled with limitations. First, among the studies on working poverty from a microeconomic point of view, the limited scope of most (which focus on a single country) makes it difficult to generalize the findings internationally (Brady, Fullerton and Cross, 2009; Brady, Fullerton and Cross, 2010). It has been noted that the characteristics of the working poor vary across countries; thus, any generalization should be made with caution. It has also been pointed out that the close association between working poverty and macro factors has not been sufficiently reflected in the

research, which undermines its persuasive power (Crettaz and Bonoli, 2010; Brady, Fullerton and Cross, 2010).

Second, despite the growing number of multivariate studies on the macro factors in working poverty within single countries, none offers sufficient explanation (Sim, 2006). Unfortunately, limitations imposed by the lack of poverty data accumulated over a long period of time are difficult to overcome at this point. Although national structural and welfare system factors for which time series variants are available can be incorporated, insufficient data for developed countries with maturing economies are available. Labor market and political institution factors affecting the working class cannot be adequately reflected, as they are invariant.

Third, although poverty research using pooled time series regression analysis has been gaining popularity, most studies focus on overall poverty; research on working poverty (which shows greater inter-country inequality) is sorely lacking (Brady, Fullerton and Cross, 2010); only the international comparison of working poverty using a multivariate quantitative method in Lohmann (2009) is available. Obviously, socio-structural, labor market and political institution factors have a greater impact on the working class than on the rest of the population. Also, we must consider the characteristics of welfare system factors focusing working class.

Fourth, although multidimensional studies that consider both micro and macro factors are on the rise, they are limited in their capacity to predict the macro factors influencing poverty (Brady, Fullerton and Cross, 2009) because most studies present abundant cases of micro factors, but fewer than 20 countries have been examined due to methodological limits. For this reason, multidimensional research falls short of being able to replace macroeconomic multivariate quantitative comparison research.

This study seeks to identify the macro factors influencing working poverty through an international comparison of major OECD countries. To achieve this goal, a pooled time series regression analysis with an unbalanced panel design was performed on international data collected from eligible two-parent households.

This study is different from existing studies in several ways. First, it is one of the few multivariate international comparison studies with a focus on working poverty rather than on overall poverty. This multivariate international analysis of working poverty examined two-parent households. Two-parent households are analyzed because they constitute the only index that can represent the working poor among LIS (Luxemburg Income Study) data. The LIS publishes poverty rates among two-parent households of subject countries, valuable data for a multivariate international comparison of working poverty.

Second, this study incorporates the results of recent international comparison studies on

poverty in order to investigate the associated macro factors and present a comprehensive explanation of the mechanism of working poverty. At the front of the social structure, the economic and demographic factors influencing working poverty were considered. Regarding the welfare system, factors pertaining to the working class (e.g., the public health spending, the children and family spending, the unemployment and incapacity spending) were considered, in addition to the social spending and the public assistance spending. The working class relies heavily on the labor market for income; thus, the union density, the wage setting coordination, the employment protection, and active labor market policies were also reviewed. Considering that the political background tends to influence efforts to alleviate poverty, the government type, the election institution, the left seat, the left cabinet and the cumulative left cabinet were considered.

Third, this study uses a unique research method. This study is the latest one that reflected recent indexes and examined from the 1980s to 2012. Most studies used data collected throughout the 1990s. However, this study incorporates new indexes added in the 2000s, increasing its relevance and the number of cases examined. This study also includes Korea, which is seldom included in international poverty comparison studies. To minimize sampling error, this study used the raw data of the *Household Survey* collected between 2006 and 2012, which include agricultural/farming households and single households. And this study made indexes of Korea on independent variables suitable for the international comparison.

II. Theoretical Background and Review of Past Research

1. Socioeconomic Factors

Economic factors are thought to have a greater impact on working poverty than on overall or elderly poverty because a growing economy increases demand, which creates more of the employment opportunities that can alleviate poverty. In the past, expanding standardized employment opportunities, centering on manufacturing, could alleviate poverty (Blank, 2000). Overall poverty rates include households headed by individuals not currently participating in the labor force, which mutes the effects of the economic factors reflected in poverty rates. Reductions in elderly poverty are not directly associated with economic growth because welfare expansion is possible only when transfer expenditure increases due to tax base expansion.

Nevertheless, economic factors' impact on poverty alleviation has been showing a different pattern in recent years (Ellwood and Summers, 1986). As Fordism's quantitative growth reached its saturation point, chronically low economic growth started to weaken the trickle-down effect

(Norton, 2002). Persistently low economic growth impedes labor-friendly factor income distribution, and a worsening labor market structure may prevent economic growth from being translated into personal income growth among the working class. As a result, economic growth itself can exacerbate income inequality and increase relative poverty (Tobin, 1994). Furthermore, the recent phenomenon of deindustrialization casts a dark shadow over society's efforts to alleviate working poverty. The expansion of the service industry produced a de-standardized and demand-oriented labor market with a polarized labor force, while the slow growth in labor productivity has intensified the competition between low-skilled laborers and the unemployed, perpetuating low wages and unemployment (Myles and Pierson, 2001). The transition to a service economy has brought with it a downward standardization of wages, growing job insecurity, low wages, and increasing income inequality. For these reasons, growth in the services sector does not always translate into reduced poverty among the working class (Andress and Lohmann, 2008; quoted in Kollmeyer, 2013).

On the other hand, women's participation in the labor force typically has a positive effect on household economies (Albrecht and Albrecht, 2007; Schwartz, 2010, quoted in Kollmeyer, 2013). Strong economic participation by females from high income families can exacerbate income inequality; as economic participation among low-income females is relatively high, however, expanding employment opportunities for the working poor can increase household income and contribute to poverty reduction (Christopher, England, Smeeding and Ross, 2002).

Studies show that the effects of economic growth on poverty are not consistent. Many studies report that economic growth does not have an effect on poverty reduction due to low growth (Moller, Bradley, Huber, Nielsen and Stephens, 2003; Brady, 2003b; Scruggs and Allan, 2006; Brady, Fullerton and Cross, 2009). Some studies report that economic growth exacerbates poverty as a result of a worsening quality of growth (Brady, Fullerton and Cross, 2010). Nevertheless, many studies still report that economic growth reduces poverty (Moller, Bradley, Huber, Nielsen and Stephens, 2003; Brady, 2006; Brady and Kall, 2008). Some studies also report that employment expansion in the manufacturing sector has no effect on poverty (Brady, Fullerton and Cross, 2009; Brady, Fullerton and Cross, 2010). On the other hand, many studies indicate the opposite (Moller, Bradley, Huber, Nielsen and Stephens, 2003; Brady, 2006; Brady and Kall, 2008). Against expectations, few studies have found a link between increasing poverty and unemployment among household members (Moller, Bradley, Huber, Nielsen and Stephens, 2003), perhaps due to the household-level poverty measurements and unemployment benefits. Most studies report that poverty is not a function of unemployment (Brady, 2006; Scruggs and Allan, 2006; Brady and Kall, 2008); some studies even report that unemployment reduces poverty (Brady, 2003b). Studies on

women's labor force participation report that it reduces poverty (Moller, Bradley, Huber, Nielsen and Stephens, 2003; Brady, 2006; Brady and Kall, 2008).

Demographic factors can contribute to poverty by influencing household income and resources. In the past, young population structures and nuclear families could effectively alleviate working poverty (Estévez-Abe, 2005; Bonoli, 2006; Crettaz and Bonoli, 2010). However, recent studies have found a different trend. The rising number of non-typical households is garnering research attention. For typical households, the growing elderly population and the presence of children are major factors that can undermine a household's collective earning power. For poverty measured at a household level, the presence of non-working household members has a determining effect on horizontal income distribution, even in typical households with a fixed income (Kollmeyer, 2013). Discounting welfare interventions, children and the elderly are bound to have greater economic vulnerabilities due to lifecycle characteristics (Kangas and Palme, 1998). The growing number of elderly household members produced through increasing life expectancies has been pointed out as an important factor in poverty. Moreover, a household's number of children serves as an important factor in working poverty. The presence of unemployed adult children living with their parents due to high unemployment has also emerged as a risk factor exacerbating poverty in southern European countries (Crettaz and Bonoli, 2010).

Many studies have found that an elderly population increases poverty (Brady, 2006; Brady and Kall, 2008; Brady, Fullerton and Cross, 2009). However, other studies show that welfare state efforts to alleviate elderly poverty offset the effect of the increasing elderly population (Brady, Fullerton and Cross, 2010). Many studies have reported that the presence of children contributes to increased poverty (Brady, Fullerton and Cross, 2009; Brady, Fullerton and Cross, 2010). However, other studies report that increased number of children has no direct impact on the growth of poverty (Moller, Bradley, Huber, Nielsen and Stephens, 2003) because of welfare spending on children. However, macro research incorporating adult children as a variable has not been conducted due to the difficulty of obtaining sufficient data.

2. Institutional Factors

1) Welfare Institutions

According to neoclassical economics, a welfare system restricts business investment and impedes the efficient distribution of resources, undermining growth potential with its inherent unproductivity (Barro, 1991). According to this logic, the expansion of welfare interrupts the

trickle-down effect and undermines efforts to alleviate working poverty. However, this argument lacks sufficient basis in reality. According to Harberger's hypothesis, tax spending has nothing to do with growth (Benbaou, 1996). Furthermore, Bassanini's empirical study (Bassanini, 2001) supports Aschauer's hypothesis that government spending does not interfere with the accumulation of private capital but in fact helps improve basic social conditions. Pryor (2004) also reports that the small governments of many Anglo-Saxon countries negatively affect growth, whereas the big governments of Nordic nations positively affect growth. On the other hand, the low level of welfare provision by small governments has been found to increase income inequality and poverty; a vicious cycle forms when impaired ability of the low-income classes to accumulate human capital undermines growth potential, which in turn reduces economic growth (Benbaou, 1996).

On the other hand, recent discussions regarding varieties of capitalism (VoC) have focused on the institutional context. VoC views a well-established welfare system as a type of public goods that mediates resource distribution at a national level. In uncoordinated liberal market economies (LMEs), capital pursues a low road (low-skill/low-wage) production regime. Private mediation is dominant between laborers and employers seeking short-term profits. In CMEs, however, most capital pursues the high road (high-skill/high-wage) production regime generating social mediation, which seeks long-term profits (Hancké, Rhodes and Thatcher, 2007). In CMEs, the welfare system emerges as corporatism's agenda because it is identified as a public goods that ensures skill accumulation and reproduction stability for workers (Granados and Knoke, 2005).

LMEs are stingy about supplying public goods and thus operate a political institution identified as the "ideal type majoritarian model." The government plays a minimal regulatory role to encourage the market economy. Contrariwise, CMEs play an enabling role against the backdrop of the consensus model. Because these nations have the capability to protect aggregate public goods, they promote the interest representative system and comprehensive trade (Lijphart, 1999; Soskice, 2007). As a result, LMEs correspond to the Beveridge system of liberal welfare states, which provide a high rate of public assistance and a low level of flat-rate benefits. Among the CMEs, continental European welfare states characterized by industry-level mediation have an elective affinity with Bismarckian welfare states based on employment and contributions, with a reliance on transfer benefits. On the other hand, northern European nations with macroeconomic mediation have an elective affinity with socialist democratic welfare states, which provide universal flat-rate and income-related benefits, and public social services (Huber and Stephens, 2005).

Studies have found that generous welfare benefits have a greater determining effect on poverty alleviation than do structural factors (Brady, Fullerton and Cross, 2010). It is also considered that

the level of welfare provision is directly linked to poverty alleviation in OECD countries (Moller, Bradley, Huber, Nielsen and Stephens, 2003; Brady, D. 2003b; Brady, 2006; Brady and Kall, 2008; Brady, Fullerton and Cross, 2009; Brady, Fullerton and Cross. 2010). Most studies report that, because public health spending provides health-related allowances, it serves as a buffer against decreasing earning power due to illness or injury (Brady, 2003b; Brady and Kall, 2008; Brady, Fullerton and Cross, 2010). According to most studies, children and family spending have a positive effect on poverty alleviation (Moller, Bradley, Huber, Nielsen and Stephens, 2003; Brady, Fullerton and Cross, 2010). Some studies suggest that poverty rates improve if unemployment benefits' short-term income replacement rate is high (Moller, Bradley, Huber, Nielsen and Stephens, 2003). Other studies suggest that poverty rates fall if health allowances' income replacement rate is high (Scruggs and Allan, 2006). On the other hand, other studies suggest that public assistance alone cannot alleviate poverty (Moller, Bradley, Huber, Nielsen and Stephens, 2003).

2) Labor Market and Political Institutions

According to the VoC approach, a labor market system is not chosen randomly. Economic activities are socially embedded and pertain to institutional issues. As such, a society's production structure contains various sub-systems forming a unique grouping pattern under the dominant institutions of governance. Specific systems tend to systematically, albeit loosely, combine via a specialized production regime because isomorphic and related subsystems have compensating strategies that provide increasing returns with microeconomic efficiency and thus tend to reinforce each other (Soskice, 1999; Ebbinghaus and Manow, 2001; Hassel, 2007; Sim, 2010). Major subsystems composing a production regime include finance and economic systems, production systems, employment relations, and vocational training systems.

Labor market institutions are thought to have a greater impact on working poverty than on overall poverty because these directly impact on income capacity. According to the VoC, however, the provision of public goods such as production, skills, and training/education is expressed as a regime-specific performance (Deer, 2005). This view considers poverty alleviation as a type of public goods. As such, various results can be expected depending on the characteristics of the labor market. Because LMEs pursue the low-road (low-skill/low-wage) production regime, private mediation between laborers and management is dominant. Low unionization, corporate level labor-management negotiation, low employment security, and insufficient public employment are typical characteristics of an uncoordinated labor market system. In CMEs, which pursue the high-

road (high skill/high wage) production regime, labor–management negotiation is based on strategic social mediation. Therefore, labor markets in CMEs are characterized by high unionization, industry or national-level wage negotiation, and high employment security. These are linked to expansion in employment (Hancké, Rhodes and Thatcher, 2007), particularly in Nordic countries.

Studies tend to focus on the impact of labor market systems on poverty. Among labor market system indicators, the unionization rate has been consistently argued to help reduce poverty (Moller, Bradley, Huber, Nielsen and Stephens, 2003; Brady, 2003b; Brady, Fullerton and Cross, 2009; Brady, Fullerton and Cross, 2010). This finding is consistent with others suggesting that concentrated wage negotiation can alleviate poverty (Moller, Bradley, Huber, Nielsen and Stephens, 2003; Brady, 2003b; Brady, Fullerton and Cross, 2010). Another study reports that employment protection contributes to poverty reduction (Brady, Fullerton and Cross, 2010). Some studies report that public employment contributes to poverty reduction (Brady, Fullerton and Cross, 2009), whereas others suggest that the two are not correlated (Brady and Kall, 2008; Brady, Fullerton and Cross, 2010).

So far, international poverty research has focused on investigating the role of left party or left cabinet based on the power resource theory. However, the VoC approach, used by researchers such as Iversen and Soskice (Iversen and Soskice, 2006), finds that, in addition to left party and left cabinet, a comprehensive political constellation helps alleviate income inequality (Austin-Smith, 2002; Ontiversos and Verardi, 2005). Because party composition and inter-party relationships are defined by the political system, the role of the political system cannot be ignored. International differences in left party's influence and governing patterns cannot be explained without a discussion of the countries' political systems (Bowler, 2006; Iversen and Soskice, 2008). According to this view, the particular makeup of a political system can positively influence the country's poverty alleviation policies by allowing the left party to expand its influence and by providing an environment hospitable to coalition government.

So far, the VoC approach has been criticized as a functionalistic approach in ignoring the political dynamics involved in production and distribution. In fact, some have criticized the approach for being confined within the limitations of the static increasing returns/path-dependency viewpoint. Thus, recently VoC approach has concerned in the political actors and political institutions that provide background to them. The specific compositions of production and welfare regimes have an elective affinity with specific political institutions. The majoritarian model popular among LMEs features a simple majority voting system, simple majority cabinet, and a separation between the legislative and administrative branches of government. On the

other hand, CMEs tend to adopt a consensus model characterized by proportional representation system, coalition government, and a balance of power between the legislative and administrative branches of government.

Differences in political systems exert a great deal of influence on party composition and inter-party relationships. In the majoritarian model, where a two-party system is dominant, the party that seeks to be a "catch all party" tends to be stingy about progressive agendas (such as welfare expansion) to attract more votes from median voters. In the majoritarian model, there is prevalent a two-party system that excludes the left party. Even though the left party is prevalent, policy stability is interrupted by sporadic single power of the government. On the other hand, because the consensus model instinctively forms a multi-party system, a proportional representation system is established to secure the left party's influence in the legislative branch of the government. Additionally, incorporating the social income function, there is a strong tendency to create a center-left cabinet (Iversen and Soskice, 2008). In LMEs, a "winner takes all" type of conflict-ridden political culture is dominant, and a minimalist regulatory government that tends to be stingy about social mediation runs the state. In CMEs, however, where a political culture of

negotiation and compromise takes root, the enabling government tends to pursue comprehensive and mediated profits. Because of this, political powers involving left party tend to pursue a comprehensive agreement regarding finance/banking and labor market policies, in addition to labor, capital, wage, and welfare policies (Granados and Knoke, 2005).

Studies have focused on verifying left parties' level of contribution to poverty alleviation on the basis of the power resource theory. These studies can be divided into two camps—those arguing that left party contributes to poverty reduction (Brady, 2003b; Scruggs and Allan, 2006) and those arguing that the two are not related (Scruggs and Allan, 2006). Some studies report that cumulative left cabinet, which greatly affect the stabilization of left parties' institutional influence, contribute to poverty reduction (Brady, 2003b; Brady, Fullerton and Cross, 2009). According to other studies that have incorporated government types and electoral systems (Ontiversos and Verardi, 2005), the parliamentary cabinet system and the size of valid electoral districts are closely related to poverty reduction. Still other studies (Scruggs and Allan, 2006) report that the number of institutional veto points spreads relative poverty but reduces absolute poverty and has nothing to do with the working class' absolute poverty. According to Lijphart (1999), however, institutional veto points include political systems that are weekly associated with the consensus model (e.g., federalism, bicameral system, national referendum), and thus the generalization of this view has limitations.

III. Research Plan

1. Research Objects and Major Variables

The subjects of this study consist of 19 countries, including Korea. Data spanning from 1981 to the present were used. Data collected before the 1980s were excluded because all cases were missing at least one continuous variable among the independent variables. Recent data missing a continuous variable were also eliminated. A total of 128 cases were included in the study. Panel data are distributed over 27 years. The average of time points for each panel is 6.7. The smallest panel data of four time points pertain to Korea, and the largest of nine time points pertain to Canada. Panel data are temporally uneven, and the number of countries at a particular time point varies; there are more cross sections than there are time series sections.

For Korea, raw data collected from the 2006, 2008, 2010, and 2012 *Household Survey* were used. The *Household Survey* has been providing household income data, including those of non-wage households (such as agricultural households) and single households since 2006. Because data collected before 2006 have systemic sampling errors, post-2006 data were used.

As seen in Table 1, the working poverty rate of two-parent families with children under 18 is used as the dependent variable. Despite the various operational definitions of working poverty, long-term time series international indexes that reflect these definitions are completely lacking. The LIS has been reporting the poverty rates among two-parent families with children under 18 in each subject country using 50% of median income as the criterion. Therefore, the results are useful for a multivariate international comparison study. Because households with children belong in the working generation, they are conceptually included among working households. Two-parent families are typical families and account for a significant portion of the working generation. Although it is limited in not including single-parent households, single households, or households consisting of couples without children, the characteristics of non-typical households do not have to be considered, and it can thus offer representative results that identify the current picture of poverty and its macro causes. Raw Korean data from the *Household Survey* were used to directly calculate the poverty rates among two-parent families.

The independent variables, selected based on a review of theoretical background and past research, are summarized in Table 1. Socio-structural factors consist of economic and demographic factors. As economic factors, the GDP per capita (log), the industrial employment, and the total employment rate were examined, in addition to the female employment, which is associated with increased income in typical households. The employment rate is measured

<Table 1> Definition of variables and archival sources

variables	description
Dependent variable	
Poverty rate	the poverty rate of two-parent households with children based on 50% median-income threshold
Socio-economic variables	
GDP per capita(log)	real GDP per capita in 2005 international dollars(log)
Industrial employment	industrial employees as % of wage and salaried employees
Employment rate	civilian employees as % of population 15 years and over
Female employment rate	female civilian employees as % of female population 15 years and over
% population over 64	population aged 65 years as % of total population
% population 0-14	population aged under 15 years as % of total population
Welfare institution variables	
Social spending	total public social spending as % of GDP
Public health spending	public spending on health as % of GDP
Children/family spending	children and family spending as % of GDP
Unemployment/incapacity spending	total of unemployment spending and incapacity-related spending GDP as % of GDP
Social assistance spending	social assistance spending as % of GDP
Political institution variables	
Government type	0=parliamentary system / 1= presidential or collegiate executive
Election system	0=proportional representation / 1=modified proportional representation / 2=single member simple plurality systems
Left seat	share of seats in parliament won by parties classified as left in the most recent election
Left cabinet	of seats in parliament held by leftist parties in the most recent government as a percentage of all seats held by the government
Cumulative left cabinet	cumulative left cabinet score from 1946 to the year of the observation
Labor market institution variables	
Union density	net union membership as % of employed wage and salary earners
Wage setting coordination	1=fragmented wage bargaining confined largely to individual firms or plants / 2=fixed or alternating industry and firm level bargaining / 3=industry level bargaining with no or irregular pattern setting / 4=mixed industry and economy-wide bargaining/ 5=economy-wide bargaining
Employment protection(regular)	0=least strictness / 6=most strictness
Employment protection(irregular)	0=least strictness / 6=most strictness
ALMP spending	ALMP spending as % of GDP

Sources 1) The poverty rates of 18 countries were calculated based on *LIS Inequality and Poverty Key Figures* (<http://www.lisdatacenter>) (2015.1.26). Luxembourg: LIS., the poverty rates of Korea were calculated based on the raw material of <the Household Survey Data>.

2) Political institution variable and ALMP spending except Korea were calculated based on OECD homepage(<http://stats.oecd.org>), other independent variables were arranged based on Brady, Beck and Stephens(2014).

3) Sources of independent variables in Korea are as in the following. Socio-structural variables, welfare institution variables, employment protection, ALMP spending were arranged based on OECD homepage(<http://stats.oecd.org>). Union density was based on Korea Labor Institute(<http://www.kli.re.kr>). Political variables and wage setting coordination were arranged based on related sources respectively(<http://www.lisdatacenter.org>, <http://www.assembly.go.kr>, the Social Policy Group in Seoul National University(2008)), (<http://www.uva-aiaa.net>).

instead of the unemployment rate because statistical unemployment rates fail to adequately reflect the realities of the labor market and thus interfere with a systematic analysis of its relationship with poverty. For the same reason, the female employment rate is used instead of the female economic participation rate. Labor market participation by added workers who make up the labor reserve has a negative correlation with the unemployment rate. Therefore, the economic participation rate, which is closely associated with fluctuations in the unemployment rate, does not effectively reflect the realities of female labor market participation, a fact that was taken into consideration. As this study examines typical households, single-parent and single households were excluded as demographic factors, and the % population over 64 and the % population 0-14 were examined for their impacts on working poverty.

As institutional factors, the impacts of welfare, labor market, and political systems were investigated. The unemployment and incapacity benefits are representative allowances targeting working individuals; if their short-term income replacement rate is high (especially for unemployment benefits), the poverty rate is low. The unemployment and incapacity spending were calculated as a combination of the two against GDP. For political systems, the government type, the electoral system, the left seat, the left cabinet, and the cumulative left cabinet were included. For labor market system, the unionization rate, the wage setting coordination, the employment protection for regular and irregular workers, and the active labor market spending were considered. To reflect public employment, as multi-year data for some countries could not be obtained, the robust labor market spending was selected.

Following Brady, Fullerton and Cross (2010), t-time variables were incorporated for the independent and dependent variables. For per capita GDP, t-1 year and natural-log values was selected. For the statistical model, structural and welfare variables were presented as the basic model, followed by an alternating injection of labor market and political institution variables.

2. Statistical Treatment and Analysis Method

Panel data are temporally uneven, and the number of countries varies depending on time point; cross-section data outnumber time series data. Panel data do not satisfy the assumption of independence between errors, and, due to unmeasurable in-variant inter-unit heteroscedasticity, inaccurate standard errors are calculated, which makes it difficult to apply OLS (ordinary least square). Furthermore, applying Beck and Katz's PCSE (panel corrected standard error) is difficult. The pooled time series regression analysis using Beck and Katz's PCSE model should not be performed if time points are less than 10 or 15; this study's average time point is only 6.7. It can

also be used when a large number of homogeneous time series data are extracted from a relatively small number of panel data. However, it cannot be used if cross sections completely outnumber time series or if the data are temporally uneven, as in this study. Parks–Kmenta's FGLS (feasible generalized least square) model assumes each units and serial correlation errors and presumes identical auto-regression processes for each units to dilute the special auto-regression processes in each unit. This method can be used when extracting a large number of homogeneous time series data from a relatively small number of units. As such, it cannot be applied if cross section units are more numerous than time series units or if data are uneven over time (Huber, Stephens, Bradley, Moller and Nielsen, 2004).

In performing a pooled time series regression analysis for which an unbalanced panel design is used, a random-effect model is used for theoretical and methodological reasons. First, from the viewpoint of methodology, a random-effect model is more suitable for a small-scale and uneven case where cross section units are more numerous than are time series units. According to Beck (2001), random-effect models are designed to work well for very small time points of two or three (quoted in Huber, Stephens, Bradley, Moller and Nielsen, 2004). Second, between and within country variants are both crucial, and a random-effect model can accommodate both kinds. In most variables, cross-national standard deviations are far greater than historical variations (In this study, Housman test indicates that the null hypothesis on the exogeneity of the explanatory variables is adopted in any of the models ($H_0 : cov(x, u_i) = 0$)). Random-effect model can provide more efficient estimator in this case). Random-effect models are a matrix of weighted averages derived from a fixed-effect model's intra-unit estimates and between-effect model's estimates. It incorporates both the general error terms and unit-specific error terms and eliminates the variants that correspond to the country-specific averages (Alderson, 1999).

On the other hand, a fixed-effect model generates inefficient estimates if the cross section units outnumber time series units (Huber, Stephens, Bradley, Moller and Nielsen, 2004). The fixed-effect model performs an OLS analysis that includes unit-specific constants, and it replaces within unit variants with unit-specific averages for all variables (Alderson, 1999; Hsiao, 2003). The cross-national variations for poverty are not a constant and have relative stability in country rankings. The fixed-effect model hides this crucial variant (Beck, 2001). According to Beck and Katz (2001), the fixed-effect model is limited in applications to regression variables that are stable over time (quoted in Huber, Stephens, Bradley, Moller and Nielsen, 2004).

IV. Research Result

Table 2 presents the descriptive statistics of the variables (see Appendix 1 for Korea's detailed indexes). The overall poverty rate was 10.1%, and the working poverty rate of two-parent families was 8.2%. For the working poverty, Italy topped the chart (16.9), followed by Spain (15.1), the U.S. (14.1), Greece (13.3), the U.K. (11.1), Canada (10.2), and Ireland (10.1), which was over 10%. The lowest rate of working poverty was found in Finland (2.2), followed by Sweden (2.8), Norway (2.8), Denmark (3.0), Germany (4.2), the Netherlands (4.5), Belgium (4.8), and France (5.9).

The findings regarding sociocultural variables were as follows. The GDP per capita was \$29,153 on average. The industrial employment rate was 30.6% on average. The total employment rates were around 66.9% on average. The female employment rate was 46.7%, which accounted for a mere 69.8% of the total. The total employment rate and the female employment rates showed a pattern that liberal countries and socialist democratic countries scoring high and continental European countries scoring low. The % population over 64 was 14.7% on average. The % population 0-14 was 18.4% on average.

The findings for the welfare variables are as follows. The total social spending was 22% on average. Socialist democratic and continental European countries spent well over 25% on welfare spending. Korea (8.7) is the only nation that spent less than 10% on welfare, and liberal countries grazed very low. The public health spending was 6.3% on average. Korea (3.7%) was the bottom, and liberal countries were not distinctively low unlike the total social spending. The children and family spending was 2.3% on average. In general, socialist democratic countries ranked high, while liberal countries, with the exception of Australia, ranked low. The unemployment and incapacity spending was 4.1% on average. In general, socialist democratic countries topped the chart, followed by continental European countries, liberal countries, and Korea. The social assistance was 6.3% on average.

The findings regarding the political institution variables are as follows. For the government type, Finland, France, Korea, and the U.S. adopted the presidential or collegial (semi-presidential) system. Finland and France are collegial systems, while Korea and the U.S. are presidential systems. Fourteen of the countries adopted the parliamentary system. Concerning the electoral systems, liberal countries - Canada, the U.K., and the U.S. - adopted the simple majority vote system. Countries with a modified proportional representation system included France and Korea. France had a two-round electoral system run using single-member districts. Korea elected of 300 parliament members through a proportional representation system, and the remaining 253 members were elected in single-member districts. Fourteen countries had a proportional representation system. The left seat was 36.5% on average. The proportions in the U.S. (0) and Korea (2.8) were dismal. In general, the left seat was high in socialist democratic and continental European countries. However, the figures varied significantly among liberal countries such as Australia and the U.K. The left cabinet was 36.6%. The proportions were high in socialist

<Table 2> Mean values of variables by country

	poverty	GDP	industry	emprate	femp	over64	0-14	social	health	family	un+inca	assist
	w-povrt	gov-type	election	leftseat	leftcab	cullecab	union	wageset	re-EPL	irre-EPL	ALMP	
total	10.1	29153.0	30.6	66.9	46.7	14.7	18.4	22.0	6.3	2.3	4.1	0.6
(128)	8.2	-	-	36.5	36.6	16.0	37.9	2.9	2.0	2.1	0.8	
AUL	12.7	29866.6	26.6	70.2	50.7	12.2	20.9	15.7	5.2	5.0	2.9	0.2
(7)	9.3	0	0	52.1	71.4	18.1	28.6	4→2	1.3	0.9	0.4	
AUS	8.4	28704.3	36.0	68.0	46.4	15.3	17.1	26.8	7.4	3.0	3.9	0.3
(5)	7.5	0	0	44.8	35.0	32.1	38.4	4	2.8	1.5	0.5	
BEL	6.5	23660.0	33.4	55.9	36.0	15.5	18.1	25.7	6.0	2.4	6.0	0.4
(6)	4.8	0	0	32.8	40.0	15.2	53.2	4→5	1.7	4.0	1.2	
CAN	12.0	29744.6	25.4	69.6	53.1	12.4	19.2	18.1	6.8	0.9	2.2	2.8
(9)	10.2	0	2	20.6	0	0	32.1	1	1.3	0.3	0.4	
DEN	6.6	28694.0	27.8	75.1	55.8	15.4	18.0	27.1	7.7	3.6	7.2	1.0
(7)	3.0	0	0	43.6	24.7	30.1	73.0	4	1.6	1.9	1.5	
FIN	6.0	25663.3	31.6	68.2	52.0	15.0	18.1	26.7	6.1	3.2	6.4	0.5
(7)	2.2	1	0	40.9	35.2	22.5	73.6	3→5→3	2.4	1.9	1.0	
FRA	8.0	25958.2	21.5	62.2	44.2	15.6	19.1	28.6	7.8	2.8	3.7	0.3
(5)	5.9	1	1	38.1	40.0	14.8	8.7	2	2.4	3.5	1.0	
FRG	7.9	27775.3	37.8	66.5	44.5	18.2	14.5	25.8	8.0	2.0	3.5	0.3
(6)	4.2	0	0	49.2	41.6	16.5	24.7	4→3→4	2.8	2.2	1.0	
GRE	13.3	21981.3	36.7	57.1	33.9	17.5	15.2	20.5	5.3	1.1	1.4	0.3
(5)	13.3	0	0	55.3	65.0	16.3	25.9	2	2.3	3.8	0.2	
IRE	12.2	26417.9	33.9	60.1	40.9	11.2	23.3	18.0	5.3	2.5	3.8	0.4
(8)	10.1	0	0	18.4	17.1	5.4	41.9	4→3	1.6	0.4	1.0	
ITA	12.7	26621.6	44.6	54.7	31.4	17.6	14.9	23.1	6.2	1.1	2.4	0.4
(8)	16.9	0	0	35.6	27.0	7.9	36.2	4→3	1.8	3.6	0.4	
KOR	18.3	25146.2	25.2	58.2	48.4	10.7	16.8	8.7	3.7	0.8	0.8	0.7
(4)	7.8	1	1	2.8	0	0	10.0	3	2.4	2.1	0.3	
LUX	5.8	53195.8	28.0	85.9	55.0	13.9	18.2	21.1	5.6	2.9	3.8	0.3
(8)	6.1	0	0	35.9	33.1	14.3	42.8	2	2.8	3.8	0.3	
NET	5.8	27049.3	25.6	66.2	44.5	13.4	18.5	23.8	6.1	1.7	7.0	0.9
(8)	4.5	0	0	38.0	25.9	11.8	23.7	4→3	3.0	1.8	1.3	
NOR	6.8	36177.1	23.9	75.3	56.6	15.3	19.4	22.4	7.3	3.1	5.3	0.7
(6)	2.8	0	0	45.2	74.9	40.4	55.6	4→5→4	2.3	3.1	0.8	
SPA	13.0	21510.1	38.7	54.5	32.1	15.4	16.9	21.2	5.6	0.8	5.0	0.1
(7)	15.1	0	0	50.3	81.0	12.7	14.5	2→3→4	2.9	3.5	0.7	
SWE	6.3	24812.9	29.6	75.1	55.4	17.3	18.4	30.3	7.3	3.8	6.4	0.7
(6)	2.8	0	0	52.0	66.7	39.6	81.5	5→4→5→3→4	2.9	2.9	1.8	
UKM	13.0	25645.6	30.5	69.5	49.2	15.7	18.8	20.2	6.1	2.7	3.2	0.3
(8)	11.1	0	2	47.1	42.7	20.9	33.8	1	1.0	0.3	0.5	
USA	17.4	36743.9	24.6	70.9	53.2	12.6	21.1	15.4	6.3	0.6	1.6	0.5
(8)	14.1	1	2	0	0	0	13.6	1	0.2	0.3	0.2	

Note1: poverty(Poverty rate), w-povrt(Working poverty rate), GDP(GDP Per capita), industry(Industrial employment), emprate(Employment rate), femp(Female employment rate), over64(% population over 64), 0-14(% population under 0-14), social(Social spending), health(Public health spending), family(Children and family spending), un+inca(Unemployment and incapacity spending), assist(Social assistance spending), gov-type(Government type), election(Election system), leftseat(Left seat), leftcab(Left cabinet), cullecab(Cumulative left cabinet), union(Union density), wageset(Wage setting coordination), re-EPL(Employment protection(regular)), irre-EPL(Employment protection(irregular)), ALMP(ALMP spending).

2: standard error: poverty(4.03), w-povrt(4.84), GDP(10020.29), industry(7.39), emprate(9.87), femp(10.0), over64(2.36), 0-14(2.52), social(5.22), health(1.24), family(1.27), un+inca(2.05), assist(0.69), presi(0.39), election(0.80), leftseat(16.32), leftcab(39.80), cullecab(12.10), union(20.87), wageset(1.29), re-EPL(0.82), irre-EPL(1.48), ALMP(0.51).

3: AUL(85, 89, 95, 01, 03, 08, 10), AUS(94, 95, 97, 00, 04), BEL(85, 88, 92, 95, 97, 00), CAN(87, 91, 94, 97, 98, 00, 04, 07, 10), DEN(87, 92, 95, 00, 04, 07, 10), FIN(87, 91, 95, 00, 04, 07, 10), FRA(89, 94, 00, 05, 10), FRG(89, 94, 00, 04, 07, 10), GRE(95, 00, 04, 07, 10), IRE(87, 94, 95, 96, 00, 04, 07, 10), ITA(91, 93, 95, 98, 00, 04, 08, 10), KOR(06, 08, 10, 12), SWE(81, 87, 92, 95, 00, 05), LUX(85, 91, 94, 97, 00, 04, 07, 10), NET(83, 87, 90, 93, 99, 04, 07, 10), NOR(91, 95, 00, 04, 07, 10), SPA(85, 90, 95, 00, 04, 07, 10), UKM(86, 91, 94, 95, 99, 04, 07, 10), USA(86, 91, 94, 97, 00, 04, 07, 10).

democratic and continental European countries. But the proportions were non-existent in Korea (0), the U.S. (0), and Canada (0), and low in Ireland (17.1). The cumulative left cabinet was 16.0% on average. The figures were high in Austria and major socialist democratic. But the figures were nil in Korea (0), the U.S. (0), and Canada (0), and low in Ireland (5.4) and Italy (7.9). In liberal countries such as Ireland (5.4), Australia (18.1), and the U.K. (20.9), the cumulative left cabinet was decidedly lower than the left cabinet.

The findings regarding the labor market system variables are as follows. The unionization rate was 37.9% on average. The figures were overwhelmingly high in Sweden (81.5), Denmark (73), Norway (55.6), and Belgium (53.2), which have experienced in running the Ghent system. Along with France (8.7), which uses the expanding coverage system, the unionization rates in Korea (10), the U.S. (13.6), and Spain (14.5) were very low. The wage setting coordination was 2.9 on average, similar to the industry-level negotiation. The U.K., the U.S., and Canada had corporate-level negotiation. Belgium is the only country where wage negotiation happens at the economy level. Regarding employment protection levels, protection for regular and irregular workers was found to be at similar levels, 2 and 2.1 respectively. The active labor market spending was 0.8% on average. Socialist democratic countries topped the chart, and rates for 11 countries were under 0.5%.

Table 3 presents the results of the regression analysis performed to identify the causes of working poverty. Because the total employment rate and the female employment rates showed a high level of correlation, those two variables were used in an alternating manner (see Appendix Table 2 for correlation analysis).

The GDP per capita, the industrial employment, the total employment rate, the female employment rate were not significant in any of the models. The % population over 64 was found to increase working poverty in all models. The % population under 15 was found to increase working poverty in five models except model 3. The total social spending and the public health spending were not significant in any of the models. The children and family spending was found to alleviate poverty in models 1, 3, 4, 6. The unemployment and incapacity spending were not significant in any of the models. The public assistance spending was found to alleviate working poverty in model 2.

The government type was not significant. Concerning the electoral system, proportional representation showed a lower rate of working poverty than did either modified proportional representation or simple majority vote in both of the models. The left party was found to contribute to poverty reduction in both of the models. The Left cabinet was not found to be significant in both of the models. The cumulative left cabinet was found to contribute to poverty reduction in both of the models. The unionization rate was found to contribute to poverty reduction in both of the models. The wage setting coordination was not significant in both of the

<Table 3> Determinants of working poverty in OECD Countries(N=128)

	Model 1	Model 2	Model 3	Model 4	Model5	Model6
Socio-economic variables						
GDP per capita(log)	0.987 (1.67)	1.014 (1.75)	0.554 (1.61)	1.042 (1.67)	1.120 (1.74)	0.645 (1.590)
Industrial employment	0.500 (0.07)	-0.043 (0.07)	1.033 (0.06)	0.900 (0.05)	0.129 (0.07)	1.267 (0.06)
Employment rate	0.053 (0.05)	0.051 (0.05)	0.051* (0.05)			
Female employment rate				0.940 (0.05)	1.260 (0.05)	1.720 (0.05)
% population over 64	1.854* (0.26)	2.477** (0.26)	2.570*** (0.27)	2.052** (0.25)	2.800** (0.25)	2.992*** (0.26)
% population 0-14	1.975** (0.20)	1.963** (0.19)	3.633** (0.18)	2.195** (0.19)	2.142** (0.19)	3.535*** (0.20)
Welfare institution variables						
Social spending	0.033 (0.21)	-0.205 (0.21)	0.738 (0.23)	0.005 (0.21)	-0.267 (0.21)	0.670 (0.23)
Public health spending	0.205 (0.39)	0.727 (0.37)	-0.459 (0.39)	0.205 (0.39)	0.711 (0.38)	-0.439 (0.39)
Children/family spending	-1.766* (0.55)	-1.502 (0.55)	-1.888* (0.51)	-1.791* (0.54)	-1.439 (0.54)	-1.826* (0.51)
Unemployment/incapacity spending	0.549 (0.37)	1.467 (0.36)	1.081 (0.37)	0.408 (0.37)	1.364 (0.36)	1.068 (0.37)
Social assistance spending	-0.906 (0.80)	-1.965* (0.79)	-1.036 (0.78)	-0.906 (0.81)	-1.995** (0.80)	-1.062 (0.79)
Political institution variables						
Government type		-1.417 (2.43)			-1.587 (2.37)	
Election system		1.694* (1.00)			1.654* (0.98)	
Left seat		-2.100** (0.04)			-2.175** (0.04)	
Left cabinet		1.100 (0.01)			1.000 (0.01)	
Cumulative left cabinet		-1.729* (0.07)			-2.117** (0.06)	
Labor market institution variables						
Union density			-2.400** (0.04)			-2.300** (0.04)
Wage setting coordination			1.577 (0.30)			1.617 (0.30)
Employment protection(regular)			-4.625*** (0.76)			-4.563*** (0.76)
Employment protection(irregular)			1.172 (0.29)			1.382 (0.28)
ALMP spending			-1.255 (0.84)			-1.322 (0.85)
Constant	-26.730 (20.21)	-26.699 (21.21)	-23.280 (20.09)	-26.871 (20.24)	-27.647 (21.27)	-25.276 (19.83)
Wald χ^2	14.54	35.06	45.15	15.14	34.74	44.770
R ² Within	0.148	0.230	0.274	0.129	0.217	0.273
R ² Between	0.010	0.276	0.348	0.041	0.323	0.343
R ² Overall	0.030	0.310	0.386	0.070	0.354	0.380

* p<.10, ** p<.05, *** p<.01 (Two-tailed test)

Note: Standard regression coefficient and standard error (in parentheses).

models. The employment protection for regular workers was found to contribute to working poverty reduction in two of the models. However, the employment protection for irregular workers and the active labor market spending were not found to be significant in both of the models.

Based on the findings of the study so far, the following discussions can be drawn. First, working poverty is a recent phenomenon in the developed capitalist countries. This study found that a high level of working poverty has continued since the 1980s. Working poverty rate is 8.2%, close to the overall poverty rate of 10.1%. The structuralization of working poverty must be considered a serious social problem, as these families are symbolic of prosperity achieved through earned income in a market economy.

Second, the structuralization of working poverty was found to be attributable to the ineffectiveness of supply-side prescriptions in capitalist mixed economies. The regression analyses indicated that economic factors such as economic growth, industrial employment, total employment rate, and female employment rate fell short of contributing to working poverty alleviation. A significantly high level of working poverty was found in the U.S., where the GDP per capita is high. And in Italy and Spain, where the industrial employment rate was high, there found a high level of working poverty. Also a high level of working poverty observed in countries with the high total employment rate and female employment rates, including the U.S., Australia, Canada, and the U.K.

Third, because levels of working poverty varied greatly by country, making a rash generalization regarding poverty convergence is not advised. The U.S., Greece, the U.K., Spain, Italy, Ireland, and Canada had high overall and working poverty rates. It appears that liberal countries and continental European countries experience high rates of working poverty due to their low-wage structures and outsider of labor market, respectively. Socialist democratic countries such as the Netherlands, Finland, Sweden, Belgium, Denmark, and Norway tended to have low rates of working poverty. The exception was Korea, which had the highest overall poverty rate (18.3%) but a working poverty rate (7.8%) lower (see Appendix Table 1 for the Korean indexes).

Fourth, the factors impeding poverty convergence must be found in each country's institutional context and the differences among actors' roles. In general, socialist democratic countries' poverty alleviation performance was superior, even to that of countries with CMEs. Regression analyses indicated that, among the welfare variables, the children and family spending contributed to poverty reduction, which partly explains the low level of working poverty in socialist democratic countries such as Sweden, Norway, and Denmark. Among the political institution variables, the proportional representation, the left party, and the cumulative left cabinet contributed to poverty reduction. Among the labor market variables, the unionization rate, the employment protection

for regular workers contributed to poverty reduction. These are typical political institutions and labor market characteristics of socialist democratic countries pursuing a high road (high-skill/high wage) system.

V. Conclusion

This study's findings offer the following implications. First, the total employment rate and the female employment rate do not have a significant effect on working poverty. Even in the correlation analyses, these variables were negatively correlated with working poverty at $-.351$ and $-.388$, respectively. This appears to be because liberal countries and socialist democratic countries have high total employment rate and female employment rates, while continental European countries do not. On the other hand, working poverty rates are low in socialist democratic countries and high in liberal countries and some continental European countries. This implies that future analyses must consider employment quality (i.e., whether employment provides an adequate living) in addition to the volume of employment (Kollmeyer, 2013).

Second, the % population over 64 and the % population under 15 were found to be major factors in increasing working poverty. Firstly, the growing elderly population implies an expansion of pay-as-you-go pension system expenditure, which can result in increased non-consumption spending for the working generation and shrinking disposable income. But, as the proportion of the elderly who live with their adult children is low in the West, the function of a pension as a supplementary income source for the working generation is less potent (Jacobs, 2000).

Next, the negative effect of the % population under 15 on working poverty is similar to the findings of previous studies. This is also attributable to the fact that the children and family spending corresponding to the increasing number of children varies by country (Moller, Bradley, Huber, Nielsen and Stephens, 2003). The correlation between the % population under 15 and the children and family spending is only $.140$. The children and family spending is high among socialist democratic countries but low in the U.S. and Australia, which have a high % population under 15.

Third, except for the children and family spending, the welfare variables were not found to contribute to poverty reduction, which violated expectations. Firstly, the total social spending had a negative correlation ($-.444$), but the regression analysis found that its contribution to poverty reduction was insignificant. Because pension spending and elderly-related public health spending account for a large proportion of total social spending, they contribute significantly to overall poverty reduction, which includes the elderly population (Brady, Fullerton and Cross, 2010). On

the other hand, because the proportion of the working class that lives in the same house with the elderly is low, the direct benefit is low.

Next, a correlation analysis indicated that the public health spending and the unemployment and incapacity spending had negative correlations with working poverty, at -0.275 and -0.583 , respectively. However, their contribution to poverty reduction was insignificant in the regression analysis. The amount of public health spending did not vary significantly between other countries and liberal countries, where working poverty is prevalent. The unemployment and incapacity spending are thought to be attributable to the fact that these are of different natures. Incapacity spending was higher in socialist democratic countries and continental European countries than in liberal countries. On the other hand, because unemployment benefit spending reflects both the unemployment benefit level and the unemployment rate, the unemployment spending rate was high in Spain and Ireland, where working poverty is high.

Meanwhile, the public assistance spending was found to contribute to poverty reduction, contrary to expectations. However, as its correlation with working poverty was only -0.074 , additional observation appears to be needed. The public assistance spending was 0.6% on average, and no great differences were found among countries whose spending hovered around 0.5% , with the exception of Denmark, which reported 1.0% .

Fourth, most of the political institution variables were consistent with the theoretical assumptions, with the exception of a few. Firstly, although the left cabinet did not contribute to working poverty reduction, the proportional representation system, the left party, and the cumulative left cabinet were found to contribute to poverty alleviation (Ontiversos and Verardi, 2005; Brady, 2003b; Brady, Fullerton and Cross, 2009). The left party, the left cabinet, and the cumulative left cabinet were found to have a negative correlation with electoral system, at -0.477 , -0.218 , and -0.255 , respectively, indicating that proportional representation was associated with left political power expansion (Iversen and Soskice, 2008). Furthermore, it was found to have a negative correlation with the wage setting coordination (-0.789), confirming that the state's enabling role can be established, which promotes the labor-management interest representation system and comprehensive trading of aggregate public goods with the background of the consensus political model. Additionally, the cumulative left cabinet had an influence on working poverty reduction similar to that of left party (Brady, 2003b; Brady, Fullerton and Cross, 2009). That the cumulative left cabinet's influence was confirmed, unlike the left cabinet, indicates that stable control of a left cabinet stabilizes CMEs' institutional mediation relationship and contributes to the settlement of actors' changing preferences and cultures (Perrson, Roland and Tabellini, 2000). On the other hand, liberal nations including Korea, U.S. and Canada, have no experience of the left cabinets, and their proportion of

the cumulative left cabinet was much lower than that of the left seat in Ireland, Australia, and the U.K. These countries generally have high rates of working poverty.

The parliamentary system was not found to alleviate working poverty. This is thought to be attributable to the fact that 14 countries had a parliamentary system, and only four had a presidential or collegial system. Brady, Beck, and Stephens (2014) did not distinguish between presidential and collegial system. Korea and the U.S., with presidential systems, had high rates of working poverty, while Finland and France, with collegial system, had very low rates. The correlation analysis indicated that the government type had a .316 and -.477 correlation with the electoral system and the left party, which suggests that the parliamentary cabinet has an elective affinity with the proportional representation system and tends to expand the left seat (Hancké, Rhodes and Thatcher, 2007).

Fifth, the labor market variables generally supported the theoretical assumptions. However, there were some new discoveries as well. First, CMEs' high road (high-skill/high-wage) elements such as the unionization rate and the employment protection for regular workers had the strongest influence on working poverty reduction (Hancké, Rhodes and Thatcher, 2007). Strong labor unions form the basis of stable left party control and mediated labor-management negotiation. This suggests that the power of labor unions can have a decisive effect on promoting a left government's labor and welfare policies and labor-management negotiations. In the correlation analysis, the unionization rate was found to be correlated with the cumulative left cabinet and the wage setting coordination, at .595 and .486 respectively. The impact of employment protection for regular workers in working poverty reduction is mainly based on the fact that these countries are in the bases of permanent employment.

Contrary to the theoretical assumptions, the wage setting coordination did not contribute to working poverty reduction. However, it was assessed that the wage setting coordination still provides a basis for CMEs' mediated employment relationship, which pursues the high road (high-skill/high-wage) path (Thelen, 2001; Hassel, 2007). The correlation analysis found that the wage setting coordination was positively correlated with the unionization rate, the employment protection for regular and irregular workers, the active labor market spending, the total social spending, the children and family spending, and the unemployment and incapacity spending at .486 .507, .356, .559, .433, .288, and .580 respectively.

Unlike the employment protection for regular workers, no effects on working poverty of the employment protection for irregular workers were found. This is perhaps because the proportion of irregular workers is not very high in most countries and composition effects are low. However, such a conclusion must be accepted only provisionally (Barrier, Brygoo and Viguiet, 2003). Because

the proportion of irregular workers grow in continental European countries, as well as in Korea where the proportion was already high. Particularly because an increasing number of irregular workers are being occupied by female workers, the employment protection for irregular workers must be closely monitored in order to investigate female poverty.

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Appendix

<Table 1> Indicators of Korea

	poverty w-povrt	GDP gov-type	industry election	emprate leftseat	femp leftcab	over64 cullecab	0-14 union	social wageset	health re-EPL	family irre-EPL	un+inca ALMP	assist
2006	181	22783.2	261	58.8	49.0	9.5	18.6	7.5	3.3	0.6	0.8	0.8
	11.2	1	1	3.3	0	0	10.0	3	2.37	2.13	0.1	
2008	16.1	24948.4	25.3	58.3	48.6	10.3	17.3	8.4	3.5	0.7	0.9	0.7
	9.2	1	1	1.7	0	0	10.3	3	2.37	2.13	0.3	
2010	18.7	25299.2	24.9	57.5	47.6	11.0	16.1	9.2	4.0	0.8	0.8	0.7
	5.6	1	1	1.7	0	0	9.7	3	2.37	2.13	0.3	
2012	20.2	27553.9	24.5	58.1	48.3	11.8	15.1	9.6	4.1	1.2	0.8	0.7
	5.2	1	1	4.3	0	0	10.1	3	2.37	2.13	0.3	

Note1: GDP(GDP per capita) is t-1 number.

2: Poverty(Poverty rate) and w-povrt(Working Poverty rate) include single households and farming and fishing households.

<Table 2> Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. w-povrt																						
2. GDP	-.053	1																				
3. industry	.311	-.508	1																			
4. emprate	-.351	.772	-.588	1																		
5. femp	-.388	.660	-.703	.915	1																	
6. over64	-.026	-.023	.227	-.002	-.114	1																
7. 0-14	-.029	-.063	-.247	.062	.130	-.729	1															
8. social	-.444	-.075	.044	.070	-.003	.661	-.330	1														
9. health	-.275	.269	-.337	.372	.396	.507	-.264	.644	1													
10. family	-.515	.211	-.286	.468	.451	.100	.140	.396	.269	1												
11. un+inca	-.583	-.192	-.014	.034	.002	.146	.071	.682	.209	.401	1											
12. assist	-.074	.025	-.326	.145	.288	-.247	.089	-.072	.184	-.234	-.042	1										
13. gov-type	-.035	.009	-.294	-.037	.167	-.216	.136	-.149	-.066	-.168	-.180	-.075	1									
14. election	.342	.048	-.382	.116	.276	-.353	.307	-.499	-.040	-.231	-.530	.410	.316	1								
15. leftseat	-.260	-.156	.220	.041	-.102	.546	-.350	.482	.203	.461	.350	-.310	-.477	-.431	1							
16. leftcab	-.086	-.101	.147	-.068	-.126	.232	-.079	.149	-.059	.235	.164	-.297	-.218	-.255	.674	1						
17. culcab	-.523	.107	-.139	.371	.335	.525	-.205	.612	.464	.664	.505	-.245	-.255	-.424	.642	.396	1					
18. union	-.535	-.077	.097	.253	.235	.196	.074	.497	.165	.497	.598	.077	-.194	-.413	.280	.103	.595	1				
19. wageset	-.423	-.237	.280	-.155	-.162	.196	-.117	.433	.104	.288	.580	-.275	-.210	-.789	.283	.166	.435	.486	1			
20. re-EPL	-.419	-.061	.194	-.034	-.172	.300	-.374	.459	.074	.106	.439	-.209	-.214	-.725	.485	.267	.357	.116	.507	1		
21. irre-EPL	-.118	-.054	.344	-.176	-.347	.365	-.433	.349	-.031	-.018	.229	-.333	-.115	-.604	.354	.221	.198	.137	.356	.552	1	
22. ALMP	-.567	-.230	-.065	.041	.088	.236	.047	.663	.320	.376	.730	.037	-.134	-.444	.238	.116	.446	.562	.559	.339	.115	1

Note: Government type(gov-type) and Election system(election) variables are nominal variables. Wage setting coordination(wageset) variable is ordinal variable.