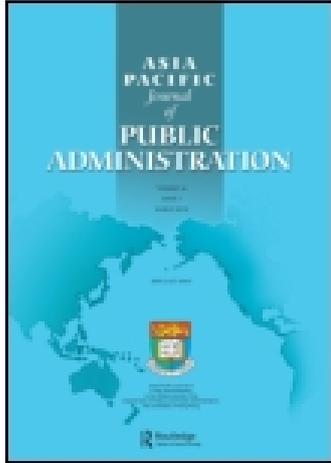


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## **An Empirical Analysis of the Relation Between Social Spending and Economic Growth in Developing Countries and OECD Members**

**Tobin Im, Wonhyuk Cho and Gregory Porumbescu**

*This study examines the economic effects of social spending in less developed nations and compares the situation with that of social spending in developed countries. Currently, research in this field is limited to developed countries, but there is a need to question the appropriateness of the conclusions of existing studies for developing countries. An analysis of data from developed and developing countries suggests that social spending correlates positively with economic growth in developing countries and negatively with economic growth for developed countries. These results imply that social spending regimes can be instrumental in achieving economic growth in poorer countries.*

### **Introduction**

Although developmental welfare is not a new issue, social policy is now, in part due to the efforts of neo-liberal economists, being vigorously re-discussed in the context of development (Midgley & Tang 2001; Kwon 2005; Mkandawire 2001; Hall & Midgley 2004).<sup>1</sup> Neo-liberal economic theories argue that social expenditure does harm to a nation's economy and should therefore be reduced in order to boost a country's competitiveness. When put into practice, however, programmes based on neo-liberal assumptions have generally resulted in more detrimental than beneficial effects for developing countries during the 1980s and 1990s. This assertion can best be illustrated by reform agendas, which are backed by the World Bank and International Monetary Fund, and are based on elements such as austerity, privatisation, and reduction of government social spending. All of these measures have generally resulted in increased economic and social vulnerability for nations following such reform packages (Cornia, et al 1987). To help illustrate this point, Cornia and colleagues (1987) explain that countries employing such initiatives were directly affected by rapidly rising food prices and the elimination of basic nutritional, educational and health services, and indirectly affected by slowing growth rates and increasing poverty rates.

In contrast to Neo-liberal economic theories, Lindert (2004) points out that social spending does not negatively affect economic growth, with support for his argument being in statistical and historical records. Building on the ideas of Lindert, Kwon (2007) argues that the developmental state in Korea, which made considerable contributions to the nation's rapid economic growth, utilised not only economic policy but also social policy as a key component of its economic development strategy. In the same vein, Hort and Kuhnle (2000) argue that East Asian countries adopted social welfare programmes as policy instruments for economic growth, while Goodman and White (1998) have suggested that the East Asian welfare states' social policies target goals such as subordinating welfare to economic efficiency and discouraging dependence on the state. Thus, developmental welfare proponents view social policy as an important tool in stimulating economic development, and to that end they opt to selectively extend benefits in order to enhance productivity.

In spite of many discussions and controversies regarding the impact of social spending on economic growth, there has been relatively little attention paid to empirically supporting the hypotheses alluded to above. Lindert (2006: 237) points out this lack of an empirical approach, claiming that "theory has gone into overdrive" regarding the issue of developmental welfare and the widening gap between empirical records and theories. Building on this deficit is the fact that most of the literature related to social spending is focused primarily on Europe and North America, with discussions over the consequences of social spending in developing countries being very limited. Furthermore, where there have growth studies which empirically examined the effects of social spending, the data used has, in most studies, been confined to OECD members and not related to developing countries. Accordingly, the objective of this study is to test the relationship between social spending and economic growth with cross country panel data, and consequently to draw a comparison between the results of developing countries and developed countries.

### **Why Developing Countries?**

At present there exists an uneven and incomplete understanding of the social policies employed throughout the world (Mares & Carnes 2009: 94). While the causes and consequences of social policies in developed countries have been well discussed and tested by a great deal of literature (eg, Esping-Andersen 1990; Wilensky & Lebeaux 1958; Titmuss 1974; Furniss & Tilton 1977; Huber & Stephens 2001; Sainsbury 1991; Mishra 1981; Bryson 1992; Graycar & Jamrozik 1993; Esping-Andersen & Korpi 1987; Jones 1993; Kwon 1998), the characteristics and economic implications of social policies outside of the OECD have escaped the same degree of scrutiny (Mares & Carnes 2009; Rudra 2007; Esser, et al 2009). As such, the current global context and the utility of such research in stimulating growth in developing

nations necessitate new comparative approaches to social spending and development (Mares & Carnes 2009) in order to fill our gaps in knowledge and understanding.

Because developing countries fall into several different levels or stages of economic development, in order to develop a deeper understanding it is necessary to begin considering the “contextual” or “temporal” dimensions of the nations being studied (Andrews 2008). These elements often serve as distinguishing characteristics of nations and, as such, contribute to the success or failure of a policy no matter the genre. Hence, by incorporating this pervasive but often neglected aspect of policy studies into our research, it is possible to yield a more complete understanding of the administrative challenges facing developing nations (Pollitt 2009). In this respect, our research attempts to contribute to this field of research by extending this topic to a number of previously omitted countries, and more particularly those that fall into the category of developing countries.

### **Empirical Studies on Social Spending**

Those who advocate the positive effects of social spending often base their arguments on the fact that social spending can help create a higher quality of human capital, reduce social conflict thereby increasing the level of social cohesion of the country, help the workforce adapt to radically changing industrial structures and technology, stabilise the economy by reducing inflation during periods of rapid growth, and create effectual demand during periods of economic depression (Rodrik 1999; Blank 1994; Kohl 1981; Abramovitz 1981; Haveman 1988). On the other hand, other studies insist that social spending is detrimental to economic growth. They argue that social spending can reduce beneficiaries or tax payers’ incentive to work, reduce private savings that could otherwise be used for investments which would induce economic growth, increase dependence on government, and expand shadow economies thereby creating a distortion in resource allocation (Gilder 1981; Murray 1984; Feldstein 1982, 1996; Weede 1986; Persson & Tabellini 1994).

In the previous empirical approaches noted above, we can see that there are some areas that must be further examined. First, most previous studies have tested the relationship only in developed countries or OECD member countries; consequently, little attention has been paid to the effects in developing countries.<sup>2</sup> This gap in related literature represents a significant oversight in that the effect of social spending on economic development is in many respects more important to test in developing countries because the social development and economic growth of such nations is much more urgent than in developed nations.

Second, previous studies have made little or no effort to compare the effects of social spending in developing countries with that of more developed or OECD member countries. Such comparisons are important

because developing countries are often in very different social, economic and institutional contexts. Consequently, social spending that has a positive, negative or negligible impact in OECD countries may have very different effects in developing countries. If one neglects to compare the performance of policy in diverse economic environments, there is no way to gauge the universality of theory that policy advocates in this field claim. In this respect, it is also worthwhile to compare the results of social spending in developing countries with those of developed and semi-developed countries using the same data sources.

Third, there is a lack of empirical literature using recent data due to the fact that many of the studies conducted were based on data published before 1990. It is necessary to look into more recent phenomena. Accordingly, this study uses data from the International Monetary Fund's Government Finance Statistics (GFS) which were collected from 1990 to 2007. As many of the previous studies used OECD data, testing the relationship with other sources could also be necessary for the sake of robustness.

Another fundamental issue is that ratios based on social spending to GDP are problematic when used as an indicator of welfare efforts by governments (Esping-Andersen 1990). Therefore, it may be necessary to supplement such ratios with observations related to the specific styles of social policy in different countries, such as an active labour market policy. However, taking such an approach may not result in accurate results due to a lack of available data that can be used to reflect specific policy differences; such difficulties are especially pronounced in the case of developing countries. Thus, our approach, which examines the relationship between social spending and GDP as proxy, is still meaningful because it tests the effects of social spending in developing countries and compares the results – although we acknowledge that this approach has some limitations.

In addition, a certain controversy exists regarding the purported reverse causality that can be found between a country's social spending and its degree of international competitiveness. The reasoning behind such an idea is that countries with high levels of economic growth create extra income, which in turn creates a higher demand for social spending, thereby resulting in more generous social services. Consequently, as governments begin investing more resources in social services, the work environment changes and the amount of funds available for economic stimulation are reduced. That is, as incomes rise, spending on social transfers rise and economic competitiveness decreases (Mares & Carnes 2009: 96). However, contrary to such assertions, an investigation by De Grauwe and Polan (2005) of the alleged reverse causality that exists between competitiveness and social spending, using a simultaneous equation model, found that such a relationship is weak. In order to dispel such disagreement, more research must be conducted to determine whether a causal relationship between social spending and competitiveness actually exists, thereby clarifying our

understanding of the issue. Therefore, due to the unclear nature of this relationship at present, we do not consider reverse causality in our model, although we are aware of it and acknowledge the potential risk of different causal relationships.

## **Methodology**

### *Data and Variables*

The data used in this study come from the International Monetary Fund's Government Finance Statistics (GFS) and the World Bank's World Development Indicator (WDI). The data consists of a time series for a cross section of 85 countries, covering the period from 1990 to 2007. The independent variable of the study, social spending, is measured by calculating the average rate of the central governments' expenditures on social protection, health and education to GDP; this method is similar to the methods used by existing studies in this area (eg, Cashin 1994; Castronova 2001; De Grauwe & Polan 2005; Korpi 1985; Landau 1985). The reason why computing the average of these three items as a single variable is superior to testing the effects of social protection, health and education spending independently is because spending on these items can overlap considerably and can also be correlated, thus creating the potential to include biases in the model itself or in the interpretation of the results. In addition to overlap, it is also important to consider the complexity of the causal relationship between social spending and economic development. As Ragin (2000) explains, "causation is often complex in character because social phenomena are remarkable in their diversity", and therefore a single independent variable is unlikely to satisfy both necessary and sufficient conditions. Instead, necessary and sufficient conditions represent a "causal conjuncture" of necessary and sufficient conditions that generate a certain outcome, which in the context of this study can be considered economic growth. By assessing the independent variables of social protection, health and education spending together, this causal conjuncture, which is perhaps more accurate in capturing the necessary and sufficient conditions, is more likely to be ensured (Ragin 2000).

The inclusion of education and healthcare as indicators of social spending, as opposed to only assessing social protection which is a need based expenditure, may ostensibly reduce the validity of our measurements of social spending. However, in the present context it is necessary to employ a more unorthodox operational definition of social spending that moves beyond need based social transfers in order to enhance the stability and consistency of our methods of measuring social expenditures in less developed nations where social transfers often do not accurately reflect social spending (Holliday 2000).

The source of our social spending data is the GFS. Each country's annual GDP growth rate has been selected as a dependent variable, with

the GDP growth rate data coming from the WDI.

Control variables used include the population growth rate, the inflation rate, and the tax rate. These control variables were also identified in previous growth studies such as by Castles and Dowrick (1990), Easterly and Rebel (1993), Davoodi and Zou (1998), and Andres and Hernando (1997). These control variables were selected because they allow us to capture real GDP growth, therefore giving our measurements of the dependent variable both high reliability and validity. The population growth rate, inflation rate and tax rate figures come from the WDI.

In order to analyse differences stemming from social, economic and institutional situations, the 85 countries included in this study are categorised into three groups. They are developing countries (N=29), developed countries (N=26) and semi-developed countries (N=30): see Table 1.

The criterion for these country classifications are based on the World Bank's income group definition data and OECD membership. The World Bank divides economies according to 2007 GNI per capita figures, which are calculated using the World Bank Atlas method. The groups which fall into the low income category have an average per capita earning figure of \$935 or less, while nations in the lower middle income group average between \$936 and \$3,705, those in the upper middle income group average \$3,706-\$11,455, and those in the high income group average \$11,456 or more. In order to dispel any regional or selection biases, our sample includes countries from the East Asia and Pacific, Europe and Central Asia, Latin America and the Caribbean, the Middle East and North Africa, South Asia, Sub-Saharan Africa, and OECD members. Table 2 provides descriptive statistics for the dependent and explanatory variables, respectively.

#### *Model Specification*

To test the relationship between social spending and economic growth, we used panel regressions. The panel regressions make use of panel datasets that consist of time series measurements on each of the cross sectional observations. Panel data estimation techniques were used because they create variability and provide more informative results, while eliminating the need for lengthy time series observations, as one can make use of information which is already available about the dynamic reactions of each subject (Kennedy 2003; Gujarati 2003; Frees 2004). An additional advantage of using panel data estimation techniques is the attenuation of the problem of omitted variables. Panel data models control for individual heterogeneity, which are inherent characteristics that are (n)either unobservable or non measurable. The use of a fixed effects panel data model, together with a wide range of control variables, intends to overcome the problem of oversimplification in modelling the complexities of social spending effects.

**Table 1**  
**Country Classifications**

Category	WB Definition	Country
Developing countries	Low income	Bangladesh, Burundi, Democratic Republic of Congo, Madagascar, Myanmar, Nepal, Pakistan, Tajikistan
	Lower middle income	Albania, Azerbaijan, Bhutan, Bolivia, Cameroon, Egypt, El Salvador, Georgia, India, Indonesia, Iran, Lesotho, Maldives, Moldova, Nicaragua, Syrian Arab Republic, Tunisia, Thailand, Ukraine, Uruguay, Vanuatu
Developed countries	High income OECD	Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Hungary, Iceland, Ireland, Japan, Korea, Italy, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Slovak Republic, Spain, Sweden, Switzerland, United Kingdom, United States
Semi-developed countries	Upper middle income	Argentina, Belarus, Brazil, Bulgaria, Chile, Croatia, Jamaica, Kazakhstan, Latvia, Lithuania, Malaysia, Mauritius, Mexico, Panama, Poland, Romania, Russia, Seychelles, South Africa, Venezuela
	High income Non-OECD	Bahrain, Cyprus, Estonia, Israel, Malta, Kuwait, Singapore, Slovenia, Trinidad and Tobago, United Arab Emirates

Due to the spatial and temporal characteristics of panel data, the use of ordinary least squares (OLS) could bias the results and could ignore factors that may be specific to each country; therefore, we have chosen a one way fixed effects estimator, an econometric approach frequently used to analyse panel data (Wansbeek & Kapteyn 1989; Beck & Katz 1995; Oatley 1999).

While no single technique can guarantee the elimination of all econometric problems, we can avoid several major problems by making use of the fixed effects model instead of OLS, because it offers the advantage of holding constant any unobserved (omitted) country specific (time invariant) determinants of the dependent variable (Persson & Tabellini 2003; Beck & Katz 2004). In addition, the fixed effects model computes the estimates based on differences of variables within countries across time, on the assumption that individual effects are correlated over time but

**Table 2**  
**Summary Statistics**

Variable		Mean	Std dev	Max	Min
Developing countries	GDP growth rate (%)	3.17	6.21	23.53	-30.90
	Social spending (%)	10.50	6.93	42.66	0.006
	Population growth rate (%)	1.15	1.26	3.83	-5.81
	Inflation rate (%)	152.07	1197.90	26762.02	-2.87
	Tax rate (%)	23.03	10.30	57.20	2.99
Developed countries	GDP growth rate (%)	3.49	3.70	33.99	-2.39
	Social spending (%)	18.78	14.28	70.08	2.73
	Population growth rate (%)	1.08	3.48	8.38	-44.40
	Inflation rate (%)	2.30	4.17	24.47	-17.14
	Tax rate (%)	29.32	9.07	58.71	8.37
Semi-developed countries	GDP growth rate (%)	4.69	3.24	14.43	-6.85
	Social spending (%)	10.17	6.48	22.8	2.61
	Population growth rate (%)	0.75	1.07	3.45	-1.50
	Inflation rate (%)	6.68	7.68	37.08	-7.05
	Tax rate (%)	29.57	7.34	42.61	15.90

Note: the data are for 1990 to 2007.

unrelated to any other regressors. Consequently, this model can correct for problems related to endogeneity. We examine the assumptions made by the model with the specification test for no fixed effect and the Hausman specification test for random effect.

We employed a method by Wansbeek and Kapteyn (1989) to handle missing observations in the data. This estimation of the variance components is performed by using a quadratic unbiased estimation (QUE) method that involves focusing on quadratic forms of the residuals, equating their expected values to the realised quadratic forms and solving for the variance components. The estimated generalised least squares procedure substitutes the QUE estimates into the covariance matrix of the composite error term.

We summarise the specification tests.<sup>3</sup> The fixed effects are tested using the incremental F test (Breusch & Pagan 1980), and the Hausman (1978) specification test compares the fixed effects models to the random effects models.<sup>4</sup> If the null hypotheses of both tests are rejected, the fixed effects model is favoured over the pooled OLS or random effects model. As shown in Table 3, the results of the tests in all of the subsets reject the

**Table 3**  
**Tests for TSCS Models**

	<b>F test for no fixed effects</b>	<b>Hausman test for random effects</b>
Subset I: developing country	F Value=2.98 (<.0001)	m Value=17.42 (<.0016)
Subset II: developed country	F Value=5.34 (<.0001)	m Value=5.90 (<.2066)
Subset III: semi-developed country	F Value=2.14 (<.0011)	m Value=6.77 (<.1485)

null hypotheses with F values and m values, which are conventionally used as a criterion. Therefore, the statistical model of our fixed effect estimator corresponds to the data, giving us reliable results.

### Results and Discussion

Table 4 presents the results of three regression analyses. Each column comprises the results for the developing, developed and semi-developed countries.

These results indicate that social spending significantly influences economic growth in all groups of countries, but in different directions: social spending decreases economic growth in the sample of developed countries ( $p < 0.05$ ) and semi-developed countries ( $p < 0.05$ ), while in developing countries social spending has been found to increase ( $p < 0.01$ ) economic growth. The control variables are inconsistently significant across the samples: the inflation rate is only significant in the sample of semi-developed countries ( $p < 0.01$ ), while the tax rate is statistically significant in the sample of developing countries ( $p < 0.05$ ) and semi-developed countries ( $p < 0.01$ ), but in different directions in terms of coefficients. The population growth rate is statistically insignificant across all of the countries used in this study.

The statistically significant and positive coefficient for social spending in the sample of developing countries supports the argument that spending on social programmes can be instrumental in growth. The diverging values of coefficients among other samples imply the existence of a trade off between efficiency and equity.

With respect to developmental welfare advocates, these findings are significant in that they lend support to arguments that social spending

**Table 4**  
**Social Spending on GDP Growth**

Dependent variable: GDP growth rate			
Independent variable	Subset I: developing country	Subset II: developed country	Subset III: Semi-developed country
Constant	6.694* (3.576)	3.593 (2.463)	-4.842* (2.895)
Social spending	0.545*** (0.403)	-0.150** (0.208)	-0.345** (0.497)
Population growth rate	0.852 (0.527)	0.134 (0.625)	0.493 (0.414)
Inflation rate	-0.000 (0.000)	-0.076 (0.055)	-0.006*** (0.001)
Tax rate	-0.232** (0.115)	-0.042 (0.092)	0.259** (0.100)
R square	0.433	0.477	0.341
Time series	1990-2007	1990-2007	1990-2007
Number of countries	29	26	30

Notes: Statistically significant at \* the 0.1 level, \*\* the 0.05 level, \*\*\* the 0.01 level. Figures in parenthesis are standard errors. The data are for 1990 to 2007.

in developing countries serves as a means of “making the pie larger” by stimulating GDP growth. To support this argument, we may look to the success experienced by the Asian Tigers which made use of social policy as a means of stimulating economic growth as opposed to expanding

or increasing the quality of citizenship (Kwon 2005). Through strategic investments in the workforce's wellbeing, the Asian Tigers, as did Bismarck in the nineteenth century, assumed economic development as being the broad policy objective of the state, while all other public policies including social policy were "readjusted to fall in line with the new policy paradigm" (Kwon 2005: 7). Accordingly, our findings may serve as empirical justification for such a strategic approach to social spending.

In contrast to the positive relationship between social spending and GDP growth in developing countries, the negative relationship experienced by the developed countries may be attributable to attempts to redistribute wealth more equitably. This reallocation of resources may in fact, as predicted by neo-liberals, harm economic growth. Unlike developing countries where social spending serves as a means of reallocating resources into productive sectors, in developed countries social spending serves as a means of reallocating resources into unproductive sectors.

This explanation can be made more robust through a framework of diminishing returns and marginal utility. In developing countries, as the government serves as the investment planner, it serves a key role in coordinating resources into one sector and out of another. The strong example of this is the government of South Korea which, during the 1970s, effectively coordinated resources to improve certain areas of social wellbeing before moving on to another genre of social wellbeing in order to maximise the utility of the nation's limited resources. Thus, based on such a framework it is possible to understand how the governments of developing countries serve effectively to coordinate investments into realms of productivity and away from saturated sectors (Rodrik, et al 1995). It is therefore possible to conjecture that resource allocation in developing countries results in Pareto improvements because they are not yet Pareto efficient, meaning that further improvements are not possible.

In order to clarify what is meant by this tangential explanatory mechanism, it is prudent briefly to explain what is meant by Pareto improvements and Pareto efficiency; and then to suggest why these ideas may help to explain the empirical findings of this study. Pareto improvements refer to resource reallocations that occur without any repercussions while simultaneously benefiting at least one member of society. Pareto efficiency may be thought of as the threshold of Pareto improvements, whereby further improvements cannot be made, all things held constant.

When considering social spending regimes of developing countries, and particularly those of developmental welfare states, areas of marked interest such as education represent rich sources for Pareto improvements as such areas of social spending serve to enhance quality of life features and labour productivity simultaneously; thus, externalities in consumption are likely to be positive, indicating that marginal private benefits are successfully converted into marginal social benefits. In contrast, developed countries'

opportunities for Pareto improving social spending policies may be far less, as these countries perhaps are already Pareto efficient in the areas in which they are pursuing social spending. Consequently, externalities of social spending in these countries are not positive, meaning that marginal private benefits are not translating into marginal social benefits.

Certainly, a portion of this explanatory mechanism may be due to characteristics of developed countries. For example, as a larger proportion of their population are living at the higher end of the economic spectrum, they are not as well situated to realise major returns from social spending. This is due to the fact that social spending serves to benefit a substantially smaller proportion of the population.

On a different note, in developed countries a much larger bureaucracy is typically charged with implementing and overseeing the distribution of welfare benefits to the population. This results in more social spending to help the poor, both directly and indirectly, by means of training and creating a bureaucracy to oversee the administration of welfare. Ultimately, whatever positive effects the welfare programmes in developed countries have on increasing GDP must surely be diluted by the high cost of maintaining such a sophisticated welfare structure. This is not a problem faced by developing countries because, more often than not, much smaller bureaucracies are involved in monitoring and administering the distribution of welfare services as compared to more developed countries. Thus, the proportion of social spending to positive impact on GDP would be higher in developing countries because more of the money spent by the governments would go directly to benefit those in need rather than to supporting a large administrative bureaucracy. Along these lines we can also imagine that once developing countries reach a higher level of development, the positive effects of social spending on GDP would taper off.

### **Concluding Remarks**

The intent of this study has been to examine the relationship between social spending and economic growth by comparing the results of social spending in developing countries to those of developed (OECD member) countries and less developed countries. By performing such an analysis, we have demonstrated that theories regarding social spending must take into consideration different levels of national development in order to affect meaningful results. The discussion has identified development as a factor which affects the impact of social spending and has helped to clarify the relationship between the two; however, we acknowledge that there are countless other factors that are waiting to be discovered.

Our results have revealed that the estimated coefficient for social spending is positive and statistically significant in the sample of developing countries. However, a significant negative relationship between social

spending and economic growth has been observed within the sample of developed countries, thereby implying that perhaps social spending in more developed countries has a negative effect on economic growth. The results of the regression in the sample of semi-developed countries showed that there are both statistically significant and negative relationships.

The results of this study have important policy implications. For example, the research has demonstrated that increased social spending in the forms currently being pursued is not helpful when it comes to stimulating economic growth in developed countries. Such an assertion lends credence to the opinions of neo-liberal economists who argue that increased social spending decreases the economic competitiveness of a nation (McCarthy & Prudham 2003). This argument matches the new public management reform efforts during the 1990s that attempted to reduce welfare spending (Paradeise, et al 2009).

The results of this study also demonstrate that such arguments made by neo-liberal economists are highly flawed when applied to developing countries. Evidence of this lies in Japanese efforts to expand their welfare system in the 1970s, and those of the four Asian Tigers during the 1980s and early 1990s which may have contributed to their economic growth (Holiday 2000; Kwon 2005). Furthermore, from the earliest stages of development, the Asian Tigers, and South Korea in particular, used the nation's scarce resources to provide education and basic healthcare services, which in turn served to affect both immediate and long term change in the countries' productive capacities.

When planning social policy and programmes, policymakers should begin taking much greater account of the attributes of development. Along these lines, this study recommends that policy makers, instead of focusing on various types of social spending balancing acts, pay more attention to researching not only what to do and how much in terms of social spending but also when to do it.

Despite creating as comprehensive a study as possible, there are some limitations of our research, the first of which is a limited dataset. Despite using as complete a dataset as possible, we were confined in our choices due to a lack of available and uniform data. While data for some countries are plentiful, for many others, especially for less developed countries, they are very limited, thereby forcing us to choose countries that possess more complete datasets. Obviously such a situation puts significant constraints on our ability to create an unbiased and comprehensive set of data. Further, we cannot fully trust the reliability and stability of the datasets for developing countries because the data collection systems in those countries are not well organised, meaning that the data they report may not be genuine.

The second limitation of our study concerns the growth variables missed. Even though there are seemingly countless factors which can affect the economic growth of a nation, we were only able to include a

limited number of variables. Again, the reason is that for many developing countries there is a lack of available information. Therefore, the data and variables used for this study were limited to those that were available for developed, developing, and semi developed countries. Clearly, the lack of uniform data constrained our ability to do a more thorough statistical analysis. Consequently, there is a call for future studies to test this relationship empirically with a wider range of data and variables.

### Notes

1. Kwon (2005) makes use of Johnson (1999)'s definition of a "developmental state as a state that plays a strategic role in economic development, with a bureaucracy that is given sufficient scope to take initiatives and operate effectively."
2. There are only two working papers, not in academic journals, which preliminarily try to show the relationship in a sample of developing countries (Devarajan, et al 1993; Baldacci, et al 2004).
3. The specification test for no fixed effects reports the conventional F statistic for the hypothesis  $\gamma = 0$ , where  $\gamma$  is the n dimensional vector of fixed effects parameters. Hausman specification test or m statistic can be used to test hypotheses in terms of bias or inconsistency of an estimator: the null hypothesis of no correlation between effects and regressors implies that the OLS estimates of the slope parameters are consistent and inefficient, but the GLS estimates of the slope parameters are consistent and efficient. This facilitates a Hausman specification test.
4. The role of dummies is the core difference between fixed and random effect models. If dummies are considered as a part of the intercept, this is a fixed effect model, while the dummies act as an error term in a random effect model (Fuller & Battese 1974; Gujarati 2003). The specification test reported is the conventional F statistic for the hypothesis  $\gamma = 0$ .

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*Tobin Im (as corresponding author) is a Professor, and Wonhyuk Cho is a PhD candidate, in the Graduate School of Public Administration at Seoul National University, South Korea; and Greg Porumbescu is a Lecturer in the Public Administration Department at Kyonggi University, South Korea. The article is a revised version of part of Cho (2009).*