FISCAL POLICY, TOTAL FACTOR PRODUCTIVITY AND ECONOMIC GROWTH IN ADVANCED ECONOMIES

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Abstract

This paper empirically examines the role of fiscal policy in explaining the persistence of weak economic growth in most developed economies since the recent financial/economic crisis. To this end, we estimate the impact of fiscal policy variables on total factor productivity and its implications for economic growth rates over the 2000-2015 period by applying a random varying coefficients growth-accounting model to data from 27 OECD countries classified into four groups according to their total government outlays relative to GDP. We also divide the period under study into two sub-periods of 2000-2007 and 2008-2015 in an attempt to shed some light on the sluggish growth after the recent financial/economic crisis. Our group-wise as well as period-wise results indicate that economic growth is impacted adversely by the size of total government outlays relative to GDP while the growth of government consumption has an unambiguously positive impact on total factor productivity and economic growth. The increase in the former and the decrease in the latter over the 2008-2015 sub-period might explain why growth has been sluggish over this sub-period.

JEL classification: C3, O4

Key words : OECD countries, total factor productivity, economic growth, fiscal policy

I. Introduction

Economic growth has, at best, been anemic amongst most developed economies even well after the recent financial/economic crisis. The persistence of weak economic growth is itself the intensification of declining growth rates in income per capita over the past several decades, with slowing productivity growth being a major factor behind this trend – see, for instance, Gordon (2012), IMF (2015a), and Furman (2015). The widespread view, as seen in writing of economists such as Summers (2013a, 2013b) and Gordon (2015), is that these trends will continue in the years ahead. This viewpoint is in line with the findings of Reinhart and Reinhart (2010) who studied fifteen severe post-World War II financial crises in advanced and emerging economies and three global contractions, the Great Depression of the 1930s, following the stock market crash of 1929, the massive spike in oil prices in 1973, and the subprime crisis of 2007. They found that real per capita GDP growth rates in developed economies were a significant full percentage point lower on average for an entire decade following financial crises and the aforementioned global shocks. As well, unemployment rates were about 5 percentage points higher in the five most advanced economies, and in ten of the fifteen post-crisis episodes, unemployment has never reverted to pre-crisis levels.

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The persistence of weak economic growth has led some well-known economists, such as Summers (2013a 2013b) and Gordon (2015) to argue that Hansen's "secular stagnation" hypothesis is very much a part of today's economic environment. Certainly, Japan's experience since the early 1990s and that of major OECD countries since the late 2000s might suggest that stagnation is the new normal state of economies instead of "full employment", or least that developed economies have entered a prolonged period during which they are more likely, as well as with greater frequency, to suffer from recession and stagnation than before.

Secular stagnation occurs when there is just not sufficient aggregate demand, even at negative real rates of interest, to support more rapid rates of economic growth. In this environment, in which nominal rates hover virtually at zero percent, real interest rates are negative, but the natural real interest rate is even lower, traditional monetary policy recipes do not work. As well, these circumstances themselves create a financial environment that is more susceptible to financial crises of the type seen recently because they increase the risk of bubbles in financial and real estate markets – see Summers (2015a, 2015b). As a result, the more promising policy avenue for restoring growth is the use of fiscal policy. By bolstering aggregate demand, higher rates of government spending would generate the traditional expansionary effects on growth in the short run. However, a shift in the composition of such spending towards infrastructure investment would promote long term growth by raising total factor productivity.

This is in line with endogenous growth models in which government policy that permanently alters the levels of variables which affects the country's rate of factor productivity growth, will alter growth rates in the short and long term [(Romer (1986), Barro (1990), and Rebelo (1991)]. The fiscal policy stimulus to growth and the ensuing inflation would lower real capital costs to firms and promote investment rather than crowd it out (Summer 2015b). The interesting question is then whether the fiscal policy impacts depend upon the kind of economic environment an economy is in. Does an expansionary fiscal policy have an asymmetric impact on economic growth depending upon the economic environment? In particular, are the distortionary effects on growth of larger governments outweighed by the positive effects in a situation of secular stagnation following a financial crisis, something that could be absent in a normal pre-crisis situation?

There is a substantial literature on the relationship between economic growth and government fiscal variables – see for instance, the survey by Bergh and Henreksen (2011). Studies in this area typically examine how government fiscal variables impact on long term growth via their effects on the efficiency of resource use, the rate of factor accumulation, and factor productivity growth. There are persuasive arguments for positive impacts on growth through the development of a legal, administrative, and economic infrastructure, and interventions to offset market failures etc. However, there are also strong cases for negative impacts because of the excess burden of taxation and government inefficiency etc, as has been noted by Ram (1986) and Tanzi and Zee (1997). Much would depend upon how government size is measured. The extensive survey by Bergh and Henreksen (2011) shows that much of the recent literature, which is richer in terms of the data sets and econometric methodologies,

suggests that economic growth among industrial countries is inversely related to government size as measured by total government outlays; that, a more disaggregated approach shows that social transfers have adverse effects on economic growth, while public investment expenditures, including those on education and training, have a positive effect.

In this paper, we examine the impact of government fiscal variables on total factor productivity and its implications for economic growth in panel of 27 advanced economies before and after the recent financial/economic crisis. To be more specific, our interest is in whether government expenditures, which include public investment as well as human capital expenditures, but exclude social transfers, have positive effects on total factor productivity and hence growth, and whether the pre and post financial crisis experience are materially different in this regard. As well, we also wish to assess these issues by examining the role played by total government size as measured by total government outlays, which include all social transfers. This is studied by classifying countries into four groups according to their total government outlays relative to GDP.

Our model is a variant of the growth accounting model used by Dar and Amirkhalkhali (2002), expressed in a random coefficients framework, and which controls for other factors like capital accumulation, labour force growth and export orientation. The model is estimated using the Swamy-Mehta random coefficients approach to accommodate inter-country differences in the nature and structure of institutions and other forms of heterogeneity, all of which are central to the political economy literature, but which are very difficult to quantify in unique and reliable fashion. In Section II, we discuss the data, models and estimation techniques. Section III contains a discussion of our empirical findings, while Section IV concludes with a summary of the findings and draws some conclusions.

2. The Data, Models and Estimation Strategy

The sample used in this study consists of annual data for 27 OECD countries covering the 2000-2015 period. The data were obtained from various issues of Economic Outlook published by Organization for Economic Cooperation and Development (OECD) and International Financial Statistics published by International Monetary Fund (IMF).

Table 1 presents average period-wise economic growth rates of real GDP (GY) over two sub-periods of 2000-2007 and 2008-2015. It speaks for itself. The inter-temporal and inter-country pattern of growth rates show considerable variability. Average annual growth rates which had varied between 1.2 and 6.7% with an overall average of 3.1% during the 2000-2007 period, reduced to -4.1 to 3.4% with an average of 0.5% during the 2008-2015 period. Although there are differences across countries in the extent to which growth rates decelerated, the significant slowing of growth was experienced by virtually all countries belonging to this group.

Table 2 provides some information regarding some aggregate fiscal variables in these 27 countries. As is also evident from the data on the structural budgetary balance, the

overall stance of fiscal policy since has been more expansionary over the 2008-2015 sub-period. It shows an increase in average ratios of government outlays (GS) as well as structural deficit (DF) and public debt but a decrease in interest payments on net debt (IPD) as % of GDP over the 2000-2015 period.

The 27 countries have been classified into four groups, depending upon the average size of government (as measured by GS) over these two sub-periods.

Group I countries (Korea, Switzerland, Australia, Estonia, USA, Ireland, Japan) display the smallest size of government, with GS under 40%. GS is over 50% in Group IV countries (Italy, Greece, Austria, Belgium, Finland, Sweden, Denmark, France).

Group II countries (New Zealand, Canada, Spain, Czech, Luxembourg) and Group III countries (UK, Norway, Israel, Iceland, Netherlands, Germany, Portugal) constitute the median group in which GS is in the low 40% and mid 40%, respectively.

Table 3 gives average growth rates of real GDP (GY), investment (GI), employment (GE), exports (GX), public consumption (GC), and government outlays as % of GDP (GS), over the two sub-periods of 2000-2007 and 2008-2015. It shows significant decreases in GI, GE, and GX in the 2008-2015 sub-period. It is also evident that there is an inverse relation between GY and GS, i.e., government size has a negative impact on growth performance. However, it also shows that despite of an increase in total government outlays relative to GDP, there has been a significant decrease in public consumption ratio.

In this paper, the model employed is a generalisation of the commonly-used growth-accounting model based on the concept of an aggregate production function. In this approach, export growth (via its favourable impact on the efficiency of resource use, innovative activity and the rate of technical progress, and the realisation of economies of scale) raises total factor productivity growth and, by implication, economic growth. The effect of government activity on economic growth is also assumed to work through total factor productivity. The production function approach to export expansion, government size, and economic growth would then involve the following aggregate production function in growth form:

$$GY_{it} = \alpha_2 (GK)_{it} + \alpha_3 (GL)_{it} + A_{it} \qquad (1)$$

where GY is the rate of growth of real GDP, GK is the rate of capital accumulation and GL is the rate of growth of labour. A_{it} can be assumed to measure the rate of total factor productivity growth. The subscripts i (i=1,2,...,n) and t (t=1,2,...,T) index the countries and time periods in the sample respectively. We assume that

$$A_{it} = \alpha_1 + \alpha_4 (GC)_{it} + \alpha_5 (GX)_{it} + u_{it} \qquad (2)$$

where GX is the rate of export growth, GC gives the rate of growth of public consumption, and u is the disturbance term. Substituting (2) in (1) yields

$$GY_{it} = \alpha_1 + \alpha_2 (GK)_{it} + \alpha_3 (GL)_{it} + \alpha_4 (GC)_{it} + \alpha_5 (GX)_{it} + u_{it} \qquad (3)$$

In recent years, this model has become a popular one for studying the determinants of economic growth rate. Since capital stock data are usually not available, most studies use the investment rate (IY) [see, for instance, Ram (1985) and Alam (1991)]. A major difficulty with these studies is that they all employ, as the underlying analytical tool, a fixed-coefficients version of the production function. However, this is a major weakness of the model in that it assumes away inter-country differences by virtue of the assumption that all coefficients are the same across countries. This is a questionable assumption a priori; at least one that should be treated as a testable proposition. We overcome this problem by adopting the more general random coefficients model which permits us to treat the fixed-coefficients assumption as a testable proposition. In addition, the random coefficients model can be seen as a refinement of the stochastic law relating economic growth to its main determinants [see Pratt and Schlaifer (1988)].

In dealing with these problems, we first postulate the following benchmark model:

$$(GY)_{it} = \alpha_1 + \alpha_2 (GK)_{it} + \alpha_3 (GL)_{it} + \alpha_4 (GC)_{it} + \alpha_5 (GX)_{it} + W_{it}'\delta \qquad (4)$$

here W is the set of excluded variables that along with those that are included are sufficient to determine GY. However, in the linear, deterministic law stated by (4), neither the slope coefficients nor W are unique in that they are sensitive to the parameterization chosen. To ensure uniqueness, we assume

$$W_{it} = \gamma_{1i} + \gamma_{2i} (GK)_{it} + \gamma_{3i} (GL)_{it} + \gamma_{4i} (GC)_{it} + \gamma_{5i} (GX)_{it} + v_{it} \qquad (5)$$

Substituting (5) into (4) yields

$$GY_{it} = \beta_{1i} + \beta_{2i} (GK)_{it} + \beta_{3i} (GL)_{it} + \beta_{4i} (GC)_{it} + \beta_{5i} (GX)_{it} + u_{it} \qquad (6)$$

with $\beta_{1i} = \alpha_1 + \gamma_{1i}'\delta$, $\beta_{2i} = \alpha_2 + \gamma_{2i}'\delta$, $\beta_{3i} = \alpha_3 + \gamma_{3i}'\delta$, $\beta_{4i} = \alpha_4 + \gamma_{4i}'\delta$, $\beta_{5i} = \alpha_5 + \gamma_{5i}'\delta$, and $u_{it} = v_{it}'\delta$.

Note that (6) is a random coefficients model, and that the disturbance is not the joint effect of excluded variables; instead, it is the joint effect of the remainder of the excluded variables after the effect of included variables has been factored out. Note also that whereas the included variables cannot be uncorrelated with every variable that affects GY, they can be uncorrelated with the remainder of every such variable [see Pratt and Schlaifer (1988)]. Thus, each of our explanatory variables can be uncorrelated with u, and (6) can be taken to represent the law relating GY to its determinants. As noted earlier, in the absence of capital stock data, a common approach is to use the investment rate (IY) as a proxy variable for GK. However, there are no compelling reasons for this choice. Indeed, other candidates, such as the growth rate of investment (GI), are equally valid candidates as proxies. In fact, GI more closely captures the wide fluctuations in investment activity compared to (IY) which changes only slowly and shows relatively less variation across countries. In this study,

we use GI as a proxy for the rate of capital accumulation. We also use the growth rate of employment rather than total labour force (GE) for GL because, given the existence of persistent episodes of unemployment in these countries over the sample period, employment more accurately captures the extent of labour utilization. It should be noted that all variables included in this model (GY, GI, GE, GC, and GX) are measured as rates of growth and we avoid mixing them explicitly with GS which is measured as a share of GDP. See, Guisan (2015) for a comprehensive discussion of potential problems because of mixing variables measured as rates of growth and shares of GDP in econometric models.

Accordingly, we estimate the following model and use the random coefficients GLS (RGLS) method to estimate its parameters.

$$GY_{it} = \beta_{1i} + \beta_{2i}\,(GI)_{it} + \beta_{3i}\,(GE)_{it} + \beta_{4i}\,(GC)_{it} + \beta_{5i}\,(GX)_{it} + u_{it} \qquad (7)$$

The random coefficients model represented by (7) is an extension of AmirKhalkhali and Dar (1995), and is more general than models employed in other studies, not only because it describes more correctly the law relating GY to its determinants, but also because it accommodates inter-country heterogeneity. The validity of the random coefficients model can be tested using the Swamy's G-statistic (G-STAT) which follows a χ^2 distribution. For more details of the RGLS estimation methods, see Swamy (1970), Swamy and Mehta (1975), AmirKhalkhali and Dar (1993), and Swamy and Tavlas (1995, 2002).

3. The Empirical Results

Table 4 reports the RGLS results for the pooled group-wise sample - that is, all four groups over the 2000-2015 period. According to these estimates, investment, employment and export growth rates have a positive and statistically significant impact on economic growth. The government consumption coefficient is also positive and highly significant. Swamy's g-statistic indicates no significant difference among these four groups. The period of our analysis covers the recent financial crisis followed by the deepest post-war recession. As a result, we divide our sample into two sub-periods of 2000-2007 and 2008-2015 and estimate the model for all four groups using sub-period specific random coefficients, in an attempt to examine the impact of the recent financial/economic crisis in our growth model. Table 5 contains the RGLS period-wise estimates of the growth model. Investment, employment, government consumption, and export growth rates have a positive and statistically significant impact on economic growth in both periods. With the exception of export growth, these impacts were somewhat stronger in the 2000-2007. Note that the g-statistic is not statistically significant at the 5 percent level. To assess whether and to what extent these aggregate results mask inter-group differences and to find out how the relative size of government impact on economic growth, we look at the group-wise estimates of the mode over the two sub-periods. These estimates are reported in Tables 6 and 7.

Table 6 shows that the impact of investment and export growth rates are positive and significant for all four groups. The largest impact is for economies with the smallest

size of government (Group I), while the smallest impact is for economies with largest size of government (Group IV). The impact of public consumption is also positive but only significant for groups I and II, and the employment growth rate coefficient is only significant in the case Group III. Note that the g-statistic is statistically significant at the 5 percent level, thereby vindicating the random coefficients model. Table 7 also supports a positive and significant impact of investment and export growth rates for all four groups. The impacts of public consumption and employment growth rates are also positive but the former are not significant in the case of economies with the largest government (Group IV) and the latter are only significant for economies with the smallest government (Group I). Again the g-statistic is statistically significant at the 5 percent level, thereby supporting the random coefficients model.

4. Summary and Concluding Remarks

The financial crisis that began in 2007 and the ensuing so-called "Great Recession" plagued many advanced economies. In this paper, we attempt to address the persistence of weak economic growth in most developed economies since the recent financial/economic crisis. Within this context, we examine empirically the impact of fiscal policy on total factor productivity and its implications for economic growth rates over the 2000-2015 period in advanced economies. We also divide the period under study into two sub-periods of 2000-2007 and 2008-2015 in an attempt to shed some light on the sluggish growth after the recent financial/economic crisis. To this end, we apply a random coefficients growth-accounting model to data from 27 OECD countries classified into four groups according to their total government outlays relative to GDP. We develop the estimating model so that it more accurately represents the law relating the rate of economic growth to its determinants as emphasized by the political economy literature. As well, institutional factors are likely to play a major role in explaining inter-group differences in growth rates, and a random coefficients treatment appears to be a more reliable way of taking these factors such as these into account than models that try to quantify them.

Our empirical group-wise as well as period-wise results indicate that the growth of government consumption has an unambiguously positive impact on total factor productivity and economic growth. It seems likely that the negative effect of government size reflects the fact that the factor responsible for the increase in government size has been an increasing government transfers and not government consumption which was slowed down to control rapidly increasing deficits. In other words, the increase in the total government outlays relative to GDP and the decrease in the growth of government consumption over the 2008-2015 sub-period would appear to explain somewhat the sluggish growth over this period.

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Table 1. Average Period-wise Economic Growth Rates , 2000-2015

Countries	**2000-2007**	**2008-2015**
Australia	3.6	2.5
Austria	2.4	0.6
Belgium	2.3	0.6
Canada	2.7	1.6
Czech Republic	4.1	0.4
Denmark	1.9	-0.4
Estonia	6.7	0.0
Finland	3.3	-0.7
France	1.9	0.3
Germany	1.4	0.8
Greece	3.5	-4.1
Iceland	4.9	0.3
Ireland	5.7	0.3
Israel	3.2	3.4
Italy	1.2	-1.3
Japan	1.5	0.1
Korea	5.2	3.2
Luxembourg	4.4	1.4
Netherlands	2.2	0.1
New Zealand	3.8	1.6
Norway	2.5	0.9
Portugal	1.3	-1.0
Spain	3.4	-0.9
Sweden	3.2	0.9
Switzerland	2.2	1.4
UK	2.8	0.7
USA	2.8	1.0
Average	**3.1**	**0.5**

Table 2
Average Ratios of Government Outlays (GS), Structural Balances (DF), and Interest Payments on Net Debt (IPD) as % of GDP, 2000-2015 and Public Debt Ratio (PD) in 2000 and 2015

Countries	2000-2007				2008-2015			
	GS	**DF**	**PD**	**IPD**	**GS**	**DF**	**PD**	**IPD**
Australia	34.0	1.6	9.7	0.3	35.9	-2.3	26.4	0.4
Austria	50.9	-2.9	60.2	2.5	51.8	-2.2	74.4	2.1
Belgium	49.5	-1.2	84.0	5.0	54.1	-3.7	98.6	3.1
Canada	39.9	0.8	66.5	2.0	41.3	-2.2	84.6	0.7
Czech	42.4	-3.4	28.0	0.5	42.8	-2.8	45.6	1.0
Denmark	52.3	1.4	34.1	1.6	56.3	0.0	47.8	0.5
Estonia	35.5	-1.0	3.7	-0.1	39.9	0.7	9.3	-0.2
Finland	48.7	3.0	35.2	0.2	54.9	-0.2	54.1	-0.0
France	52.2	-3.2	64.2	2.5	56.2	-4.2	92.9	2.3
Germany	46.1	-2.3	65.4	2.5	45.2	-0.6	79.6	1.8
Greece	44.7	-6.3	107.4	5.1	53.6	-6.9	180.2	4.6
Iceland	42.2	-0.2	29.1	1.3	47.8	-5.0	87.4	2.8
Ireland	33.3	-1.3	25.0	1.1	45.7	-9.4	118.4	2.5
Israel	47.9	-4.1	78.1	6.0	41.6	-4.6	71.8	3.5
Italy	47.0	-3.5	103.1	5.0	50.1	-1.9	127.3	4.5
Japan	37.3	-4.9	183.0	0.6	41.1	-7.1	246.2	0.6
Korea	28.3	2.1	30.7	-0.6	32.4	0.9	29.4	-0.4
Luxembourg	39.5	0.2	6.7	-1.0	43.1	2.7	27.3	-0.4
Netherlands	43.2	-1.1	45.3	2.0	46.7	-2.9	71.9	1.1
New Zealand	37.7	2.4	17.3	1.0	43.3	-1.4	37.9	0.8
Norway	44.1	0.0	56.8	-2.1	44.0	0.2	49.6	-2.5
Portugal	44.5	-5.3	68.3	2.5	49.7	-4.7	123.6	3.6
Spain	38.7	-1.2	36.3	2.1	45.1	-5.6	100.0	2.1
Sweden	53.2	0.5	39.7	1.4	51.6	0.8	34.1	0.2
Switzerland	34.0	-1.1	55.6	0.9	33.0	0.6	43.6	0.4
UK	40.8	-2.5	43.7	1.9	46.8	-6.5	96.0	2.3
USA	35.9	-4.0	67.2	2.7	40.8	-7.3	113.8	2.8
Average	**42.4**	**-3.0**	**53.5**	**2.2**	**45.7**	**-4.9**	**80.4**	**1.5**

Table 3: Average Growth Rates of Real GDP (GY), Investment (GI), Employment GE), Exports (GX), Public Consumption (GC), and Government Outlays as % of GDP (GS), 2000-2015

Group	Countries	2000-2007						2008-2015					
		GS	GY	GI	GE	GX	GC	GS	GY	GI	GE	GX	GC
I	Korea, Switzerland Australia, Estonia USA, Ireland, Japan	34	3.6	4.8	0.2	7.2	3.0	38	1.4	0.5	-0.2	4.0	1.4
II	New Zealand, Canada, Spain, Czech, Luxembourg	40	3.3	5.5	0.2	6.4	3.2	43	1.1	0.1	-0.5	2.9	1.6
III	UK, Norway Israel, Iceland Netherlands, Germany, Portugal	44	2.4	3.7	-0.0	5.5	2.3	46	0.9	-0.3	-0.1	2.5	1.2
IV	Italy, Greece, Austria, Belgium Finland, Sweden Denmark, France	50	2.3	2.6	0.2	5.6	1.7	54	-0.3	-2.3	-0.6	1.2	0.3
All		42	2.8	4.0	0.1	6.1	2.5	46	0.7	-0.6	-0.3	2.6	1.1

Table 4: Pooled RGLS Results

$GY_{it} = \beta_{1i} + \beta_{2i} GI_{it} + \beta_{3i} GE_{it} + \beta_{4i} GC_{it} + \beta_{5i} GX_{it} + u_{it}$

Periods	β_{1i}	β_{2i}	β_{3i}	β_{4i}	β_{5i}
Pooled Group-wise	0.158 (0.140)	0.149* (0.019)	0.255* (0.097)	0.332* (0.041)	0.206* (0.023)
G-STAT = 17.17					

* denotes statistically significant at 5% level.

Table 5: Period-wise RGLS Results

$GY_{it} = \beta_{1i} + \beta_{2i} GI_{it} + \beta_{3i} GE_{it} + \beta_{4i} GC_{it} + \beta_{5i} GX_{it} + u_{it}$

Periods	β_{1i}	β_{2i}	β_{3i}	β_{4i}	β_{5i}
2000-2007	0.368 (0.230)	0.159* (0.017)	0.387* (0.033)	0323* (0.053)	0.153* (0.022)
2008-2015	0.065 (0.151)	0.132* (0.016)	0.302* (0.081)	0.306* (0.042)	0.199* (0.017)
G-STAT = 8.40					

Table 6: Group-wise RGLS Results, sub-period 2000-2007

$GY_{it} = \beta_{1i} + \beta_{2i} GI_{it} + \beta_{3i} GE_{it} + \beta_{4i} GC_{it} + \beta_{5i} GX_{it} + u_{it}$

Groups	β_{1i}	β_{2i}	β_{3i}	β_{4i}	β_{5i}
I	0.213	0.270*	-0.306	0.443*	0.171*
II	0.116	0.259*	-0.070	0.282*	0.148*
III	0.698	0.118*	0.717*	0.179	0.158*
IV	1.25*	0.112*	0.377	0.118	0.069*
G-STAT = 38.66*					

Table 7: Group-wise RGLS Results, sub-period 2008-2015
$GY_{it} = \beta_{1i} + \beta_{2i}\, GI_{it} + \beta_{3i}\, GE_{it} + \beta_{4i}\, GC_{it} + \beta_{5i}\, GX_{it} + u_{it}$

Groups	β_{1i}	β_{2i}	β_{3i}	β_{4i}	β_{5i}
I	0.407*	0.145*	0.398*	0.173*	0.152*
II	0.178	0.104*	0.154	0.259*	0.233*
III	0.082	0.112*	0.122	0.304*	0.206*
IV	0.203	0.254*	0.171	0.108	0.147*
G-STAT = 32.58*					