

## Developing Relationship between Tax Structure, Pension Funds and Economic Growth in OECD Nations

<sup>1</sup> Tarika Singh, <sup>2</sup> Seema Mehta, <sup>3</sup> Yogesh Tomar, <sup>4</sup> Brajesh Srivastava

<sup>1, First Author</sup> Tarika Singh, Phd, Associate Professor, PIMG,  
E-mail :[singh.tarika@gmail.com](mailto:singh.tarika@gmail.com)

Received: September 18, 2013, Revised: September 25, 2013, Accepted: September 29, 2013.

### **Abstract**

**Purpose:** The present study combines both tax structures and pension funds as the factors of economic importance and explores the impact of both (pension funds and tax rates) on the economic growth in context of OECD nations.

**Research Design, Data and Methodology:** Last forty years data on these variables is taken for study purpose. A Sample size of thirty four nations which form the part of OECD nations was taken for study purpose.

**Results:** Regression analysis (linear) was used to find out relationship between tax structure, Pension funds and economic growth.

**Conclusion:** The results are important for nations increasing their expenditure for social contribution.

**Keywords:** Tax structure, Pension funds, social security, Economic growth .

**JEL classifications :** D63, P36.

### **1.Tax Structure**

During the past several decades, there has been an enormous amount of work in public Finance documenting myriad ways in which taxes distort the allocation decisions of firms and individuals. Many of us have tried to find out answers to the questions like is there a relation between tax structure and economic growth? Or how does tax policy affect economic growth? The more recent literature on endogenous growth, however, suggests that positive externalities omitted from the traditional neoclassical models play an

important role in explaining long-run growth. To access foreign markets, firms face a choice between producing goods at home for exports and producing abroad. A host of tax and non-tax factors affect the decision whether to relocate production abroad (Barrios et al 2005). Among the non-tax factors are the size of a foreign market, its growth prospects, wage and productivity levels abroad, the foreign regulatory and legal environment, and distance from the home country (Gorg & Greenway (2004), Barrios et al. (2005) and Mayer and Octavian (2007)). The impact of taxation on foreign direct investment (FDI) has been the subject of a sizeable literature, as reviewed by de Mooij and Verdean (2006) and Devereux and Muffin (2007). Studies of the effect of taxation on FDI location decisions generally examine host country taxation to the exclusion of parent country taxation.

## **2.Pension Funds and OECD Countries**

A pension fund is any plan, fund, or scheme which provides retirement income. Pension funds are important shareholders of listed and private companies (global investment review). Recent years have witnessed intense pension reform efforts in countries around the globe, which have often involved an increased use of funded pension programmes managed by the private sector. There is a growing need among policy makers and the regulatory community, as well as among private sector participants, to compare programme developments and experiences to those of other countries.

Present paper combines both the factors of economic importance and explores the impact of both (pension funds and tax rates) on the growth in context of OECD nations. Variables of the paper: Tax Structure, Pension Funds and Economic Growth. A Sample size of thirty four nations which form the part of OECD nations was taken for purpose of study. Secondary source was used to collect the data i.e. official website of OECD nations etc. Regression analysis (linear) was used to find out relationship between tax structure, Pension funds and economic growth. In the paper, Tax Structure is being measured by four variables: Individual tax, Corporate tax and general & specific consumption tax (Koester & Kormendi, 1989; Garrison & Lee, 1992; Padovano & Galli, 2001). The data for the same are available [www.oecd.org](http://www.oecd.org). Pension fund asset data were collected from a variety of sources. For OECD countries, OECD (2003) and Davis and

Steil (2001) are the main sources. Similarly to measure the pension two proxy variables are taken: social expenditure and population growth. The economic growth is measured by taking GDP per capital and growth in GDP variable along with inflation. The data on these variables are collected from 1970 to 2011 (i.e. almost 40 years). The results for KS test indicate that the test distribution is normal for all the series except for tax data. Further as the data are for forty long years, even the tax variables can be considered as normally distributed.

### 3.Linear Regression:

To find out the relationship between Tax structure, pension funds, and economic growth, linear regression was applied. The results of the same are discussed below in Table 1,2 and 3.

**Table 1: Model Summary: Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.970 <sup>a</sup>	.941	.931	2.09532E6	.941	95.694	6	36	.000

a. Predictors: (Constant), SpecificConsumptionTax, CorporateIncomeTax, SocialExpenditure, Inflation, PersonalIncomeTax, GeneralConsumptionTax

b. Dependent Variable: GDPperCapita

Adj R square value is shows coefficient of determination. It tells about model fit. In the case of simple linear regression, it is the squared correlation between the outcomes and the values of the single regressor being used for prediction. In the above table adjusted R square is .931. This means that 93.1% variation in GDP is explained by the independent variables used in the research. This means the independent variables are having a relationship with dependent variable. Further this proves that we are correct on the way of developing relationship between these variables.

**Table 2: AnovaANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.521E15	6	4.201E14	95.694	.000 <sup>a</sup>
	Residual	1.581E14	36	4.390E12		
	Total	2.679E15	42			

a. Predictors: (Constant), SpecificConsumptionTax, CorporateIncomeTax, SocialExpenditure, Inflation, PersonalIncomeTax, GeneralConsumptionTax

b. Dependent Variable: GDPperCapita

If we want to test the usefulness of a particular term in our model,

If we wanted to test whether any of independent variables the terms in our model are useful in predicting dependent i.e GDP, we would use the F-test. The F value in the above table measures the model fit. The f value is 95.694 is significant at 0% level of significance. The significance value of the F statistic is less than 0.05, which means that the variation explained by the model is not due to chance but much because of independent variables.

Table 3: coefficients : Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	2.888E7	2.436E7		1.185	.244		
Inflation	-539026.913	172597.643	-.237	-3.123	.004	.284	3.520
SocialExpenditure	-981018.787	439211.435	-.138	-2.234	.032	.432	2.315
PersonalIncomeTax	-136968.630	300396.662	-.040	-.456	.651	.209	4.778
CorporateIncomeTax	1328407.655	697967.024	.106	1.903	.065	.528	1.894
GeneralConsumptionTax	1272507.254	640870.717	.482	1.986	.055	.028	35.984
SpecificConsumptionTax	-711050.345	363514.452	-.350	-1.956	.058	.051	19.494

a. Dependent Variable: GDPperCapita

$$Y_{\text{predicted}}(\text{GDPperCapita}) = b_0 + b_1 * \text{Inflation} + b_2 * \text{SocialExpenditure} + b_3 * \text{PersonalIncomeTax} + b_4 * \text{CorporateIncomeTax} + b_5 * \text{GeneralConsumptionTax} + b_6 * \text{SpecificConsumptionTax}$$

The column of estimates provides the values for b<sub>0</sub>, b<sub>1</sub>, b<sub>2</sub>, b<sub>3</sub>, b<sub>4</sub>, b<sub>5</sub> and b<sub>6</sub> for this equation. The coefficient for **Inflation** is -539026.913. So for every unit increase in **Inflation**, a 539026.913 unit decrease in **GDP per capita** is predicted, holding all other variables constant. **Yan & Hu (2011)** in his study found similar relationship. The coefficient for Social Expenditure is -981018.787. So for every unit increase in Social Expenditure 981018.787 unit decrease in **GDP per capita** is predicted, holding all other

variables constant. Castles in 2006 found educational expenditure is an arena in which monocausal explanations are wholly inappropriate. Arojona et al. (2002) found no evidence that the level of income inequality affects GDP one way or another. The coefficient for Personal Income Tax is -136968.630. So for every unit increase in Personal Income Tax -36968.630 unit decrease in **GDP per capita** is predicted, holding all other variables constant. The coefficient for Corporate Income Tax is 1328407.655. So for every unit increase in Corporate Income Tax 1328407.655 unit increase in **GDP per capita** is predicted, holding all other variables constant. The coefficient for General Consumption Tax is 1272507.254. So for every unit increase in General Consumption Tax 1272507.254 unit increase in **GDP per capita** is predicted, holding all other variables constant. The coefficient for Specific Consumption Tax is -711050.345. So for every unit increase in Specific Consumption Tax 711050.345 unit decrease in **GDP per capita** is predicted, holding all other variables constant.

From the above discussion it can be interpreted there exists negative relationship between inflation & GDP, personal tax & GDP, General consumption tax & GDP, Specific Consumption tax & GDP. Only corporate tax is having positive relationship with GDP. Social expenditure and GDP are negatively related to each other.

The reasons which may be attributed to this are: Taxes may have affected economic performance via their effects on capital and labour markets, and on human capital formation. Leibfritz et al. (1997) found that that the increased integration of OECD capital markets limits the scope for using tax incentives to raise domestic savings and investment, which suggests that the tax burden in the future will have to fall increasingly on labour as the less mobile factor of production. With labour taxes having already increased sharply in recent years, contributing to a reduced demand for labour, greater labour-market flexibility is required to facilitate employers' passing labour taxes on to reductions in real wages so as to reduce labour costs; while this could reduce labour supply, such effects are likely to be relatively small given most estimates of supply elasticity. Tanzi and Zee (1998) found strong relationship between taxes and savings. Clausing (2007) empirical results indicate a parabolic relationship between tax rates and

revenues, implying a revenue-maximizing corporate income tax rate of 33% for the whole sample.

The coefficient for **Inflation** (-.237) is not significantly different from 0 because its p-value is 0.244, which is higher than 0.05. The coefficient for social expenditure (-.138) is significantly different from 0 because its p-value is 0.004, which is smaller than 0.05.

The coefficient for personal income tax (-0.040) is not statistically significantly different from 0 because its p-value is definitely larger than 0.05.

The coefficient for **corporate income tax** (0.106) is not statistically significant because its p-value of 0.000 is larger than .05. The coefficient for **general consumption tax** (0.482) is not statistically significant because its p-value of 0.000 is larger than .05. The coefficient for **specific consumption tax** (-0.350) is not statistically significant because its p-value of 0.000 is larger than .05.

The intercept is significantly different from 0 at the 0.05 alpha level.

From the above results, it can be seen that, general consumption tax emerged out to be a factor which is influencing GDP the most positively. Although there are other variables too which are affecting social expenditure. Also specific consumption tax came out to be a factor which was highly negatively related to GDP.

#### **4. Conclusion**

It can be seen that there exists negative relationship between inflation& GDP, personal tax& GDP, General consumption tax & GDP, Specific Consumption tax & GDP. Only corporate tax is having positive relationship with GDP. Social expenditure and GDP are negatively related to each other. General consumption tax emerged out to be a factor which is influencing GDP the most. Although there are other variables too which are affecting GDP. Also specific consumption tax came out to be a factor which was highly negatively related to GDP. It is also defined by Arnold(2008) “the relationship between tax structures and economic growth by entering indicators of the tax structure into a set of panel growth regressions for 21 OECD countries, in which both the accumulation of physical and human capital are accounted for and Davis (2002) talked about “the potential and actual role played by international investment in pension fund management.

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