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Pak-Japan comparative study of consumption tax (value added tax) and its effects on economic growth rate and gross savings

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Abstract. The purpose of this research attempt is to statistically observe the causal impact of consumption tax (value added tax) on GDP/economic growth and gross savings in Pakistan as well as in Japan and their comparative analysis for the period defined (1989 to 2015). Furthermore, to explore if the increase in value-added tax is either contributing to rising growth rate or increasing gross savings using time series secondary data. It is found through running regression that tax on goods and services (value added tax) maintains significant and healthy/positive association with gross domestic product growth rate and gross saving in Japan and Pakistan also. An increase in value-added tax contributes more to gross savings in Japan and Pakistan than the economic growth rate. The policymakers in Japan and Pakistan need to design policies to increase value-added tax rates to increase gross savings that could be utilized to increase physical and human capital investment to increase more production to achieve sustained economic growth. Also, this study guides Japan and Pakistan policymakers to restrict the export of the primary product to avoid value-added tax loss.
Keywords. Consumption tax, VAT, Economic growth, GDP growth, Gross savings.
JEL. H22, E21, O47.

1. Introduction

As developed and developing economies have achieved remarkable performance towards trade and growth like the USA, China, Japan, Pakistan, India, Malaysia, Korea, Canada, and European Union through implementation of newly tax form. This newly form of tax is levied on the consumption of products and services obtained through-out whole cycle of production-distribution. The Value Added Tax is called by different names in different countries like Consumption Tax "C T" in Japan, Revised General Sales Tax "RGST or GST" in Pakistan, Goods and

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Service Tax in Australia & Canada. The VAT was introduced in Japan in 1989 at the rate of 3% while at present it is charged at a rate of 8 % on the consumption of goods and services. Its contribution towards GDP was 6.445 % in 2015. Pakistan had taken steps toward implementation of VAT earlier in the 1990s but then again implemented VAT in its true spirit in 1995 at a rate of 18%, but the rate is changed by the times need, presently VAT is collected at a rate of 17% on utilization of goods and services.

In 1954 France was only one that introduced Value-added Tax (Helgason, 2017). Consequently, all over the world, about 120 countries had followed this trend initially. However, it is followed by a global level. This new form of tax was adopted by the European Union, IMF and also by other donating agencies to develop underdeveloped economies (Bird, 2005).

Malaysia and Bahamas are countries which have implemented VAT in recent time (2015). The study conducted by KPMG international showed that Europe is leading the world on the ground of the indirect tax rate. Average VAT rates in the EU are 20.1 %, while in Asia the average rate is 12.73 %, in Latin America 13.08%, in OECD countries 19.16%. Hungary is leading with 27% VAT rates, on the other hand, Canada has the lowest VAT rate of 5% (Gupta, 2017).

Earlier statistical studies have found an interconnected link between revenue collected through VAT and its economic development. The revenue collection performance of VAT is impressive and higher in economies with a high level of per capita income, lower dependency on the agriculture sector and with high literacy rate (Ebrill *et al.*, 2001). The connection flanked by the VAT and growing process of economies remains important that requires the attention of policymakers to achieve sustained economic growth through a small period. Value-added tax is a big source of gross savings as increased savings through VAT can support the economy to attain development and growth. As Domar model of economic growth states that saving is directly proportional to the economic growth rate. More savings results in more investments that lead to more production, consumption and more value-added Tax.

1.1. Statement of the problem

Excess of expenditure over revenue is a global issue that causes the government to borrow from internal and external sources. Pakistan and Japan have been facing budget deficit since long due to poor tax collection. Various research studies have suggested different measures to overcome this issue like government borrowings, foreign direct investment, increase remittances, rising agricultural, and service sector. However, this study fills the gap and examines how does VAT revenue contributes towards GDP growth and Gross Saving in Pakistan and Japan.

1.2. Objective of the Study

The intention of this research attempt is to statistically observe the causal impact of consumption tax (VAT) on GDP/economic growth and gross savings of Pakistan and Japan. Further to compare the effect of VAT in Pakistan and Japan.

2. Literature review

In the Japan not the large scale business accept Value added tax but also small medium enterprises accepted this form of indirect tax with his regressive nature (Tajika, 1995). VAT significantly contributes to savings and economic growth in 19 developing countries (Kolahi, & Noor, 2016).

Before, tax rates increase economic growth and aggregate consumption move in the upward direction but after an increase in tax rate both move in a downward direction, but all this happens only for a shorter period to time and vice versa (Miki, 2011).

A significant effect of Consumption tax (CT/VAT) on economic growth (GDP) and also consumption tax (VAT) and GDP are significantly correlated (Anojan, 2015).

In European countries Tax on consumption rather than on income, generate more savings and boost gross saving of the nation (Alm, James, & Asmaa, 2012).

There is a strong and positive impact of general sales tax (GST/VAT) over GDP in Pakistan using the OLS method by using data from 1991-2012 (Hassan, 2015).

Sthanumoorthy (2006), pragmatically examined the impacts of consumption tax (value-added tax) on macroeconomic indicators i-e savings, investment, tax revenue, and foreign trade. They found that VAT has the capacity to increase saving with the conditionality of removal or decreasing of other taxes on income. The author found significant impact of Value Added Tax and the revenue from total taxes on GDP in Nigeria. The author analyzed the effect of value added tax on gross domestic product and total tax revenue by applying simple linear regression method using the secondary data from 1994 to 2010 (Emmanuel, 2013).

Hakim (2016) examined the tax charged on consumption of goods and service (GST/VAT) and its impacts on gross domestic product growth/economic growth in 23 developed and 47 developing economies and the study was conducted from 2005 to 2012. Author/researcher used dynamic panel data GMM estimation. The results of the study showed that GST has negative impact on GDP in developing economies, but the study showed momentous and constructive impact on GDP in developed economies.

Oynipreye (2016), empirically examined the impact of consumption tax (value added tax) on income generated through taxes (revenue) and Nigeria's growth (economic growth). The study selected 20 year time duration from 1994 - 2014. The regression results of the study revealed that

there is long-run significant positive relationship between VAT with revenue and economic growth.

Zheng, & Caihua (2007), investigated the effects of taxes on national and individual savings of 29 OECD member states the data ranges from 1875-2005.The pragmatic outcomes of the research pointed out positive impact of shifting from income taxes to consumption taxes (VAT) on savings.

3. Research methodology

This study keeping the need of time conducts a comparative analysis of consumption tax (value added tax) of Japan with general sales tax (value added tax) of Pakistan. Present study considers the secondary (time series) data from 1989 to 2015 and takes the data from world development indicators, IMF and OECD official data sources.

This study uses GDP as a proxy to measure economic growth and attempts to see how consumption tax/ general sales tax (value added tax) effects economic growth? Furthermore, the objective of study is extended to see how consumption tax/ general sales tax (value added tax) affects savings in Pakistan and Japan. Later on, the comparison is made to observe the VAT impact on economic growth and savings in Pakistan how is it different from Japan Economy? Regression analysis is used for secondary data analysis using SPSS software.

To investigate the effect and relationship between Consumption Tax (value added tax) and GDP growth an empirical model is constructed as under.

Specification of Model-I

$$GDP\_gr = \beta_0 + \beta_1 Tax_{G\&C} + \text{\euro} \tag{1}$$

Here GDP-gr is the dependent variable, "$Tax_{G\&S}$" Consumption Tax (value added tax) is the independent variable, β_0 is intercept, β_1 is estimated parameter while € is error term showing the impact of omitted variables on GDP growth rate but has not been considered.

Table 1.: *OLS Results of Equation-I*

Model-I	Independent Variable: Consumption Tax (C T)			
	R Square	βs		F Sig.
		Unstandardized	Standardized	
Gross Domestic Product Growth	0.925	17.901(0.00)	0.625	2251.71 0.000

Source: Calculated by the Authors

Through this model taking consumption tax "C T" (value added tax) as an independent and dependent variable GDP growth rate. It is found that about 92.5 % change in controlled variable GDP is through model regressor VAT. The β coefficient is telling that 1 unit rise in the value of VAT causes GDP to rise by 17 units. And the model is a good fit as F value is significant.

To investigate the effect and relationship between Consumption Tax (value added tax) and Japanese G Savings. Empirical model is constructed as under.

Specification of Model-II

$$Gr\_ Savings = \psi_0 + \psi_1 Tax_{G\&S} + \mu \qquad (2)$$

In equation No: II Gr_Savings (Gross Savings) is a dependent variable, whereas "$Tax_{G\&S}$" Consumption Tax (value added tax) stands the control variable, ψ_0 is intercept and ψ_1 is estimated parameter. While μ is showing error term.

Table 2. *OLS Results of Equation-II*

Model-II	Independent Variable: Consumption Tax "CT" (value added tax)				
	R Square	βs		F	Sig
G Savings	0.993	Unstandardized	Standardized	2426.47	0.000
		32.479 (0.00)	0.732		

Source: Calculated by the Authors

The total 99.3 % change in controlled variable gross savings in response to control variable VAT is explained through calculated R^2 value. While keeping the regression coefficient constant equal to zero the value of coefficient (Calculated) of independent variable i-e VAT is 32.479 along with probability value 0.00 explaining that single unit increase in value of independent variable(VAT) leads dependent variable(gross savings) to raise by 32 units. In general model seems significant at the 5 % benchmark level because the calculated p-value remains less than 0.05.

After observing the consumption tax (value added tax) impact over GDP growth rate in Japan and now study is diverted to find out the impact of VAT over GDP in Pakistan. For this purpose, the following model is designed.

Specification of Model-III

$$GDP\_ gr = \lambda 0 + \lambda 1 Tax_{G\&S} + \mu \qquad (3)$$

Here GDP_gr is a controlled variable, $\lambda 0$ is unavoidable GDP, and $\lambda 1$ shows estimated parameter for control variable $\lambda 1 Tax_{G\&S,}$ and μ stands error term.

Table 3. *OLS Results of Equation-III*

Model-III	Independent Variable: General Sales Tax (value added tax)				
	R Square	βs		F	Sig
Gross Domestic Product Growth	0.953	Unstandardized	Standardized	1523.02	0.000
		12.518(0.00)	0.413		

Source: Calculated by the Authors

In Pakistan, a 95 % change in growth rate is making clear by VAT which is independent variable of the model, as R^2 stands 0.953. GDP growth rate in Pakistan significantly rises by 12 units in the response of one unit rise in VAT. In general model seems significant at a 5 % implication stage for the reason that the premeditated value of F stat is significant & guaranteed that the model is the best fit model at the 5 % standard height.

How does VAT affect gross savings in Pakistan? The following model is designed.

Specification of Model-IV

$$Gr\_Sags = Q_0 + Q_1 \, Tax_{G\&S} + \mathcal{E} \tag{4}$$

In equation no: 4 Gr_Sags (Gross Savings) is the dependent variable, Q_0 shows unavoidable autonomous savings that is independent of VAT in Pakistan. $Q_1 \, Tax_{G\&S}$ is induced savings subject to VAT.

Table 4. *OLS Results of Equation-IV*

Model-IV	Independent Variable: General Sales Tax (value added tax)				
	R Square	βs		F	Sig
G Savings	0.997	Unstandardized	Standardized	1126.561	0.000
		26.518 (0.00)	0.854		

Source: Calculated by the Authors

The calculated R^2 explains 99.7 % variance in outcome variable gross savings is due to change in VAT. Keeping another regression coefficient constant equal to zero, one unit increase in VAT contributes significantly to 26 units towards gross savings in Pakistan. It seems model is the best fit at 95 % confidence level, as the calculated p-value is less than 0.05.

4. Comparison of results

If we draw a parallel VAT impact on GDP, it comes to know that single unit goes up in VAT force to the rise of seventeen units in Japan and twelve units rise in Pakistan GDP. On the other hand, one unit rise in VAT in Japan contributes towards saving 32 units while in Pakistan 26 units towards savings. It is clear here that consumption tax (value added tax) effects significantly rate of economic growth and gross savings in Japan and Pakistan.

So the policymakers need to formulate the policies keeping in view the value-added tax as a significant contributor towards growth and savings to achieve sustained economic growth.

On the basis of standardized beta value, it is clear that value-added tax impacts significantly on savings than the growth rate in Japan. And the same is true for Pakistan. So it indicates Pakistan and Japan need to focus on value-added tax to raise savings and increased savings could be used to boost up the physical and human capital investments to raise production to generate more amount of value-added tax to achieve nonstop growth. Also,

Pakistan and Japan should restrict the export of primary products to avoid value-added tax loss.

5. Conclusion and policy recommendation

The purpose behind the study is to investigate the causal link of consumption tax (value added tax/ general sales tax) with economic growth (gross domestic product growth rate) and gross savings in Pakistan and Japan. Moreover, the study has been carried to perform comparative analysis on the impact of VAT on the selected variables. The results/ estimations of the study reveal that consumption tax (value added tax/ general sales tax) has an important contribution towards gross savings and economic growth (GDP) rates in Pakistan as well as in Japan. But, impact of consumption tax(value added tax/ general sales tax) on gross savings is more than the economic growth (GDP) rate in Japan and Pakistan.

The policymakers in Japan and Pakistan need to design policies to increase value-added tax rates to increase gross savings that could be consumed in multiple channels to raise physical and human capital investment to increase more production to achieve sustained economic growth. Also, this study guides Japan and Pakistan policymakers to restrict the export of primary products by imposing a high tariff to avoid decline and losses in collections of this tax (VAT). The government should support the cottage industries and manufacturing sector by providing the necessary infrastructure. The ratio of VAT needs to be increased on income induced branded or luxurious items. The import of raw material should be made tax free to produce intermediate and finished goods to raise the volume of value-added tax to achieve targeted savings and growth rate. Finally it is recommended that both the countries should maintain the low VAT rate in order to increase GDP.

Appendix
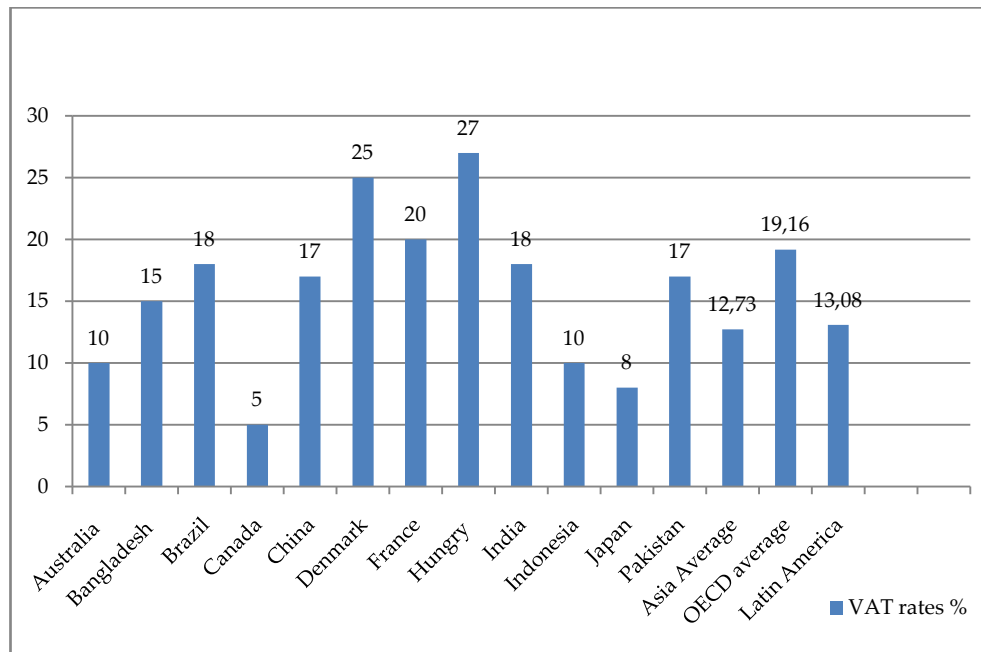
Figure 1. *Value Added Tax/ Goods and Service Tax Rates as of 2017*
Source: KPMG's Indirect tax table and author's own.

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