

## Measuring the Tax Revenue and Tax Base Erosion; Evidence from Taiwan

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**Abstract:** Basically, tax evasion is a gamble taken by private agents and limited “public-sector”. It is rather difficult to get accurate information about the extent of underground economy activities in the goods and labour market, because all individuals engaged in those activities wish not to be identified. Undoubtedly, engaging in the research can be considered as a scientific passion for knowing the unknown. To explore the relationship among economic growth, tax rate, debt, consumer price index and tax revenue. This study differs from the traditional methodology. We adopt SUR-OLS method and Threshold approach for estimating the response of economic growth on total tax revenue, direct tax revenue and indirect tax revenue in Taiwan from 1991-2020. This paper further discusses the response of total tax, direct tax and indirect tax to the fluctuation of tax rate. We show that as the tax rate is between 12.59% and 13%, the increase of income leads to the decrease instead of the increase for direct tax revenue, resulting in serious tax base erosion. That is, the relationship between GDP and TTR presents a N-shaped relationship. However, indirect tax does not exist any tax rate threshold effect, On the other hand, with the increase of GDP, indirect tax revenue also increases.

**Keywords:** Threshold model, underground economy, inflection point, tax base erosion ratio

**JEL Classification:** D43, D69, E41, H26, L13

### 1. Introduction

Undeclared economy can be measured both directly and indirectly. Indirect methods are based on the comparison of macroeconomic aggregates (such as national

accounts, cash transactions). However, indirect (especially monetary) methods often over-estimate the level of undeclared work and say little about its socio-economic characteristics. Direct methods, on the contrary, are based on statistical surveys and have advantages in terms of comparability and detail, but tend to under-report the extent of undeclared work (European Commission, 2007).

According to Schneider and Enste's (2000) survey, during the last decades the underground sector was nearly three-quarters of the officially recorded GDP in Nigeria and Thailand, but it amounted to a noteworthy 15% in the OECD countries as well. Milorad and Williams (2018) indicate that 22.6% of all employees in Montenegro are unregistered employees. In addition, 17.5% of all formal employees received under reported salaries from their employers in order to avoid paying taxes and contribution on the whole amount of an employee's salary. Another, Wang et al. (2012) examine the asymmetric response of the underground economy in Taiwan to the fluctuation of tax rate and measure the UE size from 1962 to 2003 using cash ratio approach and currency demand approach. Similarly, Giles et al. (2001) depict that an increase in the effective tax rate has a greater effect on the UE than a decrease in New Zealand. In addition, Bhattacharyya (1993) finds clear evidence for the U.K. (1960-1984) that the UE has a significant effect on the consumer expenditure.

Similarly, Schneider and Enste (2000) point out, at least two thirds of the income earned in the shadow economy is immediately spent in the official sector, revealing UE and the official sector might thus be complements. Specially, owing to the reason that some tax payers may collude with the inspector so the inspectors underreport the tax liability of the tax payers in exchange for a bribe. (see also Hindriks et al., 1999). However, Jorge and Mark (2005) find that the effect of increased enforcement effort in a given mode has an ambiguous effect on compliance in the targeted mode as well as the untargeted mode. Thus, it is not possible to predict whether taxpayers perceive alternative modes of evasion as substitutes or complements. It is worth noting that inflation will increase taxpayers' willingness to evade tax payment, resulting in an inverted U-shaped nonlinear relationship between inflation rate and tax income.

(Caballé and Panadés, 2004). Another, Blackburn et al. (2012) advocate that the higher the degree of financial development, the slowdown the imperfection of the credit market, decreasing the cost for lenders to borrow money from legal financial institutions, and reduce the scale of the underground economy. On the other side, Slemrod (2007) considers the role of third-party reporting of information that facilitates enforcement of the taxation of wages and salaries, but

helps little for self-employment income. In recent research, the night light images are taken by the operational line scan system (OLS) carried by the US military meteorological satellite program (DMSP) from 1992 to 2013. When the data were released, the abnormal lights, background noise and other non urban lights had been eliminated and could be directly used for relevant research. Similarly, Elvidge et al.(1997) propose in 1996 that there is a strong correlation between night light and population, GDP and power consumption data. Unfortunately, NOAA has no night lighting data of Taiwan from 1992 to 2013, so these variables will not be included in the analysis for the time being. In this paper, we refer to the threshold model framework of Hansen (2000) and Odedokun (1996), selecting the tax rate as the threshold variable to explore whether there exists a threshold effect of tax rate on tax revenue, and how the effect of dependent variables on tax revenue is different under high and low tax rates.

The paper is organized as follows. In section 2, we derive the hypotheses and model, section 3 proposes SUR-OLS empirical analyses. Section 4 discusses the threshold effect of TTR/DTR/ITR-to-GDP. Section 5, we discuss the Tax Kuznet Curve (TKC) results between TTR/DTR/ITR-to-GDP. Section 6 gives a summary and draws some discussions and conclusions.

## **2. Model**

This paper mainly focuses on estimating the relationship between TTR/DTR/ITR and GDP. Secondly, we discuss the effect of tax rate threshold upon taxpayers' behavior and the impact on Taiwan's TTR/DTR/ITR. Thirdly, our analysis is different with existing empirical method. Given the actual income in 2020, this paper uses Kuznet approach and SUR-OLS method to estimate the tax receivable in 2020. Then calculate the gap between the actual tax in 2020 and estimated tax, then we acquire the amount of tax base erosion in 2020. The analysis of the EKC seeks to establish whether wealth accumulation stimulates environmental degradation or contributes to improving its quality (Kaika & Zervas, 2013). According to this approach, if GDP per capita is less than the level of the turning point, wealth accumulation contributes to environmental degradation; conversely, if GDP per capita is higher, environmental quality improves.

In this setting, our research sets a theoretical model of the inflection point of Tax Kuznets curve(TKC) as follows. Eq(1) describes the indirect utility between tax burden and economic growth. We assume that utility function is separable in these

two arguments,  $R$  and  $T$ , with the additive-separable function and additive preferences. Such that :

$$V(R, T) = s_1 - s_2 \times e^{-\frac{R}{\delta}} - \gamma \times T \quad (1)$$

Assuming that the tax burden paid by the taxpayer can be expressed as

$$T = -F + \tau_{mt} \times R(\beta) \quad (2)$$

Consider the character of progressive income tax rate system, we adopt the sustained-growth version of Guo and Lansing's (1998) nonlinear tax structure and postulate  $\tau_t$  as

$$\tau_t = 1 - \eta \left( \frac{R_t^*}{R_t} \right)^\theta \quad (3)$$

In Eq(3),  $R_t^*$  denotes a benchmark level of income that is taken as given by the representative household. In our model with endogenous growth,  $R_t^*$  is set equal to the level of per capita output on the economy's balanced growth path (BGP), whereby  $\frac{R_t^*}{R_t} = \theta > 0$ , for all  $t$ . Hence, the marginal tax rate  $\tau_{mt}$ , defined as the change in taxes paid by the household divided by the change in its taxable income which is given by

$$\tau_{mt} = \frac{\partial(\tau_t R_t)}{\partial R_t} = \tau_t + \eta \theta \left( \frac{R_t^*}{R_t} \right)^\theta \quad (4)$$

where  $0 < \tau_t, \tau_{mt} < 1$  and  $\frac{R_t + F}{R_t(\theta)} \geq \tau_{mt}$ ,  $R$  represents real income,  $T$  denotes tax burden for people, reflecting the adverse impact of tax burden on the people's indirect utility, where  $s_1, s_2, \gamma, \delta > 0$  where  $s_1$  is coefficient,  $s_2$  reflects the impact of real income on utility,  $\gamma$  reflects the impact of tax burden on utility.  $F$  represents the government's subsidy to taxpayers below a certain income threshold or tax exemption threshold.  $\tau_m$  represents marginal tax rate system.  $\beta$  is income declaration rate of taxpayers. The higher the income declaration rate of taxpayers,  $\beta$ , the greater the  $T$ . Moreover, we assume that the marginal disutility of tax burden remains unchanged. In order to eliminate the impact of structural effects, we suppose that only one commodity model is used for analysis. In our situation, a large number of firms produce aggregate output,  $Y$ , using a constant returns to scale technology of the Cobb-Douglas type. Therefore, a country's incomes  $Y$  is expressed as Eq.(5):

$$Y = P \times \lambda \times T^\alpha \times F(K, AL)^{1-\alpha} \quad (5)$$

In Eq(5),  $\lambda$  is the conversion coefficient,  $P$  represents the commodity price,

with  $\lambda \in (0,1)$ .  $F(K,AL)$  is an aggregate production function, where  $K$  denotes aggregate physical capital and  $L$  represents aggregate labor employed in production,  $A$  represents the technical level, with  $A > 0$ ,  $\alpha \in (0,1)$ . Eq.(6) reflects the value of marginal tax burden upon taxpayers equal to the demand of reverse tax burden, which is given by:  $\Gamma$

$$\Gamma^D = \alpha \times P \times \lambda \times T^{\alpha-1} \times F(K, AL)^{1-\alpha} = \frac{\alpha}{T} \times Y \tag{6}$$

Also, the value of marginal tax revenue levied by government can be obtained as follows.

$$\Gamma^S = -\frac{V_T}{V_Y} = \frac{\gamma \times \Omega(P) \times \delta}{s_2} \times e^{\frac{R}{\delta}} \tag{7}$$

Through the supply-demand production function, the expression of the Kuznets curve can be obtained through Eq. (6) and Eq(7)

$$T^* = \frac{\alpha \times S_2 \times R}{\gamma \times \delta} \times e^{-\frac{R}{\delta}} \tag{8}$$

Furthermore, the following formula can be obtained by calculating the derivative of optimal tax revenue/burden  $T$ .

$$\frac{dT}{dR} = \frac{\alpha \times S_2}{\gamma \times \delta} \times \left( e^{-\frac{R}{\delta}} - \frac{1}{\delta} \times R \times e^{-\frac{R}{\delta}} \right) = \frac{\delta - R}{R \times \delta} \times T \tag{9}$$

Clearly, the inflection point of tax burden is  $R = \delta$ . When economic growth reaches a certain level, tax base erosion will occur. This means that people are beginning to evade tax to reduce the tax burden. Eq.(9) is a convergence function, and its value is greater than zero. If  $n$  positive convergence functions are added together, the function obtained should also be convergent. Based on the theoretical models derived from Eq.(1) to (9). we can seek to use empirical analyses to discuss the existence of TTR/DTR/ITR-to-GDP ratio/ Kuznets Curve and further discuss whether the Tax Kuznets Curve existed in Taiwan's TTR/DTR/ITR-to-GDP covering the 1991-2020. Obviously, if the TTR/DTR/ITR-to-GDP ratio /Kuznets curve does not exist, meaning that with economic growth, tax revenue will increase.

### 3. Estimation of correlation between TTR/DTR/ITR and GDP

To capture the synchronous correlation between heterogeneity and residuals in the model, Our empirical research employs SUR-OLS method to evaluate the correlation among those variables.

**Table 1: Performance of unit root test**

<i>variable</i>	<i>N-st difference</i>	<i>(C,T,K)</i>	<i>DW</i>	<i>ADF</i>	<i>5%</i>	<i>1%</i>	<i>Result</i>
TTR	1	(C,n,7)	2.09	-7.31	-3.58	-4.32	I(1)***
DTR	1	(C,n,7)	2.05	-5.91	-3.58	-4.32	I(1)***
ITR	1	(C,n,7)	2.19	-9.35	-2.97	-3.68	I(1)***
GDP	1	(C,n,7)	1.97	-5.17	-2.97	-3.68	I(1)***

*Note:* (C, T, K) indicates whether the test formula contains constant term, time trend and number of lag periods using AIC. Standard errors in parentheses: \*\*\* denotes the 1st- differenced form passes the stability test at 1% significance level, \*\* denotes the 1st- differenced form passes the stability test at 5% significance level.

**Table 2. Performance of Johansen Cointegration Test, TTR/DTR/ITR-to-GDP**

		<i>1991 to 2020</i>		
<i>H0</i>	<i>H1</i>	<i>Statistic</i>	<i>5% critical value</i>	<i>Prob**</i>
<b>I. TTR-GDP</b>				
Trace test				
	None*	18.0636	20.2618	0.0976
	At most 1*			
	$\gamma=0 \quad \gamma \geq 1$	3.61459	9.16454	0.4725
Max-eigenvalue test				
	None*	14.44902	15.8921	0.0831
	At most 1*			
	$\gamma = 0 \quad \gamma \geq 1$	3.61459	9.16454	0.4725
<b>II. DTR-GDP</b>				
Trace test				
	None*	24.5416	20.2618	0.0121
	At most 1*			
	$\gamma=0 \quad \gamma \geq 1$	7.6901	9.1645	0.0945
Max-eigenvalue test				
	None*	16.8515	15.8921	0.0353
	At most 1*			
	$\gamma=0 \quad \gamma \geq 1$	7.6901	9.1645	0.0945
<b>III. ITR-GDP</b>				
Trace test				
	None*	24.5416	20.2618	0.0121
	At most 1*			
	$\gamma=0 \quad \gamma \geq 1$	7.6901	9.1645	0.0945
Max-eigenvalue test				
	None*	16.8515	15.8921	0.0353
	At most 1*			
	$\gamma=0 \quad \gamma \geq 1$	7.6901	9.1645	0.0945

In model 1 of Table 3, we discuss solely the nonlinear relation between TTR-to- GDP, where variable  $GDP^2$  represents GDP squared and variable  $GDP^3$  represents GDP tripled. Including variables GDP,  $GDP^2$ ,  $GDP^3$ , debt and consumer price index (CPI), all data are denominated in million TWD. Further, we establish the relationship among TTR , GDP, square GDP, triple GDP, debt and CPI as follows :

$$\begin{aligned} \Delta Totaltaxrevenue_t &= \alpha_1 + \beta_{1i}GDP_t + \beta_{2i}(GDP_t)^2 + \beta_{3i}(GDP_t)^3 + \beta_{4i}Debt_t \\ &\quad + \beta_{5i}CPI_t + \varepsilon_t \\ \text{where } \varepsilon_t &= \varphi_1\varepsilon_{t-1} + \varphi_2\varepsilon_{t-2} + \sigma_t \end{aligned} \quad (10)$$

Case 1: Equation (10) declares that TTR increases with the increase of GDP, reaching a significance of 10%, see model 1 of Table 3. That is , as the debt variable is included, TTR also increases with the increase of GDP, reaching a significance of 10%. However, as the consumer price index(CPI) variable is added. TTR also increases with the increment of GDP, but it does not reach the significance of 10%. Our research shows that GDP-to-TTR represents N-shaped curve relationship.

$$\begin{aligned} \Delta Directtaxrevenue_t &= \alpha_1 + \beta_{1j}GDP_t + \beta_{2j}(GDP_t)^2 + \beta_{3j}(GDP_t)^3 + \beta_{4j}Debt_t \\ &\quad + \beta_{5j}CPI_t + \varepsilon_t \\ \text{where } \varepsilon_t &= \varphi_1\varepsilon_{t-1} + \varphi_2\varepsilon_{t-2} + \sigma_t \end{aligned} \quad (11)$$

Case 2: Equation (11) demonstrates that DTR increases with the increment of GDP, see model 2 of Table 3, denoting the corresponding regression coefficient is 0.061019, depicting the increment of GDP, to a certain extent, resulting in the increase of DTR. However, the coefficient does not pass the 10% significance test. Further, if the variables debt and CPI are added to the model. It shows that DTR increases with the growth of GDP, whereas these two coefficients fail the significance test of 10%. Our research shows that GDP-to- DTR presents N-shaped curve relationship.

$$\begin{aligned} \Delta Indirecttaxrevenue_t &= \alpha_1 + \beta_{1k}GDP_t + \beta_{2k}(GDP_t)^2 + \beta_{3k}(GDP_t)^3 + \beta_{4k}Debt_t \\ &\quad + \beta_{5k}CPI_t + \varepsilon_t \\ \text{where } \varepsilon_t &= \varphi_1\varepsilon_{t-1} + \varphi_2\varepsilon_{t-2} + \sigma_t \end{aligned} \quad (12)$$

Case 3: Equation (12) illustrates that ITR increases with the increase of GDP, see model 3 of Table 3, reaching a significance of 1%. Even though variable debt is included, ITR also increases with the increment of GDP, reaching a significance of 1%. Moreover, as variable CPI is added. ITR also increases with the increment of GDP, reaching a significance of 5%. Our empirical research finds that on the basis

of the existing ITR-to- GDP, adding variable debt or CPI, the relationship between ITR-to-GDP presents a N-shaped relationship.

In addition, Table 3 shows that under low inflation, the promotion effect of consumer price index(CPI) upon total tax is not significant, our empirical result is in line with Khan *et al.* (2006) argument.

**Table 3: Estimation Results of TTR-to-GDP**

Dependent Variable:	GDP	(GDP) <sup>2</sup>	(GDP) <sup>3</sup>	Debt	CPI	AR(1)	AR(2)	TSLA- (J-statistic)	DW
Total Tax revenue									
Model 1	0.3702 (1.6259)	-3.08E-8 (-1.7052)	9.59E-16* (1.9862)	0.0490 (0.2212)	1127552 (0.6206)	0.0033	0.0943	0.0000	2.0858
Model 2	0.0610 (0.5958)	-1.52E-09 (-0.1726)	9.13E-17 (0.3869)	-2.68E-16 (-0.1386)	8.91E-11 (0.1601)	0.0007	0.4486	0.0000	1.7011
Model 3	0.3148** (2.5392)	-2.56E-8** (-2.6105)	7.22E-16** (2.7444)	0.1104 (0.9142)	32265 (0.0326)	0.0424	0.0107	7.66E-43	2.2459

1. In brackets is the t-statistic of the estimated parameter. 2. the GDP in 2020 is 19766240 measured in 100 million TWD. 3. The table is based on the historical data of the National Bureau of statistics of Taiwan. 4. Robust standard errors in parentheses.  $p^* < 0.10$ ,  $p^{**} < 0.05$ ,  $p^{***} < 0.01$

**Table 4: Estimation of Tax Kuznets curve of “Tax- to- GDP”**

Year 2020	Official GDP	Actual TR	TKC approach Tax evasion	Tax evasion/ GDP	Tax-to-GDP Curve shaped
TTR	19766240	2398667	190522	0.009638	N-shaped
DTR	19766240	1324208	134050	0.006781	N-shaped
ITR	19766240	1074459	43248	0.002187	N-shaped

Note: The data sources in Table 4 are derived from the data of DGBAS,Taiwan

#### 4. Threshold Model Analyses

Mark Granovetter proposes the threshold model (see Granovetter & Soong, 1983, 1986, 1988). In the spirit of Granovetter’s threshold model, the “threshold” is “the number or proportion of others who must make one decision before a given actor does so”. In addition, Bick (2010) applies non-dynamic (static) panel threshold regression that propounded by Hansen (1999) on a balanced panel data from 40 developing countries. Another, Kremer’s (2013) findings reveal a threshold inflation of 2.53% for industrial countries and 17.22% for nonindustrial countries. Obviously,



the relationship is significantly positive below the threshold and significantly negative above the threshold for the industrial countries. Owing to different individuals have different thresholds, it is necessary to emphasize the determinants of threshold. In addition, this paper uses square term and cubic term as explanatory variables to capture the nonlinear influence relationship between these variables, including the threshold regression model established by Hansen (1999) to reduce false correlation. In addition, over parameterization will also reduce the degree of statistical freedom, resulting in inefficient regression estimation results. Therefore, our empirical analysis selects the tax rate as the threshold parameter. The empirical results can be expressed as follows:

### **Case 1: TTR-to-GDP**

According to Eq(10). When the tax burden rate is below 12.5%, the increase in GDP at this stage will produce a positive effect on total tax revenue. When the tax burden rate is between 12.5% and 13%, at this stage, the increase in GDP causes the total tax revenue to fall instead of increasing, indicating that the total tax base is being eroded. However, when the tax burden rate is greater than 13%, the increase in GDP at this stage will have a positive effect on total tax revenue. That is, the relationship between GDP and TTR presents a N-shaped relationship.(see Figure 1)

### **Case 2: DTR-to-GDP**

Similarly, according to Eq(11). When the tax burden rate is below 12.6%, the increase in GDP at this stage will produce a positive effect on direct tax revenue. When the tax burden rate is between 12.6% and 13.4%, at this stage, the increase in GDP causes the direct tax revenue to fall instead of increasing, indicating that the direct tax base is eroding. Moreover, when the tax burden rate is greater than 13.4%, the increase in GDP at this stage will have a positive effect on direct tax revenue. That is, the relationship between GDP and direct tax revenue presents a N-shaped relationship. (see Figure 2).

### **Case 3: ITR-to-GDP**

Next, according to Eq(12), we take the tax burden rate as the threshold variable, our empirical result reveals that indirect tax has no threshold effect, that is, with the increase of GDP, indirect tax revenue also increases. Clearly, the relationship between GDP and indirect tax revenue demonstrates an J-shaped relationship. (see Figure 3).

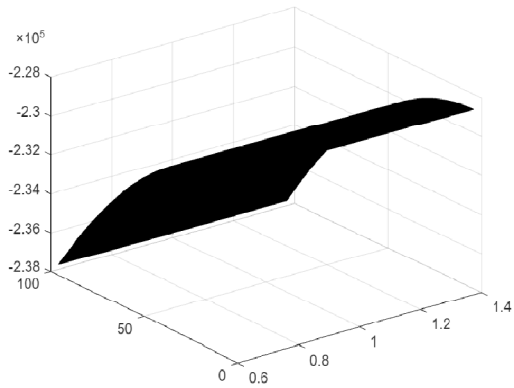


Figure 1: TTR-to-GDP, Taiwan

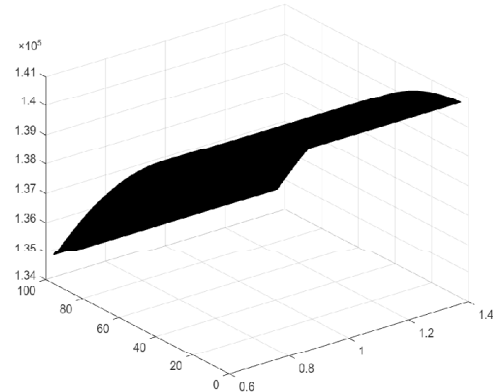


Figure 2: DTR-to-GDP, Taiwan

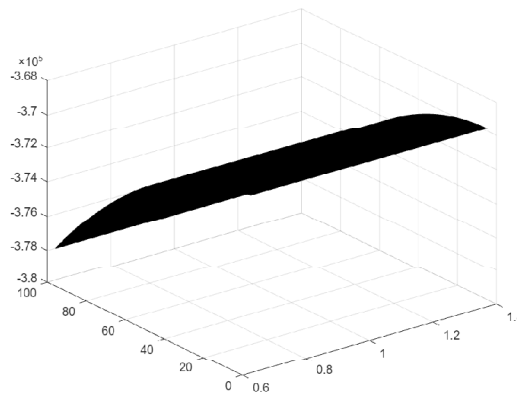


Figure 3: ITR-to-GDP, Taiwan,1991-2020

## 5. Kuznet Curve Analysis (TTR/DTR/ITR and GDP)

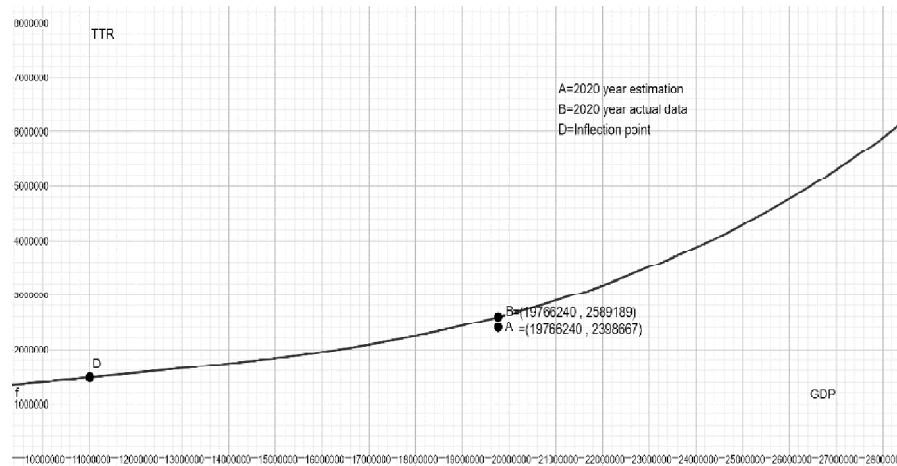
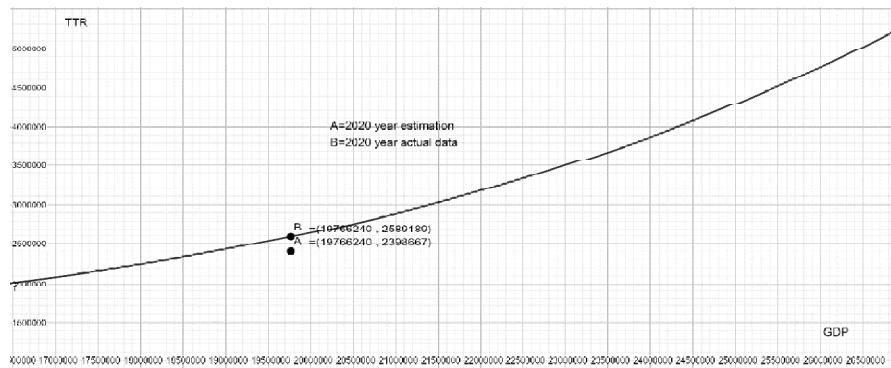
Further, according to the statistics of DGBAS, Taiwan. Taiwan's GDP in 2020 is 19,766,240 million TWD, and the actual total tax revenue is 2,398,667 million TWD. However, according to Kuznets curve of "TTR-to-GDP ratio", when Taiwan's GDP in 2020 is 19,766,240 million TWD, the TTR should be 2,589,189 million TWD, revealing the total tax base evasion is 190,522 million TWD, accounting for 0.009638 of GDP in 2020. Our empirical results declare that Taiwan's tax evasion rate in 2020 is 0.9638% (see Figure 4).

Similarly, Taiwan's GDP in 2020 is 19,766,240 million TWD, and the actual direct tax revenue is 1,324,208 million TWD. However, according to Kuznets curve approach

of “DTR-to-GDP ratio”, when Taiwan’s GDP in 2020 is 1,324,208 million TWD, the DTR should be 1,458,258 million TWD, revealing the direct tax evasion is 134,050 million TWD, accounting for 0.6781 percent of GDP in 2020. Our empirical results depict that Taiwan’s direct tax base evasion rate in 2020 is 0.6781% (see Figure 5).

Furthermore, Taiwan’s GDP in 2020 is 19,766,240 million TWD, and the actual indirect tax revenue is 1,074,459 million TWD . However, according to Kuznets curve of “TTR to GDP ratio”, when Taiwan’s GDP in 2020 is 19,766,240 million TWD, the TTR should be 1,117,707 million TWD, revealing the indirect tax evasion is 43,248 million TWD, accounting for 0.002187 of GDP in 2020. Our empirical results demonstrate that Taiwan’s indirect tax base evasion rate in 2020 is 0.2187% (see Figure 6).

From the above analysis, it can be seen that the tax base erosion rate of indirect tax is lower than that of direct tax. The main inference may be that indirect tax is taxed by withholding at source, which is not easy to evade tax for taxpayers.



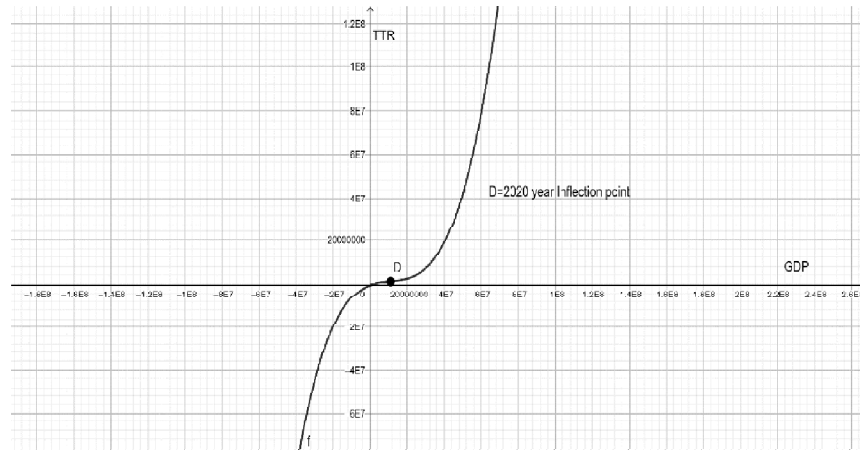
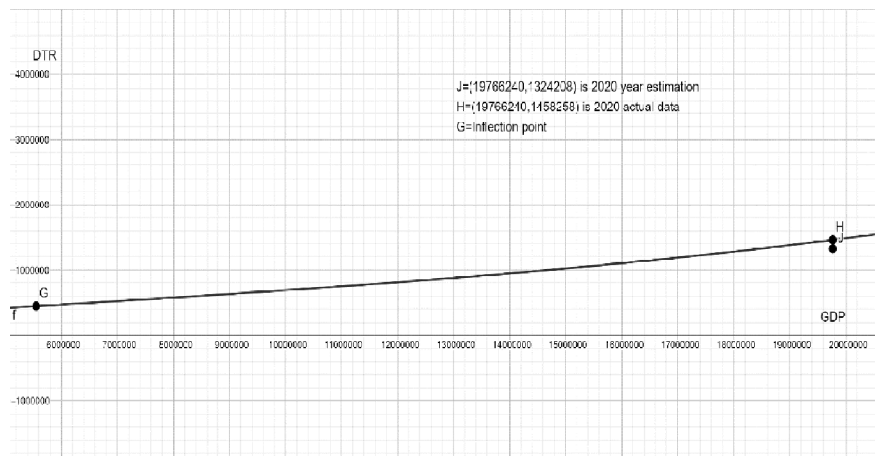
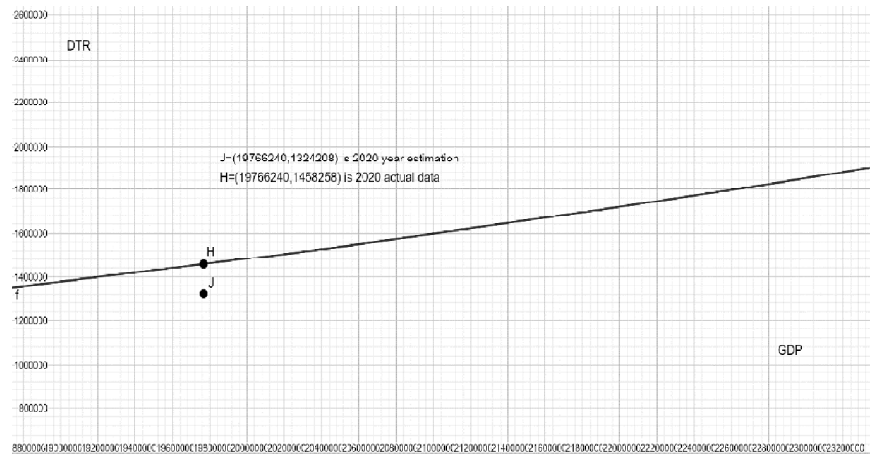


Figure 4: TTR-to-GDP, Taiwan, 1990-2020



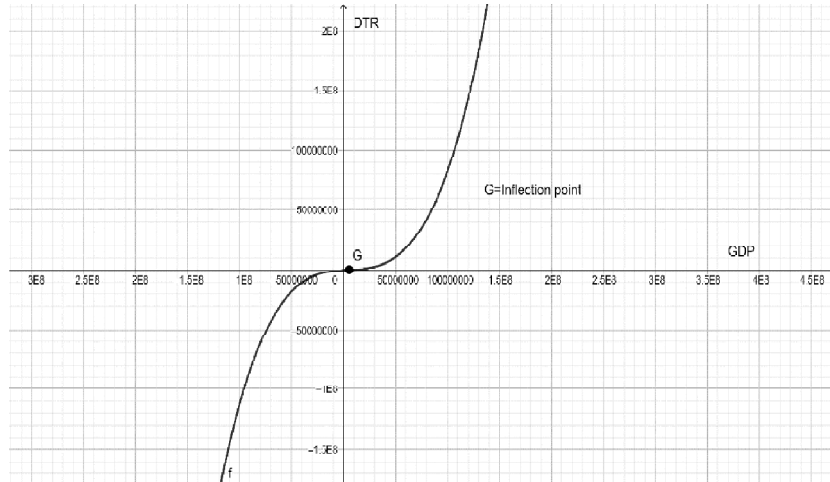
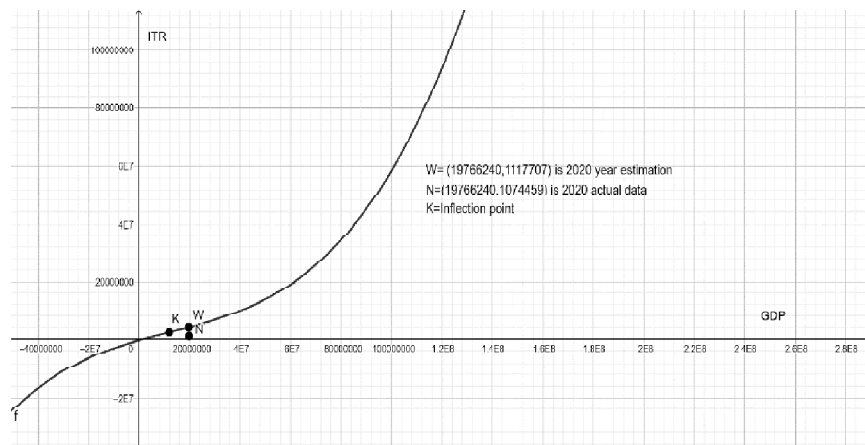
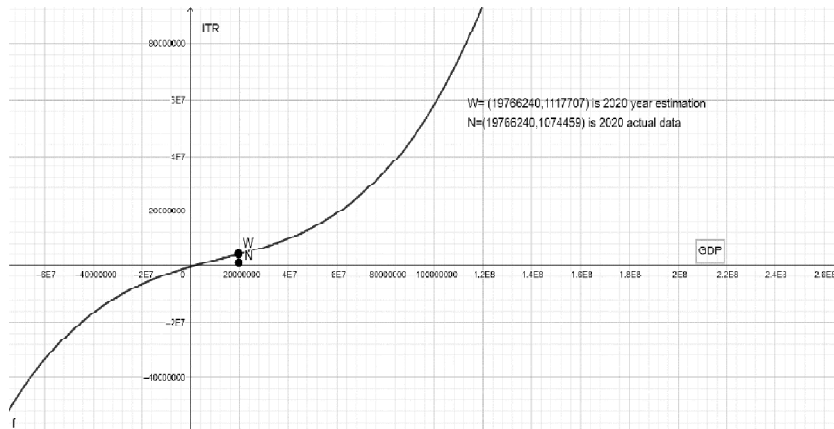


Figure 5: DTR-to-GDP, Taiwan, 1990-2020



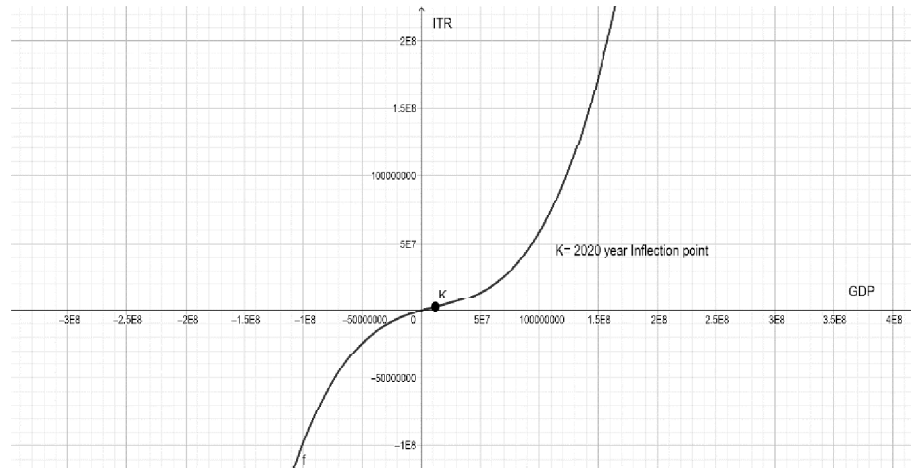


Figure 6: ITR-to-GDP, Taiwan, 1990-2020

## 6. Conclusion

Taxation and government regulations are two major factors that derive the growth of tax base erosion. In this study, we took Taiwan as a case study to explore the relation between TTR and GDP over the period from 1991 to 2020. Concurrently, we adopt Hansen's approach (1996,2000) to measure the size of tax base erosion over the same period using Tax Kuznet Curve (TKC) approach and select the parameter tax rate to capture the response of income upon tax revenue. It is found that when the tax rate is located within 12.5% and 13%, the GDP and tax revenue change inversely. However, when the tax rate is in other ranges, GDP and tax revenue present positive correlation changes. At the same time, according to the Tax Kuznet curve (TKC) approach, this paper shows the total tax base erosion rate in 2020 is 0.9638%, indicating that the tax base erosion rate in Taiwan is not so high. Therefore, our research depicts the estimated results of Threshold theory model and Tax Kuznet Curve model are consistent. In addition, this paper finds that indirect tax does not have the empirical and theoretical effect of tax rate threshold. In other words, regardless of the tax rate, both income and tax revenue fluctuate in the same direction. Further, according to the Tax Kuznet Curve model, we estimate the total tax base erosion rate in 2020 is 0.2187%, which is lower than the direct tax base erosion rate of 0.6187%. Obviously, this paper demonstrates the indirect tax revenue which does not exist the effect of tax rate threshold is more effective in reducing the tax base erosion rate than the direct tax with the effect of inflection point tax rate threshold.

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