



Sasatra SUDSAWASD,
Prasopchoke MONGSAWAD

**TAX POLICY HARMONIZATION AND FDI:
AN EMPIRICAL ASSESSMENT**

Abstract

This study investigates the impact of tax policy harmonization on foreign direct investment and total investment shares of a country. The percentage of an absolute deviation of a country's tax policy from a group average is used to measure the harmonization of three types of tax policies: corporate income taxes, consumption taxes, and import taxes. The measurement of harmonization is based on three categories: harmonization across all countries, harmonization within the same regional group, and harmonization within the same economic status group. Empirical findings indicate that more harmonization of a corporate income tax and import duty has positive impacts on those two types of investment shares. The impacts are found to be robust only in developed countries, whereas there is no evidence of the robust impact of harmonization within a developing country group or within the same regional group. Hence, the benefits of strengthening harmonization of tax policies are shown not to be the same for those developed and developing countries.

Key words:

Tax policy; Harmonization; Investment.

© Sasatra Sudsawasd, Prasopchoke Mongsawad, 2012.

Sudsawasd Sasatra, School of Development Economics, National Institute of Development Administration (NIDA), Bangkok, Thailand.

Mongsawad Prasopchoke, Assistant Professors, School of Development Economics, National Institute of Development Administration (NIDA), Bangkok, Thailand.

JEL: F13; F15.

1. Introduction

In pursuit of trade liberalization, for more than half a century, efforts have been made to remove trade impediments and to improve the trade environment. We have witnessed a continual decline in the cross-border trade barrier in forms of tariffs and quotas, resulting in part from multilateral and regional trade agreements. Now that the cross-border trade barrier has subsided and has become less important, the other types of barrier, domestic structure and regulations, have become a clear and present danger. These behind-the-border barriers have become the main impediments to trade liberalizations and are in dire need of being addressed. Such barriers are government procurement, labor and environmental standards, competition policies, product standards, technical regulations, and tax policies.

Behind-the border barriers not only impede trade but also obstruct investment flows. Trade and investment are becoming more and more complementary in the international market since trade determines the demand for a good, while investment can be considered as the supply side of the market. Liberalizing processes of both of them need to be parallel. Even though the process of trade liberalization has moved forward, investment liberalization has been relatively left behind, as not many agreements on investment policy have been made at the multilateral level, especially none that has been made on capital movement policy.

Besides the problems of domestic structure and regulations themselves, it has been argued that the variation in these regulations across countries has further hindered trade and investment liberalization. Consequently, the popular argument is that policy harmonization is a precondition of liberalization. However, many believe that the impact of policy harmonization is conditional, subject to economic conditions (e.g., Gatsios and Karp, 1992; Bhagwati and Srinivasan, 1996; Baldwin and Krugman, 2004; Baller, 2007).

Tax policy harmonization is one particular issue that has long been a center of interest of both scholars and policy planners, especially since the formation of the EU. Debate on costs and benefits of harmonization have been very intense. Opponents of harmonization claim that «tax harmonization means higher tax rates and discriminatory double-taxation of income that is saved and invested. It also means extra-territorial taxation since most tax harmonization schemes are designed to help governments tax economic activities outside their

borders» (Mitchell, 2004, p. 1). However, supporters¹ of tax harmonization argue that without harmonized regimes, countries may engage in tax competition, resulting in an inefficient low tax level or the «race to the bottom» notion. This tax cut to compete for mobile factors yields inefficient resource allocations² and comes with a cost of those factors that are immobile³. Tax policy harmonization, on the other hand, by eliminating variation in tax levels, encourages a single market. Without concerning on the effect of tax level, firms can make efficient economic decisions based on economic fundamentals, which then will result in higher competition and welfare.

Even though abundant arguments support the advantages of tax harmonization, empirical evidence is not clear cut. Attempting to contribute to the empirical literature, this study, therefore, investigates whether tax policy harmonization encourages economic activities indicated by two important types of capital: foreign direct investment inflow and total investment in a country. In addition, this study proposes an alternative measure of harmonization, calculated from the absolute value of the deviation of a tax policy measure from a country's group average. Three types of tax policies are explored: corporate income taxes, consumption taxes, and import taxes. The measurement of harmonization is considered in three categories: harmonization of all countries, harmonization within the region, and harmonization among different economic status groups. For the methodology, this study employs a modified investment model drawn from the existing literature, introducing a new variable, tax policy harmonization. Panel data from over a hundred countries (subject to data availability) during the period 1995–2006 are used.

The paper is organized as follows. The literature review on tax harmonization is in Section 2. Section 3 describes the empirical model used in this study. Then, measures of tax policy harmonization are introduced in Section 4. Data and empirical issues are discussed in Section 5. Section 6 shows the empirical results. Finally, concluding remarks are presented in Section 7.

2. Literature Review

The theoretical literature on the drawback of tax competition stems from the work of Gordon (1983), Wilson (1986) and (1987), and Zodrow and Mieszkowski (1986), which asserted that tax competition for mobile capital leads to inefficiently low tax rate and public goods. This tax competition is seen as a «race to the bottom» situation which is inefficient. It causes a distortion in real eco-

¹ Tax policy harmonization has been supported by international bureaucracies such as EU and OECD

² For example, Gordon : 1983, Wilson : 1986 and : 1987, and Zodrow and Mieszkowski : 1986

³ See Sinn : 1990, Bretschger and Hettich : 2002, Winner : 2005, and Bond et al. : 2000 for a review.

conomic decisions. Firms may decide to choose a location that has high cost of production but which offers a low tax rate because the benefit from the low tax level will offset the high production cost (Bond et al., 2000). Also, this tax competition for mobile capital comes with a cost for immobile labor. Bretschger and Hettich (2002) has provided such evidence using data of for the OECD countries during 1967–1996. They found that over those years labor tax had an upward trend, while the effective corporate tax rate declined. Similar results have also been reported by Winner (2005) using the data from 1965 to 2000.

Such disadvantages of corporate tax competition or a non-cooperative Nash game results in a tax policy harmonization proposition, as is seen to alleviate the inefficiency and improve welfare⁴. However, Baldwin and Krugman (2004) argue that tax harmonization would worsen a country's welfare in a very common situation. In their model, EU members were considered as «core» (or «north») or «periphery» (or «south»), where the core was a more advanced economy with an abundant infrastructure. They showed that the harmonizing strategy called «spilt-the-difference,» where the core coordinated tax at a higher rate than that of the south, always resulted in worse outcomes for both the north and south when there was an agglomeration. The other strategy, a «single-rate» harmonization, at high or low rate, would cause at least one side to worse off. As a result, there was no agreement on a single rate. They further showed that there would be a weak pareto improvement if the tax floor was set just below the equilibrium rate of the low-tax nation. In this case, the north would gain, while the south would be neutral. Regarding this questioning of the benefits of harmonization, Vrijburg and de Mooij (2010) also proved that, in a three country tax competition model, small countries do not benefit from harmonization. They only did so in small countries themselves under certain specific conditions.

In terms of empirical evidence, the results showed that the benefits from harmonizing corporate tax are uneven among countries. Benassy-Quere et al. (2000) conducted a simulation on corporate tax co-ordination among EU members and looked at the impact of FDI flow and revenue on EU, Japan, and the US. They explore three tax scenarios: harmonization to an average, competition to minimum rate, and dumping to zero rate. They found that EU tax rate competition and dumping would attract FDI inflow from Japan and the US, while harmonization would not. Although the EU countries have attracted more FDI via competition, their tax revenue has reduced. In terms of harmonization, the results were mixed, depending on the types of tax (nominal or effective rate) and the rate level prior to co-ordination.

The above findings are consistent with those of Gropp and Kostial (2001). However, Gropp and Kostial simulated the effect of corporate tax harmonization on FDI net inflow and corporate tax revenue (as percentage of GDP) among EU members. They found from the simulations that the effects of harmonization were strong for those countries that had tax rates much different from the harmonizing level at 35 percent. Countries that had much higher rates would enjoy

⁴ See the survey by Persson and Tabellini : 1995.

the FDI inflow and higher tax revenue, while those that had much lower rates suffered from the outflow of the FDI and the reduced revenue. They argued that it was still unclear to determine whether tax competition would drive the corporate tax rate to an inefficient low level.

Regarding overall welfare improvement, Sorensen (2004), using the computable general equilibrium model, found that EU's welfare gain from corporate tax harmonization was negligible at about 0.1–0.2 percent of the GDP, which was approximately the gain from transaction cost reduction from the introduction of the Euro. This finding was confirmed by Bettendorf et al. (2009), also employing the computable general equilibrium model—that harmonization did not yield a significant gain for the EU. To reap a welfare gain, as Bettendorf et al. have suggested, harmonizing both the tax base and tax rate is considered a necessity. As for the benefits to firms, Oestreicher and Spengel (2007) found that coordinating tax accounting yields a minor impact on firms' tax burdens; as a result, they also proposed that tax rate harmonization is necessary.

From the previous findings, it is still unclear whether harmonizing the tax rate does in fact encourage economic activities. This study, therefore, attempts to investigate whether there is an impact of tax harmonization on investment, a representative of economic activities, using the econometric method.

3. Methodology

In order to examine empirically the relationship between harmonization of tax policy and investment (considering both total investment and foreign direct investment), this study follows the work of Levine and Renelt (1992) and Sudsawasd and Moore (2006). Both of them employed Leamer's (1983) Extreme-Bound Analysis (EBA) approach to perform a robustness test in order to identify robust measures from the growth and investment models. The focus of the Levine and Renelt (1992) study was on macroeconomic indicators, based on the cross-sectional dataset, in which they found a robust relationship between international trade and investment. Sudsawasd and Moore (2006) further expanded the dataset to a panel dataset and focused mainly on trade policy volatility, which was found to have a robust correlation with investment. The variation of this study is on a variable of interest, in which tax policy harmonization is the main focus.

The model is formulated as equation (1),

$$Y = f(X, M, Z) \quad (1)$$

where Y denotes the total investment share of real GDP ($ISHARE$) and the share of FDI net inflows as expressed in a percentage of the GDP ($FDISHARE$); X is the set of variables always included in the model. As found by Levine and Renelt (1992), only the international trade variable has a positive and robust cor-

relation with investment. Thus, the export share in the GDP (*EXP*) is included as the *X* variable; *M* is a set of variables of interest which is a tax policy harmonization measure (*HAR*). Finally, *Z* is a set of optional variables to be included. Following the same set of *Z* variables employed by Sudsawasd and Moore (2006), it includes the share of government expenditures in the GDP (*GOV*), inflation rate (*INFL*), the growth rate of the domestic credit (*GDC*), standard deviation of inflation (*STINFL*), and the standard deviation of domestic credit growth (*STGDC*).

Since the set of *Z* variables that should be included is generally unknown, the EBA approach involves varying all combinations of the subset of *Z* variables in order to estimate the widest range (the highest and lowest bound values) of the estimated coefficient of the variable of interest. Applying the EBA approach, first, the model is estimated without any *Z* variables. This is referred to as a base regression. The extreme upper (lower) bound is identified by the highest (lowest) estimated coefficient of the variable of interest plus (or minus) two standard deviations. If the extreme bounds remain significant and have the same sign within both bounds, the EBA result suggests a «robust» relationship; otherwise the relationship is considered «fragile».

4. Measures of tax policy harmonization

This study focuses on three tax policies: corporate income taxes, consumption taxes, and import taxes. Seven tax indicators representing those tax policies are used. The first two indicators are related to corporate income taxes, the maximum corporate tax rate (*CIT1*) and the collected corporate tax (*CIT2*), measured by total corporate taxes collected on profits, income, and capital gains, as a percentage of the GDP. The former indicator tends to overstate the effective corporate income tax rate, since there are several tax exemptions and deductions. The latter tends to understate the effects of corporate income tax on investment. It is possible that a country with a high tax rate will have a low level of investment, resulting in low corporate income tax collected. The third indicator, the consumption tax (*CT*), is measured by taxes on goods and services as a percentage of value added of industry and services. Finally, the fourth to seventh indicators are related to import taxes. They are the simple average applied tariff for all goods (*IMT1*), simple average applied tariff for agriculture goods (*IMT2*), simple average applied tariff for non-agricultural goods (*IMT3*), and simple average import duty (*IMT4*), which is calculated from the sum of total import duties divided by the sum of total imports. These four indicators are proxies of the cost of imported capital goods and raw materials.

The measure of tax policy harmonization (*Har*) is calculated from the absolute deviation of a country *i*'s tax rate (τ) from a country group average ($\bar{\tau}$) at time *t* divided by the group's average tax rate and then multiplied by 100, as shown in equation (2).

$$Har_{i,t} = \frac{|\tau_{i,t} - \bar{\tau}_t|}{\bar{\tau}_t} \times 100 \quad (2)$$

The high value of this measure indicates large percent deviations of a country i 's tax rate from a group's average tax rate, implying a low degree of tax policy harmonization. In contrast, the low value suggests a high degree of tax policy harmonization in a country's group. This study proposes to use this measure of harmonization, since it really captures the variability of tax policies presented in the group. It reports harmonization as a deviation of each country's tax rate from the group average.

In order to measure harmonization among countries, first we consider the average of all countries' tax rates ($Har1$). However, it is unclear whether harmonization at the all countries level would provide the same benefits to all countries. Baldwin (1970) has noted that harmonization would be a practical goal only for countries that are not too different (cited in Islam and Reshef, 2006, p.8). Therefore, to investigate in more detail, we also measure harmonization among different groups of countries, based on region and economic status.

The second measure of harmonization ($Har2$) is based on regional tax policy harmonization. For this measurement, a country is categorized into one of seven regions⁵ and the simple average tax rate is calculated for each region. Then, tax policy harmonization is measured for each region group and finally pooled together. For the third and fourth measures of tax policy harmonization, countries are disaggregated into the datasets of developed and developing countries. The third measure of tax policy harmonization ($Har3$) belongs to the dataset of developed countries, while the fourth measure ($Har4$) is that of developing countries

5. Data and empirical issues

Unbalanced panel data from over a hundred countries from 1995 to 2006 were drawn from the World Bank's *World Development Indicators* and *World Trade Indicators*, the IMF's *International Financial Statistics*, the *Penn World Table 6.2*, and the IMD's *World Competitiveness Yearbook*⁶. Since the dataset is comprised of panel data, the Hausman (1978) specification test was employed to determine whether the fixed effects or random effects model estimator was

⁵ As specified in the World Development Indicators' regional classifications, those seven regions are South Asia, North America and the Caribbean, Sub-Saharan African, Latin America and the Caribbean, Europe and Central Asia, East Asia and the Pacific, and the Middle East and North Africa.

⁶ Data sources for all variables are reported in Appendix A. The List of countries is presented in Appendix B. Note that the choice of countries and time periods is determined by data availability.

suitable. The test results suggested that the random effects model was more appropriate since the test was not statistically significant at the 1 percent level, indicating that the coefficients between the two estimators (fixed and random effects estimators) were statistically indifferent.

Moreover, the Wooldridge (2002) autocorrelation test and the Baltagi and Wu (1999) locally best invariant (LBI) test for first order serial correlation were employed. Both tests rejected the null hypothesis of no first order serial correlation for each of the estimated equations. Also, the White test for the presence of heteroskedasticity was performed and rejected the null hypothesis of homoskedasticity. Since there was evidence of both serial correlation and heteroskedasticity, the random effects model with the robust covariance matrix estimator was selected as the main estimator of this study⁷.

6. Empirical results

6.1. Some stylized facts

Regarding the simple average value of tax policy indicators⁸, the results are mixed when comparing the figures of developed and developing countries. In the case of corporate income taxes, as measured by *CIT1* and *CIT2*, they are seen to be close to each other. However, developed countries are shown to charge higher consumption taxes (*CT*) but fewer import taxes (*IMT1–IMT4*). These findings suggest that tax revenue structures in developed countries rely more heavily on consumption taxes and less on international trade taxes collected, as compared with those of developing countries.

Next, when countries are grouped into seven regions, European and Central Asian countries are shown to set the highest maximum corporate tax rate, while they collect the lowest corporate income taxes as a percentage of the GDP. In addition, South Asian countries impose the highest import taxes, whereas, North American and Caribbean countries charge the lowest import taxes.

Now turning to tax policy harmonization, a summary of the descriptive statistics of the tax policy harmonization of all four measures is reported in Table 1. A maximum corporate tax rate (*CIT1*) indicator has the lowest mean value of policy harmonization, indicating the largest degree of policy harmonization. This is perhaps due to the fact that the government in most countries is restrained by domestic and political pressures. Also, countries often compete for the inward

⁷ For additional information on the models with robust covariance matrix used, known as the cluster-correlated robust estimator, see Roger : 1993 and Williams : 2000.

⁸ See Appendix C for a summary of the descriptive statistics of tax policies.

flows of capital⁹; therefore they may not set the maximum corporate tax rate much different from the rate set by others. Hence, the largest degree of tax policy harmonization is observed.

On the other hand, a simple average import duty (*IMT4*) indicator is found to have the largest mean value of policy harmonization, indicating the lowest degree of policy harmonization (within all country groups). This largest variation in the import duty partly reflects the two opposite views of the role of import taxes. In the first view, as supported by most trade economists, a country aims to remove import taxes and other trade barriers as a way to enhance social welfare. For the second view, import tax is used as the government's tool to protect domestic industries from international competition. Therefore, it is not surprising to find a large variation of import tax policy across countries.

In addition, we found that the measures based on region show the highest degree of harmonization in most tax indicators. This finding confirms that countries tend to have more similar tax rates if they are in a neighborhood. In the case of harmonization among countries with comparable economic status, the results indicate that countries within a developing country group generally have a higher degree of harmonization than developed countries do. This can be seen from the lower mean values of harmonization of five tax indicators (out of seven).

Table 1
Descriptive Statistics of Harmonization

	Obs.	Mean value of	S.D
<i>Harmonization based on the dataset of all countries</i>			
<i>Har (CIT1)</i>	386	16.44	13.99
<i>Har (CIT2)</i>	560	35.73	37.90
<i>Har (CT)</i>	1220	41.01	32.33
<i>Har (IMT1)</i>	934	54.60	43.60
<i>Har (IMT2)</i>	934	43.14	53.69
<i>Har (IMT3)</i>	934	60.49	47.54
<i>Har (IMT4)</i>	1101	72.27	65.90
<i>Harmonization based on the dataset of countries in the same region group</i>			
<i>Har (CIT1)</i>	386	14.91	14.33
<i>Har (CIT2)</i>	560	32.18	37.23
<i>Har (CT)</i>	1220	35.47	31.25
<i>Har (IMT1)</i>	934	34.94	34.79
<i>Har (IMT2)</i>	934	37.41	45.32
<i>Har (IMT3)</i>	934	39.41	44.87
<i>Har (IMT4)</i>	1101	56.89	59.87

⁹ For example, see Devereux : 2008 et al.

	Obs.	Mean value of	S.D
<i>Harmonization based on the dataset of developed countries</i>			
<i>Har (CIT1)</i>	223	17.36	14.88
<i>Har (CIT2)</i>	316	30.11	30.44
<i>Har (CT)</i>	295	36.94	30.71
<i>Har (IMT1)</i>	297	43.47	63.59
<i>Har (IMT2)</i>	297	41.74	57.57
<i>Har (IMT3)</i>	297	58.26	86.28
<i>Har (IMT4)</i>	205	88.77	63.57
<i>Harmonization based on the dataset of developing countries</i>			
<i>Har (CIT1)</i>	163	14.77	11.62
<i>Har (CIT2)</i>	244	42.53	38.95
<i>Har (CT)</i>	925	41.02	33.70
<i>Har (IMT1)</i>	634	37.73	34.97
<i>Har (IMT2)</i>	634	40.37	50.24
<i>Har (IMT3)</i>	634	39.50	36.90
<i>Har (IMT4)</i>	896	61.86	56.36

6.2. Tax policy harmonization over time

A group average of the countries' tax harmonization was simply regressed on a time variable in order to capture the time-trend effects during the period 1995 and 2006. The findings¹⁰ suggest that, for the maximum corporate income tax rate (*CIT1*), the estimated coefficient of the time variable was not significant. Hence, no time trend effect was found. When the group average of the collected corporate tax harmonization indicator, *Har(CIT2)*, was used as the dependent variable, significant and negative time-trend effects were found in most measures of harmonization. The finding suggests more harmonization of the collected corporate income tax over time. With one exception, the positive time-trend effect was found in the developed country group, suggesting more variation in the collected corporate income tax over time.

In the case of consumption tax, significant negative estimated coefficients were found in all four measures of harmonization, indicating that countries have moved towards more synchronizing policy over the last decade. Lastly, for the import tax policy harmonization measure, the findings were mixed depending upon which indicator of import taxes was considered. Nevertheless, in the developed country group, the time variable has a significant positive impact on harmonization for all types of import tax indicators. This finding indicates that those developed countries' import tax policies have drifted apart over time.

¹⁰ The estimations of a group average of tax harmonization on a time variable are reported in Appendix D.

However, the estimations suffer from the problem of insufficient data, which may affect the significance of the time variable. Therefore, the findings are used just for preliminary assessment of the trend of tax policy harmonization.

6.3 Robustness test result

First, we checked the relationship between all explanatory variables (X , M , Z) and dependent variables (investment and FDI net inflow shares) for the dataset of all countries, as reported in Tables 2 and 3.

When the models of total investment share were estimated (see Table 2), the coefficient of export share in the GDP was found to be statistically insignificant in most model specifications. Surprisingly, this indicates that a change in the export share does not relate to the level of total investment in a country. In terms of the government expenditure share in the GDP variable, the coefficient was positive and significant. This suggests that government expenditure crowds in total investment.

As expected, a country with a higher inflation rate or with a higher standard deviation of domestic credit growth is associated with lower investment, whereas a country with a higher growth rate of domestic credit attracts more. Regarding the coefficient of standard deviation of inflation, the results show insignificant effects in most model specifications. Finally, for the set of tax policy harmonization variables, the estimated coefficients of all tax harmonization indicators were statistically insignificant.

Next, with referent to the model estimations of FDI share (see Table 3), most results were different from those of the models of total investment share. The export share variable turns positive and significant in most models. This suggests that the level of exports of a country has an influence on FDI decisions, though not on domestic investment decisions. A country with a more open trade policy (proxy by a higher export share) will be a more attractive destination for the FDI. In contrast to the results on total investment, government expenditure share, growth rate of domestic credit, and standard deviation of domestic credit growth were insignificant. Moreover, the estimated coefficient of the standard deviation of inflation was positive and significant in six of seven model specifications.

With reference to the policy harmonization indicators, two of seven tax harmonization indicators, *HarIMT1* and *HarIMT3*, were negatively and significantly correlated with FDI net inflows. These empirical results indicate that more harmonization in these two import taxes leads to more inward flows of FDI.

From the above findings, the impact of policy harmonization on total investment and FDI still cannot be finalized. This is due to the fact that the sign and significance of the variable of interest (M -variable) could vary depending on the set of explanatory Z -variables included in the regression, as pointed out by Levine and Renelt (1992). Hence, we carried out a robustness test based on the EBA.

Table 2

Panel regression results for all countries
(Dependent variable: Total investment share in GDP)

HAR1 variable	Corporate tax1 (Har-CIT1)	Corporate tax2 (Har-CIT2)	Consumption tax (HarCT)	Import tax1 (HarIMT1)	Import tax2 (HarIMT2)	Import tax3 (HarIMT3)	Import tax4 (HarIMT4)							
EXP	-0.0082 (0.0248)	-0.0386 (0.0447)	-0.1089 (0.0452)	**	-0.0729 (0.0458)	-0.0741 (0.0458)	-0.0735 (0.0459)	-0.1000 (0.0422)	**					
GOV	0.0010 (0.0004)	***	0.0012 (0.0003)	***	0.0020 (0.0004)	***	0.0019 (0.0003)	***	0.0019 (0.0003)	***	0.0021 (0.0005)	***		
INF	0.0102 (0.0135)	-0.0121 (0.0131)	-0.0113 (0.0039)	***	-0.0275 (0.0138)	**	-0.0255 (0.0138)	*	-0.0274 (0.0140)	**	-0.0110 (0.0039)	***		
GDC	0.0259 (0.0166)	0.0164 (0.0100)	* (0.0064)	0.0004	0.0123 (0.0039)	***	0.0124 (0.0039)	***	0.0123 (0.0039)	***	0.0014 (0.0063)			
STINF	-0.0118 (0.0137)	0.0023 (0.0100)	0.0116 (0.0041)	***	0.0056 (0.0051)	0.0058	0.0058 (0.0051)	0.0058 (0.0051)	0.0113 (0.0042)	***				
STGDC	-0.0354 (0.0088)	***	-0.0255 (0.0103)	**	0.0004 (0.0064)		-0.0123 (0.0039)	***	-0.0125 (0.0039)	***	-0.0124 (0.0039)	***	0.0014 (0.0063)	
Har1	0.0225 (0.0223)	-0.0029 (0.0090)	-0.0129 (0.0112)		-0.0051 (0.0038)	0.0010 (0.0030)	-0.0034 (0.0032)	-0.0040 (0.0045)						
Intercept	19.7181 (2.1081)	***	19.3974 (2.6043)	***	15.7587 (1.8456)	***	15.7761 (1.9153)	***	15.4814 (1.8911)	***	15.7094 (1.8967)	***	15.1478 (1.8984)	***
No. obs.	192	313	593	469	469	469	550							
Groups	43	44	89	102	102	102	83							
R-squared	0.1708	0.1648	0.1233	0.1400	0.1387	0.1396	0.1093							

Note: ***, **, * denote 1%, 5%, 10% levels of significance, respectively. The estimated results are based on the random-effects model estimator. Figures in parentheses are robust standard errors

The EBA results based on the random-effects model are reported in Appendix E¹¹; Tables E.1 to E.4 present the EBA tests of total investment and Tables E.5 to E.8 report those of FDI net inflows. The findings are summarized and discussed below.

First, when the dataset of all countries was used, none of the estimated coefficients of the seven indicators of tax policy harmonization was robust in either the

¹¹One may concern that the based model specification may fail to capture the structures differences among countries (e. g. tax incentive structures, infrastructures, etc.). To handle these specific country differences, one normally introduces country dummies into the model (the fixed-effects model). In this paper, the Hausman test suggested the random-effects model over the fixed-effects model, because the estimated coefficients from these two models are indifferent. Also, due to the fact that the random-effects model is superior to the fixed-effect model regarding the degrees of freedom, which resulting in less sampling variations, this study, therefore, employs the random-effect model as a main tool. Nevertheless, the results of the fixed-effects model are still reported in the Appendix F.

total investment or FDI models. The evidence generally does not present positive effects of strengthening harmonization of tax policies across all countries. Similarly, the results from the datasets of the region group and developing country group were the same as those from all countries dataset, which revealed that none of tax harmonization indicators was robustly correlated with total investment or FDI shares.

However, the findings are interesting when the dataset restricted to developed countries is employed. Although most tax harmonization indicators remain «fragile,» harmonization of the collected corporate tax indicator (*HarCIT2*) is shown to have a «robust» correlation with FDI share, while the estimated coefficient of the simple average import duty harmonization indicator (*HarIMT4*) was found to have a «robust» relationship with total investment share. Since total investment includes both of domestic and foreign direct investments, the «robust» finding of total investment may suggest that domestic investment decisions, not foreign direct investment decisions, are sensitive to changes in domestic import tax policy¹².

Table 3

Panel regression results for all countries
(Dependent variable: FDI share in GDP)

HAR1 variable	Corporate tax1 (HarCIT1)	Corporate tax2 (HarCIT2)	Consumption tax (HarCT)	Import tax1 (HarIMT1)	Import tax2 (HarIMT2)	Import tax3 (HarIMT3)	Import tax4 (HarIMT4)
<i>EXP</i>	0.0931 *** (0.0230)	0.0931 *** (0.0222)	0.0148 (0.0168)	0.0604 ** (0.0245)	0.0602 ** (0.0240)	0.0601 ** (0.0243)	0.0136 (0.0191)
<i>GOV</i>	-0.0000 (0.0002)	0.0000 (0.0001)	0.0000 (0.0001)	0.0001 (0.0002)	0.0001 (0.0002)	0.0001 (0.0002)	0.0001 (0.0002)
<i>INF</i>	-0.0089 * (0.0047)	0.0088 (0.0179)	-0.0032 (0.0020)	-0.0303 *** (0.0086)	-0.0278 *** (0.0090)	-0.0304 *** (0.0090)	-0.0035 * (0.0020)
<i>GDC</i>	0.0212 (0.0163)	0.0194 (0.0218)	0.0180 *** (0.0059)	-0.0020 (0.0029)	-0.0019 (0.0029)	-0.0020 (0.0029)	0.0156 *** (0.0049)
<i>STINF</i>	0.0096 * (0.0049)	0.0077 ** (0.0032)	0.0032 (0.0021)	0.0055 ** (0.0028)	0.0059 ** (0.0029)	0.0056 ** (0.0028)	0.0035 * (0.0021)
<i>STGDC</i>	-0.0063 (0.0052)	0.0054 (0.0054)	0.0180 *** (0.0059)	0.0020 (0.0029)	0.0020 (0.0029)	0.0021 (0.0029)	0.0156 *** (0.0049)
<i>Har1</i>	0.0351 (0.0241)	-0.0114 (0.0071)	-0.0009 (0.0108)	-0.0081 ** (0.0034)	0.0003 (0.0029)	-0.0055 ** (0.0027)	0.0008 (0.0029)
<i>Intercept</i>	0.6033 (0.8096)	0.2360 (0.6461)	1.4949 ** (0.7313)	2.2664 *** (0.8732)	1.8101 ** (0.8517)	2.1585 ** (0.8889)	1.4556 ** (0.6824)
No. obs.	254	367	734	556	556	556	683
Groups	45	43	96	107	107	107	90
R-squared	0.0377	0.0401	0.0638	0.0263	0.0218	0.0230	0.0693

Note: ***, **, * denote 1%, 5%, 10% levels of significance, respectively. The estimated results are based on the random-effects model estimator. Figures in parentheses are robust standard errors.

¹² The results of the fixed-effects model are quite similar to those of the random-effects model, except that harmonization of the collected corporate tax indicator (*HarCIT2*) becomes «fragile».

Since both tax harmonization indicators show negative robustness, they reveal the benefits of synchronizing tax policies for total investment and FDI. However, the evidence suggests that the benefits from strengthening the harmonization of tax policies apply only to those developed countries. More specifically, the benefits are restricted to tax policy harmonization of simple average duties and collected corporate income taxes. Further, there is no evidence indicating the benefits of tax policy harmonization for those developing countries. Hence, harmonization of tax policy may not provide the same benefits for developed and developing countries.

7. Concluding remarks

In this study, we empirically explored the impact of tax policy harmonization on two types of investment: total investment share in the GDP and FDI share in the GDP. Since the estimated impact could be sensitive to varying set of explanatory variables included in the regression, the extreme-bound analysis (EBA) approach was employed, helping to identify the robustness relationship between tax harmonization and investment.

This study reveals some empirical evidence of robust relationships between the two types of tax policies and investment only in the developed country group. First, harmonization in the corporate income tax regime, measured by percentage of corporate tax revenue as percentage of the GDP, has a positive relationship with share of FDI inflows. A developed country with less variation in policy from the average of the group attracts more FDI net inflows. Secondly, higher synchronization of average import duties associates with more total investment share in a country. Nevertheless, robust impacts of harmonization within a developing country group or within the same region group were not found.

Our findings suggest little evidence supporting the benefits of policy harmonization in investment, and those benefits are very specific to some particular types of tax policies and country group; they are shown to depend upon the economic status of a country. Within the same economic status group, developed countries may want to pursue more tax harmonizing policy regimes as a way to enhance the good investment environment among them. For less developed countries, however, as suggested by theoretical models¹³, they may be better off without harmonizing tax policy. Our results also show no evidence of such benefits of harmonization.

This study serves as one of the first attempts to examine the link between tax harmonization and investment. There are a lot of works remaining to be explored in the future studies. Since we found the robust relationship between

¹³ For example, Baldwin and Krugman : 2004, Vrijburg and de Mooij : 2010, etc.

harmonization of average import duties and total investment share, it would be interesting to further investigate it in more details using different types of import duties such as raw, intermediate and final good import duties. Also, further examining the impact of synchronizing tax policy on bilateral FDI flows would yield very crucial information since characteristics of FDI hosts and home countries are also important factors. Such information could help policy makers in pinning down the right instrument to encourage domestic and foreign investment.

Acknowledgements

The current study was funded by the East Asian Development Network (EADN). The authors would like to thank the editor and the anonymous reviewer for their useful comments and Siam Sakaew for his research assistance.

Bibliography

1. Baldwin, R. and P. Krugman (2004), «Agglomeration, Integration and Tax Harmonization», *European Economic Review*, 48: 1–23.
2. Baldwin, R. (1970), «Nontariff Distortions of International Trade», *Brookings Institutions*, Washington.
3. Baller, S. (2007), «Trade Effects of Regional Standards Liberalization», *World Bank Policy Research Working Paper no. 4124*.
4. Baltagi, B. and X. Wu (1999), «Unequally Spaced Panel Data Regressions with AR(1) Disturbances», *Econometric Theory*, 15: 814–823.
5. Benassy-Quere, A., L. Fontagne, and A. Lahreche-Revil (2000), «Foreign Direct Investment and the Prospects of Tax Co-Ordination in Europe», *CEPII Working Paper 2000–06*.
6. Bettendorf, L., M. Devereux, A. van de Horst, S. Loretz and R. de Mooij (2009), «Corporate Tax Harmonization in the EU», Economic Policy Fiftieth Panel Meeting, Tilburg, 23–24 October 2009.
7. Bhagwati, J. and T. N. Srinivasan (1996), «Trade and the Environment: Does Environmental Diversity Detract from the Case for Free Trade?» in *Fair Trade and Harmonization: Prerequisite for Fair Trade?*, vol. 1: Economic Analysis, edited by Bhagwati, J. and R. E. Hudec, Cambridge, MA: MIT Press.
8. Bond, S., L. Chennells, M. Devereux, M. Gammie, and E. Troup (2000), *Corporate Tax Harmonisation in Europe: A Guide to the Debate*, London, the Institute for Fiscal Studies.

9. Bretschger, L. and F. Hettich (2002), «Globalization, Capital Mobility and Tax Competition: Theory and Evidence for OECD Countries», *European Journal of Political Economy*, 18: 695–716.
10. Devereux, M., B. Lockwood and M. Redoano (2008), «Do Countries Compete over Corporate Tax Rates?», *Journal of Public Economics*, 92: 1210–1235.
11. Gatsios, K. and L. Karp (1992), «The Welfare Effects of Imperfect Harmonization of Trade and Industrial Policy», *Economic Journal*, 102: 107–116.
12. Gordon, R. (1983), «An Optimal Taxation Approach to Fiscal Federalism», *Quarterly Journal of Economics*, 98: 567–586.
13. Gropp K. and K. Kostial (2001), «FDI and Corporate Tax Revenue: Tax Harmonization or Competition?», *Finance and Development*, 38: no. 2.
14. Hausman, J. A. (1978), «Specification Tests in Econometrics», *Econometrica*, 46: 1251–1271.
15. Islam, R. and A. Reshef (2006), «Trade and Harmonization: If your Institutions are good, does it matter if they are different?», *World Bank Policy Research Working Paper no. 3907*.
16. Leamer, E. E. (1983), «Let's Take the Con Out of Econometrics», *American Economic Review*, 73: 31–43.
17. Levine, R. and D. Renelt (1992) «A Sensitivity Analysis of Cross-Country Growth Regressions», *American Economic Review*, vol. 82, pp. 942–963.
18. Mitchell, D. (2004), «Tax Competition and Fiscal Reform: Rewarding Pro-Growth Tax Policy», paper presented at the Conference *A Liberal Agenda for the New Century: A Global Perspective*, the Cato Institute, the International Economic Analysis and the Russian Union of Industrialists and Entrepreneurs, Moscow, April 8–9, 2004.
19. Oestreicher A. and C. Spengel (2007), «Tax Harmonisation in Europe: The Determinant of Corporate Taxable Income in the EU Member States», *Centre for European Economic Research Discussion Paper 07–035*.
20. Persson, T., and G. Tabellini (1995), «Double-edged Incentives: Institution and Policy Coordination», in Grossman, G. and K. Rogoff (eds.), *Handbook of International Economics*, vol. III, North-Holland, Amsterdam.
21. Rogers, W. (1993), «Regression Standard Errors in Cluster Samples», *Stata Technical Bulletin*, 13: 19–23.
22. Sinn, H-W. (1990), «Tax Harmonization and Tax Competition in Europe», *European Economic Review*, 34: 489–504.
23. Sorensen, P. (2004), «Company tax Reform in the European Union», *International Tax and Public Finance*, 11: 91–115.

24. Sudsawasd, S. and R. Moore (2006), «Investment under Trade Policy Uncertainty: an Empirical Investigation», *Review of International Economics*, 14: 316–329.
25. Vrijburg, H. and R. A. de Mooij (2010), «Enhanced Cooperation in an Asymmetric Model of Tax Competition», *CESifo Working Paper no. 2915*.
26. Williams, R. (2000), «A Note on Robust Variance Estimation for Cluster-correlated Data», *Biometrics*, 56: 645–646.
27. Wilson, J. (1986), «A Theory of Interregional Tax Competition», *Journal of Urban Economics*, 19: 296–315.
28. Wilson, J. (1987), «Trade, Capital Mobility and Tax Competition», *Journal of Political Economy*, 95: 835–856.
29. Winner, H. (2005), «Has Tax Competition Emerged in OECD Countries? Evidence from Panel Data», *International Tax and Public Finance*, 12: 667–687.
30. Wooldridge, J. (2002), *Econometric Analysis of Cross Section and Panel Data*, Cambridge, MA: MIT Press.
31. Zodrow, G. and P. Mieszkowski (1986), «Pigou, Tiebout, Property Taxation, and the Under-provision of Local Public Goods», *Journal of Urban Economics*, 19:356–370.

Appendix A

Variable and source

Variable	Definition and sources
<i>CIT1</i>	Maximum corporate tax rate, calculated on profit before tax. (Source: <i>World Competitiveness Yearbook</i> , 2008.)
<i>CIT2</i>	Collected corporate tax on profits, income, and capital gains, as a percentage of GDP. (Source: <i>World Competitiveness Yearbook</i> , 2008.)
<i>CT</i>	Taxes on goods and services, as a percentage of value added of industry and services. (Source: <i>World Development Indicators</i> , 2008.)
<i>EXP</i>	Export share of GDP. (Source: <i>World Development Indicators</i> , 2008.)
<i>FDISHARE</i>	Foreign direct investment net inflows share of GDP. (Source: <i>World Development Indicators</i> , 2008.)
<i>GDC</i>	Growth rate of (net) domestic credit at the constant price. (Source: <i>World Development Indicators</i> , 2008.)
<i>GOV</i>	Government share of GDP. (Source: <i>Penn World Table</i> 6.2.)

Variable	Definition and sources
<i>IMT1</i>	Simple average applied tariff for all goods. (Source: <i>World Trade Indicators</i> , 2008.)
<i>IMT2</i>	Simple average applied tariff for agriculture goods. (Source: <i>World Trade Indicators</i> , 2008.)
<i>IMT3</i>	Simple average applied tariff for non-agricultural goods. (Source: <i>World Trade Indicators</i> , 2008.)
<i>IMT4</i>	Simple average import duty (Source: <i>World Development Indicators</i> , 2008.)
<i>INFL</i>	Inflation. (Source: <i>International Financial Statistics</i> , 2008.)
<i>ISHARE</i>	Investment share of GDP. (Source: <i>Penn World Table</i> 6.2.)
<i>STGDC</i>	Standard deviation of <i>GDC</i> . Calculated by using the square root of the squared residual of an estimation of <i>GDC</i> regressed on a constant term and time trend.
<i>STINFL</i>	Standard deviation of <i>INFL</i> . Calculated by using the square root of the squared residual of an estimation of <i>INFL</i> regressed on a constant term and time trend.

Appendix B

List of countries

All countries	Developing countries	Developed countries	South Asia	North America and Caribbean	Sub Sahara Africa	Latin America and Caribbean	Europe and Central Asia	East Asia and Pacific	Middle East and North Africa
Albania	Albania	Antigua and Barbuda	Bangladesh	Canada	Angola	Antigua and Barbuda	Albania	Australia	Bahrain
Angola	Angola	Australia	India	United States	Benin	Argentina	Armenia	Cambodia	Egypt
Antigua and Barbuda	Argentina	Austria	Maldives		Botswana	Barbados	Austria	China	Iran
Argentina	Armenia	Bahrain	Nepal		Burkina Faso	Belize	Belarus	Hong Kong	Israel
Armenia	Bangladesh	Canada	Pakistan		Burundi	Bolivia	Bosnia & Herzegovina	Indonesia	Jordan
Australia	Barbados	Hong Kong	Sri Lanka		Cote d'Ivoire	Brazil	Bulgaria	Japan	Kuwait
Austria	Belarus	Denmark			Cameroon	Chile	Czech Republic	Lao People's Democratic	Morocco
Bahrain	Belize	Finland			Cape Verde	Colombia	Denmark	Malaysia	Oman
Bangladesh	Benin	France			Republic of Congo	Costa Rica	Estonia	New Zealand	Saudi Arabia

All countries	Developing countries	Developed countries	South Asia	North America and Caribbean	Sub Sahara Africa	Latin America and Caribbean	Europe and Central Asia	East Asia and Pacific	Middle East and North Africa
Barbados	Bolivia	Germany			Ethiopia	Dominica	Finland	Papua New Guinea	Syrian Arab Republic
Belarus	Bosnia & Herzegovina	Greece			Gabon	Dominican Republic	France	Philippines	Tunisia
Belize	Botswana	Iceland			Guinea-Bissau	Grenada	Georgia	Singapore	
Benin	Brazil	Ireland			Kenya	Guatemala	Germany	Solomon Islands	
Bolivia	Bulgaria	Israel			Lesotho	Guyana	Greece	Thailand	
Bosnia & Herzegovina	Burkina Faso	Italy			Madagascar	Haiti	Hungary	Vietnam	
Botswana	Burundi	Japan			Malawi	Honduras	Iceland		
Brazil	Cote d'Ivoire	Kuwait			Mali	Jamaica	Ireland		
Bulgaria	Cambodia	Netherlands			Mauritius	Mexico	Italy		
Burkina Faso	Cameroun	New Zealand			Mozambique	Nicaragua	Kazakhstan		
Burundi	Cape Verde	Norway			Niger	Panama	Kyrgyz Republic		
Cote d'Ivoire	Chile	Portugal			Nigeria	Paraguay	Latvia		
Cambodia	China	Saudi Arabia			Rwanda	Peru	Lithuania		
Cameroun	Colombia	Singapore			Senegal	St. Kitts and Nevis	Moldova		
Canada	Republic of Congo	Slovenia			Seychelles	St. Lucia	Netherlands		
Cape Verde	Costa Rica	Spain			South Africa	St. Vincent & Grenadines	Norway		
Chile	Czech Republic	Sweden			Sudan	Trinidad and Tobago	Poland		
China	Dominica	Switzerland			Swaziland	Uruguay	Portugal		
Hong Kong	Dominican Republic	United Kingdom			Togo	Venezuela	Romania		
Colombia	Egypt	United States			Uganda		Slovak Republic		
Republic of Congo	Estonia				Zambia		Slovenia		
Costa Rica	Ethiopia						Spain		
Czech Republic	Gabon						Sweden		
Denmark	Georgia						Switzerland		
Dominica	Grenada						Tajikistan		

Appendix C

Summary descriptive statistics of tax policies

	Obs.	Mean value of	S. D.
<i>Tax indicators based on the dataset of all countries</i>			
CIT1	10	30.52	2.58
CIT2	12	3.49	0.23
CT	17	9.03	1.85
IMT1	12	10.92	1.62
IMT2	12	17.88	2.17
IMT3	12	10.16	1.58
IMT4	17	7.15	2.63
<i>Tax indicators based on the dataset of developed countries</i>			
CIT1	10	30.43	3.60
CIT2	12	3.62	0.44
CT	17	9.09	3.30
IMT1	11	4.70	1.18
IMT2	11	14.39	3.65
IMT3	11	3.62	1.06
IMT4	17	1.58	0.83
<i>Tax indicators based on the dataset of developing countries</i>			
CIT1	10	30.44	2.72
CIT2	12	3.35	0.42
CT	17	8.85	1.60
IMT1	12	13.93	2.50
IMT2	12	19.53	2.18
IMT3	12	13.34	2.61
IMT4	17	8.29	2.67
<i>Tax indicators based on the dataset of South Asia countries</i>			
CIT1	8	37.90	4.78
CIT2	12	2.01	0.68
CT	17	7.33	0.72
IMT1	12	22.65	10.15
IMT2	12	26.67	7.82
IMT3	12	22.20	10.54
IMT4	17	11.08	3.11
<i>Tax indicators based on the dataset of North America and Caribbean countries</i>			
CIT1	8	38.39	3.08
CIT2	12	3.07	0.39
CT	16	3.24	1.22
IMT1	11	4.77	1.02
IMT2	11	7.42	3.04

	Obs.	Mean value of	S. D.
IMT3	11	4.43	1.24
IMT4	16	1.22	0.56
<i>Tax indicators based on the dataset of Sub Sahara Africa countries</i>			
CIT1	8	31.75	2.71
CIT2	12	4.84	1.39
CT	17	8.29	1.22
IMT1	12	17.83	5.08
IMT2	12	21.62	5.22
IMT3	12	17.46	5.14
IMT4	17	12.48	2.39
<i>Tax indicators based on the dataset of Latin America and Caribbean countries</i>			
CIT1	8	31.73	1.27
CIT2	12	3.18	0.77
CT	17	8.87	1.99
IMT1	12	11.94	3.10
IMT2	12	15.44	3.52
IMT3	12	11.45	3.09
IMT4	17	6.03	2.00
<i>Tax indicators based on the dataset of Europe and Central Asia countries</i>			
CIT1	10	30.76	3.50
CIT2	12	3.53	0.19
CT	17	12.31	2.00
IMT1	12	5.35	2.33
IMT2	12	16.25	4.07
IMT3	12	4.20	2.52
IMT4	17	1.99	0.98
<i>Tax indicators based on the dataset of East Asia and Pacific countries</i>			
CIT1	10	29.49	1.29
CIT2	12	3.82	0.38
CT	17	7.26	1.72
IMT1	12	8.93	2.40
IMT2	12	16.75	4.28
IMT3	12	8.16	2.30
IMT4	17	7.69	4.35
<i>Tax indicators based on the dataset of Middle East and North Africa countries</i>			
CIT1	8	33.31	2.88
CIT2	12	2.58	1.02
CT	17	6.49	3.09
IMT1	12	17.84	6.14
IMT2	12	26.10	8.38
IMT3	12	17.15	6.46
IMT4	17	7.02	1.52

Appendix D

Estimations of tax harmonization on time variable

D.1 Corporate income tax (maximum tax rate)

For all countries:

$$\hat{a}vg(Har(CIT1)) = -600 + 0.3088Year$$

(638) (0.389)

n=10, $R^2 = 0.1049$

For developed countries:

$$\hat{a}vg(Har(CIT1)) = 543 - 0.2612Year$$

(1739) (0.8692)

n=10, $R^2 = 0.0112$

For developing countries:

$$\hat{a}vg(Har(CIT1)) = -1918 + 0.9645Year$$

(1214) (0.6069)

n=10, $R^2 = 0.1450$

For countries in the same region groups:

$$\hat{a}vg(Har(CIT1)) = -550 + 0.2829Year$$

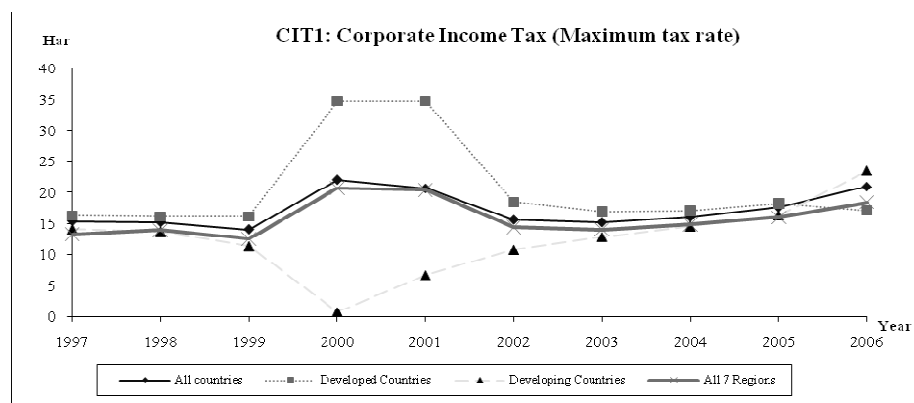
(660) (0.3301)

n=10, $R^2 = 0.0841$

Note: ***, **, * denote 1%, 5%, 10% levels of significance, respectively. Figures in parentheses are the standard errors.

Figure D.1

The trends of corporate income tax (maximum tax rate) harmonization group average



D.2 Collected corporate income tax (a percentage of GDP)

For all countries:

$$\hat{avg}(Har(CIT2)) = 593^* - 0.2789^*Year$$

(298) (0.1492)

n=12, R² = 0.1842

For developed countries:

$$\hat{avg}(Har(CIT2)) = -1190^{**} + 0.6099^{**}Year$$

(423) (0.2116)

n=12, R² = 0.3992

For developing countries:

$$\hat{avg}(Har(CIT2)) = 2530^{***} - 1.2433^{***}Year$$

(721) (0.3609)

n=12, R² = 0.4970

For countries in the same region groups:

$$\hat{avg}(Har(CIT2)) = 637^{**} - 0.3023^{**}Year$$

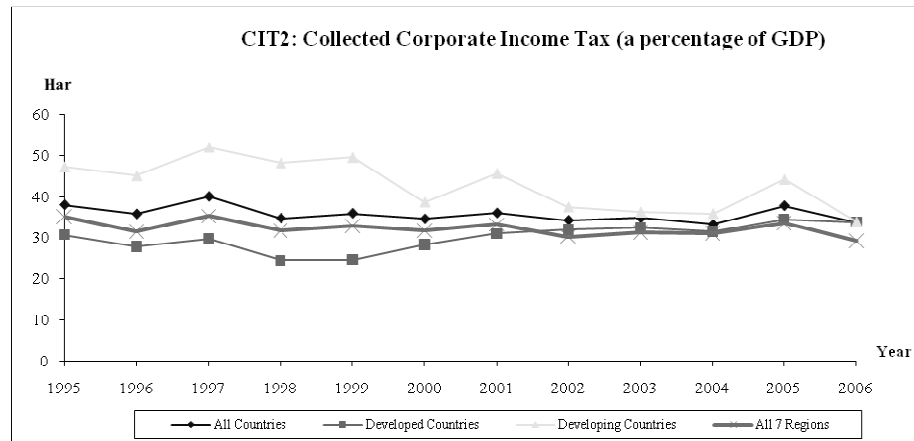
(270) (0.1353)

n=12, R² = 0.2663

Note: ***, **, * denote 1%, 5%, 10% levels of significance, respectively. Figures in parentheses are the standard errors.

Figure D.2

The trends of collected corporate income tax harmonization group average



**D.3 Consumption tax
(a percentage of value added of industry and services)**

For all countries:

$$\hat{a}vg(Har(CT)) = 2167^{***} - 1.0618^{***}Year$$

(234) (0.1171)

n=17 R²=0.8352

For developed countries:

$$\hat{a}vg(Har(CT)) = 3261^{***} - 1.6122^{***}Year$$

(824) (0.4128)

n=17 R²=0.4711

For developing countries:

$$\hat{a}vg(Har(CT)) = -1774^{***} - 0.8672^{***}Year$$

(294) (0.1471)

n=17 R²=0.6775

For countries in the same region groups:

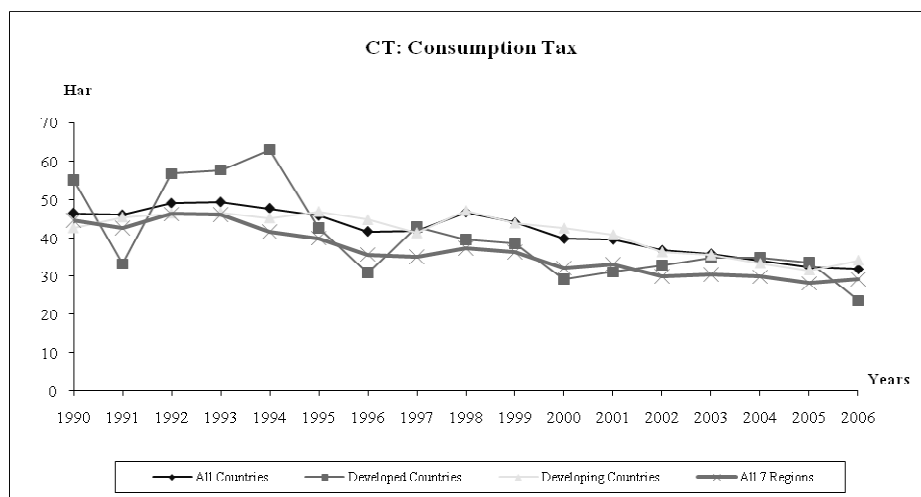
$$\hat{a}vg(Har(CT)) = 2367^{***} - 1.1669^{***}Year$$

(194) (0.0974)

n=17, R²=0.8990

Note: ***, **, * denote 1%, 5%, 10% levels of significance, respectively. Figures in parentheses are the standard errors.

Figure D.3
The trends of consumption tax harmonization group average



D.4 Applied import tariff rate for all goods

For all countries:

$$\hat{a}vg(Har(IMT1)) = 1962^* - 0.9535Year$$

(1060) (0.5301)

$$n=12, R^2 = 0.1689$$

For developed countries:

$$\hat{a}vg(Har(IMT1)) = -8206^{***} + 4.1237^{***}Year$$

(2146) (1.0734)

$$n=11, R^2 = 0.5791$$

For developing countries:

$$\hat{a}vg(Har(IMT1)) = 1327 - 0.6446Year$$

(1041) (0.5072)

$$n=12, R^2 = 0.0535$$

For countries in the same region groups:

$$\hat{a}vg(Har(IMT1)) = -717 + 0.3749Year$$

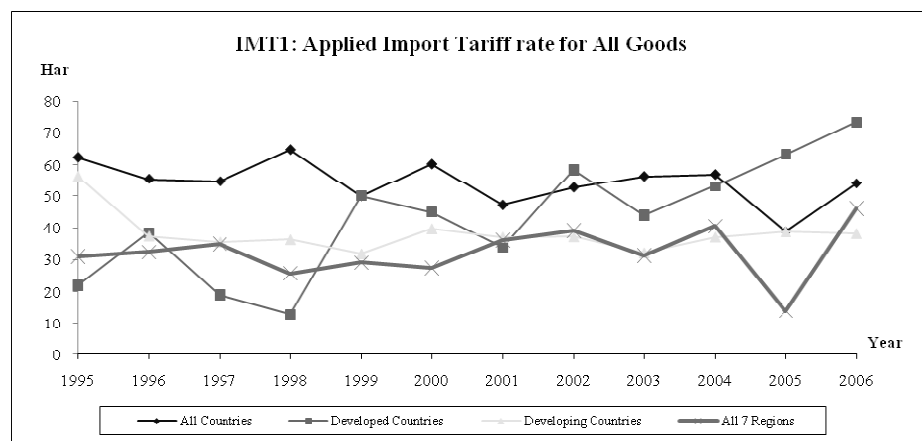
(1421) (0.7107)

$$n=12, R^2 = 0.1450$$

Note: ***, **, * denote 1%, 5%, 10% levels of significance, respectively. Figures in parentheses are the standard errors.

Figure D.4

The trends of import tax (applied import tariff rate for all goods) harmonization group average



D.5 Applied import tariff rate for agricultural goods

For all countries:

$$\hat{avg}(Har(IMT2)) = 1266 + 0.6543Year$$

(1268) (0.6343)

n=12, R²=0.0058

For developed countries:

$$\hat{avg}(Har(IMT2)) = -10018^{***} + 5.0288^{***}Year$$

(2305) (1.1526)

n= 11, R² = 0.6433

For developing countries:

$$\hat{avg}(Har(IMT2)) = 1819 - 0.8893Year$$

(1056) (0.5281)

n=12, R²=0.1430

For countries in the same region groups:

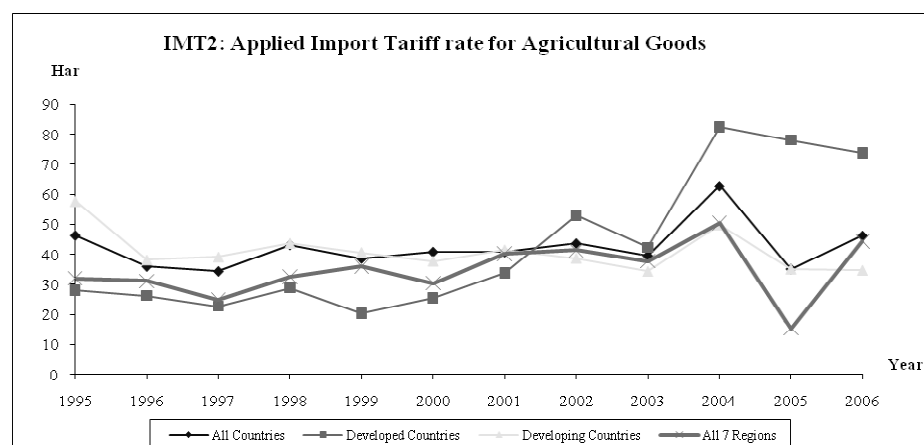
$$\hat{avg}(Har(IMT2)) = -1553 + 0.7938Year$$

(1545) (0.7226)

n=12, R² = 0.0050

Note: ***, **, * denote 1%, 5%, 10% levels of significance, respectively. Figures in parentheses are the standard errors.

Figure D.5
The trends of import tax (applied import tariff rate for agricultural goods) harmonization group average



D.6 Applied import tariff rate for non-agricultural goods

For all countries:

$$\hat{a}vg(Har(IMT3)) = 2359^* - 1.1491^*Year$$

(1209) (0.044)

n=12, R²=0.1920

For developed countries:

$$\hat{a}vg(Har(IMT3)) = -8394^{**} + 4.2251^{**}Year$$

(2694) (1.1347)

n=11, R²= 0.4691

For developing countries:

$$\hat{a}vg(Har(IMT3)) = 954 - 0.4572Year$$

(992) (4958)

n=12, R²=0.0784

For countries in the same region groups:

$$\hat{a}vg(Har(IMT3)) = -591 + 0.3135Year$$

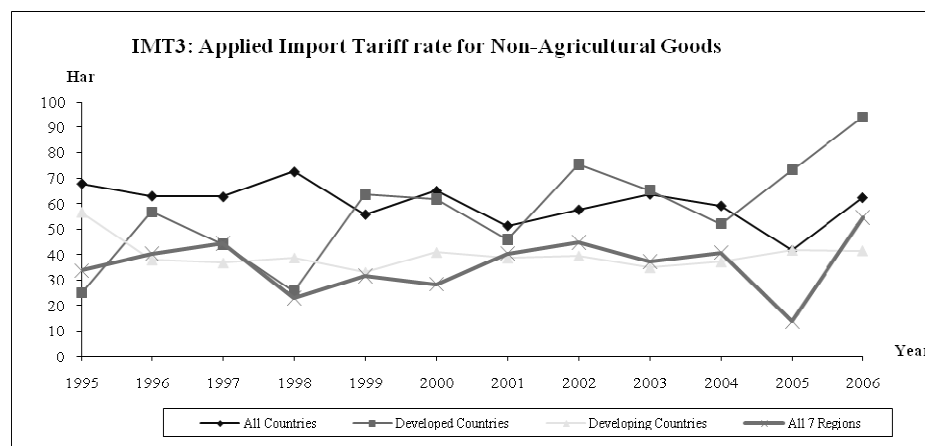
(1893) (0.9466)

n=12, R²=0.1450

Note: ***, **, * denote 1%, 5%, 10% levels of significance, respectively. Figures in parentheses are the standard errors.

Figure D.6

The trends of import tax (applied import tariff rate for non-agricultural goods) harmonization group average



D.7 Average import duty

For all countries:

$$\hat{a}vg(Har(IMT4)) = 2945^{***} + 1.5098^{***}Year$$

(603) (0.3022)

n=17, R²=0.5995

For developed countries:

$$\hat{a}vg(Har(IMT4)) = -6745^{***} + 3.4173^{***}Year$$

(2088) (1.0452)

n=17, R²=0.9657

For developing countries:

$$\hat{a}vg(Har(IMT4)) = -2223^{***} + 1.1435Year$$

(469) (0.2347)

n=17, R²=0.5869

For countries in the same region groups:

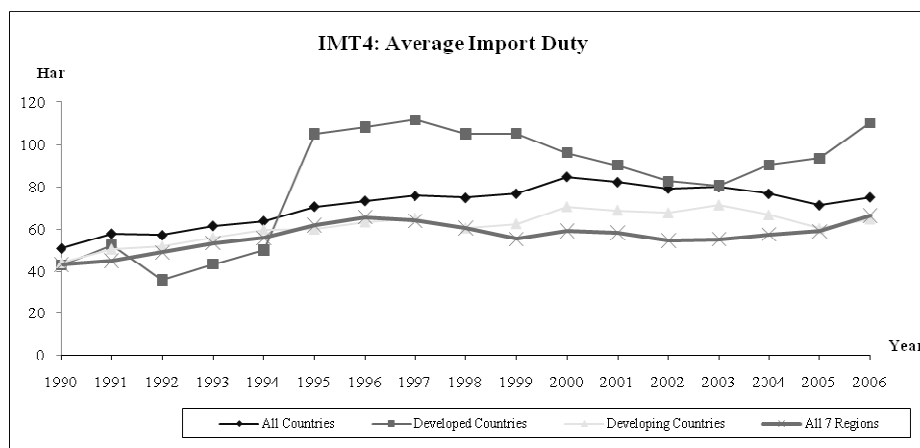
$$\hat{a}vg(Har(IMT4)) = -1431^{**} + 0.7446^{**}Year$$

(541) (0.2708)

n=17, R²=0.1450

Note: ***, **, * denote 1%, 5%, 10% levels of significance, respectively. Figures in parentheses are the standard errors.

Figure D.7
The trends of import tax (average import duty) harmonization group average



Appendix E

Robustness test results (based on the random-effects model estimator)

Table E.1

Sensitivity analysis results (Dependent variable: Total investment share in GDP)

Variable	Coefficient	S.E.	Obs	Groups	R ²	Z-variables	Robust/Fragile
<i>Har1 (Harmonization across all countries' average tax rates)</i>							
Har-CIT1	High	0.0336 *	0.0184	198	44	0.104	INF,GDC,STINF,STGDC
	Base	0.0234	0.0270	213	46	0.045	Fragile
	Low	0.0147	0.0285	202	44	0.072	GOV
Har-CIT2	High	0.0051	0.0104	321	45	0.014	INF,STINF,STGDC
	Base	-0.0016	0.0084	352	48	0.059	Fragile
	Low	-0.0072	0.0096	313	44	0.088	GOV,GDC,STINF
HarCT	High	-0.0120	0.0117	593	89	0.137	GOV,GDC,STINF,STGDC
	Base	-0.0147 *	0.0087	799	108	0.073	Fragile
	Low	-0.0160	0.0108	671	94	0.143	GOV
Har-rIMT1	High	-0.0027	0.0024	525	116	0.023	INF,STGDC
	Base	-0.0032	0.0021	571	126	0.008	Fragile
	Low	-0.0061	0.0042	469	102	0.273	GOV,INF,STGDC
Har-rIMT2	High	0.0015	0.0032	469	102	0.305	GOV,GDC,STINF,STGDC
	Base	0.0002 *	0.0029	571	126	0.005	Fragile
	Low	0.0001	0.0035	508	110	0.244	GOV
Har-rIMT3	High	-0.0017	0.0020	525	116	0.020	INF,STGDC
	Base	-0.0021	0.0017	571	126	0.006	Fragile
	Low	-0.0042	0.0035	469	102	0.269	GOV,INF,GDC
Har-rIMT4	High	0.0013	0.0042	730	101	0.009	INF,STINF
	Base	-0.0012	0.0042	749	102	0.008	Fragile
	Low	-0.0060	0.0048	618	88	0.139	GOV

Note: ***, **, * denote 1%,5%,10% significant levels respectively. The estimated results are based on the random-effects model estimator.

Table E.2

Sensitivity analysis results
(Dependent variable: Total investment share in GDP)

Variable	Coefficient	S.E.	Obs.	Groups	R ²	Z-variables	Robust/Fragile
<i>Har2 (Harmonization across countries' average tax rates in the same region)</i>							
Har-CIT1	High: 0.0032	0.0317	198	44	0.0333	STGDC	
	Base: -0.0081	0.0275	213	46	0.0555		Fragile
	Low: -0.0109	0.0262	192	44	0.1346	GOV,INF,GDC	
Har-CIT2	High: 0.0010	0.0138	321	45	0.0232	INF,STINF,STGDC	
	Base: -0.0064	0.0121	352	48	0.0625		Fragile
	Low: -0.0142	0.0132	313	44	0.0877	GOV,GDC,STINF	
HarCT	High: 0.0003	0.0084	593	89	0.1371	GOV,INF,GDC,STGDC	
	Base: -0.0059	0.0084	799	108	0.0720		Fragile
	Low: -0.0068	0.0086	770	106	0.0807	STINF	
Har-riMT1	High: -0.0038	0.0057	469	102	0.2975	GOV,INFGDC,STGDC	
	Base: -0.0069	0.0050	571	126	0.0007		Fragile
	Low: -0.0069	0.0050	558	121	0.0026	INF,STINF	
Har-riMT2	High: -0.0018	0.0042	472	103	0.2880	GOV,GDC,STGDC	
	Base: -0.0032	0.0041	571	126	0.0010		Fragile
	Low: -0.0039	0.0042	469	102	0.2567	GOV,INF,GDC,STINF	
Har-riMT3	High: -0.0075 *	0.0044	469	102	0.2912	GOV,INF,GDC	
	Base: -0.0086 **	0.0040	571	126	0.0006		Fragile
	Low: -0.0091 *	0.0046	508	110	0.2302	GOV	
Har-riMT4	High: 0.0101	0.0062	730	101	0.0010	STINF	
	Base: 0.0072	0.0058	749	102	0.0022		Fragile
	Low: 0.0056	0.0075	550	83	0.1452	GOV,INF,GDC,STINF	

Note: ***, **, * denote 1%, 5%, 10% significant levels respectively. The estimated results are based on the random-effects model estimator.

Table E.3

Sensitivity analysis results**(Dependent variable: Total investment share in GDP)**

Variable	Coefficient	S.E.	Obs	Groups	R ²	Z-variables	Robust/Fragile	
<i>Har3 (Harmonization across developed countries' average tax rates)</i>								
Har-CIT1	High:	0.0346	0.0286	101	24	0.3564	STINF,STGDC	
	Base:	-0.0110	0.0206	110	25	0.0595		Fragile
	Low:	-0.0262	0.0164	95	23	0.0162	GOV,STGDC	
Har-CIT2	High:	0.0192	0.0239	159	25	0.0078	INF,STGDC	
	Base:	0.0128	0.0204	173	26	0.0512		Fragile
	Low:	-0.0031	0.0136	151	24	0.0864	GOV,GDC,STINF,STGDC	
HarC7	High:	-0.0198	0.0192	168	26	0.0760	INF,STINF	
	Base:	-0.0456**	0.0221	169	26	0.0521		Fragile
	Low:	-0.0553***	0.0181	131	23	0.0571	GOV	
Har-riMT1	High:	0.0055	0.0061	154	28	0.0090	STINF,STGDC	
	Base:	-0.0007	0.0049	171	31	0.0004		Fragile
	Low:	-0.0020	0.0051	159	28	0.0391	GOV	
Har-riMT2	High:	-0.0049	0.0048	162	29	0.0107	INF	
	Base:	-0.0051	0.0046	171	31	0.0001		Fragile
	Low:	-0.0109***	0.0035	151	26	0.0237	GOV,INF,STINF	
Har-riMT3	High:	-0.0012	0.0048	154	28	0.0079	STINF,STGDC	
	Base:	-0.0042	0.0031	171	31	0.0008		Fragile
	Low:	-0.0054	0.0036	159	28	0.0419	GOV	
Har-riMT4	High:	-0.0154***	0.0048	141	21	0.0390	INF	
	Base:	-0.0153***	0.0054	140	21	0.0410		Robust
	Low:	-0.0218***	0.0043	102	18	0.0093	GOV,GDC	

Note: ***, **, * denote 1%, 5%, 10% significant levels respectively. The estimated results are based on the random-effects model estimator.

Table E.4

Sensitivity analysis results
(Dependent variable: Total investment share in GDP)

Variable	Coefficient	S.E.	Obs.	Groups	R ²	Z-variables	Robust/Fragile
<i>Har4 (Harmonization across developing countries' average tax rates)</i>							
Har-CIT1	High: 0.0820 **	0.0406	97	20	0.0557	GOV,GDC,STINF	
	Base: 0.0701 *	0.0398	103	21	0.0184		Fragile
	Low: 0.0559 *	0.0331	97	20	0.1466	STGDC	
Har-CIT2	High: -0.0222	0.0157	162	20	0.1511	INF,STGDC	
	Base: -0.0248	0.0167	179	22	0.0415		Fragile
	Low: -0.0307 *	0.0180	162	20	0.0084	GOV,INF,GDC,STINF	
HarCT	High: -0.0045	0.0115	467	66	0.0008	GOV,GDC,STGDC	
	Base: -0.0077	0.0089	630	82	0.0052		Fragile
	Low: -0.0080	0.0108	540	71	0.0001	GOV	
Har-riMT1	High: 0.0009	0.0043	322	76	0.0009	GOV,INF,GDC,STINF	
	Base: -0.0027	0.0023	400	95	0.0212		Fragile
	Low: -0.0036	0.0022	371	88	0.0201	GDC,STINF	
Har-riMT2	High: 0.0028	0.0034	322	76	0.0015	GOV,GDC,STGDC	
	Base: -0.0005	0.0037	400	95	0.0158		Fragile
	Low: -0.0008	0.0038	396	92	0.0091	INF,STINF	
Har-riMT3	High: 0.0028	0.0044	322	76	0.0001	GOV,INF,STGDC	
	Base: -0.0015	0.0022	400	95	0.0184		Fragile
	Low: -0.0023	0.0021	371	88	0.0188	GDC,STINF	
Har-riMT4	High: 0.0023	0.0051	590	80	0.0077	INF,STINF	
	Base: -0.0009	0.0052	609	81	0.0092		Fragile
	Low: -0.0045	0.0066	513	70	0.0007	GOV	

Note: ***, **, * denote 1%,5%,10% significant levels respectively. The estimated results are based on the random-effects model estimator.

Table E.5

Sensitivity analysis results
(Dependent variable: FDI share in GDP)

Variable	Coefficient	S.E.	Obs.	Groups	R ²	Z-variables	Robust/Fragile	
<i>Har1 (Harmonization across all countries' average tax rates)</i>								
Har-CIT1	High:	0.0379	0.0247	254	45	0.3324	GOV,INF,GDC,STGDC	Fragile
	Base:	0.0290	0.0236	283	48	0.3896		
	Low:	0.0275	0.0229	283	48	0.3963	INF,STINF	
Har-CIT2	High:	-0.0059	0.0057	410	46	0.3647	INF	Fragile
	Base:	-0.0062	0.0056	410	46	0.3647		
	Low:	-0.0114	0.0071	367	43	0.2970	GOV,INF,GDC,STINF,STGDC	
HarC7	High:	-0.0009	0.0108	734	96	0.0986	GOV,INF,GDC,STINF,STGDC	Fragile
	Base:	-0.0067	0.0091	934	114	0.1250		
	Low:	-0.0093	0.0116	810	101	0.0355	GOV	
Har-riMT1	High:	-0.0040	0.0034	627	122	0.1068	INF,GDC,STINF,STGDC	Fragile
	Base:	-0.0052	0.0033	669	129	0.0765		
	Low:	-0.0084	**0.0034	556	107	0.0602	GOV,INF,GDC,STGDC	
Har-riMT2	High:	0.0007	0.0029	556	107	0.0503	GOV,GDC,STINF	Fragile
	Base:	0.0000	0.0026	669	129	0.0712		
	Low:	0.0002	0.0027	627	122	0.0906	GDC,STGDC	
Har-riMT3	High:	-0.0026	0.0028	627	122	0.1064	INF,GDC,STINF,STGDC	Fragile
	Base:	-0.0038	0.0027	669	129	0.0764		
	Low:	-0.0057	**0.0027	556	107	0.0572	GOV,INF,STGDC	
Har-riMT4	High:	0.0022	0.0033	683	90	0.0665	GOV,INF,STINF,STGDC	Fragile
	Base:	0.0018	0.0024	887	109	0.1059		
	Low:	0.0006	0.0029	683	90	0.0892	GOV,GDC,STGDC	

Note: ***, **, * denote 1%, 5%, 10% significant levels respectively. The estimated results are based on the random-effects model estimator.

Table E.6

Sensitivity analysis results
(Dependent variable: FDI share in GDP)

Variable	Coefficient	S.E.	Obs.	Groups	R ²	Z-variables	Robust/Fragile
<i>Har2 (Harmonization across countries' average tax rates in the same region)</i>							
HarCIT1	High: 0.0515 *	0.0271	254	45	0.3240	GOV,INF,GDC	
	Base: 0.0381	0.027	283	48	0.3971		Fragile
	Low: 0.0351	0.026	283	48	0.4210	INF,STINF	
HarCIT2	High: -0.0035	0.0062	410	46	0.3618	INF	
	Base: -0.0037	0.0061	410	46	0.3617		Fragile
	Low: -0.0075	0.0075	367	43	0.2903	GOV,INF,GDC,STINF,STGDC	
HarCT	High: -0.0022	0.0053	853	108	0.1779	INF,GDC,STINF,STGDC	
	Base: -0.0058	0.0063	934	114	0.1238		Fragile
	Low: -0.0084	0.0072	914	112	0.1282	INF	
HarIMT1	High: 0.0018	0.0076	556	107	0.0526	GOV,INF,STINF,STGDC	
	Base: -0.0002	0.0059	669	129	0.0712		Fragile
	Low: 0.0002	0.0062	627	122	0.0975	GDC,STINF,STGDC	
HarIMT2	High: 0.0046	0.0062	556	107	0.0500	GOV,GDC,STINF	
	Base: 0.0033	0.0054	669	129	0.0609		Fragile
	Low: 0.0033	0.0057	627	122	0.0940	INF,GDC,STGDC	
HarIMT3	High: -0.0023	0.0069	556	107	0.0553	GOV,INF,STINF,STGDC	
	Base: -0.0038	0.0054	669	129	0.0705		Fragile
	Low: -0.0041	0.0055	568	126	0.0888	STINF	
HarIMT4	High: 0.0029	0.0031	743	95	0.0478	GOV,INF	
	Base: 0.0024	0.0021	887	109	0.1079		Fragile
	Low: 0.0013	0.0034	803	102	0.1212	INF,GDC	

Note: ***, **, * denote 1%,5%,10% significant levels respectively. The estimated results are based on the random-effects model estimator.

Table E.7

Sensitivity analysis results
(Dependent variable: FDI share in GDP)

Variable	Coefficient	S.E.	Obs.	Groups	R ²	Z-variables	Robust/Fragile	
<i>Har3 (Harmonization across developed countries' average tax rates)</i>								
Har-CIT1	High:	-0.0124	0.0180	128	24	0.5420	STGDC	
	Base:	-0.0121	0.0166	134	24	0.5406		Fragile
	Low:	-0.0515***	0.0191	114	23	0.5329	GOV,INF,GDC,STINF	
Har-CIT2	High:	-0.0189***	0.0063	188	24	0.5369	INF	
	Base:	-0.0200***	0.0070	188	24	0.5357		Robust
	Low:	-0.0267***	0.0090	167	23	0.4691	GOV,GDC,STINF,STGDC	
HarC7	High:	-0.0021	0.0125	167	25	0.3825	INF	
	Base:	-0.0080	0.0105	168	25	0.3750		Fragile
	Low:	-0.0227 *	0.0115	137	23	0.2007	GOV,INF,STINF,STGDC	
Ha-rIMT1	High:	0.0160	0.0103	161	27	0.2004	GOV	
	Base:	0.0193	0.0122	178	29	0.3173		Fragile
	Low:	-0.0080	0.0106	168	28	0.3972	GDC,STGDC	
Ha-rIMT2	High:	0.0091	0.0125	168	28	0.4021	INF,GDC	
	Base:	0.0074	0.0137	178	29	0.2663		Fragile
	Low:	0.0009	0.0115	1556	26	0.2445	GOV,STINF	
Ha-rIMT3	High:	0.0083	0.0082	161	27	0.1828	GOV	
	Base:	0.0113	0.0110	178	29	0.3003		Fragile
	Low:	-0.0123 *	0.0067	168	28	0.3820	STINF,STGDC	
Ha-rIMT4	High:	0.0023	0.0079	115	18	0.1294	GOV,STGDC	
	Base:	-0.0056	0.0042	144	20	0.2362		Fragile
	Low:	-0.0068 *	0.0040	144	22	0.2444	STINF	

Note: ***, **, * denote 1%,5%,10% significant levels respectively. The estimated results are based on the random-effects model estimator.

Table E.8

Sensitivity analysis results
(Dependent variable: FDI share in GDP)

Variable	Coefficient	S.E.	Obs.	Groups	R ²	Z-variables	Robust/Fragile
<i>Har4 (Harmonization across developing countries' average tax rates)</i>							
HarCIT1	High: 0.0580 *	0.0339	140	22	0.2288	GOV,INF,GDC,STGDC	
	Base: 0.0468	0.0364	149	24	0.1190		Fragile
	Low: 0.0453	0.0359	149	24	0.1677	GOV,STINF	
HarCIT2	High: -0.0017	0.0098	222	222	0.0904	INF,STINF	
	Base: -0.0021	0.0095	222	22	0.0862		Fragile
	Low: -0.0058	0.0101	200	20	0.1660	GOV,GDC,STINF	
HarCT	High: 0.0051	0.0123	597	73	0.1373	GOV,GDC,STGDC	
	Base: -0.0021	0.0113	766	89	0.0417		Fragile
	Low: -0.0038	0.0139	666	78	0.0401	GOV	
HarIMT1	High: -0.0028	0.0042	459	94	0.0362	INF,GDC,STGDC	
	Base: -0.0051	0.0036	491	100	0.0162		Fragile
	Low: -0.0088 **	0.0041	532	86	0.1061	GOV	
HarIMT2	High: -0.0019	0.0014	486	98	0.0224	INF	
	Base: -0.0022	0.0014	491	100	0.0141		Fragile
	Low: -0.0034 *	0.0018	404	81	0.1392	GOV,INF,GDC,STINF,STGDC	
HarIMT3	High: -0.0028	0.0038	459	94	0.0367	INF,GDC,STGDC	
	Base: -0.0046	0.0032	491	100	0.0163		Fragile
	Low: -0.0070 *	0.0036	432	86	0.1051	GOV	
HarIMT4	High: 0.0031	0.0036	664	82	0.0911	INF,STINF,STGDC	
	Base: 0.0026	0.0033	743	89	0.0667		Fragile
	Low: 0.0012	0.0041	568	72	0.1625	GOV,GDC,STGDC	

Note: ***, **, * denote 1%, 5%, 10% significant levels respectively. The estimated results are based on the random-effects model estimator.

Appendix F

Robustness test results (based on the fixed-effects model estimator)

Table F.1

Sensitivity analysis results (Dependent variable: Total investment share in GDP)

Variable	Coefficient	S.E.	Obs.	Groups	R ²	Z-variables	Robust/Fragile
<i>Har1 (Harmonization across all countries' average tax rates)</i>							
HarCIT1	High: 0.0223	0.0243	198	44	0.0376	GDC,STINF,STGDC	
	Base: 0.0167	0.0298	213	46	0.0502		Fragile
	Low: 0.0061	0.0258	192	43	0.1505	GOV,STGDC	
HarCIT2	High: 0.0055	0.0098	321	45	0.0615	INF,STGDC	
	Base: -0.0006	0.0084	352	48	0.0593		Fragile
	Low: -0.0089	0.0087	335	46	0.0400	GOV,STINF	
HarCT	High: -0.0125	0.0111	593	89	0.0111	GOV,GDC,STINF,STGDC	
	Base: -0.0157 *	0.0089	799	108	0.0748		Fragile
	Low: -0.0176	0.0108	671	94	0.0485	GOV	
HarIMT1	High: -0.0021	0.0024	525	116	0.0023	INF,STGDC	
	Base: -0.0029	0.0021	571	126	0.0033		Fragile
	Low: -0.0042	0.0022	525	116	0.0031	GDC,STINF	
HarIMT2	High: 0.0015	0.0026	525	116	0.0003	INF,GDC,STGDC	
	Base: 0.0008	0.0027	571	126	0.0045		Fragile
	Low: 0.0006	0.0035	508	110	0.1332	GOV	
HarIMT3	High: -0.0009	0.0034	472	103	0.2213	GOV,GDC,STGDC	
	Base: -0.0021	0.0018	571	126	0.0040		Fragile
	Low: -0.0034 *	0.0019	525	116	0.0034	STINF,STGDC	
HarIMT4	High: 0.0017	0.0046	730	101	0.0097	INF,STINF	
	Base: -0.0012	0.0046	749	102	0.0082		Fragile
	Low: -0.0053	0.0053	618	88	0.1319	GOV	

Note: ***, **, * denote 1%,5%,10% significant levels respectively. The estimated results are based on the fixed-effects model estimator.

Table F.2

Sensitivity analysis results
(Dependent variable: Total investment share in GDP)

Variable	Coefficient	S.E.	Obs.	Groups	R ²	Z-variables	Robust/Fragile
<i>Har2 (Harmonization across countries' average tax rates in the same region)</i>							
HarCIT1	High: -0.0107	0.0245	192	43	0.1747	GOV,GDC	
	Base: -0.0210	0.0287	213	46	0.0553		Fragile
	Low: -0.0300	0.0276	198	44	0.0510	INF,STGDC	
HarCIT2	High: -0.0028	0.0130	321	45	0.0731	STGDC	
	Base: -0.0078	0.0118	352	48	0.0611		Fragile
	Low: -0.0188	0.0120	335	46	0.0499	GOV,INF,STINF	
HarCT	High: 0.0031	0.0084	593	89	0.0002	GOV	
	Base: -0.0042	0.0085	199	108	0.0754		Fragile
	Low: -0.0050	0.0087	770	106	0.0843	STINF	
HarIMT1	High: -0.0049	0.0071	469	102	0.2073	GOV,INF,GDC,STGDC	
	Base: -0.0075	0.0058	571	126	0.0062		Fragile
	Low: -0.0086	0.0059	538	121	0.0074	INF,STINF	
HarIMT2	High: -0.0015	0.0042	472	103	0.2232	GOV,GDC,STGDC	
	Base: -0.0033	0.0041	571	126	0.0060		Fragile
	Low: -0.0037	0.0042	525	116	0.0038	INF,GDC	
HarIMT3	High: -0.0089	0.0053	525	116	0.0090	INF,GDC,STGDC	
	Base: -0.0102 *	0.0051	571	126	0.0103		Fragile
	Low: -0.0123 *	0.0062	508	110	0.1220	GOV	
HarIMT4	High: 0.0067	0.0063	730	101	0.0051	STINF	
	Base: 0.0057	0.0062	749	102	0.0046		Fragile
	Low: 0.0015	0.0069	550	83	0.1111	GOV,INF,GDC,STINF	

Note: ***, **, * denote 1%,5%,10% significant levels respectively. The estimated results are based on the fixed-effects model estimator.

Table F.3

Sensitivity analysis results

(Dependent variable: Total investment share in GDP)

Variable	Coefficient	S.E.	Obs.	Groups	R ²	Z-variables	Robust/Fragile
<i>Har3 (Harmonization across developed countries' average tax rates)</i>							
HarCIT1	High: -0.0047	0.0258	95	23	0.0437	GOV,GDC	
	Base: -0.0200	0.0207	110	25	0.0586		Fragile
	Low: -0.0315 **	0.0143	101	24	0.0699	STGDC	
HarCIT2	High: 0.0129	0.0214	159	25	0.0972	INF,STGDC	
	Base: 0.0107	0.0178	95	23	0.0657		Fragile
	Low: -0.0060	0.0146	156	24	0.0410	GOV,STINF	
HarCT	High: -0.0111	0.0194	150	25	0.1165	GDC,STINF,STGDC	
	Base: -0.0384	0.0254	169	26	0.1058		Fragile
	Low: -0.0626 ***	0.0149	131	23	0.0155	GOV	
HarIMT1	High: 0.0054	0.0061	147	26	0.0466	GOV,INF,GDC,STGDC	
	Base: -0.0014	0.0046	171	31	0.0004		Fragile
	Low: -0.0017	0.0051	154	28	0.0066	GDC,STINF	
HarIMT2	High: -0.0048	0.0051	150	27	0.0030	GOV,GDC,STGDC	
	Base: -0.0050	0.0048	171	31	0.0002		Fragile
	Low: -0.0109 ***	0.0034	162	29	0.0086	INF,STINF	
HarIMT3	High: 0.0003	0.0054	150	27	0.0116	GOV,GDC,STGDC	
	Base: -0.0046	0.0033	171	31	0.0006		Fragile
	Low: -0.0056	0.0037	154	28	0.0064	GDC,STINF	
HarIMT4	High: -0.0145 ***	0.0042	105	18	0.0005	GOV,INF,STINF	
	Base: -0.0186 **	0.0080	140	21	0.0315		Robust
	Low: -0.0216 ***	0.0069	105	18	0.0027	GOV	

Note: ***, **, * denote 1%,5%,10% significant levels respectively. The estimated results are based on the fixed-effects model estimator.

Table F.4

Sensitivity analysis results
(Dependent variable: Total investment share in GDP)

Variable	Coefficient	S.E.	Obs.	Groups	R ²	Z-variables	Robust/Fragile
<i>Har4 (Harmonization across developing countries' average tax rates)</i>							
HarCIT1	High: 0.0972 **	0.0450	97	20	0.0724	GOV,GDC	
	Base: 0.0816 *	0.0441	103	21	0.0265		Fragile
	Low: 0.0597	0.0367	97	20	0.0003	INF,GDC,STINF,STGDC	
HarCIT2	High: -0.0186	0.0169	162	20	0.0097	INF,STGDC	
	Base: -0.0220	0.0174	179	22	0.0485		Fragile
	Low: -0.0271	0.0173	179	22	0.0181	GOV	
HarCT	High: -0.0051	0.0083	602	80	0.0056	INF,STINF	
	Base: -0.0082	0.0089	630	82	0.0056		Fragile
	Low: -0.0101	0.0110	540	71	0.0044	GOV	
HarIMT1	High: 0.0025	0.0049	322	76	0.0014	GOV,STINF,STGDC	
	Base: -0.0016	0.0022	400	95	0.0141		Fragile
	Low: -0.0048 *	0.0028	349	82	0.0032	GOV	
HarIMT2	High: 0.0029	0.0035	396	92	0.0159	INF	
	Base: -0.0001	0.0033	400	95	0.0159		Fragile
	Low: -0.0011	0.0037	346	80	0.0013	GOV,INF,STINF	
HarIMT3	High: 0.0044	0.0048	322	76	0.0031	GOV,GDC,INF,STGDC	
	Base: -0.0005	0.0021	400	95	0.0154		Fragile
	Low: -0.0035	0.0026	349	82	0.0034	GOV	
HarIMT4	High: 0.0042	0.0073	448	65	0.1050	GOV,INF,GDC,STINF,STGDC	
	Base: -0.0006	0.0056	609	81	0.0094		Fragile
	Low: -0.0020	0.0078	590	80	0.0139	STINF	

Note: ***, **, * denote 1%,5%,10% significant levels respectively. The estimated results are based on the fixed-effects model estimator.

Table F.5

Sensitivity analysis results
(Dependent variable: FDI share in GDP)

Variable	Coefficient	S.E.	Obs.	Groups	R ²	Z-variables	Robust/Fragile	
<i>Har1 (Harmonization across all countries' average tax rates)</i>								
HarCIT1	High:	0.0365	0.0294	254	45	0.1202	GOV,GDC,STGDC	Fragile
	Base:	0.0282	0.0282	283	48	0.3901		
	Low:	0.0267	0.0268	283	48	0.3859	INF	
HarCIT2	High:	0.0002	0.0078	382	44	0.3669	INF,STGDC	Fragile
	Base:	-0.0003	0.0065	410	46	0.3594		
	Low:	-0.0024	0.0079	367	43	0.2325	GOV,GDC,STINF	
HarCT	High:	0.0007	0.0106	853	108	0.1414	INF,GDC,STGDC	Fragile
	Base:	-0.0046	0.0112	934	114	0.1254		
	Low:	-0.0071	0.0150	810	101	0.0032	GOV	
HarIMT1	High:	-0.0027	0.0036	627	122	0.1005	INF,GDC,STGDC	Fragile
	Base:	-0.0041	0.0033	669	129	0.0764		
	Low:	-0.0075 *	0.0039	556	107	0.0060	GOV,INF,GDC,STINF,STGDC	
HarIMT2	High:	0.0015	0.0030	658	126	0.0832	INF	Fragile
	Base:	0.0011	0.0030	669	129	0.0692		
	Low:	0.0002	0.0025	556	107	0.0049	GOV,INF,GDC,STINF,STGDC	
HarIMT3	High:	-0.0010	0.0030	627	122	0.0755	INF,GDC,STINF	Fragile
	Base:	-0.0022	0.0025	669	129	0.0752		
	Low:	-0.0045	0.0030	556	107	0.0057	GOV,INF,GDC,STINF,STGDC	
HarIMT4	High:	0.0034	0.0032	803	102	0.1139	INF,STGDC	Fragile
	Base:	0.0028	0.0029	887	109	0.1045		
	Low:	0.0010	0.0043	683	90	0.0054	GOV,GDC,STGDC	

Note: ***, **, * denote 1%,5%,10% significant levels respectively. The estimated results are based on the fixed-effects model estimator.

Table F.6

Sensitivity analysis results
(Dependent variable: FDI share in GDP)

Variable	Coefficient	S.E.	Obs	Groups	R ²	Z-variables	Robust/Fragile
<i>Har2 (Harmonization across countries' average tax rates in the same region)</i>							
HarCIT1	High: 0.0404	0.0348	254	45	0.1212	GOV,GDC,STGDC	
	Base: 0.0275	0.0355	283	48	0.3957		Fragile
	Low: 0.0220	0.0361	268	46	0.2378	INF,GDC,STINF,STGDC	
HarCIT2	High: 0.0049	0.0099	382	44	0.3656	STGDC	
	Base: 0.0032	0.0083	410	46	0.3553		Fragile
	Low: 0.0031	0.0083	410	46	0.3560	INF	
HarCT	High: 0.0012	0.0064	794	100	0.0034	GOV,INF	
	Base: -0.0030	0.0073	934	114	0.1240		Fragile
	Low: -0.0064	0.0080	794	100	0.0030	GOV,INF,STINF	
HarIMT1	High: 0.0004	0.0066	853	108	0.6444	INF,GDC,STINF	
	Base: -0.0006	0.0061	669	129	0.0711		Fragile
	Low: -0.0021	0.0076	556	107	0.0047	GOV,INF,GDC,STINF,STGDC	
HarIMT2	High: 0.0051	0.0064	627	112	0.0814	GDC	
	Base: 0.0046	0.0060	669	129	0.0664		Fragile
	Low: 0.0026	0.0058	556	107	0.0052	GOV,INF,GDC,STINF,STGDC	
HarIMT3	High: -0.0050	0.0061	627	122	0.0686	INF,STINF,STGDC	
	Base: -0.0056	0.0056	669	129	0.0684		Fragile
	Low: -0.0084	0.0074	556	107	0.0014	GOV,GDC	
HarIMT4	High: -0.0006	0.0033	867	107	0.1017	STINF	
	Base: -0.0003	0.0025	887	109	0.1030		Fragile
	Low: -0.0034	0.0036	803	102	0.1073	INF,GDC,STINF,STGDC	

Note: ***, **, * denote 1%, 5%, 10% significant levels respectively. The estimated results are based on the fixed-effects model estimator.

Table F.7

Sensitivity analysis results
(Dependent variable: FDI share in GDP)

Variable	Coefficient	S.E.	Obs.	Groups	R ²	Z-variables	Robust/Fragile	
<i>Har3 (Harmonization across developed countries' average tax rates)</i>								
HarCIT1	High:	-0.0177	0.0421	120	23	0.3204	GOV	
	Base:	-0.0207	0.0351	134	24	0.3400		Fragile
	Low:	-0.0352	0.0401	114	23	0.4394	GOV,INF,GDC,STGDC	
HarCIT2	High:	0.0012	0.0159	182	24	0.5195	STINF,STGDC	
	Base:	-0.0039	0.0101	188	24	0.5213		Fragile
	Low:	-0.0093	0.0132	169	23	0.3464	GOV,GDC,STGDC	
HarCT	High:	0.0101	0.0159	161	25	0.4108	GDC,STINF,STGDC	
	Base:	-0.0065	0.0086	168	25	0.3733		Fragile
	Low:	-0.0340 *	0.0165	161	25	0.4378	INF,GDC,STGDC	
HarIMT1	High:	0.0043	0.0135	168	28	0.3889	INF,GDC	
	Base:	-0.0014	0.0106	178	29	0.2629		Fragile
	Low:	-0.0112	0.0114	161	27	0.1262	GOV	
HarIMT2	High:	0.0094	0.0192	168	28	0.3815	STGDC	
	Base:	0.0071	0.0176	198	29	0.2677		Fragile
	Low:	0.0015	0.0135	156	26	0.2459	GOV,INF,STINF	
HarIMT3	High:	0.0017	0.0077	152	26	0.1811	GOV,STINF,STGDC	
	Base:	-0.0026	0.0051	178	29	0.2598		Fragile
	Low:	-0.0115 *	0.0058	161	27	0.1247	GOV	
HarIMT4	High:	0.0090	0.0130	115	18	0.1054	GOV,STGDC	
	Base:	-0.0043	0.0033	114	20	0.2347		Fragile
	Low:	-0.0063 *	0.0035	155	20	0.2438	INF,STINF	

Note: ***, **, * denote 1%,5%,10% significant levels respectively. The estimated results are based on the fixed-effects model estimator.

Table F.8

Sensitivity analysis results
(Dependent variable: FDI share in GDP)

Variable	Coefficient	S.E.	Obs.	Groups	R ²	Z-variables	Robust/Fragile
<i>Har4 (Harmonization across developing countries' average tax rates)</i>							
HarCIT1	High: 0.0492	0.0388	140	22	0.1731	GDC	
	Base: 0.0443	0.0396	149	24	0.1218		Fragile
	Low: 0.0423	0.0375	149	24	0.1392	GOV,STINF	
HarCIT2	High: 0.0016	0.0101	222	22	0.0863	INF	
	Base: 0.0013	0.0099	222	22	0.0823		Fragile
	Low: -0.0025	0.0107	200	20	0.1421	GOV,GDC,STINF	
HarCT	High: 0.0068	0.0139	597	73	0.0055	GOV,GDC,STGDC	
	Base: 0.0009	0.0127	766	89	0.0434		Fragile
	Low: 0.0006	0.0161	666	78	0.0259	GOV	
HarIMT1	High: -0.0012	0.0040	459	94	0.0032	INF,GDC,STGDC	
	Base: -0.0038	0.0030	491	100	0.0002		Fragile
	Low: -0.0062	0.0040	432	86	0.0836	GOV	
HarIMT2	High: -0.0007	0.0015	486	98	0.0017	INF,SINF	
	Base: -0.0010	0.0014	491	100	0.0003		Fragile
	Low: -0.0020	0.0016	404	81	0.0458	GOV,INF,GDC,STINF,STGDC	
HarIMT3	High: -0.0013	0.0036	459	94	0.0033	INF,GDC,STGDC	
	Base: -0.0032	0.0026	491	100	0.0003		Fragile
	Low: -0.0046	0.0035	404	81	0.1123	GOV,INF,STGDC	
HarIMT4	High: 0.0046	0.0048	568	72	0.0004	GOV,INF,GDC,STINF,STGDC	
	Base: 0.0026	0.0042	743	89	0.0675		Fragile
	Low: 0.0020	0.0059	568	72	0.1263	GOV,STGDC	

Note: ***, **, * denote 1%, 5%, 10% significant levels respectively. The estimated results are based on the fixed-effects model estimator.