

Priorities for Strengthening Key Revenue Sources in Asia

Sanjeev Gupta and João Tovar Jalles

Abstract

This paper discusses the evolution of key taxes in the past 20 years in developing Asia and fiscal challenges that these countries face in light of the coronavirus disease (COVID-19) pandemic. It presents estimates of tax capacity and tax potential, and discusses the productivity of key taxes in the region. The paper finds that developing Asia has potential to raise more revenues—of up to 4% of gross domestic product on average. While corporate income tax productivity is high vis-à-vis other regions, the same does not apply to personal income tax or the value-added tax. There is potential to raise more revenues by improving the compliance and design of the value-added tax. It is important to ensure that the tax systems in developing Asia become more progressive with expansion of personal income and property taxes. Increased allocations and better targeting of social spending would help offset some of the regressivity stemming from indirect taxes. An important source of revenue leakage is tax expenditures granted by countries in the region.

JEL codes: C33, H20, H23, H30, N15, O53

Priorities for Strengthening Key Revenue Sources in Asia

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I. Introduction

The Addis Agenda on financing for development pays particular attention to domestic resource mobilization, so much so that Sustainable Development Goal (SDG) #17.1 tracks country-level domestic revenue efforts (United Nations 2015).¹ The International Monetary Fund (IMF) (Gaspar et al. 2019) estimated that the average additional spending to achieve the SDGs in five key areas (education, health, roads, electricity, and water) in low-income countries (LICs) by 2030 was 15.4% of gross domestic product (GDP), and 4% of GDP for emerging market economies (EMEs).² In the average LIC, 5 percentage points of GDP additional revenue (over and above the current revenue collections) would have to come from domestic taxes. The IMF further estimated that EMEs would be able to cover the additional spending needs for the SDGs from their internal resources. As these estimates cover five areas only, it is likely that the actual amounts would be substantially larger if all SDGs were to be provided for. Many developing countries have tax-to-GDP ratios below 13%, which is the minimum tax-to-GDP ratio needed to achieve a significant acceleration in growth (Gaspar et al. 2016), and considerably below what is necessary to fully fund the SDGs. Therefore, domestic revenue mobilization (DRM) is critical to supporting higher essential spending, while reducing monetary financing (Mullins et al. 2020).

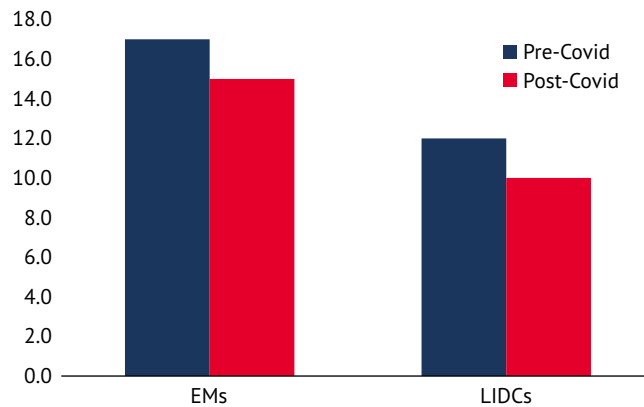
Mobilizing more domestic resources is also vital for maintaining debt sustainability when external debt payments are rising (Hurley 2018). Jones (2020) has shown that, since 2011, average external debt payments have increased gradually in LICs, to an average of 12.4% of government revenue by 2019, a rise of 125%. Growing principal and interest payments on general government debt have crowded-out public spending, which declined relatively more in highly-indebted countries.

DRM has now taken on greater urgency given the coronavirus disease (COVID-19) crisis and its impact on both revenues and expenditures. Countries increased spending on health to protect lives as well as to provide support to households and businesses through direct transfers and/or tax relief. Further, the reduction in economic activity considerably lowered revenue collections in both emerging markets and LICs in 2020 (Figure 1). There is a strong likelihood that the crisis will leave a permanent dent on these countries' economic structures, with important implications for the tax base. Experience from the global financial crisis of 2008–2010 suggests that severe output contractions are associated with falling tax compliance (Brondolo 2009).

¹In July 2015, the Third UN Conference on Financing for Development in Ethiopia agreed to the Addis Ababa Action Agenda, aimed at addressing the challenges of financing and creating an enabling environment for sustainable development. This agreement included measures to assist developing countries in setting nationally defined revenue targets and timelines for enhancing revenues and supporting countries in reaching these targets.

²The domestic revenue mobilization (DRM) needs will vary across countries. For example, the revenue needs to fund SDGs are estimated to be higher in Sub-Saharan Africa, where countries face additional spending of about 19.0% of GDP, compared to the average for all LICs of 15.4%. The resource needs will also depend on the country's starting point, in terms of tax-to-GDP. For example, in Benin the tax-to-GDP was 9.2% in 2016. As a result, it would require additional spending of an average of 21.3% of GDP, while in Rwanda the tax-to-GDP is 15.5% and the estimated additional spending is 18.7% of GDP (Gupta et al. 2021).

Figure 1. Tax revenue projection pre- and post-COVID-19 for 2020 (% of GDP)



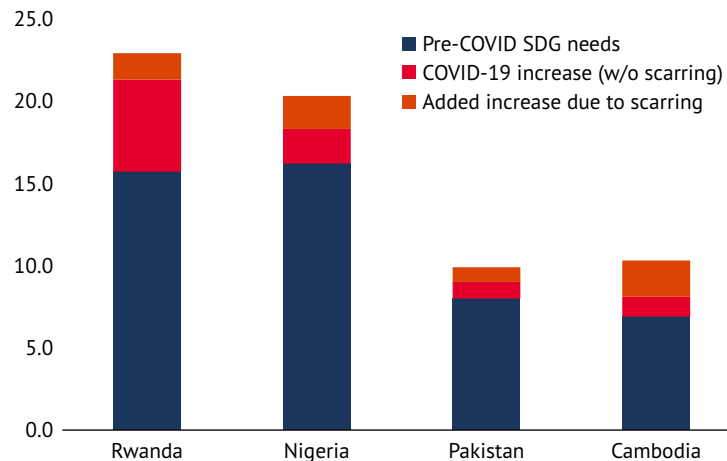
COVID-19 = coronavirus disease, EM = emerging market, GDP = gross domestic product.

Note: These are projections for 2020 carried out before and after COVID-19.

Source: International Monetary Fund Fiscal Monitor Database (2021) (accessed August 2021).

The IMF has recently estimated that scarring from the COVID-19 pandemic would increase already sizeable financing needs to achieve the SDGs (Benedek et al. 2021) (Figure 2). In Cambodia, for example, COVID-19-related scarring would increase SDG spending needs by 2.2% of GDP, which is representative of the average increase in LICs.

Figure 2. Additional spending needs pre- and post-COVID-19 (% of GDP)



COVID-19 = coronavirus disease, GDP = gross domestic product, SDG = Sustainable Development Goal.

Source: Benedek et al. (2021).

Against this background, the following section of the paper discusses the evolution of tax-to-GDP ratios in the past 20 years in developing Asia.³ In doing so, this section relies on IMF's World Economic Outlook database. Section III elaborates on tax capacity and tax

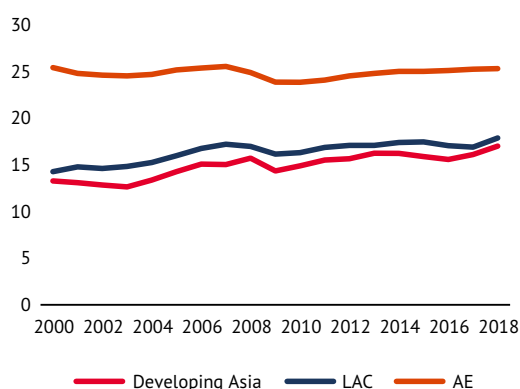
³The list of countries included in developing Asia is in Appendix 4.

potential in developing Asia. Section IV examines the issue of tax burden in developing Asia. Section V then turns to analyzing the revenue productivity of value-added tax (VAT), personal income tax (PIT), and corporate income tax (CIT). It also focuses on the results from the IMF-led Revenue Administration Gaps (RA-GAP) analysis for the VAT. Section VI elaborates on the issue of tax expenditures in developing Asia, using the recently published Global Tax Expenditure Database (Haldenwang et al. 2021). Section VII briefly discusses the political economy of tax reforms. Section VIII concludes and highlights key policy implications.

II. Revenue trends in developing Asia

The revenue performance of developing Asia as a region has improved since 2000. The average tax-to-GDP ratio increased from about 13% in 2000 to 17% in 2018, which is similar to the increase observed in Latin America and the Caribbean (LAC) countries (Figure 3). About one-half of the tax revenue increase came from rising VAT collections (Figure 4). This is despite the fact that the typical standard VAT rate in developing Asia is lower than in other regions of the world (for example, the standard rate in advanced economies is 19% and in LAC is 15% in 2020). The widespread adoption of a broad-based consumption tax, such as the VAT, by most developing Asia has strengthened tax administration as countries began relying on digital technologies in their tax system (e.g., electronic filing systems) which helped improve compliance.⁴

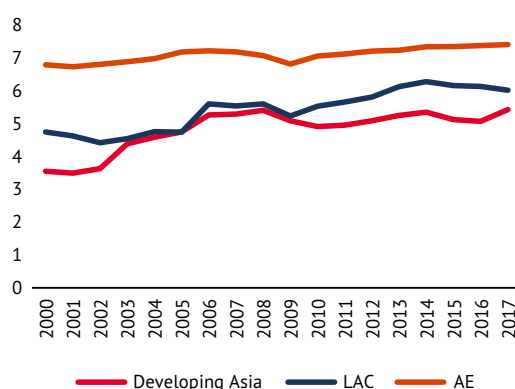
Figure 3. Tax revenue for selected regions, 2000–2018 (as a share of GDP)



AE = advanced economy, GDP = gross domestic product, LAC = Latin America and the Caribbean.

Source: International Monetary Fund's World Economic Outlook (accessed August 2021).

Figure 4. Value-added tax revenues for selected regions, 2000–2017 (as a share of GDP)



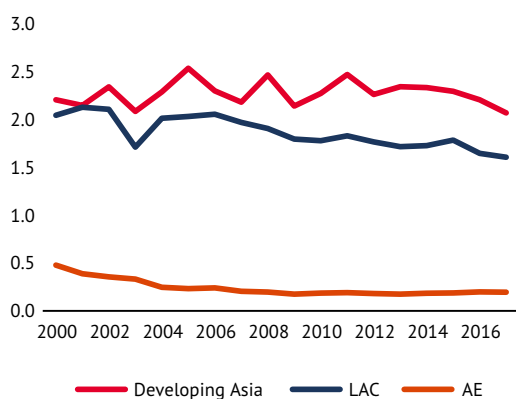
AE = advanced economy, GDP = gross domestic product, LAC = Latin America and the Caribbean.

⁴E-filing of tax returns has spread from developed to developing countries. This type of reform can reduce (i) errors and opportunities for corruption, and (ii) taxpayer compliance costs (Coolidge and Yilmaz 2014).

The increase in VAT revenues was accompanied by stable receipts from trade taxes and higher receipts from excise taxes (Figures 5 and 6).⁵ The economic literature considers high reliance on trade taxes as unfriendly to growth.⁶ This outcome in developing Asia is contrary to trends observed in LICs (Mullins et al. 2020), where trade revenues in relation to GDP, on average, have declined. This result is surprising for a region heavily reliant on trade.⁷ It is unclear whether this result is attributable to the use of conventional tariffs or other charges. Revenues from excisable goods, such as tobacco, alcohol, motor vehicles, and fuel, increased by one-third, reflecting adoption of a sound policy to tax harmful externalities.

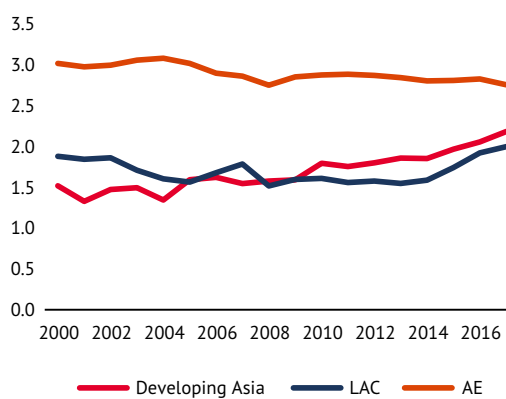
Revenues from CIT also increased by about 1% of GDP, despite falling CIT rates and concerns with tax planning by multinational enterprises (Figures 7 and 8). The CIT revenues have held up despite falling CIT rates in developing Asia, which declined on average from 30% in 2000 to 22% in 2018.⁸ The PIT revenues increased by a percentage point of GDP, reflecting the growing ability of developing Asia to put more complex tax systems in place and to bring growing incomes in the formal sector into the tax net (Figure 9). Property taxes are in use in the region but do not yield much revenue (Figure 10). In the aggregate, the ratio of direct to indirect taxes has worsened over time, with revenue increases from indirect taxes larger than those from direct taxes (Figure 11). This suggests that the tax system has become more regressive over time.

Figure 5. Trade tax for selected regions, 2000–2017 (as a share of GDP)



AE = advanced economy, GDP = gross domestic product, LAC = Latin America and the Caribbean.
Source: International Monetary Fund’s World Economic Outlook (accessed August 2021).

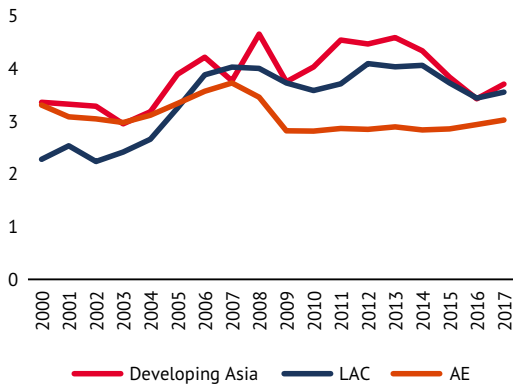
Figure 6. Excise tax for selected regions, 2000–2017 (as a share of GDP)



AE = advanced economy, GDP = gross domestic product, LAC = Latin America and the Caribbean.
Source: International Monetary Fund’s World Economic Outlook (accessed August 2021).

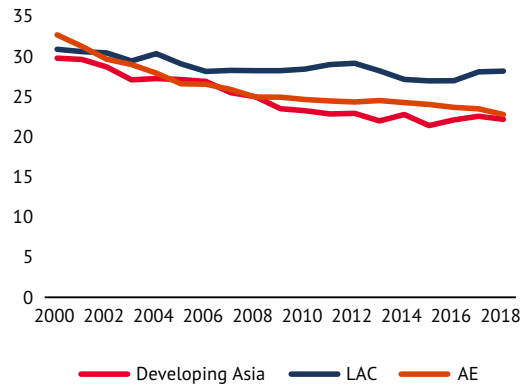
⁵ Changes in tax components do not necessarily add up to cumulative increase in tax-to-GDP ratio because of varying sample sizes for different tax types.
⁶ For a detailed discussion on taxation and its relationship with long-term economic growth, refer to IMF (2015a).
⁷ For instance, over the past 30 years, trade openness—defined as exports plus imports over GDP—in developing Asia amounted to 93% in contrast with the 71% of LAC.
⁸ The decline in corporate tax rates coupled with robust corporate tax collection appears to be a worldwide phenomenon.

Figure 7. Corporate income tax for selected regions, 2000–2017 (as a share of GDP)



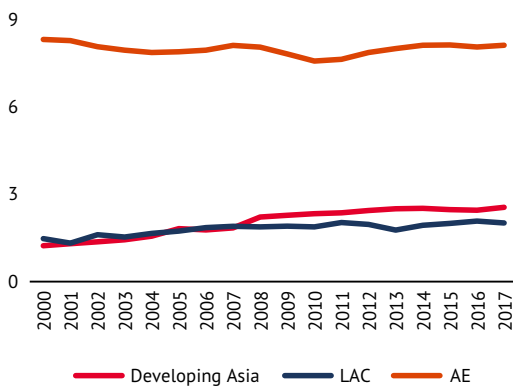
AE = advanced economy, GDP = gross domestic product, LAC = Latin America and the Caribbean.
 Source: International Monetary Fund's World Economic Outlook (accessed August 2021).

Figure 8. Corporate income tax rate for selected regions, 2000–2018 (%)



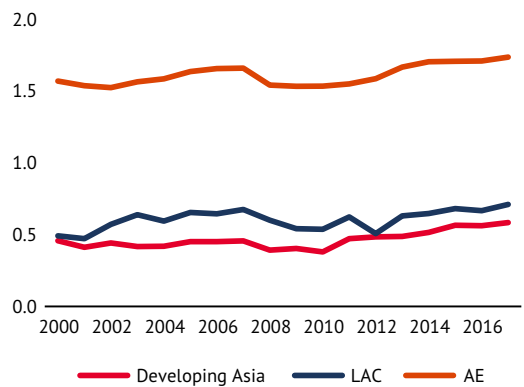
AE = advanced economy, GDP = gross domestic product, LAC = Latin America and the Caribbean.
 Source: International Monetary Fund's World Economic Outlook (accessed August 2021).

Figure 9. Personal income tax for selected regions, 2000–2017 (as a share of GDP)



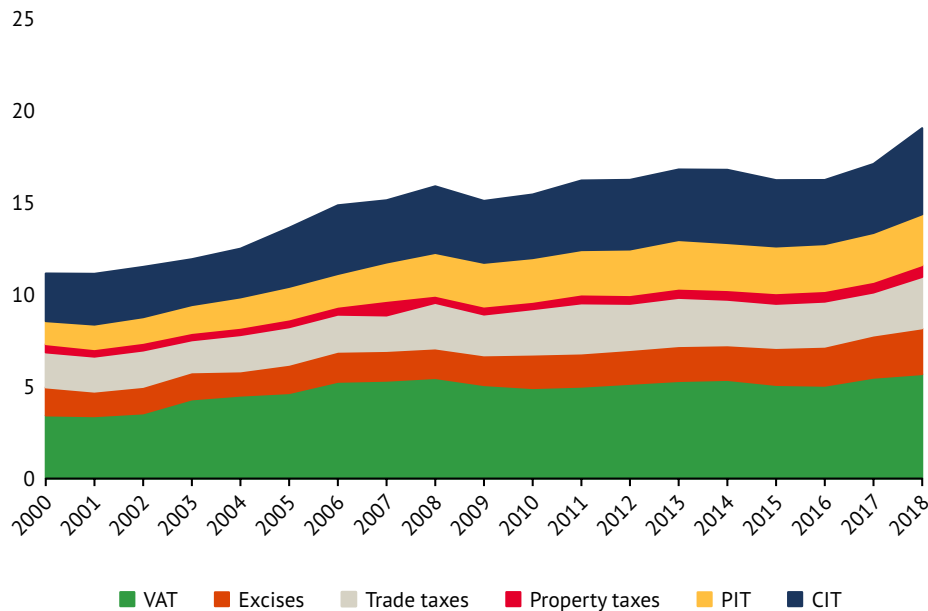
AE = advanced economy, GDP = gross domestic product, LAC = Latin America and the Caribbean.
 Source: International Monetary Fund's World Economic Outlook (accessed August 2021).

Figure 10. Property tax for selected regions, 2000–2017 (as a share of GDP)



AE = advanced economy, GDP = gross domestic product, LAC = Latin America and the Caribbean.
 Source: International Monetary Fund's World Economic Outlook (accessed August 2021).

Figure 11. Tax revenues by type in developing Asia, 2000–2018 (as a share of GDP)



CIT = corporate income tax, GDP = gross domestic product, PIT = personal income tax, VAT = value-added tax.
 Source: International Monetary Fund's World Economic Outlook (accessed August 2021).

III. Tax capacity and tax potential in Asia

This section deals with the concept and empirical estimation of Asia's taxable capacity and tax effort. Taxable capacity is a much-debated concept, but remains to be of great practical importance. Tax capacity (or the tax frontier) is defined as the maximum theoretical level of tax revenues that a country can mobilize, given its structural characteristics. The ratio of actual tax revenue to tax capacity is labeled as tax effort. The difference between current revenue and tax capacity can be interpreted as the tax potential, which reflects policy factors, such as low tax rates and narrow tax bases (i.e., high level of tax exemptions and deductions) or inefficient tax collection (i.e., a high level of noncompliance). Of course, policy factors could also reflect societal preference for a small government and low provision of public goods.

Measuring the tax performance of countries is both theoretically and practically challenging.⁹ Calculating tax effort and actual tax collection benchmarks allows us to classify countries into four groups: (i) low tax collection, low tax effort; (ii) high tax collection, high tax effort; (iii) low tax collection, high tax effort; and (iv) high tax collection, low tax effort.

⁹We estimated tax capacity using a stochastic frontier model based on country characteristics, such as per capita income, inequality, the share of government spending on education, the sectoral composition of the economy, and institutional factors such as indicators of governance. Similar controls were used in Torres (2013). Technical details are in Appendix 1.

This classification is based on the global average of tax collection and a tax effort index of 1, corresponding to a country where tax collection is the same as estimated taxable capacity. We argue that countries at various stages of development and with different initial levels of tax collection and effort should rely on different strategies for tax reforms.

The table shows the results of the estimation of tax capacity, tax effort, and tax potential for Asian countries for which data are available over the period 1990–2019. It shows that most Asian countries have space to increase revenue. With a few exceptions, results are in line with priors and previous estimates (Fenochietto and Pessino, 2013 and IMF, 2013). According to the truncated normal model (refer to Appendix 1 for details), the difference between tax capacity and current revenue is 4.2% of GDP on average. According to the half normal model, this difference is 4.0% of GDP.¹⁰ There are wide variations across countries with a standard deviation of tax potential of about 4.5% of GDP in both models. Countries with similar revenue levels can have very different levels of effort. This is the case for India and Thailand, for example. What these results do not shed light on, however, is precisely how this effort can be increased.

Tax potential in Asia: tax capacity—current revenue									
A. Low Tax Collection, Low Tax Effort					B. High Tax Collection, High Tax Effort				
Countries	Current Revenue (% GDP)	Tax Effort	Tax Capacity	Tax Potential	Countries	Current Revenue (% GDP)	Tax Effort	Tax Capacity	Tax Potential
Indonesia	11	0.6	18.38	7.38	Micronesia, Federated States of	35	0.99	35.43	0.43
Malaysia	12	0.43	28.14	16.14	Korea, Republic of	27	0.99	27.34	0.34
Singapore	13	0.58	22.47	9.47	Samoa	26	0.98	26.57	0.57
Pakistan	12	0.54	22.12	10.12	Solomon Islands	26	0.99	26.32	0.32
Vietnam	14	0.82	17.13	3.13	China, People's Republic of	24	0.99	24.3	0.3
Cambodia	17	0.8	21.31	4.31	Fiji	24	0.92	26.07	2.07
India	17	0.82	20.63	3.63	Tonga	20	0.99	20.25	0.25
Thailand	17	0.55	30.97	13.97					
Philippines	18	0.75	23.86	5.86					

¹⁰ While exercising extreme caution, a comparison of earlier IMF results with those presented here, it appears that tax effort in Asia has improved in recent years.

C. Low Tax Collection, High Tax Effort					D. High Tax Collection, Low Tax Effort				
Countries	Current Revenue (% GDP)	Tax Effort	Tax Capacity	Tax Potential	Countries	Current Revenue (% GDP)	Tax Effort	Tax Capacity	Tax Potential
Papua New Guinea	13	0.99	13.16	0.16	Japan	33	0.78	42.31	9.31
Hong Kong, China	14	0.99	14.17	0.17	New Zealand	33	0.82	40.13	7.13
Myanmar	7	0.91	7.7	0.7	Australia	29	0.76	37.97	8.97
Lao People's Democratic Republic	12	0.99	12.15	0.15					
Timor-Leste	13	0.99	13.16	0.16					
Vanuatu	17	0.97	17.47	0.47					

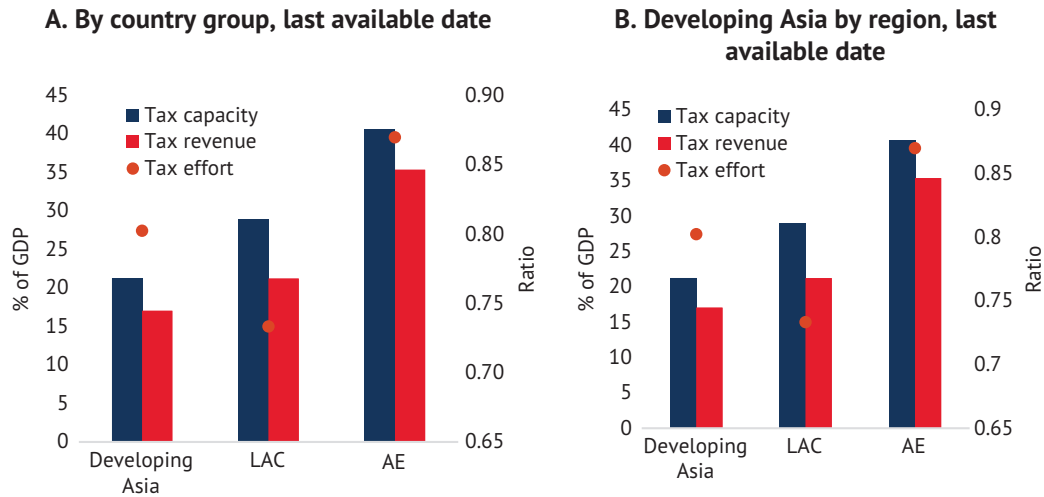
GDP = gross domestic product.

Note: Estimation based on International Monetary Fund tax and macroeconomic data for the period 1990–2019. Refer to Appendix 1 for further details.

Source: Author estimates.

Figure 12 plots the average tax capacity, average tax revenue collected, and average tax effort for developing Asia vis-à-vis LAC and advanced economies. Figure 14 presents the same indicators for different subgroups within developing Asia. We observe that tax capacity in developing Asia is lower than that of LAC, while the level of actual tax collected is broadly similar. In contrast, the level of tax effort is relatively higher in developing Asia compared with LAC. Within developing Asia (Figure 13), South Asia has the lowest tax capacity and actual tax collection, even though it is in Southeast Asia where the tax effort is the lowest. The Pacific region seems to have the highest tax effort while East Asia has the highest tax capacity. These results suggest that tax potential (that is, the difference between actual tax collections and tax capacity) is the highest in Malaysia, Pakistan and Thailand.

Figure 12. Tax effort



GDP = gross domestic product.

Note: Left-hand side axis corresponds to the tax revenue and tax capacity, right-hand side axis corresponds to the tax effort.

Source: Author estimates.

Ultimately, policy-wise, countries with a low level of actual tax collection and low tax effort (e.g., Thailand or Singapore) may have more room to increase tax revenues to reach their taxable capacity without causing major economic distortions or costs. On the other hand, Asian countries with a low level of tax collection but high tax effort (e.g., Myanmar or the Lao People’s Democratic Republic) have less opportunity to increase tax revenues without possibly creating distortions or high compliance costs.

These results should be interpreted with caution because of caveats in the modeling of tax capacity and effort. The foregoing panel analysis needs to be complemented with a detailed analysis of a country’s tax system, taking into consideration the country’s overall fiscal policy, public expenditure needs, and the overall level of development. Making fundamental changes to a tax structure of a country is politically challenging (Gupta and Jalles 2020).

IV. Tax burden in Asia: the other side of taxation¹¹

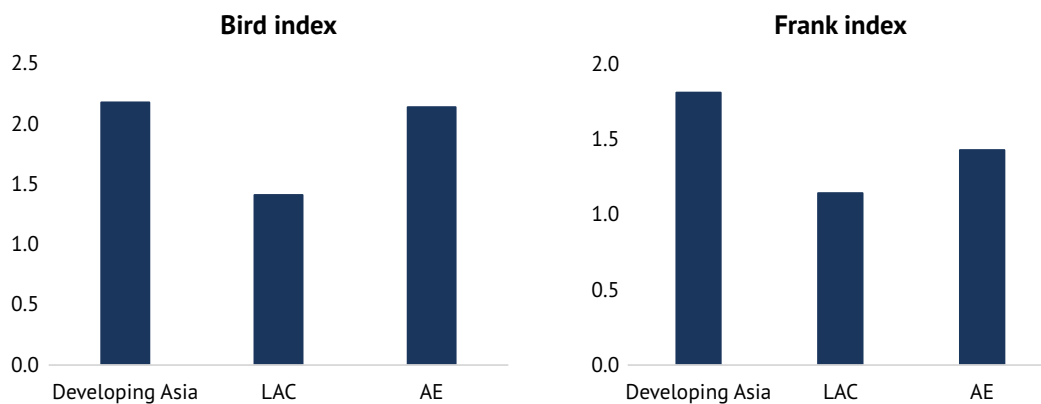
In this section, we define tax burden as an index of the ratio between the share of actual tax collections in GDP and taxable capacity, where the latter is “the predicted tax-to-gross domestic product ratio that can be estimated empirically, taking into account a country’s specific macroeconomic, demographic, and institutional features, which all change through

¹¹This analysis draws from Barros et al. (2021). Refer to Appendix 3 for technical details.

time” (Le et al. 2012). We derive two measures of tax effort, which are based on the seminal work of Frank (1959) and Bird (1964).¹²

Figure 13 shows the results for developing Asia together with those from other regions.¹³ We observe that, while there is potential for developing Asia to raise more taxes (section III), the level of tax burden in this region is comparatively high compared with either LAC or advanced economies. This is true using either Frank or Bird indexes to evaluate the degree of tax burden. This suggests that caution would need to be exercised when designing a DRM strategy for a developing Asian country; it should not affect growth adversely. In this context, the VAT has been found to be growth-friendly in contrast to CIT (Arnold et al. 2011). The good news for developing Asia is that the burden from taxation has been on a declining path since the early 2000s (Figure 19).

Figure 13. Tax burden in developing Asia versus other regions, 2000–2017 average



AE = advanced economy, LAC = Latin America and the Caribbean.

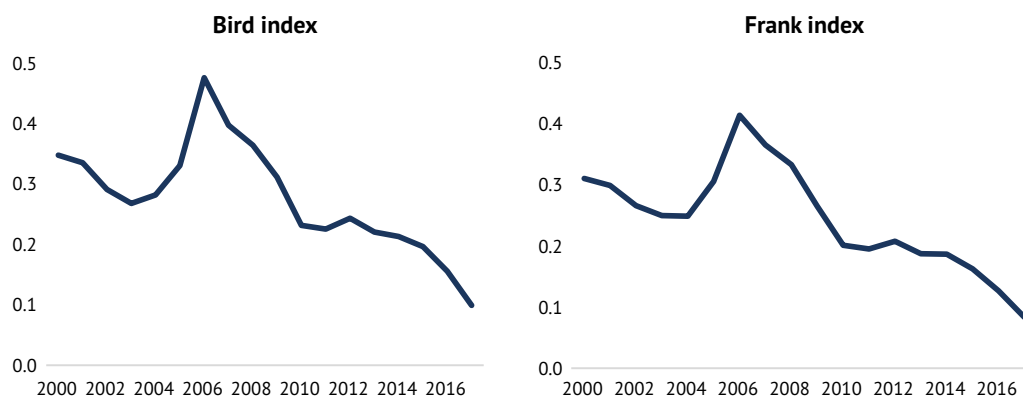
Note: Refer to Appendix 3 for details.

Source: Author estimates.

¹²The two measures are still relevant today, despite recent attempts to define more comprehensive indexes by also including economic development and the degree of openness (Lotz and Morss 1967), foreign trade (Bahl 1971), the intensity of the use of specific taxes (Bahl 1972), and frontier production possibilities (Aigner et al. 1977).

¹³Our dataset for Asia includes 30 countries during 1980–2017. Countries included are Australia, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Fiji, Federated States of Micronesia, India, Indonesia, Japan, the Republic of Korea, Kiribati, the Lao People’s Democratic Republic, Malaysia, Maldives, Marshall Islands, Mongolia, Myanmar, Nepal, New Zealand, Palau, Papua New Guinea, the Philippines, Singapore, Solomon Islands, Sri Lanka, Thailand, Tonga, Vanuatu, and Viet Nam.

Figure 14. Tax burden in developing Asia over time, 2000–2017 median



Note: Refer to Appendix 3 for details.

Source: Author estimates.

V. Tax productivity and tax efficiency in developing Asia

In addition to tax ratios, a tax system’s performance can be viewed also across economies by contrasting the relative productivity of individual taxes, most often the VAT and the CIT.

In what follows, we also include the PIT. There are several measures that can be used for this purpose, one of which is the productivity ratio, which measures how much each percentage point of the standard tax rate collects in terms of GDP.¹⁴ Comparing this ratio over time or across countries can be used to gauge the relative revenue performance of a given tax. A low ratio is typically taken as evidence of weak design (for example, exemptions and/or reduced rates in the case of VAT) and/or weak enforcement (for example, in the case of PIT).

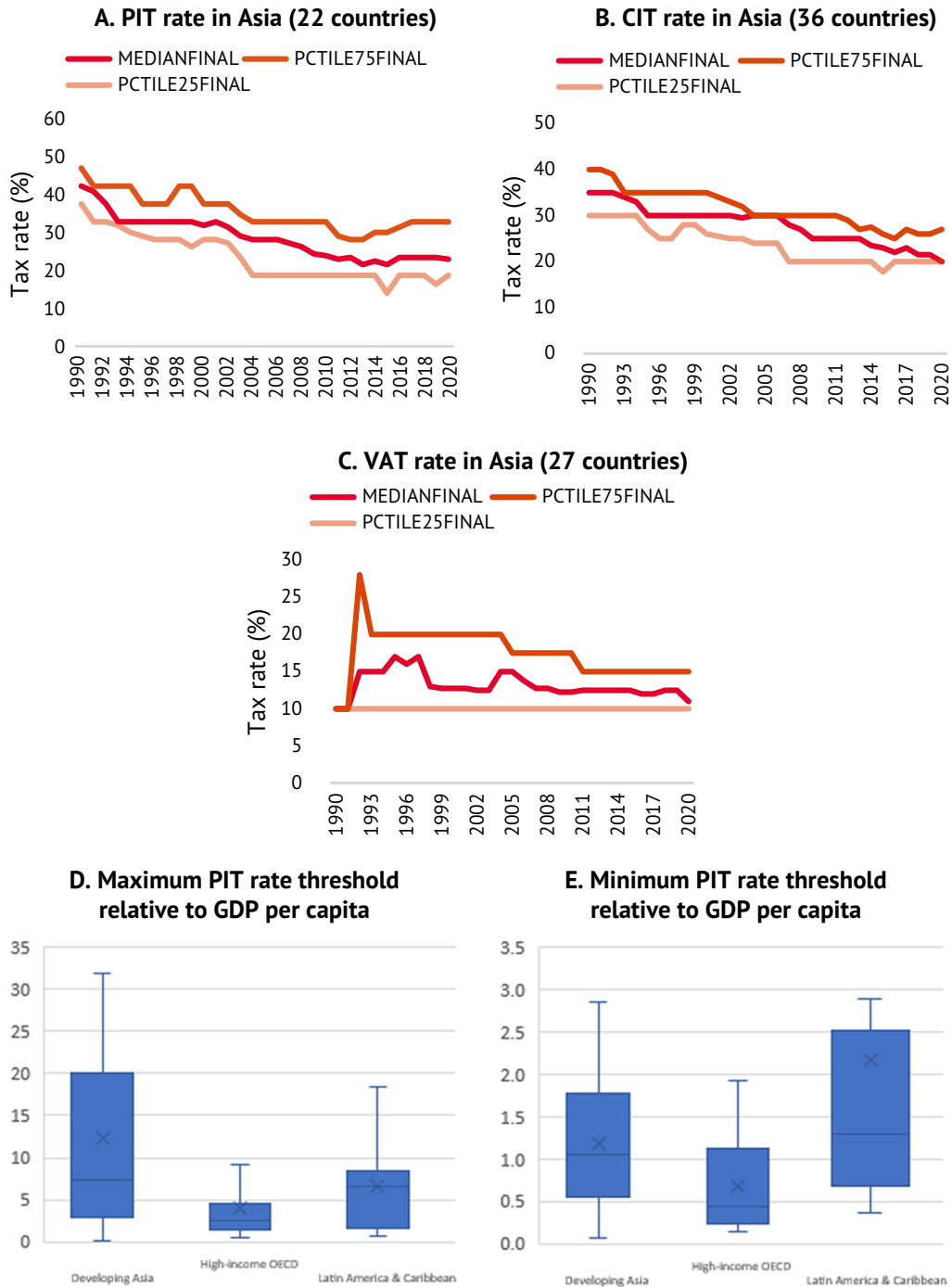
However, the measure does not give insight into the relative contribution of these factors.¹⁵

We begin by looking at the interquartile range of each of these taxes’ median rates (Figures 15a–15c for PIT, CIT, and VAT, respectively). It seems that the median PIT and CIT in Asia has been declining over time to reach the value of 24.5% and 20.0%, respectively. In contrast, the VAT rate has remained relatively constant over the period shown. In addition, the dispersion across rates has not been markedly different over time in any of the taxes. In addition, the top and bottom marginal PIT rates in Asia apply at much higher levels relative to GDP per capita than in Organisation for Economic Co-operation and Development countries (Figures 15d and 15e).

¹⁴The productivity of a given tax reflects how broad its tax base is.

¹⁵Additional drawbacks of this concept are discussed in ADB (2021).

Figure 15. Tax rates in developing Asia



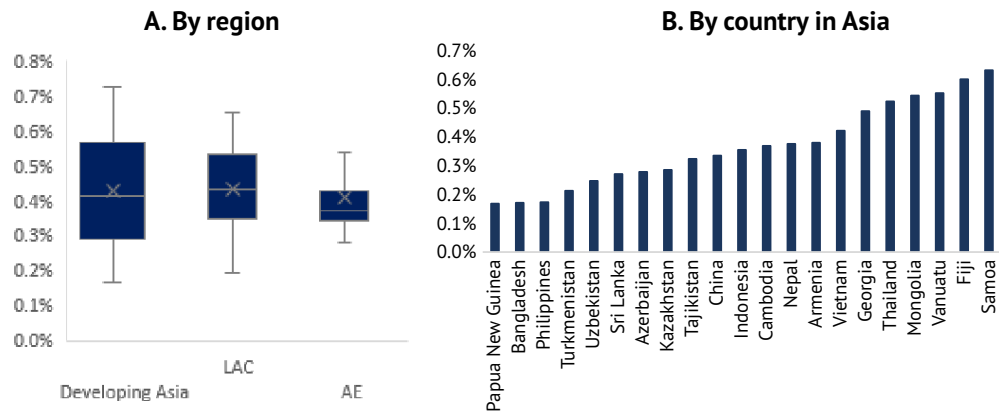
CIT = corporate income tax, GDP = gross domestic product, PIT = personal income tax, OECD = Organisation for Economic Co-operation and Development, VAT = value-added tax.

Note: PIT and CIT rates are the top combined marginal rates, while for VAT is the standard combined rate. Median and top and bottom quartiles are calculated on the basis of an unbalanced sample, hence the possible awkward pattern at the beginning of the sample (e.g., VAT).

Source: International Monetary Fund's Tax Policy Division (accessed August 2021).

Figures 16a–16c present computations of the productivity ratio for the PIT, CIT, and VAT, respectively, for the same grouping of countries included earlier. The left panels present results for different income groups, while the right panels provide a more detailed assessment of countries within developing Asia. Revenue productivity for the PIT in developing Asia is similar to that of other regions, but there is much higher heterogeneity within region (as shown by the wider interquartile range—blue box). This fact is more clearly visible in panel B where a PIT productivity of 0.0017 for Papua New Guinea contrasts with a value of 0.63 for Samoa. Turning to the revenue productivity for the CIT, the picture is rosier as developing Asia is characterized by a higher median ratio compared to both LAC and advanced economies. However, the higher relative dispersion within the region continues to be observed, particularly as a result of two outliers: Brunei Darussalam and Marshall Islands. Finally, median revenue productivity for the VAT in developing Asia is similar to that of LAC. In this case, cross-country heterogeneity is similar to that of LAC, even though there are differences across the 26 Asian economies displayed, ranging from below 0.01% in Sri Lanka to more than 0.25% in Georgia (Figure 15c panel B). There was a concentration of economies—17 out of the 26 presented—with a productivity ratio in the range 0.05%–0.15%.

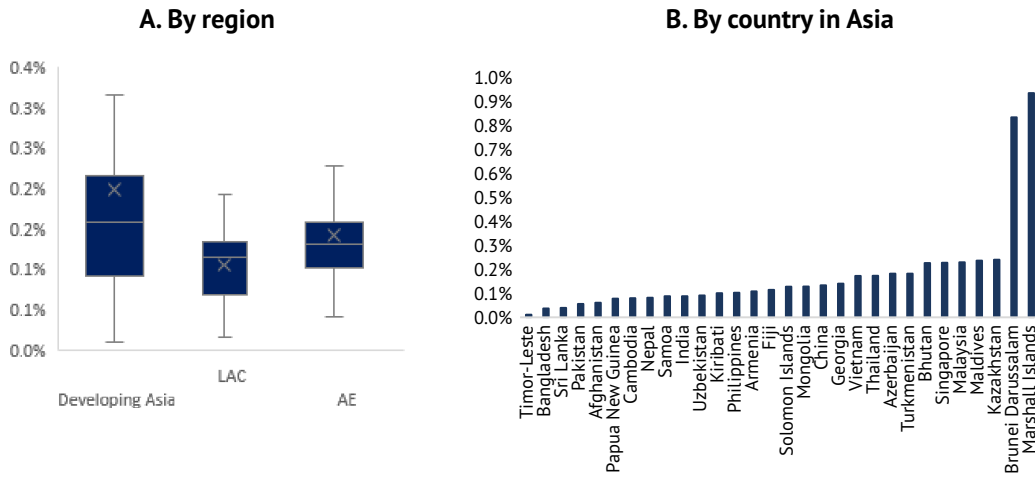
Figure 16a. Personal income tax productivity ratio (top combined rate)



AE = advanced economy, LAC = Latin America and the Caribbean.

Source: Author estimates.

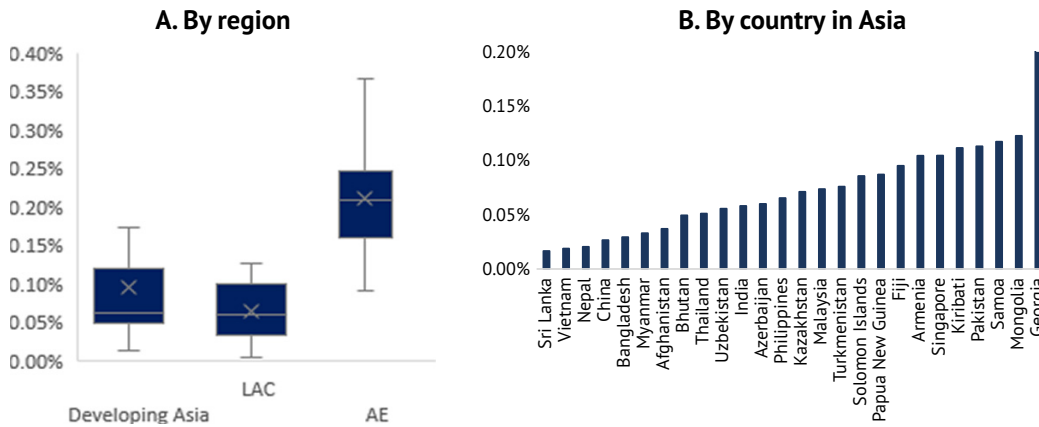
Figure 16b. Corporate income tax productivity ratio (top combined rate)



AE = advanced economy, LAC = Latin America and the Caribbean.

Source: Author estimates.

Figure 16c. Value-added tax productivity ratio (standard value-added tax rate)



AE = advanced economy, LAC = Latin America and the Caribbean.

Note: Box-whisker diagrams calculated with data from the last available year; the bar charts calculated with average data between 2000 and the last available year.

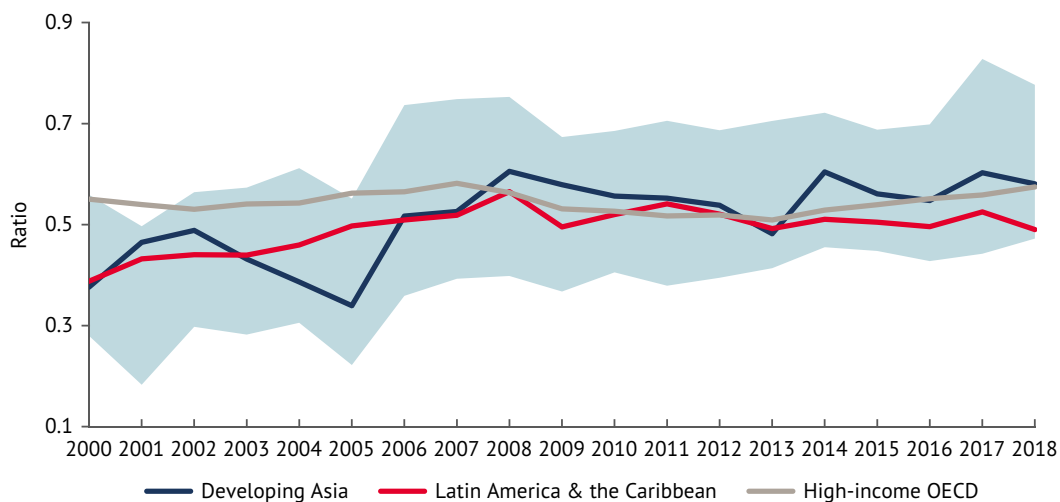
Source: Author estimates. Own calculations using International Monetary Fund data (accessed August 2021).

With respect to the VAT, another important indicator of performance and effectiveness is the C-efficiency concept—which is the ratio of actual VAT revenues to the product of the standard rate and final consumption in GDP.¹⁶ Though data is scanty for this performance indicator for developing Asia, Figure 17 shows that the median C-efficiency score increased

¹⁶ Algebraically speaking, changes in VAT revenue as a share of GDP can be attributed to three factors: (i) changes in the VAT standard rate, (ii) the share of consumption in GDP, and (iii) the C-efficiency ratio. Keen (2013) points out that changes in the C-efficiency ratio have been more influential than the changes in the standard rate and final consumption ratio to GDP in the evolution of overall VAT revenues in many countries.

over time. Part of the reason for the high median score is that, in small island countries, such as those in the Pacific, the C-efficiency score tends to be high as most VAT is collected on imports at controlled borders.¹⁷

Figure 17. Value-added tax C-efficiency in selected regions, 2000–2018



OECD = Organisation for Economic Co-operation and Development.

Notes: Excludes VAT c-efficiency observations greater than 1. Lines represent the median value for each region while the shaded area is the range between the 25th and 75th percentiles for Developing Asia.

Source: International Monetary Fund (accessed August 2021).

One final way to gauge revenue potential from the VAT is to look at detailed VAT tax gap analysis studies, carried out by the IMF during the past 7 years.¹⁸ Since the majority of these studies are confidential (unless released by the authorities), it is only possible to get information on developing Asia as a whole and compare its performance vis-à-vis other regions.¹⁹ In developing Asia, this analysis suggests that it is possible to increase VAT revenue by 2% of GDP (Baer 2021). This potential is less than that estimated for Africa and Latin America (Figure 18). As expected, revenue potential varies: the highest being in the Philippines (about 3% of GDP) and lowest in Sri Lanka and Thailand (between 0.6% and 0.8% of GDP). The VAT gap studies further indicate that the largest average compliance

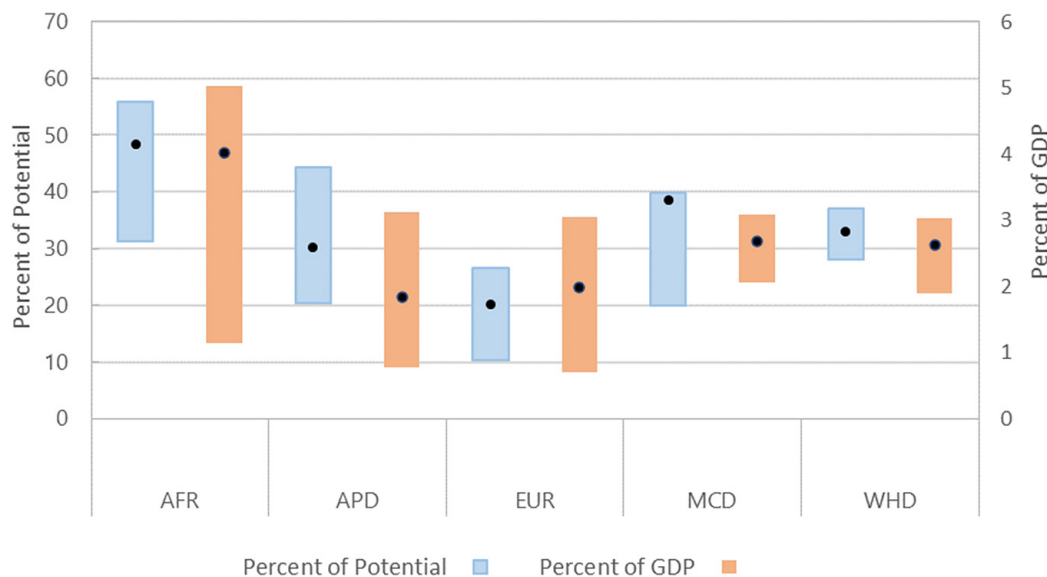
¹⁷There is a strand of literature analyzing the structural factors affecting the evolution of the C-efficiency ratio through tax compliance (e.g., Aizenman and Jinjark 2008, and De Mello 2009). For a discussion specifically dedicated to small countries and VAT, refer to Ebrill et al. (2001).

¹⁸The VAT gap is defined as the difference between expected VAT revenues and VAT actually collected. It provides an estimate of revenue loss because of tax fraud, tax evasion, and tax avoidance, but also because of bankruptcies, financial insolvencies, or miscalculations. The IMF RA-GAP approach has several distinctive advantages in respect to top-down approaches used in most countries, in particular (i) the model and methodology provides administrations with details on the nature of the tax gap, not just its size; (ii) the model for estimating potential revenue more closely follows the way a typical credit-invoice VAT works in practice; and (iii) the methodology is accruals-based. For further details, refer to Hutton (2017).

¹⁹It should be noted that the IMF regional classification is different from that of ADB. Countries in Central Asia are listed in the Middle East region.

gaps are in the construction and trade sectors, with the former almost twice as high as the latter. Increased digitalization (pre-filled tax returns, e-invoicing, electronic tax returns, and third-party information) improves the VAT’s revenue performance.

Figure 18. Value-added tax compliance gaps by region (median and inter-quartile range)



AFR = African Department, APD = Asia-Pacific Department, GDP = gross domestic product, EUR = European Department, MCD = Middle East Department, WHD =Western Hemisphere Department.
Note: Regions reflect the International Monetary Fund internal administrative regions. APD, which stands for Asia-Pacific Department, corresponds to developing Asia (Baer 2021).
Source: International Monetary Fund calculations based on results of value-added tax gap studies conducted in 32 countries.

VI. Tax expenditures in Asia

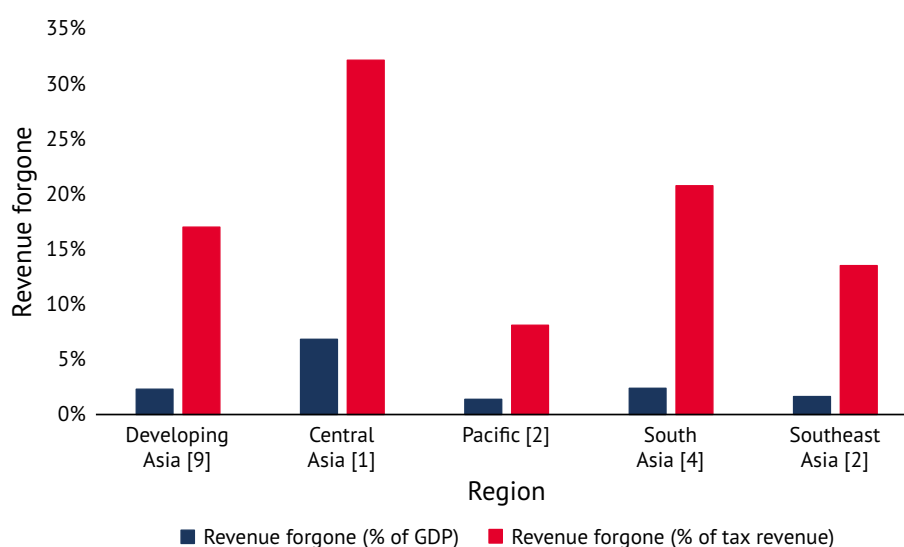
This section turns to a discussion of tax expenditures in developing Asia. The term tax expenditures “refers to benefits granted to specific sectors, activities or groups through preferential tax treatments such as exemptions, deductions, credits, deferrals and lower tax rates” (Haldenwang et al. 2021). Governments use tax expenditures to promote growth and social welfare, attract investment, and encourage consumption of renewable energy. Tax expenditures are typically not subject to the same degree of scrutiny in budgetary processes as direct spending and are assessed infrequently in terms of their costs and benefits (Congressional Budget Office 2012, and US Congressional Research Service 2019). Thus, the use of tax expenditures is characterized by a striking lack of transparency and accountability (Burman and Phaup 2011). As such, they permit “spending” that is outside the budget.

The analysis presented in this section is based on a recently launched database of tax expenditures covering 99 countries (Haldenwang et al. 2021). In some countries, it is a legal

requirement to estimate tax expenditures annually.²⁰ In other countries (including a few EMEs), such estimates are produced only periodically. The data are relatively sparse for LICs.

For developing Asia, tax expenditure data are limited to nine countries, covering selected years during 1990–2019. This data reveals the magnitude and characteristics of tax expenditures in the region. Figure 19 shows that the overall level of tax expenditures in Asia in relation to GDP are roughly one-half of the level (4% of GDP on average) found in the larger sample of 99 countries (Haldenwang et al. 2021). There are two reasons for this outcome. First, as noted in section II, the average standard VAT rate in the region is lower than in other parts of the world, thereby decreasing the value tax expenditures. Second, the rapid lowering of the corporate tax rates during the period under study implies that the value of tax concessions granted has lessened over time.²¹ The average tax expenditures in South Asia, where data availability is relatively better, are closer to the region’s average. That said, it is important to bear in mind that the methodology underlying these estimates is not necessarily comparable.²²

Figure 19. Average of countries reporting and revenue forgone by region in developing Asia



GDP = gross domestic product.

Note: Number of countries in parenthesis after each regional breakdown.

Source: Global Tax Expenditure Database (Haldenwang et al. 2021) (accessed August 2021).

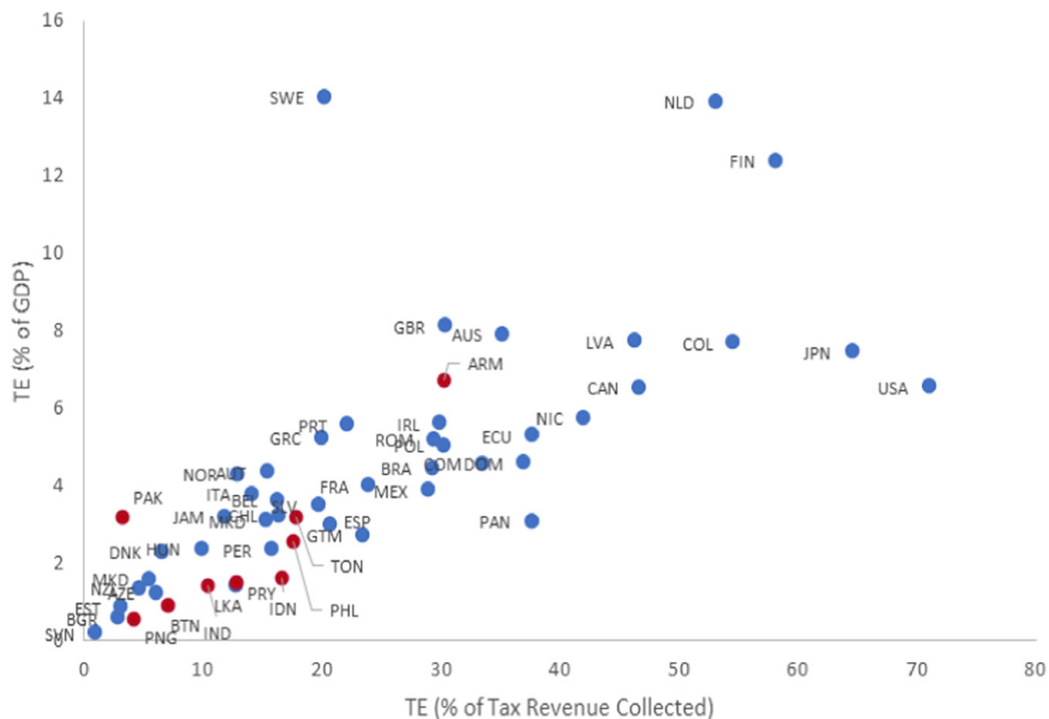
²⁰ Such as Bulgaria, Chile, Colombia, Dominican Republic, Ecuador, Guatemala, India, Mexico, Pakistan, South Africa, Uruguay (IMF 2019).

²¹ Tax incentives have been found to be redundant in attracting foreign investment. Many investors have reported that they would have invested in a country anyway, and tax incentives were not crucial determinant in their decision (IMF 2015b).

²² For instance, tax expenditures granted by different Indian states are not included in these estimates.

Within developing Asia, tax expenditures in relation to both GDP and total taxes collected are the highest in Armenia, Tonga, and the Philippines, though they are not as elevated as in some advanced economies, such as Finland, Netherlands, and Sweden (Figure 20). Most tax expenditures in developing Asia take the form of exemptions, deductions, and reduced rates (Figure 21) granted in two areas: taxes on income and taxes on goods and services. The bulk of the tax expenditures are granted on taxes on goods and services, while those on taxes on income are declining.

Figure 20. Tax expenditure (percent of GDP) versus tax expenditure (percent of tax revenue)

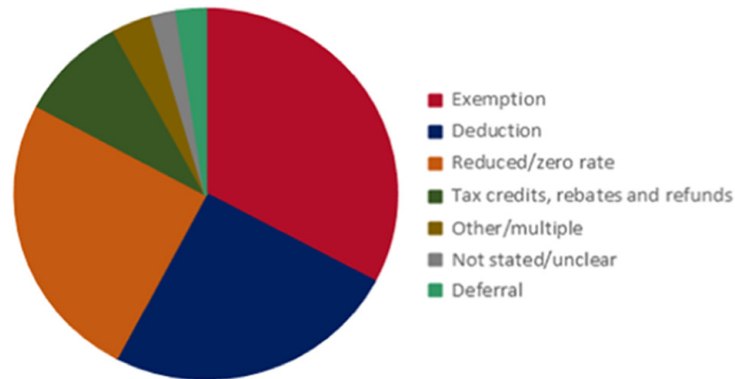


GDP = gross domestic product. Armenia (ARM), Australia (AUS), Belgium (BEL), Bulgaria (BGR), Brazil (BRA), Bhutan (BTN), Canada (CAN), Colombia (COL), Denmark (DNK), Dominican Republic (DOM), Ecuador (ECU), Finland (FIN), France (FRA), Great Britain (GBR), Greece (GRC), Guatemala (GTM), Hungary (HUN), India (IND), Indonesia (IDN), Ireland (IRL), Italy (ITA), Jamaica (JAM), Japan (JPN), Latvia (LVA), Macedonia, north (MKD), Mexico (MEX), Netherlands (NLD), New Zealand (NZL), Nicaragua (NIC), Norway (NOR), Oman (OMN), Pakistan (PAK), Panama (PAN), Papua New Guinea (PNG), Paraguay (PRY), Peru (PER), Philippines (PHL), Poland (POL), Portugal (PRT), Romania (ROU), Spain (ESP), Sri Lanka (LKA), Sweden (SWE), Tonga (TON), and United States (USA).

Note: Red dots represent countries in developing Asia, blue dots represent the remaining countries in the sample. Data is based on the latest available year.

Source: Global Tax Expenditure Database (Haldenwang et al. 2021) (accessed August 2021).

Figure 21. Number of provisions by tax expenditure type in developing Asia, 1990–2020



Note: Number of provisions is counted over the total time period for each tax expenditure type.
Source: Global Tax Expenditure Database (Haldenwang et al. 2021) (accessed August 2021).

Tax expenditures in developing Asia have narrowed the tax base, particularly in countries where it is already compressed because of large informal and agricultural sectors. As in other parts of the world, tax expenditures are high in taxes on goods and services (Figure 22)—an area that has most potential for revenue growth. There is no information on the incidence of tax expenditures in developing Asia. However, based on the nature of these expenditures in terms of the products covered, it is possible to ascertain their likely impact on inequality. First, they tend to create inequities across taxpayers, as those with similar incomes and assets end up paying different levels of taxes. Second, tax concessions granted on taxes on goods and services accrue disproportionately to middle-income and high-income households. Third, by lowering the revenue take, they further limit the government’s capacity to spend on inequality-reducing programs.

Figure 22. Tax expenditures in relation to the tax base in developing Asia



Note: Only provisions with a revenue foregone estimate are included.

Source: Global Tax Expenditure Database (Haldenwang et al. 2021) (accessed August 2021).

VII. Political economy of tax reforms

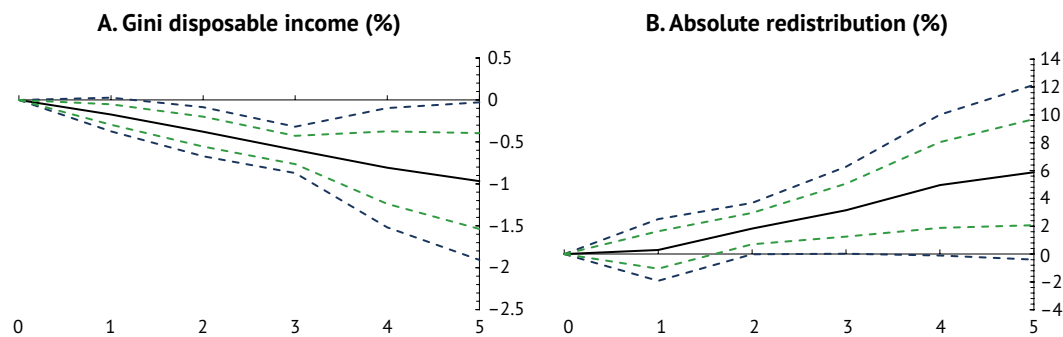
The above analysis showed that there is potential to raise more revenues from domestic sources in developing Asia, but resistance from vested interests can impede the implementation of measures with revenue potential (Mullins et al. 2020). This is likely to be the case with the removal of tax expenditures granted to consumers and producers. Similarly, attempts to make the tax system more progressive is prone to opposition from the rich. The resistance to tax reforms is channeled through the prevailing political system.

In a recent paper, Gupta and Jalles (2020) studied the experience of tax reforms in 45 emerging and LICs. They found that left-wing governments are less inclined to implement tax changes, while both proximity to elections and political strength or cohesion are positively associated with tax reforms. It seems that left-leaning governments are distrustful of modifications to tax systems presumably because they view them as favoring the rich. A reform of trade taxes is also not favored as it exposes small businesses to greater international competition with implications for employment. Interestingly, revenue administration reforms are resisted the most by left-leaning governments. Proximity to elections seems to trigger reforms of PIT, but the opposite holds for trade tax reforms.

That said, certain types of tax reforms can engender political support in their favor. This has been the case for reforms in PITs and tax administration (Gupta and Jalles, forthcoming b). Our results for a sample of eight countries in developing Asia that implemented tax reforms in these two areas between 2000 and 2015 show that, indeed, they have been equity

enhancing.²³ Figure 23 shows a decline in disposable and market Gini following a tax reform in year $t = 0$ while at the same time, the degree of the tax-benefit system redistribution goes up.

Figure 23. Impact of tax revenue reforms on income distribution



Note: x-axis in years; $t=0$ is the year of the tax reform shock. Solid black lines denote the response to a tax reform shock, blue dashed lines denote 90% confidence bands and green dashed lines denote 68% confidence bands, based on standard errors clustered at country level. “Redistribution” is defined as market minus net Gini.
Source: Gupta and Jalles (forthcoming).

We discussed in section I how the fiscal landscape of developing Asia is likely to alter as a result of the COVID-19 pandemic. At the same time, these developments could create conditions for countries to implement tax reforms. Gupta and Jalles (forthcoming a) find that past pandemics, such as the COVID-19 pandemic, have impelled emerging market and low-income countries to implement tax reforms, particularly in CITs, excises, and trade taxes.

VIII. Concluding remarks and policy implications

Developing Asia has substantially improved its revenue performance since 2000, with an almost 4 percentage points increase in the tax-to-GDP ratio to date. However, the COVID-19 crisis has both increased spending and reduced tax receipts. The trend growth in revenues observed in earlier years is unlikely to be sustained, unless governments embark on comprehensive reforms to mobilize more domestic resources. In this regard, they would have to overcome the political opposition to reforms from different pressure groups in the country.

Developing Asia has potential to raise more revenues of up to 4% of GDP on average. While CIT productivity ratio is high in relative terms vis-à-vis other regions in the world, the same does not apply to PIT or VAT, which are not only lagging but are also marked by high heterogeneity within the developing Asia region. A large potential to raise more revenues

²³The list of developing Asian countries included are Cambodia, the Lao People’s Democratic Republic, Maldives, Nepal, the Philippines, Solomon Islands, Tonga, Tuvalu. Refer to Appendix 2 for technical details.

lies in improving the compliance and design of the VAT. Two areas that deserve particular attention for improving compliance are the construction and trade sectors. At the same time, it will be important to ensure that the tax systems in developing Asia become more progressive with expansion of PIT and property taxes. Increased allocations and better targeting of social spending would help offset some of the regressivity stemming from indirect taxes.

An important source of revenue leakage is tax expenditures granted by countries in developing Asia. Three actions are required in this regard. First, countries should be encouraged to estimate and publish tax expenditures regularly to facilitate an assessment of their costs and benefits. This will enhance the transparency of government operations with beneficial consequences for the quality of governance. Developing Asia is lagging in reporting tax expenditures (Gupta 2018b). Second, countries need to exercise extreme caution in granting concessions for the payment of the VAT, an area which has the most revenue potential and where tax concessions remain stubbornly high. Finally, as many countries lack the capacity to estimate them, the Asian Development Bank (ADB), along with other international organizations (e.g., the IMF and the World Bank), should provide support to countries to estimate and rationalize tax expenditures as part of their technical assistance program.

Finally, greater mobilization of domestic resources should go together with improving efficiency of public spending. There is no point in collecting more taxes domestically if they are used to finance inefficient programs (Gupta 2018a).

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Technical appendixes

Appendix 1. Tax capacity in Asia

The stochastic frontier model of Aigner et al. (1977) is the standard econometric method for tax capacity estimates. A panel version of this model can be written as:

$$\ln \tau_{it} = \alpha + \beta^T x_{it} + v_{it} - u_{it} \quad (\text{A1})$$

where u_{it} represents the inefficiency, a nonnegative random variable associated with country-specific factors which contribute to country i not attaining its tax capacity at time t . $u_{it} > 0$. τ_{it} represents the tax revenue to gross domestic product ratio for country i at time t . x_{it} is a vector that represents independent variables affecting tax revenue for country i at time t ; β^T is a vector of unknown parameters. v_{it} is the residual, a random stochastic variable.² We assume that v_{it} has a symmetric distribution, such as the normal distribution, and v_{it} and u_{it} are statistically independent of each other. We then define tax effort (a value between zero and one) as:

$$TE_{it} = \frac{\tau_{it}}{\exp(\alpha + \beta^T x_{it} + v_{it})} = \frac{\exp(\alpha + \beta^T x_{it} + v_{it} - u_{it})}{\exp(\alpha + \beta^T x_{it} + v_{it})} = \exp(-u_{it}) \quad (\text{A2})$$

We compute county-specific estimates of tax effort and tax capacity using a panel dataset of 103 countries from 1990 to 2018 and data from the International Monetary Fund's World Economic Outlook and the World Bank's World Development Indicators. We use two different specifications of the stochastic frontier tax function: the first assumes a half normal model (HN); the second a truncated normal model (TN).¹

Table A1 reports the model parameter estimates for all countries.² Under the two models, most coefficients and the lambda factor³ are statistically significant at 1% level and have the expected signs (Table A1). These findings are in line with those from Mawaeje and Sebudde (2019) (Table 2 in their paper).⁴ Consistent with previous studies, countries with a higher

¹The normal-half normal model of Aigner, Lovell, and Schmidt (1977) can be obtained through maximum likelihood estimates. The truncated normal frontier model is because of Stevenson (1980). Half normal and truncated normal models differ on the distributional assumption of the "u" term (the "v" term does not change between the two models). While the half normal distribution is a truncated version of a normal random having zero mean and variance $\sigma^2 u$, the truncated normal model relaxes an implicit restriction in the normal-half normal model assuming that the mean of the underlying variable is μ .

²Cross-section estimation techniques, whether in the context of the peer analysis or of stochastic frontier analysis, cannot fully capture the effects of country-specific circumstances and may bias estimates of the revenue gaps or tax effort. Given these and other data imitations, results should be interpreted with caution.

³*Lambda* ($\sigma u / \sigma v$) provides information of the relative contribution of v_{it} and u_{it} to the total error term.

⁴Note, however, that the tax effort, tax capacity, and tax potential figures obtained in their Table 4 are not comparable with those in this paper. While Mawaeje and Sebudde (2019) used a sample of 150 countries to apply the stochastic frontier method, we did that on a much smaller sample comprising solely Asian economies. There are also differences in the time period covered by the two studies. It is worth noting that Mawaeje and Sebudde

level of public expenditure on education and per-capita gross domestic product are near their tax capacity (Tanzi 1968 and Lotz and Morss (1967). Also, in line with prior evidence, the size of the agriculture sector and the Gini coefficient are also highly significant variables with an inverse relationship with tax capacity and tax effort (Tanzi and Davoodi 1997, Davoodi and Grigorian 2007, and Lotz and Morss 1967). All coefficients are statistically significant (different from zero) at the 5% level and have the expected signs. Moreover, in both models the coefficients are quite similar (they include the same explanatory variables). λ_i ($\sigma_{ui} / \sigma_{vi}$) the lambda parameter is quite large (greater than 2.8) and statistically significant.

Table A1. Parameter estimates of the stochastic frontier tax function—all countries

Variable	Half Normal (HN)		Truncated Normal (THN)	
	Coefficient	St. Error	Coefficient	St. Error
Constant	-6.125***	0.714		
Real GDP per capita	1.931***	0.150	1.941***	0.144
Real GDP per capita square	-0.972***	0.0079	-0.979***	0.0075
Agriculture share in total value added	-0.011***	0.0013	-0.113***	0.0013
Public expenditure in education	0.041***	0.003	0.041***	0.0032
Trade openness	0.0005*** ^a	0.00014	0.00057***	0.00014
Gini index	-0.170***	0.053	-0.181***	0.054
Inefficiency				
Lambda ^a	6.935***	0.045	3.167***	0.270
Sigma (u) ^a	0.597***	0.045	0.175***	0.047

GDP = gross domestic product.

Note: ***, **, * denote statistical significance at the 10%, 5%, and 1% levels, respectively.

^aParameters for compound error. For further technical details unfamiliar readers should refer to footnote 24 and references therein.

Source: Author estimates.

Appendix 2. Inequality and tax reforms in Asia

To estimate the dynamic response of income distribution proxies to tax revenue reforms, we follow the local projection method proposed by Jordà (2005) to estimate impulse-response functions.⁵ Income inequality proxies, namely the Gini index, are obtained from the Standardized World Income Inequality Database, which was constructed by Solt (2009). As the disposable income does not take into account indirect taxes (Karanfil and Özkaya, 2013), to overcome this deficiency, we look at both pre-tax-and-transfers and post-tax-and-transfers

(2019) include several advanced economies, which influences the determination of the frontier against which all sample countries are compared against. In our study, given that there are only Asian countries, the resulting benchmarks for tax effort, tax capacity, and tax potential are different.

⁵The local projection method has been used to study the dynamic impact of macroeconomic shocks (Romer and Romer 2017, and Jordà and Taylor 2016). This approach has been advocated by Auerbach and Gorodnichenko (2013) as a flexible alternative to vector autoregression (or autoregressive distributed lag) specifications.

Gini indexes.⁶ According to Poterba (2007), this mitigates the reverse causality problem since post-tax-and-transfers vary “mechanically” and “economically” with the fiscal system, whereas the pre-tax-and-transfers measure vary solely through the endogenous responses of labor supply or the general equilibrium effect on factor prices. To identify the episodes of large tax revenue mobilization, we rely on a dataset put together by Akitoby et al. (2019) who focused on countries with more tangible tax revenue mobilization results: (i) countries that have increased their tax-to-gross domestic product (GDP) ratios by a minimum of 0.5% each year for at least 3 consecutive years (or 1.5% within 3 years), (ii) countries with beyond average increases in their tax-to-GDP ratios, and/or (iii) countries with better tax performance compared with peers in the same income group. Reforms include any changes that correspond to a new tax policy, changes in tax rates, changes in the tax base, and changes in exemptions. In sum, all changes that are revenue enhancing (refer to Akitoby et al. (2019) for further details). Akitoby et al. (2019) include tax reforms for 45 countries between 2000 and 2015 of which 8 are from Asia.⁷

The baseline specification is:

$$y_{t+k,i} - y_{t-1,i} = \alpha_i + \beta_k R_{i,t} + \theta X_{i,t} + \varepsilon_{i,t} \quad (\text{B1})$$

in which i denotes the cross-sectional unit, i.e., number of countries and t denotes the time in years; y is the dependent variable of interest, namely an income distribution proxy; β_k denotes the (cumulative) response of the variable of interest in each k year after the tax revenue reform; α_i are country fixed effects; $R_{i,t}$ denotes the tax revenue reform shock defined in binary terms in the area considered for country i at year t .⁸ If there are sequences of years with the same type of reform, we focus only on the first year of a given tax reform episode to improve the identification and minimize reverse causality problems. All revenue mobilization reform shocks featured in our analysis are country-wide shocks. $X_{i,t}$ is a set of control variables including two lags of tax reform shocks, two lags of real GDP growth and two lags of the dependent variable.⁹ Equation (B1) is estimated using Ordinary Least Squares Impulse response functions then are obtained by plotting the estimated β_k for

⁶The Gini indicators based on disposable income cover the total market income received by all household members (gross earnings, self-employment income, capital income), plus the current cash transfers they receive, less income and wealth taxes, social security contributions, and current transfers that they pay to other households.

⁷Cambodia, the Lao People’s Democratic Republic, Maldives, Nepal, the Philippines, Solomon Islands, Tonga, and Tuvalu.

⁸Reforms are country specific and not weighted. Akitoby et al. (2019) do not provide narrative information on every reform, so each of them is treated equally for econometric purposes.

⁹While the Nickel-bias may be a problem, papers such as Acemoglu et al. (2019) have argued that T as small as 40 should make the bias in panel linear probability model estimators relatively small. In our case, the finite sample bias is in the order of $1/T$, where T in our sample is 16. That said, similar results are obtained when we applied the bias-corrected alternative (LSDVC) via the method proposed by Bruno (2005) (the Arellano-Bond consistent estimator was used to initialize the bias correction).

$k=0,1,\dots,5$ confidence bands computed using the standard deviations associated with the estimated coefficients β_k —based on robust standard errors clustered at the country level.¹⁰

Appendix 3. Determinants of tax effort in Asia

First, we compute two measures of tax effort based on the seminal works of Frank (1959) and Bird (1964). Frank (1959) proposed a measure of “tax sacrifice”, which captures the effects of differences in population and personal income. In equation (C1), the measure of tax effort starts with the tax burden in the numerator and then accounts for the ability to pay taxes:

$$Frank_{it} = \left[\left(\frac{T}{Y} \right) \div \left(\frac{Y}{P} \right) \right] \times 100 \quad (C1)$$

where, T is tax revenues, Y is the gross national product, and Y/P scales the gross national product by population (P).

Later, Bird (1964) added that the numerator in Frank’s measure fails to consider the effort to produce the income. In addition, Bird (1964) also challenges Frank’s inclusion of gross national product, rather than gross domestic product, which better assesses performance in open economies. Nevertheless, the formulation of Bird’s index only changed the numerator part. The index proposed in this research uses disposal income to compute tax burden is:

$$Bird_{it} = \left[\left(\frac{T}{Y-T} \right) \div \left(\frac{Y}{P} \right) \right] \times 100 \quad (C2)$$

Our data covers a panel of 30 Asian countries over the period of 1980–2017 and is sourced from the World Economic Forum, the International Monetary Fund’s World Economic Outlook, and the World Bank’s World Development Indicators.

¹⁰ Another advantage of the local projection method compared to vector autoregression (autoregressive distributed lag) specifications is that the computation of confidence bands does not require Monte Carlo simulations or asymptotic approximations. However, one limitation is that confidence bands at longer horizons tend to be wider than those estimated in vector autoregression specifications.

Appendix 4. ADB's developing member countries and subregions

Central Asia (8)

Armenia
Azerbaijan
Georgia
Kazakhstan
Kyrgyz Republic
Tajikistan
Turkmenistan
Uzbekistan

East Asia (5)

Hong Kong, China
Mongolia
People's Republic of China
Republic of Korea
Taipei, China

South Asia (8)

Afghanistan
Bangladesh
Bhutan
India
Maldives
Nepal
Pakistan
Sri Lanka

Southeast Asia (11)

Brunei Darussalam
Cambodia
Indonesia
Lao People's Democratic Republic
Malaysia
Myanmar
Philippines
Singapore
Thailand
Timor-Leste
Vietnam

The Pacific (14)

Cook Islands
Federated States of Micronesia
Fiji
Kiribati
Marshall Islands
Nauru
Niue
Palau
Papua New Guinea
Samoa
Solomon Islands
Tonga
Tuvalu
Vanuatu

ADB = Asian Development Bank.

Source: Asian Development Bank.

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