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The dynamics of domestic revenue mobilization across four decades

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Abstract: We utilize the recently updated UNU-WIDER Government Revenue Dataset, which covers key indicators on tax and non-tax revenues for 196 countries since the 1980s, to study the dynamics of government revenue tax collection across selected periods from 1985 up to the most recent available year (2019). In doing so, we propose a new approach that highlights the direction, intensity, and continuity of trends in total tax and total revenue collection, with implications for aid, fiscal policy, and sustainable development. We find that in the early to late 2000s, tax- and revenue-to-gross domestic product ratios experienced an upward surge on average; however, this does not uniformly apply to all regions. In addition, for countries that witnessed moderate to high growth rates in total revenues in the early to late 2000s, moderate growth levels may have turned out to be more sustainable. This, as well as explorations of our methodology, poses topics for further investigation to contextualize global patterns, particularly regarding drivers of domestic revenue mobilization improvement or decline.

Key words: domestic revenue mobilization, Government Revenue Dataset, tax, sustainable development, aid, fiscal policy

JEL classification: E00, H2, Y10

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1 Introduction

Long before the recent global health pandemic, there were concerns about financial and non-financial risks to the global economy. Discussions about preventing another global financial crisis, an impending debt crisis in developing and emerging economies, a global climate change catastrophe, and persisting inequalities were already causing concern. At the heart of these discussions was the need to build a global coordinating mechanism as well as a global financing architecture for sustainable development. For instance, some financial estimates for meeting the 2030 Sustainable Development Goals (SDGs) in developing countries (UNCTAD 2014), where the aforementioned concerns are direst, suggested an annual cost of US\$2.5 trillion. While there is yet to be consensus on some innovations for financing global development *à la* Atkinson (2003), it is widely recognized that the potential contribution of traditional sources such as domestic revenue mobilization (DRM) is yet to be fully realized.

Domestic revenues are not only critical to efforts to fund sustainable development, but also play an important role in building state capacity for delivering on the aspirations of citizens and cementing a credible social contract (Kaldor 1963; Tilly et al. 1975). Effectively taxed states are also associated with good governance (Brautigam et al. 2008; Moore 2007; Ross 2004). It is no wonder that improving capacities for tax and other domestic revenue collection has become a key target of broader frameworks such as the Monterrey Consensus, SDG 17, and more specifically the Addis Tax Initiative (ATI 2015). The latter was launched in 2015 with the aim to foster a global, multistakeholder partnership for improving DRM in developing countries, including meeting SDG 17.1. In 2015, 20 of the world largest donors committed to double their annual aid for DRM from a total of US\$223.7 million to US\$447.5 million by 2020 (ATI 2017). A renewed declaration, ATI 2025, has since been launched to bolster the initial efforts while addressing emerging concerns. This quest to improve development financing has become more important as countries around the world have been severely impacted by the global pandemic and associated economic fallout from the novel coronavirus (SARS-CoV-2). Estimates suggested that government revenue in low-income countries was expected to fall by about 7.5 per cent on average between 2019 and 2020, with widening fiscal deficits (Mullins et al. 2020).

The increasing focus on DRM also requires accurate and timely data for researchers and policy-making to monitor progress. This paper takes advantage of the newly launched 2021 edition of the UNU-WIDER Government Revenue Dataset (GRD) (UNU-WIDER 2021), to undertake an analysis of trends in DRM over the past four decades around the world. We demonstrate how new cross-country data and aggregate indicators can be used to inform methods that seek to monitor progress in DRM as well as commitments to ATI. The data allows us to unbundle the composition of trends in tax revenue performance across about 196 countries and territories. In addition to examining global trends, we provide up-to-date coverage for developing countries where the capacity for enhanced revenue mobilization is most challenged.

The rest of the paper is as follows. Section 2 reviews recent literature on efforts to assess cross-country performance in DRM. Section 3 briefly discusses the data. In section 4 we present our method of analysis and discuss some important limitations to the present work. We report the findings in section 5. Section 6 concludes.

2 A review of recent literature

As we focus on patterns in domestic revenue trends, we discuss literature which has sought to account for drivers and initiatives that influence tax and revenue collection in different countries and regions. While this allows us to build upon earlier findings with regard to developments in DRM, it is, however, important to note that our study is not an account of potential causes of such trends. Instead, it focuses on meaningful ways in which trends in tax and revenue collection across countries can be evaluated over a considerable period of time. Several international organizations including the International Monetary Fund (IMF) and the Organization for Economic Cooperation and Development (OECD), as well as policy advocacy non-governmental organizations such as Oxfam and the Centre for Global Development, have engaged in similar analyses.

A recent analysis by Mullins et al. (2020) utilizes the GRD to review the DRM performance of low-income countries over the past two decades, finding that the average tax-to-gross domestic product (GDP) ratio rose from around ten per cent to 14 per cent between 2000 and 2018, and that as much as half of the increase came from value-added taxes (VAT). A report by Oxfam (2017), however, attributes growth in DRM in many developing countries almost entirely to a surge in commodity prices, as well as GDP growth. This Oxfam report finds that in the period from 2001 to 2012, domestic revenues saw a nominal growth of 350 per cent in low-income and lower middle-income countries, compared with a corresponding nominal growth in GDP of 330 per cent. Based on estimates prepared by the IMF Development Committee and World Bank in April 2015, Oxfam (2017) further states that for lower-income countries, gains in DRM outcomes might be stagnating. In addition, many developing countries seemed to have turned to consumption-based tax schemes, suggesting that potentially regressive forms of taxation may have contributed to increases in DRM (although the more recent report by Mullins et al. (2020) does not find evidence of this shift). A further study conducted by Oxfam (2018) showed that despite their commitments under ATI, donor countries were not on track to double their development assistance for DRM. Extreme inequality, particularly wealth concentration at the top, further magnifies core challenges for DRM in contexts where legal and policy loopholes can hamper effective taxation (Oxfam 2019). Hence, DRM is not just a topic of the global South, and it goes beyond the space of donor relationships. The Paradise Papers, for instance, showed that 14 countries in receipt of DRM support from the United States had a more effective tax collection system than their donors, according to Oxfam's Commitment to Reducing Inequality Index (Oxfam 2017).

In addition, studies and reports have discussed relevant policy initiatives and market developments associated with tax revenue collection. These are often set within a particular region or country group. The majority of the debate has focused on developing countries, particularly in sub-Saharan Africa (SSA) (for a recent review, see Levin 2021). SSA is a region that, despite significant progress over the past 30 years, collects among the lowest amounts of tax-to-GDP on average. The region does, however, perform better on tax effort—the ratio of actual tax collection to potential collection based on economic fundamentals—relative to some others, such as Latin America (Gwaindepi 2021) or the Middle East and North Africa (MENA) (McNabb, Danquah et al. 2021).

A number of important drivers of progress in DRM have been identified recently. These include, for example, improvements in non-resource revenues compared with resource revenues (Gupta and Tareq 2008); the importance of political commitment, creating momentum for simplification and the combination of reforms to both policy and administration (Sy et al. 2019); and the rationalization of tax expenditures—exemptions, deductions, reduced rates, credits, and

deferrals—which can represent as much as 7.5 per cent of GDP in Africa or 6.6 per cent in Latin America (Redonda et al. 2021).

Another positive driver of revenue mobilization is tax revenue diversification, which can help to reduce tax revenue volatility and hence foster sustainable development and good governance (Compaoré et al. 2020; Sy and Sow 2016). The IMF’s Tax Revenue Diversification Index can help to assess cross-country performance in the quest to diversify sources of domestic revenue (Compaoré et al. 2020). Two key insights from the index are the non-linear relationship between economic diversification and revenue diversification, and the importance of paying attention to macroeconomic, political, and institutional factors in addressing DRM challenges. The challenges with dependence on natural resource revenues have also been highlighted in the recent literature (see e.g., Chachu 2020; Chachu and Nketiah-Amponsah 2021). Here, a key concern stresses that non-renewable sources will deplete over time. The volatility associated with their demand and therefore pricing generates shocks which have dire implications for fiscal stability and DRM (Morrisey et al. 2016). Furthermore, the global shift away from fossil fuels means that government revenues in hydrocarbon-producing countries, for example, will come under severe pressure from reduced demand in the future.

In addition to cross-country analyses, the literature also draws on case studies to assess progress towards meeting domestic revenue goals, evaluating reforms and drawing lessons for policy (see e.g., Akitoby et al. 2020). Akitoby et al. (2020) evaluate tax reforms in seven low-income countries, stressing the importance of political commitment and securing the buy-in of key stakeholders for sustained DRM efforts. Individual country case studies on tax performance also abound in the literature, with some focusing on country-level experience with tax reform and its impact on DRM (Bekoe et al. 2016; Suliman 2005; Von Handelwang 2017).

Proposing a more holistic approach to DRM, Lebdioui (2021) demonstrates how various factors, including economic, environmental, and social ones, could be considered in tax revenue mobilization, while Oxfam (2019) looks beyond revenue performance and the capacity of tax administration to other factors, including tax avoidance. The role of external support has also been pushed strongly by Oxfam and other international organizations, with some arguing for a surge in support for low-income countries (Lee 2018). This view is also echoed under the revamped ATI due to the recent impact of the global health pandemic.

In this paper, we study the dynamics of DRM trends by identifying the direction and intensity of trends as well as whether and where they have been sustained. By drawing on the GRD, we are able to assess trends in tax- and revenue-to-GDP ratios on a global level, with high cross-sectional coverage (196 countries) and a long time span (1985–2019). We further discuss brief country insights where applicable to contextualize trend patterns.

3 Data

The GRD was developed with the aim to encourage the use of cross-country data in analysis and research. It can answer questions concerning DRM, especially in developing countries where detailed data has been lacking in the past. The GRD provides data on government tax and non-tax revenues, social contributions, and grants, both in nominal local currency and as a percentage of GDP. It also highlights, where available, the portion of government revenues that accrues from natural resources. The dataset currently covers 196 countries over the period 1980–2019. There are 40 tax and revenue variables in total.

The GRD complements data from several underlying sources—such as the OECD’s Revenue Statistics and the IMF’s Government Finance Statistics—with data from IMF Article IV country reports. This has led to considerable gains in coverage, particularly for developing countries. The principles applied in the selection of data sources are discussed in detail in McNabb, Opiel et al. (2021). That notwithstanding, the shortcomings of some of the underlying data sources have also been well documented (e.g., McNabb 2017; Prichard 2016). The specific composition and underpinning definitions of variables included in the GRD dataset are described in Opiel et al. (2021), including the two key variables utilized in our analysis and discussion in this paper.

4 Methodology

In this section we detail our approach to defining and comparing trend patterns in DRM.

4.1 Variables

Our analysis focuses on aggregate variables and the most complete data series to explore trends in domestic revenue collection. These are total government revenue and total taxes, both expressed as a percentage of GDP.

‘Total revenue’ refers to total government revenue, which includes, broadly, four subcomponents: taxes, non-tax revenue, social contributions, and grants. In this study, we consider total revenue exclusive of grants and social contributions (see Opiel et al. 2021).¹ This variable is most consistent across countries with high availability across our period of observation. It covers about two thirds of countries in the late 1980s, rising to around 90 per cent in the late 2000s (Table 1).

‘Total taxes’ presents an aggregate indicator that captures all sources of tax revenue. In this study, the variable is expressed exclusive of social security contributions. Note that this variable then also captures resource taxes where applicable, although these are not always separately reported or defined (Opiel et al. 2021).

Table 1: Selected periods of observation

	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7
Time span	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19
Data coverage							
Total tax	64.3%	78.1%	86.7%	91.8%	92.9%	90.3%	84.7%
Total revenue	52.0%	65.8%	80.1%	86.2%	90.8%	90.3%	84.2%

Note: Data availability differs regarding whether statistics are available for one specific period, as in Table 1, or for two periods for comparison, as in Tables 3 and 4. Hence the difference in statistics presented in Table 1 compared with those presented in Tables 3 and 4.

Source: authors’ calculations based on data from UNU-WIDER (2021).

¹ Grants are not necessarily reflective of a country’s own DRM effort, as they usually accrue from bilateral or multilateral donors. Meanwhile, in many countries, social contributions are administered separately from domestic tax collection, often as a separate arm of general government. Similarly, it is not clear that social security contributions are important drivers of a country’s DRM effort.

4.2 Periods of comparison

In order to understand the dynamics of DRM over time, we compute five-year rolling averages of our two variables of interest. Hence, each observation at time t_0 covers a span of t_0-2 to t_0+2 . Starting with the latest year available, i.e. 2019,² we then define the (non-overlapping) periods shown in Table 1. Defining a five-year period within which we aggregate information can smoothen short-term fluctuations (which are commonly observed in tax revenue collection). As the aim is to observe general trends across a longer time span, these five-year averages highlight short-term variations in trends rather than simply comparing the beginning and end of each decade. Ultimately, however, for a study of the dynamics of revenue collection, a five-year period might be considered a fairly short time span of observation (see section 4.3). Data availability here ranges from 52 per cent for total revenues during the late 1980s to 93 per cent coverage for total tax in the mid- to late 2000s.

4.3 Trend classifications

There appears to be a consensus view with regard to how to assess the evolution of tax revenue mobilization among developing countries. The literature often refers to a tax-to-GDP benchmark of 15 to 20 per cent, below which governments' ability to finance their basic functioning and provision of services is undermined (Adam and Bevan 2001; Gupta and Tareq 2008; IMF 2005; Mascagani et al. 2014).³ The International Development Association's results measurement system—by which outcomes in countries supported by International Development Association funds are evaluated—includes, as one of its Tier 1 indicators, the share of countries where the tax-to-GDP ratio has risen over 15 per cent of GDP. In the case of assessing tax performance over specific time horizons (for example, up to three years for short periods, and from five years to ten years for longer horizons), various benchmarks or thresholds are proposed, usually on the basis of normative judgements. Keen and Simone (2004), for example, argue that ten years is a relatively short period in the life of a tax system. One plausible implication of this view is that, in general, one should not expect a huge increase in tax performance over that time horizon. Others, however, have evaluated cross-country tax performance over shorter periods (for a more recent assessment see e.g., Akitoby et al. 2020). Here, the IMF has employed a benchmark of a 0.5 percentage point (pp) increase in tax-to-GDP ratios per annum to gauge progress for developing countries under its support programmes (Akitoby et al. 2020; Lagarde 2017). Other countries outside IMF support programmes also use similar benchmarks. We propose three different approaches to classify and study the dynamics of tax and revenue collection, as follows.

Direction of trends

As we are interested in the dynamics of DRM over time, we classify countries based on whether their tax or revenue ratios (i.e. as a percentage of GDP) increase or decrease when we compare one period (as defined in section 4.2) with the subsequent period. We begin by simply observing whether the change (D) in total tax or total revenue statistics (DRM) of a country (c) over two periods (t and $t-1$) in tax or revenue collection is increasing (1) or decreasing (0):

² While the 2021 edition of the GRD includes figures for 2020 for some countries, we only include observations from 1985 up until 2019, to ensure consistency.

³ Furthermore, Gaspar et al. (2016) estimate that countries with a tax revenue-to-GDP rate of at least 12.88 per cent grow about 0.8 per cent faster per annum than those below that threshold. This benchmark of approximately 13 per cent has been referred to in the literature as a 'tipping point'.

$$D_{c,t-1} = DRM_t - DRM_{t-1} \quad [1]$$

$$D_{c,t-1} \begin{cases} = 1 & \text{if } D_{c,t-1} > 0 \\ = 0 & \text{if } D_{c,t-1} < 0 \end{cases}$$

Intensity of trends: introducing thresholds

However, this first distinction in the direction of trends does not capture the magnitude, or *intensity*, of trend changes. To account for this, we propose a threshold in line with some of the studies discussed earlier (e.g., Akitoby et al. 2020). Applied to a five-year period, the benchmark of 0.5 pp per annum corresponds to a change of 2.5 pp. We first differentiate countries according to equation [1], before applying the thresholds defined in Table 2: countries that have exceeded the 2.5 pp threshold (high decrease or increase); countries that show a trend of at least half of or up to the threshold (moderate decrease or increase); countries that show no more than half or a marginal change (low decrease or increase). We also show countries with no data available, to account for data coverage.

Table 2: Trend classification of countries, threshold approach

Categories	Pp change, 5-year period	Score
High decrease/increase	$D_{c,t-1} \geq \pm 2.5 \text{ pp}$	+/-3
Moderate decrease/increase	$\pm 2.5 \text{ pp} > D_{c,t-1} \geq \pm 1.25 \text{ pp}$	+/-2
Low decrease/increase	$\pm 1.25 \text{ pp} > D_{c,t-1}$	+/-1
No data	No data	0

Source: authors' calculations.

To identify the magnitude of trends in DRM, we compute a cumulative score across all periods using the assigned values of the categories introduced in Table 2. The values per period range from minus three for a high decrease to plus three for a high increase in an observed period. If no data is available for a given period, we assign a score of zero. If all compared periods display either a high increase or decrease, and if data is available, a country can obtain the hypothetical maximum (minimum) of 18 (-18).⁴ The closer the score to zero, the more marginal the changes in trends observed. The intensity scores are explored further in section 5.3, where we focus particularly on countries with the highest and lowest scores—given full data availability—and also those whose revenue and tax scores trend in opposite directions.

Sustained trends

Lastly, we consider whether the trends are sustained. Specifically, section 5.4 focuses on the most recent three periods of data, namely from the early to late 2000s to the early to late 2010s. Broadly, trends can be thought of as sustained if they are continued in the same direction (i.e. increasing or decreasing). We then pay specific attention to those countries where sustained trends show similar levels of intensity, as defined above. We also examine cases where countries that showed initial high or moderate increases in tax and revenue collection in the early to late 2000s failed to sustain this trend.

⁴ There are seven averages computed, as per the periods defined in Table 1; accordingly, there are six periods over which we can study the dynamics.

4.4 Limitations

We acknowledge that the approaches followed here have a number of inherent limitations. Firstly, the thresholds defined above, while grounded in previous work by the IMF for example, remain arbitrary. There is no agreed-upon rate of tax or revenue growth which is considered to reflect ‘good’ performance. Our thresholds might allow us to reveal broad trends but can mask outliers. For example, two countries could be classified as high increase in a given period, even if one increased its tax-to-GDP ratio by 2.5 pp while the other showed a growth of 12.5 pp. Similarly, a country increasing its tax ratio by 1.24 pp would be classified as low increase alongside a country increasing by 0.01 pp. At the same time, an examination of the data shows that this is rarely the case. We do not observe a large number of countries where extreme increases or decreases from one period to the next occur. For instance, at the upper end of the increasing scale, the weighted average of the 90th percentile observation (i.e. weighted by data availability) across each period is a 2.73 pp increase in total tax-to-GDP ratios. (The same figure for increases in revenue stands at 4.25 pp.) There is probably no correct answer as to how such thresholds should be defined. However, we feel confident that the approach presented here is at least somewhat intuitive. By examining pp changes, we further do not consider the starting position of a country. For instance, a 2.5 pp increase in tax-to-GDP for a country initially collecting five per cent of GDP equates to a greater relative change (and is probably much more difficult to achieve) than a 2.5 pp increase in a country initially collecting 25 per cent of GDP.⁵ However, the use of relative changes that account for starting positions—e.g., an increase that represents a share of the starting position—would generate an analysis where trend trajectories were comparable within, but not necessarily across, countries.

Data availability is a further challenge. Trends may be skewed by the fact that countries are missing observations for certain periods. In our analysis, we generally show the share of countries for which there is no data alongside our results. We then further narrow down the sample when performing comparisons where data availability would bias or misrepresent results and interpretations. Yet we are cautious in light of the fact that data availability is not systematically related to revenue performance. Where data is sourced from the IMF country reports, it may be the case that these are not made public for political reasons. On the other hand, better-quality—and more complete—data is generally available for countries that are able to report according to IMF *Government Finance Statistics Manual* standards. The ability to do so is systematically related to capacity within national governments and their quality of data management.

Furthermore, the study only draws on relevant data up until 2019. Hence, it does not reflect effects of the COVID-19 pandemic. The associated economic crises around the world, coupled with reforms to tax policy and administration, will undoubtedly influence trends in tax and revenue ratios over the coming years to a great extent.

The final and perhaps most crucial limitation concerns the semantics that accompany our analysis. Recall that the work is set against the backdrop that many countries in the global South are in urgent need of financing to meet the challenges of the SDGs while facing rising debt levels and economic crises following the COVID-19 pandemic. When assessing tax and revenue performance, we use terms such as ‘improvement’ or ‘enhancement’ when trends are increasing. While many readers would agree that increases in tax collection are objectively ‘good’ outcomes, the analysis does not speak to how these revenues are collected. Increased revenue collection that happens by coercive means or by levying inequitable or regressive taxes might show a country in

⁵ The fact that our analysis in this paper shows that many countries in some of the world’s poorest regions dominate the high-increase or moderate-increase categories makes their performance even more impressive.

a positive light in terms of its increased tax-to-GDP ratio. However, what may appear to be positive developments in the short term should not blindly be lauded as such. Instead, further exploration is called for to understand the underlying drivers. Similarly, a reliance on revenues from natural resources or other sources of ‘unearned income’ often goes hand in hand with poorer governance and democratic outcomes (Prichard et al. 2018). In addition, increases or decreases in government revenues in developed countries should probably be viewed in a different light from those in the global South. In the former, the choice to collect more or less tax revenue is often a societal choice rooted in ideas about appropriate levels of public spending, and will probably reflect the stance of the country’s leadership at a given moment in time. On the other hand, almost all of the world’s poorest countries would probably welcome increased tax and revenue ratios, regardless of the political leanings of the leadership.

5 Trends in DRM since the 1980s

We begin our discussion by providing a high-level overview of historical changes in DRM. We then proceed with an examination of the intensity of such changes. The extent to which governments are able to collect revenues constitutes an important feature of sustainable financing mechanisms. DRM patterns on a global level reveal notable cross-country differences, which we explore further in subsequent sections. The results displayed in Appendix A are based on step 1 in our trend classification, and thus simply distinguish whether total tax revenue or total revenue have increased or declined when we compare two periods.

Given data availability, the periods in which we observe declines in total tax-to-GDP ratios for a majority of countries are the late 1980s to early 1990s and the late 1990s to early 2000s. With regard to total revenue, this only applies to the late 1980s to early 1990s. For all other periods, we observe a greater share of countries with improved DRM trends. A period that stands out in this regard is the early to late 2000s. For two thirds of countries, DRM improved (68 per cent for total tax, 66 per cent for total revenue). This share is more than twice as great for total tax revenues compared with the preceding period (late 1990s to early 2000s).

With data availability remaining fairly consistent since the early 2000s, we also observe that this shift towards increases in tax and revenue efforts has not been sustained. While shares remain higher than before the early 2000s, increasing trends can be observed for roughly half of the countries in more recent periods. In order to investigate the sharp increase in the early to late 2000s, we now focus on the varying degrees of intensity in DRM trends in section 5.1.

5.1 Varying trends in DRM

In the following analysis (Tables 3 and 4), we examine total tax and total revenue as a percentage of GDP by comparing the seven periods defined in Table 1. We begin by focusing on broader trends in tax and revenue mobilization, and specifically on the share of countries to which different directions and levels of trends apply. Note that when we describe periods as ‘late’ or ‘early’, ‘late’ captures the second five-year period of a decade (say, 1995 to 1999), while ‘early’ captures the first half (say, 1990–94). Thus, we are comparing average tax and revenue performance in the first and second halves of a decade (to recap, we begin with the second half of the 1980s, with data thus drawn from 1985 onwards). We begin by considering tax revenues (Table 3).

Table 3: Trends in total tax across observed periods

Period	Total taxes						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
	Row percentage						
Late 1980s - early 1990s	9.2	7.1	17.4	12.8	11.7	5.1	36.7
Early 1990s - late 1990s	6.1	10.2	17.9	16.8	17.9	7.7	23.5
Late 1990s - early 2000s	6.1	10.7	19.9	24.5	17.4	7.2	14.3
Early 2000s - late 2000s	2.0	5.6	13.3	28.1	18.4	21.9	10.7
Late 2000s - early 2010s	5.6	12.2	21.9	25.5	13.8	8.7	12.3
Early 2010s - late 2010s	6.1	4.6	16.3	24.0	21.4	9.2	18.4

Note: Data availability differs regarding whether statistics are available for one specific period, as in Table 1, or for two periods for comparison, as in Tables 3 and 4. Hence the difference in statistics presented in Table 1 compared with those presented in Tables 3 and 4.

Source: authors' calculations based on data from UNU-WIDER (2021).

The first takeaway of note from the analysis in Table 3 is that the share of countries with high decreases in total tax-to-GDP (corresponding to a decline of ≥ 2.5 pp) is fairly low across all observed decades, falling as low as two per cent of all countries in the early to late 2000s. Another notable pattern is the high share of countries with increasing tax revenue trends in the early to late 2000s (21.9 per cent, compared with an average of 7.6 per cent in all other periods). This was a period when a new consensus emerged on the role of governance and institutions in development, characterized by an emphasis on public expenditure management reforms and the coupling of tax policy reforms with effective tax administration, including the widespread adoption of semi-autonomous revenue institutions (Dom and Miller 2018). Furthermore, compared with the previous decade, the total share of countries with decreasing trends declined by 16 per cent, whereas more than two thirds in total showed increases in total tax (68 per cent, or 134 countries in total). This period thus shows the highest share of countries with increasing trends observed across the four decades considered. It also shows the smallest share of countries experiencing a high decrease in tax revenue.

It is also noteworthy that the share of countries with moderate increases has remained fairly constant at around 17 per cent since the late 1990s. We observe a notable decline during the late 2000s and early 2010s, before the share then increases again in the most recent period observed.⁶ The dip in the late 2000s to early 2010s coincides with higher shares of countries experiencing low, moderate, or high decreases in tax revenue. While the total share of countries (for which we have data) with decreasing trends amounted to around 22 per cent in the years closer to the global financial crisis, it increased to around 45 per cent during the subsequent period.

It is interesting to observe this shift in patterns for the early to late 2000s and subsequent periods, as it may reflect changes in fiscal policies after the financial crisis. This especially concerns the introduction of fiscal stimulus or austerity packages, which had varied effects on tax-to-GDP ratios

⁶ Countries that remained within the share of moderate increase over an extended time include e.g., Armenia, Bulgaria, and Ghana.

across the globe. We also observe that the high share of countries with high increases (in the early to late 2000s) was not sustained over subsequent periods. This would support the view that fiscal stimulus was insufficient to consolidate public finances over a sustained period (Izvorski 2018). Tax ratios in many developing countries, however, were not so significantly or immediately affected by the global financial crisis. Similarly, for countries reliant on tax revenues from resource extraction, the end of the ‘commodities super-cycle’ around 2014 would have influenced performance in subsequent years.

The patterns observed regarding total tax revenues are closely mirrored when we look at trends in revenue as a whole. We see from Table 4 that, overall, the share of countries with increasing trends again outweighs that with decreasing trends, except for the earliest period observed.⁷ Generally, greater variations are observed for a smaller share of countries during the earlier periods of observation: both high decreases and high increases apply to less than 12 per cent of countries between the late 1980s and the late 1990s. Thereafter, the share of countries with high decreases drops more drastically, while high increases in total revenue are observed more frequently up to the most recent decade, reaching as high as 27.6 per cent in the early to late 2000s.

Table 4: Trends in total revenue across observed periods

Period	Total revenue						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
	Row percentage						
Late 1980s - early 1990s	11.2	6.1	10.7	7.7	5.1	8.7	50.5
Early 1990s - late 1990s	11.2	7.7	11.7	12.8	12.2	9.7	34.7
Late 1990s - early 2000s	9.2	11.2	12.3	18.9	10.2	16.3	21.9
Early 2000s - late 2000s	3.1	5.6	9.7	19.9	18.9	27.6	15.3
Late 2000s - early 2010s	12.2	7.1	18.9	17.4	12.2	18.9	13.3
Early 2010s - late 2010s	16.3	3.1	13.3	21.9	13.3	13.3	18.9

Note: Data availability differs regarding whether statistics are available for one specific period, as in Table 1, or for two periods for comparison, as in Tables 3 and 4. Hence the difference in statistics presented in Table 1 compared with those presented in Tables 3 and 4.

Source: authors' calculations based on data from UNU-WIDER (2021).

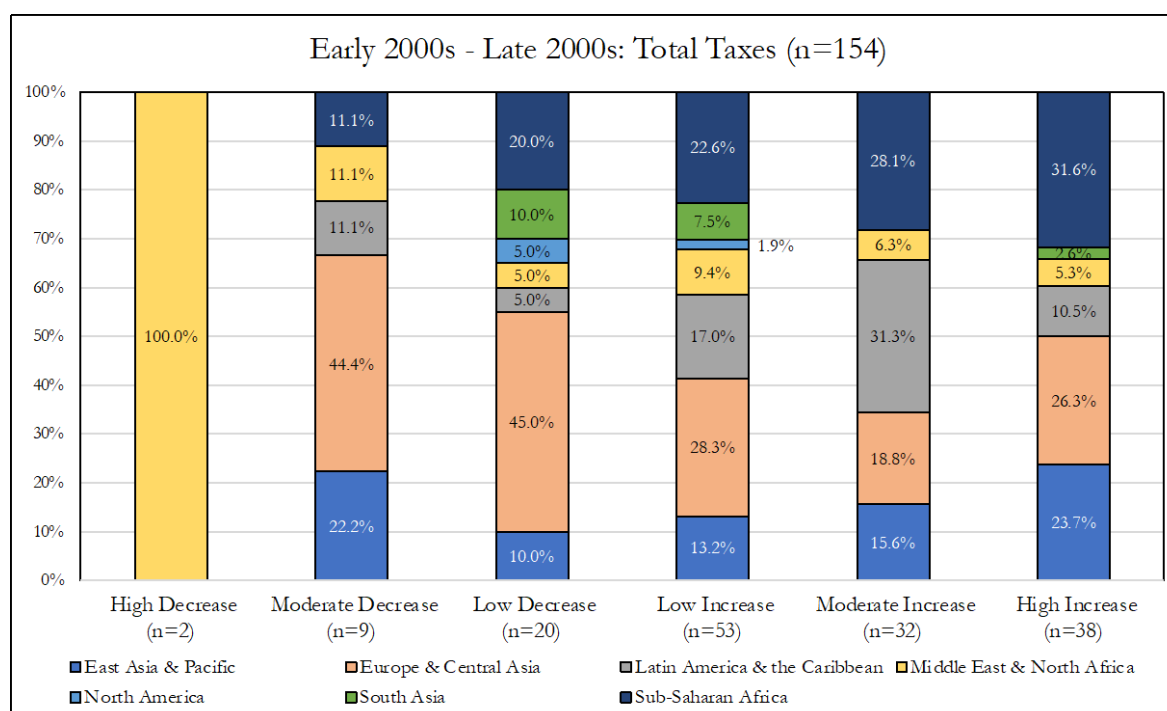
Another similarity is the shift towards increasing trends in the early to late 2000s. Generally, the number of countries with increasing trends in total revenue consistently rose between the late 1980s to early 1990s period (21 per cent) and the early to late 2000s period (66 per cent). Again, the largest share of countries experiencing high increases can be observed for the early to late 2000s. It is also noteworthy that trends are more uniformly distributed during the late 1990s and early 2000s, meaning that there was a greater variation in total revenue trends in that period. In the next section, we turn to a comparison of how trend levels and directions vary across regions.

⁷ However, in the late 1980s to early 1990s, we observe total revenue data for only around half of the 196 countries.

5.2 Regional comparisons

When we look more closely at the trends presented above, notable differences emerge across regions. As we have observed, there is a shift towards increases in both tax and revenue collection in the early to late 2000s. For the sake of brevity, we focus on this and the following periods, to understand better whether this was a global trend or concentrated in particular regions.⁸ The following exploration shows that this trend was not observed in all regions uniformly or to the same extent. Figures 1 to 3 show a breakdown of trend levels by region in total tax collection for the three periods of interest. In this and subsequent sections, we restrict the sample to cases where we had an observation for both tax and revenue statistics in each period. This generally restricts our sample to a total of 154 countries in the early to late 2000s, and 143 countries in the early to late 2010s.

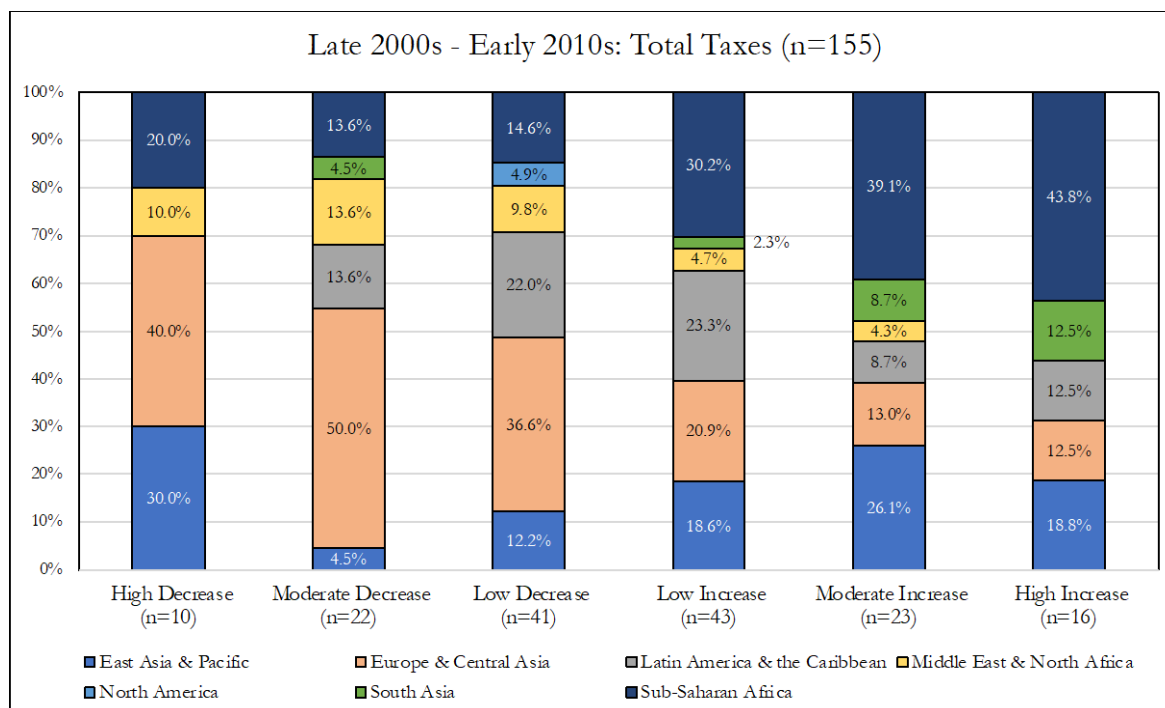
Figure 1: Regional trend patterns, total tax, early to late 2000s



Source: authors' illustration based on data from UNU-WIDER (2021).

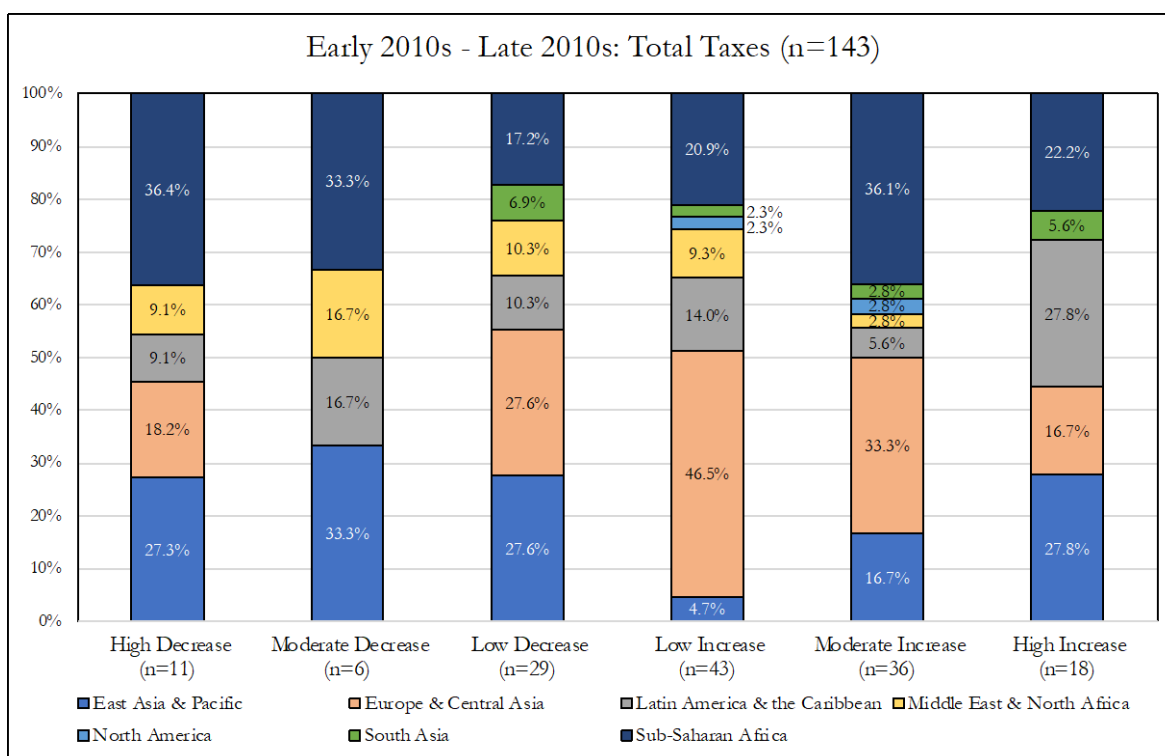
⁸ We have illustrated above that trend patterns are largely mirrored across both total tax and total revenue statistics, but we focus on total tax in this section. Appendix D contains the corresponding charts for total revenue.

Figure 2: Regional trend patterns, total tax, late 2000s to early 2010s



Source: authors' illustration based on data from UNU-WIDER (2021).

Figure 3: Regional trend patterns, total tax, early to late 2010s



Source: authors' illustration based on data from UNU-WIDER (2021).

SSA represents roughly one third of the countries (12 out of 38 countries) that displayed high increases in total tax revenue in the early to late 2000s (Figure 1). Correspondingly, this period is also characterized by a comparatively lower representation of SSA countries among those with low or moderate decreases in total tax revenue: seven out of 20 countries with low decreases are in the SSA region, whereas only two SSA countries, Burundi and Zambia, feature among the nine countries with moderate decreases. In the late 2000s to early 2010s (Figure 2), the total number of countries with high increases more than halved (from 38 to 16 in total). This global reduction is also reflected in SSA's representation among high increasers, albeit to a lesser extent. Here, seven SSA countries (out of 16 countries globally) show high increases in their tax-to-GDP ratio—for example, Chad, Mozambique, and Seychelles. The same dynamic—a global decline in total numbers and to a lesser extent in SSA—also applies to low and moderate increases during the late 2000s to early 2010s.

When we look at the most recent period, the early to late 2010s (Figure 3), there are again small increases in the number of countries globally with increasing tax ratios compared with the preceding period. However, this applies less to SSA countries. Instead, the region's representation among high increasers is halved, while globally the number of countries in this category increases by two. Only a total of four SSA countries remain among the high increasers, namely, the Democratic Republic of the Congo, Mauritania, Rwanda, and Uganda. The region's representation also slightly declines among low and moderate decreasing trends during the most recent period, with rising representation among countries with high decreases in their tax-to-GDP ratio (from only Eswatini and Lesotho in the late 2000s to early 2010s, to five in the most recent period: Angola, Botswana, Lesotho, Sao Tome and Principe, and Zimbabwe). In sum, we suggest that SSA countries were driving a noteworthy share of the trend towards increasing tax ratios in the early to late 2000s. These trend patterns were also more lasting in SSA: the global reduction in high increasers applied to a lower extent to SSA countries. Yet we see in the most recent period that SSA is more evenly represented across all six categories than in any of the previous periods considered: one third or more of the countries showing a high or moderate decrease in the most recent period are in SSA.

Another interesting region to consider is Latin American and the Caribbean (LAC). During the early to late 2000s, and similarly to SSA countries, the region constitutes roughly one third of those with moderate increases. This amounts to a total of 12 LAC countries out of 32 globally, including Brazil, Nicaragua, and Peru. In the following period, on a global level, the number of countries with moderate increases then declines to 23. This is reflected in the LAC region, where only four countries show moderate increases, with Nicaragua being the only one to sustain the trend.

On the other hand, during the same period, i.e. the late 2000s to early 2010s, globally the number of countries with low decreases doubled from 20 to 41. LAC's relative share in this more than quadrupled from five to 22 per cent, and rose from three to nine countries. Thus, LAC countries were a significant contributor to this global shift. Lastly, during the most recent period (Figure 3), LAC increased its representation among high increasers from 13 to 28 per cent (and from two to five countries), whereas globally the number of countries only rose by two. Overall, LAC represented a notable share of countries with a moderate increase during the early to late 2000s, which in the following period shifted instead towards low increase or low decrease. Most recently, LAC countries represented a comparatively greater share amongst high increasers, including Bahamas, Belize, Grenada, Honduras, and Mexico.

It is noteworthy that countries in Europe and Central Asia (ECA) follow a slightly different path. The region's representation among categories of decreasing trends is relatively high in comparison with other regions during the earlier periods discussed here. For instance, ECA countries represent 44 per cent and 50 per cent of all countries with moderate decreases in the early to late 2000s and

the late 2000s to early 2010s respectively. This is due to a doubling in the number of ECA countries with moderate decreases, from five to 11, in line with the global trend (the total number of countries more than doubles, from nine to 22). During the late 2000s and early 2010s, ECA also features among countries with high decreases in their tax-to-GDP ratio (40 per cent), including e.g., Azerbaijan, Belarus, Iceland, and Lithuania. Nonetheless, during the same period, 11 ECA countries (about 20 per cent) feature among those with low increases. This share then more than doubles during the most recent period (the early to late 2010s). While globally the number of countries remains constant in this category, ECA now represents 47 per cent of low increasers. Similarly, the region almost triples its representation among moderate increasers when we compare the latest and the preceding periods: from 13 to 33 per cent, and from a total of three (Armenia, Italy, and Kyrgyzstan) to 14 countries—compared with a global rise from roughly 15 to 25 per cent.

We also observe that countries in East Asia and the Pacific (EAP) display an increased share among the high increasers in the most recent period, at 28 per cent. On the other hand, the representation of SSA and South Asian countries halves, from 44 to 22 per cent and from 13 to six per cent respectively. Overall, for high increasers, we observe a geographical shift: from SSA and South Asia in the late 2000s to early 2010s, to EAP and Latin America in the most recent period.

If we look at the other end of the scale, ECA notably declines its share among countries with high decreases, from 40 to 18 per cent.⁹ Thus, while other regions (e.g., EAP and MENA) keep their shares fairly constant, we can see a slight shift in the decreasing categories towards LAC and SSA, away from ECA. More broadly, we can also see a higher representation of ECA countries among countries with increasing tax-to-GDP ratios.

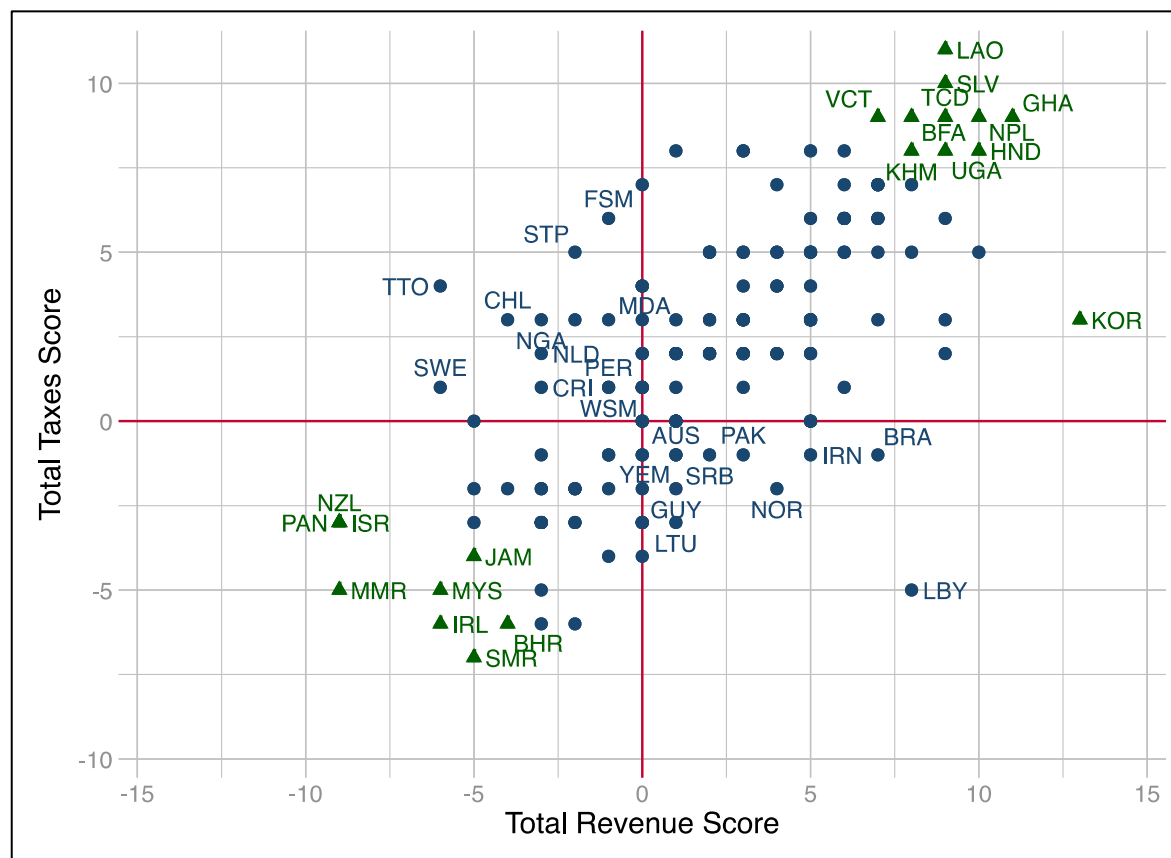
Global trend patterns do not apply uniformly across different geographical regions. This indicates a significant heterogeneity not only in performance, system design, and reform patterns, but also in the extent to which—and how—tax and revenue collection may respond to global economic trends. Based on our aggregate analysis, we refrain from drawing specific conclusions. However, by focusing on comparisons of the period of the financial crisis and thereafter, we highlight a point worth further exploration. While global economic trends have direct and indirect effects on different economies and economic regions, there may also be varying capacities to accommodate such changes and to ensure sustainable financing mechanisms going forwards. The detected differences in patterns across regions call for further exploration and research to understand this.

5.3 Trend intensity

In this section, we examine the intensity of the trends outlined in the previous sections. Intensity is depicted by calculating the total score for each country, which constitutes the summation of scores for our six study periods. We again restrict the analysis to observations where we observe a data point for both tax and revenue in each period. The score for each observation ranges from minus three (high decrease) to plus three (high increase). Accordingly, the total potential score for any one country can range from -18 to 18. In Figure 4, we plot the cumulative total revenue and total tax scores per country.

⁹ A breakdown within the region also shows that the share of countries with increasing trends recovers to a combined share of 73 per cent (see Appendices B and C).

Figure 4: Cumulative total revenue and total tax scores, per country



Source: authors' illustration based on data from UNU-WIDER (2021).

We expect, *ex ante*, to observe a positive relationship between the intensities in the variations of total revenues and total taxes. That is to say, we expect the dynamics of total taxes and total revenues to move in the same direction. This assumption is based on the facts that (i) for the vast majority of countries, taxes constitute the main driver of total government revenues, and (ii) our variables are expressed exclusive of both social contributions and grants, and thus total revenues differ from total taxes only due to the inclusion of non-tax revenue. Thus, a growth in total taxes and a decline in total revenue over our time period would signify a change in the composition of government revenues (i.e. tax revenue is growing while non-tax revenue is declining, or vice versa). To highlight some cases where this occurs, we label only those points in the bottom-right or top-left quadrants in Figure 4. We also highlight the countries whose total tax or revenue scores lie in the top five per cent at either end of the scale (increasing or decreasing).

Taking first those countries where revenue grows at a positive rate while tax declines (bottom-right quadrant of Figure 4), we see that Libya stands out, showing a decline in total taxes of minus five with a commensurate increase in total revenues of plus seven. This is driven by high increases in non-tax revenues between the early 1990s and late 2000s and falling tax revenues over the same period. In Libya, the vast majority of the increase in non-tax revenues comes from natural resources. For reference, in the early 1990s, non-tax revenues averaged 21.4 per cent of GDP, while by the late 2000s they averaged 65.8 per cent of GDP. Tax revenues in the same period fell from an average of 6.5 per cent of GDP to 3.7 per cent of GDP. Other cases of note include Iran and Brazil, where tax revenue remains more or less stable, declining only slightly (cumulative score of minus one) over our periods of observation. Non-tax revenues, on the other hand, show steady increases (with cumulative scores of plus five and plus seven respectively). At the other end of the scale we see, for example, Trinidad and Tobago, where total revenues decline over the time span

of our study (cumulative score of minus six), while total taxes grow modestly (plus four). Again, we see that the decline in non-tax revenues was driven by a fall in collections of natural resource revenues, while the modest increase in tax revenues was largely driven by improvements in income tax collection (UNU-WIDER 2021).

Turning to the countries where increases in both tax and revenue collection are greatest, we see that Burkina Faso, Chad, El Salvador, Ghana, Honduras, Lao People's Democratic Republic, Nepal, and the Republic of Korea stand out; at the other end of the scale, Ireland, Israel, Myanmar, New Zealand, Panama, and San Marino display the poorest performance in terms of both indicators. In New Zealand, much of the decline in taxes probably stems from cuts to personal income tax (PIT) rates between 2008 and 2011, when the rate schedule was gradually revised from between 15 and 39 per cent to between 10.5 and 33 per cent. PIT as a percentage of GDP in New Zealand subsequently fell from 14.7 per cent in 2007 to just 11.1 per cent in 2011 (UNU-WIDER 2021). Similar reductions in PIT receipts were seen in the late 1980s—when PIT as a percentage of GDP stood at around 20 per cent on average—and the early 1990s, when it fell to around 16 per cent on average.¹⁰ In Myanmar, the majority of the observed decline in tax and revenue occurred during the early 1990s to mid-2000s (for an overview of the manifold reasons, see e.g., Asian Development Bank 2012). In Ireland, meanwhile, much of the decrease is explained by the fact that in 2015 Ireland's GDP growth was estimated to be over 25 per cent, due to a revision in how overseas companies were accounted for (OECD 2016).

5.4 Sustained trends

This section focuses on the question of whether the trends have been sustained—and intense—periods of increase in tax and revenue collection. As a starting point, we again focus on the period of the early to late 2000s, which is where we observe the largest number of countries showing moderate or high increases in their tax-to-GDP. Following on from this period, we enquire whether the moderate or high increases witnessed have been sustained, and to what extent.

Figure 5 shows those countries for which we have complete data for the most recent three periods and in which we observe a high increase in tax-to-GDP ratios in the early to late 2000s. Figure 6 shows the same for countries where we observe a moderate increase in tax-to-GDP. These figures, when viewed side by side, reveal a number of interesting findings. Firstly, we see that of the countries depicted in Figure 5, just 25 per cent (eight out of 32) continued to increase their tax revenues over the subsequent two periods, while the same metric stands at 41 per cent in Figure 6. Similarly, if we examine the intensity of trends over the subsequent periods, we see that ten of the 32 countries ended with a score above three (which we assign due to the high increase observed in the early to late 2000s). Among countries experiencing moderate increases in the early to late 2000s, however, 53 per cent (17 out of 32) ended the most recent period with a score above two. On average, the score obtained across these three periods for our samples in Figures 5 and 6 are three and 3.2 respectively.

We can thus tentatively conclude that in countries where a high increase in tax collection was observed in the early to late 2000s, the performance in subsequent periods was somewhat poorer on average in terms of sustained growth in revenue collection. However, in countries where we witness a moderate increase in the same period, the subsequent performance was somewhat better.

¹⁰ Statutory PIT rates were not available for this period.

Figure 5: Sustained trends in total tax of countries displaying a high increase in the early to late 2000s

Country	Early 2000s - Late 2000s	Late 2000s - Early 2010s	Early 2010s - Late 2010s	Total Score (+3,..., +9)
Belize	High increase	Moderate increase	High increase	8
Malawi	High increase	High increase	Moderate increase	8
Tajikistan	High increase	High increase	Moderate increase	8
El Salvador	High increase	Low increase	Moderate increase	6
Gambia, The	High increase	Low increase	Moderate increase	6
Kyrgyzstan	High increase	Moderate increase	Low increase	6
Ukraine	High increase	Low increase	Moderate increase	6
Niger	High increase	Low increase	Low increase	5
Solomon Islands	High increase	High increase	Low decrease	5
Namibia	High increase	Moderate increase	Low decrease	4
Cape Verde	High increase	Moderate decrease	Moderate increase	3
Congo, DR	High increase	Moderate increase	Moderate decrease	3
Dominica	High increase	Low decrease	Low increase	3
Hong Kong, China	High increase	Low increase	Low decrease	3
Liberia	High increase	Low increase	Low decrease	3
Macao, China	High increase	High increase	High decrease	3
Moldova	High increase	Low decrease	Low increase	3
Tonga	High increase	High decrease	High increase	3
Azerbaijan	High increase	High decrease	Moderate increase	2
Bosnia and Herzegovina	High increase	Moderate decrease	Low increase	2
Cyprus	High increase	Moderate decrease	Low increase	2
Eswatini	High increase	High decrease	Moderate increase	2
Mongolia	High increase	Moderate increase	High decrease	2
Montenegro	High increase	Moderate decrease	Low increase	2
Sao Tome and Principe	High increase	Moderate increase	High decrease	2
Malta	High increase	Low decrease	Low decrease	1
Papua New Guinea	High increase	Low increase	High decrease	1
Morocco	High increase	Low decrease	Moderate decrease	0
Vietnam	High increase	Low decrease	Moderate decrease	0
Jordan	High increase	High decrease	Low decrease	-1
Angola	High increase	Moderate decrease	High decrease	-2
Lesotho	High increase	High decrease	High decrease	-3

Source: authors' illustration based on data from UNU-WIDER (2021).

Figure 6: Sustained trends in total tax of countries displaying a moderate increase in the early to late 2000s

Country	Early 2000s - Late 2000s	Late 2000s - Early 2010s	Early 2010s - Late 2010s	Total Score (+2,..., +8)
Burkina Faso	Moderate increase	High increase	Moderate increase	7
Cambodia	Moderate increase	Moderate increase	High increase	7
Mozambique	Moderate increase	High increase	Moderate increase	7
Bahamas, The	Moderate increase	Low Increase	High increase	6
Guinea	Moderate increase	High increase	Low Increase	6
Nicaragua	Moderate increase	Moderate increase	Moderate increase	6
Togo	Moderate increase	Moderate increase	Moderate increase	6
Fiji	Moderate increase	Low Increase	Moderate increase	5
Ghana	Moderate increase	Low Increase	Moderate increase	5
St Vincent & the Grenadines	Moderate increase	Low Increase	Moderate increase	5
Haiti	Moderate increase	Low Increase	Low Increase	4
Honduras	Moderate increase	Low decrease	High increase	4
Lao, PDR	Moderate increase	High increase	Low decrease	4
Senegal	Moderate increase	Low Increase	Low Increase	4
Tanzania	Moderate increase	Low Increase	Low Increase	4
Guyana	Moderate increase	Low decrease	Moderate increase	3
South Africa	Moderate increase	Low decrease	Moderate increase	3
Albania	Moderate increase	Low decrease	Low Increase	2
Bulgaria	Moderate increase	Moderate decrease	Moderate increase	2
Dominican Republic	Moderate increase	Low decrease	Low Increase	2
Iceland	Moderate increase	High decrease	High increase	2
Mauritius	Moderate increase	Moderate increase	Moderate decrease	2
Thailand	Moderate increase	Low Increase	Low decrease	2
Egypt	Moderate increase	Moderate decrease	Low Increase	1
Marshall Islands	Moderate increase	Moderate decrease	Low Increase	1
Peru	Moderate increase	Low Increase	Moderate decrease	1
Poland	Moderate increase	Moderate decrease	Low Increase	1
Saint Kitts and Nevis	Moderate increase	Moderate decrease	Low Increase	1
Lebanon	Moderate increase	Low decrease	Low decrease	0
Vanuatu	Moderate increase	Low decrease	Low decrease	0
Brazil	Moderate increase	Moderate decrease	Low decrease	-1
Russian Federation	Moderate increase	Moderate decrease	Low decrease	-1

Source: authors' illustration based on data from UNU-WIDER (2021).

If we turn to specific countries, Belize, Malawi, and Tajikistan stand out as having the best cumulative performance over the three periods considered. In Belize, this can be attributed to, *inter alia*, a base-broadening for goods and services taxes through the removal of a number of tax expenditures, increases in excise duties on fuel and alcohol, and increases in some import duties (IMF 2018a).¹¹ Belize's tax-to-GDP ratio increased from an average of 19.3 per cent in the early 2000s to 26.6 per cent by the late 2010s. In Malawi, high growth in the late 2000s (averaging around 8.3 per cent between 2007 and 2010 (IMF 2012)), coupled with increased taxes on fuel and reforms to revenue administration (including the adoption of electronic fiscal devices, improved audit capacity, etc.) built on gains seen earlier in the decade, starting with the establishment of an independent revenue authority in 2000. In Burkina Faso, meanwhile, gains in tax revenue performance were also realized mostly through systematic policy and administrative reforms. For example, in 2004 customs processes were digitized and a large taxpayer division established, while later reforms included the introduction of taxpayer identification numbers, invoicing standards to reduce VAT fraud, efforts to expand the tax base of medium-sized enterprises, and the removal of favourable tax provisions for mining companies (IMF 2005). Tajikistan also saw extensive reform of the tax system, including the introduction of a simplified tax code in 2013 (IMF 2015), which reduced the number of taxes from 14 to ten, and a programme of tax administration reforms between 2010 and 2019 (Khwaja et al. 2020).

Turning to total revenue, we see that these patterns are largely repeated. Among countries that experienced a high increase during the early to late 2000s (and for which we have data in both subsequent periods) (Figure 7), just 11 out of 37 experienced positive growth in both subsequent periods, while 15 out of 37 ended the late 2010s having experienced at least some further net growth in revenues (i.e. a score higher than three for these periods). Seventeen out of 37 countries ended the three periods in a worse position than they had been following the initial high growth in the early to late 2000s. However, for countries experiencing a moderate increase in revenue collection in the early to late 2000s (Figure 8), we see that over half (16 out of 30) experienced positive growth in both subsequent periods, while two thirds (20 out of 30) experienced at least some further net growth in revenues. On average, countries experiencing high growth in revenues in the early to late 2000s ended the three periods with a score of 2.65, while those experiencing moderate growth in revenues in the early to late 2000s ended with an average score of 3.83. These findings again suggest that in countries where moderate growth in revenues was experienced in the early to late 2000s, (i) this was more likely to be sustained, and (ii) these countries on average ended up in better positions (with respect to the revenue-to-GDP ratio) than those experiencing high growth in the early to late 2000s.

The countries whose revenue positions continued to improve following high increases in the early to late 2000s notably include Mozambique, which experienced high increases in tax collection for both of the subsequent periods we considered. While there were large windfall capital gains taxes in 2013, 2017, and 2019 (estimated at 5.8 per cent of GDP in the latter case) (IMF 2020), the trend across both direct and indirect taxation—including the elimination of VAT exemptions on certain goods such as basic foodstuffs, which was estimated to raise around 1.9 per cent of GDP (IMF (2018b)—and non-tax revenues in Mozambique was largely positive. Overall, total government revenue in Mozambique rose from an average of 9.1 per cent in the early 2000s to an average of 24.7 per cent in the late 2010s.

¹¹ Gains in terms of tax-to-GDP were fairly evenly spread between direct and indirect taxation.

Figure 7: Sustained trends in total revenue of countries displaying a high increase in the early to late 2000s

Country	Early 2000s - Late 2000s	Late 2000s - Early 2010s	Early 2010s - Late 2010s	Total Score (+3,..., +9)
Mozambique	High increase	High increase	High increase	9
Malawi	High increase	High increase	Moderate increase	8
Belize	High increase	Moderate increase	Moderate increase	7
Dominica	High increase	Low increase	High increase	7
Hong Kong, China	High increase	High increase	Low increase	7
Kyrgyzstan	High increase	High increase	Low increase	7
Solomon Islands	High increase	High increase	Low increase	7
South Africa	High increase	Low increase	High increase	7
Gambia, The	High increase	Low increase	Moderate increase	6
Korea, Republic of	High increase	Low increase	Moderate increase	6
Cape Verde	High increase	Low decrease	High increase	5
El Salvador	High increase	Low increase	Low increase	5
Liberia	High increase	High increase	Low decrease	5
Niger	High increase	Low increase	Low increase	5
Namibia	High increase	Moderate increase	Low decrease	4
Azerbaijan	High increase	High increase	High decrease	3
Bosnia and Herzegovina	High increase	Low increase	Low decrease	3
Congo, DR	High increase	High increase	High decrease	3
Kuwait	High increase	High increase	High decrease	3
Macao, China	High increase	High increase	High decrease	3
Djibouti	High increase	Moderate decrease	Low increase	2
Eswatini	High increase	High decrease	Moderate increase	2
Iceland	High increase	High decrease	Moderate increase	2
Jordan	High increase	High decrease	Low increase	1
Malta	High increase	Low decrease	Low decrease	1
Montenegro	High increase	High decrease	Low increase	1
Chile	High increase	Moderate decrease	Low decrease	0
Morocco	High increase	Low decrease	Moderate decrease	0
Angola	High increase	Low decrease	High decrease	-1
Moldova	High increase	High decrease	Low decrease	-1
Ukraine	High increase	Low decrease	High decrease	-1
Congo, Rep.	High increase	High decrease	High decrease	-3
Equatorial Guinea	High increase	High decrease	High decrease	-3
Lesotho	High increase	High decrease	High decrease	-3
Russian Federation	High increase	High decrease	High decrease	-3
Sao Tome and Principe	High increase	High decrease	High decrease	-3
Sudan	High increase	High decrease	High decrease	-3

Source: authors' illustration based on data from UNU-WIDER (2021).

Figure 8: Sustained trends in total revenue of countries displaying a moderate increase in the early to late 2000s

Country	Early 2000s - Late 2000s	Late 2000s - Early 2010s	Early 2010s - Late 2010s	Total Score (+2,..., +8)
Nepal	Moderate increase	High increase	High increase	8
Brazil	Moderate increase	High increase	Moderate increase	7
Burkina Faso	Moderate increase	High increase	Moderate increase	7
Ghana	Moderate increase	High increase	Moderate increase	7
Samoa	Moderate increase	Moderate increase	High increase	7
Bahamas, The	Moderate increase	Low increase	High increase	6
Guinea	Moderate increase	High increase	Low increase	6
Honduras	Moderate increase	Low increase	High increase	6
Japan	Moderate increase	Low increase	High increase	6
Latvia	Moderate increase	Moderate increase	Low increase	5
Senegal	Moderate increase	Low increase	Moderate increase	5
Tanzania	Moderate increase	Low increase	Moderate increase	5
Togo	Moderate increase	Moderate increase	Low increase	5
Cote d'Ivoire	Moderate increase	Low increase	Low increase	4
Estonia	Moderate increase	Low increase	Low increase	4
Thailand	Moderate increase	Low increase	Low increase	4
Vanuatu	Moderate increase	Low decrease	High increase	4
Albania	Moderate increase	Low decrease	Moderate increase	3
Madagascar	Moderate increase	Low decrease	Moderate increase	3
Portugal	Moderate increase	Moderate increase	Low decrease	3
Dominican Republic	Moderate increase	Moderate decrease	Moderate increase	2
Mongolia	Moderate increase	High increase	High decrease	2
Serbia	Moderate increase	High decrease	High increase	2
Tonga	Moderate increase	High decrease	High increase	2
United Kingdom	Moderate increase	Low decrease	Low increase	2
Norway	Moderate increase	Moderate decrease	Low increase	1
Cameroon	Moderate increase	Low decrease	Low decrease	0
Lebanon	Moderate increase	Low decrease	Low decrease	0
Vietnam	Moderate increase	Low decrease	Low decrease	0
New Zealand	Moderate increase	Moderate decrease	Low decrease	-1

Source: authors' illustration based on data from UNU-WIDER (2021).

We see that the countries towards the bottom of Figure 7—whose revenue positions subsequently worsened following the bump in the early to late 2000s—include a number with large extractive sectors, such as Angola, the Democratic Republic of the Congo, Equatorial Guinea, and Sudan. To the extent that the oil price crash of 2014 is reflected in the late 2000s to early 2010s period, this might explain some of the high decreases noted in this period. Oil (and other commodity) prices in the final period were subsequently much lower. Notwithstanding the end of the commodities super-cycle around 2014, it is not uncommon for countries which are fiscally dependent on revenues from natural resources to experience more frequent swings in revenue on a year-to-year basis. Given that many have, *ceteris paribus*, higher revenue-to-GDP ratios than their

neighbours or comparators, our threshold for a high increase or decrease of +/-2.5 pp is more likely to be met more frequently.¹²

6 Discussion and conclusion

In this study, we have utilized the UNU-WIDER GRD in order to gain an understanding of the dynamics of DRM—in terms of direction, intensity, and continuity—between the 1980s and 2019.

We found notable shifts in the patterns of total tax and revenue trends across our period of study. In particular, the early to late 2000s saw a strong shift towards moderate or high increases in tax and revenue ratios. While the fallout of the global financial crisis meant that for many countries these gains were not sustained, a significant number of developing countries appeared more able to weather the storm and sustain the increases in tax and revenue ratios. We also see some evidence in countries that are more fiscally dependent on revenues from hydrocarbons or minerals that revenue performance was more volatile and tended to regress following the end of the commodities super-cycle in the mid-2010s. These countries were also, *ceteris paribus*, more likely to display shifts in the composition of revenues between tax and non-tax.

Among the countries that witnessed moderate or high growth in revenues in the early to late 2000s, we found tentative evidence that moderate growth in revenues proved more sustainable. On average, these countries were in better tax or revenue positions by the late 2010s compared with the group of countries experiencing high growth. Further research might focus on the question of whether moderate—as opposed to rapid—improvements in DRM outcomes prove to be more sustainable in the longer term.

While methods for aggregating complex information and the resulting classifications are subject to predefined and ultimately arbitrary thresholds, our analysis in this paper allows important insights to be highlighted. These include a general overview of trend patterns on a global basis and hence across developed and developing countries. In addition, a high-level overview as presented in this study enables the identification, and calls for in-depth exploration, of periods, regions, or countries of interest.

To return to our opening argument in this paper—that a sustainable, global financing architecture is required to meet countries' spending needs—our analysis has shown that despite significant progress in many countries, improvements to DRM outcomes appear to be uneven, volatile, or unsustainable for some. On top of that, recent estimates from the IMF suggest that the COVID-19 pandemic will cost countries an average of two per cent of GDP in revenue (IMF 2019, 2021). Thus, it is likely that in some countries, the effort required to overcome this latest hurdle will provide further impetus for improvement, while for those already struggling, it may prove a bridge too far.

¹² We see that Lesotho performs quite poorly in more recent periods. However, this merely reflects the way in which South African Customs Union receipts (i) are recorded in the IMF's Government Finance Statistics and (ii) were allocated among member states during this period. The Government Finance Statistics include all customs union receipts from the South African Customs Union (a large part of which comprises a development grant) as trade taxes, meaning that in the late 2000s period Lesotho is recorded as having collected an average of 34 per cent of GDP in trade taxes. This figure falls to just 5.51 per cent by the late 2010s.

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Appendix A General trends

Table A1: Trend patterns in total tax (without threshold)

Period	Total tax (row percentage)		
	Decrease	Increase	No data
Late 1980s - early 1990s	33.7	29.6	36.7
Early 1990s - late 1990s	34.2	42.4	23.5
Late 1990s - early 2000s	36.7	29.0	14.4
Early 2000s - late 2000s	20.9	68.5	10.7
Late 2000s - early 2010s	39.8	48.0	12.2
Early 2010s - late 2010s	27.0	54.6	18.4

Source: authors' calculations based on data from UNU-WIDER (2021).

Table A2: Trends patterns in total revenue (without threshold)

Period	Total revenue (row percentage)		
	Decrease	Increase	No data
Late 1980s - early 1990s	28.1	21.4	50.5
Early 1990s - late 1990s	30.6	34.7	34.7
Late 1990s - early 2000s	32.7	45.4	21.9
Early 2000s - late 2000s	18.4	66.3	15.3
Late 2000s - early 2010s	38.3	48.5	13.3
Early 2010s - late 2010s	32.7	48.5	18.9

Source: authors' calculations based on data from UNU-WIDER (2021).

Appendix B Regional trends in total tax

Table B1: Trend patterns in total tax in EAP

Total tax	Row percentage						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
Late 1980s - early 1990s	9.7	6.5	19.4	9.7	16.1	6.5	32.7
Early 1990 - late 1990s	12.9	19.5	19.4	6.5	12.9	6.5	22.6
Late 1990 - early 2000s	3.2	12.9	22.6	25.8	9.7	12.9	12.9
Early 2000 - late 2000s	0.0	6.5	6.5	22.6	19.4	32.3	12.9
Late 2000 - early 2010s	9.7	6.5	16.1	25.8	19.4	9.7	12.9
Early 2010 - late 2010s	9.7	6.5	25.8	9.7	19.4	16.1	12.9

Source: authors' calculations based on data from UNU-WIDER (2021).

Table B2: Trend patterns in total tax in ECA

Total tax	Row percentage						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
Late 1980s - early 1990s	9.8	7.8	13.7	2.0	13.7	2.0	51.0
Early 1990s - late 1990s	7.8	11.8	3.9	7.8	19.6	9.8	39.2
Late 1990s - early 2000s	13.7	7.8	17.7	23.5	15.7	7.8	13.7
Early 2000s - late 2000s	0.0	9.8	21.6	29.4	11.8	21.6	5.9
Late 2000s - early 2010s	7.8	21.6	31.4	21.6	5.9	5.9	5.9
Early 2010s - late 2010s	3.9	2.0	15.7	39.2	27.5	5.9	5.9

Source: UNU WIDER GRD, Version 2021.

Table B3: Trend patterns in total tax in LAC

Total tax	Row percentage						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
Late 1980s - early 1990s	5.6	11.1	5.6	16.7	11.1	5.6	44.4
Early 1990s - late 1990s	0.0	5.6	27.8	25.0	19.4	11.1	11.1
Late 1990s - early 2000s	0.0	11.1	11.1	33.3	25.0	8.3	11.1
Early 2000s - late 2000s	0.0	2.8	8.3	27.8	33.3	19.4	8.3
Late 2000s - early 2010s	2.8	8.3	25.0	38.9	11.1	5.	8.3
Early 2010s - late 2010s	2.8	8.3	13.9	22.2	16.7	13.9	22.2

Source: authors' calculations based on data from UNU-WIDER (2021).

Table B4: Trend patterns in total tax in MENA

Total tax	Row percentage						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
Late 1980s - early 1990s	5.0	5.0	20.0	0.0	5.0	10.0	55.0
Early 1990s - late 1990s	0.0	0.0	20.0	30.0	10.0	5.0	35.0
Late 1990s - early 2000s	10.0	10.0	35.0	10.0	5.0	0.0	30.0
Early 2000s - late 2000s	10.0	5.0	5.0	30.0	15.0	10.0	25.0
Late 2000s - early 2010s	5.0	20.0	25.0	10.0	5.0	0.0	35.0
Early 2010s - late 2010s	5.0	5.0	15.0	25.0	5.0	0.0	45.0

Source: authors' calculations based on data from UNU-WIDER (2021).

Table B5: Trend patterns in total tax in North America

Total tax	Row percentage						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
Late 1980s - early 1990s	0.0	0.0	0.0	50.0	50.0	0.0	0.0
Early 1990s - late 1990s	0.0	0.0	0.0	50.0	50.0	0.0	0.0
Late 1990s - early 2000s	0.0	100.0	0.0	0.0	0.0	0.0	0.0
Early 2000s - late 2000s	0.0	0.0	50.0	50.0	0.0	0.0	0.0
Late 2000s - early 2010s	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Early 2010s - late 2010s	0.0	0.0	0.0	50.0	50.0	0.0	0.0

Source: authors' calculations based on data from UNU-WIDER (2021).

Table B6: Trend patterns in total tax in South Asia

Total tax	Row percentage						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
Late 1980s - early 1990s	0.0	0.0	50.0	25.0	12.5	0.0	12.5
Early 1990s - late 1990s	0.0	25.0	12.5	25.0	25.0	0.0	12.5
Late 1990s - early 2000s	0.0	12.5	25.0	37.5	12.5	0.0	12.5
Early 2000s - late 2000s	0.0	0.0	25.0	50.0	0.0	12.5	12.5
Late 2000s - early 2010s	0.0	12.5	0.0	12.5	25.0	25.0	25.0
Early 2010s - late 2010s	0.0	0.0	25.0	12.5	12.5	12.5	37.5

Source: authors' calculations based on data from UNU-WIDER (2021).

Table B7: Trend patterns in total tax in SSA

Total tax	Row percentage						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
Late 1980s - early 1990s	14.6	6.3	22.9	25.0	8.3	6.3	16.7
Early 1990s - late 1990s	8.3	8.3	25.0	18.8	18.8	6.3	14.6
Late 1990s - early 2000s	4.2	8.3	20.8	22.9	25.0	6.3	12.5
Early 2000s - late 2000s	4.2	4.2	12.5	25.0	18.8	25.0	10.4
Late 2000s - early 2010s	4.2	6.3	12.5	29.2	22.9	14.6	10.4
Early 2010s - late 2010s	10.4	4.2	12.5	18.8	27.1	8.3	18.8

Source: authors' calculations based on data from UNU-WIDER (2021).

Appendix C Regional trends in total revenue

Table C1: Trend patterns in total revenue in EAP

Total revenue	Row percentage						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
Late 1980s - early 1990s	12.9	3.2	16.1	12.9	6.5	9.7	38.7
Early 1990s - late 1990s	22.6	6.5	6.5	9.7	16.1	6.5	32.3
Late 1990s - early 2000s	16.1	16.1	12.9	3.2	19.4	12.9	19.4
Early 2000s - late 2000s	3.2	0.0	6.5	22.6	25.8	22.6	19.4
Late 2000s - early 2010s	3.2	9.7	22.6	16.1	6.5	32.3	9.7
Early 2010s - late 2010s	19.4	3.2	6.5	16.1	16.1	29.0	9.7

Source: authors' calculations based on data from UNU-WIDER (2021).

Table C2: Trend patterns in total revenue in ECA

Total revenue	Row percentage						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
Late 1980s - early 1990s	3.9	0.0	5.9	0.0	2.0	3.9	84.3
Early 1990s - late 1990s	13.7	0.0	2.0	2.0	5.9	11.8	64.7
Late 1990s - early 2000s	17.7	13.7	5.9	15.7	7.8	13.7	25.5
Early 2000s - late 2000s	2.0	7.8	17.7	21.6	13.7	27.5	9.8
Late 2000s - early 2010s	15.7	7.8	19.6	19.6	17.7	9.8	9.8
Early 2010s - late 2010s	9.8	2.0	27.5	37.3	9.8	5.9	7.8

Source: authors' calculations based on data from UNU-WIDER (2021).

Table C3: Trend patterns in total revenue in LAC

Total revenue	Row percentage						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
Late 1980s - early 1990s	11.1	8.3	5.6	8.3	0.0	11.1	55.6
Early 1990s - late 1990s	2.8	8.3	16.7	13.9	16.7	11.1	30.6
Late 1990s - early 2000s	0.0	2.8	30.6	11.1	11.1	11.1	33.3
Early 2000s - late 2000s	0.0	8.3	5.6	16.7	27.8	19.4	22.2
Late 2000s - early 2010s	2.8	13.9	13.9	22.2	8.3	19.4	19.4
Early 2010s - late 2010s	8.3	5.6	11.1	11.1	11.1	11.1	41.7

Source: authors' calculations based on data from UNU-WIDER (2021).

Table C4: Trend patterns in total revenue in MENA

Total revenue	Row percentage						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
Late 1980s - early 1990s	15.0	15.0	15.0	0.0	5.0	15.0	35.0
Early 1990s - late 1990s	20.0	5.0	25.0	5.0	10.0	5.0	30.0
Late 1990s - early 2000s	5.0	10.0	5.0	10.0	5.0	45.0	20.0
Early 2000s - late 2000s	10.0	10.0	0.0	15.0	5.0	40.0	20.0
Late 2000s - early 2010s	30.0	5.0	20.0	5.0	0.0	20.0	20.0
Early 2010s - late 2010s	30.0	5.0	10.0	20.0	0.0	0.0	35.0

Source: authors' calculations based on data from UNU-WIDER (2021).

Table C5: Trend patterns in total revenue in North America

Total revenue	Row percentage						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
Late 1980s - early 1990s	0.0	0.0	0.0	50.0	0.0	50.0	0.0
Early 1990s - late 1990s	0.0	0.0	0.0	50.0	50.0	0.0	0.0
Late 1990s - early 2000s	0.0	100.0	0.0	0.0	0.0	0.0	0.0
Early 2000s - late 2000s	0.0	0.0	50.0	50.0	0.0	0.0	0.0
Late 2000s - early 2010s	0.0	50.0	50.0	0.0	0.0	0.0	0.0
Early 2010s - late 2010s	0.0	0.0	0.0	50.0	50.0	0.0	0.0

Source: authors' calculations based on data from UNU-WIDER (2021).

Table C6: Trend patterns in total revenue in South Asia

Total revenue	Row percentage						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
Late 1980s - early 1990s	0.0	25.0	12.5	25.0	12.5	25.0	0.0
Early 1990s - late 1990s	12.5	25.0	37.5	12.5	0.0	12.5	12.5
Late 1990s - early 2000s	12.5	0.0	75.0	0.0	0.0	12.5	12.5
Early 2000s - late 2000s	0.0	12.5	50.0	25.0	12.5	0.0	0.0
Late 2000s - early 2010s	0.0	25.0	25.0	25.0	12.5	12.5	0.0
Early 2010s - late 2010s	12.5	12.5	25.0	0.0	25.0	25.0	12.5

Source: authors' calculations based on data from UNU-WIDER (2021).

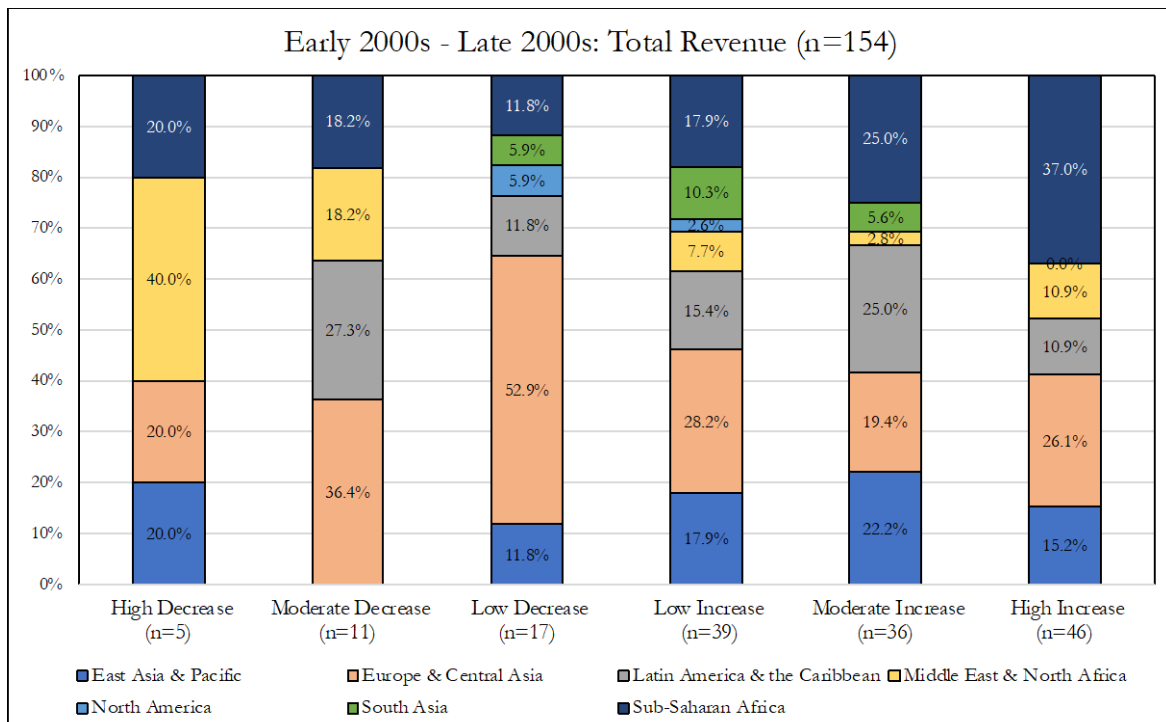
Table C7: Trend patterns in total revenue in SSA

Total revenue	Row percentage						
	High decrease	Moderate decrease	Low decrease	Low increase	Moderate increase	High increase	No data
Late 1980s - early 1990s	18.8	10.4	12.5	12.5	8.3	6.3	31.3
Early 1990s - late 1990s	6.3	16.7	14.6	22.9	12.5	12.5	14.6
Late 1990s - early 2000s	6.3	8.3	10.4	33.3	10.4	16.7	14.6
Early 2000s - late 2000s	4.2	4.2	8.3	14.6	18.8	35.4	14.6
Late 2000s - early 2010s	16.7	0.0	16.7	16.7	16.7	20.8	12.5
Early 2010s - late 2010s	25.0	0.0	6.3	16.7	22.9	16.7	12.5

Source: authors' calculations based on data from UNU-WIDER (2021).

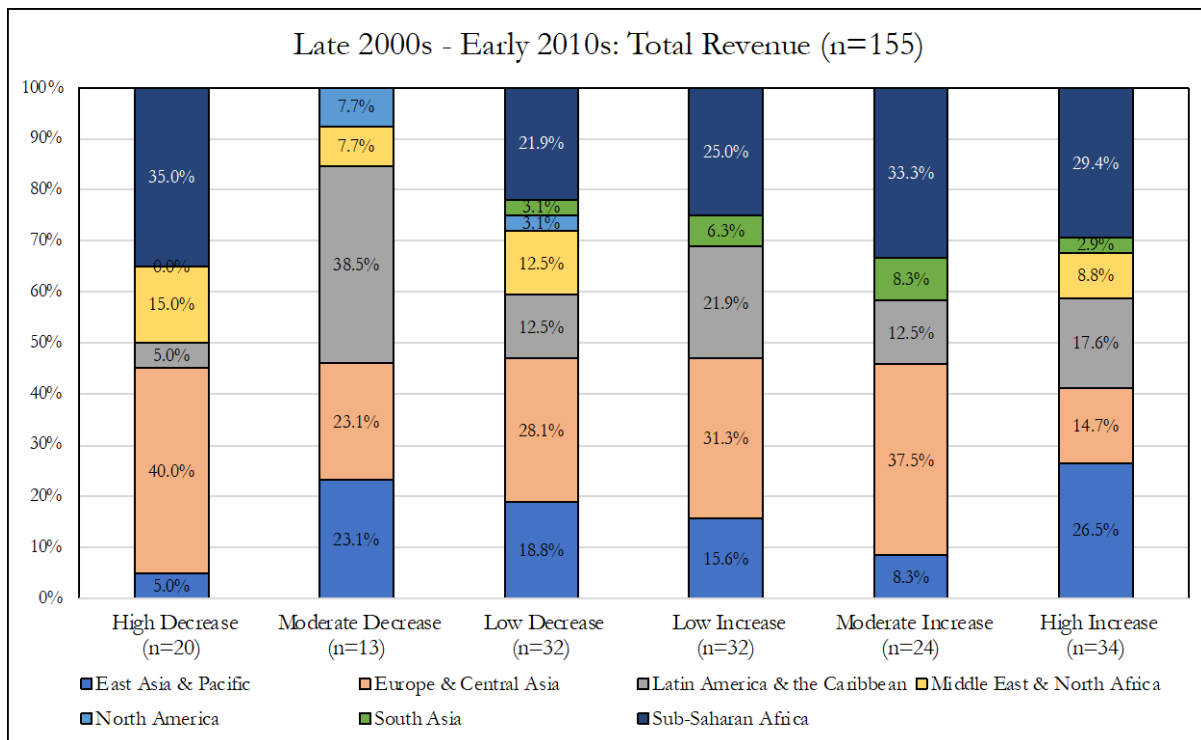
Appendix D Regional trends in total revenue: charts

Figure D1: Regional trend patterns, total revenue, early to late 2000s



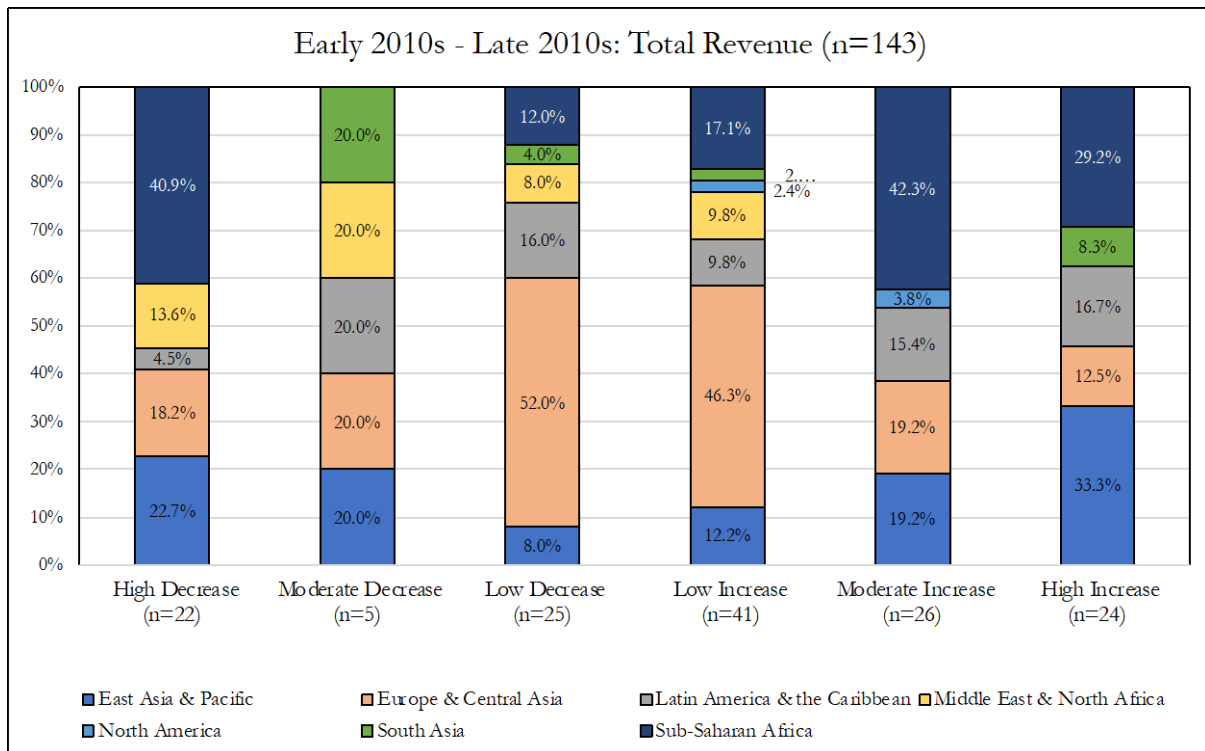
Source: authors' illustrations based on data from UNU-WIDER (2021).

Figure D2: Regional trend patterns, total revenue, late 2000s to early 2010s



Source: authors' illustrations based on data from UNU-WIDER (2021).

Figure D3: Regional trend patterns, total revenue, early to late 2010s



Source: authors' illustrations based on data from UNU-WIDER (2021).