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*The effects of national and international tourism on income inequality:  
Evidence from Asia Pacific economies*

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**Abstract**

**Purpose:** This paper explores the effect of tourism (national and international) indicators on income inequality in a sample of 21 Asia Pacific economies.

**Methodology:** Our study uses panel data set from 1995 to 2020 and employs panel autoregressive distributed lag (ARDL) method for the empirical investigation.

**Findings:** The empirical findings from the panel ARDL models suggest that all of the considered tourism indicators have significant negative impacts on income inequalities. The results remain consistent with alternative indicators and methods.

**Social Implications:** The findings of this study will be critical for the policymakers to take effective measures to reduce the income inequality. Such measures could include promoting tourism in general, focusing on attracting international tourists or domestic tourists, putting more weight on developing leisure or business tourism, which will boost the overall economic performance and alleviates inequalities in the society.

**Originality/value:** This is the first study to consider various forms of tourism indicators to see their impact on income inequality in the Asia-Pacific region, and offers important implications for the policy actions.

**Keywords:** Tourism indicators; financial development; per capita income; trade openness; income inequalities; Asia Pacific region

## 1. Introduction

Tourism has been widely acknowledged as one of the key drivers for economic growth (Li et al. 2016; Faisal et al. 2021; Rasool et al. 2021) and unemployment reduction (Banerjee et al. 2015; Sánchez 2019). According to the World Travel and Tourism Council (WTTC)<sup>1</sup>, the growth of the tourism sector prior the Covid-19 pandemic (2019) (3.5%) is greater than that of the global economy (2.5%) and many other major sectors such as manufacturing and retail. In total, tourism contributed US \$8.97 trillion (10.3% of global GDP) and supported 330 million jobs, equivalent to 1 in 10 jobs in the global economy. In the tourism industry, various businesses from different sectors, including accommodation, food and beverage, retail trade, transportation and cultural sports and recreation, work together to make a tourism service available to a potential tourist. This indicates that tourism can have influences on many sectors, and hence can transmit welfare across people, households, regions and even nations. Nevertheless, the growth of an economy cannot be sustainable if the benefits generated by tourism are transmitted more to the rich than the poor, since income inequality can have a wide range of negative impacts on health and wellbeing (Luo and Xie 2020; Tibber et al. 2022; Huang 2019), national social cohesion (Tadjoeddin et al. 2021; Anser et al. 2020), and poverty alleviation (Chotia and Rao 2017). Therefore, it is very important to look at the tourism development and income inequality nexus.

Theoretically, tourism can have a positive or negative impact on income inequality. For example, tourism development enhances local economic activities and drives up the living cost (e.g., higher property prices and inflation) (Bowden 2005), which could increase the percentage of families struggling to make ends meet. Moreover, if job creation by tourism is mainly for

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<sup>1</sup> <https://wttc.org/Portals/0/Documents/Reports/2020/Global%20Economic%20Impact%20Trends%202020.pdf?ver=2021-02-25-183118-360>

skilled workers (e.g., language, customer service and technology) who are mostly in the above-average or average income groups, income gap would be wider. Also, tourism industry tends to be dominated by multinational conglomerates as they are well known for better services and stronger finance (Schilcher 2007). This domination may be destructive to local businesses which rely on less skilled workers, depleting jobs for less skilled workers and widening income gap. However, if tourism development can engage the poor in the production of tourism goods and services or if the redistribution of tourism tax aims at supporting the poor (e.g. on/off-the-job training projects), such pro-poor impacts of tourism development could help reduce income inequality.

The literature on tourism and income inequality can be classified into three groups based on the context of investigation: i) a single province (e.g., Truong et al. (2014), Banerjee et al. (2015), Nguyen and Funck (2019), Qin et al. (2019)) or a country (e.g., Incera and Fernández (2015), Mahadevan et al. (2016), and Shahbaz et al. (2020)), ii) multi countries (e.g. Proença and Soukiazis (2008), Nguyen et al. (2021), Zhang (2021), and Subramaniam et al. (2022)), and iii) multi provinces within a country (e.g., Goh et al. (2015), and Li et al. (2016), and Zhang (2022)). It is observed that the studies in groups i) and ii) document mixed evidence on the contribution of tourism to the alleviation of income inequality, and the studies in group 2 utilizes a global sample or a group of countries with similar economic income or income inequality levels. Nonetheless, the multi-province studies (i.e., group iii) consistently report the contribution of tourism to a more even provincial distribution of income. This is explained by the fact that competition in tourism between provinces within a country has reallocated the tourism revenue in a way that brings more benefits to poorer provinces. Given that, this triggers for a broader investigation of whether tourism competition between the countries within the Asia-Pacific region can assist for the redistribution of tourism revenue in a way that brings more benefits to the poorer countries.

Asia Pacific region represents the countries from the East Asia, Southeast Asia, and Oceania. The Asia-Pacific region possesses distinctive natural attributes, such as rainforests, coral islands, beaches, and charismatic animals, which provide a strong exotic image to tourists (Frost et al. 2014). In 2019, the Asia-Pacific region experienced the fastest growth in travel and tourism, with a 5.5% increase. This growth was driven by the rising number of middle-income households, favorable visa policies, improved connectivity, and the government's emphasis on the tourism sector. Also, this region is posed to be the focus of world tourism in the future (Tolkach et al. 2015; Yeoman and Beeton 2014). Despite this development of tourism, Asia Pacific experiences a high level of income inequality, with the average Gini index in 2020 of around 43.15 points. Figure 1 shows the yearly change in income inequality index and the five tourism development indicators in the Asia Pacific region over the 1995-2020 period. It can be observed that the yearly changes in all the indicators are mostly positive, but generally income inequality index reveals a decreasing trend while all tourism indicators fluctuate in the range of 0% and 15%, suggesting a possible correlation between income inequality and tourism development in this region. With such impressive tourism growth and concerned income inequality level in the Asia Pacific region, no empirical study on the impact of tourism on income inequality in this region has been found. Therefore, this study aims to fill this gap in the literature by examining whether tourism development in the Asia Pacific is a mechanism for reallocating income from the rich to the poor.



To achieve this aim, tourism development is captured by five indicators covering both the domestic and international tourism activities in the Asia Pacific region, including total international tourists' arrivals, tourism direct contribution, tourism domestic spending, tourism leisure spending, and tourism total contribution, while income inequality is measured by GINI Index based on the disposable income. To examine the long-run impact of tourism indicators on income inequality, we make use of panel autoregressive distributed lag (ARDL) method and fixed effect estimator. For this purpose, study utilizes annual data from 1995 to 2016 on 21 Asia Pacific countries. In doing so, our study also accounts for potential determinants of income inequality in the model such as financial development, per capita income and trade openness.

This study contributes to the policy and to the body of knowledge as follows. More specifically, there have been several cross-country studies investigating the impact of tourism development on income inequality. However, these studies use global data sample or groups of countries with similar economic income or income equality levels. No study has been found in regards to the role of tourism to the reduction of income inequality in the Asia-Pacific region. Moreover, our study measures tourism development using five different tourism indicators (total international tourists' arrivals, tourism direct contribution, tourism domestic spending, tourism leisure spending, and tourism total contribution), which address not only the overall effect of tourism, but also the individual effect of each tourism component. The findings of this study will be critical for the policymakers to take effective measures to reduce the income inequality. Such measures could include promoting tourism in general, focusing on attracting international tourists or domestic tourists, putting more weight on developing leisure or business tourism, which will boost the overall economic performance and alleviates inequalities in the society. In addition, this study employs robust panel econometric techniques such as the ARDL to evaluate the nexus between tourism indicators and income inequality

using the latest available data, from 1995 to 2020. Given all of these, the present study adds significant value to the existing empirical literature.

The rest of this study is organized as follows. Section 2 presents a review of the literature on tourism and income inequality. Section 3 discusses the nature of data, research methodology, and preliminary analysis. Section 4 reports empirical findings, detailed discussion and provides policy implications. Finally, the summary of results and concluding remarks are presented in section 5.

## **2. Literature review on tourism development and income inequality**

The economic impacts of tourism can be grouped into three categories: i) the direct effects of tourists' expenditure, ii) the indirect effects from the purchase of inputs from related industries to supply tourism firms and tourists, and iii) the dynamic effects of investment in infrastructure and other economic activities (Nguyen et al. 2021). International tourism (the tourism activities of international visitors) increases economic vulnerability of destination countries (Nguyen and Su 2022), while domestic tourism (the tourism of resident visitors within the country) has an opposite impact (Canh and Thanh 2020)). Although international tourism and domestic tourism affect economic vulnerability differently, they both contribute to the production, job creation, tax collection, and foreign currency accumulation, and hence they are expected to affect income inequality in the same sign.

The contribution of tourism development to income inequality, however, is theoretically positive and negative. On the one hand, tourism is usually developed in poor rural and coastal areas, providing microentrepreneurship and job opportunities for people in these areas. Moreover, the jobs created by tourism, by its nature, are labor intensive; they are often for unskilled or less skilled individuals who are usually poor (e.g., room service,

waiter/waitress, security, cleaner, gardener, motorbike or taxi driver, construction worker). Further, there are more women employed in tourism than other sectors, and tourism can be used as a tool for alleviating gender inequality (Nguyen 2022). Such pro-poor tourism development allows the poor to engage in the production of tourism-related goods and services, improving their livelihood and narrowing their income gap with the rich. On the other hand, it is argued that a significant proportion of the labor force in tourism is related to family businesses (e.g., accommodation and restaurant services) which rely on unskilled or less skilled labor. Their traditional local means of livelihood are also changed, from farming and fishing to mainly being employed in paid work, as tourism develops (Luo and Bao 2019). However, the domination of big players in the tourism market which are known for better service and stronger finance could be destructive to these small businesses, depleting jobs of unskilled or less skilled workers. Moreover, tourism development could induce higher demand for property and primary products, which would drive property price and inflation upward, making lives of poorest households more difficult. For such reasons, tourism development could lead to increased income inequality.

Empirical studies can be classified in to three groups based on the context of examination: i) a single province or country, ii) multi countries, and iii) multi provinces within a country. For the within-province/country studies, Truong et al. (2014), Banerjee et al. (2015) and Qin et al. (2019) provide evidence of the contribution of tourism to the improvement of income for low-income and vulnerable households in Sapa Vietnam, Haiti, and northern China, respectively, which could help narrow their income gap with the rich ones. Shahbaz et al. (2020) find that tourism (tourist arrivals, tourist receipts) improves income distribution by lowering income inequality in Malaysia. In contrast, Blake et al. (2008) show that tourism expenditure in Brazil increases income of all income groups, but to a lower degree in the lowest income group than some higher income groups, and hence widening the income gap between



the rich and the poor. Incera and Fernández (2015) report that tourism consumption in Galicia enlarges the income gap between the rich and the poor, but foreign inbound tourism consumption contributes more to the uneven income distribution than national inbound tourism consumption. Mahadevan et al. (2016) find that an increase in the number of international visitors and domestic visitors results in a rise of income inequality in Indonesia. Decomposing Indonesia into urban and rural regions, the impact of tourism on income inequality remains unchanged. Nguyen and Funck (2019) interview local enterprises in Yakushima of Japan and report that tourism may not necessarily contribute to equal income distribution; it creates unequal benefits and income gap between tourism villages and non-tourism villages. Nguyen (2019) interviews people working in tourism in Vietnam and find that tourism improves their living conditions, but benefits are distributed unequally which increases social conflicts.

For the cross-country studies, the negative influence of tourism on income inequality is found in the studies of Proença and Soukiazis (2008), Nguyen et al. (2021), and Subramaniam et al. (2022). The former study shows that international tourism significantly narrows the regional gap between different regions of Spain, Italy, Greece and Portugal. The middle confirms that both domestic and international tourism reduce income inequality using data on 97 countries. The latter finds that tourism is one of the major drivers of income equality in the world's most income equality countries. A different influence of tourism on income inequality is documented in the following studies. Blake (2008) finds that tourism-related industries in Kenya, Tanzania and Uganda provide substantially less income for poorer households than other export activities, leading to concern that tourism expansion may fuel poverty and income inequality in these countries. Petit (2016) observes that international tourism in 10 developed countries significantly increases wage inequality between highly skilled and semi-skilled workers and between semi-skilled and unskilled workers in the long run. Zhang (2021) reports that tourism increases income inequality, because compared with the broad economic industry,

the income level of the tourism industry is relatively low. The author also finds that even within the tourism industry, the difference in income distribution is very significant. Alam and Paramati (2016) document the existence of the Kuznets curve between the tourism revenue and income inequality in 49 developing economies, which is consistent with the finding of the study of Raza and Shah (2017) utilising the top 43 tourist arrival countries. Mahadevan and Suardi (2017) find no significant contribution of tourism receipt (to GDP) to the reduction of income inequality in 13 tourism-intensive economies.

The cross-province studies examine whether tourism is a mechanism of interprovincial or interregional transfer of income or not. Specifically, Haddad et al. (2013) report that domestic tourism expenditure significantly channels resources between the five Brazilian macro regions, and hence reducing income inequality among regions of Brazil. Li et al. (2015) find that in China, tourism receipts in the less developed inland region can promote regional economic growth more strongly than that in the developed coastal region, implying that tourism development can reduce regional inequality in this country. Goh et al. (2015) and Li et al. (2016) find that tourism receipts narrow provincial economic gaps and income gap in China, with domestic tourism making a greater effect than international tourism. Zhang (2022) indicate that tourism development can significantly reduce the urban-rural income gap, and domestic tourism has a stronger reducing effect. It appears from these cross-province studies that tourism development is an important tool for reducing regional inequality.

The reviewed studies above measure tourism development using several out of the following indicators: expenditure, consumption, revenue, investment, trade and arrivals, and measure income inequality by Gini index. There are several cross-country studies examining the effects of tourism on income disparity, but these studies use global data sample or groups of countries with similar levels of economic income or income inequality. That is, no study has

shifted the investigation to the Asia-Pacific region. Notably, the findings of the within-province/country and cross-country studies are inconclusive about the contribution of tourism to the reduction of income inequality, but the cross-province studies consistently confirm that tourism development does help transmitting wealth from the rich regions to the poor regions. Asia Pacific consists of countries with similar natural attributes and tourism dependence. Many Asia-Pacific countries have initiated programs to keep the influx of both domestic and international tourists high. We argue that similarly to the cross-province studies, tourism would help transmit wealth from the rich regions to poorer regions, and from the rich countries to poorer countries in the Asia-Pacific region, which allows people at the bottom of the pyramid to have more opportunities to engage in the production of tourism-related goods and services to improve their income. Moreover, compared to international tourism, domestic tourism is consistently found to be stronger in reducing income inequality, possibly because it is more sustainable, resilient, and dominant in terms of market scale and economic contributions. Therefore, we propose:

Hypothesis: Tourism development reduces income inequality in the Asia-Pacific region, with a stronger reducing effect of domestic tourism.

### **3. Data and methodology**

#### **3.1 Data**

This paper is specifically designed to investigate the effects of tourism indicators on income inequality in a sample of 21 Asia Pacific economies. For this reason, our study makes use of annual data from 1995 to 2020 and constructs unbalanced panel data set. The selected sample countries are: Australia, Bangladesh, Cambodia, China, Fiji, Hong Kong, India, Indonesia, Japan, Korea, Laos, Malaysia, Mongolia, Nepal, New Zealand, Pakistan, the Philippines,

Singapore, Sri Lanka, Thailand and finally, Vietnam. The selection of the sample countries is based on the availability of data for the reasonable time period.

The variables of the study are described as follows: we measure the income inequality through the Gini (GINI) index which is based on the disposable income. The higher GINI value is an indication of higher income inequality and vice versa<sup>2</sup>. Similarly, we consider five indicators for tourism, which cover from the domestic to international tourism activities across these economies. More specifically, the total number of international tourist arrivals (TA), tourism direct contribution (TDC), tourism domestic spending (TDS), tourism leisure spending (TLS), and total tourism contribution (TTC) are used for capturing tourism development for the following reasons:

The WTTC's report on the Asia Pacific tourism in 2019 shows that the total tourism contribution to GDP is 10.3%, of which 2.7% comes from the direct contribution which reflects total spending by residents and non-residents for business and leisure purposes. Particularly, tourists' spending is 77.9% on leisure versus 22.1% on business; and 72.9% by domestic visitors versus 27.1% by foreign visitors. Given these figures, three tourism components – tourism direct contribution, tourism domestic spending and tourism leisure spending – are used to capture tourism development in the Asia Pacific region. The indirect and induced contribution of tourism to GDP is also taken into account by using tourism total contribution as a tourism development measurement. International tourists' arrivals help transmit the welfare to the destination country in general and the households in particular, and hence it is also used to measure tourism development.

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<sup>2</sup> The Gini index data is sourced from Solt (2020).

All of these tourism indicators (TDC, TDS, TLS and TTC) are measured in million US\$ and real prices. Our study also considers three potential determinants of income inequality in the model such as the financial development (FD) which is measured through the ‘domestic credit to the private sector as a percentage of GDP’; the per capita income (PI) is measured by the GDP per capita in constant 2010 US\$; and finally, the trade openness (TO) is the total exports and imports as a percentage of GDP. The required data on GINI index is sourced from the Standardized World Income Inequality Database (SWIID), while data on TA, FD, PI and TO are obtained from the World Development Indicators. Finally, the remaining data on TDC, TDS, TLS and TTC are sourced from the World Travel and Tourism Council (WTTC) online data base.

### 3.2 Empirical methodology

This research paper aims to explore the impact of tourism indicators on income inequality in a sample of 21 economies from the Asia Pacific region. To achieve that, we frame the following empirical model for the investigation.

$$GINI_{it} = f(FD_{it}, PI_{it}, TO_{it}, TI_{it}, e_i) \quad (1)$$

Where GINI, FD, PI, TO and TI indicate the income inequality, financial development, per capita GDP, trade openness and tourism indicators (such as tourist arrivals, tourism direct contribution, tourism domestic spending, tourism leisure spending, and total tourism contribution), respectively. Further,  $i$  and  $t$  capture cross-section (country) and time-period, respectively and finally,  $e_i$  represents for the error term in the model<sup>3</sup>. Our main focus in this paper is to empirically investigate the role that tourism plays on income inequality in a panel of Asia Pacific economies. In doing so, our study also accounts for other potential determinants

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<sup>3</sup> For detailed understanding on the factors that drive the income inequality can be referred to the following studies: Canh et al. (2020); Le et al., (2020).

of income inequality in the model such as financial development, per capita income and trade openness. Before we begin to analyze, we convert all of our variables into natural logarithms to avoid the issues that are associated with the measurement of variables.

Before we proceed for the rigor analysis, we start with the panel unit root tests to understand the distributional properties of the each data series. Precisely, it is very important to identify the order of integration of the variables before employing any econometric technique. This analysis will help us to choose the right econometric technique for the investigation. Given that, we apply several panel unit root tests that examine common, as well as individual, unit root processes. More specifically, the common unit root process is investigated using the Levin et al. (2002) and Breitung (2000) tests, while the individual unit root process is investigated by employing the Im et al. (2003) and two Fisher-type tests such as the Augmented Dickey and Fuller (ADF) and Phillips and Perron (PP). The Fisher-type panel unit root tests are due to the approach suggested by Maddala and Wu (1999). All of these unit root tests follow the null hypothesis of a unit root as against the alternative hypothesis of no unit root, in general.

Our empirical findings from the panel unit root tests show the mixed evidence. More precisely, the results suggest that the selected variables are integrated of either with  $I(0)$  or  $I(1)$ . These results imply that they have mixed order of integration. Hence, the standard panel regression models cannot be applied to explore the long-run parameters. As a result of that, we choose to apply panel autoregressive distributed lag (ARDL) model to explore the long-run estimates of income inequality. The main advantage of this technique is that it can be applied to any model, which possesses a different order of integration of the variables, that is, either  $I(0)$  or  $I(1)$ . Therefore, given the findings from our panel unit root tests, the ARDL model is more appropriate to examine the long-run estimates of income inequality. To this end, we apply the panel approach suggested by Pesaran et al. (1999). This method assumes the cross-sectional

independence, implying that the disturbances are independently distributed across units and over time with zero mean and constant variances. The required lag length for the analysis is chosen based on the Akaike Information Criteria (AIC).<sup>4</sup>

### 3.3 Preliminary analysis

To begin our preliminary analysis, we present the share of tourism indicators of sample countries in the world during 1995-2015 in **Figure 2**. The figure implies that all of the tourism indicators have positive trend during the sample period. The global share of international tourists by the sample countries has increased from 12% to 20% during 1995-2015. Similarly, the global share of tourism direct contribution, tourism domestic spending, tourism leisure spending, and total tourism contribution has also significantly increased over the years. It mainly indicates that there is a considerable growth in the tourism sector across the Asia Pacific economies.

**[Insert Figure 2 here]**

**Figure 3** displays the GINI index values for all the selected sample countries in the region. It implies from the graphs that the income inequality is increasing over time in countries like India, Indonesia, Japan, Korea, Laos and Sri Lanka; whereas, the inequality is in downward trend in countries like Cambodia, China, Fiji, Hong Kong, Malaysia, Mongolia, Nepal, the Philippines, Singapore, Thailand and Vietnam. Some countries also have ups and downs in inequality during the study period. The main take away knowledge from these inequality graphs is that the income inequality is not uniform across the selected countries and also have considerable variations over the study period.

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<sup>4</sup> The detailed discussion of the empirical methods is avoided to conserve the space in the paper. Please see Asafu-Adjaye et al. (2016) for detailed discussion on the panel ARDL method.

**[Insert Figure 3 here]**

We also present scatter diagrams using data on GINI index and total tourism contribution to the GDP (%) in **Figures 4, 5 and 6**. These graphs suggest that the pattern of association between income inequality and tourism is changing from time to time. The graphs clearly suggest that the association between income inequality and tourism is positive in general but further investigation is required to draw any conclusion.

**[Insert Figure 4 here]**

**[Insert Figure 5 here]**

**[Insert Figure 6 here]**

Further, we present summary statistics on the selected variables of the sample countries in Table 1. The reported average statistics suggest that among the considered sample countries, Sri Lanka, the Philippines, China, Fiji and India have higher income inequalities (GINI), while countries like Japan, Korea, Australia and New Zealand have lower inequalities. On average, China, Hong Kong, Malaysia and Thailand receive more than 10 million international tourists (TA) during the study period, whereas less than 0.5 million tourists arrive in Bangladesh, Mongolia, Nepal and Fiji. The tourism direct (TDC) and total contribution (TTC) to the GDP is higher in Japan, China, Australia and India. Likewise, the tourism domestic spending (TDS) and leisure spending (TLS) is also significantly higher in Japan, China and India. All of these indicators are considerably lower in Mongolia, Laos and Fiji. On average, the financial development (FD) is substantially higher in Hong Kong, Japan, New Zealand, and Malaysia, while it is relatively lower in countries like Laos, Cambodia, Pakistan, Bangladesh and Mongolia. It is important to highlight that the average per capita income (PI) is more than 40 thousand US\$ only in Australia, Japan and Singapore. On the other hand, a number of Asia



Pacific countries (Nepal, Bangladesh, Cambodia, Laos, Pakistan and India) have less than 1000 US\$. Finally, we also notice that the trade openness also significantly varies among the sample countries. These average statistics on the selected variables imply that there is a significant diversity among the sample countries.

**[Insert Table 1 here]**

We further aim to understand the growth rates of the selected variables. Therefore, we calculate compounded annual average growth rates and the results are presented in Table 2. The average growth rates on income inequality indicate that only China has higher than 1 percent growth, while all other countries have either negative or a small positive growth during the study period. Similarly, the growth rates of tourist arrivals is more than 3 percent for all of the countries and, Cambodia and Laos have more than 10 percent growth. Among the other tourism indicators (TDC, TDS, TLS and TTC), only Japan has a negative growth in tourism domestic and leisure spending, whereas both Laos and Cambodia have highest positive growth across these indicators. The per capita income also has a positive growth for all of the countries, while financial development and trade openness have mixed growth rates. Overall, the compounded growth rates suggest that the selected sample countries have shown either negative or low positive growth rates in income inequalities, whereas tourist indicators have considerable positive growth rates for all of the countries with the exception of Japan.

**[Insert Table 2 here]**

#### **4. Empirical results and detailed discussion**

A number of researchers (e.g. Alam and Paramati, 2016) argue that it is important to identify the order of integration of the variables before any empirical investigation among the dependent and independent variables. It is an important step as it determines the suitable empirical

methodology for achieving the study objective. Consequently, this paper undertakes several panel unit root tests. More specifically, we apply LLC and Breitung unit root tests under the assumption of ‘common unit root processes, while IPS and Fisher-type ADF and PP tests assume ‘individual unit root processes’. The results of these unit root tests are presented in Table 3. The findings on level data show mixed evidence that is either I (0) or I (1). Therefore, we apply again these tests on the first order differences of the considered variables. The results on first difference data confirm the rejection of the null hypothesis. These findings suggest that all of our variables are either I (0) or I (1).

**[Insert Table 3 here]**

Given the unit root tests’ results, it would be difficult to apply standard regression models to explore the long-run estimates. Therefore, we apply panel ARDL model to examine the long-run elasticities of income inequality. This is a robust and reliable econometric technique to estimate long-run parameters even in the presence of mixed order of integration among the selected variables in the model. The results of panel ARDL method are reported in Table 4.

- A 1% growth in TA, TDC, TDS, TLS and TTC reduces income inequality by 0.333%, 0.294%, 0.071%, 0.356% and 0.283%, respectively.

Our empirical findings establish that the tourism indicators have significant negative impact on income inequality in the Asia Pacific economies, confirming the proposed Hypothesis. More specifically, the negative effect of tourism indicators on income inequality varies from 0.071% to 0.356%. The negative effect on income inequality is more witnessed from tourism leisure spending and tourist arrivals. All of the variables are statistically significant. Our findings are consistent with the single-country studies such as Banerjee et al.

(2015) for Haiti and Shahbaz et al. (2020) for Malaysia, and several cross-country studies such as Alam and Paramati (2016) for developing economies, Raza and Shah (2017) for top 43 tourist arrival countries, Nguyen et al. (2021) for 97 countries, and Subramaniam et al. (2022) for the top 9 income equality countries. Further, our results demonstrate that the growth in financial development also plays an important role to reduce income inequality in these economies. However, the growth in per capita income and trade openness positively contribute for income inequality. Most of these coefficients are statistically significant. These results overall imply that the growth in tourism and financial development assist these economies to fight the growth of income inequality, while economic development and international trade play the opposite role. A recent study by Paramati and Nguyen (2019) also confirm that the economic growth (per capita GDP) and trade positively contribute to the income inequality in emerging economies.

**[Insert Table 4 here]**

We also carry further investigation by using the fixed effect estimator on the full sample, full sample with trend, major and minor tourism nations. The reason for choosing fixed effect method is to control for unobserved country-specific heterogeneity in the model. We classify our full sample countries into two groups to see whether the nexus between tourism and income inequality is same or varies between these two groups. For that purpose, we split the sample countries based on the total tourism contribution to the GDP. Specifically, the major tourism countries are those where total tourism contribution to the GDP is more than 10%, while minor tourism countries are those where total tourism contribution to the GDP is less than 10% during the study period, on average. The results on all these panels are presented in **Table 5**. The findings on these panels clearly suggest that the tourism indicators play an important role in reducing the income inequality. However, the impact of tourism indicators on income

inequality became mostly insignificant in a sub-sample of minor tourism countries. Though, it is important to note that the nature of impact remains same but statistically not significant in four models, out of five models. The rest of results remain same across the models.

**[Insert Table 5 here]**

We further estimate bivariate analysis of tourism indicators on income inequality to see their pure influence on income inequality. The results are reported in **Table 6**. The findings again confirm that the nature and degree impact from tourism indicators to income inequality is mostly remain same. These evidences therefore establish that there is a significant negative association between tourism indicators and income inequality in the Asia Pacific region.

**[Insert Table 6 here]**

*Robustness check* – for the purpose of robustness check, we have updated the data set, 1995 to 2020 and run the models by making use of panel fully modified OLS (FMOLS) method to address the issue of endogeneity<sup>5</sup> in the model. Further, in this analysis we also use different measures of Gini index that is based on disposable income (post-tax) and market income (pre-tax) and then additional control variable i.e. foreign direct investment (FDI). The results of these estimates are displayed in **Table 7**. The empirical findings, based on disposable income Gini index, reveal that the tourism indicators (TA and TLS) have significant negative impact on income inequality. These evidences again confirm that the tourism continue to have negative impact on income inequality in the selected countries. Further analysis with market income based Gini index results also confirm the same nature of impact from tourism to inequality in the region. These evidences imply that both measures of Gini index have the similar outcomes.

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<sup>5</sup> A number of previous studies (e.g., Sadorsky (2009, 2011)) argue that

Finally, we include additional control variable in the model i.e. FDI net inflows (% of GDP) as recommended by the previous studies (e.g. Alam and Paramati, 2016). The results show no significant changes to the estimated coefficients in the model. Overall, these robustness check estimates reassure the earlier findings.

**[Insert Table 7 here]**

Given these evidences, we argue that the tourism sector might be playing a crucial role in transmitting wealth from the rich to the poor within the Asia Pacific region. Further, the growth in tourism sector might be a driving force for the new employment creation and also increasing additional tax revenues for the local and national level governments, as also argued by Fang et al (2020) and Alam and Paramati (2016). It may also be true that the employment opportunities that are created through the tourism might be for low-skilled and local communities. Therefore, the tourism sector not only creates employment opportunities but also improves income distribution and thus reduces income inequality which eventually alleviates poverty. Further, we argue that as tourism grows then the governments may also spend more money on infrastructure development as it is an essential for the industry to grow further. The governments may also increase their spending on social welfare schemes as they generate from revenues from the international tourists through various taxes. Hence, we argue that the tourism development plays an important role for improving income distribution, reducing poverty and inequalities.

Similarly, our results indicate that the financial development also plays a pivotal role in reducing income inequality. However, the growth in per capita income and international trade (exports and imports) is against the essence of income distribution. Given these evidences, we suggest that the growth in financial development might be beneficial for the poor people as they have more access to the credit and hence, they may create additional earning opportunities.

On the other hand, the economic development and international trade may be more beneficial for the skilled and rich people. Therefore, both economic development and international trade in the Asia Pacific economies are not in favor of improving income distribution in the region.

## **5. Conclusion**

In recent decades, the Asia Pacific region has seen tremendous growth in the tourism sector. More specifically, the region's (21 countries) share of total international tourist arrivals has increased from 12 percent to 20 percent during 1995-2015. Further, the tourism and travel sector contributes for more than 8 percent of the region's GDP in 2015. These statistics therefore imply the significance of the tourism sector in the region. However, during the same period the region is also witnessed considerable growth in income inequality. Hence, this research paper was designed to explore the effect of tourism indicators (tourist arrivals, tourism direct contribution, tourism domestic spending, tourism leisure spending and tourism total contribution) on income inequality. The study also accounted for other potential determinants of income inequality such as financial development, per capita income and trade openness. Using annual data from 1995 to 2020, we constructed an unbalanced panel data set for the empirical investigation and employed several robust panel econometric techniques.

The empirical evidence confirmed that all of the tourism indicators have played an important role in reducing income inequality in the Asia Pacific economies. Our results also showed that the growth in financial development also assisted these economies to improve the income distribution. However, the growth in per capita income and international trade has worked in favour of increasing income inequalities in the region. Given these findings, we suggest the policy makers of the Asia Pacific economies to realize the significance of tourism sector as it helps these economies to improve the income distribution by providing additional employment opportunities for the semi-skilled and low-skilled labour in the local communities.

Therefore, the policy makers have to initiate further policies to promote the growth of tourism industry in these economies, which will not only ensure income distribution but also plays a significant role in fighting the growth of income inequalities and poverty. However, the policy makers have to be careful in implementing the tourism development policies as further growth in tourism sector may deteriorate the environmental quality. Nevertheless, if the policy makers pay considerable attention for sustainable tourism policies such as initiating sustainable tourism investments, as highlighted by previous studies (Alam and Paramati, 2017; Paramati et al., 2018), and making awareness programs among the visitors and stakeholder of the industry in the Asia Pacific economies. This will not only help to meet their economic objectives but also assist those economies to mitigate the adverse effect of the tourism on the environment in the Asia Pacific economies. In such a way, the tourism sector could be a sustainable industry in the long-run. We further stress that the regional cooperation is another way of promoting tourism activities across the borders, which will help the nations to prosper together rather than individually. Finally, our study adds new knowledge to the literature by considering both national and international tourism indicators and their effect on income inequality. The main limitation of this study is that it didn't estimate the models for country-specific; so the future studies may do the analysis at the individual country level to provide more specific implications. Further, future studies may also consider to use nonlinear estimation methods to account for recent COVID impact on tourism.

#### **Declaration of Competing Interest**

None

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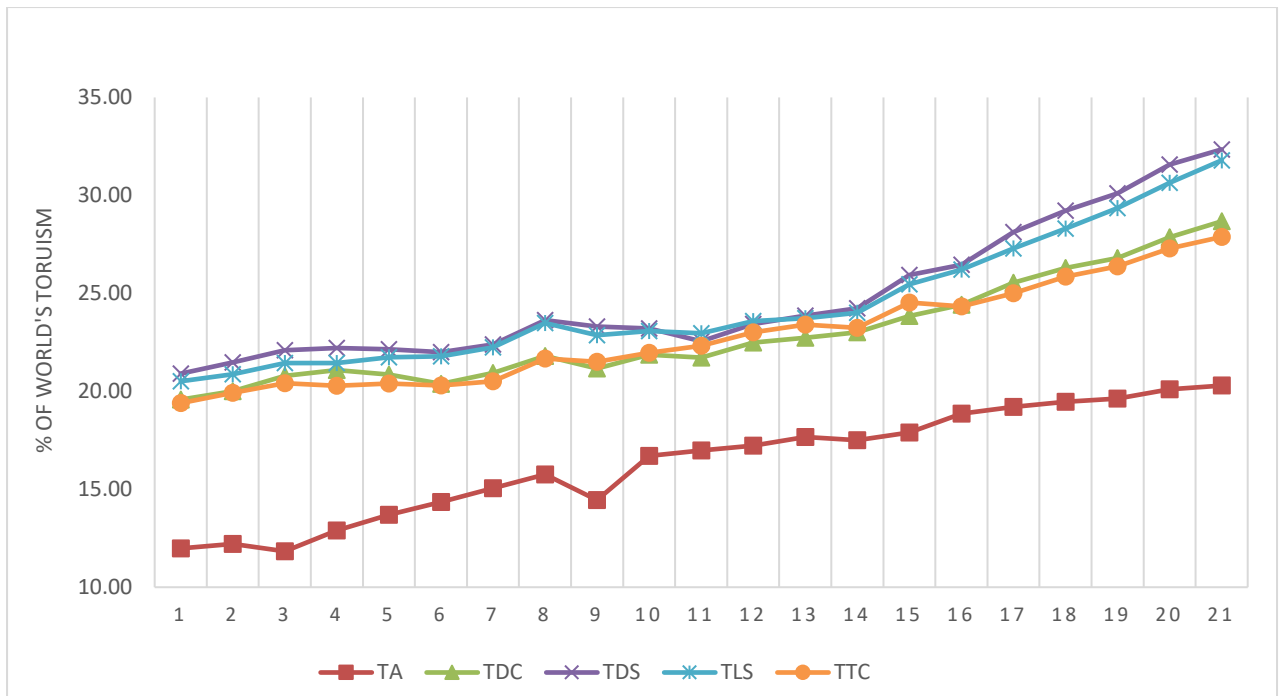
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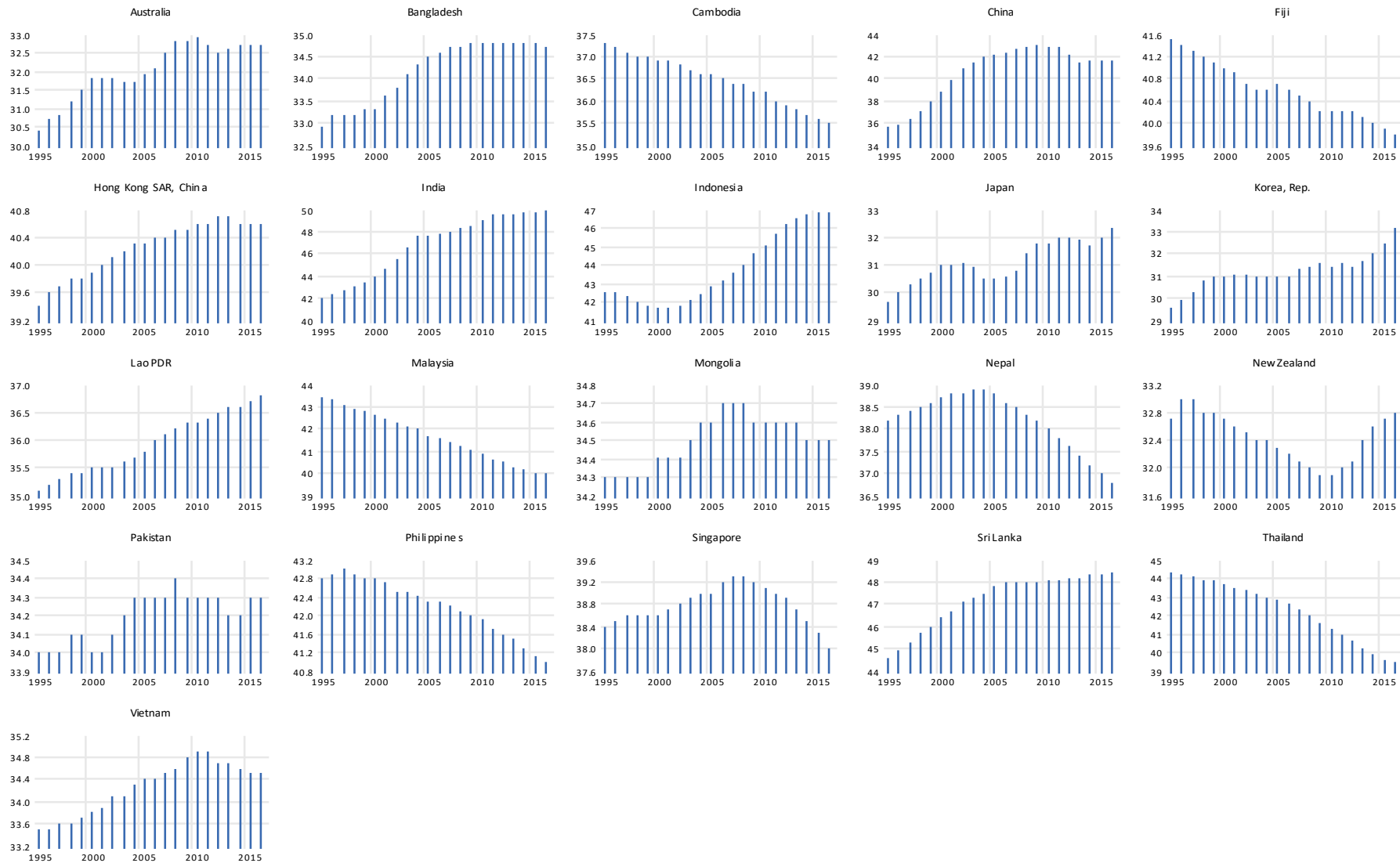


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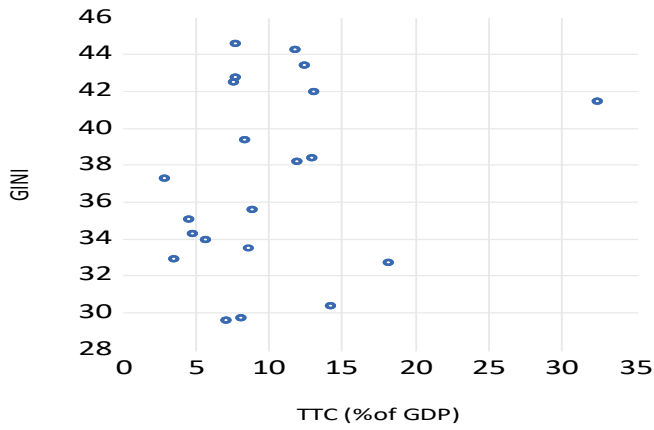
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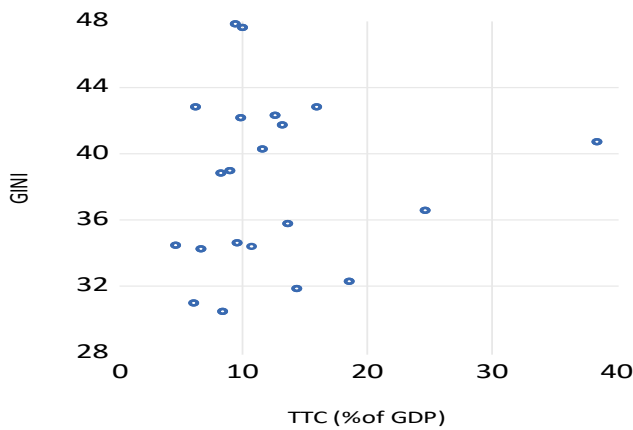
**Figure 2:** Percentage of sample countries' tourism indicators in the world (%), 1995-2015



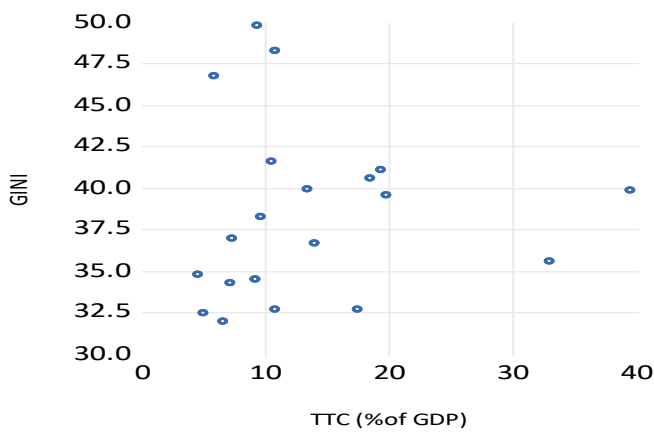
**Figure 3:** Time-varying trends of GINI index values for selected sample countries



**Figure 4:** Scatter diagram using GINI index and total tourism contribution (% of GDP) of sample countries in 1995



**Figure 5:** Scatter diagram using GINI index and total tourism contribution (% of GDP) of sample countries in 2005



**Figure 6:** Scatter diagram using GINI index and total tourism contribution (% of GDP) of sample countries in 2015

**Table 1:** Summary statistics on the selected sample countries

Country	GINI	TA	TDC	TDS	TLS	TTC	FD	PI	TO
Australia	32.29	5.20	29186.74	61968.27	66550.63	114802.40	103.13	47439.27	40.49
Bangladesh	38.91	0.23	2248.20	3542.00	2747.89	4783.24	26.73	569.43	32.17
Cambodia	41.36	1.30	802.96	314.70	1126.83	1850.15	13.45	569.72	111.36
China	47.86	41.61	102891.18	164927.33	190728.07	399331.45	113.50	3080.49	46.85
Fiji	46.25	0.44	376.58	84.67	656.85	1018.67	44.32	3446.29	122.01
Hong Kong	40.66	16.92	9673.18	7992.72	25779.66	35771.92	169.55	29288.38	341.16
India	46.17	3.77	35257.79	88040.19	93002.76	110963.57	36.89	959.77	37.01
Indonesia	41.26	6.10	12244.83	12355.64	15977.96	35755.25	31.03	2720.00	57.13
Japan	29.91	6.53	118355.34	231604.40	163970.65	361026.25	125.20	43457.07	25.44
Korea	30.11	7.57	20080.58	36673.49	39401.15	58620.00	111.92	18812.30	77.81
Laos	39.71	0.83	254.91	161.35	274.27	723.94	11.14	865.90	74.92
Malaysia	44.48	16.25	9067.20	6384.21	6727.41	23876.54	120.32	8022.85	184.71
Mongolia	37.80	0.29	199.87	138.98	268.30	497.58	26.73	2241.62	110.96
Nepal	42.91	0.43	578.44	495.22	727.32	1273.26	32.59	483.45	50.74
New Zealand	32.45	2.16	7121.33	11100.72	15045.43	24089.12	121.61	32091.84	58.94
Pakistan	36.16	0.68	5141.75	7198.71	6661.33	11186.32	23.69	938.03	33.34
Philippines	48.63	2.59	9733.83	10369.65	9438.31	19549.41	35.51	1800.46	89.34
Singapore	39.80	7.92	8029.78	5807.20	9404.53	18430.55	104.39	40232.70	367.09
Sri Lanka	50.76	0.55	1623.40	1454.02	2061.32	3800.05	30.98	2215.97	69.82
Thailand	45.60	12.79	18310.07	12442.15	27029.22	43592.65	109.16	4239.84	119.52
Vietnam	41.38	3.65	4780.40	4213.37	7005.57	11007.34	60.96	1044.41	126.71
Panel average	40.44	6.83	19539.73	32862.01	33667.21	63342.83	71.31	12382.21	105.72

**Notes:** GINI – GINI Index; TA – total International tourists arrivals; TDC – tourism direct contribution in million real US\$; TDS – tourism domestic spending in million real US\$; TLS – tourism leisure spending in million real US\$; TTC – Tourism total contribution in million real US\$; FD – Domestic credit to private sector by banks (% of GDP); PI – GDP per capita real US\$; TO – Trade (% of GDP).

**Table 2:** Compounded annual average growth rates (%)

Country	GINI	TA	TDC	TDS	TLS	TTC	FD	PI	TO
Australia	0.30	3.10	2.03	1.26	1.02	1.64	3.13	1.80	0.53
Bangladesh	0.38	4.24	7.72	7.58	7.11	7.21	4.27	3.37	1.85
Cambodia	-0.91	16.77	21.60	12.47	20.47	22.52	14.33	5.33	2.47
China	1.22	5.24	10.36	13.04	10.30	9.54	2.65	8.35	1.37
Fiji	-0.38	3.62	3.19	2.74	2.73	2.36	3.27	0.92	-0.52
Hong Kong	0.10	7.16	8.88	3.51	9.01	8.81	1.17	2.92	2.78
India	0.48	6.48	5.22	4.55	4.83	4.43	4.67	4.91	5.02
Indonesia	0.74	4.27	2.62	2.97	2.46	3.74	-2.26	2.63	-1.20
Japan	0.26	7.19	0.09	-0.09	-0.28	0.03	-2.52	0.71	4.14
Korea	0.37	7.18	2.81	3.01	3.68	2.53	6.04	3.46	1.77
Laos	0.37	22.18	11.64	6.11	10.44	13.42	4.95	5.00	1.74
Malaysia	-0.33	6.72	3.71	7.29	8.14	5.27	-0.15	2.56	-1.63
Mongolia	0.04	6.67	7.48	12.20	8.54	9.62	10.45	5.04	1.44
Nepal	-0.22	3.22	1.38	3.41	1.27	1.25	5.63	2.43	-1.60
New Zealand	-0.04	3.50	2.35	2.25	1.81	2.36	2.29	1.44	-0.16
Pakistan	0.05	5.06	4.62	5.01	4.88	5.23	-2.04	1.51	-0.42
Philippines	-0.14	5.05	9.17	10.40	10.59	7.97	-0.64	2.33	-1.19
Singapore	0.05	3.17	3.44	4.75	2.74	3.60	1.88	2.74	-0.37
Sri Lanka	0.43	6.25	5.82	4.22	4.83	5.83	0.59	4.42	-2.62
Thailand	-0.36	7.31	5.47	2.02	5.44	5.38	-1.15	2.42	2.11
Vietnam	0.26	9.21	7.35	5.86	7.55	6.43	8.82	4.95	4.18
Panel average	0.13	6.84	6.05	5.45	6.08	6.15	3.11	3.30	0.94

**Note:** Growth rates were calculated using before log conversion data.

**Table 3:** Results of panel unit root tests

	Method	LLC test	Breitung test	IPS test	Fisher ADF	Fisher PP	LLC test	Breitung test	IPS test	Fisher ADF	Fisher PP
		Level					First difference				
GINI	Statistic	-0.205	4.507	2.278	39.263	12.220	-4.790***	-3.225***	-3.648***	76.643***	78.881***
	Prob.	0.419	1.000	0.989	0.592	1.000	0.000	0.001	0.000	0.001	0.001
TA	Statistic	0.617	1.090	-0.603	55.349*	42.716	-8.574***	-4.739***	-9.440***	165.129***	238.436***
	Prob.	0.731	0.862	0.273	0.081	0.440	0.000	0.000	0.000	0.000	0.000
TDC	Statistic	-2.923***	0.031	-2.304**	63.803**	57.059*	-11.774***	-6.252***	-9.942***	165.107***	248.515***
	Prob.	0.002	0.512	0.011	0.017	0.061	0.000	0.000	0.000	0.000	0.000
TDS	Statistic	-2.298**	-0.712	-0.869	53.483	56.124*	-12.550***	-5.337***	-8.986***	155.082***	223.549***
	Prob.	0.011	0.238	0.193	0.110	0.071	0.000	0.000	0.000	0.000	0.000
TLS	Statistic	-2.555***	0.881	-2.209**	67.080***	39.616	-11.043***	-4.201***	-7.852***	135.858***	218.917***
	Prob.	0.005	0.811	0.014	0.008	0.576	0.000	0.000	0.000	0.000	0.000
TTC	Statistic	-3.641***	-0.478	-2.886***	74.481***	70.648***	-13.144***	-4.253***	-10.662***	171.509***	258.315***
	Prob.	0.000	0.316	0.002	0.002	0.004	0.000	0.000	0.000	0.000	0.000
FD	Statistic	3.097	1.683	2.818	26.984	29.127	-12.189***	-6.358***	-8.392***	134.887***	147.187***
	Prob.	0.999	0.954	0.998	0.965	0.934	0.000	0.000	0.000	0.000	0.000
PI	Statistic	0.060	0.184	1.121	30.778	16.656	-11.542***	-5.976***	-8.924***	149.025***	173.344***
	Prob.	0.524	0.573	0.869	0.900	1.000	0.000	0.000	0.000	0.000	0.000
TO	Statistic	-2.289**	0.766	-2.619***	83.528***	47.266	-12.618***	-9.986***	-12.304***	198.700***	264.185***
	Prob.	0.011	0.778	0.004	0.000	0.266	0.000	0.000	0.000	0.000	0.000

**Notes:** \*\*\*, \*\* & \* indicate the rejection of the null hypothesis of a unit root at the 1%, 5% and 10% significance levels, respectively; the unit root tests were estimating using constant and trend variables; the appropriate lag length was selected based on the AIC approach.



**Table 4:** Results of long-run estimates on income inequalities using panel ARDL method

Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
FD	-0.169***	0.000	-0.549***	0.000	-0.122***	0.000	-0.409	0.137	-0.439***	0.000
PI	0.405***	0.000	0.519***	0.000	0.223***	0.000	0.722*	0.067	0.631***	0.000
TO	0.833***	0.000	1.537***	0.000	0.751***	0.000	1.157	0.128	1.339***	0.000
TA	-0.333***	0.000								
TDC			-0.294***	0.000						
TDS					-0.071**	0.050				
TLS							-0.356*	0.081		
TTC									-0.283***	0.000

**Note:** \*\*\*, \*\* & \* indicate the significance levels at the 1%, 5% and 10%, respectively.

**Table 5:** Results of long-run estimates on income inequalities using fixed effect method

Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Full sample countries										
Constant	2.983***	0.000	2.772***	0.000	2.846***	0.000	2.864***	0.000	2.820***	0.000
FD	-0.019***	0.000	-0.022***	0.000	-0.030***	0.000	-0.015***	0.004	-0.022***	0.000
PI	0.149***	0.000	0.155***	0.000	0.157***	0.000	0.127***	0.000	0.159***	0.000
TO	0.034***	0.000	0.037***	0.000	0.017**	0.049	0.027***	0.002	0.029***	0.001
TA	-0.041***	0.000								
TDC			-0.052***	0.000						
TDS					-0.048***	0.000				
TLS							-0.032***	0.000		
TTC									-0.052***	0.000
Full sample countries - with trend										
Constant	3.913***	0.000	5.337***	0.000	5.908***	0.000	5.626***	0.000	5.566***	0.000
FD	-0.020***	0.000	-0.024***	0.000	-0.032***	0.000	-0.018***	0.001	-0.024***	0.000
PI	0.158***	0.000	0.184***	0.000	0.191***	0.000	0.158***	0.000	0.190***	0.000
TO	0.034***	0.000	0.037***	0.000	0.018**	0.038	0.027***	0.001	0.029***	0.001
TA	-0.039***	0.000								
TDC			-0.050***	0.000						
TDS					-0.046***	0.000				
TLS							-0.030***	0.000		
TTC									-0.049***	0.000
Trend	-0.001	0.358	-0.001***	0.005	-0.002***	0.001	-0.002***	0.004	-0.002***	0.003
Major tourism countries										
Constant	3.652***	0.000	3.365***	0.000	3.503***	0.000	3.404***	0.000	3.447***	0.000
FD	-0.005	0.385	-0.004	0.483	-0.012**	0.041	-0.001	0.833	-0.003	0.572
PI	0.001	0.943	0.048***	0.001	0.059***	0.001	0.051***	0.000	0.040***	0.008
TO	0.053***	0.000	0.061***	0.000	0.035***	0.001	0.052***	0.000	0.057***	0.000
TA	-0.012*	0.085								
TDC			-0.041***	0.000						
TDS					-0.049***	0.000				
TLS							-0.041***	0.000		
TTC									-0.035***	0.000
Minor tourism countries										
Constant	2.581***	0.000	2.523***	0.000	2.503***	0.000	2.524***	0.000	2.532***	0.000
FD	-0.036***	0.000	-0.038***	0.000	-0.040***	0.000	-0.037***	0.000	-0.038***	0.000
PI	0.164***	0.000	0.160***	0.000	0.174***	0.000	0.154***	0.000	0.163***	0.000
TO	0.030**	0.012	0.027**	0.022	0.026**	0.024	0.025**	0.027	0.025**	0.027
TA	-0.013	0.151								
TDC			-0.010	0.365						
TDS					-0.018*	0.094				
TLS							-0.004	0.528		
TTC									-0.012	0.340

Note: \*\*\*, \*\* & \* indicate the significance levels at the 1%, 5% and 10%, respectively.

**Table 6:** The bivariate analysis of income inequality and tourism indicators using fixed effect method

Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Constant	-2.700***	0.004	-2.014**	0.016	-0.413	0.637	-2.049***	0.008	-1.808**	0.033
Trend	0.003***	0.000	0.003***	0.000	0.002***	0.000	0.003***	0.000	0.003***	0.000
TA	-0.017***	0.004								
TDC			-0.014**	0.017						
TDS					0.002	0.790				
TLS							-0.013***	0.003		
TTC									-0.012**	0.047

**Note:** \*\*\* & \*\* indicate the significance levels at the 1% and 5%, respectively.

**Table 7:** Robustness check using panel FMOLS method and updated data set

Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Gini index with disposable income (post-tax)										
FD	0.013*	0.060	0.007	0.287	0.011*	0.067	0.016***	0.005	0.003	0.617
PI	-0.059**	0.011	0.021	0.125	-0.022	0.129	0.027*	0.057	0.017	0.189
TO	0.031***	0.000	0.030***	0.000	0.021***	0.000	0.026***	0.000	0.025***	0.000
TA	-0.005**	0.033								
TDC			-0.007	0.286						
TDS					0.007	0.506				
TLS							-0.015**	0.013		
TTC									-0.003	0.632
Gini index with market income (pre-tax)										
FD	-0.005	0.312	-0.006	0.172	-0.003	0.419	0.002	0.592	-0.009**	0.037
PI	-0.045**	0.033	0.027**	0.023	-0.012	0.321	0.033***	0.006	0.024**	0.031
TO	0.025***	0.000	0.018***	0.000	0.015***	0.000	0.015***	0.000	0.016***	0.000
TA	-0.004**	0.044								
TDC			-0.004	0.349						
TDS					0.008	0.372				
TLS							-0.010**	0.024		
TTC									0.000	0.970
Gini index with disposable income (post-tax) and additional control variable i.e. foreign direct investment (FDI)										
FD	0.013*	0.054	0.009*	0.098	0.013**	0.017	0.017***	0.002	0.005	0.333
FDI	-0.001	0.317	0.000	0.976	0.000	0.878	0.001	0.501	0.000	0.707
PI	-0.065***	0.004	0.017	0.236	-0.022	0.115	0.023	0.102	0.015	0.255
TO	0.032***	0.000	0.027***	0.000	0.019***	0.000	0.023***	0.000	0.023***	0.000
TA	-0.004*	0.094								
TDC			-0.010*	0.088						
TDS					0.001	0.904				
TLS							-0.019***	0.001		
TTC									-0.009	0.192

Note: \*\*\*, \*\* & \* indicate the significance levels at the 1%, 5% and 10%, respectively.