



# 10. ULUSLARARASI BİLİMSEL ARAŞTIRMALAR VE İNOVASYON KONGRESİ 16-20 NİSAN 2025

## DUBAİ - UAE



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10. ULUSLARARASI DUBAİ BİLİMSEL ARAŞTIRMALAR VE İNOVASYON KONGRESİ 16-20 NİSAN 2025 tarihleri arasında DUBAİ’de yüzyüze ve online olarak 32 farklı ülkeden (Türkiye:120 ve diğer Ülkeler:134; Toplam:254 akademisyen/araştırmacıların katılımı ile gerçekleşmiştir. Kongre, 16 Ocak 2020 Akademik Teşvik Ödeneği Yönetmeliğine getirilen ‘’ Tebliğlerin sunulduğu yurt içinde veya yurtdışındaki etkinliğin uluslararası olarak nitelendirilebilmesi için Türkiye dışından en az 5 ülkeden farklı tebliğ sunan konuşmacının katılım sağlaması ve tebliğlerin yarıdan fazlasının Türkiye dışından katılımcılar tarafından sunulması esastır. ‘’ değişikliğine uygun düzenlenmiştir. Bilgilerinize arz edilir.

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## ÜCRETLİLER İÇİN GELİR VERGİSİ ADALETİNİN ÖLÇÜLMESİ: TÜRKİYE ÖRNEĞİ (2006–2023)

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### ÖZET

Bu çalışma, 2006–2023 döneminde Türkiye’de ücretlilere uygulanan gelir vergisinin dağılımsal adaletsizliğini, iki farklı gösterge aracılığıyla incelemektedir. Araştırmada ilk olarak, ücretlilerin gelir vergisi hasılatı içerisindeki payını ücret gelirlerinin toplam gelir içindeki payına oranlayarak ölçen Gelir Vergisi Temsil İndeksi (GVTI) hesaplanmıştır. İkinci olarak, ücretlilerin gelir vergisi hasılatındaki payının, toplam hanehalkı içindeki payına oranlanmasıyla tanımlanan Gelir Vergisi Demografi İndeksi (GVDI) değerlendirilmiştir. GVTI, ücretlilerin vergi gelirlerine katkısını doğrudan ekonomik kapasiteleriyle ilişkilendirdiği için dağılımsal adaletsizliği nicel ve somut bir biçimde ortaya koyar. GVDI ise, ücretlilerin vergi gelirlerine katkısının, nüfus temelli temsil oranlarına göre nasıl dağıldığını ortaya koyar. Her iki indeksin de 1’e eşit çıkması durumunda, vergilendirme dağılımının tam adil olduğu kabul edilmektedir. Öte yandan, bu indeksler 1’den küçük çıktığında vergi politikasının ücretlilere görece avantaj sağladığı; 1’den büyük çıkması durumunda ise ücretlilerin dezavantajlı bir konumda olduğu anlaşılmaktadır. Araştırmada, TÜİK’in Hanehalkı Tüketim Araştırması verileri, eşdeğer hanehalkı kullanılabilir fert gelir dağılımı verileri ve Gelir İdaresi Başkanlığı’nın yıllık faaliyet raporlarından elde edilen veriler kullanılarak kapsamlı bir analiz gerçekleştirilmiştir. Elde edilen sonuçlar, GVTI’nin incelenen tüm yıllarda 1’den büyük olduğunu göstermekte; bu durum, ücretlilerin gelir vergisi hasılatına orantısız derecede yüksek katkıda bulunduğunu ve sistemin ücret gelirine dayalı vergilendirmede adaletsizlik içerdiğini ortaya koymaktadır. GVDI analizinde ise, 2022 yılı dışındaki tüm dönemlerde indeks 1’in üzerinde seyretmiş, ancak 2022 yılında GVDI’nin 1’den düşük çıktığı tespit edilmiştir. Bu farklılık, 2022’de asgari ücretin vergi istisnası kapsamına alınmasının demografik dağılım açısından ücretlilere belirli bir avantaj sağladığını göstermektedir. Bulgular, Türkiye’de ücretlilere yönelik vergi politikasının hem ekonomik kapasite hem de nüfus dağılımı açısından adaletsizlik barındırdığını göstermektedir.

**Anahtar Kelimeler:** Gelir Vergisi Temsil İndeksi (GVTI), Gelir Vergisi Demografi İndeksi (GVDI), ücret geliri, vergide adalet, Türkiye



## MEASURING INCOME TAX JUSTICE FOR WAGE EARNERS: THE CASE OF TÜRKİYE (2006–2023)

### ABSTRACT

This study examines the distributive inequality of income taxation applied to wage earners in Türkiye between 2006 and 2023 through two distinct indicators. First, the Income Tax Representation Index (ITRI) is calculated by measuring the share of wage earners in income tax revenue relative to the share of wage income in total income. Second, the Income Tax Demographic Index (ITDI) is assessed by comparing the share of wage earners in income tax revenue to their share in total households. While ITRI quantitatively and concretely reveals distributive inequality by directly linking wage earners' contribution to tax revenues with their economic capacity, ITDI demonstrates how their tax contribution is distributed relative to their demographic representation. When both indices equal 1, the tax burden is considered perfectly equitable. Conversely, if these indices fall below 1, the tax policy is deemed relatively advantageous for wage earners, whereas values exceeding 1 indicate a disadvantageous position. The study employs data from the Turkish Statistical Institute's (Turkstat) Household Budget Survey, equivalent household disposable income distribution, and the Turkish Revenue Administration's annual activity reports to conduct a comprehensive analysis. The findings reveal that ITRI remains above 1 in all examined years, indicating that wage earners contribute disproportionately to income tax revenue, thereby reflecting an inequitable tax system. Also, ITDI is above 1 in all years except 2022, when it falls below 1. This discrepancy suggests that the exemption of minimum wage from income tax in 2022 provided wage earners with a relative demographic advantage. The results demonstrate that Türkiye's income tax policy for wage earners entails distributive inequality in both economic capacity and demographic representation.

**Keywords:** The Income Tax Representation Index (ITRI), the Income Tax Demographic Index (ITDI), wage income, tax justice, Türkiye

### 1. INTRODUCTION

In his work *The Wealth of Nations*, Adam Smith places tax justice at the forefront of the four fundamental principles that all taxes should adhere to (Smith, 1776/2007: 498). Tax justice is a pivotal concept in public finance, focusing on the equitable distribution of tax burdens among individuals and entities. It seeks to balance the need for public revenue with fairness in taxation, ensuring that individuals contribute to public finances in proportion to their economic capacity. The principles of tax justice are often evaluated through the lenses of horizontal and vertical

equity. Horizontal equity posits that individuals with similar economic situations should be taxed similarly, promoting fairness among taxpayers in comparable positions. Vertical equity, on the other hand, suggests that taxpayers with greater economic capacity should contribute more, justifying progressive taxation systems where tax rates increase with income levels (Galle, 2008: 1324-1325).

Income tax justice specifically examines how income taxes are structured to distribute tax liabilities among taxpayers. A fair income tax system is typically characterized by progressivity, where higher-income earners pay a larger percentage of their income in taxes compared to lower-income earners. This structure aims to reduce income disparities and fund public services that benefit society at large. Diamond and Saez (2011) present a case for progressive taxation based on optimal tax theory, arguing that such systems can achieve a balance between efficiency and equity. They contend that appropriately designed progressive taxes can mitigate income inequality without significantly distorting economic behavior.

In Türkiye, personal income tax is levied on seven types of income: wages, commercial income, agricultural income, professional income, income from movable capital, income from immovable property, and other income and earnings. Wage earners represent a significant segment of taxpayers, and the fairness of their tax treatment is crucial for overall tax equity. In many tax systems, wage earners are subject to direct income taxation, often withheld at the source, making their tax contributions both visible and substantial. Smith (1776/2007: 535) argues that a direct tax on wages increases wages by more than the amount of the tax itself, assuming constant labor demand and stable prices of consumer goods. Ricardo (1817: 285) similarly contends that this rise in wages diminishes the profits of capital, asserting that a tax on wages is effectively borne solely by those who employ labor and, in essence, constitutes a tax entirely on profits. Sugin (2004), however, argues that the combination of income and payroll taxes imposes a disproportionately heavy burden on labor compared to capital, leading to both horizontal and vertical inequities in the tax system. This imbalance suggests that wage earners may bear a greater relative tax burden than capital income earners, raising concerns about the fairness of the tax structure. Moreover, Sevilla-Bernabéu and Del-Valle-Calzada (2024) argue that integrating human rights perspectives into tax policy is essential for achieving tax justice. They emphasize that equitable tax systems should ensure that all individuals, including wage earners, contribute fairly to public finances, thereby enabling states to fulfill their obligations in mitigating economic and social inequalities.

Addressing these concerns requires careful consideration of how tax policies impact wage earners, ensuring that tax burdens are equitably distributed and do not disproportionately

disadvantage labor income relative to other forms of income. Although various approaches have been proposed to measure tax justice in general, there remains a gap in the literature regarding the assessment of income tax justice specifically for wage earners. Therefore, the aim of this study is to develop indices to measure income tax justice for wage earners and to present the index values for Türkiye over the period 2006–2023. Within this framework, the indices developed are first formalized, and the data to be used are introduced. Subsequently, the findings of the analysis are evaluated.

## 2. METHODS AND DATA

This study develops two indices to assess income tax justice for wage earners: the Income Tax Representation Index (ITRI) and the Income Tax Demographic Index (ITDI). Both indices aim to measure the fairness of income taxation for wage earners, each based on distinct criteria.

ITRI compares wage earners' share of total income with the share of income tax they actually pay, taking into account their economic capacity. From the perspective of tax justice, it is expected that the share of income tax paid by wage earners should be equal to or closely aligned with their share in total income. Developed to measure this alignment, ITRI is based on two key variables: the share of wage earners in income tax revenue and the share of wage income in total income. The former reflects the actual taxes paid by wage earners, while the latter indicates their level of representation in the economy based on economic capacity. The formulation of ITRI is presented in Equation (1).

$$ITRI = \frac{\frac{\text{share of wage earners in income tax revenues}}{\text{share of wage income in total income}}}{\frac{\text{income tax on wage earners}}{\text{total income tax}} \div \frac{\text{salary, wage and daily income}}{\text{total income}}} \quad (1)$$

An ITRI value equal to 1 ( $ITRI = 1$ ) indicates that wage earners pay income tax in proportion to their representation in the economy, which is considered the fairest scenario in terms of income taxation. In contrast, an ITRI value greater than 1 ( $ITRI > 1$ ) implies that wage earners pay a higher share of income tax than their representation in the economy would warrant, thereby signaling tax injustice. Conversely, an ITRI value below 1 ( $ITRI < 1$ ) indicates that wage earners pay less income tax relative to their economic representation. Although this situation may benefit wage earners, it could be interpreted as inequitable from the perspective of other income components in the economy. However, when considering income distribution justice—a fundamental function of governments—an ITRI value below 1 might reflect a

deliberate political choice. Particularly, given the notion that wage earners are at a disadvantage in a free-market economy, an ITRI below 1 may not necessarily be problematic.

ITDI compares the share of wage earners within the total household population—i.e., their demographic representation—with the share of income tax they actually pay. From the perspective of tax justice, it is expected that the share of income tax contributed by wage earners should be equal to or close to their demographic representation in the economy. Developed to measure this alignment, ITDI is based on two variables: the share of income tax revenue that comes from wage earners and the share of wage earners in the total number of households. The former reflects the actual tax paid by wage earners, whereas the latter indicates their level of representation based on the demographic structure. The formulation of ITDI is presented in Equation (2).

$$ITDI = \frac{\frac{\text{share of wage earners in income tax revenues}}{\text{share of wage earners in total households}}}{\frac{\frac{\text{income tax on wage earners}}{\text{total income tax}}}{\frac{\text{number of wage earner households}}{\text{total number of households}}}} \quad (2)$$

An ITDI value equal to 1 ( $ITDI = 1$ ) indicates that wage earners pay income tax in proportion to their representation within the population, which is regarded as the fairest scenario. An ITDI value greater than 1 ( $ITDI > 1$ ) implies that wage earners pay a larger share of income tax than their population share would warrant, signaling tax injustice. Conversely, an ITDI value below 1 ( $ITDI < 1$ ) indicates that wage earners pay a smaller share of income tax relative to their representation in the population. Given that wage earners are at a disadvantage in a capitalist system, paying less income tax than their household representation might be a deliberate choice of state policy.

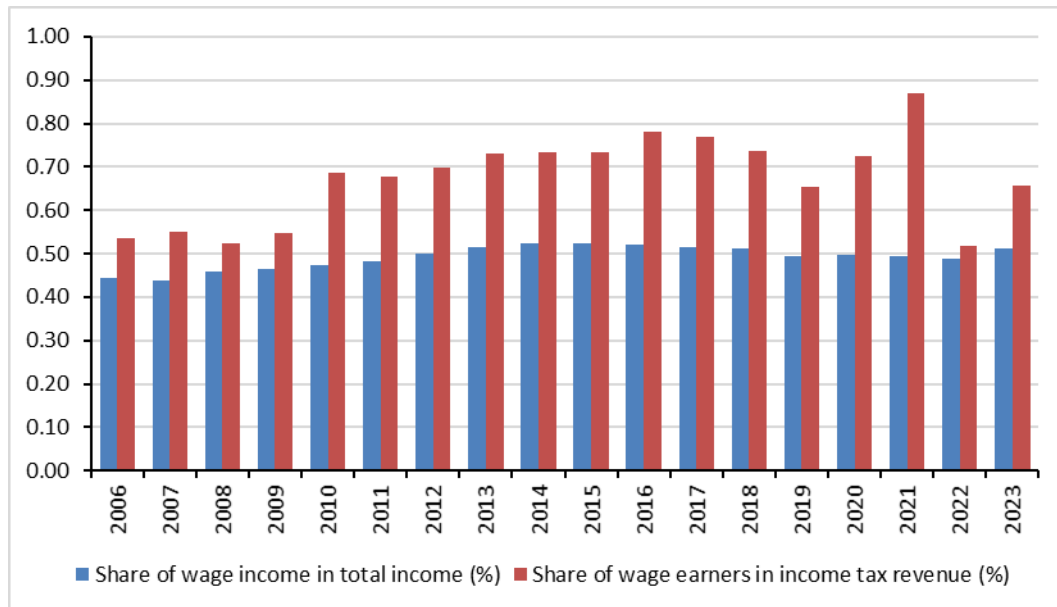
When analyzing income tax justice for wage earners in any country, values of these two indices equal to or less than 1 can be interpreted positively, whereas values exceeding 1 may be seen as indicative of income tax injustice. In Türkiye, both indices are employed to measure the justice of income tax for wage earners over the period 2006–2023. Certain data sources are used to calculate the variables for both indices. To determine the share of wage earners in income tax revenue, total income tax revenue data from the Turkish Ministry of Treasury and Finance (2024) is utilized, while the income tax paid by wage earners is derived from the Turkish Revenue Administration (2006–2023). The share of wage income within total income is calculated using data from the Turkish Statistical Institute (2024a), which provides the proportion of wages, salaries, and daily incomes in total income. Finally, the share of wage

earners in the total number of households is measured using data from the Turkish Statistical Institute (2024b). However, since data for 2020 and 2021 are not available in the Turkish Statistical Institute (2024b) dataset, the data series has been made linear by assuming that the figures for 2019 are identical to those of 2020, and the figures for 2022 are identical to those of 2021.

### 3. RESULTS AND DISCUSSION

This study aims to measure income tax justice for wage earners in Türkiye over the period 2006–2023. Utilizing the aforementioned datasets, the variables are first computed for each year, and then ITRI and ITDI are calculated based on these variables.

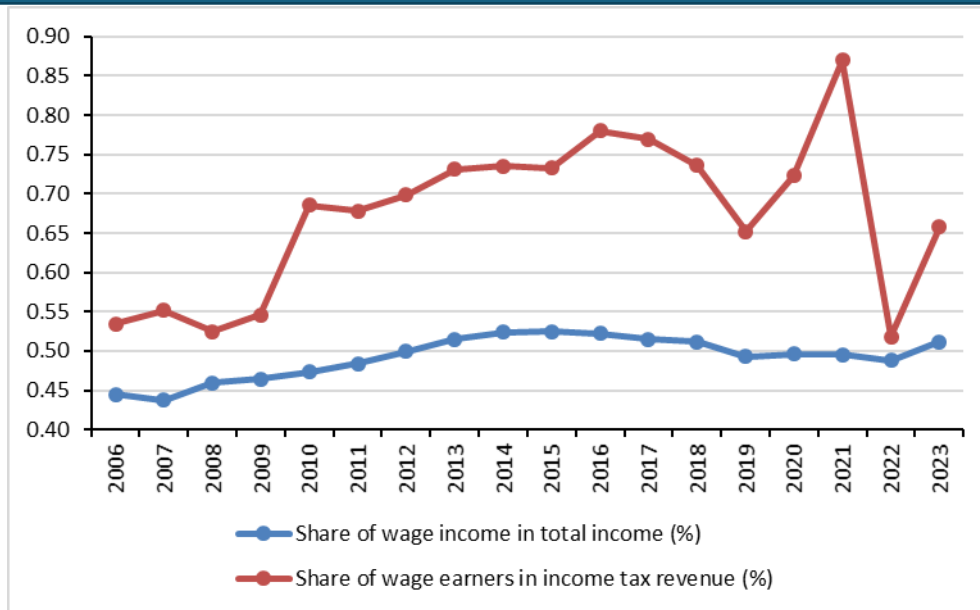
**Fig. 1** illustrates the annual differences between the share of wage income in total income and the share of total income tax paid by wage earners, which forms the basis of ITRI.



**Fig. 1.** Comparison of the variables constituting ITRI

Throughout the period 2006–2023 in Türkiye, wage earners consistently paid an income tax that exceeded their share of wage income in total income. The difference between these two variables notably increased from 2010 onward. After the discrepancy fell in 2022, it rose again in 2023 to approximately the average level observed in the 2010s.

Fig. 2 illustrates the annual trends in the share of wage income in total income and the share of total income tax paid by wage earners, which together form the basis for ITRI.



**Fig. 2.** Trends in the variables constituting ITRI

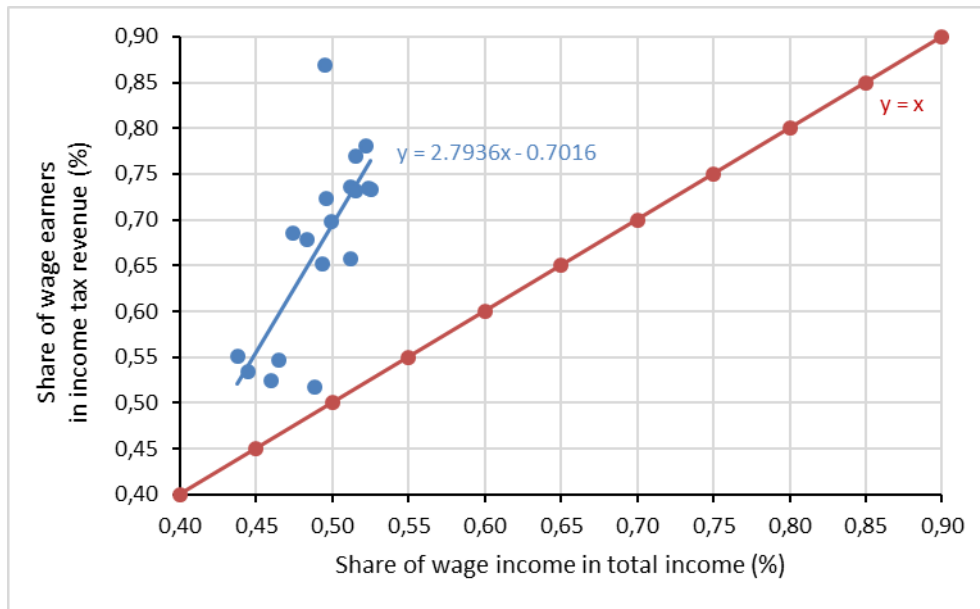
The share of wage income in total income over the period 2006–2023 initially follows an increasing trend before subsequently declining. The downward trajectory, particularly after 2015, remains stable following the COVID-19 pandemic. In contrast, the share of total income tax revenue attributable to wage earners, while variable across the years, generally exhibits an upward trend over the 2006–2023 period. This variable’s fluctuations over time are characterized by a decline in 2019, an increase culminating in a peak in 2021, and an abrupt drop in 2022.

In 2019, Türkiye experienced a peak in unemployment and a significant decline in employment. Due to the reduction in labor force engagement, the share of income tax collected from wage earners relative to total income tax revenue decreased in that year. Although the share of wage income in total income did not increase, the substantial rise in the tax share paid by wage earners in 2021 can only be explained by a decrease in the share of taxes from non-labor income. The abrupt drop in the income tax paid by wage earners in 2022 is attributable to the introduction of an income tax exemption for amounts corresponding to the minimum wage from that year onward. Even though the policy of exempting the minimum wage from income tax continued in subsequent years, the share of income tax attributed to wage earners increased again in 2023. This outcome is attributed to the fiscal drag and inflation tax caused by the extremely high inflation in Türkiye during those years. In a high inflation environment, the nominal wage increases lead to wages being subjected to higher tax brackets under a progressive tax system. This fiscal drag results in an inflation tax, where the increase in taxes paid exceeds the rise in



income. Consequently, the income tax exemption applied to wages loses its significance under conditions of high inflation.

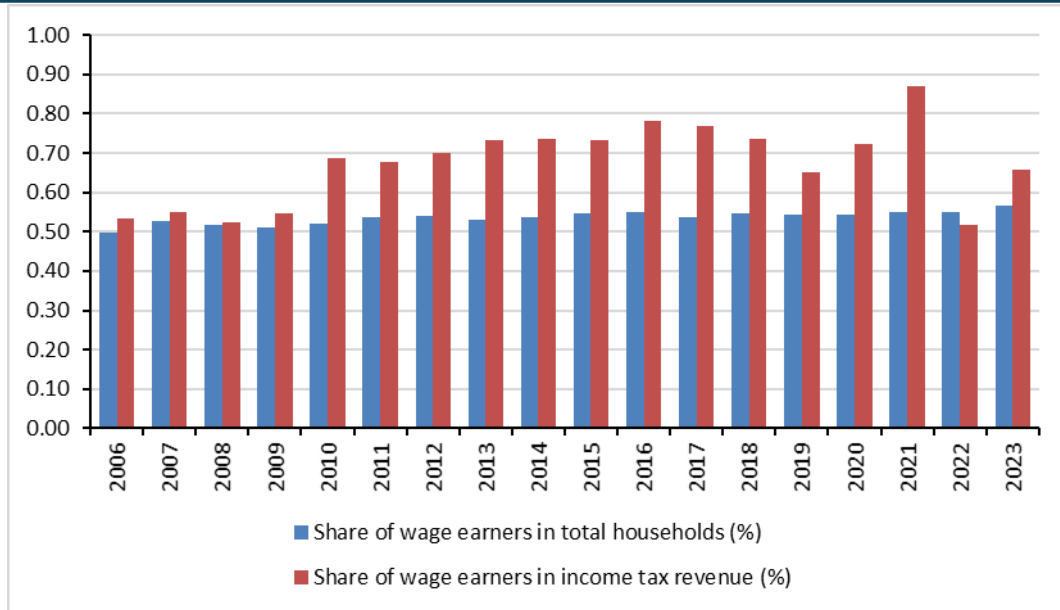
Fig. 3 presents the yearly correspondence between the share of wage income in total income and the share of total income tax paid by wage earners, which together form the basis of ITRI.



**Fig. 3.** Deviation from tax justice based on ITRI variables

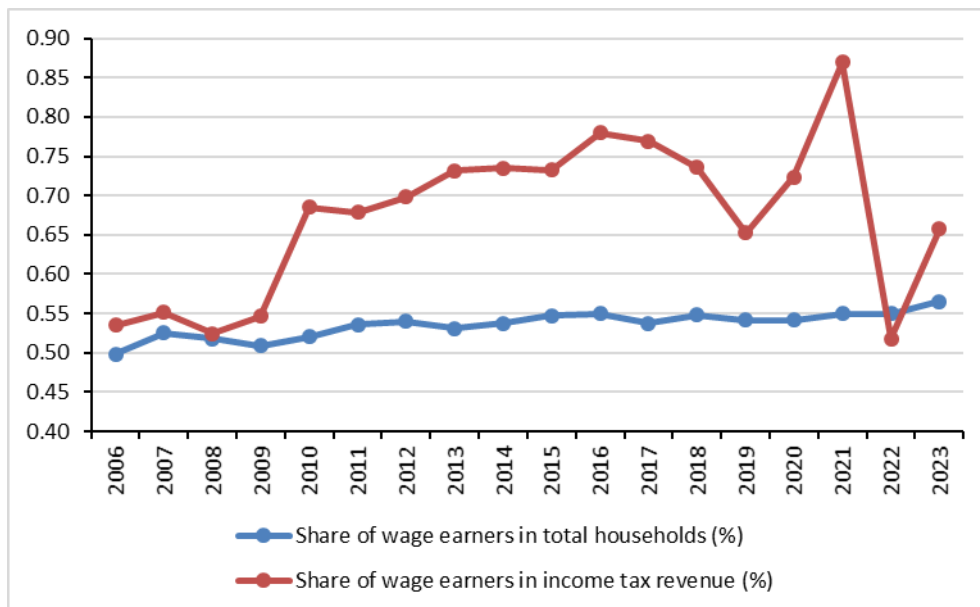
The red line and dots in Fig. 3 are equidistant from the axes and represent the points of absolute equality between the two variables—namely, the share of wage income in total income and the share of total income tax paid by wage earners. In other words, this line indicates the points where ITRI equals 1 and should be regarded as the reference for tax justice. The blue dots and the linear trend line represent the actual situation. The greater the distance between the actual indicators and the line of absolute equality, the greater the degree of income tax injustice. Moreover, the fact that the blue indicators are positioned in the upper-left region relative to the absolute equality line indicates that ITRI is greater than 1—that is, wage earners are paying more in income tax than their economic representation would warrant.

Fig. 4 illustrates the annual differences between the share of wage earners in the total number of households and the share of total income tax paid by wage earners, which together form the basis of ITDI.



**Fig. 4.** Comparison of the variables constituting ITDI

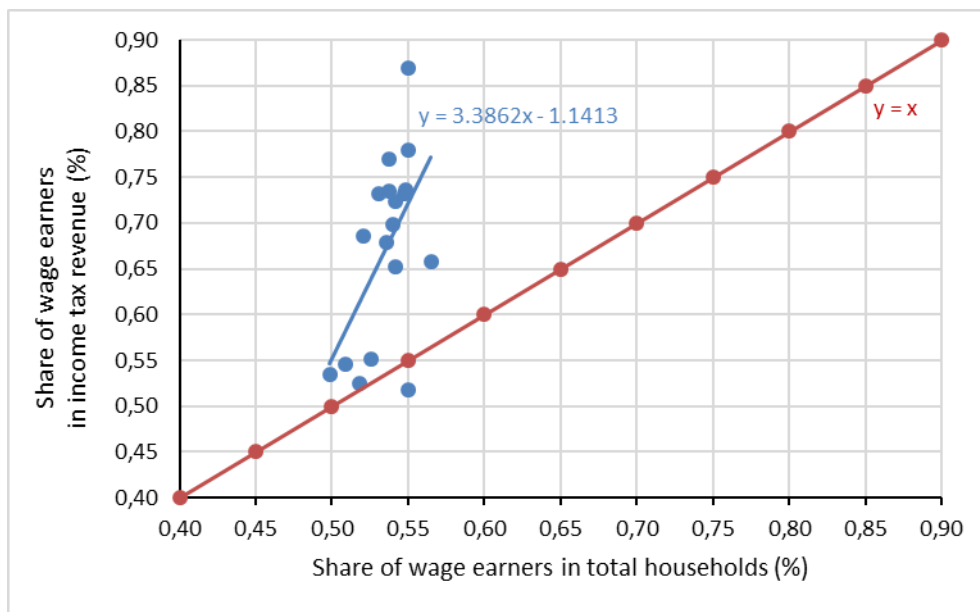
Throughout the 2006–2023 period in Türkiye—except for the year 2022—the share of income tax paid by wage earners consistently exceeded their share in the total number of households. The gap between these two variables notably widened starting from 2010. After a reversal in 2022, the difference returned in 2023 to approximately the average level observed in the 2010s. Figure 5 illustrates the annual trends in the share of wage earners within total households and the share of total income tax paid by wage earners, which constitute the basis of ITDI.



**Fig. 5.** Trends in the variables constituting ITDI

The share of wage earners within the total number of households shows a steady upward trend over the 2006–2023 period. While the share of income tax paid by wage earners fluctuates from year to year—due to reasons previously explained in relation to Fig. 2—it generally exhibits an upward trajectory throughout the same period.

Fig. 6 presents the yearly correspondence between the share of wage earners within total households and the share of total income tax paid by wage earners, which together form the basis of ITDI.



**Fig. 6.** Deviation from tax justice based on ITDI variables

In Fig. 6, the blue dots representing the actual values and the line indicating their linear trend deviate from the line of absolute equality. Although the degree of deviation is not as pronounced as in the case of the ITRI variables, this still points to a degree of income tax injustice. Only in 2022 do the variables intersect below and to the right of the reference line, indicating that the ITDI in that year favored wage earners.

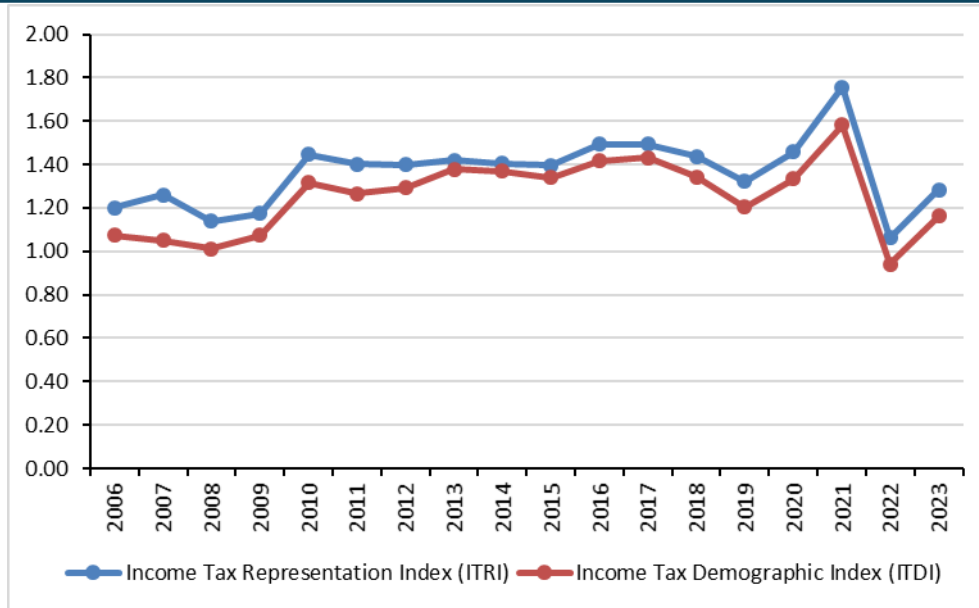
Following the presentation and interpretation of the variables constituting ITRI and ITDI, the final objective is to present the results of these indices. The findings of ITRI and ITDI, which aim to assess income tax justice for wage earners in Türkiye over the 2006–2023 period, are displayed in Table 1.

**Table 1.** Empirical findings

Years	Share of wage earners in income tax revenue (%)	Share of wage income in total income (%)	Share of wage earners in total households (%)	Income Tax Representation Index (ITRI)	Income Tax Demographic Index (ITDI)
2006	53.49	44.49	49.86	1.20	1.07
2007	55.13	43.76	52.55	1.26	1.05
2008	52.44	45.99	51.83	1.14	1.01
2009	54.62	46.45	50.92	1.18	1.07
2010	68.55	47.38	52.04	1.45	1.32
2011	67.83	48.36	53.59	1.40	1.27
2012	69.85	49.93	54.00	1.40	1.29
2013	73.16	51.52	53.07	1.42	1.38
2014	73.50	52.36	53.72	1.40	1.37
2015	73.27	52.50	54.74	1.40	1.34
2016	78.01	52.20	55.01	1.49	1.42
2017	76.93	51.50	53.76	1.49	1.43
2018	73.59	51.20	54.81	1.44	1.34
2019	65.25	49.30	54.18	1.32	1.20
2020	72.34	49.60	54.18	1.46	1.34
2021	86.96	49.54	54.98	1.76	1.58
2022	51.79	48.81	54.98	1.06	0.94
2023	65.75	51.20	56.49	1.28	1.16

ITRI has remained above 1 throughout all years, indicating that wage earners have paid more income tax than their economic capacity would warrant. In 2022, due to the income tax exemption applied to the minimum wage, the ITRI value was 1.06, which can be interpreted as a result close to the ideal of full tax justice. As for ITDI, it exceeded 1 in all years except 2022, which implies that wage earners paid more income tax than their demographic representation would suggest. Only in 2022 did the ITDI fall slightly below 1 (0.94), indicating a more favorable tax justice outcome for wage earners. Additionally, the ITDI values of 1.05 in 2007 and 1.01 in 2008 also suggest near-equitable outcomes in those years.

Figure 7 presents the trends of ITRI and ITDI for the 2006–2023 period in Türkiye.



**Fig. 7.** Trends of ITRI and ITDI

The overall trend of the ITRI and ITDI indices demonstrates a general parallelism. When the two indices are compared, it becomes evident that the ITRI has consistently remained higher than the ITDI. In other words, the excess tax burden wage earners bear relative to their economic capacity exceeds the burden they bear relative to their demographic representation. Both indices exhibit an upward trend starting from 2010, reaching a peak in 2021. A notable break occurs in 2022, primarily due to the implementation of income tax exemptions for the minimum wage. However, from 2023 onwards, both indices enter a renewed upward trajectory, indicating a resurgence in the tax burden disproportionate to wage earners' representation.

#### 4. CONCLUSION

This study develops two distinct indices to measure income tax justice for wage earners. The first is the Income Tax Representation Index (ITRI), which considers the taxes paid by wage earners relative to their economic capacity. The second is the Income Tax Demographic Index (ITDI), which evaluates taxes paid in relation to their demographic representation. Utilizing these indices, the study assesses income tax justice for wage earners in Türkiye over the 2006–2023 period. Overall, both indices reveal a pattern of income tax injustice against wage earners. Only in 2022 is a partial improvement in tax justice observed, largely due to the income tax exemption introduced for the minimum wage. Despite the continuation of this exemption, the renewed upward trend in both indices from 2023 onward is attributed to fiscal drag and inflation tax driven by high inflation, which erodes the intended relief and reinstates the disproportionate tax burden on wage earners.

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