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DISTRIBUTIONAL EFFECTS OF THE SHIFT FROM PROGRESSIVE TO FLAT-RATE TAXATION IN UZBEKISTAN

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Abstract. This study evaluates how major changes in Uzbekistan's personal income tax (PIT) and value-added tax (VAT) regimes altered the distributional structure of taxation during 2015–2025. The analysis combines official income-decile distributions, Gini coefficients, household income composition, household final consumption expenditure and spending composition with historically coded PIT and VAT rules. It applies the established Lorenz–concentration-curve framework of Kakwani (1977), complemented by effective tax-burden analysis and the Reynolds–Smolensky logic of redistribution. Because complete annual household tax-payment microdata is not publicly available for the entire period, the paper is explicitly designed as a real-data-anchored longitudinal microsimulation: official statistics and legal tax schedules are observed inputs, whereas VAT/excise incidence and some PIT distributional quantities are modeled. The progressive PIT schedules of 2015–2018 generate positive simulated Kakwani indices of 0.1535–0.1778. Under the structural benchmark in which the 12% post-2019 PIT is proportional to the ranking income base; PIT progressivity falls to zero. Modeled VAT remains moderately regressive throughout the period, with Kakwani indices near −0.05, while modeled excise incidence is more regressive. Reductions in the VAT rate from 20% to 15% in 2020 and to 12% in 2023 lower the level of indirect taxation but do not mechanically remove its relative regressivity. The results imply a shift from a tax mix containing a strong progressive direct-tax component toward one in which that offset is substantially weaker. The paper therefore distinguishes changes in statutory rates, progressivity, tax levels and redistributive effects, and cautions against interpreting before/after movements as causal effects without household-level counterfactual identification.

Keywords: tax progressivity; Kakwani index; personal income tax; value-added tax; excise tax; inequality; microsimulation; Uzbekistan.
JEL classification: H23; H24; H31; D31; D63.

1. Introduction

Tax reform affects distribution through at least two distinct channels: the level of resources collected from households and the way that burden is distributed across the income ranking. These channels are not equivalent. A lower tax rate can reduce liabilities at every income level without making the tax more progressive, while a reform of brackets, allowances or exemptions can materially change progressivity even when aggregate revenue changes little. Kakwani (1977) formalized this distinction by comparing the concentration of tax payments with the Lorenz distribution of pre-tax income. This distinction is especially relevant for Uzbekistan, where the tax system underwent major structural reforms over the last decade.

Until the end of 2018, resident PIT operated through a progressive schedule. From 2019 the system moved to a unified 12% benchmark rate. VAT remained at 20% through 2019, fell to 15% from 2020, and was reduced to 12% from 2023. These reforms jointly altered the architecture of direct and indirect taxation. A progressive PIT tends to concentrate payments toward the upper end of the income distribution; a uniform PIT applied proportionally to the same ranking income has a Kakwani index of zero by construction. Consumption taxes, by contrast, may remain regressive relative to annual income when lower-income households consume a larger fraction of current resources.

The empirical question is therefore not simply whether tax rates became higher or lower. It is whether the reforms changed the concentration of tax burdens relative to the underlying income distribution, and whether the progressive contribution of direct taxation continued to offset regressive indirect taxation. This paper constructs a longitudinal 2015–2025 distributional database and applies established progressivity and redistribution measures to that question.

The objective of this study is to quantify the evolution of PIT, VAT and excise-tax progressivity in Uzbekistan and to identify how the 2019 PIT reform and subsequent VAT-rate reductions altered the distributional structure of the modeled tax system. The contribution is threefold. First, it assembles annual official distributional and macro-household indicators into a consistent tax-incidence database. Second, it applies the Kakwani framework separately to direct and indirect taxes rather than inferring distributional effects from statutory rates. Third, it makes the simulation boundary explicit: the paper separates observed official inputs, mechanically derived grouped indicators and modeled tax-incidence outputs.

The main finding is that the modeled system becomes markedly less progressive after 2019 because the positive rate-structure progressivity generated by the earlier PIT schedule disappears, while VAT and excise remain regressive relative to annual income. VAT-rate reductions reduce tax levels, but their Kakwani coefficients remain negative because a uniform rate change alone does not necessarily alter the relative concentration of the tax base.

2. Literature Review

The modern measurement literature distinguishes local progression of tax schedules from global distributional progressivity. Musgrave and Thin (1948) related progression to before- and after-tax inequality, but Kakwani (1977) showed that redistribution depends jointly on the average tax rate and progressivity. His index measures the difference between the concentration coefficient of tax payments and the Gini coefficient of pre-tax income. A positive value indicates that taxes are more concentrated among higher-income units than income itself; a negative value indicates regressivity. Suits (1977) proposed a related global measure based on the concentration of taxes relative to cumulative income. These contributions remain foundational because they permit tax systems with different average rates to be compared on a common distributional basis.

Subsequent work refined the theoretical treatment of tax reform. Keen, Papapanagos and Shorrocks (2000) demonstrate that standard progressivity results require modification when tax liabilities can be zero and analyze how allowances, deductions and credits change the distribution of tax burdens. This is relevant to statutory PIT analysis because changes in schedules cannot be reduced to movements in the top marginal rate. The IMF literature on PIT progressivity similarly emphasizes structural measures of schedule progressivity and the distinction between statutory design and realized distributional outcomes.

Progressivity and redistribution are related but conceptually distinct. Reynolds–Smolensky redistribution is the reduction in the Gini coefficient between pre-tax and post-tax income. Under no reranking, redistribution depends on both the average tax rate and Kakwani progressivity. A highly progressive tax levied at a very low average rate can have a small redistributive effect, whereas a less progressive tax with a large revenue share can have a substantial effect. Later decomposition work further separates vertical redistribution from horizontal inequity and reranking. This paper therefore interprets Kakwani as a progressivity measure, not as a complete measure of the change in inequality.

The flat-tax literature stresses that a single statutory rate does not by itself determine realized progressivity. Keen, Kim and Varsano (2008) show that flat-tax reforms differ in allowances, bases and enforcement and therefore can produce different distributional outcomes. In the benchmark used here, however, a uniform 12% PIT applied proportionally to the same pre-tax income concept used for ranking has a concentration coefficient equal to the income Gini, so Kakwani equals zero. Departures from zero in observed microdata would arise from exemptions, deductions, non-taxable income, informal earnings, differential compliance or other base differences.

Consumption-tax incidence requires a different empirical treatment from PIT. Household expenditure rather than income is the proximate tax base, and consumption-to-income ratios generally vary along the income distribution. Modern household-incidence research therefore combines expenditure microdata with commodity-specific tax treatment, exemptions and rates. Recent work in the Journal of Public Economics shows that consumption taxes can offset part of the redistribution generated elsewhere in the fiscal system when evaluated against current

income. This literature also emphasizes that conclusions can differ when the welfare denominator is current income, expenditure or lifetime resources.

For VAT, the relevant burden is not obtained by multiplying total household income by the statutory rate. The analyst must identify taxable consumption, distinguish exempt or zero-rated items where possible, and account for the fact that expenditures are often reported tax-inclusive. Where tax-inclusive expenditure E faces rate τ, the embedded VAT is Eτ/(1+τ). When item-level data are unavailable, calibrated effective taxable shares can be used, but the result must be reported as a simulation rather than an observed tax payment. The same principle applies to excises, for which quantity-specific or ad valorem liabilities are preferred when detailed consumption information exists.

Uzbekistan has increasingly rich official distributional statistics and survey infrastructure, including annual income-decile shares and Gini indicators from the national statistical system, the World Bank Listening to the Citizens of Uzbekistan panel, and the earlier Jobs, Skills and Migration Survey. However, a single publicly accessible household file containing consistent annual 2015–2025 pre-tax income, detailed consumption, actual PIT liabilities, VAT exposure and excise quantities is not available for the entire study period. This creates a familiar fiscal-incidence problem: official aggregates are reliable but incomplete for household incidence, while household surveys provide rich microeconomic structure for selected years.

The present study addresses this gap with a transparent real-data-anchored microsimulation. It does not replace missing observations with claims of observed household tax payments. Instead, official distributions and macro aggregates anchor the annual data, historical legal schedules define tax regimes, and modeled incidence parameters are used only where the public data do not directly identify the required household tax burden. This design is consistent with the broader microsimulation tradition, provided that calibration assumptions and sensitivity are clearly disclosed.

H1: The progressive PIT schedules used through 2018 generate positive Kakwani indices. H2: the 2019 transition to a uniform 12% PIT materially reduces structural PIT progressivity. H3: VAT is regressive relative to annual income because consumption propensities decline with income. H4: lowering the uniform VAT rate reduces the level of VAT liabilities but does not necessarily eliminate relative regressivity. H5: once PIT becomes proportional in the benchmark; regressive indirect taxes receive greater relative importance in the overall distributional structure.

3. Data and Methodology

3.1 Data architecture and source hierarchy

The empirical database covers 2015–2025. The source hierarchy gives priority to Uzbekistan's National Statistics Committee/SIAT for income distributions and household aggregates; official legal sources for tax schedules; World Bank household-survey metadata and microdata documentation for variable definitions and survey-design guidance; and international databases such as the World Bank, IMF and WID for external cross-checking rather than replacement of the official domestic series. The core annual observed variables are decile income shares, official Gini, total population income, production/property/transfer income

shares, household final consumption expenditure, consumer spending composition and nominal wages where available.

Survey resources are used conservatively. Listening to the Citizens of Uzbekistan contains household-round observations and variables covering wages, self-employment, pensions, benefits and remittances, while the Jobs, Skills and Migration Survey provides detailed employment and consumption information for an earlier benchmark. Because authenticated/raw annual records are not available within the constructed database for the full 2015–2025 period, those surveys inform variable architecture and plausibility rather than being represented as directly observed annual tax records.

Table 1. Tax rates of selected taxes in Uzbekistan[1]

Period	PIT regime	VAT standard rate	Analytical interpretation
2015	Progressive: 0/8.5/17/23%	20%	Progressive direct-tax schedule
2016–2017	Progressive: 0/7.5/17/23%	20%	Progressive direct-tax schedule
2018	Progressive: 0/7.5/16.5/22.5%	20%	Last pre-flat PIT year
2019	12% flat benchmark	20%	PIT structural break
2020–2022	12% flat benchmark	15%	First VAT reduction
2023–2025	12% flat benchmark	12%	Second VAT reduction

The annual legal coding is used to define reform regimes rather than to claim that every household faced the headline rate on every unit of economic income. For progressive years, the simulated PIT schedule is applied to the modeled taxable-income base. For 2019 onward, the structural benchmark treats the 12% rate as proportional to taxable income. The VAT rate is combined with modeled taxable consumption exposure; therefore a change in the statutory rate affects the tax level while the Kakwani index changes only if relative tax shares across deciles change.

[1]Tax Codes of the Republic of Uzbekistan and other normative legal acts in force during the period 2015–2025

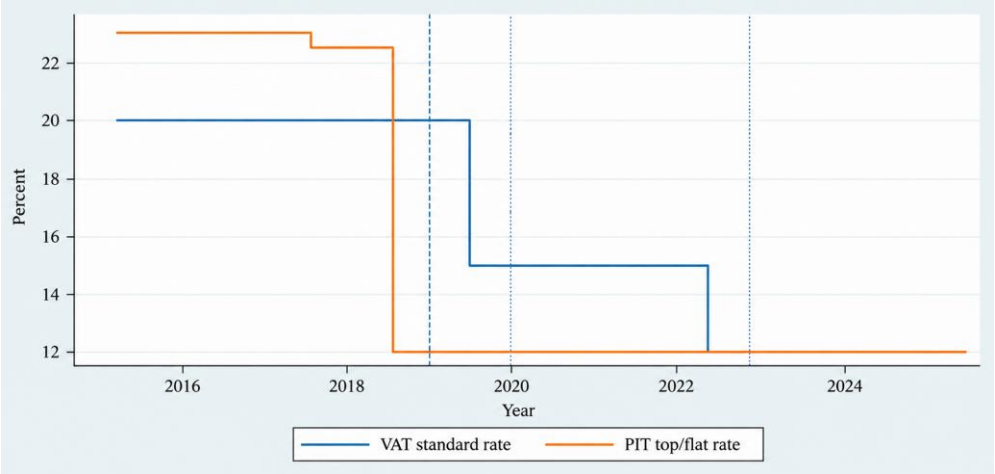


Figure 1. Statutory PIT and VAT rate regimes[2]

3.2 Welfare ranking and Lorenz distribution

Households are ranked by pre-tax income. Because the longitudinal public series is available in deciles, each year is represented by ten equally sized population groups. Let s_{dt} denote the income share of decile d in year t. Cumulative income is:

$$L_{dt} = \sum_{j \le d} s_{jt}$$

The grouped Gini is calculated from the trapezoidal area under the Lorenz curve:

$$G_t = 1 - \sum_{d=1}^{10} \left(L_{dt} + L_{d-1,t}\right)\left(P_{dt} + P_{d-1}\right)$$

where each population increment equals 0.10. The grouped Gini is used as the internally consistent inequality benchmark for concentration calculations because it is constructed at the same level of aggregation as the tax shares.

The official Gini is retained as an external benchmark. The two series need not coincide exactly because official Gini estimation can use unit-record information, survey weights and methodological adjustments unavailable in a decile reconstruction. This distinction is important: forcing grouped decile shares to reproduce a lower unit-record Gini would create an internally inconsistent synthetic distribution.

3.3 PIT incidence and concentration

For each year, PIT liability is represented by

$$T_{dt}^{PIT} = f_t(Y_{dt}^{taxable})$$

where f_t is the statutory schedule. The tax share of each decile is

[2]Calculated and formulated by the author.

$$q_{dt}^{PIT} = \frac{T_{dt}^{PIT}}{\sum_d T_{dt}^{PIT}}$$

and the cumulative concentration ordinate is

$$Q_{dt}^{PIT} = \sum_{j \le d} q_{jt}^{PIT}$$

The concentration coefficient is

$$C_t^{PIT} = 1 - \sum_{d=1}^{10} (Q_{dt}^{PIT} + Q_{d-1,t}^{PIT}) \times 0.10$$

PIT progressivity is then

$$K_t^{PIT} = C_t^{PIT} - G_t$$

For 2019–2025 the main structural benchmark sets$K_t^{PIT} = 0$ when the 12% rate is applied proportionally to the same ranking income base. This is a benchmark property, not an empirical claim that actual PIT payments are perfectly proportional. A separate microdata article should relax this assumption using observed taxable wages, exemptions, informal income and compliance.

3.5 VAT and excise incidence

Consumption exposure is modeled as $C_{dt} = Y_{dt} c_{dt}$, with c_{dt} declining across deciles. Annual official food, non-food and service spending shares anchor the commodity composition. The effective VAT base is:

$$B_{dt}^{VAT} = \alpha_F Food_{dt} + \alpha_N Nonfood_{dt} + \alpha_s Service_{dt},$$

where α parameters capture taxable exposure rather than statutory rates. VAT liability is:

$$T_{dt}^{VAT} = \tau_t^{VAT} B_{dt}^{VAT}.$$

Excise exposure is modeled analogously from a declining excisable-consumption propensity. These parameters generate relative tax shares; they are not described as observed household payments. For each indirect tax j, $K_{jt} = C_{jt} - G_t$. Negative values indicate that tax payments are less concentrated than income and therefore regressive relative to annual income. Because the same ranking is maintained across components, an aggregate Kakwani can in principle be decomposed as the tax-revenue-weighted sum of component Kakwani indices when consistent revenue weights are available.

3.6 Effective tax burden and redistribution

The average or effective tax burden for tax j and decile d is $ATR_{djt} = T_{jdt}/T_{dt}$. This measure complements Kakwani because a tax can remain equally regressive in relative terms while its absolute and average burden falls after a rate reduction. The total modeled burden is the sum of PIT, VAT and excise liabilities. For redistribution, post-tax income is $Y_{dt}^{post} = Y_{dt}^{pre} -$

T_{dt} and the Reynolds–Smolensky index is $RS_t = G_t^{pre} - G_t^{post}$. Positive RS indicates an inequality-reducing tax; negative RS indicates an inequality-increasing tax.

Where no reranking occurs, the redistributive effect can be related to the average tax rate and Kakwani progressivity. In household microdata, reranking should additionally be measured as the difference between the post-tax Gini and the post-tax concentration coefficient evaluated using the pre-tax ranking. Because the present longitudinal database is grouped by pre-tax income decile, precise reranking is not identified and is therefore not used as a headline result.

3.7 Reform comparisons and identification limits

The analysis reports discrete changes around 2019, 2020 and 2023. For example, $\Delta K_{PIT,2019} = K_{PIT,2019} - K_{PIT,2018}$. These are institutional before/after comparisons, not causal treatment effects. Other macroeconomic changes, shifts in labor income, transfers, consumption patterns and survey composition occur simultaneously. A causal design would require a credible counterfactual, such as household-level microsimulation holding the income distribution fixed, difference-in-differences with differently exposed groups, or a structural tax-benefit model.

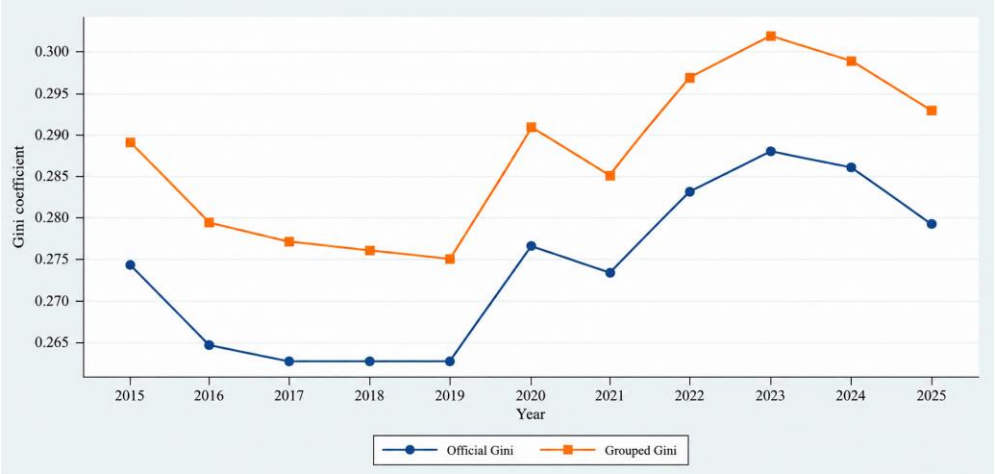


Figure 2. Official and grouped Gini coefficients[3]

Third, modeled indirect-tax incidence is interpreted by sign, ordering and persistence rather than by false precision. The exact magnitudes depend on the assumed decile consumption gradients and taxable shares and should be re-estimated when full commodity-level household microdata become available.

4. Results

The grouped Gini declined from 0.2894 in 2015 to 0.2750 in 2019. It then rose to 0.2905 in 2020, reached 0.3019 in 2023 and eased to 0.2930 by 2025. The official Gini follows a broadly similar temporal pattern at a somewhat lower level. This confirms that the distributional environment surrounding the tax reforms was not constant. Consequently, changes in observed inequality cannot be attributed mechanically to tax reforms.

[3] www.stat.uz – National Statistics Committee of the Republic of Uzbekistan.

The simulated PIT Kakwani index is positive in every progressive-rate year: 0.1535 in 2015, 0.1611 in 2016, 0.1778 in 2017 and 0.1677 in 2018. The positive sign means that PIT liabilities are more concentrated toward higher-income deciles than pre-tax income. The peak in 2017 is consistent with a schedule whose higher brackets concentrate liabilities at the top, although the precise year-to-year differences also reflect the annual income distribution and the simulation mapping.

Table 2. Trends in Income Inequality and Tax Progressivity in Uzbekistan, 2015–2025: Gini and Kakwani Indices[4]

Year	Official Gini	Grouped Gini	PIT Kakwani	VAT Kakwani	Excise Kakwani
2015	0.274	0.2894	0.1535	-0.0551	-0.2016
2016	0.264	0.2794	0.1611	-0.0547	-0.2000
2017	0.262	0.2766	0.1778	-0.0547	-0.2003
2018	0.262	0.2756	0.1677	-0.0541	-0.1990
2019	0.262	0.2750	0.0000	-0.0530	-0.1945
2020	0.276	0.2905	0.0000	-0.0535	-0.1942
2021	0.273	0.2853	0.0000	-0.0487	-0.1893
2022	0.283	0.2975	0.0000	-0.0511	-0.1966
2023	0.288	0.3019	0.0000	-0.0515	-0.1939
2024	0.286	0.2995	0.0000	-0.0513	-0.1946
2025	0.279	0.2930	0.0000	-0.0498	-0.1915

The 2018 value of 0.1677 provides the immediate pre-reform benchmark. It should be interpreted as rate-structure plus grouped-distribution progressivity under the model, not as an official administrative Kakwani estimate.

The central result is the change from $K_{PIT} = 0.1677$ in 2018 to the proportional benchmark $K_{PIT} = 0$ from 2019 onward. The immediate modeled change is −0.1677. This does not mean that the 12% rate increased every lower-income household's tax burden or reduced every upper-income household's burden; it means that the progressive concentration generated by the rate schedule itself disappears when the same uniform rate is applied proportionally to the ranking base.

This distinction is crucial for interpreting the reform. A flat statutory rate can coexist with realized progressivity if low-income households have exemptions or if taxable income rises more than proportionally with total income. Conversely, informality or differential compliance can reduce progressivity. The present benchmark isolates the structural rate effect and therefore provides a clean reference point for future microdata estimation.

Modeled VAT Kakwani indices remain negative throughout the sample, ranging from approximately −0.055 in the early years to −0.050 in 2025. The negative sign reflects the declining consumption-to-income profile embedded in the incidence model. Lower-income

[4] Calculated and formulated by the author.

deciles devote a larger share of annual income to consumption and therefore carry a larger VAT burden relative to income even when higher-income households pay more VAT in absolute currency terms.

The reduction from 20% to 15% in 2020 does not generate a discrete improvement in Kakwani: the index moves from about −0.0530 in 2019 to −0.0535 in 2020. Similarly, the reduction to 12% in 2023 does not eliminate regressivity. This is methodologically expected. Multiplying every household's taxable consumption by a common lower rate reduces liabilities but leaves relative tax shares nearly unchanged unless the tax base, exemptions or consumption composition also change.

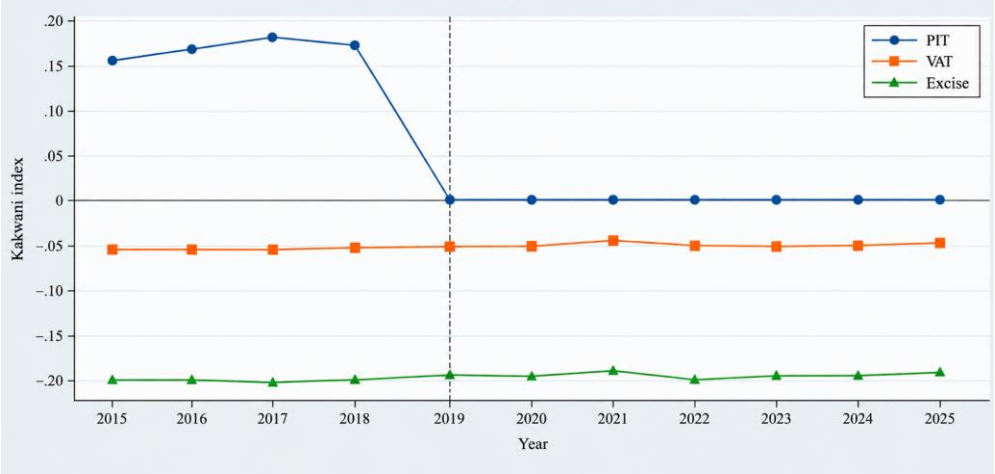


Figure 3. Simulated Kakwani indices by tax[5]

The modeled excise Kakwani coefficients are substantially more negative than the VAT coefficients, approximately −0.19 to −0.20 across the period. Within the simulation this occurs because excisable consumption exposure is assumed to decline more sharply relative to income across deciles. The result indicates stronger regressivity than VAT under the specified consumption profile. It should be treated as a hypothesis-generating estimate until commodity quantities and product-specific excise rules are linked to household microdata.

The official income-composition series shows a pronounced change over the period. Production income falls from 82.0% of total population income in 2015 to 67.1% in 2025, while transfers rise from 15.8% to 29.6%; property income remains comparatively small. This matters for tax incidence because a PIT concentrated on formal labor income need not be proportional to total household resources when the composition of income differs across deciles.

[5]Calculated and formulated by the author.

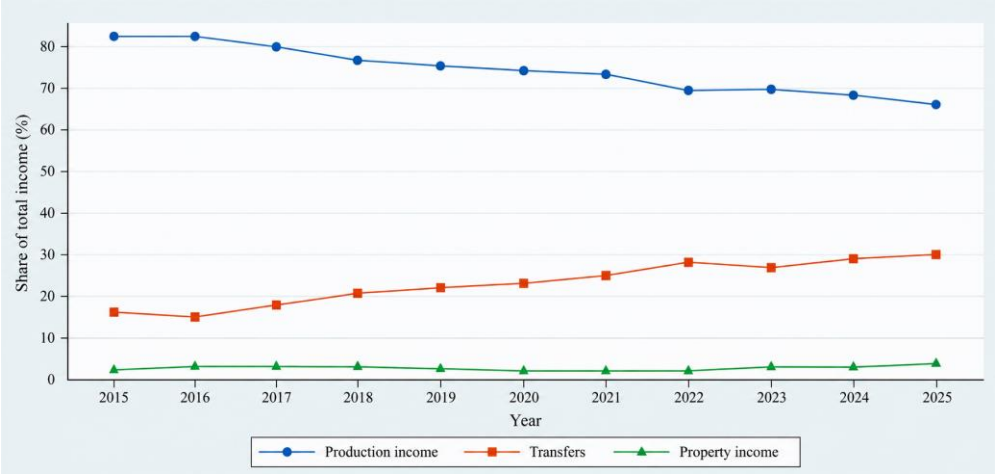


Figure 4. Composition of total population income[6]

The changing composition also highlights why the post-2019 K_PIT=0 result is deliberately labeled a structural benchmark. A 12% tax on taxable labor income is proportional to taxable labor income, but it need not be proportional to total economic income when transfers, property income, self-employment and informal earnings differ systematically across the distribution. Future household-level estimation should therefore rank households by a comprehensive pre-fiscal income concept and calculate actual or simulated PIT on the legally taxable components.

The food share of consumer spending varies materially across years and rises above 55% in several recent years. Since food categories may face different effective VAT exposure from non-food goods and services, expenditure composition affects the simulated concentration of VAT independently of the headline rate. The model therefore uses annual official spending composition rather than holding the consumption basket constant for the entire period.

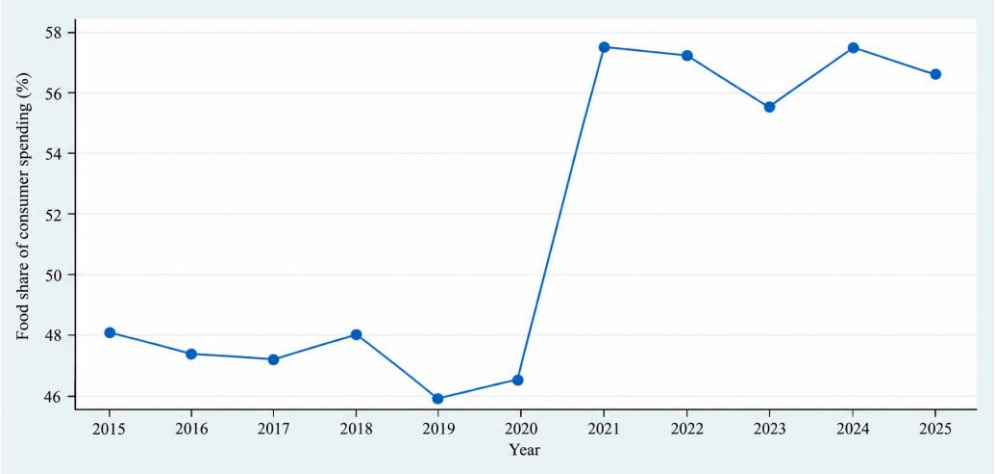


Figure 5. Food share of consumer spending[7]

[6]Calculated and formulated by the author.
[7] www.stat.uz – National Statistics Committee of the Republic of Uzbekistan.

The logic of the results can be seen graphically. A tax concentration curve below the income Lorenz curve indicates that tax payments are more concentrated among richer households and therefore progressive; a tax concentration curve above the Lorenz curve indicates regressivity. Under a proportional tax on the ranking income, the two curves coincide. This geometric interpretation is the basis of the Kakwani index.

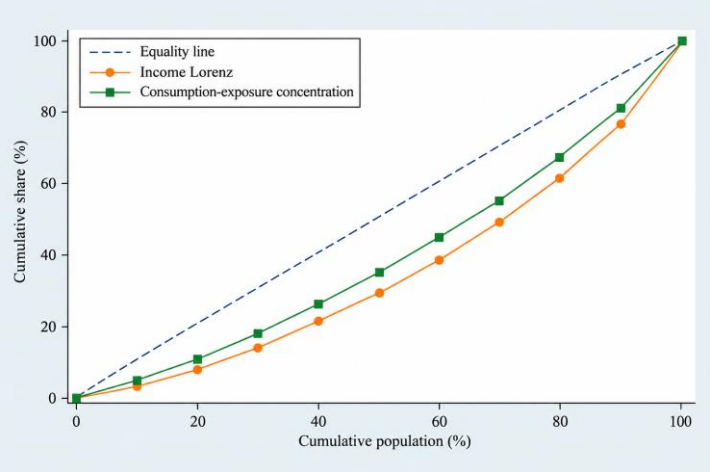


Figure 6. Illustrative 2025 income Lorenz and modeled consumption-exposure concentration curves[8]

The 2025 consumption-exposure curve lies above the income Lorenz curve in the simulation, consistent with a negative indirect-tax Kakwani coefficient. This does not imply that lower-income households pay more VAT in absolute terms. It means that their tax payment relative to income is larger than the corresponding burden higher in the income distribution.

Within the model, the answer is yes in a precise structural sense: the tax mix becomes less progressive and more exposed to regressive indirect taxation after 2019. Before the reform, PIT contributes a positive Kakwani component of roughly 0.15–0.18. After the reform, that rate-structure contribution falls to zero in the proportional benchmark, while VAT and excise remain negative. Thus, the progressive offset that previously counterbalanced indirect-tax regressivity is removed.

However, “more regressive” should not be conflated with “higher total tax burden” or “higher observed inequality caused by tax reform.” VAT-rate reductions from 20% to 15% and then 12% reduce the level of VAT liabilities. The model therefore identifies competing changes: less direct-tax progressivity, but lower indirect-tax rates. A complete welfare assessment requires both concentration/progressivity and the level of tax payments, ideally estimated from household microdata.

5. Discussion

The 2019 reform illustrates a general trade-off in tax design. A uniform PIT rate can simplify withholding, improve transparency and reduce marginal-rate dispersion, but the rate schedule

[8]Calculated and formulated by the author.

itself no longer produces the same vertical differentiation as a progressive bracket structure. The flat-tax literature cautions that the overall effect depends on allowances, base broadening and compliance. The Uzbekistan benchmark is therefore best interpreted as evidence that statutory rate progressivity declined sharply, not as a complete judgment on the reform's efficiency or welfare effects.

The VAT findings demonstrate why progressivity indices must be interpreted separately from tax levels. If a common VAT rate is reduced proportionally across the same taxable base, each decile's absolute liability falls but its share of total VAT can remain almost unchanged. Since the concentration coefficient is based on relative tax shares, Kakwani may change little. The reform can still benefit households through lower liabilities; it simply does not necessarily alter the relative incidence pattern.

Overall tax progressivity depends on both component Kakwani indices and the revenue weights attached to those components. A progressive PIT can offset part of the regressivity of VAT and excises. Once PIT becomes structurally proportional, the overall system can move toward regressivity even if VAT rates are simultaneously reduced. This is the key compositional insight of the study and provides a more informative interpretation than comparing headline rates alone.

The findings are consistent with the broader literature in two respects. First, progressive income taxes tend to have concentration coefficients above the pre-tax Gini when higher-income groups face higher effective rates. Second, consumption taxes evaluated against annual income are commonly regressive because saving rates and consumption propensities vary with income. What is distinctive in Uzbekistan is the sequencing of reforms: a large reduction in direct-tax rate progressivity occurred immediately before substantial reductions in the standard VAT rate. This creates a natural setting for separating progressivity from the tax level.

The results do not imply that progressive PIT rates are universally preferable or that VAT reductions are ineffective. They show that different reforms target different dimensions. Progressive PIT schedules alter vertical differentiation in direct taxation; VAT-rate reductions alter the burden level; exemptions and targeted transfers can alter distributional incidence; and compliance reforms can change effective rates independently of statutory rates. Policy evaluation should therefore report the tax level, effective rates by decile, Kakwani progressivity and Reynolds–Smolensky redistribution together.

For future work, the strongest empirical design would construct repeated household microsimulations using actual survey distributions and hold selected elements constant to isolate reform channels. A counterfactual exercise could apply the 2018 PIT schedule to the 2019 income distribution and the 2019 flat schedule to the 2018 distribution, separating schedule effects from distributional change. Similar counterfactuals could apply 20%, 15% and 12% VAT rates to a common consumption distribution. Such decompositions would remain simulations but would identify the mechanical reform effect more cleanly than simple year-to-year comparisons.

6. Conclusion

This paper develops a longitudinal distributional assessment of Uzbekistan's major household-tax reforms over 2015–2025 using official income distributions and macro-household statistics combined with historically coded tax rules. The methodology is grounded in the established Kakwani concentration framework and the distinction between progressivity and redistribution emphasized in the public-finance literature.

Three findings stand out. First, the progressive PIT schedules in 2015–2018 generate clearly positive simulated Kakwani indices, between 0.1535 and 0.1778. Second, the transition to a 12% flat PIT in 2019 removes rate-structure progressivity in the proportional benchmark, producing a sharp decline from K=0.1677 in 2018 to zero. Third, modeled VAT remains moderately regressive relative to annual income throughout the period, while excise is more regressive under the assumed consumption profile. The VAT reductions from 20% to 15% and subsequently 12% lower the tax level but do not mechanically transform the relative concentration of VAT burdens.

The combined interpretation is that Uzbekistan's tax mix became less progressive after 2019 in the model because the progressive direct-tax offset weakened while regressive indirect taxes remained. This statement concerns the structure of incidence, not a causal claim that the reforms increased national inequality. Observed inequality is shaped by earnings, transfers, employment, demographics, macroeconomic shocks and other policies as well as taxation.

The analysis also demonstrates a methodological lesson with wider relevance: statutory rates alone are insufficient for distributional evaluation. A comprehensive assessment should jointly report the average tax burden, concentration coefficients, Kakwani progressivity, post-tax inequality and Reynolds–Smolensky redistribution. The next empirical step is to replace calibrated incidence parameters with actual household microdata and commodity-level tax rules, allowing survey-weighted confidence intervals, dominance tests, reranking analysis and formal counterfactual reform decomposition.

References

1. Kakwani, N. C. (1977). Measurement of tax progressivity: An international comparison. The Economic Journal, 87(345), 71–80. https://doi.org/10.2307/2231833

2. Suits, D. B. (1977). Measurement of tax progressivity. American Economic Review, 67(4), 747–752.

3. Musgrave, R. A., & Thin, T. (1948). Income tax progression, 1929–48. Journal of Political Economy, 56(6), 498–514.

4. Keen, M., Papapanagos, H., & Shorrocks, A. (2000). Tax reform and progressivity. The Economic Journal, 110(460), 50–68. https://doi.org/10.1111/1468-0297.00490

5. Keen, M., Kim, Y., & Varsano, R. (2008). The "flat tax(es)": Principles and experience. International Tax and Public Finance, 15(6), 712–751.

6. Lambert, P. J. (1993). Evaluating impact effects of tax reforms. Journal of Economic Surveys, 7(3), 205–242.

7. Kakwani, N. C. (1977). Applications of Lorenz curves in economic analysis. Econometrica, 45(3), 719–727.

8. Duclos, J.-Y., Jalbert, V., & Araar, A. (2003). Classical horizontal inequity and reranking: An integrating approach. Research on Economic Inequality, 10, 65–100.

9. International Monetary Fund. (2018). Personal Income Tax Progressivity: Trends and Implications. IMF Working Paper 18/246.

10. European Commission, Joint Research Centre. Redistribution, progressivity and level: EUROMOD indicators. Methodological metadata.

11. National Statistics Committee of the Republic of Uzbekistan. SIAT official statistics: living standards, income distribution, Gini coefficient, household income and expenditure series.

12. Republic of Uzbekistan. Presidential and tax-law instruments governing PIT and VAT reforms, including the 2019 unified PIT reform and subsequent VAT-rate changes.

13. World Bank. Listening to the Citizens of Uzbekistan (L2CU), survey documentation and data dictionary.

14. World Bank. Uzbekistan Jobs, Skills and Migration Survey, survey documentation and microdata catalogue.

15. World Bank. Poverty and Inequality Platform and Uzbekistan country indicators.

16. World Inequality Database (WID). Distributional data and metadata for Uzbekistan and comparative inequality analysis.

17. International Monetary Fund. Uzbekistan country and fiscal statistics, used for macro-fiscal cross-checking where comparable.