

TECHNICAL PAPER ON VARIABILITY OF TAX REVENUE SINCE 2019

TECHNICAL PAPER 1/24

July 4th, 2024



Independent Authority
for Fiscal Responsibility



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for Fiscal Responsibility

The Independent Authority for Fiscal Responsibility (AIReF) was created with the mission of ensuring strict compliance with the principles of budgetary stability and financial sustainability enshrined in Article 135 of the Spanish Constitution.

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CONTENTS

1.	Introduction	7
2.	Change in tax revenue: main results.....	11
3.	Change in Personal Income Tax revenue	17
4.	Change in Corporate Income Tax revenue	25
5.	Change in VAT revenue	31
6.	Change in special taxes and other tax revenue	37
ANNEX I.	Breakdown of the variability of tax revenue by taxes and factors	43
ANNEX II.	Breakdown of Personal Income Tax variability	45
ANNEX III.	Breakdown of Corporate Income Tax variability	47
ANNEX IV.	Breakdown of VAT variability.....	50

1. INTRODUCTION

In this technical paper, AIReF updates its analysis of the main factors that have had an impact on the changes in tax revenue in recent years. This update incorporates the most recent data available, and the methodological improvements implemented in its estimation procedures with respect to those in the previous paper. Since the pandemic, tax revenue has shown a unique evolution, affected by the high uncertainty associated with the upturn in economic activity, inflation and the multiple fiscal measures adopted to counteract its effects. After the downturn in 2020, the common feature has been its extraordinary dynamism, with tax collection growth rates reaching double digits in 2021 and 2022 and 6.4% in 2023. In order to quantify the different factors that have led to this increase in tax collection, AIReF published a breakdown exercise of the variability of the main taxes¹ in June last year, which it is now revising with the incorporation of the tax collection data observed for 2023 and with the revision of the Spanish National Accounts series published by the INE in September 2023, which has led to an upward revision of the nominal GDP levels and its composition. It also considers the updating of the tax bases and tax accruals, which are provisional in the Tax Agency publications for the last two years available. It also incorporates the methodological improvements implemented in AIReF's estimation

¹ [Variability of tax revenue](#)

procedures, which mainly affect the Corporate Income Tax forecasting models, which have been broken down by type of instalment payment calculation and type of company (large companies, groups and SMEs).

The time scope of the analysis refers to the tax collection recorded during the period 2019 to 2023 and AIRcF's forecasts for 2024 as included in its Report on the Initial Budgets of the General Government (GG) 2024². The study is carried out in detail and independently on the tax collection data for each of the main taxes: Personal Income Tax, VAT, Corporate Income Tax, special taxes and other tax revenue as a whole.

The variability factors are classified into six categories, including an unexplained variability component that includes changes that cannot be explained by economic activity, by the tax collection structure inherent in the different tax items and by regulatory changes. The real component reflects the relationship between macroeconomic variables in volume terms and the main taxes. The price component includes the part of the increase due to inflation. It also breaks down how much of the growth is due to the increase in the average Personal Income Tax rate without an increase in the rate. Another component groups together the changes generated by different taxation elements, which have been perfectly identified and which have not been broken down into real factors or prices, such as changes in Corporate Income Tax due to the settlement and instalment payments relating to SMEs; changes due to extraordinary refunds and exceptional income; changes in income from movable capital and leased property; in withholdings on movable capital, on leases and on investment funds; in Personal Income Tax instalment payments; in the tax on lotteries; in withholdings for fiscal transparency and in family deductions. The measures component includes the change caused by the regulatory changes adopted, both temporary and permanent. The rest of the change that cannot be included in any of the previous categories is defined as unexplained variability.

The core of the analysis focuses on the breakdown of the variability of the tax bases for the main taxes in relation to the underlying macroeconomic variables. These relationships are used to break down the real evolution or volume component from the price component, using data on recipients and income from the Tax Agency for Personal Income Tax, while AIRcF's projection models for the respective tax bases are used for VAT and Corporate Income Tax. Based on the breakdown of the change in the tax base, the breakdown of tax revenue is deduced by applying the structure inherent to each of the

² [Report on the Initial Budget of the General Government 2024](#)

items analysed, considering their accrual by component, and isolating the change resulting from the regulatory measures introduced during the period analysed. For special taxes and other tax revenue, the analysis is simplified by separating the tax collection of those taxes whose evolution is linked to prices from those whose evolution is linked to volume. The breakdown obtained for each block of taxes analysed is integrated through the contributions to the growth of each of them to the total tax revenue, thus obtaining an overall result that completes the partial view by tax. The paper is divided into five sections. First, the main results are presented. This is followed by a breakdown of the variability of Personal Income Tax, Corporate Income Tax, VAT and, finally, the breakdown of special taxes and other tax revenue.

2. CHANGES IN TAX REVENUE: MAIN RESULTS

The update maintains the conclusions on the tax collection growth of 2021, which was mainly explained by the real component, and of 2022, mainly explained by the price component. These two years saw tax collection rates above 14%. Although the data on tax revenue in cash were already final in the analysis presented the previous year, the results relating to tax bases and tax accruals published provisionally by the Spanish Tax Agency (AEAT) for the last two reference years are updated. The revision of the Spanish National Accounts series published by the INE in September 2023 and the latest methodological improvements implemented by AIReF are also included. Although these updates lead to changes in the variability results of the different factors, the main conclusions for this period are maintained, which show that 43% of the growth in tax collection in 2021 was explained by the real component, which boosted both direct and indirect taxes, while in 2022, on the other hand, the price component was the main factor, accounting for 47% of the growth, with a particular impact on VAT.

In 2023, although tax collection growth was more contained, the contribution of prices to growth intensified. Of the 6.4% increase observed in 2023, 85% was explained by macroeconomic variables, with a greater contribution from the price component, which accounted for 55% of the growth, compared with the real component, which contributed 29%. The average Personal Income Tax rate increased because of the rise in average compensation of

employees, contributing 19% to revenue growth. Regulatory measures subtracted 4% from growth by partially offsetting each other. Of note on the negative side were the reductions in earnings from work and in the regional Personal Income Tax rate, which offset the rise in the tax rate, and on the positive side the limitation to 50% of the offsetting of intra-group tax losses in Corporate Income Tax, among others. Lastly, with a negative impact on tax collection, the remaining miscellaneous items subtracted 0.1% from growth, mainly due to the settlement of Corporate Income Tax.

TABLE 1. BREAKDOWN OF THE VARIABILITY OF TAX REVENUE (% CHANGE AND % GDP)

TOTAL	Annual rate of change (% CHANGE)						Annual change over GDP ⁽¹⁾ (% GDP)					
	2019	2020	2021	2022	2023	2024	2019	2020	2021	2022	2023	2024
Variability ⁽²⁾												
Total	2,0	-8,8	15,1	14,4	6,4	8,4	0,3	-1,7	2,4	2,4	1,1	1,5
Real	1,1	-11,1	6,6	5,9	1,9	2,3	0,2	-2,1	1,0	1,0	0,3	0,4
Prices	1,5	1,2	4,3	6,7	3,6	2,9	0,2	0,2	0,7	1,1	0,6	0,5
Average tax rates (PIT)	0,0	1,9	0,1	1,3	1,3	1,0	0,0	0,4	0,0	0,2	0,2	0,2
Miscellaneous items	0,5	-0,6	2,3	1,5	-0,3	1,1	0,1	-0,1	0,4	0,2	-0,1	0,2
Measures	-1,3	-0,1	-0,1	-2,3	-0,3	1,0	-0,2	0,0	0,0	-0,4	0,0	0,2
Unexplained change	0,1	-0,2	1,9	1,2	0,3	0,0	0,0	0,0	0,3	0,2	0,1	0,0

Source: AEAT, AIRcF estimates and preparation

(1) Change in GDP= $100 \cdot (X_a - X_{a-1}) / GDP_a$ (a=reference year)

(2) **Real**: change by volume

Prices: price change

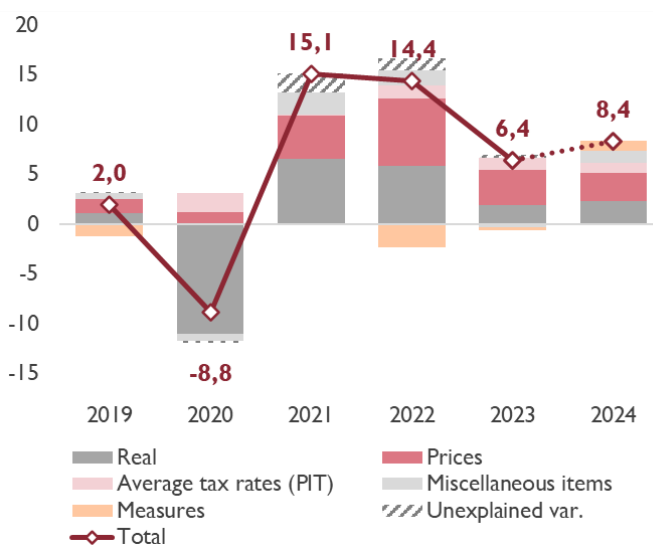
Average tax rates (Personal Income Tax): increase due to the change in average tax rates on earnings and pensions without rate changes.

Miscellaneous items: changes in instalment payments by SMEs and in the settlement of Corporate Income Tax; in extraordinary refunds and exceptional income; in capital income not subject to withholding; in withholdings on movable capital, on leases and on investment funds; in Personal Income Tax instalment payments; in the tax on lotteries; in withholdings for fiscal transparency and changes in family deductions.

Measures: change brought about by regulatory changes adopted, both temporary and permanent.

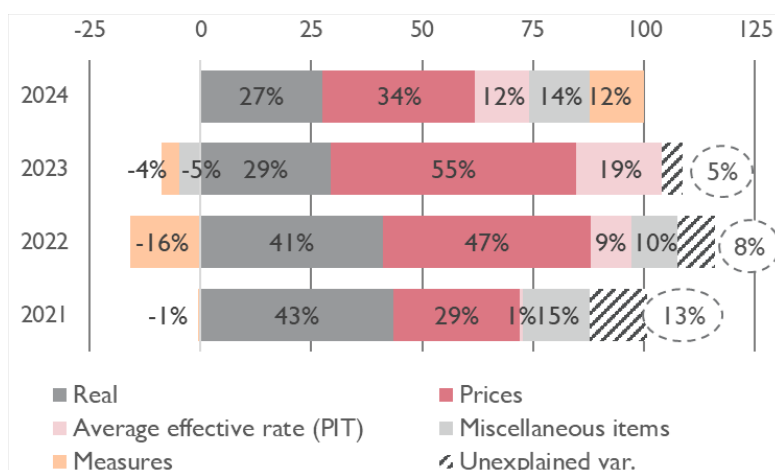
Unexplained variability: change that cannot be included in the above.

FIGURE 1. TAX REVENUE EVOLUTION 2019-2023 (% CHANGE)



Source: AEAT, AIReF estimates and preparation

FIGURE 2. DISTRIBUTION OF TAX REVENUE GROWTH 2021-2024



Source: AEAT, AIReF estimates and preparation

In VAT and Corporate Income Tax, a part of the variability that cannot be explained by any factor is identified, which peaked in 2021 and progressively decreased in 2022 and 2023. In the case of VAT, the unexplained variability arises from the gap between the evolution of Final Expenditure Subject to VAT and domestic demand that manifested itself with the outbreak of the pandemic and increased in 2021, affecting the projections for 2022 and 2023 to a greater extent. However, this gap has narrowed since the previous analysis due to the incorporation of the revised Spanish National Accounts data published last September. In the case of Corporate Income Tax, the unexplained variability is a consequence of the separation between the bases of this tax and the Gross Operating Surplus, and mainly shows the difficulty in reflecting peculiarities of the tax, such as the double taxation exemption and

the offsetting of tax losses, in economic variables, although this has been reduced with the methodological improvements implemented in AIReF's estimation procedures. The unexplained variability of Corporate Income Tax peaked in 2021 and progressively decreased until 2023. It should be noted that the results for 2023 are still influenced by the more provisional nature of the taxable income published for this last reference year.

AIReF forecasts that inflation will continue to be the main driver of revenue growth in 2024, although it will make a smaller contribution than in 2023. AIReF's forecasts place tax collection in 2024 8.4% higher than in 2023. Although the price factor is expected to make a smaller contribution than in the previous year, it will once again be the main driver of tax collection and together with the increase associated with Personal Income Tax rates will contribute 47% of the change, almost half of the estimated growth. A higher contribution is expected from the real factor and the other elements of taxation with a combined contribution of 41%. Regulatory measures will contribute an additional 12% increase, mainly due to the partial withdrawal over the course of 2024 of the tax reductions established to mitigate price rises³.

The weight of tax revenue in GDP from 2019 to 2023 grew by 1.5 points of GDP, although temporary changes subtracted 0.3 points of growth. Apart from temporary measures, extraordinary revenue and refunds, the changes from the other components analysed are permanently incorporated into revenue dynamics. In 2023, tax collection reached 18.6 points of GDP, 1.5 points more than in 2019, although it was affected downwards by temporary measures which AIReF estimates at 0.4 points of GDP and whose effect, barring further extensions, will disappear when the deadlines established for each of them expire. Tax collection was also affected by extraordinary revenue and refunds that accounted for 0.3 points of GDP. Discounting the contextual effect of the temporary measures and extraordinary revenue/refunds, which together subtracted 0.3 points of growth, a growth of 1.8 points of GDP in 2023 compared with pre-pandemic tax revenue can be deduced. In relation to temporary measures, this includes tax rebates on indirect taxes adopted to mitigate the effects of inflation⁴ and the temporary suspension of the 2019 Tax on the Value of Electricity Production (IVPEE); some additional rebates on

³ Gradual recovery of VAT rates on energy products and certain foodstuffs and of the rate of the Special Tax on Electricity together with the gradual reinstatement of the IVPEE.

⁴ Reduction of VAT rates on energy products and certain foodstuffs, the reduction of the rate of the Special Tax on Electricity and the suspension of the Tax on the Value of Electricity Production.

Personal Income Tax⁵ are also considered, while on the negative side they were partially offset by revenue from the temporary limitation on the offsetting of losses under Corporate Income Tax⁶ and by the Temporary Solidarity Tax on Large Fortunes⁷. In relation to exceptional revenue and refunds, lower revenue in 2019 from refunds of maternity services declared exempt from taxation under Personal Income Tax, as well as settlements for court rulings and refunds for tax credits payable under Corporate Income Tax and exceptional VAT refunds are deducted.

⁵ Temporary Personal Income Tax measures: deductions for home renovations (RDL 19/2021); reduction of income in objective estimation, agriculture, and livestock (Order HFP/405/2023), increase in expenditure that is hard to justify (HFP/1172/2022) and additional reduction in net income (HFP/1172/2022).

⁶ Established in the General State Budget 2023.

⁷ Law 38/2022 of December 27th, on the establishment of temporary energy taxes and taxes on credit institutions and financial credit institutions and creating the temporary solidarity tax on large fortunes and amending certain tax rules.

Temporary levies on financial institutions and energy companies are not included in the total tax revenue analysed in this paper because they are considered non-tax contributions.

3. CHANGE IN PERSONAL INCOME TAX REVENUE

In 2021 and 2022, the main driver of the Personal Income Tax increase was employment growth, and from 2022 wage and pension increases, which in 2023 became the main drivers of growth. The updated results maintain similar conclusions to those of the previous year, with only slight changes in the breakdown obtained, from which the evolution of Personal Income Tax was determined by the fall in private employment during the pandemic and its growth throughout 2021. In 2022, Personal Income Tax experienced the highest growth of the period analysed, with a year-on-year rate of over 15%, explained to a great extent by the widespread growth in employment, together with the increase in pensions, wages, and their associated tax rates. In 2023, growth was more contained, and the change fell to 9.9%, almost entirely explained by the higher intensity of wage and pension increases compared with 2022 and, consequently, by the increase in their associated tax rates. Although this increase in tax rates accounted for 30% of the total change in Personal Income Tax as a percentage of GDP, it was offset by regulatory measures, which subtracted 36% of the growth, mainly due to the increase in the reduction on earnings from work approved in the GSB23 and the reductions established by the Autonomous Regions in the part of Personal Income Tax over which they have jurisdiction (minimums, rates, and deductions).

TABLE 2. PERSONAL INCOME TAX: VARIABILITY OF NET REVENUE

PIT	Annual rate of change (% VAR)						Annual change over GDP (% GDP) ⁽¹⁾					
	2019	2020	2021	2022	2023	2024	2019	2020	2021	2022	2023	2024
Variability ⁽²⁾												
TOTAL	4,9	1,2	7,5	15,8	9,9	7,0	0,3	0,1	0,5	1,1	0,7	0,6
Real	3,7	-6,8	3,4	6,0	3,0	1,9	0,2	-0,5	0,2	0,4	0,2	0,2
Prices	4,1	3,1	2,0	4,1	6,5	3,1	0,3	0,2	0,1	0,3	0,5	0,3
Average tax rates	0,0	4,7	0,2	3,1	2,9	2,3	0,0	0,4	0,0	0,2	0,22	0,2
Miscellaneous items	0,5	0,9	1,7	1,7	0,9	0,8	0,0	0,1	0,1	0,1	0,1	0,1
Measures	-3,4	-0,6	0,1	0,9	-3,5	-1,2	-0,2	0,0	0,0	0,1	-0,26	-0,1

Source: AEAT, AIReF estimates and preparation

(1) Change in GDP= $100 \cdot (X_a - X_{a-1}) / GDP_a$ (a=reference year)

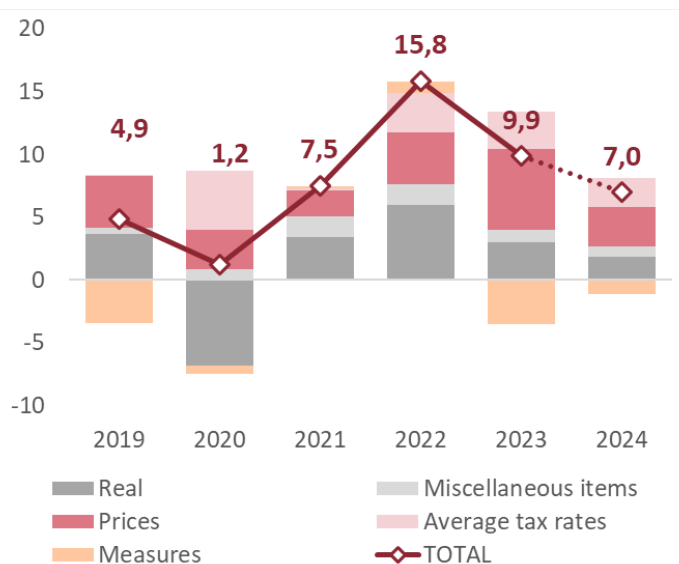
(2) **Real**: change by volume

Prices: change in prices

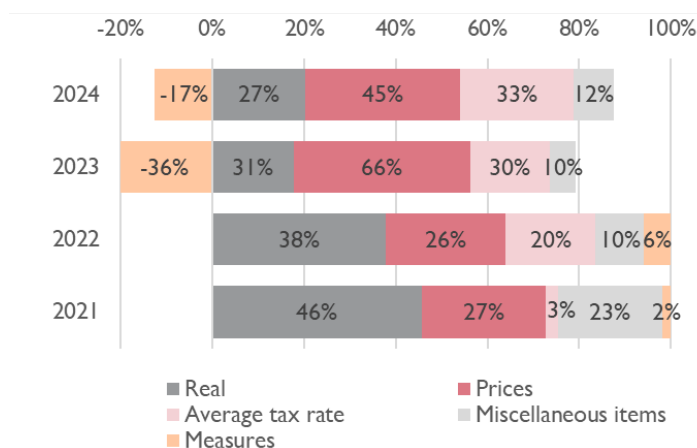
Average tax rates (Personal Income Tax): increase due to the change in average tax rates on wages and pensions without rate changes.

Miscellaneous items: changes in capital income not subject to withholding; in withholdings on movable capital, on leases and on investment funds; in Personal Income Tax instalment payments; in the tax on lotteries; in withholdings for fiscal transparency and changes in family deductions.

Measures: change brought about by regulatory changes adopted, both temporary and permanent.

FIGURE 3. PERSONAL INCOME TAX; NET INCOME (% CHANGE AND CONTRIBUTIONS)


Source: AEAT, AIReF estimates and preparation

FIGURE 4. PERSONAL INCOME TAX: DISTRIBUTION OF TAX REVENUE GROWTH 2021-2024


Source: AEAT, AIReF estimates and preparation

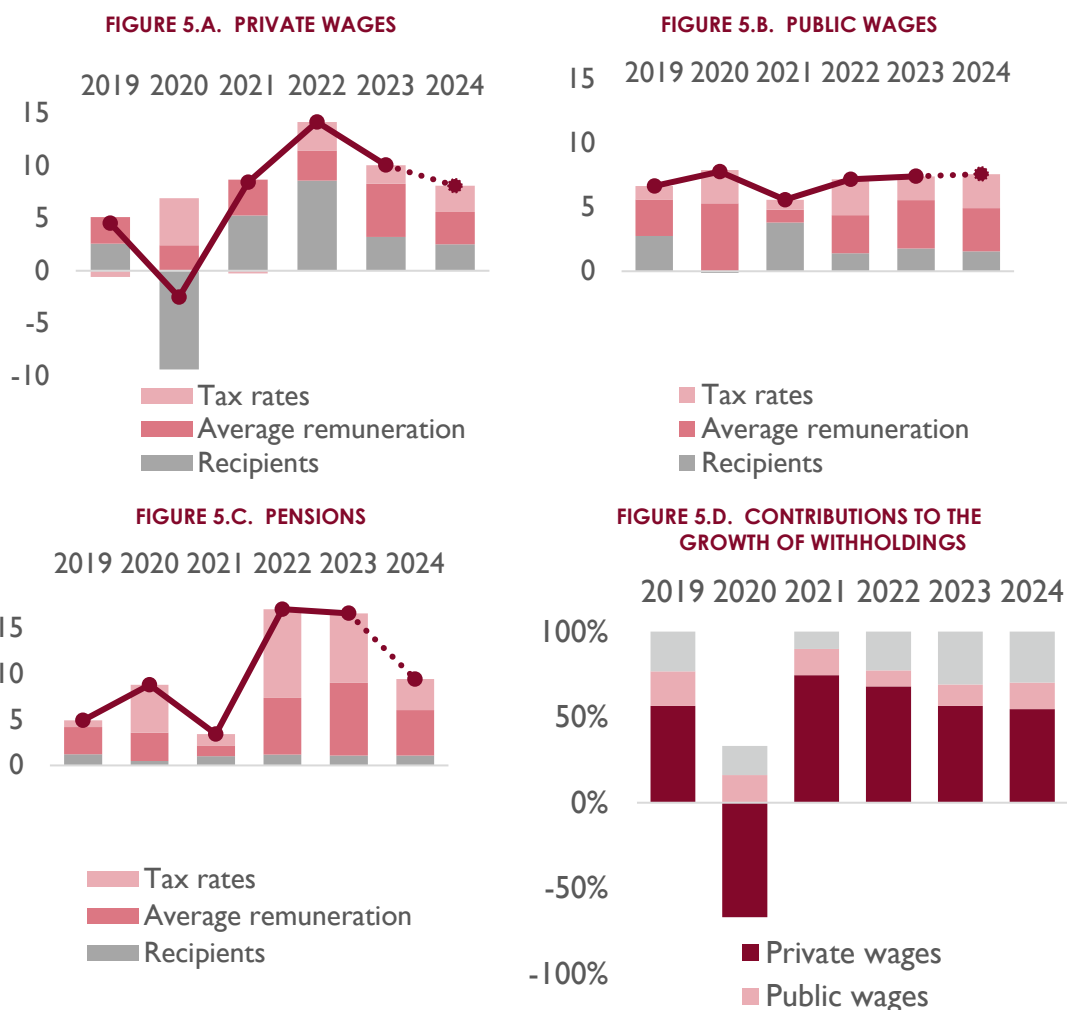
AIReF forecasts that in 2024 wage and pension increases will continue to be the main driver of growth in Personal Income Tax revenue. AIReF's forecasts place tax collection in 2024 7% higher than in 2023, mainly driven by the price factor, which with the consequent increase associated with tax rates will account for 75% of the expected increase. The impact of the measures is expected to reduce the growth in Personal Income Tax revenue by 17%, less than in 2023 when the impact of the reductions implemented by the Autonomous Regions in their Personal Income Tax jurisdiction⁸ was the highest on record.

The weight of Personal Income Tax revenue over GDP from 2019 to 2023 grew by 1.3 points of GDP, although 0.1 points of this increase was due to extraordinary refunds. Total Personal Income Tax collection in 2023 reached 8.2 points of GDP, an increase of 1.3 points more than in 2019. Although the impact of the temporary measures⁹ on Personal Income Tax in 2023 did not exceed 0.05 points of GDP, the extraordinary refunds in 2019 for the maternity services exempt from taxation accounted for 0.1 points of GDP on a contextual basis. If the temporary measures and extraordinary refunds are discounted, the growth in the weight of Personal Income Tax in GDP since 2019 stood at 1.2 points. The temporary measures that are discounted are the deductions for housing renovations (RDL 19/2021); the reduction of income in objective estimation, agriculture, and livestock (Order HFP/405/2023), the increase in expenses that are hard to justify (HFP/1172/2022) and the

⁸ Several Autonomous Regions raised the family minimums, partially deflated the rate, approved new deductions, or extended existing ones.

additional reduction in net income (HFP/1172/2022). In relation to exceptional revenue and refunds, the lower revenue in 2019 for refunds of maternity services declared exempt from Personal Income Tax are deducted.

The evolution of wage and pension bases in 2021 and 2022 was mainly explained by the increase in private employment and in 2023 was largely a consequence of the increase in wages and pensions. The taxable income under Personal Income Tax associated with wages and pensions is broken down in terms of volume, through employment and the number of pensioners, and in terms of prices, through average wages and pensions (see ANNEX II Breakdown of Personal Income Tax variability). This breakdown shows that it was private employment that was responsible for the fall in revenue during the pandemic and for the subsequent recovery in employment in 2021. Even in 2022, the growth in taxable income under Personal Income Tax continued to be explained to a great extent by the boost in private employment, despite recording the largest price increase in recent years. However, it was in 2023 when the knock-on effect of inflation to private compensation made the largest contribution to the growth of taxable income under Personal Income Tax, also driven by the increase in public wages and pensions, whose contribution was greater than in the previous year, despite incorporating in 2022 the additional effect of the compensatory payment in 2021. For 2024, AIRcF's projections for taxable income under Personal Income Tax balance the contributions from wages and private employment and forecast a greater contribution from the price component in the public sector and in the pension bases.

FIGURE 5. PERSONAL INCOME TAX WITHHOLDINGS ACCRUED (% CHANGE)


Source: AEAT, AIRcF estimates and preparation

In 2021, the increase in average Personal Income Tax rates was a consequence of changes of composition in the labour market, while in 2022 the increase was associated with rises in average wages and pensions, which intensified in 2023. The breakdown of the variability of Personal Income Tax revenue is derived from the multiple interaction of taxable income and tax rates. The variability of rates includes both the effects of fiscal drag and changes in the composition of employment. In 2020, there was an increase in average Personal Income Tax rates due to the uneven impact of the pandemic on the sectoral and wage distribution of the labour market, with wage increases in activities and sections with a significant volume of employment and above-average wages (public sector, health, information, and telecommunications). This increase temporarily coincided with a fall in employment in lower-paid occupational categories, especially in low-paid sectors (hotels and catering and commerce), so that although the fall in

employment in net terms during the pandemic implied a fall in the total compensation of employees, it led to an increase in the average wage per employee and its associated tax rates. Throughout 2021, employment recovered so that the bulk of activities showed employment growth accompanied by wage increases, which entailed increases in the associated Personal Income Tax rates. In 2022, tax rates continued to rise, largely because of more widespread wage increases, which intensified in 2023, when the higher CPI levels recorded in 2022 were passed on to private compensation of employees in the following year.

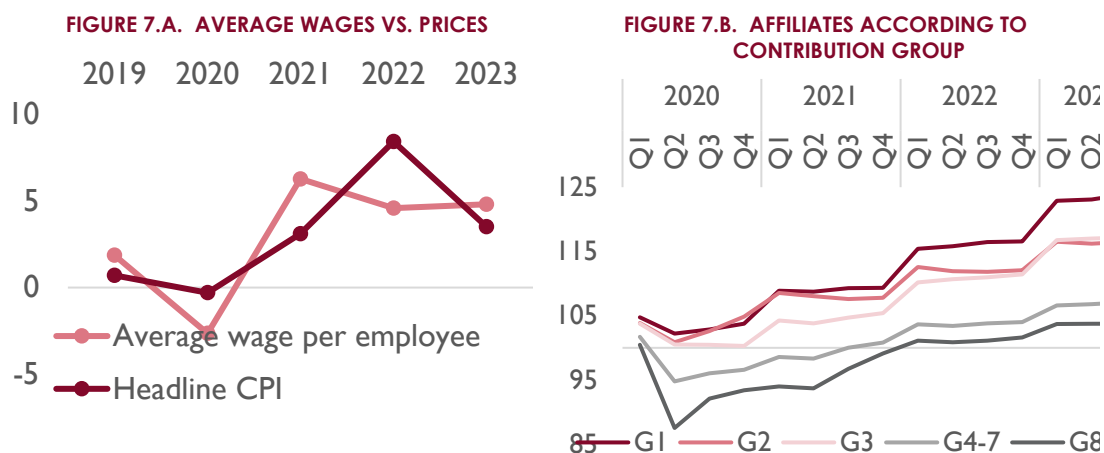
FIGURE 6. EVOLUTION OF AVERAGE WAGES VS. AFFILIATION (2019=100)



Source: General Social Security Treasury and INE (ETCL); AIRcF

Note: Activities B: mining and quarrying; C: manufacturing; D: energy; E: water and other; F: construction; G: commerce; H: transport; I: hotels and restaurants; J: information and communication; K: financial; L: real estate; M: professional, scientific, and technical; N: administrative and support; O: General Government; P: education; Q: health; R: arts, recreation, and entertainment; S: other services.

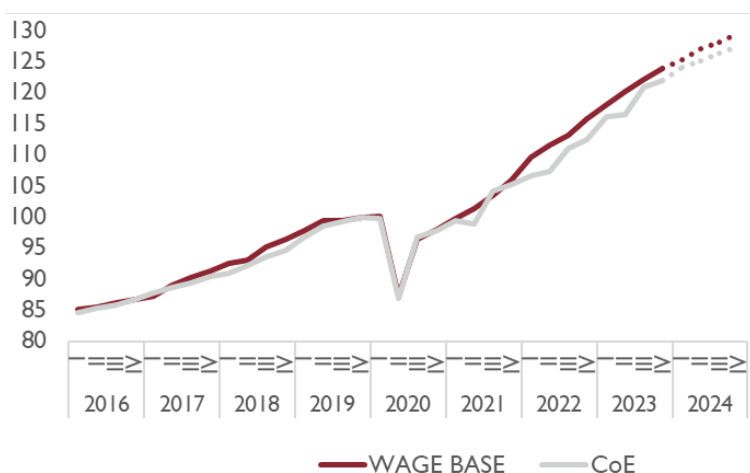
FIGURE 7. EVOLUTION OF WAGES, PRICES AND AFFILIATION (2019=100)



Source: INE (CPI, QLCS) and General Social Security Treasury

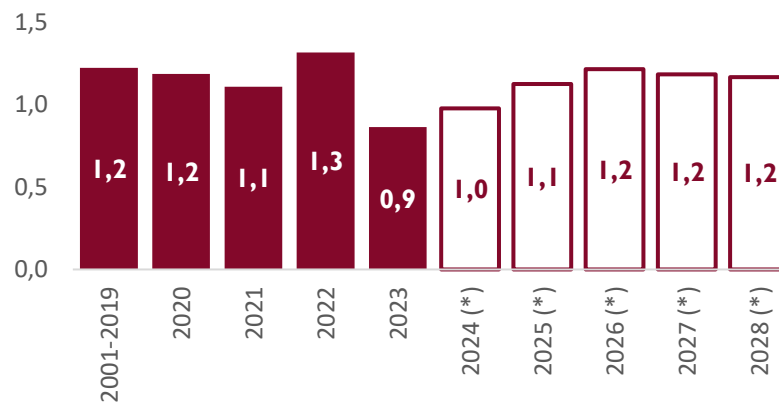
AIReF's forecasting model for the wage bases assumes an elasticity with respect to the compensation of employees that is greater than unity. The evolution of Personal Income Tax is compared with the compensation of employees, with respect to which it has historical elasticity that, on average, is greater than unity. After the crisis stemming from the pandemic, there was a strong recovery of the tax which was not initially reflected in the compensation of employees series, but which has been corrected with the revision of the Spanish National Accounts series published by the INE last September. The latest available results still maintain a certain separation in 2022 which closes in 2023. As a result, the elasticity between both magnitudes increases in 2022 and decreases in 2023. AIReF's forecasting model gradually recovers the historical elasticity, to which it returns from 2025 onwards.

FIGURE 8. EVOLUTION OF THE WAGE BASE OF PERSONAL INCOME TAX VS COMPENSATION OF EMPLOYEES (2019Q4=100)



Source: AEAT, INE, AIReF estimates and preparation.

FIGURE 9. ELASTICITY OF THE WAGE BASE OF PERSONAL INCOME TAX WITH RESPECT TO COMPENSATION OF EMPLOYEES



Source: AEAT, INE, AIReF estimates and preparation.

4. CHANGE IN CORPORATE INCOME TAX REVENUE

The increase in Corporate Income Tax in 2021 and 2022, in the wake of the pandemic, was a consequence of the recovery of all its components, while in 2023 it was explained to a greater extent by price increases and the adoption of measures. Corporate Income Tax is affected by the existence of elements, such as the double taxation exemption and the offsetting of tax losses from previous years, which make it difficult to compare with economic variables and is reflected in the unexplained variability component. The update changes the results obtained with respect to the previous year, as methodological changes have been implemented in the modelling of taxable income¹⁰, which have reduced the component of unobserved variability. The current analysis shows that the real component explained the fall in the volume of corporate profits experienced in 2020 due to the pandemic, which led to a 33.2% drop in Corporate Income Tax collection. During 2021 and 2022, tax collection reached growth rates of over 20%, driven by the recovery in the volume of profits and by price growth and intensified

¹⁰ Main methodological changes applied:

- Projection of taxable income associated with instalment payments instead of consolidated taxable income.
- Breakdown of taxable income according to the type of company and method of calculating the instalment payment (large companies, groups, and SMEs).

by various elements of taxation¹¹ independent of the evolution of economic activity in the year. In 2023, growth moderated to 9%, with a stronger contribution from the price component, which accounted for 87% of the increase in this figure. The negative contribution of sundry tax items, a consequence of the large number of refunds from previous years, was largely offset by the regulatory measures¹² which boosted growth in 2023. The remaining variability in Corporate Income Tax, which cannot be explained by any single factor, affected the evolution of 2021 and 2022 by more than 20%, as instalment payments were more dynamic than the Gross Operating Surplus, and fell to 8% in 2023.

TABLE 3. CORPORATE INCOME TAX: VARIABILITY OF NET REVENUE

Corporate Income Tax	Annual rate of change (% CHANGE)						Annual change over GDP ⁽¹⁾ (% GDP)					
	2019	2020	2021	2022	2023	2024	2019	2020	2021	2022	2023	2024
Variability ⁽²⁾												
TOTAL	-4,4	-33,2	67,9	20,8	9,0	10,7	-0,1	-0,7	0,9	0,4	0,2	0,2
Real	-4,2	-18,2	15,8	9,9	1,7	1,4	-0,1	-0,4	0,2	0,2	0,0	0,0
Prices	-4,3	-1,3	16,7	7,5	7,8	2,3	-0,1	0,0	0,2	0,1	0,2	0,1
Miscellaneous items	3,0	-8,8	18,9	6,7	-5,6	6,1	0,1	-0,2	0,2	0,1	-0,1	0,1
Measures	0,0	-1,3	2,4	1,0	4,4	0,9	0,0	0,0	0,0	0,0	0,1	0,0
Unexplained change	1,0	-3,5	14,2	-4,3	0,7	0,0	0,0	-0,1	0,2	-0,1	0,0	0,0

Source: AEAT, AIRcF estimates and preparation

(1) Change in GDP= $100 \cdot (X_a - X_{a-1}) / GDP_a$ (a=reference year)

(2) **Real**: change by volume

Prices: change in prices

Various elements: changes in instalment payments for SMEs and in the settlement of Corporate Income Tax; in extraordinary refunds and exceptional income, in income from movable capital and leased property; in withholdings on movable capital, on leases and on investment funds; in the tax on lotteries and in withholdings for fiscal transparency.

Measures: change brought about by regulatory changes adopted, both temporary and permanent.

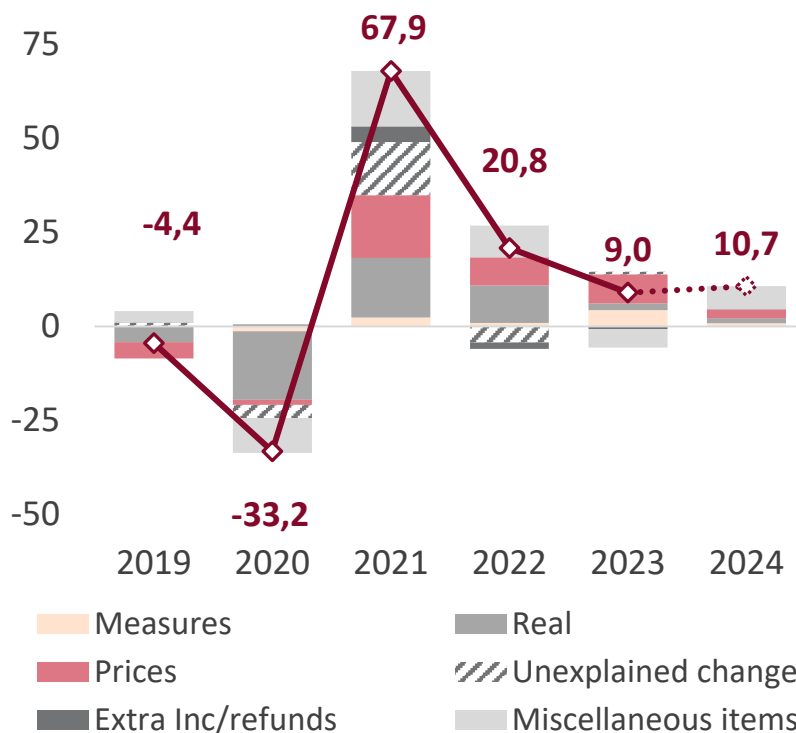
Unexplained variability: change that cannot be included in the above.

¹¹ 2121: Revenue from extraordinary operations and low repayments from previous years

2022: Higher revenue from previous years, albeit limited by the existence of extraordinary refunds from court rulings or linked to deferred tax assets (DTAs).

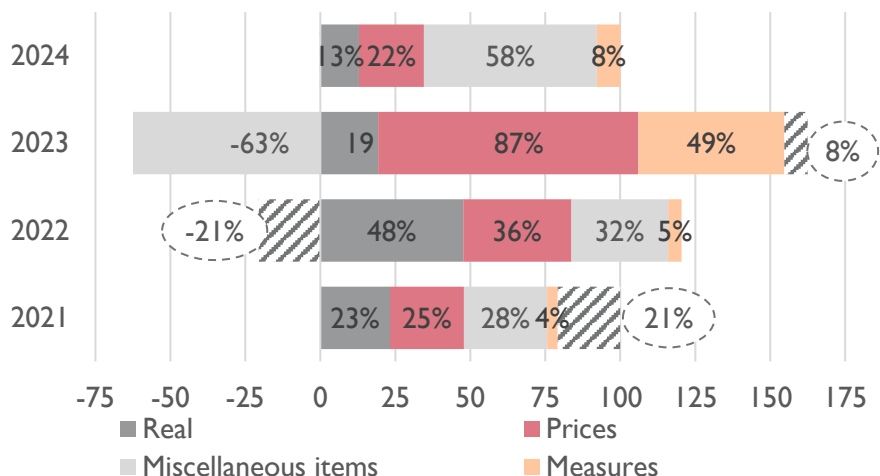
¹² Mainly due to the temporary limitation on offsetting losses in consolidated groups established in the 2023 GSB and the establishment of the minimum rate at 15% of taxable income introduced in the 2022 GSB.

FIGURE 10. CORPORATE INCOME TAX: NET REVENUE (% CHANGE AND CONTRIBUTIONS)



Source: AEAT, AIReF estimates and preparation

FIGURE 11. CORPORATE INCOME TAX: DISTRIBUTION OF TAX REVENUE GROWTH 2021-2024



Source: AEAT, AIReF estimates and preparation

AIReF forecasts that in 2024 the increase in Corporate Income Tax settlements will be the main driver of its growth. AIReF forecasts that tax collection in 2024 will be 10.7% higher than in 2023. This is mainly due to a more balanced

dynamic between revenue and refunds, which will mean an increase in the net tax liability compared with 2023, which was affected by higher refunds, and which is reflected in the sundry items component. A more balanced contribution to the growth of instalment payments is also expected between the real and price components, although the latter will remain more significant. The incorporation of regulatory changes, mainly due to the extension to 2024 of the time limits on the offsetting of intra-group losses in consolidated groups¹³, will contribute an additional 8% growth in tax collection.

The weight of Corporate Income Tax revenue in GDP grew by 0.5 points from 2019 to 2023, although 0.1 points of this increase was the result of both temporary measures and extraordinary revenue and refunds. Corporate Income Tax collection reached 2.4 points of GDP in 2023, half a point higher than in 2019. 0.1 points of this growth was due to the temporary effect of extraordinary revenue and refunds from court rulings and refunds on deferred tax assets, and the temporary limitation on the offsetting of intra-group tax losses established in 2023. Eliminating the impact of these temporary effects, tax growth compared with 2019 was 0.4 points of GDP.

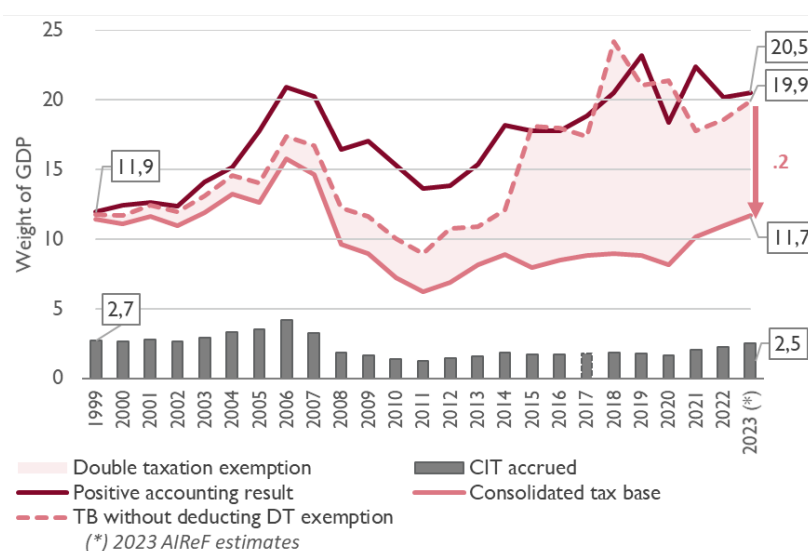
The part of the variability of Corporate Income Tax that cannot be explained is justified by the separation between the instalment payments and the gross operating surplus. This figure is affected by the existence of elements unrelated to the evolution of the economic cycle that separate the consolidated tax base from the accounting result and the evolution of the Gross Operating Surplus (GOS). Since 2015 the double taxation exemption; the offsetting of tax losses from previous years; the existence since 2012 of a minimum payment that generates two different methods of calculating instalment payments; deferred tax assets (DTAs); the criteria for the temporary allocation of depreciation and impairment losses, as well as the incentives and deductions affect the dynamics of the tax and justify the presence of an unexplained variability component.

The methodological improvements implemented in AIRcF's estimation procedures (see ANNEX III Breakdown of Corporate Income Tax variability) **have reduced this component of unexplained variability.** Compared with the analysis carried out the previous year, the projection mainly focuses on the instalment payment base instead of consolidated taxable income, and by doing so separately according to the type of instalment payment calculation and broken down by type of company (large companies, groups, and SMEs).

¹³ Initially established as a temporary measure in the GSB23 and whose extension to 2024 was introduced as an amendment to the Draft Law from Royal Decree-Law 8/2023.

Although the complexity of its composition does not allow conclusions to be drawn in absolute terms for all the years of the period studied, Corporate Income Tax shows a high elasticity with respect to the gross operating surplus throughout its entire historical series, in which the high values recorded for groups stand out. AIReF's prediction models for the instalment payment bases produce elasticities with respect to the gross operating surplus of 1.3 for large companies and 2.1 for groups, although this will be temporarily reduced in 2025 due to the withdrawal of the measure limiting the offsetting of tax loss carry forwards in this type of company.

FIGURE 12. CORPORATE INCOME TAX: EVOLUTION OF ACCOUNTING PROFIT, TAX BASE, DOUBLE TAX EXEMPTION AND TAX (% GDP).



Source: AEAT, AIReF estimates and preparation

FIGURE 13. YEAR-ON-YEAR CHANGE IN THE CORPORATE INCOME TAX INSTALMENT PAYMENT BASE VS. GROSS OPERATING SURPLUS (% CHANGE)

FIGURE 13.A. LARGE COMPANIES

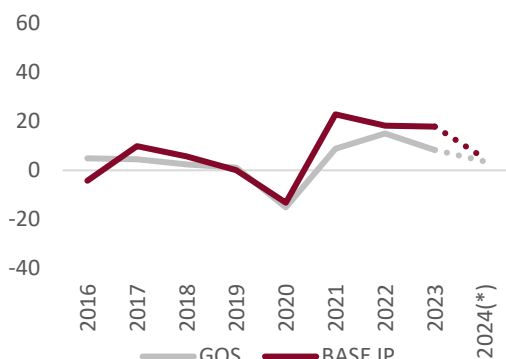
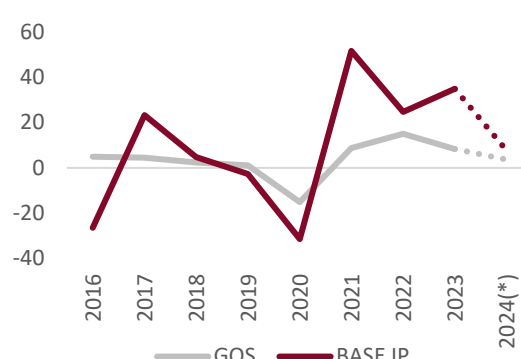
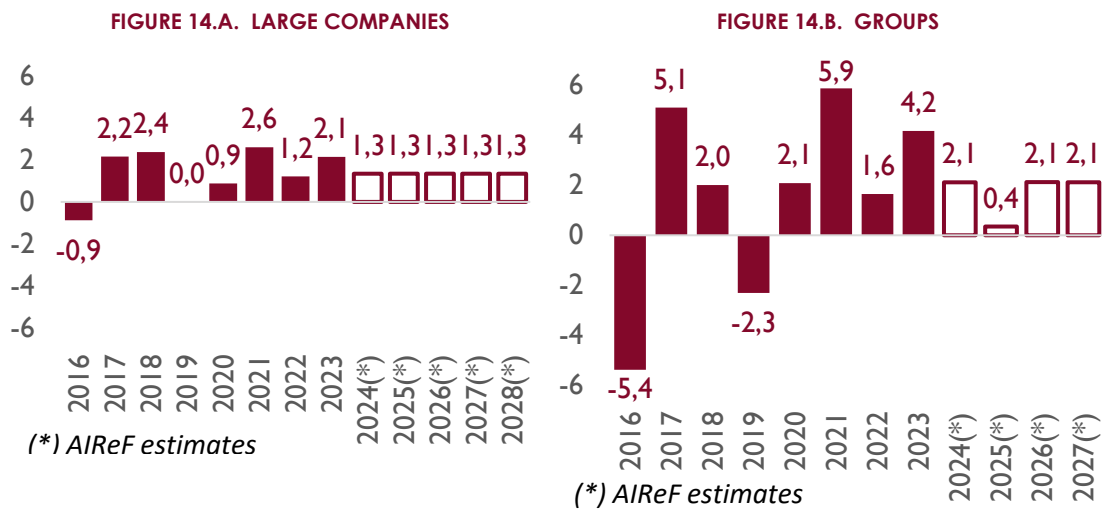


FIGURE 13.B. GROUPS



Source: AEAT, INE, AIReF estimates and preparation

FIGURE 14. ELASTICITY OF THE CORPORATE INCOME TAX INSTALMENT PAYMENT BASE VS. THE GROSS OPERATING SURPLUS



Source: AEAT, INE, AIReF estimates and preparation

5. CHANGE IN VAT REVENUE

The falls in volume of consumption and investment during 2020 and their subsequent recovery in 2021 marked the evolution of VAT over these two years, while from 2022 onwards price increases accounted for most of the increase, although in 2023 they were offset by the rate cuts adopted. The update of results over the last year-end implied an upward revision of the final expenditure subject to VAT from 2022 by the AEAT and an increase in domestic demand by the INE. Although these revisions correct the results of the variability breakdown analysis, the main conclusions on the evolution of VAT, which was determined by the fall in consumption and investment during the pandemic and its growth throughout 2021, are maintained. From the second half of this year, the price rises associated with energy products began, which intensified in 2022 with the outbreak of the conflict between Russia and Ukraine and was mainly responsible for the increase in VAT revenue, accounting for 57% of the increase. VAT rate reductions adopted on energy products¹⁴ offset 12% of the increase in 2022. After recording rates above 13% in 2021 and 2022, VAT revenue growth fell to 1.6% in 2023, because of several factors. On the one hand, energy prices moderated their growth, while at the same time, given the persistence of core inflation, further reductions were

¹⁴ Electricity VAT: Reduction to 10% electricity rate (RDL 12, 17 and 29/2021 and 6/2022). Reduction to 5% from July 2022 (RDL 11/2022), extended until December 31st, 2023 (RDL 20/2022).

VAT on gas, briquettes, and pellets: Reduction to 5% gas rate (RDL 17/2022), extended until December 31st, 2023 (RDL 20/2022)

established for VAT rates on certain foodstuffs¹⁵, so that the totality of measures adopted practically offset price growth. The component of VAT variability that cannot be explained by any factor has increased since 2021, affecting the projections for 2022 and 2023 to a great extent, although it has fallen since the previous analysis due to the incorporation of the revision of the Spanish National Accounts data published last September.

TABLE 4. VAT: VARIABILITY OF NET REVENUE

VAT	Annual rate of change (% CHANGE)						Annual change over GDP (1) (% GDP)					
	2019	2020	2021	2022	2023	2024	2019	2020	2021	2022	2023	2024
Variability ⁽²⁾												
TOTAL	1,9	-11,5	14,5	13,9	1,6	9,7	0,1	-0,7	0,7	0,7	0,1	0,5
Real	0,9	-12,8	8,2	2,5	0,8	2,7	0,0	-0,8	0,4	0,1	0,0	0,1
Prices	1,1	1,0	4,8	8,0	2,4	5,2	0,1	0,1	0,3	0,4	0,1	0,3
Measures	-0,1	-0,2	-0,9	-1,7	-2,2	1,8	0,0	0,0	0,0	-0,1	-0,1	0,1
Unexplained change	0,0	0,6	2,4	5,2	0,7	0,0	0,0	0,0	0,1	0,3	0,0	0,0

Source: AEAT, AIRcF estimates and preparation

(1) Change in GDP= $100 \cdot (X_a - X_{a-1}) / GDP_a$ (a=reference year)

(2) **Real**: change by volume

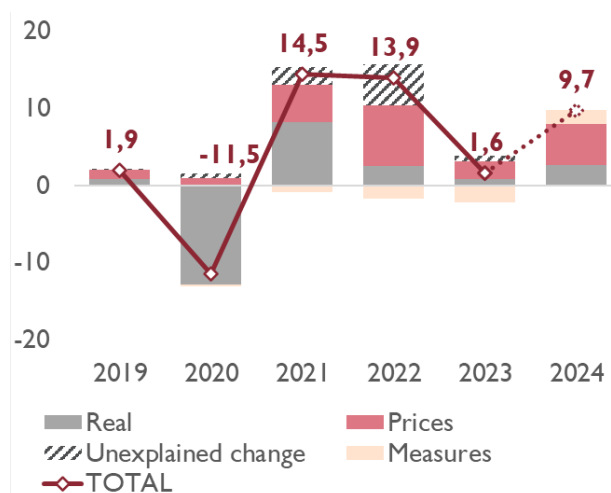
Prices: change in prices

Measures: change brought about by regulatory changes adopted, both temporary and permanent.

Unexplained variability: change that cannot be included in the above.

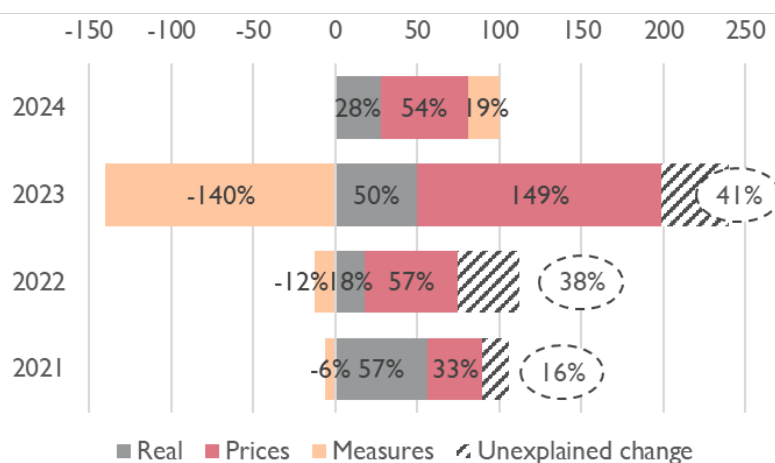
¹⁵ VAT on foodstuffs: Reduction to 0% for all staple foods and 5% for olive and seed oils and pasta (RDL 20/2022), extended until December 31st, 2023 (RDL 5/2023).

FIGURE 15. VAT: NET REVENUE (% CHANGE AND CONTRIBUTIONS)

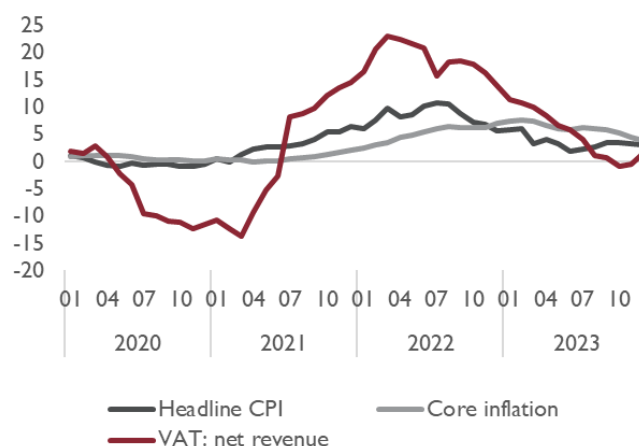


Source: AEAT, AIReF estimates and preparation

FIGURE 16. VAT: DISTRIBUTION OF TAX REVENUE GROWTH 2021-2024



Source: AEAT, AIReF estimates and preparation

FIGURE 17. ANNUAL CHANGE OF VAT VS. CPI 2020-2023 (% CHANGE)


Source: AEAT, INE

AIReF forecasts that in 2024 the price factor will be the main driver of its growth. AIReF's forecasts place tax collection in 2024 9.7% higher than in 2023, still largely driven by the price component, which will account for 54% of the increase to which an additional 19% will be added due to the gradual withdrawal of the reductions established¹⁶.

The weight of VAT revenue over GDP from 2019 to 2023 was maintained, although eliminating the impact of temporary measures and extraordinary revenue and refunds results in growth of 0.3 points of GDP. VAT collection amounted to 5.7 points of GDP in 2023, the same weight as in 2019, although it was affected by temporary rate reductions on energy products and certain foodstuffs established from the end of 2021, as well as extraordinary refunds. If the combined impact of these temporary effects is discounted, tax growth compared with 2019 amounted to 0.3 points of GDP.

The part of VAT variability that cannot be explained is justified by the separation between final expenditure subject to VAT and domestic demand. The separation between the evolution of VAT and that of domestic demand since the pandemic is mainly responsible for the unexplained component of variability in AIReF's forecasting model (see ANNEX IV Breakdown of VAT variability). These results have changed with respect to the analysis carried out

¹⁶ Royal Decree-Law 8/2024:

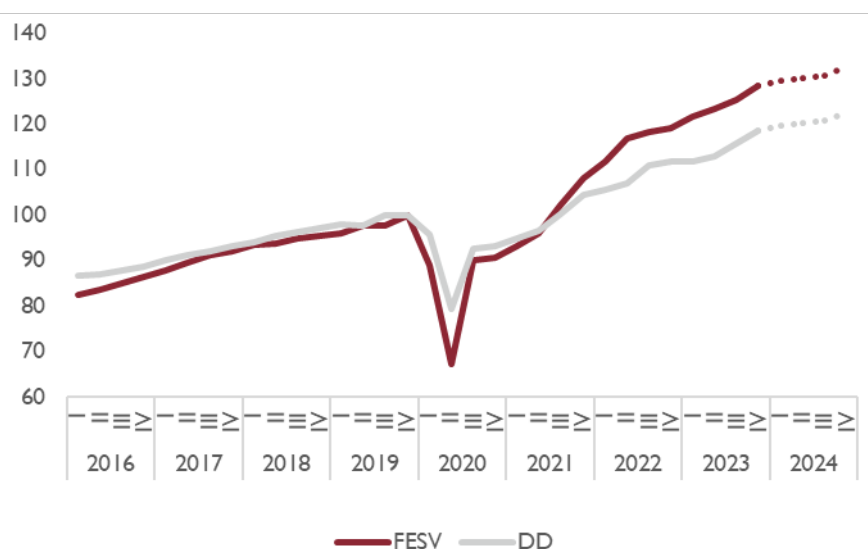
VAT on electricity at 10% until December 31st, 2024, conditional on the average daily market price of electricity exceeding 45 euros/MWh each month.

VAT on certain foodstuffs: until June 30th, 2024.

VAT on gas, briquettes, and pellets: at 10% in the first quarter of 2024.

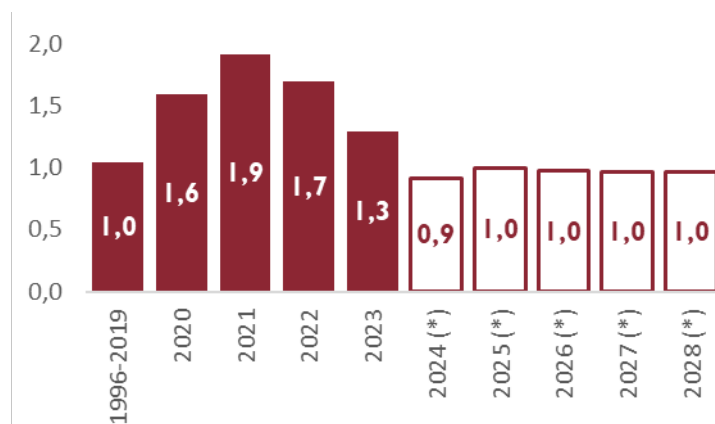
in the previous year because of the revision of the Spanish National Accounts series published by INE last September, in which an upward revision was applied to domestic demand for 2021 of more than €20 bn in nominal terms, with a greater revision to the volume component. This revision updates AIReF's forecasting model, which lowers the volume coefficient and increases the price coefficient, resulting in a decrease in the weight of the unexplained variability with respect to the previous analysis in 2020 and 2021, as opposed to an increase in 2022. Despite this correction, the main findings on the separation between final expenditure subject to VAT and domestic demand are maintained, with a larger fall in the former during 2020 and a larger recovery thereafter, which intensified during 2021 and stabilised from 2022 onwards. This separation means that the elasticity of final expenditure subject to VAT is above its historical average. AIReF's forecasting model readjusts these decouplings and produces an elasticity with respect to domestic demand below the historical average, to which it returns from 2025 onwards.

FIGURE 18. YEAR-ON-YEAR CHANGE IN FINAL EXPENDITURE SUBJECT TO VAT VS. DOMESTIC DEMAND (2019Q4=100)



Source: AEAT, INE, AIReF estimates and preparation

FIGURE 19. ELASTICITY OF FINAL EXPENDITURE SUBJECT TO VAT VS. DOMESTIC DEMAND



(*) AIReF estimates

Source: AEAT, INE, AIReF estimates and preparation.

6. CHANGE IN SPECIAL TAXES AND OTHER TAX REVENUE

The falls in the volume of consumption during 2020 marked the evolution of special taxes, whose recovery was slower than the rest of the taxes and, since 2021, has been affected by the measures approved to alleviate the rise in energy prices. The evolution of special taxes is explained by real variability, except for the Special Tax on Electricity, whose change is associated with the price factor. The contribution of regulatory measures is isolated, which in relation to special taxes includes the reduction in the rate of the Special Tax on Electricity from 2021 and the entry into force of the new Special Tax on Single-use Plastics as from 2022. The general fall during the pandemic affected these taxes over a longer period and from the last quarter of 2021, the increase in electricity prices led to an increase in the price component which peaked in 2022 and fell in 2023, although this was offset by the reduction in the rate of the Special Tax on Electricity¹⁷. In 2023, in addition, the new Tax on Single-use Plastics was introduced as a measure, increasing the contribution of the measures component. In 2024, the gradual withdrawal of the reduction in the Special Tax on Electricity will raise the growth in special taxes to 6.7%, according to AIReF's forecasts.

¹⁷ Reduction of the Special Tax on Electricity (IEE) rate from 5.1% to 0.5% until December 2023, to 2.5% until April 2024 and to 3.8% until June 2024.

TABLE 5. SPECIAL TAXES: VARIABILITY OF NET REVENUE

SPECIAL TAXES	Annual rate of change (% CHANGE)						Annual change over GDP (1) (% GDP)					
	2019	2020	2021	2022	2023	2024	2019	2020	2021	2022	2023	2024
Variability ⁽²⁾												
TOTAL	4,1	-12,1	5,0	2,5	2,6	6,7	0,1	-0,2	0,1	0,0	0,0	0,1
Real	-1,0	-11,6	5,6	6,9	-0,1	1,9	0,0	-0,2	0,1	0,1	0,0	0,0
Prices	0,1	-0,7	1,0	4,3	-3,3	-0,5	0,0	0,0	0,0	0,1	0,0	0,0
Measures	5,0	0,1	-1,6	-8,6	6,1	5,3	0,1	0,0	0,0	-0,1	0,1	0,1

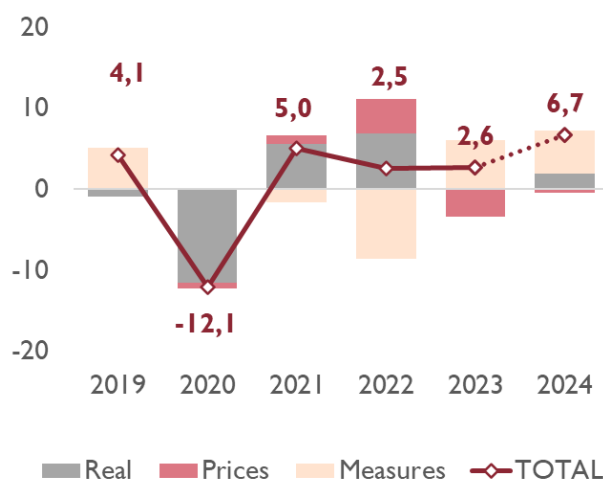
Source: AEAT, AIReF estimates and preparation

(1) Change in GDP= $100 \cdot (X_a - X_{a-1}) / GDP_a$ (a=reference year)

(2) **Real**: change by volume

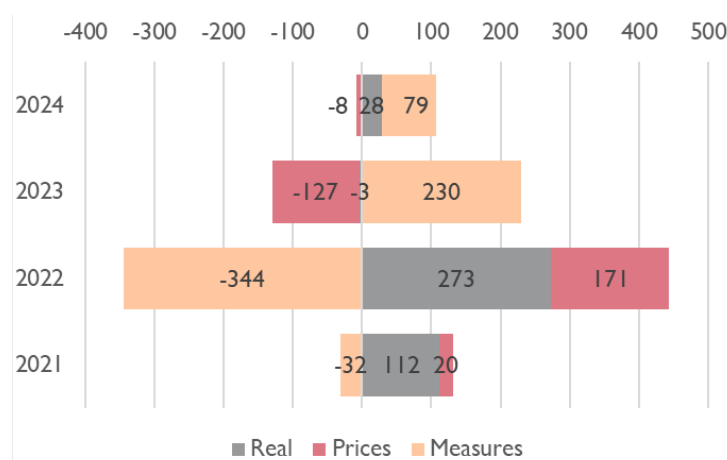
Prices: change in prices

Measures: change brought about by regulatory changes adopted, both temporary and permanent.

FIGURE 20. SPECIAL TAXES: NET REVENUE (% CHANGE AND CONTRIBUTIONS)


Source: AEAT, AIReF estimates and preparation

FIGURE 21. SPECIAL TAXES: DISTRIBUTION OF TAX REVENUE GROWTH 2021-2024



Source: AEAT, AIReF estimates and preparation

FIGURE 22. ELECTRICITY: EVOLUTION OF THE DAILY MARKET PRICE 2020-2024Q1 (€/MWH)



Source: System Operator's Information System e·sios- Red Eléctrica

The evolution of other tax revenue was determined by the fall in consumption from 2020, its recovery in 2021 and, from 2022, by the rise in electricity prices and regulatory measures. The variability of other tax revenue is explained by the real change, except for the Tax on the Value of Electricity Production (IVPEE) whose change is associated with the price factor. The contribution of regulatory measures is isolated¹⁸, the most relevant being the suspension of

¹⁸ Regulatory measures adopted in the period under review:

- 2019: Temporary suspension of IVPEE

the IVPEE adopted from the last quarter of 2021 to mitigate the rise in electricity prices, which cancelled out the impact of the price component on tax collection. Also noteworthy was the introduction of the Temporary Solidarity Tax on Large Fortunes (ITGF) in 2023 which, together with the fall in the impact of the suspension of the IVPEE, a consequence of the drop in electricity prices this year, raised the growth of other tax revenue to 8.6%. AIReF estimates that its growth during 2024 will be determined by the gradual reinstatement of the IVPEE, placing it at 8.6% above 2023.

TABLE 6. OTHER TAX REVENUE: VARIABILITY OF NET REVENUE

OTHER REVENUE	Annual rate of change (% CHANGE)						Annual change over GDP (1) (% GDP)					
	2019	2020	2021	2022	2023	2024	2019	2020	2021	2022	2023	2024
Variability ⁽²⁾												
TOTAL	-9,9	-12,6	23,4	10,0	8,6	8,6	-0,1	-0,1	0,2	0,1	0,1	0,1
Real	-1,5	-17,2	12,2	17,6	3,0	7,0	0,0	-0,1	0,1	0,1	0,0	0,1
Prices	-1,0	-3,6	8,9	25,3	-16,1	-8,8	0,0	0,0	0,1	0,2	-0,1	-0,1
Measures	-7,4	8,2	2,2	-32,9	21,8	10,4	-0,1	0,1	0,0	-0,2	0,2	0,1

Source: AEAT, AIReF estimates and preparation

(1) Change in GDP= $100 \cdot (X_a - X_{a-1}) / GDP_a$ (a=reference year)

(2) **Real**: change in volume

Prices: change in prices

Measures: variation brought about by regulatory changes adopted, both temporary and permanent.

The weight of special tax revenue over GDP from 2019 to 2023 fell by 0.3 points of GDP and that of other tax revenue rose by 0.2 points although eliminating the impact of the temporary measures we can deduce a fall in special taxes of 0.2 points and an increase in other revenue. Although the collection of special taxes accounted for 1.5 points of GDP in 2023, 0.3 points less than in 2019, it was affected by the temporary measures to reduce the rates of the Special Tax on Electricity, which reduced the total increase by 0.1 points. If the contextual impact of these temporary measures is discounted, it can be deduced that, compared with 2019, there was a fall of 0.2 points of GDP for special taxes. For its part, other tax revenue stood at 0.8 points of GDP in 2023, 0.1 points more than in 2019, although this difference includes both the temporary impact of the suspension of the IVPEE established since 2021 and

- 2021: Increase in the Insurance Premium Tax, entry into force of the Financial Transaction Tax and the Tax on Certain Digital Services.
- 2021-2024: Temporary suspension of the IVPEE, with the reinstatement of half of its amount in the first quarter of 2024, three quarters in the second quarter and the full amount from the third quarter.

its partial suspension in 2019, as well as the increase in tax collection brought about by the Temporary Solidarity Tax on Large Fortunes. If these temporary effects are subtracted, the growth of other tax revenue compared with 2019 was 0.2 points of GDP.

ANNEX I. BREAKDOWN OF THE VARIABILITY OF TAX REVENUE BY TAXES AND FACTORS

ANNEXES. TABLE 1. BREAKDOWN OF THE VARIABILITY OF REVENUE: RATES OF CHANGE (%CHANGE)

		2019	2020	2021	2022	2023	2024
TAX REVENUES		2,0	-8,8	15,1	14,4	6,4	8,4
PIT	Real	1,5	-2,8	1,5	2,5	1,3	0,8
	Prices	1,6	1,3	0,9	1,8	2,8	1,4
	Tax rates	0,0	1,9	0,1	1,3	1,3	1,0
	Rest	0,2	0,4	0,8	0,7	0,4	0,4
	Measures	-1,4	-0,2	0,1	0,4	-1,5	-0,5
CIT	Real	-0,5	-2,0	1,3	1,2	0,2	0,2
	Prices	-0,5	-0,1	1,4	0,9	1,0	0,3
	Unexplained change	0,1	-0,4	1,2	-0,5	0,1	0,0
	Rest	0,0	0,1	0,3	-0,2	-0,1	0,0
	Rest	0,4	-1,0	1,2	1,0	-0,6	0,8
	Measures	0,0	-0,1	0,2	0,1	0,6	0,1
VAT	Real	0,3	-4,3	2,7	0,8	0,3	0,8
	Prices	0,4	0,3	1,6	2,6	0,8	1,6
	Unexplained change	0,0	0,2	0,8	1,7	0,2	0,0
	Measures	0,0	-0,1	-0,3	-0,6	-0,7	0,6
Special Taxes	Real	-0,1	-1,2	0,5	0,6	0,0	0,1
	Prices	0,0	-0,1	0,1	0,4	-0,3	0,0
	Measures	0,5	0,0	-0,2	-0,8	0,5	0,4
OTHERS	Real	-0,1	-0,8	0,5	0,8	0,1	0,3
	Prices	-0,1	-0,2	0,4	1,1	-0,7	-0,4
	Measures	-0,4	0,4	0,1	-1,5	0,9	0,5

Source: AEAT, AIRcF estimates and preparation

ANNEXES. TABLE 2. BREAKDOWN OF REVENUE VARIABILITY (% GDP)

		2019	2020	2021	2022	2023	2024
TAX INCOME		0,3	-1,7	2,4	2,4	1,1	1,5
PIT	Real	0,2	-0,5	0,2	0,4	0,2	0,1
	Prices	0,3	0,2	0,1	0,3	0,5	0,2
	Tax Rates	0,0	0,4	0,0	0,2	0,2	0,2
	Rest	0,0	0,1	0,1	0,1	0,1	0,1
	Measures	-0,2	0,0	0,0	0,1	-0,3	-0,1
CIT	Real	-0,1	-0,4	0,2	0,2	0,0	0,0
	Prices	-0,1	0,0	0,2	0,1	0,2	0,1
	Unexplained variable	0,0	-0,1	0,2	-0,1	0,0	0,0
	Revenues/returns extra	0,0	0,0	0,1	0,0	0,0	0,0
	Others	0,1	-0,2	0,2	0,2	-0,1	0,1
	Measures	0,0	0,0	0,0	0,0	0,1	0,0
VAT	Real	0,0	-0,8	0,4	0,1	0,0	0,1
	Prices	0,1	0,1	0,3	0,4	0,1	0,3
	Unexplained variable	0,0	0,0	0,1	0,3	0,0	0,0
	Measures	0,0	0,0	0,0	-0,1	-0,1	0,1
Special Taxes	Real	0,0	-0,2	0,1	0,1	0,0	0,0
	Prices	0,0	0,0	0,0	0,1	0,0	0,0
	Measures	0,1	0,0	0,0	-0,1	0,1	0,1
OTHERS	Real	0,0	-0,1	0,1	0,1	0,0	0,1
	Prices	0,0	0,0	0,1	0,2	-0,1	-0,1
	Measures	-0,1	0,1	0,0	-0,2	0,2	0,1

Source: AEAT, AIRcF estimates and preparation

ANNEX II. BREAKDOWN OF PERSONAL INCOME TAX VARIABILITY

The analysis is carried out through the taxable income of Personal Income Tax associated with wages and pensions, which are broken down in terms of volume, through employment and the number of pensioners, and in terms of prices, through average wages and pensions. The data from the Tax Agency allow us to break down the public wage, private wage and pension bases in such a way that the real variability is included through the evolution of public and private employment and the number of pensioners respectively, while the price variability includes the effects of the increase in the average wages of public and private workers and of the average pension for the respective taxable income considered. It should be noted that this accounting breakdown allows the total variability of the wage and pension bases to be broken down, so that the unobserved variability component is not assessed in the case of Personal Income Tax. The analysis replicates the procedure used in the previous year's version, incorporating the data for the last year observed with the updating of the taxable income for 2021 and 2022 due to the provisional nature of the figures published by the Tax Agency on taxable income, tax rates and accrued taxes relating to the last two reference years.

$$BASE = Recipients \times Average \text{ wages} \quad (1)$$

$$\Rightarrow \Delta BASE = \Delta Recipients + \Delta Average \text{ wages} = \Delta Real + \Delta Price \quad (2)$$

The breakdown of the variability of Personal Income Tax revenue is derived from the multiple interaction of the taxable income and the tax rates. The breakdown in terms of accrual is carried out by separating the withholdings from work and economic activities from the rest of the components. Withholdings from employment, which account for around 90% of Personal Income Tax revenue, are broken down based on the breakdown obtained for the wage and pension bases, bearing in mind that the accrual is the result of the product of the bases and the average tax rates, so that the contribution of the latter represents an additional component of variability. In addition to withholdings from work, a breakdown is also made of capital gains not subject to withholding, which account for around 7.5% of income from Personal Income Tax. The breakdown is established according to the number of second-hand housing transactions, which is established as the real variability component, and the evolution of house prices, which includes price variability. The variability of the remaining items of Personal Income Tax depends on a variety of effects that are combined in a single component. In addition, the contribution to growth of policy measures is isolated.

ANNEXES. TABLE 3. OUTLINE OF THE BREAKDOWN OF VARIABILITY ACCORDING TO PERSONAL INCOME TAX COMPONENTS

Components and their breakdown		Variability	
Withholdings from work and economic activities	Recipients	Public Private Pensioners	Real
	Average remuneration	Public Private Pensioners	Prices
	Tax rates	Public Private Pensioners	Average tax rates
Annual return	Income/ Profits not subject to withholding tax.		Miscellaneous items
	Leased properties		Miscellaneous items
	Capital gains	Real Prices	
Withholdings on moveable capital			Miscellaneous items
Withholdings on leases			Miscellaneous items
Withholdings on investment funds			Miscellaneous items
Instalment payments			Miscellaneous items
Tax on lotteries			Miscellaneous items
Settlements made			Miscellaneous items
Catholic Church allowance			Miscellaneous items
Regulatory measures			Measures

Source: AIRcF

ANNEX III. BREAKDOWN OF CORPORATE INCOME TAX VARIABILITY

The analysis of the variability of Corporate Income Tax is carried out by separating instalment payments from the rest of the tax components. The variation in the instalment payments of large companies and consolidated groups is broken down based on their taxable income, which is modelled in terms of gross operating surplus (GOS). The remaining components of the tax are included in the factor of sundry items of taxation. Specifically, these sundry items include the instalment payments of SMEs, the calculation of which depends on the previous year's tax liability; capital withholdings, the dynamics of which are not linked to the evolution of the taxable income; tax returns and refunds, which correspond to previous years' taxable income; settlements made by the authorities, extraordinary income, court rulings and deferred tax assets (DTAs), the evolution of which does not follow any pattern. As in the rest of the taxes, the impact of regulatory measures is isolated as an additional component of variability.

ANNEXES. TABLE 4. OUTLINE OF BREAKDOWN OF VARIABILITY ACCORDING TO CORPORATE INCOME TAX COMPONENTS

Component			Variability
Breakdown	Type of company	Instalment payment calculation method	
Instalment payments	Large companies	By tax base	REAL + PRICES + UNEXPLAINED CHANGE
		By accounting result	REAL + PRICES
	Groups	By tax base	REAL + PRICES + UNEXPLAINED CHANGE
		By accounting result	REAL + PRICES
SMEs		MISCELLANEOUS ITEMS	
Capital withholdings			MISCELLANEOUS ITEMS
Settlements and other items			MISCELLANEOUS ITEMS
Return income and refunds			MISCELLANEOUS ITEMS
Extraordinary revenue			MISCELLANEOUS ITEMS
Court rulings			MISCELLANEOUS ITEMS
Deferred tax assets (DTA)			MISCELLANEOUS ITEMS
Regulatory measures			MEASURES

Source: AIRcF

The instalment payments of large companies and groups are broken down in terms of prices and volume, through the gross operating surplus, and a component of variability is derived that is not explained by the existing separation between the dynamics of instalment payments and that of this variable. Large companies and groups calculate their instalment payments

based on the taxable income, but if the amount obtained does not exceed the limit set, they are recalculated on the basis of the accounting result. The methodological improvements implemented by AIReF in the last year have introduced changes in the modelling of this tax, moving from estimating the consolidated base to estimating the instalment payment bases, also applying separate estimates for large companies, groups, and SMEs. The analysis also separates the instalment payments deducted from the taxable income from those deducted from the accounting result. In the first case, the tax base of the instalment payments is modelled in terms of gross operating surplus. For each type of company, an annuity regression model is defined which uses gross operating surplus (GOS) as an explanatory variable (3). The variation in GOS is broken down into a component of real variation and another due to prices (4), by considering it as the difference between GDP, net of taxes and subsidies on production and imports, and the compensation of employees¹⁹. The variability explained by the model is disaggregated between real and price components in proportion to the breakdown of the GOS (5). The difference between the variability observed for each of the three bases considered and that resulting from the estimation of the model is considered as unexplained variability (6). Accordingly, the total variability of each of the three bases considered is broken down as the sum of the three components - real, prices and unexplained variability (7) and this breakdown is applied proportionally to the corresponding instalment payments.

Breakdown of the variability of instalment payments deducted from the instalment payment base (IP_TB):

$$d\log(\widehat{TB}) = c_1 + c_2 * d\log(GOS) \quad (3)$$

$$\Delta GOS = \Delta GOS_REAL + GOS_PRICES \Delta \quad (4)$$

$$\Delta \widehat{TB} \cong \frac{\Delta GOS_REAL}{\Delta GOS_REAL + \Delta GOS_PRICES} * \Delta \widehat{TB} + \frac{\Delta GOS_PRICES}{\Delta GOS_REAL + \Delta GOS_PRICES} * \Delta \widehat{TB} = \Delta \frac{\Delta GOS_REAL}{REAL + \Delta PRICES} \quad (5)$$

$$\Delta TB - \Delta \widehat{TB} = \Delta Not_explained \quad (6)$$

$$\Delta TB \cong \Delta REAL + \Delta PRICES + \Delta Not_explained \quad (7)$$

$$\Delta IP_TB \cong \Delta REAL / \Delta TB * \Delta IP_TB + \Delta PRICES / \Delta TB * \Delta IP_TB + \Delta Not_explained / \Delta TB * \Delta IP_TB \quad (8)$$

¹⁹ See "Breakdown of gross operating surplus" in Annex III at <https://www.airef.es/en/centro-documental/variability-of-tax-revenues/>

For large companies and groups which, limited by a minimum amount, calculate their instalment payments based on accounting profit, it is assumed that the latter evolves with unit elasticity with respect to GOS. The difference between the observed variability for GOS and accounting profit is defined as unobserved variability and, analogously to the previous case, the variability of accounting profit is broken down as the sum of the three components - real, prices and unexplained variability (9). The associated instalment payments are broken down proportionally to the breakdown deducted for the accounting result (10).

Breakdown of the variability of the instalment payments deducted from the accounting profit (IP_AP):

$$\Delta AP \cong \Delta GOS_REAL / \Delta GOS * \Delta AP + GOS_PRICES / \Delta \Delta GOS * \Delta AP + \Delta Not_explained = \Delta REAL + \Delta PRICES + \Delta Not_explained \quad (9)$$

$$\Delta IP_AP \cong \Delta REAL / \Delta AP * \Delta IP_AP + \Delta PRICES / \Delta AP * \Delta IP_AP + \Delta Not_explained / \Delta AP * \Delta IP_AP \quad (10)$$

Most SMEs calculate their instalment payments based on the latest available instalment, which in the case of the first instalment payment corresponds to the settlement of two previous years and, for the second and third instalment payments, refers to the previous year, so its dynamics cannot be explained by the changes in the period and is included in the sundry tax items component.

ANNEX IV. BREAKDOWN OF VAT VARIABILITY

The analysis of the variability of VAT is carried out based on the relationship between Final Expenditure subject to VAT (FESV) and domestic demand. The variation of VAT is broken down based on its tax base, whose quarterly change is modelled through a correction model that uses the real component of domestic demand and its deflator (11) as explanatory variables. The variability explained by the model is disaggregated between the real component and prices through the variation of these explanatory variables and of the factors derived from the model's own coefficients (12). The difference between the variability observed for the base and that from the estimation of the model is considered as unexplained variability (13). Consequently, the VAT base is broken down into three variability components reflecting the real change, the change due to prices and the variability not explained by the model (14).

$$d\log(\widehat{TB}) = c1 + c2*d\log(DD_REAL) + c3*d\log(DD_PRICE) + c4*(\log(BASE(-1))-c5*(\log(DD_PRICE(-1)))+c6*dummy (11)$$

$$\begin{aligned} \Delta\widehat{TB} &\cong \frac{(c2 + c4*c2)* \Delta ADD_REAL}{(c2 + c4*c2)* \Delta ADD_REAL + (c3 + c4*(c3-c5)* \Delta ADD_PRICES)} * \Delta\widehat{TB} + (c3 + c4*(c3-c5)* \Delta ADD_PRICES) * \Delta\widehat{TB} \\ &= \Delta REAL + \Delta PRICES \quad (12) \end{aligned}$$

$$\Delta TB - \Delta\widehat{TB} = \Delta Not_explained \quad (13)$$

$$\Delta TB = \Delta REAL + \Delta PRICES + \Delta Not_explained \quad (14)$$

To deduce the variability of net revenue, the contribution to growth of the policy measures is separated from the net revenue and the breakdown obtained for its base is applied proportionally to the result.