Public Economics and Finance

Exam Normal Period (Época Normal – 2022-23)

Resolution criteria

Note: In the answer to a question of normative scope, different answers may be admitted, as long as they are properly grounded in their arguments and consistent with the assumptions explained and the theoretical references. In questions of a quantitative nature there is only one correct answer and the calculations must be explained. In some question calculations are optional if they are not explicitly demanded, but are presented below.

1.

1a)

The financial interventionism supports the conception of the welfare state.

Key features of interventionist finance:

Public expenditure covers allocation (public goods/infrastructure), distribution (income redistribution) and stabilization (fiscal policy) functions. Public social expenditure has a main role here, associated with the financing of redistributive public policies (concern with reducing inequalities in income distribution) and promoting equal opportunities: the distribution function plays a key role in expenditure.

The main source of revenue is taxes, but it accepts issuing public debt, with respect for the "golden rule" (zero current balance or surplus).

Budget balance: accepts deficits, particularly in recessive economic cycles.

The public finance system must ensure the financing of public goods and operate redistribution mechanisms and provide incentives for economic activity.

Size of the public sector: public expenditure in the order of [40% - 60%] of GDP.

1b)

This policy measure – the introduction of tolls on a motorway that did not initially have them, in a context of high usage – requires a careful presentation of arguments in terms of the normative criteria of efficiency and equity.

The determinant of the government's decision clearly obeys a rationale of efficiency in the public sector's intervention: by introducing tolls on the congested motorway, the intention is to

moderate the use of the road by potential users, reflecting the external cost associated in this payment within a situation of congestion and consequent generation of negative externalities in the use of the road.

However, in the field of effects, despite the possibility of a reduction in traffic, improving efficiency in the use of the resource, this measure can be seen in terms of equity – another relevant normative criterion – namely in terms of its redistributive impact.

But, for that purpose, we must remember the evaluation of the measure both according to a logic of the principle of *ability to pay* and according to the principle of *benefit.*

In relation with *ability to pay*, the measure will be felt more negatively by agents (individuals/families) with less economic resources who need to use the road, reducing their real income. In this sense, it has a regressive redistributive effect and may be considered an unfair measure, especially if it is a situation with few alternatives, or alternatives of much worse quality and safety.

Judging in the light of the *principle of benefit*, the measure may be considered, however, relatively fair, since those who directly derive economic benefit from it must pay charges for using the road, in the logic of the paying user.

Thus, at the normative level, there may be a trade-off between efficiency and equity in the analysis of the effects of this measure considering an assessment according to the principle of ability to pay, but there is no such normative trade-off if we assess the situation considering the benefit principle.

2.

Topics

2a)

Goods are economically distinguished in view of two fundamental characteristics: rivalry in consumption and exclusion. Consumption of a good is rival if consumption of that good by one individual prevents another from consuming it; a good is subject to exclusion if it is possible to exclude, in a certain way, an individual from its consumption, imposing, for this purpose, a price, tariff or fee to allow him or her to access the good.

Thus, we have a public good when, for all individuals, there is no rivalry in consumption and where exclusion is either not possible or, if possible, not economically desirable from the point of view of economic efficiency. The main distinguishing feature of a public good is non-rivalry in consumption. We have a private good when, by nature, there is rivalry in the consumption of the good and there is the possibility of exclusion in accessing the good through a price.

These are the economic *characteristics* that distinguish goods: rivalry and exclusion.

The provision of a good defines how citizens have access to the good. Public provision: users do not pay a price, or pay an economically insignificant price, to have access to the good/service; the good is financed by the budget of a public entity, namely through taxes. Private provision: the good is financed through a price, tariff, or fee, which must be like the marginal or average cost of production.

A private good can be privately provided (and most of the time this is what happens, within the normal functioning of markets), or publicly provided (if the good has the characteristics of a private good but is made available free of charge through financing public revenue). Just as a public good can be publicly provided (and most of the time this is what happens, within the scope of the State's response to a market failure) or privately provided, if, for financial reasons, it is decided to charge a fee, tariff, or price for the citizen to have access, although undesirable from an economic efficiency point of view.

In conclusion, the phrase is not valid in the unambiguous association that it seems to make between private provision/private goods and public provision/public goods, as their intrinsic characteristics. In each type of goods – private or public – there can be situations of public provision or private provision.

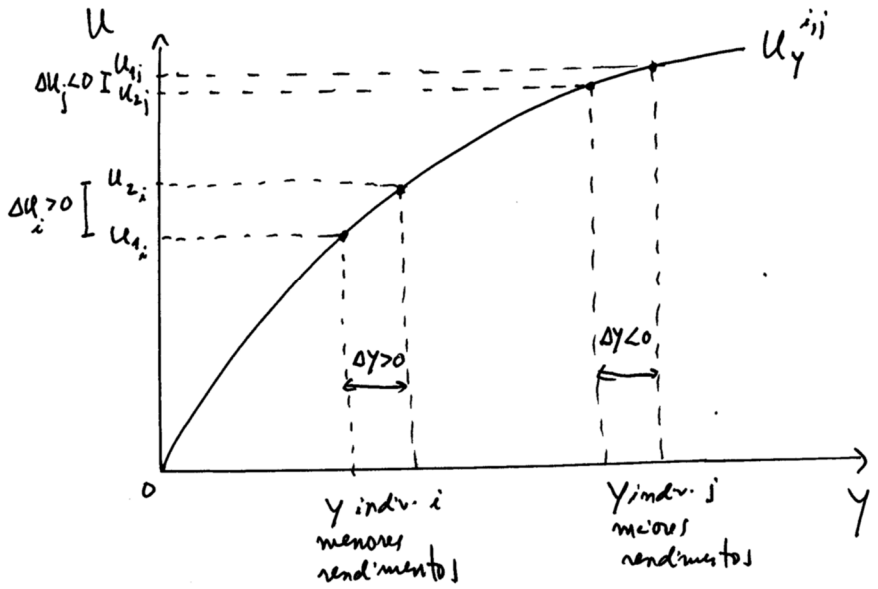
2b)

For *utilitarians*, social well-being is determined by the unweighted sum of individual utility levels, thus attributing the same weight to the variation in well-being of any individual in society.

The usual assumptions are the following ones: utility (and aggregate social welfare) depends only on income, the marginal utility of income is decreasing, individual utility functions are identical, and there are no redistribution costs.

The illustrative graph below, with the representation of the individual utility functions (they are identical), shows the effect resulting from a redistribution of income such as that described in social welfare, from a utilitarian perspective.

Individual j, who has a higher income level, transfers ΔY to individual i, with lower income, as described below.



Assuming the marginal utility of income is decreasing (a plausible hypothesis), this determines a curve of total utility, Ui,j(Y) concave and, thus, for a transfer of ΔY from j to i, we easily have that the relation of the variations of the individual utilities, in absolute value, with no redistribution costs, imply that:

$$\Delta Ui > | \Delta Uj |$$

This means that, for utilitarians, social welfare improves, that is, ΔW>0. The sum of utilities, after the transfer of income, will be greater than the initial one, that is, before the redistribution of income among individuals takes place.

(Note: in the case where it is assumed that the marginal utility of income is constant, then the sum of individual utilities would not change, maintaining the level of aggregate well-being after this redistribution of income. In this hypothesis, the utilitarian individual utility function would be represented by an increasing line with income.)

Group 2

3)

Vertical equity: the personal income tax (IRS) presents progressive rates, that is, the marginal rate and the average rate increase as income increases, thus contributing to the reduction of inequality.

Horizontal equity: it happens when, in computing the tax amount to be paid, the "circumstances of each household" are considered, translated by its size and composition and which originate the designated deductions. The idea is that similar equivalent incomes (income concept that allows comparing households of different sizes and compositions) pay similar taxes.

4)

Efficiency: on the one hand, a reduction in the level of taxation can stimulate work/ employment, savings and investment, favoring international competitiveness and attracting foreign investors and, therefore, increasing efficiency.

On the other hand, an increase in tax complexity with the increase in the number of tax brackets is detrimental for efficiency.

Equity: this measure is positive for equity because it increases the progressivity of the tax.

5)

This statement makes little sense since restaurants would be able to deduct the VAT they paid to their suppliers from the VAT they will pay, on behalf of their customers, to the State. In other words, restaurants pay VAT on the food goods they purchase and receive VAT on the meals they supply, with the difference between the VAT charged (on sales) and that received (on purchases) being handed over to the State.

Therefore, this measure has no effect on the margins of restaurants. In the given example, he continues to pay all of the 13% of the meals he sells to the State and stops deducting the 6% that he previously paid to the supplier. With VAT on inputs at 6% and outputs at 13%, it would handover 1300-60=1240 to the State. With VAT at 0% on inputs, the restoration will deliver 1300 as it no longer deducts VAT. From the point of view of the restaurants, they still pay the same amount of VAT on their service. It should be noted that the price of meals continues to be 10,000+VAT at 13%, so the margin of restaurants (i.e, their net revenues) is not affected.

(Note: No calculations are required to answer the question with a good explanation.)

6)

Unlike IRS which, due to its salience at the time of annual payment, is calculated in a more transparent and clear way, VAT, as it is paid in small installments in each purchase over the course of annual consumption, which is much more difficult to calculate.

Group 3

7.

Coluna	C	D	E	F	G	
Linha						
6	(millions of euros)	Central Governmental and Local Gover		Social Security	General Government	
7	**Effective revenues (current and capital)**	71 059	14 002	35 523	102 582	=D7-D9+E7-E9+F7-F9
8	***Transferências correntes e de capital, das quais:***					
9	*Transfers from other subsectors of the General Governmen*	1857	5 244	10 901		
10	**Effective spending (current and capital)**	78 855	13 862	31 457	106 132	=D10-D14+E10-E14+F10-F14
11	***From wich***					
12	*Spending with personal*	19 005	4 967	303		
13	*Interest payments*	6 416	181	7	6 604	
14	*Transfers to other subsectors of the General Government*	16 088	192	1 762		
15	**Primary balance**	**-1 380**	321	4 073	**3 054**	**3 014**
16	**Budget balance**	-7 796	140	4 066	**-3 550**	**-3 590**

Note: Due to statistical discrepancies the approaches for calculating primary and global balances differ by 40M€. Both answers were considered correct.

GDP 239 300 millions of euro

Weight of General Government **44.4%** =G10/G19

8.

Note: A correct answer without calculations to support it was classified with 75% of the score.

A reasoned response with supporting calculations was rated up to 100% of the score.

Answer without calculations:

The Government's forecast in the 2023 State Budget contains two important deviations in the macroeconomic scenario.

First, it underestimates the starting point (2022 budget execution) by overestimating a 2022 deficit, which was 0.4% of GDP instead of the 1.9% of GDP predicted by the Government, a deviation that is very serious because this forecast is made in October 2022 when the Budget was submitted to the Parliament.

Second, it estimates nominal growth of 4.9% when nominal growth is now forecast at 8.3%. In addition, the forecast for growth in tax revenues (+2.6%) is very low compared to the original forecast for economic growth (+4.9%).

Thus, given the new forecast of much higher economic growth and the much better starting point for the public deficit, *tax revenues will tend to grow more than predicted by the Government, which will result in an improvement in the budget balance in 2023.*

As a result, it is very likely that in 2023 the General Government will run a budget surplus rather than the budget deficit of 0.9% of GDP forecasted in the State Budget (if no extraordinary expenditures measures are implemented).

Answer with supporting calculations:

The nominal growth rate in 2023 is now forecast to be 8.3%. Thus, if tax revenues grew by about 8% instead of the 2.6% of the macroeconomic scenario and admitting tax revenues from the General Government of 60 billion euros in 2022, the differential of growth of tax revenues compared to the government's forecast would be:

€61.560 billion (2023 State Budget forecast).

€64.970 billion (if tax revenues grow by 8% compared to 2022).

That is, a growth in tax revenues about 3.4 billion euros (64.97-61.56) above the forecast by the Government in the OE 2023.

Expenditures are assumed unchanged. In response to a better budget execution, the government may increase discretionary spending, but spending on unemployment benefits should decrease.

The government predicted an improvement in the budget balance of 1 percentage point of GDP from -1.9% of GDP in 2022 to -0.9% of GDP in 2023, i.e., 2.3 billion euros.

The budget balance in 2022 ultimately stood at -0.4% of GDP.

Thus, starting from this figure and assuming an improvement in the balance of €5.7 billion (=3.4+2.3) compared to 2022 (-0.4% of GDP=€-0.96 billion), the budget balance in 2023 should be estimated at €4.7 billion (=3.4+2.3-0.96).

GDP in 2023 would be 239.3*1.083=€259.2 billion.

Therefore, the budget balance in 2023 should now be estimated at about +1.8% of GDP (=4.7/259), instead of the budget balance of -0.9% of GDP predicted by the Government in the OE2023.

Group 4

9 a)

a) The ratio of interest expenditures on public debt (% GDP) is given by the difference between the primary balance and the overall balance. SOp=SO+J, thus J=SOp-SO

To calculate the cyclically adjusted primary balance (or structural balance if there are no *oneoff measures*) one possibility is to first calculate the cyclically adjusted balance: Since SOe= SO-Soc, then the cyclically adjusted primary balance is given by = SOe+Interest.

Finally, to analyze the nature of fiscal policy, we will have to look at the change in the cyclically adjusted primary balance, to see whether it is expansionary or contractionary. The fact that this balance increases every year shows that fiscal policy will be contractionary.

With the available information of a positive growth rate during the period, despite decelerating (given that we do not have information on the output gap which would be more accurate), we can then conclude that we expect to be facing an anti-cyclical fiscal policy. See calculations below.

	2023	2024	2025	2026
Expenditure with Interests (% GDP)	1,2	1,2	1,2	1,4
Cyclically Adjusted Budget Balance	-2,9	-2,5	-2,3	-2,2
Cyclically Adjusted Primary Balance	-1,7	-1,3	-1,1	-0,8
Variation of the Cyclically Adjusted Primary Balance		0,4	0,2	0,3
Real GDP Growth (%)	0,1	3	2,9	2,5

b) Automatic stabilizers are budgetary variables that have an automatic stabilizing effect of smoothing the economic cycle, *whether in a situation of recession and unemployment or in a situation of economic growth and inflationary pressures* (examples are the personal ncome tax (IRS) or unemployment benefits). The effect of automatic stabilizers is captured by the cyclical component of the budget balance (SOc). From 2023 to 2025 this component is negative, which means that the output gap is negative and they are contributing to worsen the budget balance, although less and less (-0.6; -0.4; -0.1). In 2026, SOc is 0, which indicates that the output gap is zero, that is, that real GDP will be identical to potential (or trend) GDP. In other words, the automatic stabilizers are contributing to the improvement of the budget balance.

C) The budget balance (% GDP) is the difference between actual revenue and actual expenditure as a % of GDP. If we look at the variation in the budget balance, in percentage points, we see that it should improve over the years (see calculations below). We can easily conclude whether this improvement comes mainly from the side of the weight of expenditure or the weight of revenue on GDP.

The burden of public spending is expected to decline significantly over the years. If we calculate the variation in public expenditure (% GDP) we see that it is always greater (in module) than the variation in the budget balance. That is, if the weight of public revenue (% GDP) had been constant over the period, the budget balance *would have improved much more* just because of the *contribution of reduced expenditure.* This shows that the only contribution to the improvement of the budget balance came from the reduction in the weight of public expenditure. The weight of public revenue in GDP does not increase, but rather *decreases,* which in no way contributes to improving the balance. The measures that the government (with approval by the Assembly of the Republic) may be taking are: on the public expenditure side, an

increase in civil servants salary below nominal GDP growth and on the revenue side a slight reduction in the marginal rates of some taxes .

	2023	2024	2025	2026
Variation of the Budget Balance (in p.p.)		0,6	0,5	0,2
Variation of Public Expenditure (p.p.)		-2,1	-1,2	-0,8
Variation of Public Revenues (p.p)		-1,5	-0,7	-0,6

(Optional: it is not necessary to calculate the change in public revenue, but it can be easily calculated if we take into account that the change in the budget balance, as a percentage of GDP, is given by the change in public revenue minus the change in public expenditure (% GDP). Therefore, the variation in public revenue will be given by the sum of the variation in public expenditure and the variation in the budget balance (see Table). Alternatively, the weight of public revenue in GDP can be directly calculated, since SO=R-D, therefore R =SO+D. Thus, for example, in 2023, with SO=-3.5% and D=44.7%, R=44.7%+(-3.5%)=41.2%. It is not necessary to present these calculations provided a good explanation is given).