An alternative to budgetary balances to assess benefits for the Member States

di
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Abstract:
Il saggio mira a dimostrare che l'adozione di un'analisi di carattere macroeconomico basata su indici di input e output e su flussi commerciali tra gli Stati membri permette di superare le criticità teoriche e operative di una strategia europea che si fonda esclusivamente sulla considerazione dei flussi di bilancio. L'esito dello studio si colloca nell'ambito di una visione strategica in cui il fine del bilancio europeo è distribuire risorse in modo ottimale in modo da agevolare lo sviluppo delle economie degli Stati membri.

The goal of the paper is to demonstrate that a proper macroeconomic analysis based on input-output tables as well as on trade flows among Member States is likely to contrast the conceptual and operational drawbacks of a methodology that relies only on budgetary flows. The outcome of the analysis places itself in the context where the purpose of European budget is to redistribute resources among Member a States to support development of Member States economy.

1. Introduction.

The budgetary balances calculation method is actually enshrined in a Council of Ministers' Decision [2]. The principle of the calculation of the Member States' net positions draws thus support by an official methodology. Moreover, data on budgetary balances are regularly published by the

Commission since 1998 [3]. Such calculations become obviously a key element of the decision making process of the Union.
As the Commission itself stresses, *"allocating expenditure to Member States is merely an accounting exercise that gives a very limited view of the benefits that each Member State receives from the Union (...). This accounting allocation, among other drawbacks, gives no indication of many of the other benefits gained from EU policies*" [4].
This study attempts to demonstrate that a proper macroeconomic analysis based on input-output tables as well as on trade flows between Member States may enable us to overcome the conceptual and operational drawbacks of the present methodology, based exclusively on budgetary flows.

2. Main features of the European budget

The Treaty on the functioning of the European Union (art. 311) stipulates that the European budget is financed from "Own resources" of the Community. The "Own resources" system defines the typology of financial resources (Custom and Agricultural duties, Sugar levies, VAT resource, GNI resource and Miscellaneous revenue) as well as the overall ceiling of total resources which can be called [5]. The system, first set up by the Council Decision of April 21st 1970, has been amended several times, mainly in order to modify the burden of financing among Member States. The GNI resource, based on each Member State's Gross National Product, was introduced in 1988 [6] to increase the share of contributions based on the relative prosperity of the Member States.
It should be pointed out that the resources financing the European budget are not administered nor fixed *de facto* in an autonomous way by the Community but rather by the Member States. The European budget's financing is provided by a decision which has first to be unanimously adopted by the EU Council of Ministers and, to come into force, needs to be ratified by the Member States according to their own constitutional rules.

3. The concept of "excessive budgetary imbalance"

In an attempt to manage worries from both kinds of Member States - "net" beneficiaries as well as "net" contributors - the Commission has proposed [7] a generalised correction mechanism, calculated on the basis of the net budgetary balance of each Member State. To satisfy "net" contributors Member States a rebate would be applicable if net contributions exceed 0,35% of each country's GNI, this threshold representing a kind of "reasonable net contribution" (contributions above this would be refunded at

a rate of 66%). On the other side, the total volume of corrections would be limited to 7,5 billion EUR a year (financed by all Member States based on their relative share of GNI), thus insuring "net" beneficiaries Member States (which do not benefit of the rebate) against excessive costs of the mechanism.
However, although the likely Member States' "net" balances have been projected by the Commission against various future financing scenarios, the concept of "imbalance" continues to be based on payments from and to Member States. The inherent drawbacks of such a concept, illustrated in section 5, would therefore apply also to such a new mechanism. Moreover, correcting budgetary imbalances through *ad hoc* mechanisms essentially amounts to refusing to intervene directly on the sources of the imbalances. [8]

4. The share of the financial burden falling on Member States and their budgetary balances

As most of the financing of the European budget derive from the VAT and GNI resources, the “financial” burden is shared among Member States basically in function of their part in the total GNI and, to a lesser extent, on the basis of their final consumption liable to VAT.
Since it provides a balance between contributions paid by the Member States and payments received, the allocation of the EU expenditure made in this frame represents in a way the "official" reference to define winners and losers in the framework of the European Budget. It is on this basis that the Members States consider themselves (and are conventionally considered) "net contributors" or "net beneficiaries". The definition used to this purpose is that of “operating expenditure”, which is an ancillary definition of "allocated expenditure" and differs from the latter in that it omits administrative expenditure relating to EU institutions.

5. Conceptual drawbacks and inadequacies of a method based on budgetary balances

The difference between budget contributions and budget expenditure by each Member State tends to misrepresent the benefits from EU membership. The Commission itself listed a series of reasons for which conventionally measured budgetary balances fail to adequately represent the benefits of EU membership, ending up with results that are not uncontroversial [9]. These re

a) given the diversity of circumstances and productive structures among Member States, a given EU expenditure will not result in the same

economic benefits for all the Member States;

b) EU expenditure only registers the amounts used, for example, to fund agricultural market support measures or payments of direct aid to farmers; the benefits gained, and the costs incurred, by producers and consumers in the Member States are largely due to factors which for obvious reasons go unregistered in the EU budgetary accounts; these factors, which are often very difficult to quantify, are the flow of income from consumer to producer both within and between Member States, the benefits derived from stability of price and security of supply, the effects of the EU subsidies on the allocation of productive resources;
c) around one third of the agricultural spending is devoted to market support measures; however, those measures are supposed to benefit all countries and not only the ones receiving the payments from the European budget;
d) structural expenditure accruing to one Member State has also important spill-over effects, reflecting largely the enhanced interdependence characterising the EU; financing projects in less favoured areas generates production of goods and services in other areas [10].
e) the greatest economic benefits of the Internal Policies are likely to relate to economic integration; the limited usefulness of measuring benefits from EU membership in budgetary terms alone is highlighted by the disparity between the budgetary cost of these policies and their impact in terms of growth and employment.

The methodologies based on budgetary balances furthermore do not take into account important "financial" aspects:

f) the method is based on the calculation of a balance between two sets of data conceptually different, while VAT and GNI resources are financed through general taxation by all taxpayers, a similar parallelism does not exist for the payments made from the European budget to a given country;
g) payments are normally allocated to the Member State in which the principal recipient resides; This is not a guarantee that the payment benefits to the country of residence; a similar situation can arise for research contracts, often implemented by several partners while, for the purpose of allocating the "operating expenditure", the payment is totally attributed to the partner heading the consortium.

The methodology proposed in this paper does not solve all the foregoing problems, but it faces mainly those items under a) – d).

6. Estimating economic benefits accruing from EU expenditure: a methodology based on the increase in the demand of goods and services

We believe that the benefits which each Member State derives from the EU budget could be estimated in a more comprehensive way, avoiding the conceptual and operational drawbacks of the present methodology. The starting point is that each unit of (European) expenditure generates, somewhere (within/outside the EU), a given quantity of production (goods and/or services). This induced production can be further divided by type (agriculture, industry, services, building) and can be assumed as a proxy of the benefits for each EU Member State (and, indeed, for States outside the EU). For this exercise we used basically two tools, the input-output data of the Member States and the actual expenditure they received from the European budget.
The proposal aims to develop a methodological framework to evaluate the global benefits caused by the European Union expenditure to each Member State. The main characteristics of this methodology are:

- clearly specified hypotheses,
- a methodology founded on an economic background largely accepted, and
- an algorithm which is completely standardised.

Furthermore, in this evaluation the main methodological tool is the input-output analysis [11].

6.1 The basic model [12]

In order to evaluate the impacts of EU expenditure on the Member States' economies it is necessary to estimate the global benefits caused by such expenditure. In this study only the expenditure having an effect on production level has been considered.
Basically we assume that the EU gives a contribution *X* to the country *Y* in order to increase the production level of sector *Z* of economic activity. At this stage it is essential to identify the economic sector (*Z*) on which the EU expenditure (*X*) weighs; it is therefore necessary to classify the EU budget in a way consistent with the economic classification. In order to evaluate the global impact on national economy it is necessary to estimate the quantity of additional production of *Z* activated by *X*.
In general, the global benefit of EU expenditure (*B*) can be defined by the equation $B=PI+PE$, where *PI* and *PE* represent the amount of domestic and foreign production due to *X*. With this information it becomes possible to follow the proposed procedure.
The EU gives a contribution in order to increase the production of a particular sector of activity in a specific country; such amounts cause an increase of

production (*PI*) both in the specific sector and in all the other economic activities interrelated with the previous one. The increase of production causes an increase in the imports (*PE*) required to produce *PI*. *PI* + *PE* represent the total benefits; *PI* however is the domestic benefit while *PE* is the foreign component and must be imputed to other countries.
From a statistical point of view, the main difficulty concerns estimating the two amounts *PI* and *PE*. Such an estimate must be realised using a data set with a high degree of reliability and comparability among the EU Member States. We can find both these characteristics in Eurostat's "input-output database".
The input-output model is a matrix in which the horizontal rows show how the output of each sector of the economy is distributed among the others. Conversely, the vertical columns show how each sector obtains from the others its needed input of goods and services. A simplified input-output matrix is showed in Figure 1.
Using the input-output table columns it is, in fact, possible to know the values of input needed to produce output *Z*. In formal terms this can be represented by the equation $Z_i = C_{i1} + C_{i2} + ... + C_{in} + VA_i$; where: C_{i1}, C_{i2}, ..., C_{in} are the values of input used (goods and services purchased) to produce *Z* and *VA* is the value added that correspond to the total payments for primary inputs (capital stock, labour and land). The inputs used in this production (C_i) can be produced in country Y (CI_i), in EU countries (CUE_i) or finally in extra EU countries (CEU_i). Therefore, the previous equation can be written as
$Z = (CI+CUE+CEU)_{i1} + (CI+CUE+CEU)_{i2} + ... + (C+CUE+CEU)_{in} + Va_i$ [1]

Figure 1 **A simplified input-output matrix**

		INDUSTRY PURCHASING					
		Agriculture	Industry	Services	Intermediate consumption	Final demand	Total output
INDUSTRY PRODUCING	Agriculture	CI_{11}	CI_{21}	CI_{31}	$CI_{.1}$	D_1	Z_1
	Industry	CI_{12}	CI_{22}	CI_{32}	$CI_{.2}$	D_2	Z_2
	Services	CI_{13}	CI_{23}	CI_{33}	$CI_{.3}$	D_3	Z_3
	Total costs	$CI_{1.}$	$CI_{2.}$	$CI_{3.}$	$CI_{..}$	$D_.$	Z
	Value added	VA_1	VA_2	VA_3			
	Total output	Z_1	Z_2	Z_3			

It is now evident that each increase in *Z* production determines, *coeteris paribus*, an increase in inputs C_i (because Z_i production needs more resources). These additional resources can come from domestic (CI_i) or foreign production (CUE_i or CEU_i).

In this study we assume that EU expenditure (*X*) in a particular sector of activity causes an increase of production in the same sector. Using the input-output model, by extending equation [1] it becomes therefore easy to calculate both the domestic and foreign results due to *X*. These results represent the total benefits (*B*) and are measured in terms of additional domestic (*PI*) and foreign (*PE*) production. In this way we can quantify not only the benefits in country *Y*, but also the benefits in the whole EU expressed in terms of imports of EU goods and services in country *Y*. We can furthermore split both the domestic and the foreign benefits in "direct" and "indirect". The former are produced in a shorter period than the latter.
In order to analyse more in depth the relationship among the EU countries we need to split between EU and extra EU countries the amount of foreign benefits. We have further to assign to each Member State a share of EU foreign benefits. In order to do this it is necessary to know import-export flows among the EU Member States and between the whole of the EU and all other countries. A specific Eurostat database allows us to group the import-export flows in this way and then to identify from which country *Y* purchases the inputs needed to produce *Z*.
Taking simultaneously into account the input-output data set and the import-export database we can locate the total imports of each country and, consequently, the benefits produced by such imports in the various EU Member States.

6.2 The main characteristics of databases

6.2.1 Input-Output tables

As a starting point of the analysis we use Eurostat's "input-output database". This database contains harmonised input-output tables concerning the EU Member States as well as producing tables (as complete as possible) for the EU as a whole. The input-output system of Eurostat includes detailed information for a given year on production activities, supply and demand of goods and services, inter-industry transactions, primary inputs and foreign trade. The economy is broken down into various branches (agriculture, industry, services), clearly presenting thus the interdependencies between economic variables. Transactions in goods and services are broken down by:

- supplier and user,
- type of use (intermediate or final)
- geographical origin and destination.

Input-output tables also show the cost structure of production activities (intermediate inputs, compensation of labour and capital, taxes on

production). The tables supplied within this database are harmonised with reference to the European System of Integrated Economic Accounts (ESA) [13] In order to use the import flows in an input-output model we need to split the total import flows between final and intermediate uses. In fact, in this analysis the attention is focussed on import flows used in the domestic production process. To this end have been used the symmetric input-output tables both for internal production and for imports. Furthermore, the imports of intermediate goods and services have been split by countries of origin using the database on the statistics of trade (see par. 6.2.2).

6.2.2 Statistics on trade

We use the Eurostat database on the external trade. This database records for each Member State, with reference to the years 1998-2001, the import-export flows broken down by sectors of economic activity and by country of origin. The classification of economic activities of this database is analogous to the input-output classification; the two databases can thus be easily matched.

6.2.3 EU expenditure

The definition of EU expenditure used corresponds to that of " operating expenditure" within the meaning of the exercise carried out annually by the Commission.

"Operating expenditure" is allocated by the Commission to three main budgetary areas: agriculture, structural actions and internal policies. For the purpose of identifying a direct link between the type of expenditure and the type of production directly generated (agriculture, services, industry, building) we have treated these three fields as follows:

- We have deducted from the "allocated operating expenditure" for Agriculture the part relating to budgetary lines like "set-aside" or "early-retirement" which are more of a subsidy than of an incentive to product. Other budget lines have been excluded due to the difficulty of allocating them to one of the four sectors of production selected. The part finally deducted equals 6,6 % of the total allocated expenditure for this section. The rest of the budget lines have been attributed to one of the four sectors of production according to the type of production that each kind of expenditure is likely to generate. The expenditure has been attributed to the Member States according to the budgetary implementation (average 2000 to 2002).
- Concerning expenditure for Structural actions we were forced to choose a different procedure, since the budgetary implementation does not allow the necessary detailed analysis to attribute the expenditure to a sector of

production. We have therefore assumed that we could apply to this part of the operating expenditure the typology of interventions financed for the period 2000-2006. On this basis we have divided by sector of production the operating expenditure by Member State. A small part of the total has been excluded (1,1 %), either because of its subsidy nature or due to difficulty of attribution.

- As far as the internal policies part is concerned, we have assumed that the total was to be attributed to the input of production of services. Each Member State' part in this section of the "operating expenditure" has then been attributed consequently.

7. Concluding remarks

The results of this study should be considered in a context where one of the main aims of the European Budget is to re-distribute resources among Member States so as to fund a more harmonised development of the different economies. It is therefore quite normal that more prosperous Member States should be "net" contributors, although the relative size of their "balance" is ultimately a matter of political choice and acceptance. It seems however established that when evaluating the benefits accruing from European expenditure the analysis of the budgetary flows constitutes a very limited, and in a way misleading, instrument. As the evaluation of these benefits constitutes for the Member States a precondition of fundamental political decisions (first of all, the amount of the resources of the European Budget), a proper analysis would require estimating the increase in domestic output generated by EU expenditure together with the side effects generated in other countries.

Beside the possibility to properly estimate benefits accruing from EU expenditure the proposed methodology has several advantages. In contrast to a method based on budgetary flows the proposed methodology:

1. takes explicitly into account the interrelations among the different productive activities on the basis of an input-output model;
2. quantifies the increase of production as a result of EU expenditure and makes therefore possible to estimate the quantitative and geographical effects of an eventually different sectorial allocation of the EU expenditure;
3. highlights the fact that if the level of the additional production induced is greater than the EU expenditure, this same level depends on the economic structure of each country;
4. stresses the importance of intra-community commercial flows in order to estimate the benefits accruing to country X from EU expenditure in

country Y.

Note:
[*] Il presente contributo è stato preventivamente sottoposto a referaggio anonimo affidato ad un componente del Comitato di Referee secondo il Regolamento adottato da questa Rivista.
[1] S. Pisani is an official of the "'Agenzia delle Entrate", an agency of the Italian Ministry of Economy and Finances (Stefano.Pisani@agenziaentrate.it). Opinions expressed in this paper are personal and in no way commit his employer.
[2] See Art. 4 and 5 of Council Decision 2007/436/EC, Euratom of 7 June 2007. The details of the calculation are set in a Commission working document (Commission working document of 23 May 2007, available on: http://ec.europa.eu/budget/library/biblio/documents/financing/calc_own_res_2007_en.pdf.
[3] In reality such data are calculated at least since 1995. See European Commission (1998), annex 3, page 5.
[4] See European Commission (2003), page 2. Similar concern had been expressed by the European Court of Auditors (1998), Para. 3.29. The Berlin European Council (1999) has also recognised that "[..] the full benefits of Union membership cannot be measured solely in budgetary terms (See Presidency conclusions, point 68). A full statement has been made by the Commission in the Own Resources Report (1998), chapter 2, and in "Budget Contributions, EU Expenditure, Budgetary Balances and relative Prosperity of the Member States", paper presented by President Jacques Santer to the Ecofin Council of October 13, 1997.
[5] The overall ceiling of payment appropriations is currently set at 0,98 % of the total GNI of the Member States. According to the applicable rules, Revenue and Payment appropriations must balance each other. This means that expenditure cannot go beyond this limit.
[6] At the time called the GNP resource.
[7] European Commission Own Resources Report (2004), sections I (pages 6-8) and II (pages 25-40)
[8] See European Commission (1998), page 19.
[9] See the Commission Own Resources Report (1998), chapter 2 and annex 3 and the Commission's reports on allocation of "operating expenditure".
[10] The second interim Commission's report on economic and social cohesion (COM (2003) final of 30.1.2003, page 15) indicates concerning expenditure related to Objective 1 that there are substantial effects outside

the eligible areas. It is estimated that due to the single market one quarter of the expenditure will be employed in other areas, and almost 1/10 even outside the EU.

[11] An input-output model is essentially a simplified general theory of production; it explains the magnitudes of the inter-industry flows in terms of the levels of production in each sector. This model is based on the premise that it is possible to divide all economic productive activities into sectors whose interrelations can be meaningfully expressed in a set of simple input functions. It is not sufficient to consider only one economic system described in terms of interdependent industries; it is also necessary to combine several national models into a larger economic unit. See Leontiev (1966), Chenery (1959).

[12] An empirical application of this method is showed in Cipriani & Pisani (2004).

[13] Which is the Community version of the United Nations' System of National Accounts (SNA). Eurostat (1995), UN (1993).

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