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Chapter Author: Daniela Elena Stefbescu, Maria Chiainevschi

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9 Report on the Romania–Republic of Moldova Bilateral Comparison, Benchmark Year 1993: An Informal Report

Daniela Elena Ştefănescu and Maria Chişinevschi

Romania participated in two rounds of the European Comparison Programme (ECP), a part of the International Comparison Program (ICP) focusing on GDP. This took the form of a Romania-Austria bilateral comparison with 1990 and 1993 as the benchmark years, Austria being the bridge country between the Group II countries (in transition) and other European countries.

After the end of the 1990 ECP round, preparations for the next round coincided with the political changes in Central and Eastern Europe and the breakup of the Soviet Union.

As a result, twenty-three countries applied for inclusion in the Group II comparisons for 1993. Although the increase in the number of countries did not mean greater geographic coverage (which is more or less the same as in 1990), it proved to be beyond the power of the Austrian Central Statistical Office (ACSO). Thus, the organizers of the European comparison concluded that the work efforts must be shared.

In this context, at the beginning of February 1993, the OECD asked the National Commission for Statistics (NCS) of Romania to assume the burden of carrying out a bilateral comparison within the next round. In this way, Romania had as a major task in this comparison organizing and carrying out everything required of a "bridge country." The reference pattern was Austria, the center of the star-shaped organization of bilateral comparisons within the Group II A countries.

The main objective of this report is to illustrate the procedure for the bilateral comparison between Romania (the National Commission for Statistics)

Daniela Elena Ştefănescu has been director of Co-operation and European Integration Direction of the National Commission for Statistics of Romania since 1996. She is a Ph.D. candidate in statistics at the Academy of Economic Studies in Bucharest. Maria Chişinevschi is head of the International Comparison Division, Direction of Co-operation and European Integration within the National Commission for Statistics of Romania.

and the Republic of Moldova (the Statistical State Department) as well as giving the results of this comparison.

The Republic of Moldova has been included in the Group II D subgroup.

9.1 Organization of the Comparison

With a view to establishing the organizational and conceptual framework as well as the working schedule, in May 1993, in Bucharest, a meeting of representatives of the OECD, the ACSO, the NCS, and the State Department of Statistics of the Republic of Moldova took place. As it was the first time the Republic of Moldova joined the comparison, it was necessary to explain the comparison's aims, the methods and techniques used, and the informational burden of each participating country.

The Moldavian experts were informed that joining the comparison assumes ensuring that the following necessary data are available: (*a*) gross domestic product, broken down into homogeneous basic headings; (*b*) the list of typical items with significant shares in each GDP expenditure basic heading, together with the detailed technical characteristics for each item; (*c*) the average annual and national prices for selected goods and services; and (*d*) other additional information needed to compare nonmarket services and other GDP expenditure.

A few meetings took place in order to clear up methodological issues, especially those referring to GDP computation in accordance with ESA methodology, moving from the material product system to the European system of accounts, and observing the rules of the ECP methodology, very important elements in ensuring the indicators' comparability.

As national practices always differ to a certain extent, the differences in the international recommendations have been noticed, discussed, and corrected; likewise, issues connected to data collection and computing the annual average and national prices for the selected products have been tackled.

Besides the working meeting, it was deemed that, with a view to gathering evidence, the Moldavian representatives would benefit from the translation into Romanian (which is also spoken in the Republic of Moldova) of papers describing the basic methodology used to obtain the purchasing power parities (PPPs).

On the basis of the list of representative products established by the ACSO for the Group II countries, the Romanians settled on the representative products typical of both economies, pointing out the characteristics of each product.

At the bilateral meetings organized during 1993–95 in Bucharest and Kishinev, all the representative products selected by the Republic of Moldova from the list proposed by Romania were investigated; the characteristics of products were matched, and time was allocated for Romanian experts to visit Moldavian shops. When necessary, the method of quality adjustment was tackled.

Prices have been further analyzed, and the GDP breakdown by basic head-

ings has been surveyed (with a view to obtaining a more representative composition), as has the coverage of all groups with representative products. Finally, the preliminary results of the bilateral comparison have been examined in detail.

9.2 GDP Disaggregation by Expenditure Categories

The GDP breakdown for the bilateral comparisons of Group II involved 295 basic headings. Data were collected in accordance with a detailed questionnaire (common for all Group II countries). Because the Moldavian statistics did not use the expenditures method to estimate GDP at that time, the Romanian experts worked together with the Moldavians to determine the indicators specific to this method.

To establish population final consumption in keeping with the methodology of the ECP, issues related to the differences between the content of this aggregate with a significant share in GDP and of the population final consumption concept computed on the basis of ESA methodology were clarified. Final consumption of public administration was carefully broken down into individual consumption and government consumption using specific data sources for each of the fields education, health, and social welfare.

The disaggregation of GDP expenditure by basic heading was examined in detail, taking into account that the available data sources did not fully meet the requirements. Therefore, these were analyzed with a view to determining the GDP expenditure groups, and different data sources were compared in order to estimate more accurately each basic heading of expenditure, those concerning both population final consumption and governmental consumption.

In terms of the correct disaggregation of expenditure into basic headings, greater accuracy was achieved for three reasons: the coverage for all expenditure aggregates was ensured; the dispersion of individual price ratios was lower within the basic heading than between the commodity groups within aggregations at a high level; and the weighted averages parities could be computed at a relatively detailed level.

9.3 Item Selection

On the basis of the items selected by Romania within the bilateral comparison with Austria, the Romanian experts worked out the item list to be as representative of and as comparable between both countries as possible.

For countries belonging to a homogeneous group, the variance of individual price ratios tends to be lower if the compared items are described through trademark and model number instead of functional specification. In this way, equivalent pricing for items of the same content and quality could be assured. Nevertheless, in the bilateral comparison between Romania and Moldova, this procedure could be followed only in a few cases.

Under these circumstances, we used the technical characteristics of items, without specifying the brand and the model. Therefore, the item specifications were mostly generic, and, consequently, differences in the quality of priced items required price adjustments to compensate for the quality differences.

This was the case for consumer goods and services, specifying in detail the characteristics of items to be priced. Because of the general lack of products on the Moldavian market and an extremely low volume of imported goods, it was necessary that the initial list of population final consumption items match the features specific to the Moldavian market. At the beginning, the Romanian experts put together a list of 609 goods and services. After discussion with their Moldavian colleagues, a final list of 479 items was agreed to, for which the Moldavians were supposed to provide the price data (table 9.1 shows the number of items by categories initially proposed by the NCS and finally priced by the Statistical Department of Moldova).

In the process of selecting consumer goods and services, for most cases the Moldavian experts picked out items priced for the consumer price index computation rather than collect additional prices. For very few items, a special investigation was undertaken (e.g., medicines).

For population final consumption, the list was drawn up so that it met, well enough, the two fundamental comparison principles: comparability and equire-presentativity.

However, for certain basic headings, it was impossible for experts to select representative products, and the expenditure for these commodity groups was computed again by means of the price ratios from other similar analytic aggregates, in keeping with ECP methodology (e.g., sea fruit, 11110331; or products made of potatoes, 11110721; or other varieties of bread, 11110134).

For machinery and equipment to be assigned to gross fixed capital formation, the Romanian experts drew up a representative list containing 233 items. After the proposals had been reviewed, the Moldavian experts selected only 42 items.

The pricing of these items required a special (survey) investigation. Specifications for selected machinery and equipment referred to brand and model to be priced. More than 80 percent of these items were imported, especially from the countries of the former Soviet Union, built in accordance with standards incompatible with Romanian ones. Thus, the Romanian experts also needed to identify other items compatible to those proposed by the Moldavians.

For construction, the bills of quantities proposed by the Austrians were used (detailed descriptions of the seven standard but fictive construction objectives). The bills of quantities were priced by experts working within a specialized institute.

This ECP segment was complex because such pricing requires information not usually available to statistical offices. This was the reason why exact harmonizing with the structure and the content of bills of quantity was required for each objective.

Table 9.1 **Consumer Goods and Services**

	Number of Items Initially Proposed by NCS Romania	Number of Items Priced by SSD Moldova	Number of P-type Quality Adjustments	Number of Items Finally Used
111 Food, beverages, and tobacco	180	137	10	122
112 Clothing and footwear	113	101	1	86
113 Gross rent, fuel and power	15	13	. . .	13
114 Household equipment and operation	120	93	6	78
115 Health	25	13	. . .	9
116 Transport and communication	38	30	3	25
117 Education, recreation, and culture	64	44	4	37
118 Miscellaneous goods and services	54	48	. . .	38
Total	609	479	24	408

9.4 Nonmarket Services and Rent Comparison

In the case of nonmarket services, there are no market prices for the so-called comparison-resistant services; the standard method could not be used because these services are provided either free of charge or at prices that do not fully cover the cost. The following services belong to this area: health, education, and welfare services and collective government consumption. As is well known, for these service comparisons two approaches can be used: the input method in monetary terms (based on annual compensation of selected and specified occupations) and in quantitative terms (based on number of employees) and the output method (based on data in physical terms representing the output of the services concerned, e.g., number of pupils, number of births in hospitals, number of hospital bed days, etc.). Both approaches require a detailed database, collected by means of a questionnaire.

In table 9.2, the methods used in the bilateral comparison for the detailed categories of nonmarket services are illustrated. The PPP computation for the intermediate consumption and the consumption of fixed capital in these services was imputed with the benchmark parities of other similar categories of household consumption or gross fixed capital formation, as appropriate.

The use of the input approach could raise serious problems for the comparison results when data are not adjusted because of the productivity differences caused by the different organizational conditions, educational standards, or endowments with technical equipment. Consequently, two types of adjustment were needed.

First was an adjustment based on a general relative productivity level (GRPL) assuming that the differences in productivity prevailing in the nonmar-

Table 9.2 **Nonmarket Services**

	Method Used
1153 Medical services outside hospitals	IMPI (GRPL)
1154 Hospital care and the like (compensation of employees):	
Physicians	OMPI (GRPL)
Other medical staff	OMPI (GRPL)
Nonmedical staff	OMPI (GRPL)
1174 Education (compensation of employees):	
First and second school level	IMMI (SRPL)
Third school level	IMPI (SRPL)
Universities	IMMI (SRPL)
Other personnel	IMPI (GRPL)
1184 Welfare services (compensation of employees)	IMMI (GRPL)
1300 Final consumption of general government:	
Employees with university level of education	IMMI (GRPL)
Other employees (nonacademic)	IMMI (GRPL)

Note: IMPI = input method physical indicators. IMMI = input method monetary indicators. SRPL = specific relative productivity level. OMPI = output method physical indicators. GRPL = general relative productivity level.

ket sector roughly equal the productivity differences in the market sector (excluding agriculture). Information necessary to compute GRPL was obtained from an additional questionnaire (value added and number employed in the sectors concerned). The experts from Statistical Department of Moldova could not supply the information requested, so data on the Republic of Moldova were estimated on the basis of Romanian data, namely, of the value-added structure from the nonagricultural market.

Second was an adjustment based on the specific relative productivity level (SRPL). For instance, for preuniversity education, the use of the SRPL assumes that the time allocated by a teacher to a pupil is a decisive factor in the quality of education, meaning that the productivity coefficient is inversely related to the number of pupils per teacher. For higher education, the situation seems to be the opposite, the productivity coefficient being directly related to the number of students per professor since this kind of education is based on a great deal of individual study.

In the housing rents comparison in the Group II countries, certain difficulties were faced. For most of the countries, these difficulties were solved by means of quantitative indicators, in accordance with a special questionnaire drawn up for this purpose, with a view to substituting for information on housing rents. If this information had been available, it would not have been reliable or comparable because rents actually paid were lower than the cost of the housing supply.

In the bilateral comparison between Romania and Moldova, as a first variant the same method as for most of the Group II countries was first attempted, but the Moldavian experts could not provide all the information needed for imputation. Consequently, taking into account that the policy adopted in the establishment of housing rents did not differ between the two countries, data on housing rents (in both the state and the private sectors) were deemed to be comparable, and, therefore, expenditure on rents was deflated by means of the PPP computed on the basis of rents per square meter. However, the data obtained were considered unreliable. An explanation could be the tendency to underestimate the rent levels of the private sector. Finally, the PPP of the heading "household repairs maintenance" was used.

9.5 Quality Adjustments

As it cannot be asserted that the situation in the Romanian and the Moldavian markets is identical (although much alike from the consumer preferences point of view), the possibility of comparing physically identical or economically equivalent items was constrained, to some extent, although the second comparability principle, namely, representativity, was not neglected. Thus, the quality adjustments, a typical feature of comparisons within Group II, could not be avoided in the case of the bilateral comparison between Romania and Moldova (they were, however, few in number).

Experience with this practical tool had already been gained in comparison

rounds in which Romania participated and in several discussions between the two countries' experts, examining the issues in detail in order to distinguish the discrepancies to be adjusted/removed. In short, it is well known that the theoretical background to support such quality adjustment does not yet exist, so we "learned by doing."

As concerns the C-type quality adjustments, the bulk of them were made by the State Statistical Department. Either the differences on the selling or packing units were adjusted, or the prices were adjusted in the case of a priced item that was noncomparable because of a single parameter in direct relation with price.

In any event, the adjustment as such did not raise serious challenges.

In some cases, the Romanians changed the items proposed at the beginning in order that they be comparable to the Moldavian items.

The P-type quality adjustments solving the quality differences that are noticed but that cannot be directly measured were subject to uncertainty. To remove these differences, which could have affected the Romania-Moldova comparison results, we utilized the experience of the Romania-Austria comparison, employing, for instance, the "analogy method."

Following the bilateral debates, the adjustment factors were agreed on, and, even if they remain subjective, arbitrary, and nonscientific, they obviously improved the comparison results. Thus, for the items belonging to population final consumption, there were twenty-four P-type quality adjustments (their breakdown by commodity groups is illustrated in table 9.1). For machinery and equipment, there were six P-type quality adjustments.

After the preliminary computation of individual price ratios and of the basic headings, unweighted geometric averages were calculated and the relations between the price ratios within the groups analyzed: some initial prices were revised or some items removed when the dispersion of the individual price ratios was high relative to the group average or when there were significant differences between the Moldavian prices for different items.

It must be pointed out that, for much of 1993, Moldavian product prices were in rubles, the national currency being at the time the Soviet ruble and the so called Moldavian coupon. On 30 November 1993, the ruble was replaced with the *leu moldovenesc,* the current national currency. Consequently, even if the Moldavian product prices had been computed in rubles, they were converted in Moldavian lei on the basis of the Moldavian lei/ruble ratio holding as of 30 November 1993.

Finally, 408 consumer goods and services, 36 equipment goods, and 6 construction objectives remained in the comparison.

At the Kishinev meeting in January 1995, the last meeting before the preliminary computations, which an ACSO expert also attended, the benchmark PPP was agreed on to recompute the expenditure on those commodity groups for which representative goods and services were not selected (especially for equipment).

9.6 Results of the Romania–Republic of Moldova Comparison

The detailed data obtained from the Romania–Republic of Moldova bilateral comparison were analyzed by Austrian experts on the occasion of the bilateral Austria-Romania meeting at the beginning of May 1995. All the proposals and results were debated with the Moldavian experts at the last bilateral Romania-Moldova meeting at the end of May 1995. On that occasion, it was agreed that the Moldavian experts would reexamine some data from the content point of view (in accordance with the ECP methodology) and transmit corrections and explanations.

According to bilateral Romania-Moldova results (see tables 9.3 and 9.4), Moldavian GDP per capita was 590,897.66 Romanian leu, representing 63.7

Table 9.3 Bilateral Results: Main Indicators

	Romania	Moldova
GDP in national currency (billions)	19,738	2,210.514
PPP (Romanian leu)	1	.0009199
GDP converted to Romanian leu using PPP (billions)	19,738	2,403
Overall volume index	100.0	12.17
Volume index for household consumption	100.0	10.8
Volume index for gross fixed capital formation	100.0	6.5
PPP for household consumption	1	.0009091
PPP for gross fixed capital formation	1	.0013660
Relative price-level index for gross fixed capital formation	100.0	148.5
Relative price-level index for household consumption	100.0	98.8

Table 9.4 Share of Main Components in GDP per Capita, Volume Indexes, and Purchasing Power Parities

	GDP/Inhabitant			
	Structure (%) Computed in Romanian Leu		Moldova as against Romania (%)	PPP (Moldavian leu/ Romanian leu)
	Romania	Moldova		
Total GDP	100.0	100.0	63.7	.0009199
Population final consumption	68.1	57.8	56.2	.0009091
Collective consumption of government	6.9	8.3	90.7	.0009401
Gross fixed capital formation	15.8	9.5	34.1	.0013660
Changes in inventories	14.2	31.5	150.3	.0009873
Net exports of goods and services	−5.0	−7.1	95.9	.0021900

percent of that of Romania. The total volume of goods and services purchased in Romania was 8.21 times that in Moldova.

Unlike the exchange rate, which takes into account the short-term economic and financial situation, expressed through relations in the field of commercial and financial transactions, PPP expresses the ratio between prices employed in the internal markets of both countries. The overall ratio is the result of a comparison of ratios determined for 295 basic headings, on the basis of individual indexes of representative product prices within each commodity group, taking into account the quality adjustment and the differences between the technical parameters of products. PPP for the overall GDP, computed on the basis of Fisher indexes, eliminating the structural differences, is of 0.0009199 Moldavian leu/1 Romanian leu as against 0.00219 Moldavian leu/1 Romanian leu, which is the average official commercial exchange rate for 1993; therefore, the ratio between the exchange rate and parity is about 2.4:1. This result reflects the tendency of the less-developed countries to underestimate real purchasing power by using the exchange rate. The discrepancy is a result of the differences between the prices employed on national market, especially for goods and services that are not subject to external trade. Dividing the PPP by the exchange rate, the comparative price-level index is obtained, statistical information well understood and often used by those traveling abroad. Thus, to buy the same volume of GDP in Romania and Moldova, one would pay one hundred Romanian leu and forty-two Romanian leu, respectively. One can conclude that Romanian tourists find the Republic of Moldova a cheap tourist destination.

Vis-à-vis the GDP price level, equipment goods prices are 48.5 percent higher and consumer goods and services prices 1.2 percent lower in Moldova than in Romania.

The results of the bilateral comparison were transmitted to the ACSO, to ensure the linkage computation with Austria, and in this way they could be linked in a European comparison.