ASSESSMENT REPORT

ON COMPLIANCE OF THE INDUSTRIAL STATISTICS OF THE REPUBLIC OF MOLDOVA WITH THE LATEST INTERNATIONAL RECOMMENDATIONS

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1. Review of the industrial statistics of the Republic of Moldova

1. Classifications

Effective 2014, the 2nd edition of the national classification of economic activities CAEM (CAEM rev.2 – Clasificatorul Activitatilor din Economia Moldovei) is being used in the industrial statistics of Moldova. This classification is harmonized with the NACE rev.2 and ISIC rev.4. The time series of industrial production index and industrial value added variables have been re-calculated in line with CAEM rev.2 for the period starting 2010.

Currently, industrial statistics is using the PRODMOLD 2013 list of industrial products aligned with the European PRODCOM list 2013 and based on CAEM rev.2 and Statistical product classification of the Republic of Moldova (CSPM).

Above-mentioned classifications have been approved by the decision of the Board of the National Bureau of Statistics. The membership of the Board comprises not only senior executives of the National Bureau of Statistics, but also representatives of other governmental organizations and civil society.

Thus, industrial classification of all economic activities and product classification used in Moldova's industrial statistics are in line with the requirements of the International Recommendations on Industrial Statistics 2008 (IRIS).

1.2 Statistical units

In the industrial statistics of Moldova, both reporting and observation units are legal entities (the enterprises). Only several variables, which are collected through the structural business survey questionnaire, are broken down by local units, namely: turnover (sales), average number of employees, wages and salaries. This is the most significant divergence from the IRIS that encourages countries to use the establishment as a statistical unit for industrial statistics so as to ensure the homogeneity of the economic activity and its geographical distribution (p. 2.71 of the IRIS). However, collecting industrial statistics variables from enterprises can also be acceptable according to p. 2.71 of the IRIS.

1.3 Statistical business register

In the Republic of Moldova, the legal entities and individual entrepreneurs established on the territory of the country are registered by the territorial offices of the State Chamber of

Registration (exceptions are entities that according to the local legislation are registered by other state agencies). For example, the non-commercial entities are registered by the Ministry of Justice, or by the local authorities.

The National Bureau of Statistics receives from the Registration Chamber information about newly registered, re-organized and liquidated legal entities and individual entrepreneurs on a daily basis. The registration data received from the Registration Chamber include identification code, economic activities declared by an enterprise or individual entrepreneur, type of ownership, ownership structure and other information. The National Bureau of Statistics uploads this information into Statistical business register and updates it further based on the enterprises' financial statements and structural business statistics data. If the enterprise (or the individual entrepreneur) declared several economic activities, the very first of them is assumed to be the principal one.

Actual values of quantitative variables for legal entities (enterprises) and individual entrepreneurs come to business registers from two following sources:

- Annual financial statements of legal entities and individual entrepreneurs, responsibility for collection of which lies with the National Bureau of Statistics according to the national legislation. There are very rare cases when financial statements should not be submitted, for example, by small farms and by business license holders (natural persons).
- Structural business statistics.

Data from other administrative sources of information, particularly, from the tax authorities, are not still used for uploading quantitative variables into business register, however, such a possibility does exist and the National Bureau of Statistics is weighing the practicality of such approach.

Namely, according to the article 16 "Statistical registers" of the Law of the Republic of Moldova on Official Statistics "the central and local public authorities, other legal persons that manage databases on physical and legal persons shall submit free of charge, at the request of the central statistical body, the available statistical information to create and update the statistical registers". According to the article 19 "Sources of data collection" of the same Law, "the central and local public authorities and other legal persons that hold administrative data shall submit the requested primary and generalized information free of charge to the official statistical bodies". In line with the article 20 "Administrative data", "the public authorities that collect administrative data in order to exercise their duties or manage such databases shall coordinate their content and volume with the central statistical body".

Based on the Law on official statistics, the National Bureau of Statistics and the State Tax Service of the Republic of Moldova signed an agreement, according to which the Tax Service provides to the National Bureau of Statistics individual data of the monthly tax declarations on VAT (in xml format), annual declarations on profit tax and other data (6-7 forms in total). This process is organized using inter-departmental electronic data exchange platform «M-Connect».

It should be noted that the Tax Service of Moldova possesses the data on local units of enterprises, as local units pay local tax, the size of which depends on number of employees.

Currently, negotiations are under way between the National Bureau of Statistics and the National Social Insurance House on a subject of data exchange.

Thus, statistical business register is based on reliable sources of information – administrative and statistical, which is in line with the international recommendations on industrial statistics.

1.4 Data items on industrial statistics

Structural enterprise survey (questionnaire ASA – Ancheta Structurală Anuală în întreprinderi) is conducted in the Republic of Moldova annually. This questionnaire covers all variable groups, specified in the IRIS, except for the following ones: hours worked (data items 2.5 and 2.6 of IRIS chapter IV B), E-commerce sale/turnover/value of shipments (item 5.4 of IRIS chapter IV B), new orders received and unfilled orders (items 12.1 and 12.2 of IRIS chapter IV B), physical quantity and value of individually important products produced (item Q5.1 of IRIS chapter IV). Thus, structural survey covers wide thematic spectrum of variables, at any rate it is wider than in majority of CIS countries.

Some variable groups recommended in the IRIS but not included into the structural business survey (ASA) are contained in other annual questionnaires associated with the structural survey, namely:

- Annual survey on the questionnaire form M3 “Compensation of employees and labor costs” which contains the majority of variables belonging to the following variable groups: number of persons employed, hours worked, compensation of employees. All the key variables are given in the breakdown by activities. Data on female employment and labor input are presented as separate figures.

- Annual survey on the form 1-BE “Energy balance sheet” which must be filled by the enterprises and contains variables on energy production, acquisition, consumption, transfers, etc. These variables are expressed in terms of physical quantities, and are presented by types of fuel and energy.

- Annual survey of industrial production PRODMOLD-A, which includes data on quantity of individually important products produced by the reporting enterprise, quantity and value of individually important products sold (in domestic market and in export), stocks of finished products (in terms of physical quantities). Quantity and value of products sold must be split onto two lines: 1 – products produced out of own raw materials, 2 – products produced out of customer-owned raw materials.

- Annual survey on the form Nr. 1-mediu “Current environmental protection expenditures” which must be filled by the enterprises.

There are simplified infra-annual analogues for the above-mentioned annual questionnaires M3, 1-BE and PRODMOLD-A: quarterly questionnaire M1, monthly questionnaire 1-RE, and monthly questionnaire IND TS accordingly. These three questionnaires cover the same population of industrial enterprises (approximately 1400 enterprises).

The quarterly questionnaire form 5-CI “Expenditures of Enterprise and Costs of Production” can be considered as a partial analogue for the structural business survey questionnaire. The form 5-CI contains the data on enterprise revenues, enterprise expenditure and enterprise inventories structures.

Only a few variables recommended in the IRIS are not included in statistical questionnaires used in Moldova. The list of these variables is as follows:

- number of employees engaged in research and development, mineral exploration and evaluation, software and database development, production of artistic originals, own-account fixed assets formation and major repair (data items 2.1.3.1.1 – 2.1.3.1.5 of IRIS chapter IV B);

- hours worked by employees engaged into the above-mentioned activities (items 2.5.1.1 to 2.5.1.5 of IRIS chapter IV B);

- wages and salaries (in cash and in kind) of employees engaged into the above-mentioned activities (items 3.1.1.1 – 3.1.1.5 of IRIS chapter IV B);

- cost of materials for own-account capital formation for the above-mentioned activities (items 4.1.3.1 – 4.1.3.5 of IRIS chapter IV B);

- value of fixed assets, capital expenditures, retirements and depreciation of fixed assets used in the above-mentioned activities (items 11.1.4.1 – 11.1.4.5, 11.2.4.1 – 11.2.4.5, 11.3.4.1 – 11.3.4.5, 11.4.4.1 – 11.4.4.5, 11.5.4.1 –11.5.4.5 of IRIS chapter IV B);

- payments made by an enterprise for work that is outsourced to another unit (item 4.4.1.2);

- fees paid for leased employment (item 4.4.1.2.1);

- receipts received by an enterprise for contract and commission work in cases when this enterprise (contractor) carries out specific operations of the production activity (like processing, transforming, assembling or fabricating the materials, as ordered by another productive unit (the principal)), constituting the whole or a part of the principal's activity in producing a good or a service (item 5.1.4.1)[1];

- E-commerce sale/turnover/value of shipments/receipts for services or other revenues (item 5. 4);

- new orders received (item 12. 1) and unfilled orders at the end of the inquiry period (item 12. 2).

The list of variables included in the structural business survey questionnaire affords an opportunity to calculate output of an enterprise, its intermediate consumption and value added, as it is recommended by the IRIS (items 8 – 10 of IRIS chapter IV B). Such calculation is performed by the National Bureau of Statistics, however, it plays supporting role, and the results are not published. The National Accounts and Macroeconomic Synthesis Division make its own calculation of value added which is not directly based on structural business statistics.

1.5 Performance indicators

Chapter V of the IRIS recommends to calculate the following performance indicators:

1. Growth rates of:
   a) value added of industrial activity;
   b) employment in the industrial sector.
2. Ratio indicators:
   a) output per person employed;
   b) output per hour worked;
   c) value added per person employed;
   d) ratio of orders received to shipment;

[1] As noted in the IRIS, this item is of particular significance in some developing countries.

e) inventories-to-shipment ratio;

f) intensity of energy consumption by activity:

this indicator should be derived as the ratio of total energy consumed (measured in terajoules) to total value added;

g) water-use intensity by economic activity:

this indicator should be derived as the ratio of quantity of total water used (in cubic meters) to total value added;

h) ratio of environmental protection expenditure to value added:

this indicator is computed as the ratio of environmental protection expenditures incurred by the producing unit to the value added generated during the reference period.

3. Share indicators:

a) share of industrial activity value added in total value added (the value added generated on account of industrial activity as a proportion of total value added of the economy);

b) employment in industrial activity as a share of total employment: it should be calculated as the ratio of the total number of persons employed in industrial activities to the total number of persons employed in the total economy.

It is recommended to calculate the above-mentioned performance indicators at the three‑digit (group) level of ISIC, Rev.4, for annual periodicity and at the two-digit (division) level of ISIC, Rev.4, for quarterly periodicity (see IRIS, para. 5.9).

The National Bureau of Statistics of Moldova calculates and publishes only performance indicators that are listed above under numbers 1 and 3. The ratio indicators (listed under number 2) are not calculated, and are not published.

To reach the accuracy of data on performance indicators, it is necessary to ensure that all components of a calculation formula are taken from the same source of information (say, from the same questionnaire). For example, when the value added per person employed is being calculated, both components required for its computation – value added and number of employees – could be derived from the structural business survey questionnaire.

1.6 Small Business Statistics

According to the national legislation of the Republic of Moldova, small and medium-size enterprises are the enterprises that have not more than 250 employees and turnover of which does not exceed 50 mln lei. Small-size enterprises should not have more than 10 employees and their turnover should not exceed 10 mln lei. Micro-enterprises should not have more than 9 employees and their turnover should not exceed 3 mln lei.

There are no special marks for small and micro enterprises in the statistical business register, however, the list of such enterprises can be easily obtained by using appropriate filters.

To collect the data for small, medium and large-sized enterprises, the same questionnaires are used in Moldova. It is necessary to note in this connection that in para. 2.70 of the IRIS there is the following recommendation: “For small single establishment enterprises,

it is feasible to collect only a limited amount of data. Estimates have therefore to be made for the items omitted for these enterprises".

Moreover, the IRIS (see para. 7.48) recommends that an abbreviated version of an inquiry form might be used for the small establishments.

Therefore, absence of abbreviated versions of questionnaires for small businesses is a deviation from spirit and letter of the International recommendations.

For annual surveys in Moldova, all enterprises with more than 20 employees are covered on a complete enumeration basis; and if the number of employees is between 0 and 20, the coverage recommended is attained by using sampling techniques.

For infra-annual (monthly) surveys for all enterprises with the number of employees not less than 20, the complete enumeration method is used; if the number of employees is between 4 and 19 (inclusive), the sampling techniques is used; if the number of employees is not more than 3, the enterprises are not observed at all.

Such approach is fully in line with the p. 7.39 of the IRIS: "for most establishment surveys, all units above a certain size (cut-off point) are included in the survey, while only a sample is drawn from the rest of the units".

If the sampling technique is used, it is usually the random sampling method. To design and evaluate sampling plans SAS software is used.

1.7 Index of industrial production (IIP)

In the Republic of Moldova, the index of industrial production is compiled using the deflation method in full compliance with sub-section 5.5.1 of International recommendations for the index of industrial production (IRIIP). Namely, IIP calculation practice is in line with the following recommendation of the IRIIP sub-chapter 1.5 «Summary list of recommendations»:

(vii) in general, to compile volume measures for the IIP, the deflation process with the use of an appropriate price index is recommended;

(viii) the Producer Price Index (PPI) is recommended as the price index to be used by countries when current price values are deflated to compile volume measures of output for the IIP;

(ix) it is recommended that the deflator be applied to the value data at the lowest level possible, but not higher than the ISIC class (4-digit) level in order to obtain a volume estimate for use in the compilation of the IIP.

Moreover, in para. 5.45 of the IRIIP, it is stated that in general deflation procedure is recommended for compiling volume measures for the IIP. Ideally, the volume extrapolation method should be avoided if the products selected to compile the IIP are subject to quality change. There are, however, situations where quantity data (specifically, labor input data) are the only data available.

In accordance with the procedure recommended in sub-section 5.5.1 of the IRIIP, at the initial stage of IIP compiling, the value indices calculated for each product (so called value relatives), are weighted (for each product group) using as a weight the share of output of a given product in the total output of the given product group. While calculating value indices for each product the total production of this product should be taken into account, including its production out of both own raw materials and customer-owned raw materials. For this

purpose, at the pre-processing stage, production of each product out of customer-owned raw materials are evaluated by using market prices for the same product, but produced out of own raw materials.

Such calculation is possible because in the monthly questionnaire form IND TS data on manufacturing and shipment of each product (in natural and value measurement) are presented in two lines: 1 – product produced out of own raw materials, and 2 – product produced out of customer-owned raw materials. This allows to calculate the unit price for each product manufactured out of own raw materials, and extrapolate this price to the same product but manufactured out of the customer-owned raw materials. Although this data preparation procedure is not reflected in the international recommendations, it does not contradict to the essence of the deflation method (as described in sub-section 5.5.1 of the IRIIP). On my opinion, this approach is fully adequate to the circumstances of Moldova where outsourcing (i.e. when the owner of the raw materials transfers the manufacturing process to the contractor) is being quickly spread out among the enterprises. Explicitly, this approach allows to calculate the IIP index correctly in case if the customer is the individual entrepreneur and, on some reasons, is not covered by the regular statistical surveys.

There is an alternative to the deflation method of the IIP calculation (as defined in sub-section 5.5.1 of the IRIIP). This alternative is direct deflation of turnover at the lowest level of ISIC (which is used in some countries including European). However, in this case it should be carefully monitored that the reporting forms are obtained from both - the customer and the contractor. In such a case, the customer should report for manufacturing the product ordered (say, vegetable oil), and the contractor (i.e. actual producer) – only for services provided on processing the customer-owned raw materials. On my opinion, it is quite problematic to ensure high-quality IIP calculation using the described method in the transition economies, including Moldova.

Therefore, as applied to the structure of Moldova's economy, where the food and other consumer goods manufacturing are developed, I would consider as the optimal method of the IPP calculation the one that is currently being used by the National Bureau of Statistics.

The value-added variables used for IIP aggregation from the lowest ISIC levels to the higher ones, come from the national accounting data (but not directly from the structural business statistics).

In Moldova, for the IIP compilation the moving basic year that is updated annually is used. As a basic year, *t – 2* year is used; for example, for the IIP computation for the months of 2017 the basic year is 2015. This is in line with para. 5.66 of the IRIIP: “It is recommended that the industry level weights of the IIP be updated annually with the latest weights available as this will ensure that the IIP is an accurate indicator of volume growth. The latest weights available are likely to be from year *t-2* or *t-3*”.

Seasonal adjustment of the IIP time series is performed in Moldova using the Demetra+ software for 30 time series: for the total production calculated as B+C+D sections of ISIC rev.4, separately for sections B, C, and D, and for the two-digit level of ISIC (for sections B and C). Starting 2017, the National Bureau of Statistics publishes the seasonally adjusted IIP time series (as well as non-adjusted ones).

The IPP data are published on the 40th calendar day after the end of the reporting period.

The methodology of compilation of IIP elaborated by the National Bureau of Statistics envisages a certain revision policy for normal IIP revisions. The first revision of the indices compiled for the month *t* is conducted when the indices for the month *t+1* are published. The second revision is conducted on February 17 of the next year (when the IPP data for the period January-December of the previous year are published).

1.8 Industrial statistics at sub-national level

There are 35 administrative districts in the Republic of Moldova, which are grouped into 5 regions according to the national legislation. The National Bureau of Statistics calculates indices of industrial production for each region. The calculation principle of these regional indices is analogous to the calculation of national indices, however, the methodology used is streamlined.

2. Conclusions and recommendations

On my opinion and as it appears from the provided materials and official publications of the National Bureau of Statistics, industrial statistics of the Republic of Moldova complies with the International recommendations for industrial statistics 2008 and International recommendations for the index of industrial production 2010 approved by the UN Statistical Commission.

However, some practical approaches, being although an acceptable option, are not the best recommended approaches. First and foremost, it is related to the statistical units: in Moldova, the basic unit of observation is the enterprise, while the recommended unit is the establishment.

Some of the recommended indicators are not collected or not calculated, most notably – industrial performance indicators (namely, ratio indicators).

The same statistical questionnaires are used for micro, small, medium and large-sized enterprises, whilst international recommendations suggest using simplified questionnaires for small businesses, that should contain limited set of variables.

The deflation method is used for compiling the industrial production index, which is recommended by the IRIIP as the best practice. Procedure of the IIP calculation in Moldova is in full compliance with the IRIIP. Additional calculations are made at the stage of data preparation, that allow to include into the IIP calculation the products manufactured out of the own raw materials as well as the products manufactured out of the consumer-owned raw materials.

In view of all above, it is recommended:

1. To develop methodology and proceed with the calculation of the full set (or majority) of the industrial performance indicators, since the minimal information, required for calculation, is already being collected.

2. To aim for development of simplified statistical questionnaires for small businesses that contain limited set of minimally required indicators, and to use indirect calculation methods for other required indicators.

3. To tend to collect from the enterprises and/or administrative sources a complete set of variables envisaged by the IRIS. For example, it should not be a big problem to include variables of new orders received (item 12.1 of IRIS chapter IV B) and unfilled orders (item 12.2) into existing reporting form, for example, into monthly form IND TS.

4. Talking into account that recommended unit of observation in industrial statistics is the establishment, the goal should be to expand gradually the set of variables collected for the level of local units within the framework of structural business survey.

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