Methodological problems of relevance of official statistics

in micro, mini and small economies

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Abstract

*The majority of economies in the world of today (over 200) are small economies (MMS). Today 96 of them have the political status of sovereign, independent states. All of these states are the members of the United Nations. Over 50 small economies are the regions of some level of political autonomy, however they are officially or de facto politically dependent or politically interrelated with other countries. About 50 MMS are the economies that have the political status of exclaves or overseas territories of other countries.*

*In globalized world main prerequisite of social and economic policy of governments of MMS is the availability of pertinent information adjusted to the specificity of each particular small economy. Special attention should be paid to the production of sets of integrated data on political, social, economic and ecological environment, on the fields of economic gravitation and on transborder economies in which the MMS exist. The production and dissemination of such information for governments, social organizations and businesses is the duty of national systems of official statistics of the MMS.*

*Statistical agencies of small economies are insisted by international organizations to submit statistical data following exactly global, international standards that are adjusted first of all to the specificity and the needs of large countries. Those standards - methods, categories, metadata and data - are often difficult for direct implementing, hardly interpretable, sometimes useless or even misleading for SME.*

*Main theses of the paper:*

* *international statistical standards are not fully relevant to the specificity of small economies; official statistical standards should be creatively adjusted to specific social, economic and ecological phenomena and processes of each particular MMS;*
* *governments, businesses and society of MMS need individualized sets of leading indicators for monitoring of political, social and economic processes;*
* *because of lack or shortage of research capacity of statistical offices in particular MMS, international statistical community is encouraged to build the network of excellence supporting statistical agencies in their efforts to modernize their systems of official statistics and to adopt them to specific needs.*

*Social and economic attributes specific of small economies, especially those, that have the impact on information sources, methods of statistical monitoring and the information needs of national users of statistics, are analyzed. On the basis of those analyses the typology of small economies is proposed. The consequences of the specificities of different types of the SME for statistical methods and tools, for duties, functionalities and strategies of development of official statistics and the approaches to statistical capacity building for the MMS are discussed.*

*In the conclusion it is stressed that - in the light of the Amendment 10 of the UNFP - extensive researches focused on the development and implementation of methods, tools and techniques adjusted to the needs of official statistics of MMS should be supported by international statistical community. Joint research center serving as the common scientific capacity for all MMS, the network of excellence integrating experts elaborating special statistical methods and tools for MMS and the education the managers and high level experts in official statistics (Masters in Official Statistics - MOS ) for SE is the duty of international statistical community.*

Key words: *small economies, fragile economies, economic gravitation, economic environment, transborder processes, methodological relevance,*

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1. Formulation of the problem. Micro, mini and small economies (MMS) as official statistical categories

*Micro, mini and small country and economy* (MMS) is a *national economy* or a *geographically and institutionally* separated *economic or social region* *politically* *interrelated* with other country, several countries or with international organizations, which demographic *potential*, human and social *capital*, natural *resources* or economic *capacity are not sufficient for independent, sustainable maintenance and development* in its political and economic environment of globalized economy.

In the world of today the majority of national economies and separate economic regions (over 200 – from statistical point of view) are *micro, mini or small economies* (MMS). About 100 *small economies* have the political status of sovereign, independent states. For most of them this political status is confirmed by the membership in the United Nations and in other international organizations. About 50 economies do not have full political sovereignty. They are politically interrelated with other countries, with some level of political autonomy, with political institutions self-governance. The forms of limited political autonomies are different. Next about 50 small economies are the geographically separate regions that are politically the entire parts of other states, e.g. *exclaves* or so-called *overseas territories*.

In global system of official statistics the statisticians representing micro, mini and small economies are the ***silent majority***. The voice of official statisticians of MMS is not strong enough on the fora of international statistical community represented by the United Nations Statistical Commission and statistical services of other international organizations.

Because of that, the information needs of stakeholders representing small economies and the conditions of organization and production of official statistical data are not taken into account sufficiently by international statistical organizations and by research institutes and universities of the countries that are the leaders in the development of modern statistical methods and techniques. Also the specificity of small economies is not sufficiently taken into account in the recommended ***best statistical practices***.

MMS are rather often placed on the peripherals of main processes of global politics, technological progress, development of information society and knowledge-based economy in this sense that they are not participating in the development of main trends of information culture. Small economies are adopting themselves to political, social, economic and technological environments created by other countries. They are rather the users of methods, approaches and techniques elaborated in bigger economies.

However full independence or autonomy that is not true for small economies. Economic and social position of small economies differs very much from the position of middle and large economies. In small economies the governments and businesses do not have in their hands – as a rule – the legal, political or economic tools strong enough for the control of impact of external impulses and stimuli coming from outside, from big countries and from global transnational companies. The MMS – willing or not - are under strong influence of external factors and processes generated in their political, economic and natural environment. The MMS are also interrelated persistently with other, bigger national economies and supranational companies.

All economies are creating their own ***fields of economic gravitation***, i.e. the geographic space in which the processes controlled by those economies are dominating. In globalized world the *fields of economic gravitation* of national economies of states that have the status of global, regional or sectoral powers, are transnational, global or regional. Some fields of economic gravitation are also created by international organizations, e.g. the global field of economic gravitation of banking sector controlled by the IMF, global field of economic gravitation of the branch of petrol and gas controlled by the OPEC and global fields of economic gravitation created by international organizations of producers of some strategic goods and services.

All countries or economies that find themselves in the fields of economic gravitation are trying to optimize their position in those economic spaces. Big economies are actively creating or influencing the fields of economic gravitation. Middle-sized countries are trying to build their own fields of economic gravitation that enables them to optimize their position in global or regional economic spaces.

Fields of economic gravitation is also created by small economies. However, fields of economic gravitation of the MMS are very small and weak. The powers of gravitation are not strong enough to counterbalance the economic gravitation of other bigger economies. The only possibility of the MMS is to adapt themselves to the conditions that exist inside the fields of economic gravitation created by other countries or by international organizations. To optimize their position inside those fields of economic gravitation, the governments and businesses in the MMS are trying to increase the adaptability of local economy and society to the situation existing inside the fields of economic gravitation and to possible changes of those fields, especially to economic shocks coming from outside to the MMS. The governments and businesses of small economies need extended official information on the fields of economic gravitation inside which they exist.

Most of the MMS are belonging to the spaces of economic gravitation created by bigger neighbouring economies or by large trans-national corporations. Political, social and economic processes in bigger economies that are the centers of the fields of economic gravitation inside which the MMS exist, have – as a rule - much stronger impact on small economy than the reactions that can be undertaken by economic subjects and the instruments that can be used by the governments of the MMS.

Because of that the strategies of economic development realized by the governments of the MMS is focused on the finding of “safe niches” inside the fields of economic gravitation created by bigger economies by optimal adopting their economies and societies to political, social and economic environment created by bigger countries.

For official statistics it is also important that real political independence of countries and economies that belong to the class of MMS is often limited by different international bilateral or multilateral agreements with other countries, by international conventions and resolutions, as well as by informal influence of different external groups of interests, especially by transnational, global corporations running their businesses on the territories in the MMS. Those limitations of economic sovereignty depend on the policy of international organizations, of the countries and of trans-national corporations that are dominating in the fields of economic gravitation and in political and economic environments of small economies.

The policy of governments of the MMS is realized the conditions of strong influence - or even the pressure - of political and economic environment created by bigger economies on the MMS makes the decision. Because of that, the governments and businesses of the MMS need stronger information support relevant for their concrete decisional situations, for social and economic policy optimal for their own small countries.

The information needed by governments, businesses and social organizations for realizing effective, successful policy, for representing properly the interests of local societies and businesses of the MMS, should cover not only the information on entire national or regional economy of single MMS, but also on the whole economic and social environment, and complex, pertinent information on the processes and phenomena occurring in the fields of economic gravitation inside which the MMS are functioning.

In globalized world, in the majority of middle and large economies, main factors of social and economic development are controlled by the institutions of national governments of those economies. The governments of those economies have – or have the hope to have – political, legal and organizational instruments enabling them to control the stability and sustainability of internal social and economic processes and to react on external factors influencing their national economies. Official statistics in those countries is the informational foundation of governments and organizations of businesses. So, the official statistical institutes are expected first of all expected to meet those needs.

The information needs of governments, businesses and social organizations of the MMS are much wider than the needs of many respective institutions in big economies. The statistical information requirements of institutions in big economies are to large extent covered by international statistical standards, while the MMS need more data on many external factors influencing small economies.

Official statisticians of the MMS should also anticipate future potential information needs of national users. This anticipation shall be not only passive i.e. forecasting possible requests of users addressed to statistical agencies, but active in this sense that statisticians should formulate the proposals of delivery of new information that may be useful or necessary in the future, in probable usage situations of the stakeholders of statistical processes. Statistical offices of the MMS shall also stimulate the development of information needs of governments and other stakeholders of statistical processes by explaining the users how the proposed new information may help them to optimize their behavior in future usage situations.

Additional important functionality of official statistics of the MMS shall be the initiation, and – if possible – the elaborating of specific information standards pertinent to existing and future usage situations in the MMS, and the coordination of the implementing of those standards in all infrastructural information systems and processes in the MMS, with special reference to administrative information systems and to the systems producing and managing social and economic transactional data resources (*big data*).

National statistical services of MMS in their *national strategies of development of official statistics* (NSDSs) and in the programs of national subjects responsible for producing, collecting and delivering relevant official information for national and local users of data of *small economies*, the production of statistical data relevant to those specific, extended information needs of the stakeholders in the MMS should be given high priority, with special reference to the potential needs governments and leading businesses.

Anticipated defining of potential – actual and future - information needs of stakeholders of statistical processes in the MMS and active supplying of pertinent information to them, also without their explicit requests from the part of the stakeholders, should be the task of highest priority and permanent activity of official statistical agencies of MMS.

However national stakeholders, also the governments of the MMS, rather often do not expect from statistical offices such wide scope of competences as the basic governmental information service. The officers in governments, managers of businesses, experts and even the scientists often imagine official statisticians as the producers of yearbooks and tables with numbers that usually are to late, to general and not very relevant to their current needs.

Alas, official statisticians of MMS are often made to self-limit their active role in national information infrastructure to the delivering of data that are satisfying the explicit information requirements of most important institutional users. Because of that self-limitation of ambitions and duties of official statisticians, the efforts of national statistical offices in the MMS are concentrated on the producing of basic, standard statistical data and on the organizing the surveys required by international organizations (e.g. United Nations and regional political and economic supranational and international institutions) or by statistical offices of countries that are politically or economically interrelated with the MMS.

The tasks of official statistical agencies as the leaders and coordinators of information standards and infrastructural information systems of governments, as the suppliers of social and economic data, providers of analyses and prognoses for governments and leaders in active development of national information infrastructure of the MMS are often not formulated clearly and explicitly in national laws regulating the competences of official statistical agencies and statistical services of governments of the MMS.

On the other hand it happens quite often that statistical agencies of MMS are rather passive in the initiating and elaborating of new methods adjusted to the specificity of particular small economy, in the delivering of pertinent data not required explicitly by end-users and in the offering of personalized information services for governments and businesses of the MMS. Official statistical agencies of MMS rather prefer to wait patiently for explicit, precise requests of governments and other national and international stakeholders. They do not like to take the risk – sometimes political - of initiating new surveys, new statistical data and analyses, especially when those initiatives require additional budget and resources for statistical agencies.

Passive behavior of national statistical agencies of the MMS on international fora of official statistics can be explained by:

1. The fundamental law of progress in official statistics[[2]](#footnote-2): ***The only internal driving force of progress in official statistics is its inertia***. All stimuli of progress in statistical offices, the initiatives of development or implementation of new methods, realization of new surveys, are coming from outside – from universities and scientists, from IT, from governments and international organizations.
2. The capacity of official statistical services in the MMS is – first of all – adjusted and limited to current external informational obligations of the governments of the MMS, mainly the duties of delivery of statistical data to international organizations (UN agencies, regional and sectoral organizations) or – in case of small economies dependent of other countries – the realization of demands of central governments and central statistical offices of those countries.

Active *anticipated identification and defining* of information needs of national stakeholders needs extended scientific, methodological and educational capacity of statistical offices. However in small economies such capacity is underdeveloped because of limited resources for statistics in the budgets of governments of MMS. Most of statistical offices of MMS in practice have very limited number of staff, especially the shortage of researchers and methodological experts. Statistical offices in the MMS do not have – as a rule – special research and development units or institutes. Despite of high professional level of staff, the quantity of human and social capital of statistical offices of the MMS is often not sufficient for systematic analysis and forecasting of information requirements of stakeholders and for elaborating statistical methods adjusted to the specificity of societies and economies of the MMS. The number of high level experts and brilliant scientists in statistical agencies of MMS is to small to meet all needs of all domains of statistics.

Because of shortage of scientific human capital in many MMS the realization of complex research works in official statistics by national scientists, the coordination of the information infrastructure of economies by implementing relevant statistical standards and active information policy is difficult for national or local statistical agencies of MMS. In case of the need of scientific help for realization of new developments, official statistical agencies of MMS rather prefer to invite experts from other countries or from international organizations. Most frequently those invited experts are coming from bigger countries. Their knowledge and experience, usually excellent from scientific point of view, may not be directly applicable in small economy. Frequent approach of external experts is the adoption or direct transplantation of experiences and best practices of their native countries into statistics of small economy. Those experiences and practices may be useful in and only if they are creatively adjusted to the specificity of particular small economy.

From the point of view of data sources and information needs of users in the MMS, statistical methods, scope and organization of surveys, statistical data produced by official statistical agencies of the MMS cannot be limited to statistical standards, programs of surveys and methods recommended by international organizations and developed by official statisticians and by scientists in few developed countries of the world that are the leaders in research in statistics and in information technologies.

International statistical standards, methods and techniques are – as a rule - not taking into account sufficiently the specificities of the MMS, their economic and social conditions, the availability of information sources, local statistical capacity and special needs of stakeholders of statistical processes – statistical units, producers of information and users of data – governments, businesses and external stakeholders.

As it was mentioned above, for proper statistical describing, measuring and monitoring of phenomena and processes in MMS are needed specific, pertinent methods and approaches that often may differ from global statistical standards. Despite of that obvious fact, official statistical agencies of MMS are in practice focusing their efforts and capacity building on the meeting of the requirements and recommendations of international organizations. They are obedient executors of direct implementing of international statistical standards, most often by “transplanting” those standards, and on the adopting of foreign best practices of big countries leading in world statistics. They also are trying to describe the phenomena and processes in MMS using directly standard methods and indicators recommended by international organizations adjusted to the conditions of big national economies.

International methodological standard are often not relevant to the availability of the sources of information and to the information needs of local stakeholders in the MMS. Also the semantics of standard statistical indicators, especially macroeconomic indicators, is not relevant for describing the specificities of the phenomena and processes important for small economic systems[[3]](#footnote-3). Some macroeconomic indicators may be misleading for the officers of international organizations and the experts not acquainted with the specificity of articular small economy. For example deep dropdown of the annual indicator of dynamics of GDP in a single small economy may not necessarily mean the macroeconomic turbulences of a small economy as a whole, but rather it could be the statistical effect of the problems of small regional branch of one foreign financial institution – bank or insurance company – operating on the territory of a given small economy.

Serious problem for official statistics of all the MMS is the methodological gap between international statistical standards and the standards that are pertinent to the needs of stakeholders of statistical processes and to the specificity of information environment and information sources of the MMS. Methodological gaps between statistics of the MMS and international standards are the consequence of the fact that international standards are elaborated by excellent experts from big countries, without active participation of experts understanding and representing the experiences of MMS.

International statistical standards are based on *best practices* of developed economies leading in official statistics. Most of them are large or middle-sized countries, developed, relatively rich, with well-organized governments and statistical institutions. Comparing the situation of information infrastructure in the majority of the MMS with the situation in countries leading in official statistics we can easily notice that *best statistical practices* of big, developed, rich economies and international organizations may be *not the best*, not adjusted or - sometimes - even *not* *applicable* in many small economies.

The development of official statistics in small economies should be also analyzed from historical perspective. Leaders in official statistics have long tradition of development of scientific capacity and statistical institutions. For example, most of developed economies have organized their central statistical agencies by the end of XVIII century or in XIX century (e.g. first central statistical institute in Europe was created by Polish government in 1789). Statistics as the science was developed by scientists and was thought at the universities in most developed countries much earlier. The methods and techniques of statistics were developed to meet the information needs of those countries.

The tradition of official statistics in MMS is much shorter. Building official statistics in the MMS is connected with the changes of their political status as independent states or autonomic political regions. It should be remembered that most of the MMS that have now the status of sovereign countries have reached their full political independence or higher level of political and economic autonomy not so long ago, some after 1st World War, most of them in second half of XX century, after 2nd World War or even in the 90th.

Because of that, official statisticians from small countries and economies did not participate in the activities of international organization developing global, international standards of statistics. especially in works of International Statistical Institute, statistical divisions of the League of Nations after 1st World War and of United Nations after 2nd World War).

The process of building global statistical system has been started after 1st World War under the auspices of the League of Nations, still in the period of colonization of large parts of the world by few political powers. The process of building modern global statistical system was accelerated after 2nd World War within the frames of the United Nations, especially thanks to the creation of the UN Statistical Commission in 1947, and to the development of statistical bureaus or services of other international institutions e.g. International Monetary Fund, World Bank, OECD and regional or specialized international organizations of the United Nations.

Even today (2018) the voice of official statisticians representing over 200 small economies, with about 100 members of the United Nations, in global statistical community is not strong enough to convince the statisticians in international organizations and bigger developed countries that their colleagues from small economies shall not be expected and to be made to imitate or to follow their *big brothers* (so *ex definitio* – older and wiser) by transplanting their *best experiences*.

To the contrary, analyzing the experiences of the MMS in European region I am convinced that statistical *big brothers* could and should learn a lot from the experiences of their colleagues from MMS. One of the main reasons of my opinion is that in MMS the statisticians are much closer to the respondents, sources of data and the users. They see much clearer the interrelation between microeconomic processes, macroeconomic phenomena and statistical data in real economy. Those relations and the details of representation of real economic and social processes in statistical surveys in small economies are directly observable and interpretable, while in big countries the statisticians organizing the surveys often see only the numbers and can hardly associate those numbers with real people and companies, with real social, economic or ecological facts.

Official statisticians in MMS are working in quite different institutional, economic, technological and informational environments than their colleagues in big, stabilized and developed countries, saying nothing about statisticians that are analyzing global economic processes sitting in the towers of international organizations. The contacts and cooperation of statisticians with the stakeholders of statistical processes in small economies is much closer. For proper understanding and describing of social and economic phenomena and processes original methods of statistical monitoring and measurement adjusted to entire specificity of particular MMS can be very illuminating and edifying for global statistical community.

Conclusion

Informational obligations of statistical offices and services in the MMS are much wider than the duties of official statistics in large countries. The duty of official statisticians in the MMS should not be limited only to the producing of the data on explicit requests of national government following the recommendations of international organizations.

Official statisticians of the MMS should – first of all - creatively identify specific, extended, potential information needs of governments, businesses and scientists of the MMS, stimulate new information needs and actively deliver pertinent data to the governments and institutions even without their explicit demands and requirements.

2. Statistical typology of MMS

The MMS create the heterogeneous set of different types of political, socio-economic and ecological systems. Those systems are functioning in different political, social, economic and ecological environments, under the influence of different fields of political and economic gravitation. The governments of small economies that are responsible for social and economic stability and development, the businesses and non-profit social organizations operating in economic space of particular MMS need good theoretical or doctrinal basis necessary for their activities, for proper understanding of the economic and social processes and for monitoring, simulation and decision making within the frames of their competences.

Proper typology of small economy is necessary for better understanding of social, economic and political processes in small economies and for building theoretical foundations and doctrines useful for elaborating strategies of development of each MMS. The typology of MMS is also helpful for elaborating relevant statistical methods, tools and indicators for particular economy and for building statistical capacity.

Because of the variety of MMS, the typology should be multi-criterial (*facet* structure). Below it is presented the preliminary proposal such multi-criterial typology of MMS. It seems that this multi-criterial typology needs further research and deeper empirical verification based on statistics and other information characterizing the whole variety of small economies. I take the liberty to invite researcher and practicians to join the discussion on the approaches and methods of defining basic types of *MMS* and building the classification useful for official statistics of MMS.

On the basis of empirical observations of socio-economic processes, the behavior of businesses and the activities of governments in selected representative economies that can be classified as *small economies* we distinguish three general types of MMS:

1. *micro*-economies,
2. *mini*-economies,
3. *small* economies.

***Micro-economy*** is an economy in which demographic potential, human and social capital, institutional capital, financial system, economic and natural resources are not sufficient for its independent, sustainable existence, stability and development. Micro-economy is fully dependent on their political and economic environment. The prerequisite of sustainable development of micro-economy is the continuous access to complementary resources that are available in its economic environment. Economic and social processes in micro-economy are determined by the fields of economic gravitation created other countries. E.g. San Marino, Liechtenstein, very small island states and overseas territories.

***Mini-economy*** is an economy that has the demographic potential, human and social capital and institutional capital sufficient for its sustainable development, however some resources, e.g. financial resources, specialized economic potential and modern technological capital, highly specialized human capital, are to small for effective use of own resources and the resources from abroad. The prerequisites of sustainable development of mini-economy are

1. the access to complementary resources existing in its environment,
2. their absorption and use by local businesses and institutions, and
3. sustainable strengthening of the own resources of mini-economy in cooperation with the economies creating the fields of gravitation and economic environment. E.g. small island countries in the Caribbean or Pacific, Guiana, small exclaves.

***Small economy*** is an economy that has the demographic potential, human and social capital, institutional capital, financial, economic and natural resources are sufficient for its independent, sustainable stability and development, but because those capacities are to small, the economy is under strong impact of the field of economic gravitation of other larger economies. Small economy is that they can base sustainable development on its own social and economic capacities, but these capacities can be built, maintained and developed only thanks to the continuous access to the resources of economic environment. The governments and businesses of small economy adopt their strategies and current activities to the economic environment created by other, stronger countries and supranational organizations. The strategies are not limited to foreign trade between businesses of small economy and other countries. They are based on international agreements between governments and on institutionalized cooperation in infrastructural branches of economy (e.g. energy, transport, research activities) and – if necessary – the outsourcing of activities that need the investment and infrastructure exceeding the possibilities of small economy (e.g. telecommunication, defense). E.g. Luxembourg, Estonia, Greenland, Reunion.

In globalized world and in knowledge based economy, the independent *institutional capital* based on own solid human capital and social capital that is able to counterbalance the impact of stronger economies and states, is the prerequisite of effective, sustainable development of small economy and country.

***Micro-economy*** is a socio-economic subject reacting on the economic processes in the field of economic gravitation and in its economic environment inside which the MMS exists. Micro-economy does not have the capacity to influence those processes. The main feature of the strategy of survival and sustainable development of micro-economy is the ***passive adaptation*** to its economic environment.

***Mini-economy*** is also strongly influenced by the processes realized in relevant fields of economic gravitation and in economic environment. But, mini-economy can define its own social and economic policy that - at least in some domains – represents the interests of MMS independently on interest of the countries dominating in the economic environment of MMS and determining the processes of economic gravitation. However the capacity of mini-economy is not sufficient to influence the economic environment. In practice the main feature of main strategy of implementing political and social goals of economic development of mini-economy is the ***creative adoption*** to the changes of economic environment and implementing institutional solutions optimizing the position of mini-economy inside the fields of economic gravitation and inside its economic environment.

***Small economy*** is also under strong influence of external procesMMSs and events that appear in its economic environment and in its fields of economic gravitation. But – comparing to the situation of micro and mini economies - the political status and economic capacity of small economy is strong enough to realize its own national or regional policy of social and economic development. The strategy of achieving the goals of economic and social policy of small economy is based on the creating of institutional instruments and infrastructural foundations controlled by the institutions, making the small economy more resistant on the impulses and shocks coming from the fields of economic gravitation and from its economic environment. The main feature of strategy of economic development of small economy is ***active adoption*** to its external economic environment by the control of infrastructure, independent institutional, human and social capital.

Summarizing the above definitions of types of economies, main *differentia specifica*between three types of countries and economies is the position of particular MMS within the frames of concrete ***fields of economic gravitation*** created by bigger economies and inside its political, social and economic *environment* created by global or regional powers.

Special importance for stability and sustainable development of small economy has the possibility and efficacy of the reacting of governments, institutions and businesMMSs on economic and social procesMMSs running within the frames of the fields of economic gravitation, especially shocks and catastrophes and the position inside its economic environment.

3. Typological criteria of classificationof MMS

It seems that good scientific and methodological tool for defining the types of the MMS it the *facet classification* consisting of following facets:

1. Demographic potential
2. Human and social capital
3. External economic environment
4. Natural resources
5. Transborder processes
6. Political status
7. Geographic space

3.1. Demographic potential

The main criterion of classifying of economies into three classes: micro, mini and small countries and economies is the population.

Statistical indicators of *demographic resource* are basis for classifying and rating the economies as *micro*, *mini* or *small* countries and economies. National economy or autonomous economic region are small because their population is below certain number of population. Demographic resources are decisive for creation, building and strengthening of human capital and social capital of those economies. Other factors like territory, natural resources, economic resources or financial resources are of secondary importance in globalized world.

The demographic criterion of classifying the countries and economies into *micro, mini* and *small* is of qualitative nature. Analyzing the number of inhabitants in particular representative cases of small economies, the following quantification of the following general criterion of demographic potential may be proposed:

1. *Micro-economy* - below 0.2 million residents,
2. *Mini-economy* – about 0.2 – 1.0 million residents,
3. *Small economy* – about 1.0 – 3.0 million residents.

In each case the indicator of demographic potential should be defined and interpreted individually for particular country or region. We can find the country with the number of population below 0,4 million that has all demographic qualitative capacity of independent *small* economy (e.g. Iceland, Malta), as well as we can find a region with the population of 0,6 million inhabitants that has rather the economic capacity of micro-economy (e.g. Cape Vere).

Ad A. *Micro-economy*.

In *micro-economies* the demographic potential is sufficient for the maintenance of existing model of economy. However it is not sufficient for development, restructuring or modernization of the economy. Especially the demographic potential of micro-economies is not sufficient for the creation of human capital needed for all positions in governments, social services, education, science, managerial capacity of businesses. The initiatives of development and progress should be supported by the immigration of population from outside. E.g. in small tourist islands the development of tourism requires seasonal or permanent migration of people employed in tourist industry.

In micro-economies relatively small immigration or emigration of inhabitants is generating demographic and social shocks. Because of very small demographic potential the micro-economies are dependent in many domains on human capital of other economies.

Ad B. *Mini-economies*.

Demographic potential of mini-economies is sufficient for creating of basic human capital for governments, administration and local businesses. However it is not sufficient for technological development of the economy, use of natural resources, reaction in case of shocks and catastrophes. Education and training of skilled staff required by the sectors of social services that need higher level of knowledge and experience cannot be created on the basis of existing demographic potential, e.g. higher level of education, research and development, implementing of modern technologies, health care, finances, engineering, defense etc.

Because of limited demographic capacity the development of human capital on high level is dependent on the access to university education and highly specialized professional experience outside the mini-economy.

Ad C. *Small economies*.

The potential of population of *small economy* is sufficient for sustainable demographic and social development of a country or region. However the demographic potential is not sufficient for providing human capital and social capital necessary for building national institutional and economic capital.

Important demographic feature of all types of small economies is the reaction of the economy and society on demographic shocks caused by the emigration of educated or professionally experienced people from small economy to the countries or regions that are the centers of the fields of economic gravitation in which the economy exists (***emigration shocks***). Another kind of demographic shocks may be caused by immigration of people from other countries or continents (***immigration shocks***). For all types of small economies even little number of emigrants or immigrants may cause serious social and economic disturbances.

In the world of today demographic processes are becoming more and more dynamic. Main reason of that is the globalization of economic and information processes. Main reasons that made or encourage the people to migrate, causing the demographic shocks and catastrophes in small countries of immigration and emigration are not only economic crises, but social, ethnic and religious policy of governments, military conflicts and ecological disasters.

The causes of demographic shocks are also the economic polarization of countries and regions, social and ethnic policy of governments, shocks and catastrophes of safety and security of population are stimulating demographic processes of migrations on regional and global scale. It is necessary to stress that the global information systems and telecommunication (TV, internet), relatively cheap transport, liberalization of the crossing of borders and availability of international travel services encourage people to migrate between countries and continents. Idealized images of other countries are also important reason of migration.

For micro, mini and small economies the processes of emigration and immigration are the causes of demographic shocks or even catastrophes. Official demographic statistics should elaborate the systems of monitoring of demographic processes enabling to forecast different kinds of processes of migrations and their possible impact on demographic, social, political and economic situation of small countries and regions. Special attention should be paid to the forecasting and modeling of shocks and catastrophes caused by migrations in demographic environments of the MMS economies.

Classic theory and methods of demography elaborated in XIX century are not sufficient for statistical monitoring of dynamism of population processes in globalized world of today, in XXI century. It seems that – especially for the MMS - relevant theoretical foundations and methodological approaches of monitoring, modeling and forecasting demographic processes should be elaborated.

3.2. Human and social capital

Internal *human capital* and *social capital* of micro, mini and small economies, is the capital of educated and active individuals and social groups that are independent from foreign, external political, economic and environment. National *human capital* and *social capital* should identify itself with the values and interests of the country and society. This identification is of crucial importance for political, social and economic position and development of MMS economies.

The creation, development and maintenance of *human capital* depend on following main factors:

1. demographic potential of economy,
2. system of education, with special reference to the education on higher level realized by local universities and other types of schools,
3. vocational education and training,
4. life-long learning,
5. protection of people representing national human and social capital of the MMS economy against internal and external threats,
6. continuous use of human capacities and skills of population in the forms of employment, entrepreneurship, social and political activity of population,
7. research and development programs and institutes.

In many micro, mini and to some extent also in small economies the entire demographic potential to small for the “reproducing” of sufficient number of educated, trained and experienced people, individuals with managerial capacity and leadership talents, that are willing and ready to take responsible positions in the governments and national institutions that need educated, skilled and motivated people (e.g. in the sectors of education, health care, security, research, innovative branches of industry etc.) and in businesses.

Because of the shortage of national human and social capital in the MMS economies the positions in business and administration that need specific knowledge and expertise are rather often offered and taken by experts from other countries, mainly from bigger developed economies. Those experts are transferring the solutions, know-how and best practices that occurred to be efficient and that were successfully implemented in their countries. However best practices from highly developed big countries may not be necessarily relevant for specific situation and needs of micro, mini or small economies.

Next problem of the capacity building of human and social in the MMS is that many micro and mini-economies and some small economies do not have their own potential of education on the university levels, in the research and development institutes. It may be also the shortage of the *training-on-the-job* facilities for upgrading the experience of existing human capital and for building the capacity of new human capital. Moreover, gifted individuals from micro, mini and small economies that have the opportunity to study at the universities, to work in foreign research institutes and other organizations for education and professional training in developed countries, rather often are offered more attractive positions in those countries. Capacity building of human capital by the education and training abroad can be the form of *brain drain* that is very big loss for the quality and quantity human resources of the MMS countries. The emigration of many educated and gifted people from India to developed industrialized countries is negligible, but the emigration of few talented young scientists, engineers or doctors of medicine from micro-economy may create serious gap in human capital of the society.

Because of that the high priority task of official statistics of MMS should be the building of the system of statistical monitoring of the needs of human capital, the gaps between the needs and the resources of human capital, the processes of creation of national human capital, the efficacy of different forms of creation of human capital by education and training on site and abroad, and the processes of deletion of national human capital, especially in different forms of emigration to other countries. The import of human capital from abroad and the impact of this import on the creation of national human capital should also be the function of the system of statistical monitoring. Main function of imported human capital should be rather the creation of national human capital by transfer of know-how, training and education of local population than the taking of managerial positions in the economy and governments of the MMS.

In MMS the following phenomena and indicators of should be taken into account from the point of view of the criterion of human capital and social capital:

* the level of self-sufficiency of the economy from the point of view of maintenance and upgrading of existing human capital,
* the possibilities and the policy the creation of human capital adjusted to new needs of society and economy by national system of education, training and development of skills,
* the possibilities of creating national human capital of high level experts, scientists, leaders and politicians, e.g. by research and development institutes, universities, governments and businesses,
* the capacity of *social capital* (political, managerial, professional, cultural, local social organizations integrating human capital on national and local level) and relevance of different resources of *social capital* to the needs of the MMS, their impact on the stimulation of social activity, the mobilizing and integrating distributed human capital in the forms useful for the MMS countries, economies and societies,
* the policy of governments toward the development of different forms of social capital needed by society, economy and governments, e.g. the policy of supporting or creating the obstacles in the development of NGOs, social role of religious organizations.

*Social capital* of any economy is dependent not only on the capacity of *human capital* but - first of all - on political system of countries. Political systems may support or may hinder or block the development of proper social capital useful and necessary for the development of countries. It seems that especially in the MMS the role of active policy of governments in developing human capital as well as in stimulating and supporting its organization in different forms of social capital is crucial for the use of national human capital for the benefit of local society.

The troubles of creation of social capital effectively contributing to the development of particular MMS appear when the resources of *social capital* in MMS economies are created and maintained not by national or local society, but by financed from abroad, small, noisy, well organized groups representing external, foreign political and economic interests, e.g. by the so-called NGOs controlled and financed from abroad, by financing different political and social actions, by financing of some politicians from abroad, by organized and financed from abroad foreign mass media, research and development projects, foundations operating on the territory of the MMS.

For bigger countries the costs of creation and financing of groups of interest and organizations representing influential social capitals in particular micro, mini or small economy are negligible, while the effects of the influence of those groups of social capital representing foreign interest on the situation in MMS may be very high, bringing political, economic or social shocks or even catastrophes.

From the point of view of the mentioned above criteria of *human capital* and *social capital* the following types of small economies can be specified:

1. *dependent economy*
2. *partly self-sufficient economy*
3. *self-sufficient economy*

The obligation of official statistics is to identify and classify the structures representing social capital, with special reference to real national social capital and the structures of social capital representing the interests of other countries or groups of interest. Statistical agencies should monitor the processes of creation and financing of the structures of social capital, the activities of those groups and organizations, their impact on different domains of life.

Especially the *micro-economies* are of the fully dependent on human capital from abroad or on their own human capital educated and created abroad. They do not have – as a rule - sufficient potential and internal capacities of universities and institutions of higher education, research and development institutes, professional training and upgrading the experience and skills of the residents to create national potential of human and social capital necessary for government administration, social services and for the management of economy.

In *micro-economies* many people with highest level of education are the graduates of foreign universities, as a rule in developed bigger countries. Many managers, engineers and experts are getting the experience in foreign institutes and corporations. Because of the shortage of national know-how, the foreign experts, also long-term experts, are bringing with them to the MMS their own profile of human capital. They are transferring their knowledge, know-how and best practices helping to create and develop national human capital of the MMS. The contributions of foreign experts for capacity building of human capital of MMS are– as a rule – very valuable. The transfer of the knowledge and experience from big developed countries to the MMS should not be concentrated on the “transplantation” of “best practices” of big country to micro, mini or small economy and country. This transfer of should be based on critical and creative adoption of best practices of developed economies to specific conditions of particular MMS by national processionals, with the help of foreign experts who are understanding well the situation and needs of particular micro-economy.

National or local human capital is sustainably used in the economy and country only if it is organized in the forms of social capital relevant to the needs of society and economy. Most often the input of foreign experts is limited to the building of human capital in specific domains and processions by training some individuals.

As a rule, foreign experts are not participating in the processes of building social capital in respective domains of MMS. Those experts after finishing their short-term or middle-term missions focused on the capacity building of human capital of the MMS economy in the forms of training, seminars, workshops and delivering lectures at local universities - they leave the countries. Human capital created by them - without respective integration with local structures of social capital - may not have the power or propensity to continue the creation of more resources of national human and social capital by transferring the knowledge and skills to local stakeholders, within the frames of the national system of education, training and transfer of know-how.

For example, the capacity building of human capital of scientists by national universities and research institutes is the exception in micro-economies. Most frequent form of capacity building of human capital in research and education is that the developed countries or international organizations are supporting and financing research institutes or education projects on the territory of MMS, however those institutes are – as a rule – isolated technological enclaves on the territory of MMS. Such institutes are not very active in the upgrading or developing of the national human and social capital of the MMS hosting the institute, but – to the contrary – more often those institutes may play the role of the gates for the brain-drain of gifted local individuals, whom - after some period of time of work in those institutes - are offered more attractive positions abroad, in businesses and universities in the national economies of funders.

In *mini-economies* the building of basic human capital on middle level (e.g. secondary schools, vocational training) and skills (e.g. training on the job) is based on national or local system of education and professional training. National high level education is – as a rule – limited to the fields of pedagogics, law and administration, economics, some domains in engineering and natural sciences depending on the profile of the economy.

The development of human capital in more specialized domains, for which the *mini-economy* needs the limited number of people, relies on the access to the education and training outside the mini-economy, in other countries. The creation of high level human capital by research institutes and universities is similar to that in micro-economies, although the capacity of institutes and universities in the domain of humanistic sciences, social sciences, and the branches of natural and technical sciences covers the needs of mini-economy.

*Small economies* are more sef-sufficient from the point of view of the developing and maintenance of *basic human capital* needed by governments, society and economy. That refers mainly to the human capital of managerial staff, experts in law, administration, engineering, basic branches of economy. However in highly specialized branches of industry, in technical sciences, in some “narrow” specializations in medicine, in the management of special projects and organizations, there are often the gaps in national human capital of professionals and there is the shortage of experienced staff.

Local universities and research institutes of the MMS do not have the building of national human capital in their educational and research programs. Because of thatin some domains and branches of economy the small economies must rely on other countries. That dependence refers to the branches that are based on modern technologies and on know-how developed in other countries, and have to be imported or insourced by small economies from abroad.

3.3. External economic environment

Next typological criterion of MMS economies is the relation of the economy with its *external economic environment*. From the point of view of this criterion the following types can be specified:

A. *Independent* economy

B. *Interrelated* economy

C. *Integrated* economy

Ad A. *Independent* economy – the *independent* MMS has regular or incidental relations and cooperation with other economies, but in case of breaking-off or disturbances those relations the economy is able to adopt itself new situation using their internal resources. Independent MMS are many distant island countries, distant exclaves, regions economically semi-autarchic, relatively self-sufficient overseas territories.

Main feature of *independent economy* is the sustainability and adoptability to the changes of political, social or economic situations without the necessity of the assistance from outside, from its external political and economic environment. This independence of MMS economy from the impact of external environment is especially important in case of high probability of political, social, economic or ecological shocks that appear seasonally or incidentally.

In globalized world full independence of economies does not exist. The MMS independent from their external environment often do not have all resources and capacities necessary for smooth absorption of shocks coming from outside and to the adoption of businesses and society. However they should be able to keep their economic and social stability and development on the basis of their own internal resources without politically-based help or the intervention from outside. However in case of extremal shocks or catastrophes exceeding the possibility of smooth absorption, also the independent MMS economies may need the support by other countries or regions.

For each particular MMS the criteria of *independence* should be defined individually. E.g. MMS that have good financial situation and rich human capital in stabilized political and market-driven economic environment (e.g. in Europe - Iceland, Luxembourg, Liechtenstein, Monaco) can be classified as *independent economies*, although they may depend on surrounding countries in many other domains of economy, also in strategic and infrastructural branches like energy, transport, water, university education, access to modern technologies. The countries of similar size in non-stabilized natural environment (e.g. seasonal hurricanes in Caribbean region) will not be *independent* in case of extremely strong meteorological catastrophes.

Ad B. *Interrelated* economy. *Interrelated* MMS are the countries and economies that have developed sustainable cooperation links with other economies in selected branches and domains. Those are mainly the interrelations of particular MMS with its external environment and with the countries creating the *fields of economic gravitation* inside which an MMS is placed.

The interrelations between particular MMS and its external environment are developed often in strategic branches and sectors, e.g. monetary system, leading export-dependent and import-dependent branches of economy, strategic sectors services managed by foreign companies (e.g. tourism, insurance, transportation), research and development activities, high level specialized education, defense and security, transborder trade, highly professionalized segments of labor market, infrastructural systems like energy, air and railroad transport infrastructure, high-tech processes that need licenses and know-how. E.g. Cape Verde, Greenland, small islands in Pacific or Indian Ocean.

Ad C. *Integrated* economy. Integrated MMS economy is the part of the economic, social and ecological environment created by neighbouring bigger countries. The integration of MMS economy with its external environment may refer to the whole MMS country, or only to leading branches or to the companies dominating the national economy. Those branches or companies are entire parts of the branches of other countries or of foreign companies that have leading position in the external economic environment of MMS economy. For example, national company of MMS economy is the regional branch of big foreign company, national commercial bank of small economy is owned by foreign financial institutions, labor market of small economy is the entire part of the labor markets of its neighbouring countries creating the economic environment. Integrated MMS economies sometimes do not develop some branches or infrastructures at all, e.g. energetic infrastructure, monetary system, defense and security system, railroad or air transport. E.g. San Marino, Madera.

The interrelations of the MMS economy with its external environment should be also analyzed and classified taking into account the political independence of MMS country from external influence. The *independent* MMS *economy* is the economy that may have tight relations and cooperation with other economies, but those links are under the control of a government and businesses of MMS economy. Economic cooperation links with *independent* small economy cannot be overused by foreign companies or other governments to exert political or economic pressure on social or economic policy of MMS country, on its governments and national companies.

However, in globalized world real, full economic independence of small countries or regions does not exist. Because of that, the evaluating and measuring the *level of independence* is important for the analysis of the relations of particular MMS economies with their external economic environment. The identification and measuring of *levels of independence* should be the task of official statistics of MMS economies.

The following types of MMS economies from the point of view of political independence can be defined:

* *Independent* MMS - the governments and businesses of *independent* small economies are able to counteract the economic and political pressure of their external economic environment and resist the impact of the fields of economic gravitation, e.g. counteraction against uncontrolled migrations, protection of energetic security, control of financial markets by governments, national universities creating strategic human capital for governments and management of economy, infrastructural mass media etc.
* *Policy-dependent* MMS - the governments and businesses of *policy-dependent* MMS economies have political, technological and economic capacity to control strategic layers of sectors and branches of economies, although economic and social policy may be influenced by external governments and foreign companies. For example, the government of small economy may keep control on natural soils of the country, however the exploitation of those soils is given to the hands of foreign companies that have finances, technologies and know-how; local governments and businesses may keep legal and administrative control on the tourist infrastructure of the country, but the management of tourism is in hands of foreign or international tourist companies
* *Sector-dependent* MMS – some sectors or branches of small economy are fully owned and managed by foreign companies or are controlled by other governments or international organizations, e.g. national banking system or insurance system of economy could be managed by national bank of other country; borders of small economy are guarded by the forces of other country, some natural soils, their exploitation and trade of products belongs to foreign companies or other governments.
* *Fully dependent* MMS - all sectors of economy of such MMS are directly or indirectly controlled by other countries or foreign companies. The governments and businesses of small economy have to adopt themselves to political and economic situation existing in their external environment. Social and economic situation of such countries or regions depends on political strategies of the big countries dominating in economic environment. Main question of the governments of fully dependent MMS economies is if the dominating countries are willing and ready to understand and accept real interests of the society of the MMS country, its ambitions of political, cultural and economic sovereignty, or the “big brothers” and international organizations are treating the MMS as the dependent areas and the territories of realization of their political and economic interests.

The evaluation and measuring of the independence of MMS economy should take into account the features of political systems of bigger countries existing in its external environment, creating the field of economic gravitation of the MMS economy. In practice, the political model of the external environment has decisive impact on all other factors of social and economic development of the MMS. The MMS countries or the MMS exclaves placed in unstable political environment cannot be classified as independent economies even if they have rich natural resources and rich human capital sufficient for full independence in other political model of its external environment.

Most of MMS – willing or not - are under the influence of the fields of gravitation generated by more powerful countries and must obey the rules and processes of their external political and economic environment. In practice the policy of the governments of the MMS countries, the activities of businesses and social organizations are often taking into account the possible reaction of their “bigger brothers”.

Economic, social and political processes in the fields of gravitation influencing the MMS economies depend on political models and real political decisions of bigger countries creating the field of economic gravitation[[4]](#footnote-4). Political model of the environment of the MMS country is taken into account in the decisions of the governments and businesses of the MMS. In globalized world the superpowers as well as the regional and local powers are determining the conditions and rules of political, economic and social behavior for all sovereign MMS countries and self-governments of dependent territories existing within the frames of their economic environment and within the fields of political and economic gravitation. By the way, not only the MMS are expected by them to obey their rules, to consult with them also some internal decisions.

On the other hand the governments and self-governments of MMS are expected by the population and businesses to take the decisions and implement the laws optimal for the society and economy of the country or territory, for the benefit of their small societies and economies. We can say that the governments and businesses of the MMS are often “*between hammer and nail*” – the *hammer* of the surrounding political and economic environment and the *nail* of the needs, wishes and ambitions of local society and economy.

Official statistics of MMS can and should help the governments to optimize their economic policy in the conditions existing in their external political environment and under the influence of the fields of economic gravitation. Official statistics of each particular MMS should extend the scope of their traditional functions by building complex systems of dynamic statistical monitoring of the impact of external economic environment and the fields of economic gravitation of the MMS economy as a whole and on particular branches of economy and domains of social life. Official statisticians in the MMS should take the initiative to identify potential information needs of governments and other stakeholders in different possible usage situations, especially in the situations of shocks, catastrophes and other unusual impulses coming from outside.

The statisticians should not ask the users “*what data do you want*”? but they should build the scenarios of typical and extremal usage situations of local governments and businesses, to prepare in advance the statistical information systems ready to produce relevant data and to deliver to the users pertinent data without explicit request of stakeholders. Official statistics should also provide to national users the data necessary for forecasting possible threats coming from external environment and for management of possible crises and shocks. Such systems of dynamic statistical monitoring and early warning systems are of particular importance for *integrated* and *interrelated* MMS.

3.4. Natural resources

Main problem of MMS economies from the point of view of their natural resources is that those economies rather do not have their own capacities necessary for independent, effective use of the resources. For example, small island country may have rich resources of fish and other seafood, but it may not have their own shipbuilding industry, the technology for processing of products and the marketing capacities for efficient export of those products. In case of the resources that can be exploited only using high technologies and highly skilled professional staff (e.g. exploitation of mineral soils like oil, gas, ores of metals etc.), the MMS have to rely fully on foreign companies and on the policy of their countries of residence when they are negotiating the conditions of licenses for those foreign companies. Because of that the MMS are rather often dependent on the policy of big companies, institutions or countries that are active in their economic environment.

From the point of view of natural resources the MMS can be divided into three main classes:

1. *Rich resources*
2. *Limited resources*
3. *Conditional resources*
4. *Poor resources*.

Ad A. *Rich natural resources*. The natural resources of the MMS country or region are *rich* if the economic effects of use or exploitation of those resources using available technologies is sufficient for sustainable development of the country in the perspective of very long time and if this exploitation is not wasting other natural, social and economic resources of the country. The MMS may have rich natural resources like: oil, gas, minerals, sea resources, favorable natural conditions for specialized agricultural production, attractive natural conditions for tourism. Many MMS, especially island countries, have their most important and most valuable economic resources are in their continental shelfs and in their 200-miles economic zones on surrounding sea or ocean.

Economic value of the resources of those MMS overcomes the needs of effective social and economic development of small countries. The MMS that have political rights to rich natural resources rather often do not have the technologies and capacities necessary or exploitation of those resources. So the MMS that have rich natural resources, do not have their own economic potential necessary for independent exploitation of those resources, their own human and social capital, know-how, technologies, industrial capital, finances, position on global markets.

Infavorable political conditions the governments of rich MMS can control the sustainable exploitation of their natural resources. However political climate can be changed any time. Official statistics of MMS that have rich natural resources should build the information systems adjusted to high-risk and uncertainty of political environment.

Ad B. *Limited natural resources*. The MMS are classified as the economies of *limited natural resources* if they have valuable natural resources important for economy, but the scale of economic effects gained from the exploitation of those resources is not sufficient for sustainable development of those economies. The MMS is also classified as the economy of *limited natural resources* if the time of availability of resources is limited and the overexploitation of the soils will cause economic catastrophe in respective branches of economy in certain period of time.

In the MMS of limited natural resources the governments and businesses need the information basis for long-term forecasting of development and stability of economy as a whole taking into account of the scenarios of the exploitation of limited resources. The exploitation of *limited resources* should be carefully controlled by the governments of the MMS. The threat for MMS is the overexploitation of limited natural resources because of the loss of the control of governments on the activities of foreign companies that have the licenses for exploitation. The obligation of official statistics is the information support of long-term forecasting of economic policy connected with the use of limited resources.

In the economic history we can find many examples of total, durable or permanent exploitation of limited resources. For the MMS economies such procesMMSs of wasteful exploitation of limited resources mean the macroeconomic catastrophe.

It may happen that the governments of the MMS do not have such information and are ready to sell the licenses for exploitation of their limited but valuable resources without effective restrictions protecting the country against the policy of grabbing by foreign or international corporations. The wasting of other resources, not so profitable for the moment, may not be taken into account. For short term exploitation of limited resources the governments of MMS can be paid and fill in the gaps in their budgets, but in middle or longer term such decisions may bring economic catastrophes. Statistics should help the governments of MMS to conduct complex, long term analyses and scenarios of different policies of exploitation of limited resources.

The availability of resources may be limited in time. It could be the scarcity of non-renewable natural resources that – in case of extensive exploitation – can become exhausted in some time. The limitation of use of natural resources could be also the effect of seasonality of use or access to resources, e.g. in many countries the tourist resources are available only seasonally during summertime or during a winter. The limitation of use of resources could be also the result of fluctuations of external demand for products, e.g. technological changes that dramatically reduce global or regional demand for some products. For most of the MMS such seasonality has macroeconomic character.

Another aspect of use of the limited resources in MMS economies are the changes of technological or ecological standards in the countries importing the products based on the exploitation of natural resources from MMS economy. Ecological and technological laws and standards are becoming more often the tools of protectionism and competition on the market. Big countries like to use this tool. It is for them very cheap method of strengthening the competitiveness of their national companies. Besides, such policy can be presented to the societies and international organizations as the protection environment, the care of people against the import of products of poor quality, protection of public health etc. The MMS do not have enough political power to counteract against such practices. The only method is to prepare their small economies to economic shocks that may be caused by such protectionist practices. Therefore, for MMS of limited natural resources the policy of exploitation of limited natural resources needs additional official statistical information necessary for long-term simulation and planning how to optimize the exploitation of *small resources of small economies*.

The MMS - as a rule - do not have sufficient national capacity for independent, effective exploitation of their own resources. Especially they do not have the technologies necessary for exploitation of the resources. They are dependent on big international companies, institutions or on other countries. Those economies are dependent on external demand for their resources.

Governments of the MMS countries should be delivered the data enabling to simulate the middle and long term consequences of use of limited resources. Production and submission of such data is the special duty of their national official statistics. Official statistics should be obliged to collect the data on available limited resources.

Official statistical services of the MMS should have the right to demand the information on the scale and availability of limited strategic resources from all respective governmental institutions and any businesses operating on the economic territory of the MMS countries, including the economic zones on seas and oceans. Those data on resources should be integrated with other statistical variables. Such integrated data files can help the governments of the MMS economies in formulating proper policy of reasonable use of their limited natural resources, protecting the countries and nations against devastation of their most valuable natural wealth.

Ad C. *Conditional natural resources*. The *conditional natural resources* are the resources which usefulness depends on economic situation of other countries, on legal regulations, changes of fashion or habits in other countries, especially the countries that are creating the political and economic external environment of MMS. Good example of such conditional natural resource is climate, nature, monuments of historical and cultural heritage of MMS countries that are very valuable natural resource for international tourist industry. Those resources are effectively used by the MMS economy only if there is a demand from the part of other countries. The crises in the countries from which the tourists use to come to the MMS economies “specialized” in tourist services for foreigners, may generate deep economic shocks or even may bring to economic catastrophes of MMS economies. Beautiful beaches, wonderful climate and ancient architectural monuments have no economic value if foreign tourists do not want to pay for excursions or cannot afford to come to the resorts in those MMS .

The governments and the businesses of the MMS should be prepared for dynamic reaction in case of rapid change of the market for their resources caused by political decisions or by economic turbulences in other countries. The economies of the MMS should be *resistant* on such shocks.

To help the governments and businesses the official statistics in the MMS countries should include to their statistical systems the functionalities of dynamic monitoring of the potential of *conditional natural resources* and the statistical observation of the factors that influence the use of those resources for the MMS economy. Official statistics should also collect the data on all phenomena and processes in other countries that determine the *conditions* of use of those *conditional resources*.

Ad D. *Poor natural resources*. Economic value of accessible natural resources of economies is negligible from the point of view of the sustainability of development of country. The MMS economies that are poor form the point of view of accessible natural resources have to base their position and development on other assets, e.g. human and social capital, cultural and historical heritage, geographic localization in strategic places important from the point of view of geopolitics. For some MMS economies the most important value is their strategic geographic localization important from military point of view of political superpowers, from the point of view of international air and maritime transport, control of telecommunication. This value may be lost or may grow up in case of geopolitical and technological changes in telecommunication or transport.

The MMS that do not have valuable natural resources, are to large extent or dependent on the policy of bigger countries. Especially they may depend on cross-border processes between neighboring countries. The stabilization of economic situation of such MMS can be achieved by the institutionalization of cooperation with bigger countries, often within the frames of international bilateral and multilateral agreements.

The duty of official statistics of any MMS is to collect complex data on natural resources of the economy, the data characterizing the impact of economic environment on the exploitation of all four types of natural resources. Official statistics should also monitor the phenomena and processes in the economic environment, especially in the field of economic gravitation to deliver to the governments and businesses of the MMS all data necessary for monitoring and forecasting of possible shocks and catastrophes that may come from outside, caused by political, economic or ecological processes taking place in other bigger countries (e.g. political turbulences, embargos, ecological catastrophes, shocks on financial markets etc.).

3.5. Transborder processes

Most of the MMS are under the influence of cross-border processes that are – as a rule - covering the whole territories of MMS countries. The only exceptions are the island countries that are distant from other economies, e.g. small island countries on open oceans. However nowadays, because of the development of communication and transportation technology and decrease of costs of transport, the geographic coverage of cross-border processes and the areas of transborder economies are rapidly growing. Now much more small island countries may belong to transborder economy created by their relatively distant neighbors than it was few decades ago.

The scale, the power and the forms of impact of cross-border processes on MMS depend on the specificity of the fields of economic gravitation surrounding particular MMS and on its political environment. Often the whole MMS is the entire part of bigger transborder economy covering the border regions of bigger neighbor countries and the MMS economy as a whole. In this new situation all socio-economic subjects and processes of MMS are - more or less, but often fully - dependent on transborder economy dominated by bigger neighboring countries.

The dependence of MMS from related transborder economy does not mean the political dependence of small country on their neighbors. *Transborder economic dependence* may refer both to politically sovereign countries, to the countries of limited political sovereignty and to the politically dependent territories, e.g. exclaves of other countries.

From the point of view of impact of transborder economies and cross-border processes the following types of small economies can be defined:

1. *Total dependence*.
2. *sectorial dependence*.
3. *Infrastructural dependence*.
4. *Independence*.

Ad A. *Total dependence* . Small economies that are entire subsystems of transborder economy are *totally dependent* on cross-border processes. That means that any decision concerning the activity realized by national economic or social subjects in small economy should take into account all possible impact of external factors of transborder economy. The governments of such small economies in their political and administrative decisions should take into account*.* *Totally dependent* are - as a rule – the economies that are the enclaves or the MMS that do not have their own natural, infrastructural or demographic capacity for sustainable existence, development and for building the competitiveness of the economy on global market.

Ad B. *Sectorial dependence*. The MMS are often dependent on transborder economy from the point of view of selected sectors of economy, e.g. sector of energy, water supply, transportation, banking sector, university education, specialized health services or mass media. Sectorial dependence is rather common for micro and mini-economies geographically placed among bigger countries that have developed respective branches of economy and agree to supply the products of those branches to small neighboring small economies.

Ad C. *Infrastructural dependence* on the transborder economy means that the MMS economy is made to use the infrastructures developed and controlled by other countries. Often the MMS countries do not develop their own infrastructure in some domain of economy relying on the use of infrastructural facilities of other countries.

The infrastructural dependence is common in case of the infrastructural facilities which size or scale are significantly overcoming the needs and economic possibilities of the MMS economy. Infrastructural dependence refers mainly to the energetic infrastructures, transportation infrastructure (road, railway, water transport), water supply, telecommunication, information infrastructure in some domains of social and in profiled university education, highly specialized health care services.

Ad D. *Independence on cross-border processes.* The MMS are independent on cross-border processes in case of small island countries that are beyond the economic gravitation of any other economies. The MMS can also be independent on cross-border processes if their borders with neighbouring countries are isolating the businesses and societies, because of political decisions and administrative regulations or because of natural conditions (e.g. mountains, deserts).

The independence on cross- border processes does not mean that the MMS economy is autarchic or fully independent from other economies. It may be dependent as any economy in globalized world, but not as the entire element of regional transborder economy.

In all MMS that are or potentially could be dependent on cross-border processes, the transborder statistics and monitoring of transborder processes is the domain of statistics of utmost importance. It is necessary to elaborate methods and tools of statistical monitoring of transborder economies from the perspective of different types of the MMS countries. Important task of statistical community is the elaboration of methods of delimitation of transborder economies and the tools and indicators for statistical monitoring of the impact of processes of economic gravitation on MMS countries.

3.6. Geopolitical status

From the point of view of geopolitical status the following types of the MMS can be specified:

1. *Sovereign state*
2. *Exclave*
3. *Autonomic territory*
4. *Dependent territory*
5. *Occupied territory*

All those types are well defined in international law and are used as the standard typology in international statistics.

Practical problems of classifying the MMS to particular types of political status arise in the situations of conflicts of interests between superpowers, regional powers or bigger states related to the MMS. Particular MMS economy could be considered by some states or international organizations as a sovereign state while at the same time other countries and international organizations may consider the same MMS as occupied territory.

For example, the MMS for one country could be an *occupied territory*, while for other country could be a formally *sovereign state*. More complicated is the situation if the MMS composed of a number of small island is considered by UN and many countries as one *sovereign state*, while one or few countries are a part of it – one or few islands – as the exclave of other country (e.g. political situation of islands on the South Chinese Sea).

3.7. Geographic space

Geographic space of the MMS economy is an important indicator characterizing the possibilities of potential development of such economy. The indicators measuring of the space of the MMS economies are necessary for computing any statistical coefficients of density of any other objects, phenomena and processes *per square kilometer* (*square mile*). For statistical purposes, for proper interpretation and comparability of the measuring of density per unit of geographic space, the following main statistical characteristics of the geographic area of the MMS economy are necessary:

1. *geographic land space*,
2. *economically usable space,*
3. *economic space*.

The *geographic land space* is the land area of particular MMS according to its political status. Practical problems of measuring and classifying the geographic space of MMS appear in case of conflicts of political interests of external countries connected with the delimitation of borderlines of the territories of particular MMS.

In such situation collecting of data and statistical measuring of geographic space as the basis for compiling of any other indicators and indexes *per square kilometer* (mile), is difficult because of the problems of access to integrated and complete microdata.

The identification and measuring of the *economically usable space* is necessary for those MMS economies, which geographic space is extremely diversified from economic and social point of view. The indexes of density in any domain of statistics can be uninterpretable or even misleading without more precise defining of types of geographic space. For example in Greenland, the autonomic territory of Denmark (2 166 thousands sq. km, population 56 thousands), over 80 % is economically not exploitable and depopulated. At the same time the economic space of Greenland covers the 200 miles of maritime economic zone and is great value for the economy of Greenland as the MMS and for the whole Denmark. More extreme examples are the MMS economies that are the dependent territories of other countries on Pacific, Indian Ocean or Atlantic, with zero population, but with 200 miles of maritime economic zone around them. The same phenomena refer also to sovereign states that in the past were the colonies or dependent territories of bigger states.

The identification and measuring of *economic space* of the MSS is important for the economies that have direct access to seas or oceans, covering not only the land surface, but also economic maritime space, e.g. 200 miles around the island and other economic spaces according to international laws and multilateral agreements. Some problems appear in an MMS economy is located on the seashore with narrow strip of the shore, close to other countries. Official statistics should identify relevant strips of the sea or ocean according to legal status of division of economic space between neighboring countries (e.g. the impact of the access of West Balkan countries to the eastern shore of Adriatic and the division of economic space between those countries on statistical indicators measuring national economies of these countries).

Official statistics is obliged to elaborate relevant methods of delimitation of all three types of space for each MMS. Official statistics should also elaborate relevant statistical indicators measuring those three spaces (A, B, C) of MMS as separate economies as well as the parts of other national economies, for each type of geographic and political status.

International statistical community realizing the Amendment 10 of the UNFP woulod do good job helping the colleagues from MMS to elaborate such methods and indicators for each type of political and geographic status that may take place in practice of each MMS. Special attention should be paid to fragile regions and to the areas of real and potential conflicts of political and economic interests between bigger countries of the region. The obligation of official statisticians of both the MMS and neighboring countries is also to cooperate in producing reliable statistical data measuring so complicated situations of delimitation of space of countries and economies..

3.8. How to use the facet typology of MMS for statistical capacity building

For better measuring, interpretation of statistical data and understanding the specificity of social and economic processes it is necessary to classify each economy is strongly recommended to classify of each micro, mini or small economy using the facet based typology discussed above. Such classifying would be useful not only for the governments of sovereign MMS and for governments of exclaves, autonomous and dependent territories, but also for international organizations, especially the United Nations, and – hopefully – for all bigger countries that have the impact on the situation of the MMS economies by shaping their political, social and economic environments, the processes of economic gravitation and transborder economies inside which all MMS have to exist and survive.

All listed below 7 facets of the typology are necessary to define for particular MMS the attributes that should be taken into account in the building of the system of official statistics and the strategy of development (NSDS) of the MMS:

1. Demographic potential
2. Human and social capital
3. External economic environment
4. Natural resources
5. Transborder economies and cross-border processes
6. Political status
7. Geographic space

From such typological classifying official statisticians can and should derive practical conclusions what priorities should be defined in the strategy of official statistics in particular MMS, how the interchange of data between statistical agencies of the countries creating the economic environments and the fields of economic gravitation and the statistical services of the MMS shall be organized, and what initiatives should be undertaken by international organizations that are developing and coordinating the global system of official statistics.

Each micro, mini and small country and economy should be classified by concatenation of all seven criteria listed above. For each country the values of attributes used for classification should be analyzed and – if necessary – verified.

Conclusion

Each MMS should be classified according to the above facet typology . For each multi-criterial behavioral type of MMS the models of statistical information system should be elaborated.

The models may be used by particular MMS for strategic planning (elaboration of the NSDS’s), capacity building of official statistics, optimization of functionalities of statistical agencies and specification of leading statistical indicators relevant to the specificity of each particular MMS economy.

Multi-criterial facet-structured typology of the MMS needs further research works and discussion among statisticians of MMS and interested experts from other countries.

The contribution of International Statistical Institute, statistical offices of the United Nations and other international organizations in elaborating official multi-criterial classification of MMS can hardly be overrated.

4. MMS as the economies in permanent transition

In globalized world all MMS economies are opened and - to large extent – exposed to the impulses of political, economic, social or ecological nature coming from outside, from their external environment and often are helpless, not having their own capacities to resist, counteract or neutralize negative consequences of those impulses. The governments of the MMS economies as economies in transition are trying to find optimal position of their small countries in globalized world and in globalized, institutionalized economy.

*All MMS are the countries and economies in permanent transition*. The cause that the MMS are in *permanent transition* is the necessity of dynamic adoption of all branches, businesses and societies to the changes of their economic and social environment. The relation between the MMS and its external environment is the “one way traffic” – strong impulses are coming from external environment that may generate shocks or catastrophes in the economy of the MMS.

*The MMS are to small to influence actively on their environments*. For the MMS the only strategy of maintenance and protection of social stability, economic equilibrium and sustainable development is active policy and deep institutional interventionism of governments of the MMS focused on the building of national capacity (institutional, social, economic, technological), that ensures high adaptability to the changes of their economic environment to avoid shocks or catastrophes. The governments of the MMS economies should have a long term strategy of permanent transition. The anticipating of possible changes of external environment, of shocks and catastrophes on the basis of reliable, pertinent statistical information needs active help from the part of official statistics of MMS.

Main strategy of sustainable development of the most of the MMS economies, especially micro and mini economies, is the *adaptability* of the economy and society to the processes running in their external political and economic environments. The foundation of the transition strategy of governments and businesses of the MMS economies is the optimization of the adaptation of the country to the changes of economic environment. For elaboration of those strategies the governments and businesses of the MMS economies can creatively use the experiences, tools and methods of the countries in transition and the post-transition countries – former centrally planned economies isolated from global markets that had transformed their political and economic systems. Many of them are micro, mini and small economies.

Official statistical systems of the MMS *economies in transition* should also be the *statistical information systems in transition*. The task of official statistics is the to guarantee the informational safety and security of governments and businesses by the anticipating of future information needs of stakeholders in different expected – or unexpected by them - usage situations. That needs the preparing *ex ante* relevant information and delivering pertinent data to the users also without explicit requirements in due time, place, scope and language.

The transition processes in the MMS are realized in two dimensions:

1. *The building* *of* *the strategy of transition* from existing model of economy to the model optimal for particular MMS economy in its globalized economic environment;
2. *The capacity building* necessary for dynamic adoption of the MMS economy to the changes and shocks coming from their external political, social and economic environment and to transborder processes.

Many MMS are on the way of building their political, social and economic systems trying to find optimal compromise between their specificity, the changes of external economic environment and the impact of the fields of economic gravitation on MMS.

The prerequisite of effective and quick reacting of businesses, local societies and local governments, branches of economy is the strong informational support from the part of national or local statistical offices and other organizations producing reliable, official data.

The consequence *permanent transition* of MMS economies is that the information systems of official statistics *shall be* also in *permanent transition*. The transition processes of official statistics in MMS are threefold:

1. *Transition of statistical capacity*. Statistical capacity building enabling the reaction of official statistics on the dynamic, often unexpected, changes of the potential of needs of governments and businesses of the MMS economy. Statistical services should elaborate relevant methods of information infrastructure to be able and ready to produce non-standard data pertinent to new needs of national stakeholders, especially new indicators describing the impulses coming from economic environment and the impact of those impulses on MMS countries, to help the governments to take optimal decisions and to the businesses to optimize their behavior.
2. *Transition of statistical methods.* The adjusting of statistical methods to the changes of the needs of stakeholders (respondents, managers of administrative and primary sources of data, disseminators of statistical information and end-users of data), taking also into account the changes of the access to external data sources controlled by the governments and businesses of bigger neighboring countries. Transition of statistical methods shall include creative adaptation of international standards and recommendations to existing and possible usage situations of particular MMS economy.
3. *Transition of statistical processes.* Dynamic adjusting of programs of surveys anticipating the changes of the needs stakeholders of statistical processes, (respondents, managers of administrative and primary sources of data, disseminators of statistical information and end-users). Dynamic adjusting of output data produced, stored and disseminated to existing and forecasted usage situations of the stakeholders of statistics of the MMS economy. Personalized, active dissemination of output data, especially to the central and local governments and to social organizations. Statistical offices should elaborate and systematically update the scenarios of both - typical and extremal – usage situations of stakeholders of statistics. For each scenario of user’s situation it is necessary to build the models of statistical processes and to maintain the statistical capacity that could be activate any time.
4. *Transition of statistical technology*. Modernization of statistical system by implementing new information technologies in statistics, implementing new methods, organization and techniques of statistical processes for optimal use of the ICT in businesses, governments and the development of information society. Two approaches to the transition of statistical technology shall be considered:
   1. building technological capacity of statistics for the use of statistics and for other governments of the MMS economy (e.g. in some countries statistical offices are managing the computing centers that are providing ICT services for other governments).
   2. official statistics is using the ICT capacity of national or local governments and is outsourcing other ICT activities (e.g. data capturing, interviewing, ICT systems design and management, dissemination etc.). If approach (B) is preferred, the risks and threats connected with the outsourcing shall be carefully analyzed.

(5) *Transition of statistical production* *processes*. Statistical offices of MMS economies, both the offices or services of independent states and – in case of dependent or overseas territories also the offices of surveilling countries - should elaborate the usts of *leading statistical indicators* describing the phenomena and processes in different political, social, economic and ecological situations of each particular MMS economy, with special reference to the monitoring of fragility, shocks and catastrophes that may come from outside, form external environment.

In practice in the processes of transition of statistics and adjustment to the transformation of political, administrative and economic institutions, the governments of MMS economies have the propensity to the *transplanting* of statistical experiences of their “bigger brothers”, i.e. of other countries leading in research and progress of official statistics.

The statisticians from MMS economies sometimes believe that those foreign experiences are the *best practices* for them. It seems that main reason of such *transplantation approach* of foreign statistical *best practices* is that statistical offices of almost all MMS do not have their own research and development capacity strong enough to develop original methods and systems or to adopt *creatively* the practices of other countries to the specificity of particular MMS.

In the MMS that have reached their political independence as the consequence of decolonization in XX century, the governments of the MMS economies usually adopt the institutions of former colonial states that were ruling the territories of micro and small economies and countries before they reached their political independence. Those political, economic and social models of former colonial states are not necessarily optimal for the MMS that have reached their independence and sovereignty not so long ago, in last decades of XX century. Passive *transplantation* of foreign institutions and economic policy of bigger states to the micro, mini or small countries is – as a rule – not optimal. The experiences of other countries should be *creatively adapted* to the reality of the MMS as separate socio-economic subjects.

In case of the MMS that have long tradition of political sovereignty, extended independence or autonomy (e.g. in Europe – Andorra, Liechtenstein, Monaco, San Marino), the models of governance and the models of the economy are adopted to their external political and economic environment and to the cross-border influence of neighbouring bigger countries. Those MMS have organized their information infrastructure of governments and official statistical systems by creative adaptation of the models of statistical systems of their bigger neighbors.

In MMS that in the past were the regions of federal states or other political structures and have reached their political independence or autonomy in 2nd half of XX century or later, the systems of official statistics of were for many years the integral parts of official statistics former, larger political structures, e.g. in Europe - Yugoslavia, USSR. Some domains of statistics in former provinces of federal states were not developed at all. Statistical capacity in those former provinces (republics of federal states) was – as a rule – limited to the capturing of primary data from respondents and to basic data editing. After reaching political independence the building of statistical capacity and modernization of statistical system was the priority for the governments of new independent states. In some of those countries official statistics is still in the phase of building full capacity, especially the methodological, analytical and research capacity.

The MMS that were in the past the dependent economies, e.g. former colonies, are often maintaining the model of official statistics of colonial states. The MMS that have longer tradition of autonomy or independence, are building their statistical capacity often by implementing the experiences of bigger neighbouring countries. Although many experiences and practices of statistical systems of “*bigger brothers*” may be useful, the statistical systems of new independent or autonomous MMS need deep transition to reach optimal adjusting to new political and economic situation and to changes of their external and internal information environment.

The strategy of transition of official statistics in the MMS that are the overseas provinces or dependent territories is to large extent the imitation or transplantation of the policy of national statistical offices of their metropolitan states. Statistical systems of that type of MMS are expected to be the regional subsystems fully compatible with statistical system of the country as a whole.

However, statistical practice of many countries shows that *what is good for big country, not necessarily is optimal for its small distant province,* like overseas islands or exclaves. However central statistical offices of the countries that have the exclaves, overseas islands and dependent territories usually demand from their “little brothers” the same statistical methods, indicators and organization of statistical system.

But statisticians should remember that, what is good for statistics of the Republic of France and Paris, may not necessarily be optimal for statistical system of French Guyana or French Polynesia. What is very good for statistics of Norway, may not necessarily be the best for statistics of Peter I Island on Pacific Ocean or Queen Maud Land in Antarctica. What is good for Germany, not necessarily will be good for Liechtenstein – a German speaking micro-country. Solutions good for Turkish statistics, not necessarily will be the best for the statistics of the eastern part of Cyprus.

It seems that central statistical offices of the countries that have in their structure the dependent MMS economies (no matter - *de iure* or *de facto*), organizing their systems should find the compromise between the compatibility of statistics of MMS with the “mainland” and the specific needs of stakeholders of statistics in MMS. Conducting the surveys in distant MMS may be more complicated and demanding from methodological and organizational point of view than the same surveys in the metropoly.

Main features of social and economic systems that are typical for all MMS and that have significant impact on the strategies of transitions of statistics in micro, mini and small economies are following:

* *The supremacy of information environment* created by bigger countries over the information infrastructure of MMS economy. Political independence or autonomy of MMS countries and economies has rather weak influence on the interrelations between their internal information systems and the external information environment. It seems that the duty of international statistical community (e.g. ISI IAOS, UNSC, CES) is to build the relations based on real partnership between official statistics of the MMS and official statistics developed by bigger states leading in world statistics. In globalized world economy the statisticians working in over 200 MMS countries and dependent economies should not be the “silent majority” in global statistical system coordinated by international organizations.
* *“Monoculture” of the MMS economies*. The domination of one or very few branches in the economy as a whole. In most of the MMS economies are usually one or two leading branches of economy. Those branches are often dependent on the policy of the states that create the external economic environment and the field of economic gravitation for the MMS economies; e.g. international tourism, agricultural production of one type of products, mining of one or few natural resources. The priority of official statistics is to build the system of monitoring of those branches and their impact on the economy as a whole. Special attention should be paid for statistical monitoring of shocks connected with the monoculture and on the providing of data necessary for simulation and projection of development in case of different types of shocks.
* *Domination of foreign national or transnational companies* in leading sectors and branches of MMS economies. Local businesses are often the establishments belonging to foreign companies or are depended on them as subcontractors. The MMS economy as a whole may be dependent on global policy of transnational or foreign company. Official statistics should be able to deliver to the governments and local businesses the data that help to build the scenarios of the impact of policy of those transnationals and global foreign companies on social and economic situation and the strategies of protecting the sustainability of small economy.
* *Dependence on external political* *environment*. Economic and social situation of MMS is to large extent determined by political decisions of countries that are creating their economic environments. For example, the political decisions on exchange rates of global or regional currencies, custom tariffs, embargos, ratings published by global rating institutes and other institutional factors may generate much stronger shocks in MMS economies than in bigger economies. The situation of main sectors or branches in MMS economy depends on the policy of foreign corporations that have dominating position on local market. For big corporations the markets of particular MMS economies is often small, even negligible segment of their business. At the same time those corporation are strongly dependent of politics of their own countries. Official statistics of MMS economies should provide to their governments the data that identify possible threats that may come from external political environment. Statistical monitoring of political aspects of economic decisions of the countries of residence of politics-dependent corporations should be an important objective of the transition of official statistics in any MMS economy.
* *Economic shocks and catastrophes*. Small economic shocks in bigger neighbouring or economically interrelated countries are causing deep, serious disturbances of political, social and economic processes in MMS economies that are under the influence of economic gravitation of those countries. The transition of statistics shall include the development of statistical monitoring of causes and consequences of economic shocks coming from outside.
* *Transborder economy*. The cross-border social and economic processes have strong, often dominating impact on micro, mini or small economies. For big economies the cross-border processes are of local or regional importance, while for the majority of MMS economies they have macroeconomic character. In many MMS the whole territory and all branches of the economies are under the influence of cross-border processes determined by economic situation in neighbouring bigger countries.
* *Integrity of administrative and statistical information systems*. The interrelations between governments, public institutions and businesses in the MMS are much closer than in other bigger countries. In micro and mini-economies statistical offices are usually the divisions or sections of other central governments. In small economies statistical offices are often the separate governmental units. But the capacity of those units is very limited because of budgetary limitations. Statistical surveys and censuses are realized in close cooperation with other governments or are outsourced. Because of that the activities of statistical offices and sections are – as a rule – more deeply and more directly regulated by government administration than in bigger economies. Taking into account the development of e-government the transition of official statistics in MMS should be oriented on the strengthening of methodological independence, high scientific level of methods and the use of international standards, while the processes of production of statistics may be based on organizational and ICT capacities of other governmental institutions. Centralized methodological coordination of statistical processes realized by different governmental units of the MMS economies is the *conditio sine qua non* good, harmonized official statistics. It is also possible opposite approach – building strong ICT and methodological capacity of statistical offices as the infrastructure for other governments and administrative information system of the country. This solutions is optimal for building the information infrastructure of governments in modern ICT environment.

The attributes listed above should be taken into account in the transition of information infrastructure of the MMS economies. The consequences of the specificity of the economies for official statistics are following:

* The governments of micro, mini and small economies need *more detailed information* on all internal phenomena and processes and *on all external political, social and economic processes* that have the influence or may incidentally penetrate internal processes, phenomena and branches of economy.
* Internal stakeholders of statistics in MMS need *more detailed and frequent information on particular internal economic and social phenomena*. Statistical aggregates obeying the requirement of statistical confidentiality are often to general for relevant describing and explaining of internal phenomena and processes. The stakeholders are expecting to receive statistical data concatenated with the micro-aggregates derived from administrative registers of governments and primary registers of other organizations. To meet such requirements statistical agencies should play double role:

(1) producer of aggregated statistical indicators,

(2) supplier of relevant micro-aggregates concatenated - if it is methodologically possible – with the data derived from administrative registers, primary registers and big data (“transactional data”) produced by residents in MMS economy.

* *Deep institutional and technological integration* of official statistics and administrative information systems. Statistical offices are most often the internal units of other governments (ministries or other units). Thanks to that the official statistical output data may be produced directly from administrative information systems and from big data files produced and stored by governments and businesses. Official statistical data could be produced by statistical services or by other institutions if they obey strictly official methodological standards.
* *Problem of statistical confidentiality*. In all MMS particular branch or sector is rather often represented by one of very few businesses. That means that strict obeying of the principle of *statistical confidentiality* (Amendment 6 of the UNFP) is difficult or even impossible. Quite often in the MMS there is only one business or only one single dominating business in one branch or sector of economy. In such situation statistical indicators measuring the whole branch and region are isomorphic with microdata produced by single businesses and organizations representing certain branch or region. Publishing such statistical “aggregates” for a branch or sector would be the obvious disclosure of individual data on particular enterprise. To avoid the danger of disclosure that may have negative consequences both for the trust to statistics and for the position of businesses on the market, it is necessary to redefine the concept of statistical confidentiality for MMS economies. It seems that it should be defined what data on particular enterprise are *sensitive* (and should not be published) and what data are *non-sensitive* and may be safely published as official statistical indicators even if they represent only one or very few subjects. For the needs of MMS economies the several amendments of the UN Fundamental Principles of Official Statistics (UNFP) shall be re-interpreted, e.g. statistical confidentiality, use of international statistical standards, international cooperation of official statistics.
* *Underdevelopment of research capacity of official statistics*. The solving of new specific statistical problems needs the scientific support and research works. Statistical agencies of MMS often ask for the assistance of foreign experts and international organizations. The experts and consultants are rather often the statisticians and researchers from developed and big countries that have their own statistical research capacity. Their experience and may not necessarily fit exactly to the specificity, conditions and needs of MMS economies. One can observe the propensity to the implementation or rather the transplantation of best practices of developed and big countries into narrow frames of micro, mini and small economies. The solution of the problem of shortage or research capacity in statistical services in the MMS could be the organizing of international research center specialized in solving scientific and methodological problems for all MMS (200 countries or economies).

The elaboration of optimal strategies of transition of official statistics should be one of priorities of international statistical community. The following contributions will help the statisticians from the MMS to elaborate the NSDS for their little economies:

* *The elaboration of detailed typology of MMS economies as statistical metadata standard*. The typology presented above could be used as the preliminary proposal. Official typology should contain the specification of all social and economic attributes of MMS countries that are important for precise defining of the typical behavioral situations of MMS economies. The typology is necessary to determine the priorities of transition of official statistics.
* *The elaboration of best practices exactly focused on the needs of MMS economies*. *Best practices for* *MMS* shall be based on critical analysis of practical experiences and successful solutions implemented in practice in statistical and administrative information systems in each representative type of the MMS (see: behavioral typology of MMS discussed above). Evaluation of practical experiences of selected MMS from the point of view of the satisfaction of the needs of stakeholders of statistics. The SWOT analysis of representative case studies of each type of MMS economies is recommended.
* *NSDS as the strategy of permanent transition of MMS statistics*. On the basis of the SWOT analysis the recommendations concerning the long term strategy of transition and the approaches to statistical capacity building should be formulated. The examples of best practices of transition of statistics in most advanced MMS for sure will be helpful for other MMS economies. Best statistical practices of those MMS will be more useful and much easier adaptable for their colleagues from other micro, mini and small economies than the best practices of big countries leading in world statistics.
* Interpretation of the amendments of UN Fundamental Principles of Official Statistics in the context of practical situations of official offices and information infrastructure in different behavioral types of MMS.

Conclusion

All micro, mini and small economies are the economies in permanent transition. Their statistical information systems are also in permanent transition.

The strategy of transition of statistics should be based on best practices of other of MMS economies.

The models of transition for each behavioral type of MMS will help the governments and statistical agencies to elaborate the strategies of development of statistical systems. These models should be the guidelines for elaborating of the NSDS in all MMS countries and economies.

Statistical offices of countries that are politically supervising the MMS economies (e.g. overseas provinces, dependent territories, exclaves etc.) are recommended to elaborate separate NSDS documents for those MMS .

5. MMS as fragile economies

*Fragile economy* (national economy, region, branch or sector of economy) is the economy that may lose its stability in case of relatively small extremal events, phenomena or processes.

*Fragile economies* do not have sufficient internal capacities and resources for efficient defense and reacting in case of extremal, unusual or exceptional events or phenomena. If extremal processes or events happen, they need external help to reduce and eliminate the consequences of such processes for the population, economy and infrastructure. In case of lack of external help those processes are causing in fragile economy the shocks or catastrophes in regions, branches or in the economy as a whole. For example, the region devastated by hurricane or earthquake is fragile if it needs help from other region of the country or from other countries to minimize the ravages and to restore or reconstruct the region after the catastrophe.

In the situation of *macroeconomic fragility* are – in practice – all MMS. For example, tourist sector in MMS oriented on foreign tourists from developed countries is always fragile, because it is fully depended on external factors, like the changes of political relations of those countries with the governments of MMS, the policy of tourist companies in developed countries, exchange rates of currencies, advertisement or anti-advertisement organized by competing companies, meteorological disasters in the areas of MMS, threats for safety and security in the whole MMS country.

Another example: small turbulences on labor markets and exchange the EU economy, far away from beautiful small island country, may cause deep shock not only in its tourist sector, but in the whole economy of small island country. The MMS country without sufficient human and social with capital, and in consequence the non-professional local or regional governments, is more fragile than the country with well-organized local governments, educated and professional staff on all levels of administration. The countries with relatively weaker national economic and military capacities in politically unfriendly environment are much more fragile than countries with a strong military power, reliable alliances and efficient, professional administration. The above examples prove that all micro, mini and small economies are fragile.

***All MMS economies are fragile economies***. The fragility of the MMS economies is to large extent the consequence of their dependence on external political and economic environment, on the processes of external economic gravitation and on their weaker position in the fields of economic gravitation surrounding them.

Internal social, economic and ecological phenomena may also be the cause of fragility, but in practice their influence is – as a rule – short term or incidental, although the consequences of such incidents may be long lasting or persistent, e.g. eruption of volcano or earthquake on small island is lasting few weeks or few hours, but the effects for MMS are long lasting, may be forever, the bankruptcy of main employer in micro-economy is an event, but can destabilize the labor market of the whole MMS for long time, destabilization of political system because of conflict between competing politicians may cause long-term destabilization of the whole small country.

The following behavioral situations of MMS should be distinguished:

* *shocks,*
* *catastrophes.*

Exaggerating a bit we may say that the MMS are the *economies permanent in shocks*. in this sense, that the events or phenomena negligible for bigger countries are generating deep shocks in the MMS that are in the *field of social or economic gravitation* of bigger countries.

The governments, businesses and society of MMS are (or should be) prepared for counter-reaction in case of shocks that happen with relatively high frequency. For example, in small island countries the economy and population are – as a rule – prepared to survive seasonal hurricanes up to some scale. In seismic regions the governments, population and businesses are prepared for relatively small earthquakes. Monoculture MMS economy shall be prepared for rapid dropdown or raise of the prices for its product. Tourist sector of MMS economy shall be prepared to survive rapid decrease of the number of tourists caused by the fluctuations of exchange rates of currencies, political turbulences or weather conditions.

Extremal external or internal phenomena or processes may cause not only shocks, but also economic or social catastrophes. General concept of *catastrophe* defined in the *theory of catastrophes* elaborated by French mathematician Rene Thom and developed by E.C. Zeeman[[5]](#footnote-5). Rene Thom defined *a catastrophe* of a system (technical, economic, social, ecological) as such qualitative and quantitative change of attributes of a system that the system belonging to one class is transformed into the system of quite different class.

For example, the road accident hopefully without injuries of passengers – is a *catastrophe* if the car is transformed from nice, comfortable vehicle into 2 or 3 tons of scrap metal. The *catastrophe* of the Tchernobyl nuclear power station in Ukraine in 1985 had transformed beautiful rural and forest regions of neighboring Belarus into depopulated land for many decades or may be forever. The hyperinflation caused by financial policy of government will be the catastrophe for many businesses and households using local currency, wasting their savings, real value of incomes, the profitability of contracts and the destruction of economic stability of national economy for couple of years. Deep change of tax and customs tariffs introduced by sudden political decision of the government may bring thousands of effective businesses to the status of bankruptcy and to their disappearance from national or regional market.

The MMS are sensitive to unexpected events or phenomena, especially happening in other countries and influencing the MMS via the powers of economic gravitation. Political, economic, social or ecological turbulences in external environment may easily generate the catastrophes of whole MMS economy. The duration of the catastrophe and its consequences for the MMS depend on individual characteristics and peculiarities of the economy and its resistance on the phenomena and processes generating the catastrophe.

Official statistics of MMS should be ready not only to monitor the shocks and catastrophes themselves, but also to observe and measure the interactions between the phenomena and processes causing particular catastrophes and the ex post situations, after catastrophes.

Statistical systems and statistical institutions of MMS should forecast by them own the statistical requirements of governments, businesses and societies in regions, branches of economy and social groups imperiled by catastrophes caused by external factors. Official statistics of MMS should prepare the specification of all possible and probable shocks and catastrophes and to maintain the statistical information systems for continuous dynamic monitoring of shocks and catastrophes:

* internal and external phenomena and processes that may cause the shocks or catastrophes inside the MMS,
* peculiarities of *“shocking”* or *“catastrophic”* phenomena and processes, i.e. building *ex ante* statistical models of economic shocks and catastrophes using special methods and – if necessary – organizing special surveys,
* behavior and activities of governments, businesses and society during the shocks or catastrophes,
* *ex post* activities and behavior of governments, businesMMSs and society after a shock or catastrophe, to bring the MMS to the *status ex ante* or to new state of economic and social equilibrium.

*In all MMS economies the shocks and catastrophes have macroeconomic character.* They hit directly or indirectly all branches and sectors of small economy. In bigger countries the same type of shock or catastrophe that is the disaster for MMS as a whole, could be local or regional event, or may penetrate the part of the branch or sector of economy. In big countries many shock or catastrophes have local influence and are negligible from the point of view of national economy as a whole. The same phenomena that are negligible for the whole economy of big country usually have total influence on all branches and territory of neighboring MMS countries. Small economic shock in big country may be felt in neighboring MMS economy as total macroeconomic catastrophe. Official statistics of MMS should be ready to inform the governments and businesses on all such threats.

For example, the hurricane in Mexican Bay is the local catastrophe in few cities on the seashore, but it is negligible for American economy and society as a whole. Moreover American businesses in other regions of this big country can benefit from local catastrophe, if they get contracts for rebuilding of devastated region. The same hurricane brings total catastrophe for small island countries of the Caribbean Sea with long-lasting consequences for their societies and economies. Deep dropdown of prices for bananas in bigger country producing bananas as one of many other products, will cause local temporary shock in this particular branch of agriculture, while the same phenomenon in micro or mini-economy may cause macroeconomic and social catastrophe.

Economic or social catastrophes are caused by extremal processes and events may happen any time in any country, region or sector of the economy. Well organized states and developed economies are resistant to economic shocks and local catastrophes of different nature and scale. They have usually enough internal capacities and resources to absorb the results or reduce the impacts of shocks on societies and economies. They have also the tools for minimizing the consequences of catastrophes and for rebuilding the regions, branches or subjects to the status before catastrophe, or even to new, better status, e.g. to reconstruct old tourist village devastated by tsunami into modern, safe resort, to rebuild the town ruing by terrorists into modern smart city. That is not possible for MMS countries and economies.

Less developed economies and fragile states are – as a rule – not fully resistant on the shocks and catastrophes. They usually do not have their own capacities and resources sufficient for reacting in case of shocks and catastrophes. Because of that the reduction or elimination of results of shocks or catastrophes may take long time. It may happen that after the catastrophe the economy as a whole, the branch of economy or region of the country change their character forever.

For example, in the beginning of the 90th in some countries of Central and Eastern Europe the processes of transition from centrally planned to market driven economy were typical catastrophes exactly fitting to the definition of Rene Thom. The peculiarity of those catastrophic processes of transition is that the causes of catastrophe of shock therapy were not the objective economic processes but the political decisions of ideologically motivated people not very well educated in economics that incidentally took important positions in central governments of some countries. Those economic catastrophes caused by erroneous political decision were officially named the *transition by shock therapy*. So called *shock therapy* was in fact the devastation of many branches of economy that were developed and adjusted to economic system of centrally planned economy.

Many enterprises in the transition countries that were properly functioning in non-market economy (so-called *centrally planned economy*) occurred to be not effective in open, global market driven economy, but their economic and technological resources created during the period of centrally planned economy did not lose their industrial and technological value and could be used also in market economy, if they had time and institutional support for smooth transition from non-market to market driven economy. From the light of *theory of catastrophes*, the *shock therapy* applied in many post-communist MMS countries in the beginning of the 90th is good example how easy deep, long lasting macroeconomic catastrophe of MMS economy can happen.

Except some ecological catastrophes (eruption of volcanos, earthquakes, hurricanes, droughts, floods etc.) most often the causes of economic shocks and catastrophes are generated outside the territory of MMS, in neighboring bigger countries, in external economic environment and in the countries that create the fields of economic gravitation.

Because of small internal resources and economic capacities the MMS have very limited possibility of contraction against strong shocks and catastrophes coming from abroad. The resistance of MMS to the shocks and catastrophes is usually very weak. But at the same time the ability of MMS to overcome the consequences of shocks or catastrophes with the help coming from outside is relatively strong, if the MMS economy has its own human, social and institutional capital willing, ready and capable to absorb the external help in optimal way. For that the governments, businesses and society of MMS economies need the information delivered by official statistics in proper scope, time, and form.

Main strategy of MMS of the defense against the shocks and catastrophes coming from outside is to build economic and infrastructural system capable to elastic adaptation to the conditions created by the extremal events and processes, to survive most critical situations, and to accumulate the resources needed for quick and efficient recovery and reconstruction of economy after the catastrophe or shock. Safety and security of MMS should be based on its adaptability to extremal situations and its ability to activate alternative factors of social and economic development. Official statistics should be ready to identify and measure those factors.

The governments, businesses, social, political and economic organizations should build the systems of safety and security protecting the population, economy and environment of country, regions and branches of the economy in case of particular kinds of shocks and catastrophes. For example, the island micro-economy fully dependent on foreign tourism should develop alternative branches of economy that could be activated in case of rapid and deep financial or political turbulences in the countries from which the tourists used to come, like fishing, export of local agricultural products usually used by domestic tourist industry, and in extremal situation – organized temporary emigration of workers to other countries. The governments should also elaborate the scenarios of applying for foreign and international help in case of extremal shocks and catastrophes.

Official statistics of MMS should be ready *ex-ante* to deliver to the governments and other institutional stakeholders responsible for safety and security of country, region, branches of the economy or social groups of population the data needed for elaborating the following scenarios:

1. *scenarios* describing potential extremal situations and processes, and their impact on social, economic and environmental systems,
2. *scenarios of reaction and counter-action* of governments, businesses and society *preceding* the events or in case of extraordinary events, catastrophes and disasters,
3. *scenarios of reaction and counter-action* of stakeholders during the extraordinary events, catastrophes and disasters,
4. *scenarios of activities of stakeholders* after the extraordinary events, catastrophes and disasters, restoring the country, economy and society and strategies of development after the periods of catastrophes and disasters.

Those four types of statistical scenarios should be used for defining potential information needs of stakeholders, to select or develop new indicators, new methods, organization and techniques of collecting and submitting *pertinent* information to the users *just on time*, in proper place, in clear form, understandable language, accessible information technology.

Official statisticians as the statisticians in any fragile country or region shold remember famous ancient Roman proverb: *Si vis pacem para bellum*. The mission of official statistics of MMS as fragile economies is to build professional information infrastructure supplying relevant, pertinent, reliable, complex information on shocks and catastrophes to all governments, businesses, media and population.

Official statistics should be ready to deliver statistical information on any extraordinary phenomena and processes ***ex ante, during***and***ex post*** catastrophes and shocks. Producing and providing such information to all stakeholders is the duty of modern official statistics in all MMS countries and economies.

Informational support of governments and other subjects in MMS economies exposed to the shocks and catastrophes needs the permanent maintenance of statistical capacity, methods and information systems “specialized” in *dynamic monitoring* of all phenomena and processes related with probable and possible shocks and catastrophes:

* statistical monitoring of all phenomena and processes in external environment that could be the sources of shocks or catastrophes, with special reference to seasonal or situational extremal phenomena influencing the MMS economy,
* statistical monitoring of internal phenomena and processes that may generate shocks or catastropic phenomena,
* *early warning information systems* on shocks and catastrophes for governments, businesses, social services and population,
* *informational and analytical support* of statisticians in building the models simulating the shocks and catastrophes, elaborating the scenarios of necessary behavior and actions of governments, businesses and society during the processes of shocks and catastrophes, projection and forecsting of consequences of shocks and catastrophes for the whole MMS,
* information systems supporting governments, businesses and society in the period after shocks or catastrophes, monitoring the processes of the *ex post* reconstruction of economy, all kinds of infrastructures of MMS, ecological resources, human and social capital.

Official statistics can also be helpful in the elaborating of the specification of all kinds of shocks and catastrophes, building theoretical models of each type of shocks and catastrophes, methods of measuring the ex ante, during and ex post phenomena for all particular types of shocks or catastrophes for each single MMS economy.

Having in mind high sensitivity and small resistance of MMS economies on external and internal turbulences, the governments, businesses, society and official statisticians in their everyday work are recomended to derive proper conclusions from famous ancien Roman proverb mentioned above: *Si vis pacem para bellum*. [[6]](#footnote-6)

6. MMS as transborder economies

All MMS are the ***entire parts of* *transborder economies*** that on the territories of two or more neighboring countries. For the MMS the cross-border processes have macroeconomic character. May be except some very distant islands on the oceans.

There is qualitative and quantitative difference between the scale of the impact of cross-border processes on MMS economies and on bigger national economies. For bigger countries the cross-border processes have regional or local character. Because of that the economists and governments of bigger countries are treating the *transborder economies* as regional, peripheral phenomena in the territories located close to their borderlines. In most of the countries and in international statistical organizations the statistics of transborder phenomena is often not included at all into the programs of statistical surveys as separate domain of official statistics. For official statisticians of those countries and organizations the foreign trade and regional statistics and regional statistics seem to be sufficient place for monitoring and explaining the cross-border processes [[7]](#footnote-7).

The approach to *transborder economy* as regional economy and the treating of *transborder statistics* as small aspects of foreign trade and regional statistics could be acceptable only in big countries in which the transborder economies exist on the distant peripherals of national economy, far away from their industrial and economic centers. However the same approach to transborder economy and transborder statistics in middle-size countries is misleading, if transborder processes penetrate significant parts of the territory or cover the space of important economic centers. It means that the data produced by official statistics covering only the administrative borders of countries and regions are uncomplete not only from the point of view of regional governments and businesses but also for central governments.

The ignoring or the underrating of transborder statistics as separate domain of official statistics in Europe seems to be the serious gap in the European Statistical System, because large part of the territory of the European Union is covered by cross-border processes. For example, the Association of European Border Regions (AEBR) has elaborated and published in 2014 the map of delimitation of European transborder economies[[8]](#footnote-8). The map shows that over 2/3 of the territory of European countries is under the influence of transborder processes. This map also clearly shows that all European MMS are fully the entire parts of regional transborder economies (see: *www.aebr.eu*).

It seems that the time has come for international statistical organizations to accept transborder statistics as separate domain of official statistics. Transborder statistics should be included to the international programs of methodological works, elaboration of statistical standards, programming and coordination of surveys. Special assistance in developing methods and tools of statistics of transborder processes and economies should be given to official statisticians of MMS countries. The statisticians of MMS economies have limited possibilities to elaborate those methods and tools themselves because most of statistical offices of MMS do not have nor their own research and methodological capacities nor the possibilities of convincing the international statistical organizations include the issues of tranborder statistics to the programs of joint research works.

In MMS that have land borders with other countries, all cross-border phenomena and processes have direct or indirect *macroeconomic* impact on the whole economy and society. In that situation the statistics based on microdata collected from the residents is not sufficient for measuring, explaining, evaluating and taking proper decisions by governments and businesses of the MMS.

Statistical monitoring of transborder economy of MMS should be focused first of all on cross-border processes that are determining the dependence of MMS economy and society on their external political, social and economic environment. The following cross-border processes are of utmost importance:

* *transborder energy infrastructure* supplying the energy to the MMS economy from power stations located in transborder economic space; power stations of the MMS and neighboring countries supplying energy to the MMS economy, e.g. water-power plant on the border river commonly;
* *transborder water infrastructure,* e.g. economic activities on transborder rivers, lakes, MMSashore areas;
* *transborder transportation infrastructure*, e.g. airports, railroads, highways, harbors etc. placed in transborder area of MMS and uMMSd as basic infrastructure by businesMMSs and population of MMS economy;
* *transborder social infrastructure*, e.g. health care facilities, educational institutions, cultural institutions, tourist and recreation facilities places abroad and uMMSd by the MMS population and businesMMSs as main resources;
* *infrastructural facilities protecting security and safety* in transborder areas, for all MMS the transborder area covers the whole country and economy;
* other cross-border processes specific for particular MMS economies and the transborder economy as a whole.

Conclusion

Transborder statistics is the domain of high priority for all MMS.

Monitoring of cross-border processes and of their impact on the MMS economy as a whole should be the integral part of the system of official statistics.

In open, globalized, institutionalized, market-driven economy it is necessary to elaborate original statistical methods and techniques of delimitation, identification and measuring of transborder phenomena and processes. Those methods and techniques should be optimally adjusted to the specificity and capacity of each particular MMS country and economy.

7. Methodological gaps between international statistical standards and the information needs of MMS

It is obvious that in globalized world official statistics is one of most important information systems that are creating the foundations of knowledge of any government, social organization and business. Because of that the developing and maintaining of the systems of official statistics optimally adjusted to the specificity and peculiarities of countries and economies is the duty of all governments and international statistical organizations.

The countries that are the members of international organizations coordinating global system of official statistics are expected to harmonize their national statistical systems with the standards recommended by those organizations. Those international statistical standards are developed from the point of view of the needs of international organizations: United Nations, specialized organizations of UN like ILO, FAO, WHO, WTO, WOPO, UNESCO, UNICEF, UNIDO, UNDP, HCR etc. and associated organizations like IMF, World Bank. In the processes of designing and changing international statistical standards the priority is given to the international comparability of data. The adjustment of standards to the needs of stakeholders of particular countries is of secondary importance. It seems that the importance of the needs of micro, mini and small countries is even third-rated.

Main objectives of international statistical standards are:

* *international* *harmonization* of statistical concepts and definitions, metadata and methodology for all domains of statistics,
* *international* harmonization of criteria of integrity and comparability of statistical indicators;
* *global transparency* of national statistical system enabling the interchange of statistical data between countries and international organizations;
* *international coordination* of programs of statistical surveys;
* *unification* of criteria and methods of control of quality of statistical data;
* obeying the Fundamental Principles of Official Statistics, ISI Code of Statistical Ethics, EU Code of Statistical Practices and other official documents on statistical ethics and mission of official statistics;
* *coordination of global statistical actions*: statistics of MDG, censuses of population, censuses of agriculture, specialized surveys and systems of statistical monitoring of global, supranational, international and transborder economic and social processes e.g. international and transcontinental migrations, international trade, diffusion of health processes, epidemic and pandemic phenomena, banking and financial processes, transport, telecommunication, ecological transnational processes, phenomena of climate changes, transnational and global stability of energy systems, use of non-renewable resources, etc.;
* harmonization of statistical indicators important for decisions taken by international organizations, e.g. classification of countries from the point of view of economic development (UN), data used for evaluation and rating of countries from the point of view of financial stability (IMF).

Basic subject in global statistical system is national economy. For macroeconomic statistics there is no difference between the national economies of USA, India and San Marino. International organizations are expecting to receive the same macroeconomic indicators from so extremal different countries. It seems that in globalized, open economy the standardization of statistics should be realized on three levels:

* *global common denominator* *of statistical standards* recommended or mandatory for all national economies of the world, independent on their size, potential, level of development and external political, social and economic environment;
* *statistical standards for general types of economies* depending on their size, level of development and external environment; MMS are one of such general types of economies;
* *statistical meta-standards,* i.e. the generic standards determining the methods and approaches that should be obeyed standards by national or local statistical offices in the processes of elaborating specific standards for particular countries, regions or branches of economy.

International standards (laws regulating statistical activities, classifications, nomenclatures, definitions of concepts, input and output indicators, methods of designing metadata, surveys, forms and questionnaires) are oriented on the indicators used for global analyses and international comparisons. It could be the conflict of interest between the needs of standardization of international organizations and the needs of different types of national economies, especially micro, mini and small economies.

International standards are oriented for the needs of international organizations. Those standards are also coherent with the needs of large economies and – to some extent – for middle-scale economies that are most active, dominating players on global or regional markets. One of the reasons of the relevance of international standards with the needs of big countries is that most of international standards and methodological recommendations are elaborated by the statisticians that represent the expertise of large or middle-size countries. Because of the variety of situations of different MMS economies it is difficult to elaborate such global standards that would be at the same time relevant for measuring global processes and the phenomena in differentiated community of MMS.

Because of that the international statistical standards often do not represent sufficiently the specificity of monitoring and measuring the phenomena and processes in different MMS, especially statistical observation of extremal and extraordinary events and evaluation of fragility of MMS. Standard statistical indicators that follow the methodology and practices good for big economies may be not relevant and even misleading for MMS economies.

Some standard statistical indicators required by international organizations are useless for governments and businesses in micro and small economies. On the other hand the governments, businesses and societies of micro and small countries need specific statistical data that are not envisaged in international recommendations.

Usually standard statistical methods, tools and orgware recommended by international organizations as *best practices* were developed as the result of successful experiences of statistical offices in large or middle-scale economies (e.g. typologies of statistical units, statistical frames, sampling procedures and size of samples, statistical confidentiality rules etc.). The implementing of those methods and practices needs the capacity and resources that overcomes the possibilities of the MMS. Standard methods that are good for large economies are often excessively expensive for MMS, sometimes not applicable and they do not correspond with the information infrastructure of governments and economy of the MMS.

Because of that, the transplantation or other forms of direct implementation of international standards and best practices approved by international statistical community cannot be efficiently adopted in the MMS, especially in *micro* and *mini economies*.

It seems that the MMS statistical services should adopt creative approach to the use and implementation of those standards. International statistical standards should be treated by MMS statisticians as the generic platform for building specific national standards relevant for particular MMS.

Four basic approaches to the adopting and implementing of international standards and best practices should be considered by statistical agencies each particular MMS:

* 1. *Transplantation approach* - direct implementing of international standard or best practice in statistics of MMS;
  2. *Gateway approach* - building gateways between existing standards and internationally recommended or used standards, i.e. building correspondence tables for classifications and nomenclatures, algorithms for recalculation of indicators, conversion procedures etc.;
  3. *Creative adoption approach* - designing specific national standards on the basis of international standards and best practices;
  4. *Original national standards* - building statistical standards originally adjusted to the needs of particular MMS, i.e. standards needed for statistical monitoring of phenomena and processes specific for particular MMS.

Main obstacle of implementing the approaches (B), (C) and (D) in MMS statistics is the shortage of researchers and methodologists that have time and resources to design original standards optimally adopted to the specificity of their country and economy, to redesign international standards adopting them to specific conditions of the MMS or to build the gateways between their standards and international standards. In my statistical practice I never met in any MMS the statistical office with research and development institute or special methodological department involved in the elaboration of original methods and standards. Usually if MMS statistical agency is facing any methodological or standardization problems, it is asking the international organizations or collaborating friendly states for help expecting direct transplantation of foreign best practices and international standards. Such approach will for sure solve quickly the problem of production of data comparable with international standards and coherent with the needs of international organizations, but may not solve the problem of production of data pertinent to the needs of local governments and businesses.

This specific conflict of interests between friendly statistical organizations could be solved, if it were created the joint research institute integrating the scientists, methodologists, technologists and experienced managers of statistics specialized in solving specific problems of MMS statistics and representing the interests of “little brothers” on high international for a of global statistical system.

Conclusions

International standards and best practices of developed countries do not take into account sufficiently the specificity of particular MMS.

Particular MMS need original methodological, organizational and technological approaches and legal frameworks for their information systems of official statistics. It is necessary to elaborate statistical methods, standards and tools relevant to the specificity of MMS economies.

Statisticians in MMS should critically evaluate the development and use of

a) international standards and best practices,

b) methods of building gateways between metadata,

c) methods of adapting of international or foreign national statistical standards to the specificity of particular MMS

d) methods of developing original national standards in particular MMS.

Official statistics in micro and small economies should be based on creative adoption of international standards and best practices of leading national statistical offices to the specificity of micro and small economies.

The guidelines of NSDS should contain the chapters explaining what approaches of developing national statistical standards are optimal for MMS. In the Guidelines different functional and organizational models of statistical systems for particular general types of MMS shall be presented.

International joint research institute integrating the scientists, methodologists, technologists and experienced managers of statistics specialized in solving specific problems of MMS statistics and representing the interests of “little brothers” on high international for a of global statistical system shall help over 200 micro, mini and small countries and economies to be real partners in global system of official statistics.

8. Relevance of statistical methods and indicators for MMS economies

8.1. Relevance of macroeconomic standard indicators

All international organizations are collecting statistical data from all their member-countries. Main objective of those data is the realization of statutory competences of these organizations. The scope of data and the methodology, metadata standards and criteria of data quality are elaborated by those organizations and represent their information requirements. One of important criterion of quality is their full, global international completeness and comparability of data from all national economies, from *San Marino* and *Tuvalu* to *China, USA* and *Russian Federation*. Good and well documented example of such approach is the IMF system of SDDS[[9]](#footnote-9).

Internal statistical needs of governments, businesses and citizens of the countries and economies providing their statistics are of secondary importance to the international organizations. For big and middle-size countries most of data produced on request and according to the methods and standards of international statistical organizations are useful also for internal needs. However for micro, mini and for many small economies large part of these indicators is not relevant for proper describing and measuring the phenomena and processes in MMS. The production of them is an excessive burden put on respondents and official statistics on MMS. Social or economic sense of macro-indicators describing the micro-economy is not interpretable and the decisions taken on the basis of such indicators can be erroneous.

For example, macroeconomic categories of the SNA - like famous index of growth of GDP or GDP per capita - are not very useful for evaluating the economic situation and stability of the micro or mini-economy fully influenced by cross-border processes generated by bigger neighboring economies and for formulating the proposals of the reaction of governments on economic shocks.

The shocks generated in the external field of economic gravitation by more powerful economies may cause the changes of numerical values of macroeconomic indicators without any consequence for real sphere of small economy. Happily some small economists have good economists, politicians supported by professional statisticians and are avoiding obedient execution of recommendations of “international experts”; e.g. pragmatic reaction of governments of Iceland and Estonia on deep dropdown of national GDP and rapid raze of rate of central government budget deficit to GDP, that was caused by global financial turbulences round 2008. The governments of those two small countries knew well that the extremal values of macro-indicators were caused not by real economic processes, but by financial speculations of foreign banks that had registered their branches and sub-offices in Tallin or Reykiavik.

The relevance of standard international macro-indicators for MMS may be improved by the interpretation of general statistical concepts in the context of concrete micro, mini or small economy. This contextual interpretation means that values of statistical indicators, especially the changes that could be the symptoms of economic or social shocks, should be explained as the effects of phenomena or processes taking place in the fields of economic gravitation of MMS, transborder economy or within its external economic environment.

Deep, more sophisticated, interdisciplinary *contextual interpretation* of standard statistical categories and indicators is very helpful for understanding and explaining economic or social paradoxes of values of indicators, e.g. high increase of unemployment rate and thigh increase of incomes and expenditures of households can be easily explained if the data are associated with non-registered emigration of young men from MMS for seasonal or long-term work abroad and the non-registered remittances of their salaries to their families in MMS. For bigger economies such processes are often negligible, but for the MMS they have – as a rule – macroeconomic character.

Official statisticians of MMS should be offered by international statistical community the guidelines helping them to adjust the interpretation of general statistical standards to concrete usage situations that may happen in their countries and economies. Of course the MMS statistical offices should realize their obligations delivering the data to international organizations and realizing censuses and other surveys according to multi-annual programs of global statistical system. However those activities should rather be treated as the easement for international organizations not replacing other surveys and services for domestic users.

8.2. Relevant leading statistical indicators

For each particular MMS economy it is recommended to elaborate the list of leading statistical indicators characterizing real economic and social processes realized under the influence of external economic environment. As it was mentioned above, the MMS are as a rule the monoculture economies with one or very few dominating sectors and one or very few businesses in each branch of economy.

For example, the micro or mini island economies have often only one, two or three leading branches: fishing, tourism and one type of agricultural production. Other economic activities may be also developed but they play the role of auxiliary activities, e.g. transport of tourists, production of domestic food for tourists etc. Leading statistical indicators should be focused on those two or three branches. The other data should be interpreted in the context of those branches.

Selection and identification of leading economic indicators specific for each particular MMS is the mission and duty of official statistics on each MMS. Proper identification of leading indicators and the organizing of surveys, capturing and processing of leading indicators should be given high priority not only by statisticians, but also by governments of the MMS.

8.3. Symptomatic data

In MMS the macroeconomic social or economic situation may depend on single phenomenon or process. For example in monoculture agriculture of small country the crops are depending on ecological events or on the shocks on global market. Micro-economy depending on foreign tourism fully depends on the efficacy of marketing in the countries generating the demand for tourist services, exchange rates of currencies, probability of ecological shocks in the MMS and on political situations both in the MMS and in the countries from which tourists are coming. Official statisticians may help the governments and businesses of the MMS to take proper decisions and activities by delivering them the data on the symptoms showing or predicting the changes of the factors that have the impact on strategic branches of MMS and on social processes.

For example, the increase of differences of wages and salaries between the MMS and the countries of the external environment should be interpreted as the symptom of the emigration of best labor force. For micro-economy such emigration may cause the demographic shock and – in long term – the processes of depopulation of small economy.

8.4. Traced data

The governments and businesses of MMS need quick statistical information enabling them to react on external stimuli and shocks. “Traditional” production of statistical output data takes to much time and the frequency of statistical observation is to rare. Statistical offices produce relevant, but not pertinent data. The gap between relevance and pertinence of statistics can be reduced by the use of so called traced data, i.e. the capturing of statistical data that are not directly meeting the needs of end users, but they could be used as the basis for estimation of the values of final statistical categories.

For example, local governments and businesses of beautiful Antigua and Barbuda may not be interested what is the direct number of mobile phones are log in every day. But statistical services on the basis of login of this small island country can and should estimate what is the number of tourists visiting this country, where they are coming from, how long they stay. And concatenating those information with the sample data on expenditures of tourists the statisticians should be able to deliver quick estimates on other economic phenomena not waiting for a year and a half for annual GDP estimates.

For example, the government of San Marino may not be interested on the number of postage stamps sold by local post office. But statisticians of San Marino know, that almost all tourists visiting this oldest European republic immediately after climbing to the center of the town are going to the post office buying the postcards and beautiful stamps. The number of postal stamps is precise, cheap and daily monitored traced data on tourist movement in San Marino.

Trace data approach is used by some central banks for quick estimates of business cycles and for forecasting of possible shocks. For example, long lasting experience in the identification and use of traced data have Federal Reserve, Bank of England and Banque de France. It seems that because of high usefulness of traced data in MMS the statistical offices of those economies can be encouraged to pay the attention to that approach in vereyday statistical practice.

8.5. Concatenated monitoring

In modern ICT environment official statistics shall include to its methods and techniques the current statistical monitoring. The frequency of statistical observations and measuring of economic and social phenomena shall be adjusted from one side to the needs of stakeholders, and from the other – to new technological possibilities of cheap and immediate data capturing and processing. Statistical monitoring is used in some domains of statistics, e.g. financial sector, energy, transport, retail trade managed by international or national corporations etc. Statistical monitoring is replacing traditional, cyclic (annual, quarterly) surveys.

Next step of progress of statistics is the development of methods and the implementation of *concatenated monitoring*. Complex and total digitization of all information systems and resources of governments and businesses shows that nowadays it is possible to implement the *concatenated monitoring* of social and economic processes and subjects.

The *concatenated monitoring* means that the production of relevant and pertinent data and the realization of analyses and projections of social and economic phenomena is based on data captured from:

(a*)*”traditional” *statistical monitoring*,

(b) *administrative records and registers*,

(c) *primary registers of businesses*,

(d) *transactional data* i.e.so-called *big data*.

The data derived from these four sources should be edited, verified and harmonized from methodological point of view. Basic problem of harmonization of those data is conversion of data from different sources to one common metadata platform (thesaurus of term, classifications and nomenclatures, harmonized identification of subjects, objects and events).

Analyzing and projecting the development of the needs of stakeholders of statistics it seems that the *concatenated monitoring* of social, economic and ecological phenomena and processes will be – sooner or later – the future of official statistics of the MMS.

8.6. Early warning systems

It was mentioned above that - from statistical point of view - all MMS should be treated as fragile economies. The fragility means that relatively small social and economic fluctuations or variations may cause macroeconomic shocks. Stronger impulses may cause sectoral or macroeconomic catastrophes. The governments and businesses of MMS need strong information support and simulation models enabling them to predict in advance possible shocks or catastrophes.

The projection of impact of the processes or events taking place in external environment of MMS is the main function of early warning information systems. Those systems need complex information integrating data from different sources: statistical surveys, administrative registers, primary records, big data, scientific information, technical and ecological information systems. In government structures of bigger countries there exist many offices and institutions responsible for the development and management of official information systems. Official statistics is one of them. But in the MMS official statistics is the main governmental institution that has (or should have) the capacity of collecting and integrating quantitative data from different sources for building the early warning systems.

8.7. Syndrome approach

For statistical analyses and projections of social and economic phenomena and processes in the MMS we shall also consider the use of so-called *syndrome approach*. The *syndrome approach* in information science means that the information systems or information resources are built on the basis of semantic maps (frames in expert systems). The relations linking the indicators and other chunks of knowledge in semantic maps are (a) cause-effect relations, (b) coincidental relations. Semantic maps are in practice the tools of modeling of complex, multi-dimensional, dynamic processes. They describe the syndromes composed of many different phenomena and processes.

Syndrome approach is very useful for building the information foundations for governments and businesses in case of shocks of catastrophes. For example the *earthquake syndrome* is the approach that means the building of semantic map of information identifying all possible threats connected with the shocks or catastrophes that may be caused by earthquake, hurricane or tsunami, information necessary during the process of rescue, reconstruction after the catastrophe and information needed for prevention of consequences of ecological shocks or catastrophes. In the *syndrome approach* the semantic maps is identifying and linking data on infrastructures, real estate, households, businesses and the data on other objects that are participating of may participate in the future in some concrete complex processes.

According to my knowledge the official statistics is not using up to now the syndrome approach as the method of modeling and building statistical information systems. But we can observe in statistical practice the approaches that are typical implementation of *syndrome approach*. For example, such approach is commonly adopted for the implementation of the system of SNA in fragile countries and sensitive economies in extraordinary situations that are very common in many regions of the world. This approach was called Fernand Cowboy syndrome. This term and the concept of the *Fernand Cowboy Syndrome* were inspired by French classic pastiche of American Westerns from the period of colonization of the American Wild West, entitled *Fernand Cowboy* (the film was produced in 1956)[[10]](#footnote-10).

Fernand, young French dandy, inherited a saloon of his aunt in a little town on the Texas prairies. In one of first scenes of the movie, Fernand is traveling in a stage-coach through the prairies, carefully learning English from his French-English phrase–book, repeating all the time only one sentence: *Three red roses are growing in the garden of my aunt*. During the journey the stage-coach is attacked by bandits, some passengers are killed and wounded, the coach is attacked by Indians, later - an earthquake and a tornado with huge floods. Fernand sitting in the coach all the time is diligently learning his English by repeating the same phrase *Three red roses are growing in the garden of my aunt*. Finally, when the coach arrives in *a little town in Texas*, Fernand is asked by the inhabitants seeing the coach full of dead and wounded passengers inside, what has happened. Fernand cowboy looks into his French-English phrase-booklet and answers: *Three red roses are growing in the garden of my aunt*.

It seems to me that official statisticians behave like Fernand Cowboy traveling in the coach through American prairies. I am sorry for referring to actual (February 2017) tragic examples, but the indicators *Quarterly regional GDP per capita in constant prices* or the indicators *Regional quarterly GDP per capita* are much less informative for local and national governments of small island countries devastated by hurricanes and tsunamis and for the NGOs trying to help the inhabitants of those regions suffering because of economic erroneous decisions of governments or international corporations, political instability of MMS, natural disasters, than *Three red roses* *growing in the garden of my aunt* recited by *Fernand Cowboy* to the inhabitants in a little town in 19th century Texas prairies.

It seems that the term *Fernand Cowboy Syndrome* represents well the essence of the phenomenon of methodological gaps between the traditional methodological approaches dominating in international standards and methods that could be much more efficiently used in MMS as well as in many other fragile countries, regions and branches of economy. The concept of the *Fernand Cowboy Syndrome* is rather picturesque and – thanks to that - seems to be useful for explaining to non-professional end-users of data as well as to professional official statisticians limiting their activities to global standards, the importance of the problem of relevance and pertinence of official statistics to existing situations of countries, regions and branches, and the necessity of its adjustment to the dynamics of processes and phenomena in a globalized world, to rapid changes of the social, economic and natural environment and to the changes of real information needs of end-users of statistics.

Conclusion

The *syndrome approach* seems to be useful especially for all MMS countries and economies as the basis for statistical capacity building and for strategic planning of development of official statistics. It would be useful to elaborate the models (semantic maps) of the syndromes of most important social and economic situations that need complex information support from the part of official statistics. The monitoring of phenomena and processes of syndromes should be taken into account in the NSDSs of any MMS.

9. Hierarchy of competences of official statistical services of MMS

The following *differentiae specificae* between the competences of the MMS systems of official statistics, and the competences of statistical systems of big and middle countries are important for elaborating the strategy of implementation of standards and best practices by MMS statisticians:

1. In the MMS the official statistical services are organizationally integrated with government administration. Statistical offices in big and middle-scale national economies are – as a rule – separate, relatively autonomous central offices, while in MMS the statistical offices are often the sub-units or sections of other governments. Separate central statistical offices exist in some number of *small* economies, but not in *micro* and *mini* economies.
2. In the MMS the most of statistical production systems are realized by government administration. The competences of national statistical services are limited to the programming and coordination of surveys, methodological supervision of surveys, compiling official statistical output data and editing of publications on the basis of aggregated data received from other governments.
3. Direct organizational relations of statistical services and government administration facilitate – in theory, but not necessarily in practice - the use of administrative records for statistical purposes. Statistical output data can be produced directly within the frames of administrative information systems, e.g. tax systems, social insurance, vital registration and other administrative registers and big data. Official statistics is receiving the aggregated data for publication in the form of statistical yearbooks and bulletins, statistical databases and warehouses.
4. Organizational links between statistical services and government administration in MMS cause the *diffusion of competences* of official statistics and government administration. There are two important consequences of that diffusion of competences: (1) positive – more easy access to administrative records, big data and IT resources for statistical purposes, (2) negative – the propensity of government administration to use the identifiable microdata collected during statistical surveys for administrative purposes, as any other administrative data. That means the breakdown of the principle of statistical confidentiality.
5. Organization integration of statistical services of MMS within the frames of government administration means that statistical offices are in large extent the *copies* of that administration. It may have negative impact on the statistical capacity building. For example, in typical of government administration the R&D units do not exist. If governmental unit needs scientific support, it is looking for external research units, universities and free-lance experts, both national or from abroad. Because of that in statistical services in MMS integrated with government administration there is no place for researchers, methodologists, system analysts and managers. Methodological, research, analytical and managerial tasks are usually outsourced or the statisticians involved in regular production take for granted and implement the standards and methods recommended by international organizations. Due to the lack of capacity and time the statisticians involved in everyday production have strong propensity of *transplanting* the international standards and best statistical practices elaborated by large and middle-scale countries that have within the frames of statistical offices their own statistical research institutes, methodological and analytical departments.
6. Among politicians, governmental officers and businesses is dominating the stereotyped picture of official statistics as the supplier of statistical indicators according to international standards. According to this stereotype the main competence of statistical offices of MMS is the delivery of standard data to international organizations, the realization of surveys and production of statistical variables according to the requirements of international organizations: UN and the UN-associated organizations, IMF, UE (for the member countries), OECD, etc. The governments of MMS rather seldom consider their statistical offices as their basic informational and analytical background supporting the decisions and extending verified knowledge on social, economic and ecological problems of countries and regions.
7. The shortage of scientific, methodological and analytical capacity of official statistics of MMS is the barrier of extending the competences of statistical offices. We can observe a sort of self-limitation of rights and duties by statistical offices. Often they are limiting their activities to the producing of standardized, simple, aggregated indicators on explicit demand of governments and international organizations. Statistical analyses, diagnoses and projections of social and economic processes are often limited to simple interpretation aggregates. Because of limited scientific and analytical capacity statistical offices do not have enough courage to take the initiative of delivering pertinent information to the users even without explicit requests, elaborating analyses and evaluations, prognoses, building and maintaining early warning systems, simulation models of extremal processes.
8. Official statistical agencies in MMS have limited possibilities of training statisticians *on the job* and educating of higher-level staff. Statisticians in MMS are educated at national universities (basic theoretical background of statistics), and trained abroad in best practices. The consequence of these forms of training and education is the implementing of the methods, techniques and best practices of the countries where the staff of MMS statistics in educated. This “foreign-made” knowledge and experience may not be optimal for particular MMS.
9. Full obeying of all amendments of the UN Fundamental Principles of Official Statistics and the ISI Code of Statistical Ethics in the MMS is difficult because small scale of economy, small number of economic and social subjects and small methodological and scientific capacity of statistical offices

For example, in MMS the obeying the Amendment 6 of the UN Fundamental Principles of Official Statistics – statistical confidentiality – is difficult because in many branches of economy are operating very few subjects, often only one dominating enterprise or establishment. Rigid obeying of this amendment means that many economic indicators should not be published at all, because they refer to one or very few subjects. The risk of disclosure of individual data on businesses is very high in case not only for large businesses but often for medium businesses. From statistical point of view, using the random sampling algorithms, the size of the samples should be the same for very large economies and for the MMS.

For example, for compilation of macroeconomic aggregated indicators the same size of sample should be derived for China, USA, Estonia and San Marino. According to random sampling approach the same number of households should be derived for the HBS survey in China and in Estonia (sample: 1:1, population - 1000:1). The share of costs of HBS sample survey in China will be negligible, but in Estonia it is great burden for the budget of the CSO.

1. The share of fixed costs of surveys and the costs of statistical surveys in government budgets in MMS is much higher than in bigger countries. In MMS the share of costs of household surveys conducted by interviewers in total expenditures for surveys is extremely high. Many MMS countries are trying to minimize the costs by the reducing of the number of respondents, e.g. 700 households instead of 7000 households. In modern ICT environment the “traditional” methodology of random sample surveys in MMS can be replaced by full surveys based on the capturing of microdata from administrative and primary registers.

For optimizing the costs of surveys the MMS statisticians need to elaborate new methodological approaches. For example, instead of the producing of statistical variables on the basis of random samples they could produce the output data directly processing the administrative data, primary registers or transactional data (*big data*). But the conversion of administrative, primary or big data categories cannot be done by simple summing up the microdata, but by econometric estimation of output variables. In case of lack of relevant administrative data, primary registers and big, for minimizing the size of samples it would be more effective to implement non-random sampling based on *strong frames* and *behavioral typologies* of households and individuals.

11. Exchange of experiences of best practices elaborated and verified in practice by statistical services of mini, micro and small economies will stimulate and facilitate the progress in official statistics in over 200 economies in the world.

As it was mentioned above, the statistical services of MMS are - as a rule – tightly integrated with governmental organizational units and structures. Statistical services are often the divisions or sections of ministries and other central offices. This organizational integration may create the problems of independence of statistics on administrative information systems. The officers in governments may have the propensity to treat statistical surveys and questionnaires as any other administrative information systems and administrative forms.

To defend the obeying of the UNFP in the MMS by all stakeholders of statistical processes, especially by the governments managing and financing statistical services, the international statistical community should help to strengthen the position of statistical offices as the coordinators of the production of all official statistical data. It should be remembered that in the MMS the role of central statistical offices is often limited to methodological coordination of selected statistical activities, the supply of national data to international statistical agencies of the UN and to other organizations, and often (but not always) to the programming and planning of statistical surveys, storage, archiving and dissemination of information and translating metadata standards from international to national language – if necessary.

For strengthening the position of MMS statistical offices integrated with the structures of governmental institutions and for the building of the capacity relevant to the needs of global statistical system, the following competences (rights and duties) of statistical offices of the MMS should be given the priority:

1. Identification of potential information needs of institutional users (governments, social organizations, national businesses, education system, national mass media, citizens).
2. Building the infrastructural national information resource of the MMS. Defining of the scope of economic and social information that should be collected, stored and disseminated to all stakeholders, with special reference to statistical information.
3. Active participation in the designing, implementing and maintenance of administrative information systems and processes, with special reference to the information infrastructure of governments and of all institutions cooperating with governments.
4. Active participation in the designing and maintenance of socio-economic metadata used by administrative information systems, with special reference to the development of *generic metadata standards* used both by statistics and by other governments and institutions managing administrative information systems (classifications, nomenclatures, typologies, glossaries of terms, catalogues of indicators, registers of socio-economic subjects and objects, directories etc.).
5. Coordination of statistical surveys: programming and scheduling of production of data, elaboration of methodology, storage and dissemination of metadata and data, total quality control of information processes.
6. Providing informational and analytical services to the governments, social and economic organizations, universities, researchers, mass media and – on request – to the businesses.
7. Representing the MMS country and economy in statistical offices of all international organizations, in which the MMS is the member, e.g. ISI, UNSC, other commission of the UN, regional UN statistical offices, statistical services of specialized UN organizations like UNIDO, UNESCO, FAO, WTO (trade), WTO (tourism), IMF, WB, ILO, WIPO, UN high commissionaires on special issues, regional international organizations and branch organizations like OPEC, international organizations of countries – producers of some kind of good and services;
8. Research and development works that are integral component of implementation of methods and techniques in the information infrastructure of the country, with special reference to statistics; this duty depends on the research and development capacity of official statistics of particular MMS.
9. Statistical education of stakeholders of statistical processes. Statistical education of intermediaries participating in the processes of collecting and disseminating statistics (e.g. accounting firms, mass media, accounting firms, ICT systems providers etc.);
10. Quality control of official statistical processes and their products. Quality control of non-official statistical production and dissemination, which may have the impact on the use and trust to official statistics.
11. Cooperation with national system of education and science: schools and universities, research institutes, cooperation with foreign universities and research institutes in the field of interchange of data and of experiences and know-how in information systems and statistics.

Conclusion

Each MMS needs its own original **strategic model** of official statistics defining the position of statistics in the information infrastructure, the objectives, functionalities, forms, methods tools and resources needed for realization of those functions, and the roadmap of transition from existing model to optimal strategic model of official statistics.

The Guidelines how to build strategic models and the roadmaps of transition for of each behavioral type of MMS elaborated by international statistical community within the initiative of PARIS21 shall help the statisticians of MMS to build the capacity of official statistics in short and long term.

10. How to build the NSDS for MMS

Practical tool for the government of the MMS and for national statistical services, supporting optimal capacity building and developing of the national statistical system is the NSDS (National Strategy of Development of Statistics).

It seems to me that the recommendations of the PARIS21 and the WB concerning the contents, structure and methods of elaborating the NSDS for the MMS need some adoption and extension to the specificity of each type of the MMS. The following aspects should be paid special attention:

* The NSDS should cover not only all official statistical activities of the MMS, but also the projection of development of their information environment, including administrative information systems, infrastructural information systems of the economies, as well as the information infrastructure and *big data* files managed by all other subjects operating in the social, economic and political space of the MMS and in their external information environment, i.e. all information systems and resources that have impact on national administrative systems and national statistical activities.
* The time perspective of the NSDS – minimum 15 years; the period of 15 years is the time for which it is possible to forecast the impact of the implementation or of common use of ICT by the respondents, intermediaries and end-users of statistics, i.e. individuals and households, businesses and local governments.
* The NSDS should include deep analysis and projection of development of administrative information systems of all levels of governments; special attention should be paid to the information environment and information systems of lowest level local governments and their informational literacy.

The following strategic changes of the organization, technology and methodology of statistical processes should be specified in the NSDS:

* The finalization of complex implementation of statistical electronic questionnaires (e-questionnaires), final elimination of paper questionnaires from official statistics.
* Replacing of statistical e-questionnaires by *intelligent* electronic questionnaires, i.e. the *self-editing* e-questionnaires *pre-filled* with the data derived from relevant administrative records of governments and *big data* files.
* Replacing of statistical e-questionnaires by direct use of data stored in administrative registers and records, primary registers of businesses and big data files of companies and institutions operating in the economic space of the MMS.
* Precise division of duties of data capturing, editing, compilation of output data between statistical offices and government administration of MMS.
* Elaboration of the methodology of re-designing of paper questionnaires and simple e-questionnaires into intelligent electronic questionnaires; elaboration of methodology of compiling statistical indicators on the basis of microdata stored in administrative records, primary registers of businesses and in big data resources.
* Elaboration of methods and procedures of harmonization and concatenation of statistical data produced inside the MMS with the data received from external environment of MMS.
* Organization of reliable, systematic data flows from *external information environment* to the MMS statistics, with special reference to the data managed by foreign and international companies operating in the economic space of the MMS (e.g. banking, insurance, telecommunication, transport, foreign trade, foreign businesses realizing cross-border economic processes, foreign businesses that have local units in the economic space of the MMS).
* Adjustment of national laws to statistical the needs of proper functioning of national statistical system, with special reference to the regulations determining the access to data sources that are not in the disposal or are not under control of national authorities of the country;

On the basis of the analyses of the aspects mentioned above the following topics should be included to the contents of the NSDS:

* SWOT analysis of the existing system of official statistics and the information infrastructure of the MMS.
* Target (*ideal*) model of the systems of official statistics and of other segments of the information infrastructure of the MMS in the perspective of 15 years.
* The *roadmap of transition* of from existing model to target model of statistics and of relevant layers of information infrastructure of the MMS; precise specification of *critical paths of transition*, specification of main actions of strategic importance for transition, political, legal, social, economic and technological prerequisites of realization of the roadmap; general evaluation of the resources needed for successful realization modernization of statistics, with special reference to the capacity building of professional staff, organizational capacity, technology and legal regulations.

The roadmap of capacity building and transition from existing to target model should obey the amendments of the UN Fundamental Principles of Official Statistics and the ISI Code of Statistical Ethics. However it is necessary to include in the NSDS specific interpretation of the implementing of particular amendments adjusted to the conditions of small-scale national economies.

The need of elaborating the strategy of development and capacity building of official statistics for the MMS on two layers should be also considered, i.e.

1st layer: tailored NSDS containing

1. generalized *target model* of statistics and of the information infrastructure of MMS,
2. general roadmap of implementation of the NSDS,
3. strategic milestones of transition limited to the critical paths of the roadmap,
4. capacities and resources of statistics and information infrastructure of governments necessary for successful transition from existing model to the target model,
5. functional specification of basic systems of concatenated monitoring,
6. functional specification of basic syndromes.

2nd layer: detailed NSDS according to the recommendations of PARIS21 methodology and extended analysis of the impact of external information environment of the country on official statistics of the MMS.

Conclusion

PARIS21 methodology of strategic planning could help the MMS statistics by the elaboration of the guidelines adapted to the needs and specificity of different types of the MMS

The “NSDS for MMS” guidelines should contain detailed methodological recommendations, the detailed pattern of the contents of the NSDS document, recommendations concerning the place of NSDS in the laws of the MMS and the organizational prerequisites of implementation of the NSDS in practice for different behavioral types of MMS.

11. Statistical capacity building in MMS

Strategy of strengthening intellectual and professional capacity of statistics of MMS should take into account real substantial difference between the needs and possibilities of official statistics of micro, mini and small economies and large national economies.

In large economies the number of employees in statistical offices is counted in hundreds or in thousands. The consequence of large scale of statistical processes and the number of staff involved in each single survey is the specialization of individual employees. The skills of the majority of statisticians in large statistical offices are narrow, often very narrow. In big statistical offices one can observe the syndrome of *horse blinders* – very high professionalism in very narrow domain. Many statisticians are acquainted only with one aspect of one phase of single survey or other statistical process. In the MMS to the contrary one person if of the responsible for many different statistical activities.

Although the knowledge of single statisticians in large statistical office is usually deep, but *very narrow*, the *concatenated knowledge* of many *narrow-specialized experts* cooperating in one statistical process creates strong intellectual and professional synergy and capacity of statistical offices and statistical systems as a whole.

In the MMS statistical offices such narrow specialization, distribution and “dispersion” of knowledge and skills among many employees, is not. The number of statistical staff in the offices of the MMS is small. Statisticians in small offices are involved in many different phases of statistical processes. They are expected to be the “*universal specialists*” experienced in developing the methodology of surveys, organizing and managing the surveys, supervising data processing systems, designing the output tables, disseminating of output data in many branches of statistics.

The skills of basic staff of statisticians in the MMS should be much wider and higher than the skills of particular, single employee in statistical office of big country. A statistician in small statistical office is responsible for much wider scope of statistical activities. Because of that the education and training of statisticians for MMS should be focused on the formation of high-level managers of statistical offices and surveys with good methodological background and knowledge of information systems in modern ICT environment. Such profile and level of knowledge and skills of statisticians is necessary for proper management of the whole statistical systems of MMS and for effective, optimal outsourcing of all technical, organizational and managerial tasks connected with the realization of statistical processes.

It seems that proper professional level and profile of statisticians in MMS countries and economies could be based on post-graduate studies of *Masters in Official Statistics* – MOS (post-graduate studies similar to the MPA - *Master in Public Administration*). The proposal of the program of the MOS was presented during the WSC 2013 in Hong Kong[[11]](#footnote-11). Having in mind wide geographic dispersion of MMS countries and economies all over the world it seems that the system of e-learning with very carefully prepared training materials, lectures and visual presentations prepared by best scientists and practicians understanding very well the specificity of different types of micro, mini and small economies could be quite effective and relatively cheap solution of education of MMS statisticians on the MOS level.

The training programs for the MMS refer also to other stakeholders of statistical processes: central and regional governments as well as other subjects actively participating in statistical processes as providers of data, intermediaries, managers, designers and users.

Conclusion

The MOS (maters in official statistics) post-graduate education seems to be good platform of formation of leading and managerial staff of the MMS statisticians.

The organization of one research and education center (virtual post-graduate school of MOS) seems to be optimal form of strengthening intellectual and professional capacities of statistical services of the MMS.

11. Summary

*Micro, mini and small countries and economies* (MMS) need official statistics adjusted to the needs of their governments, businesses and societies. Those needs differ very much from those of big national economies. However international statistical standards are not taking into account sufficiently the specificity of MMS. International statistical standards, methods and indicators are oriented for observation and measuring the phenomena and processes from the perspective of global organizations and big countries dominating in these organizations.

Many macroeconomic statistical indicators (e.g. SNA) are useless and even misleading for analysis and evaluation of MMS economies. This fact should be obvious because the phenomena in *micro*-economy or *mini*-economy cannot be measured by *macroeconomic* indicators. However this fact seems to be ignored by the leaders of global statistical systems.

Many MMS statisticians are expecting the elimination of the methodological gaps between the conditions of MMS and the methodological statistical standards elaborated and required by international organizations. Many of them would be happy to do it by themselves. However, statistical scientific and methodological capacity of each single MMS is to small for elaborating original statistical methods and tools optimally adjusted to their needs and at the same time meeting the expectations of their “bigger brothers” sitting in beautiful offices of international organizations and statistical offices of developed economies.

According to the Amendment 10 of the UN Fundamental Principles of Official Statistics (*Bilateral and multilateral cooperation in statistics contributes the improvement of official statistics in all countries*) the international statistical community is predestined to initiate and coordinate the long-term programs of elaborating and implementing of statistical, methods, tools and indicators relevant for statistical monitoring of MMS economies. It seems that most effective solving of many problems of statistics in MMS countries and economies in globalized world and economy can be achieved by the extension of the mission of international statistical organizations, especially the UNSC, ISI and IAOS – giving the problems of statistics of MMS high priority in the programs of joint work and in funding the projects .

Optimal organizational form of the capacity building of official statistics for over 200 MMS countries and economies seems to be the creation of joint research and education center for all MMS in the form of *network of excellence* composed of units (universities, statistical offices) and experts that are willing and ready to contribute to the development of methods, tools and best practices for micro, mini and small countries and economies. The programming and financing of work need strong coordination center scientific supervision by respectable scientific and programming committee representing real needs of all types of MMS. In modern, global ICT environment the network of excellence seems to be optimal platform official statisticians of the MMS covering and integrating all over 100 small and micro-countries, organizing exchange of ideas, experiences and best practices applicable for different types of micro and small economies and societies. The representatives of official statistics of ALL micro and small counties would be encouraged to join actively the network of excellence.

The prerequisite of development of official statistics of MMS countries and economies is the system of post-graduate education of high-level statisticians – MOS – Masters in Official Statistics. As the basis for the elaborating of the MOS post-graduate program for MMS high-level statisticians could be the proposal of such program presented on the WSC 2013 in Hong-Kong and on the satellite meeting of this WSC organized by IASE in Macau. The use of e-learning technology and facilities will reduce significantly the costs of education of statisticians living in many different remote places of the world. Such system can stimulate direct contacts and exchange of experiences between statisticians of MMS all around the world. Organization of the Master in Official Statistics post-graduate training profiled and tailored to the needs of MMS (using distant learning tools and techniques – if necessary) is the prerequisite of effective intellectual and professional capacity building of official statistics in over 200 countries and economies of the world.

It seems that the IAOS as the only global organization representing all official statisticians of the world is predestined to discuss specific problems of official statistics in micro, mini and small countries and economies, and to initiate – in cooperation with international organizations leading in global system of official statistics – the programs and projects of development of this layer of information infrastructure of globalized economy in modern ICT environment.

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3. ) Macroeconomic categories of the SNA - like famous index of growth of GDP - are not very useful as the indicators measuring economic situation and stability of the MMS. The shocks generated in the field of economic gravitation by more powerful economies may cause the changes of numerical values of macroeconomic indicators without any consequence for real sphere of small economy (e.g. pragmatic reaction of governments of Iceland and Estonia on the dropdown of national GDP caused by global financial turbulences round 2008). [↑](#footnote-ref-3)
4. The processes realized in the fields of economic gravitation, that are creating the economic environment of small economies, depend on political models and defining the interests of big countries. Democratic, market-driven economies are – as a rule – obeying international law and principles of international cooperation and trade. In political environment of the MMS economies determined by big countries, especially by global or regional powers, small countries are often made to accept limited economic and political sovereignty and adopt their economic and social policy to the expectations of “big brothers”. The duty of official statistics of small economies is to provide to the governments and businesses complex data necessary for proper defining of real economic models of small economies from the point of view of the criterion on independence and for simulation of the impact of the environment on sectors, branches and the social situation of small economy. [↑](#footnote-ref-4)
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8. See https//www.aebr.eu [↑](#footnote-ref-8)
9. *Dissemination Standard Bulletin Board* (DSBB), International Monetary Fund, https://sdbb.imf.org [↑](#footnote-ref-9)
10. Olenski J., *Role of official statistics in fragile countries, regions and branches of economy*, in. *Statistical Journal of the IAOS*, Vol. 33, No. 4, Publ. IOSPRESS, ISSN 1874-7655 (P), 2017. [↑](#footnote-ref-10)
11. See: Jozef Olenski**,** Lazarski University,Warsaw, *Education of masters in official statistics for globalized economy in modern ICT environment,* ISI 2013 World Statistics Congress, Hong Kong, 25-30 August 2013, Special roundtable session: *Modern training of statisticians for modern globalized economy*, Organizer of the session: Misha Belkindas, Open Data Watch, Washington. [↑](#footnote-ref-11)