FINANCING THE LOSSES AND THE RISKS DUE TO EARTHQUAKES

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In this paper, three topics will be discussed, elaborated, and clarified.

1. A brief definition will be given for the way in which the terms financing the losses and risks due to earthquakes is used here;

2. A comparative analysis will be made of the basic approaches and mechanisms for financing the losses due to earthquakes in Skopje in 1963 and Montenegro in 1979;

3. A model will be presented of a way in which losses and especially risks due to earthquakes can be financed.

Defining the Terms: Financing the Losses and the Risks Due to Earthquakes

For the purposes of this paper, it is necessary to define how the terms financing the losses and risks due to earthquakes will be used. This involves addressing three issues:

- what the term financing denotes;
- how losses due to earthquakes are defined and determined;
- how risk due to earthquakes is defined.

The term financing the losses and the risks denotes supplying financial resources to mitigate or eliminate the material and human losses that result from earthquakes. It means that financial resources should be made available to compensate the losses.

Financial resources can be obtained from various sources: domestic and foreign credits, loans, percentage assessments of the national product, bank reserves, monetary remissions and transfers, etc. It is important to identify the specific sources of financial resources to be used, the precise amount, and the means and terms of repayment, if the resources are assigned as returnable, as precisely as possible.

In addressing the problem of financing the losses and the risks due to earthquakes, attention should be given to several considerations.

First of all, to determine the total amount of financial resources necessary to restore the losses that occurred;

Second, to determine the various sources of the resources;

Third, to identify those who will make the resources available;

Fourth, to determine the time period over which the resources will be collected, and

Fifth, to determine the way of establishing the magnitude of the losses (in value indicators) that have resulted from earthquakes in as objective a way as possible.

The term losses due to an earthquake denotes all those losses (material and human) that occur as a consequence of an earthquake disaster. This term comprises both direct material and human losses and indirect losses and damages, the amount of which are difficult to determine. Indirect losses are the results of the interrruption of normal economic and social life for a more or less protracted period in a region which has suffered an earthquake. Determination of these losses which occur much after the event is also very important in order to eliminate completely all the losses due to earthquakes.

In any case, it should be noted that the magnitude (the value) of the total of all the losses should be determined as objectively as possible, and the estimate should be based on a uniform methodology which is objectively defined for the evaluation of losses due to earthquakes and other natural disasters.

The term risks due to earthquakes denotes those losses (human and material) that are expected to occur as a result of future earthquakes. Risks due to earthquakes apply to future expected losses. The evaluation of risk should be determined on the basis of experience over a period of ten or more years, i.e., on the basis of evaluated losses due to earthquakes in earlier periods in a region either geographic or seismic. This region can be a country, a region in a country, a continent, or larger regions within a continent, etc.

A Comparison of the Systems and Mechanisms of Financing the Losses Due to Earthquakes in Skopje in 1963 and in Montenegro in 1979

A comparison of the approaches followed after the earthquakes in Skopje in 1963 and in Montenegro in 1979 can serve as the basis for inquiring as to the most appropriate system for financing losses and risks.

Financing the losses and the damages which resulted from the earthquake in Skopje in 1963 was carried out by a system characterized by the following basic and more important rules:

1. Law or Legislative Act which created the Fund for renewal and reconstruction of Skopje:

2. Law or Legislative Act establishing the method by which contributions were to be made to the Fund for renewal and reconstruction of Skopje;

3. Law or Statute determining the total amount of resources that the social community was to provide for the renewal and reconstruction of Skopje;

4. Law or Statute establishing the level of contributions for renewal and reconstruction of Skopje, and;

5. Law or Statute establishing the level of public loans for renewal and reconstruction of Skopje.

The purpose of the first two temporal laws or acts was to create a Fund for the renewal and reconstruction of Skopje for restoring the damage to the city, and to establish a means for supplying financial resources by which the larger social community was able to participate in the effort with the SR Macedonia and the city of Skopje to eliminate the consequences of the earthquake.

The resources of the Fund were created by:

a) contributions from the resources that are designated for investments,

b) contributions from the resources designated for material expenses for general consumption or operating expenses,

c) contributions from the resources available for personal income of the employees both in payments and benefits,

d) contributions from a special levy or tax on income paid to individuals,

e) grants from the social-political communities at various levels,

f) domestic and foreign grants and loans,

g) annuities and income on the loans issued from the resources of the Fund, and interest on the resources of the Fund deposited in the banks.

The total amount of the resources of the Fund were determined by the law or statute under number three above. It was based on the estimated cost of executing the programme for renewal and reconstruction of Skopje as it was adopted by the Assembly of the City of Skopje. This law or statute was enacted by the end of 1964. Until its enactment, for the first part of 1964, the Law cited under number two temporarily determined the level of contributions cited in item (a) to item (d) from the sources identified above.

That Law, when enacted, established the level of contributions from the resources designated for investment, the contributions from the material expenses for general consumption, and the contributions from the taxation on the resources available for personal income at the level of 2% of the quoted resources, and the special levy or tax on the personal income of the empoyees was set at 1%. These types and levels of contributions and rates were also determined later in the Law of contributions for renewal and reconstruction of Skopje. The total amount of resources for renewal and reconstruction of Skopje was set at four hundred billion old dinars. The time period over which these resources were to be collected was established as the five years from 1965 to 1970.

The resources of the Fund were to be used especially for renewal and reconstruction of economic productive capacity, residential areas, community facilities, social service facilities, public facilities required for the provision of state services, equipment for technical assistance, for cleaning up the ruins, and for research, planning and design for the reconstruction of the town, and for building temporary shelters for the population that lost their dwellings. The resources of the Fund were assigned to the beneficiaries primarily as grants without obligation for repayment, and also to some extent in the form of loans.

As mentioned above, at a later point, Article No. 11 of the Law determining the total amount of resources with which the larger social community participated in the renewal and reconstruction of Skopje, the Fund for renewal and reconstruction of Skopje was eliminated, and its resources and all other rights and obligations were transferred to the Assembly of Skopje. According to the Law, the resources governed by it were to be assigned to the Assembly of Skopje as a grant without obligation for repayment.

Another instrument for supplying resources designated for restoring the consequences of the earthquake in Skopje was the Law or Statute providing for public loans for the renewal and reconstruction of Skopje. By this Act resources were supplied for public loans which amounted to thirty billion old dinars above and beyond the amount of the contributions.

In summary, it can be seen from the brief description above that:

1) The resources required for the elimination of the consequences of the earthquake in Skopje were supplied, for the most part, in the form of gifts and contributions from various sources throughout the economy of Yugoslavia as a whole, and a portion of them were supplied in the form of public loans for the renewal and reconstruction of Skopje.

2) The resources for elimination of the consequences of the earthquake were assigned to various beneficiaries largely as grants without obligation for repayment, and to a lesser extent in the form of loans.

3) The total amount required for elimination of the consequences of the earthquake in Skopje was determined on the basis of the cost of carrying out the Programme for the renewal and reconstruction of Skopje, which was adopted by the Assembly of the City of Skopje.

In comparison, the financial aspects of dealing with the consequences of the earthquake in Montenegro in 1979 were quite different. The main features are as follows. The system and the mechanism that was established for financing the consequences of the earthquake in Montenegro in 1979 is basically regulated by two legislative acts: The Law for supplying resources for the elimination of the consequences of the earthquake disaster that hit the region of Montenegro in 1979, and Law of resources for elimination of the consequences of the earthquake disaster that hit the region of Montenegro in 1979.

The effect of these acts was to establish the following system and mechanism for financing actions dealing with the consequences of this earthquake:

1. The resources for elimination of the consequences of the earthquake disaster in SR Montenegro are to be supplied by contributions from the republics and the autonomous provinces.

2. The contributions of the republics and provinces is determined by their proportional share of the nominal national product of the whole economy of SFR Yugoslavia as of the year prior to the earthquake, calculated on the basis of net product, and on the basis of official statistical data that are available at the time of determination of the contribution.

3. The amount of the total resources for the elimination of the consequences of the earthquake disaster in Montenegro is determined to be and is to be supplied in the total amount of 53,637,000,000 dinars.

   The largest share of the amout, 39,937,000,000 dinars, is to be supplied by the contributions of the republics and the provinces, and these resources are assigned to SR Montenegro without obligation for repayment.

   The remainder of the resources, 13,699,635,000 dinars, also to be supplied by contributions of the republics and the provinces, are assigned to SR Montenegro in the form of loans to be used to provide loans to citizens for renewal and reconstruction of residential buildings and economic production facilities within the region of Montenegro.

4. The time period over which the republics and the provinces are to supply the resources required for eliminating the consequences of the earthquake in Montenegro by their contributions is set at 10 (ten) years, from 1979 to 1989.

5. The amount of total resources is determined on the basis of the final evaluation of the magnitude of the losses incurred. The estimation of the magnitude of the loss is determined on the basis of an Instruction for a unified methodology for evaluating the losses due to natural disasters. This methodology was adopted in 1979.

As can be seen from this brief description, the standards and approaches taken in financing the actions dealing with the consequences of the earthquake in Montenegro differs considerably as compared with the procedures regulating the financing of the consequences of the earthquake in Skopje in 1963. The chief differences are as follows:

1) Unlike previously, it is now the republics and the provinces which supply financial resources by their contributions, and not the whole economy, as was the case with the earthquake in Skopje in 1963.

2) As previously, the financial resources are supplied, for the most part, without obligation for repayment, but in this case a much larger share of the total is in the form of loans, with the obligation for repayment.

3) The amount of total resources is determined on the basis of

evaluated magnitude of the loss incurred as determined on the basis of a unified methodology for evaluation of the losses due to natural disasters, and not as previously on the basis of the cost of execution of a reconstruction programme.

This comparison of the differences in the approach and procedures followed in supplying the financial resources for eliminating the consequences which resulted from the earthquakes in Skopje in 1963 and in Montenegro in 1979 establishes several points. Until now this problem has been solved partially not comprehensively, on an ad hoc basis case by case, and not systematically by a unified approach, nor based on permanent sources of resources.

The conclusion derived from this review is that the problem of ensuring financial resources for dealing with the consequences resulting from earthquakes and other natural disasters should be resolved on a permanent and unified basis, in the sense of ensuring a permanent source of resources for this purpose. In short, the conclusion is that these resources should be ensured by establishing a Fund against risks from earthquakes and other natural disasters. We shall discuss this concept in detail in the following section.

A Model for Financing the Losses Resulting from Earthquakes and Other Natural Disasters

Regarded from a systemic point of view, there are two basic approaches that can be taken for financing the losses and the risks due to earthquakes and other disasters.

1) By creating a Fund for financing the renewal and reconstruction of regions which have suffered losses by earthquakes and other disasters. In essence, it would mean creating a Solidarity Fund such as are currently established.

2) By creating a Fund against the risk of financing the elimination of the consequences of earthquakes and other disasters.

From all that has been stated above, it is clear that we speak in favor of a solution which assures a permanent supply of financial resources for eliminating the consequences which result from disasters. Rather than creating funds after the fact for the renewal and reconstruction of regions which have suffered losses from earthquake, it calls instead for creating a fund against the risk of the elimination of the consequences of earthquakes. In short, not financing the concrete losses due to earthquakes ex post, but rather financing the risks of losses due to earthquakes ex ante.

This approach to the problem presupposes the capability to determine the risk first of all, i.e., determining future value of anticipated losses that would occur by future earthquakes.

One question that must be addressed is the way of creating such a Fund against risk and accumulating resources by which the consequences due to earthquakes would be eliminated, i.e., the losses that would result from eventual earthquakes would be restored.

Resources in a fund against risk for eliminating the consequences due to earthquakes could be created in two ways:

1) in the same way as the resources for risk insurance of fixed assets of organizations of associated labor are presently created;

2) in the same way as the obligatory resources of the Federation fund for development capital for the undeveloped republics and socialist autonomous province of Kosovo are presently created.

Resources in both cases would be ensured obligatorily and permanently as a percentage of the national product or of the national income of the whole country. Every organization of associated labor, the social-political communities, and eventually the citizens would be obliged to contribute to this fund.

This amount of resources which should be accumulated each year would be determined on the basis of the value of the calculated losses resulting from earthquakes over some previous period, say the last five or ten years. Consequently, the basis would be established in accordance with the actual experience concerning value of losses over a determined period of time.

If the resources accumulated in this way do not prove adequate for the requirements of a year or in the long term, then the basis can be adjusted in light of experience and additional resources can be supplied.

The Fund would be organized and would operate as an autonomous and self-managed institution. The resources of the Fund against risk would be assigned to those regions where losses occur from earthquake disasters and other similar natural hazards covered within the risk.

The resources would be assigned for the most part without obligation for repayment, and to a lesser extent for specified purposes with such an obligation in the form of loans.

It is our opinion this way of financing the losses resulting from earthquakes is superior to the existing one which is rather partial and not sufficiently efficient and rational. Certainly this way of financing is more difficult in application because of the difficulties in determining the risk of eventual earthquakes: the probability of disasters, and the magnitude of the losses.

Although there are difficulties in developing this system, we consider the approach to financing the losses resulting from earthquakes by creating a fund against risk to be a better, more justified, more efficient, and more rational procedure than the existing one. The present approach has considerable shortcomings in practice, especially in the supply of financial resources on short notice, and this is extremely important and decisive in the efficient elimination of all the losses due to earthquakes and other disasters.