

Macroprudential stability indicators of financial systems: Analysis of Bosnia and Herzegovina and Croatia

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Abstract. *The introduction of macroprudential stability indicators for risk estimation in financial systems is a hot topic in transition countries. Our examination is focused on the repeating rate of instability in financial systems in Bosnia, Herzegovina and Croatia based on the selection of appropriate macroprudential indicators. Empirical investigation analyzed the statistical data of the National Bank of Croatia and the Central Bank of Bosnia and Herzegovina for the period of ten years between 2003 and 2013. With multivariate logistic regression we create a model based for determination of probability of the occurrence of instability in financial systems based on real values of macroprudential indicators.*

Keywords: macroprudential analysis, system risk, financial system.

JEL Classification: E02, B26, E63, G32.

Introduction

The global financial crisis, which escalated in 2008, upset both the financial markets as well as the theorists who analyzed it. Although it was certain that the crisis was not an isolated occurrence, the speed by which the crisis expanded through the global financial system, covering a wide range of financial institutions, prompted an interesting discussion in academic circles.

The causes for the financial crisis are many, however, one of the most significant causes is the risk perception by the many participants in the market. Innovations in the field of risk management gave confidence to careless financial analysts with a false certainty that changes of the financial risk assessment model would eliminate business risks in financial markets. Exposure assessment of risks based on time series which do not contain a complete business cycle, and discounting the specifics of the risk distribution in financial markets created an unrealistic base for analyzing the exposure to system risks.

Many years of stable growth and low inflation encouraged investors to switch to investments with more risk. At the same time, financial engineering created new financial instruments where risk degree was hard to estimate⁽¹⁾ even by experienced agencies such as Moody's and Standard & Poor's. Aforementioned trends slowly led the system to even larger and greater system risks, while giving a false impression of safety and prosperity. Our attention is focused on how the financial system reacted on the occurrence (in this case the crash on the mortgage markets) and led to an extensive growth of instability that many authors describe as "financial contagion".

There are different points of view in terms of the potential consequences from the connection of financial institutions through claims. On the one hand, authors claim that it leads to strengthening of the stability position of the financial market. In addition, disturbances which would occur in a single region or financial institution would be spread onto a larger number of institutions which would be ready to absorb losses. (Allen and Gale, 2000: 1-6)

On the other hand, many authors condemn the new trends in development of the theory of stability of the financial system, pointing out that the interconnection between financial institutions is a catalyst for fast growth of financial disorder (Dasgupta, 2010: 2-6). Many authors point out that financial regulations improved the management of risks at the level of single institutions, but at the same time led to uniform reactions of financial institutions. Since the current regulations primarily focus on the problem of adequate capitalisation and achievement of an adequate level of liquidity, it can prompt a mass sale of certain financial instruments. Due to such an occurrence, the financial institutions lean towards an adequate structure of risk weighted assets. Only instruments with the highest risk degree would be sold. This would result in a price drop of specific segments of the financial market. In this case the regulatory framework which is designed to control risks, can lead to a crash of endangered segments of the financial system. In this way the financial system stops working as a safety network, which absorbs risks, and becomes the cause for further deepening of the crisis.

For the purpose of this paper we will follow the middle path and agree on the fact that the interconnection between financial institutions contributes to the formation of financial systems which is at the same time immune to low instabilities, but fragile in cases where serious disturbances occurred. In the chapter “System risks and stability in financial networks” authors Acemoglu, Ozdaglas and Tahbaz-Salehi introduce a model that shows a dual effect of the current regulatory framework to the preservation of stability of the financial system. According to their model, more complex financial systems can amortize impacts while their number and intensity is small. But if the toleration level is exceeded, the financial system becomes a mechanism for spreading instability, to the level where the question is if the externalities exceed the benefits of the current type of regulation. (Acemoglu et al., 2013: 2-4).

We can conclude that financial regulation has generally contributed to reduction of the management risk of financial institutions, but at the same time, with their actions, increased the importance of proper understanding of system risks. Due to the fact that individual institutions are not able to manage system risks, it is necessary to implement instruments for evaluation and management of system risks on a macroeconomic level, which is actually the mission of the macroprudential analysis.

The researched element in this paper is the role of macroprudential analysis as an instrument for limiting system risks, as well as risks which endanger the functionality of the financial system as a unity. The term macroprudential analysis derives from the words *prudencija* (lat. Prudens-prudence, foresight, experience) and *macroeconomics* (gr. Macro, oikonomia), which draws attention to the attempt to widen the financial regulation framework and the risk estimation in financial markets with the analysis of macroeconomic variables. The use of macroprudential indicators contributes to the neutralization of instabilities through:

- Prevention of financial disturbance escalation and building a fast and efficient defense against spreading consequences for instability of the real sector
- Identification and evaluation of risk exposures, as well as the connection between risks that could lead to risk overflow between different segments of the financial market that could lead to malfunction of the financial system as a unity.

The basic guidelines of macroprudential policy are:

- The goal of macroprudential analysis represents a respond to a system risk and to risks which endanger the functionality of the whole financial system.
- The research field of macroprudential analysis is the whole financial system as well as its interactions with the real sector.
- The key instruments for the implementation of the analysis are macroprudential indicators.

So far there are identified a large number of macroprudential indicators divided in six categories:

- Indicators of economic growth.
- Indicators of payment balance.
- Inflation degree.

- Expansion of loans and real estate prices.
- The effect of financial contagion.
- Interest and exchange rate.

Our goal in this research is to determine whether monitoring the value of macroprudential indicators can help predict instability in the financial system. The main research hypothesis is: Based on the analysis of macroprudential indicators the probability of recurrence of instability of the financial system can be determined.

Macroprudential indicators are independent variables within the framework of the basic research hypotheses. For the independent variable the following macroprudential indicators were selected: real annual rate of growth, balance per unit of GDP, the ratio of reserves to debt, the average annual inflation rate, interest rate volatility, the volatility of national exchange rates, the rate of expansion of public loans, and real estate price index. The probability of instability in the financial system is a dependent variable. The dependent variable, the probability of occurrence of instability in the financial system, takes its values in the interval between 0 and 1. The financial system is considered stable, according to the theory of business cycles, if it is in a phase of expansion or the top, and as unstable if the business cycle is at the bottom or in contraction.

For the purpose of the research section of this paper we will use the statistics of the Central Bank of Bosnia and Herzegovina and the Croatian National Bank, for the period 2003-2013 year. As the main statistical methods will use multivarious logistic regression. With logistic regression, we will try to establish a model for determining the probability of occurrence of economic uncertainty, depending on the selected variables.

Empirical research

In the empirical part of the paper we examine the probability of occurrence of instability in the financial systems of Bosnia and Herzegovina and the Croatian Republic on the basis of the selection of appropriate macroprudential indicators.

With multivariate logistic regression we will create a model to determine the probability of occurrence of instability in the financial system based on the current value of macroprudential indicators. Multivariate logistic regression is used to determine the probability that the dependent variable is found in the requested state, depending on the n independent variables. The mathematical model of logistic regression can be represented in the following form:

$$f(z) = \frac{e^z}{1+e^z}$$

where z is: $z = \sum_{i=1}^n \beta_i X_i$.

In the model, the variable x is the exposure to the risk factor set, and $f(z)$ is the probability of a certain result with regard to the risk factor set. Therefore, the variable z is a measure of the overall contribution of the risk factors that were used in the model (Kvesić, 2012: 321).

The model is due to mathematical transformation⁽²⁾ reduced to the following form:

$$P(y) = \frac{1}{1 + e^{-(\alpha + \sum_{i=1}^n \beta_i X_i)}}$$

where:

P (Y) is the probability of occurrence of favourable events;

e is the base of the natural logarithm;

α is the independent member of the equation;

β_i is the coefficient of the independent variable;

X_i is the independent variable.

By determining the coefficients of the independent variable and independent member of the equation the forecasting model is obtained.

The condition of application of the logit model is that the independent variable is dichotomous, i.e. that it can take only two values, which is for this model needs to be quantified as a value of 0 and 1. The dependent variable of this research is the probability of occurrence of instability of the financial system. In accordance with the requirements of the model we differentiate two states in which the financial system can be. If the financial system is stable the independent variable takes the value 1, otherwise it takes the value 0. A stable financial system will be defined as a system in the expansion phase including the phase of reaching the peak of the business cycle. An unstable system is a system in the contraction phase, including the phase of reaching the bottom of the business cycle.

For the independent variable were selected following macroprudential indicators: real annual rate of growth, balance deficit per unit of GDP, the ratio of reserves to debt, the average annual inflation rate, interest rate volatility, the volatility of the national exchange rate, the rate of expansion of public loans, real estate price index. By determining the coefficients of the independent variable determine the importance of each indicator by determining the probability of financial system stability.

Unlike linear regression, logistic regression assumes a linear relationship between the dependent and independent variables. Since the largest number of macroprudential indicators that will be used to create the model has a cyclic characteristic it is appropriate to use just logistic regression. The advantage of this method lies in the fact that it does not use the Gaussian distribution as its base, which can lead, as we have previously stated, to an inadequate nature assumption of risk in financial markets.

Specifics of financial environment of Bosnia and Herzegovina and Croatia

Before we approach the development of models for determining the probability of occurrence of instability in the financial markets, we will analyze financial systems in the before mentioned countries.

The degree of financial market development can be measured in different ways. Most often as indicators of development are taken: the complexity of the financial structure;

development of the banking system; sophistication of the capital market; the ratio between the banking system and the capital market, the presence of non-bank financial intermediaries (Šonje, 2005: 48-58).

The financial system of Bosnia and Herzegovina is built on the principles of the continental model of organization of the financial markets. This model is characterized by the dominant role of banks as a key player in the financial market. In addition to the banks in the financial market of Bosnia and Herzegovina there are also investment funds, insurance companies and reinsurance companies, microcredit organizations and leasing companies.

The participation of banks in the assets of the sector ranged from 85.61% to 86.56% in the past three years. After the banks, the most important participants in the financial market are insurance companies, whose relative share in the assets of the sector grew in this period from 4.61% to 5.11%. Assets of leasing companies have been decreasing, and are reduced to only 3.24% at the end of 2013. Microcredit organizations and investment funds participate in the total supply of financial services with a share of less than 3%. In the observed period, the share of banks in the total supply of financial services in the market of Bosnia and Herzegovina amounted to 85.95%, which shows that the sector of non-banking institutions is weak developed. As for the organization and regulation of the capital market, it is compounded, organized and multilayered. By the vertical principle there exist two levels, and by the horizontal principle tree. At the state level there are: the Central Bank, the Deposit Insurance Agency and the Agency for assurance. The second level is divided into two separate markets. There are two stock exchanges (Banja Luka and Sarajevo) that are independent and act independently from one another. Regulatory authorities are doubled, so that there are two Securities Commissions, two Registries of Securities and two Banking Agencies (ABRS and FBA). Market participants are active in both markets, but are subject to control and reporting on a geographic basis, depending on the residence. Organizational parts of unregulated institutions by territorial jurisdiction. Organizational parts subject to the regulatory institutions by territorial jurisdiction (Kumalić, 2013: 69).

Shares represent the dominant securities, primarily thanks to the privatization process, which as a result has produced exactly this type of securities. The main characteristic of the shares traded on the stock exchanges in Bosnia and Herzegovina are expressed in their poor quality, which is in the discrepancy between their nominal value and market value (Omerhodžić, 2008: 307). The first bond turnover on the stock exchanges in Bosnia and Herzegovina was registered year 2009. Two years later, the entity governments broadcasted treasury bills, which was the first trade of short-term financial instruments on the market. Bosnia and Herzegovina as a small country with a small market capacity, double institutions and poor coordination, cannot be classified as high-quality financial market. Regardless of the development of some qualitative indicators, the financial market in Bosnia and Herzegovina is basically shallow, underdeveloped, compounded, dysfunctional, centered in banks with high concentration of the banking sector (Kumalić, 2013: 69).

Specifics of financial environment of Croatia

If we compare the financial system of Bosnia and Herzegovina and the Croatia, we can notice that both countries have a similar base structure. As before, the importance of certain groups of intermediaries in the financial market will be measured by the share of their assets in their total financial sector assets. In Croatia, the banks play a dominant role, so that the Croatian financial system is classified into financial systems with continental structure.

The share of assets of commercial banks in the total amount of assets of the financial sector ranged from 76.90% to 73.95%. It is interesting to note that the share of commercial banks fell in favour of the non-banking sector. So that the non-banking sector at the end of 2013, covered more than a quarter of the financial market. The trend of strengthening the non-financial sector is present in more advanced financial systems. From the table above it is possible to see that this strengthening was useful for pension insurance companies whose relative share climbed from 7.75% to 10.68% in the reporting period. Insurance companies are also making progress from 6.04% to 6.49%.

The regulatory framework of the financial system is complex. The Croatian National Bank conducts supervision of credit institutions and supervise payment operations, and regulates the amount of money in circulation. The local currency is the Croatian Kuna, whose exchange rate is formed depending on the supply and demand for funds in the given currency. Banks (and the state) casual trade with foreign currency with the National Bank of Croatia, either directly or on so-called. Foreign exchange auctions, and the National Bank regulates through these transactions the price of the domestic currency in the foreign exchange market⁽³⁾. Supervision of the non-banking sector was organized by the Croatian Agency for Supervision of Financial Services (HANFA).

Croatia has a fairly developed money market and capital market. All transactions are conducted through the Zagreb Stock Exchange. Similar to Bosnia and Herzegovina, the highest number of transactions on the Stock Exchange relating to the purchase and sale of shares, while the rest consists of selling bonds, commercial paper, certificates and rights. Trading is handled completely electronically. Responsible for proper settlement of trade transactions in the domestic capital market is the Central Clearing Depository Association.

Analysis of selected macroprudential indicators

Using instruments of descriptive statistics, we will analyse the collected data. For each indicator we calculated the minimum value, maximum value, the arithmetic mean and standard deviation.

Since we intend to use the data for forming multivariate logistic model it is necessary to check the degree of correlation between the selected indicators. The degree of correlation measures the relationship between two variables. Logarithmic models give the best results when there is no correlation between the individual indicators. A high level of correlation data shows that it is possible to simplify the model, eliminating one of two variables that are mutual dependent.

In the analysis of macro prudential indicators of Bosnia and Herzegovina, we observe a strong negative correlation between ratios of reserves to foreign debt and the amount of public debt per GDP unit (-0.948).

Among the analyzed data for Croatia, the amount of average annual interest rate is correlated with the annual rate of growth, the value of reserves by the ratios of foreign debt and public debt per unit of gross domestic product, so we can conclude that the model would not have lost much of its relevance if you leave out this variable.

Comparative analysis of macroprudential indicators of Bosnia and Herzegovina and Croatia

If we compare values of macroprudential indicators we can notice that in Croatia much larger variations in value of annual growth rate were recorded than in our country. Bosnia and Herzegovina in past 11 years achieved biggest growth rate of 6.30% in 2004. Croatia achieved top of her business cycle in 2003, when general growth of goods and services of 5.4% was recorded. By following just this macroprudential indicator we can perceive that the reactions of market are very slow. Effects of global economical crisis led to a decline of growth rate in 2009, when the negative growth rate of -7.4% was recorded in Croatia and -2.7% in Bosnia and Herzegovina. As we mentioned before, a balance deficit by unit of gross domestic product is derived measure of stability of financial system. It gives us an insight in which amount the deficit of balance of payment is significant through comparison with total production of goods and services of certain country. From the attached data we can perceive that in both countries outflows of balance of payment surpassed inflows, videlicet that both countries recorded payment-balance deficit in last 11 years. Bosnia and Herzegovina really stands out by very high deficit values which in 2003 reached 19.40% GDP. It is important to highlight that the deficit by unit of gross national product has significantly declined after 2009.

It is interesting to compare values of raid reserves by debt. Bosnia and Herzegovina, in the observed period, was covering every KM of public debt with 1,114 KM of national reserves. If we observe the movement trend of this indicator, we can notice that in the period from 2006 to 2008 conservative debt policy was conducting and that the raid took very high values (from 1.34 to 1.69). In Croatia the national reserves are significantly lower and they are on average 26.6% of public debt. This indicator showed small variations in observed period as it was indicated by standard deviation of 0.033.

Price levels in Croatia and Bosnia and Herzegovina have a tendency of gradual growth. Croatia recorded significant rise in level of inflation of 6.1% in 2008. In Bosnia and Herzegovina two sudden rises of price levels were recorded. In 2006, a level of inflation of 6.1% was recorded, while in 2008 the level of prices raised by 7.4%. In next year a partial correction of price levels was recorded which influenced on deflation of 0.4%.

If we look the growth trend of interest rate in Croatia we can notice three phases. In period from 2003 to 2008 interest rates were moving between 4.5 and 4.88%. In 2008 the interest rate raised up to 9%. This interest rates level kept for next three years, whereupon the gradually decreasing of interest rate to 7% came. Rise of interest rates in period of ingoing of crisis is in accordance to increased risk of management in period of financial stress.

Interest rate level which was recorded in Bosnia and Herzegovina doesn't follow this form. Highest values of interest rates were recorded in 2003, when interest rate was 10.50%.

Another unit of indebtedness of country is public debt by unit of gross national product. Again, we can notice that Croatia has a significantly higher affinity towards debt. On every kuna of national product this country took over 81.25 lipas of public debt. In Bosnia and Herzegovina the situation is remarkably different. For every KM gross national product Bosnia and Herzegovina took over on average 23.5 pfening of debt. This indicator showed sudden rise of values in both countries in 2009 which is in accordance with expectations that the state will take over additional financial funds in order to take actions against the crisis. In Croatia the public debt is increased from 84.30 to 100.40, while in Bosnia and Herzegovina rise from 17 to 21.5 was recorded.

Determination of possibilities of instability appearances in financial system of Bosnia and Herzegovina and Croatia

Based on previously presented data for Bosnia and Herzegovina multivariate model of logistic regression was crated:

$$P(y) = \frac{1}{1 + e^{-(369,9+9,5*X_1+3,7*X_2-140,4*X_3+2,8*X_4-0,9*X_5-7,6*X_6)}}$$

Biggest informative significance for financial instability in financial system of Bosnia and Herzegovina probability evaluation has reserve ratio towards external debt. Negative value of coefficient of independence variable ($\beta_3=-140.39$) shows that with reducing of reserves or debt increase the probability of instability in financial system increases. By increasing of public debt by unit of gross national product stability of financial system is disturbed. On the other side real annual growth rate and decrease of payment-balance deficit are having positive values of coefficients which shows that their growth increases probability that the financial system remains stabile. Average inflation rate in observed period has increased by 2008, after which the decrease of inflation rate was recorded. Because of this in logistic model inflation rate growth is in positive relation with system stability increase ($\beta_4 = 2.84$).

By using identical methodology the model for determination of probability of instability appearances in Croatia was formed:

$$P(y) = \frac{1}{1 + e^{-(329,3+1,6*X_1-0,7*X_2-69,3*X_3+2,8*X_4-36,7*X_5-1,2*X_6-0,4*X_7-0,1*X_8)}}$$

Biggest informative significance has the reserve ratio towards foreign debt. Negative value of coefficient of independent variable ($\beta_3 = -69.3$) shows that by reducing of reserves or by increasing public debt the probability of instability in financial system increases. In model the value of coefficient of exchange rate stands out ($\beta_5 = -36.7$). Decline of course of Croatian kuna in accordance to euro indicates the decline of Croatian financial system. Average inflation rate has a positive coefficient ($\beta_4 = 2.8$). Every decrease of inflation rate by 1% increases the probability of crisis ingoing in financial system by 2.8 times.

Concluding remarks

In this paper we have primarily dealt with the issue of financial system stability conservation. We have focused on analysis of system risks as well as on risks which endanger the functioning of financial system as unity.

As an answer on question how to follow position of system risk in financial system of certain country, we have set the process of macroprudential analysis. This process means the tracking of system risk by selected macroeconomical indicators. By calibration of standard values of macroprudential indicators it is possible to identify disorder on certain segments of financial markets on time, but, also, we can analyze movement of whole business cycle. Development of quality prudential model and its constant perfecting is basic assumption for sup and control on financial market.

In research part of the paper we tried to give humble contribution to development of macroprudential analysis on the territory of Bosnia and Herzegovina and Croatia. Our hypothesis was to determine is it possible to determine, by tracking of values of macroprudential indicators, probability of instability appearances in financial system.

We have confirmed the hypothesis by conducting two independent mathematical models, one for the financial system of Bosnia and Herzegovina, and other for system of Croatia. Models which we conceived are having an assignment to determine probability of instability appearances in financial system on the base of given values of macroprudential indicators. Featured models are based on equation of logical regression. Taking into account the fact that logistic distribution is by its nature nonlinear, and that it is not based on Gaussian distribution, we can use it for risk position simulation on financial market.

Most of the analyzed indicators proved to be significant for determination of stability position on financial market of Bosnia and Herzegovina and Croatia. Biggest informative significance in models which we created had the reserve ratio to debt, annual growth rate and average annual inflation rate. It is determined by research that by reserve reduction or public debt increase the level of stability in financial system decreases. We have also confirmed that positive growth rate of gross national product and stable inflation level are indications of stable financial system. Despite these indicators, the height of currency exchange of local currency in accordance to euro proved to be significant for position of stability determination in financial system of Croatia. The weakening of kuna course in accordance to euro indicates on weakening of financial system of Croatia.

Furthermore, it has been found that the model could be simplified by eliminating one out of two indicators which showed a high level of mutual correlation. In accordance to our research it has been determined that it is not necessary to follow height of public debt by gross national product unit in neither of listed models, since the position of debt is already covered by ratio of reserve to foreign debt. On territory of Croatia we can exclude the interest rate level analysis from the model because it has been proved that analysis is in the direct relation with gross national product growth.

We are hoping that this paper will stimulate researchers to turn to similar analyzes which would try to improve the quality and informative significance of macroprudential models.

By expanding time series and covering more business cycles could be given a more reliable model. Also, by including more macroprudential indicators in faze of preliminary research and by subsequent elimination of indicators which are showing high level of correlation it is possible to increase the informative significance of model.

Macroprudential analysis of individual segments of financial markets could give an insight in financial market structure. Tracking of macroprudential narrow range indicators, based on time series which would contain several business cycles, would enable better comprehension of financial stress expansion from one segment to other. On this way using the macroprudential analysis financial system infection and the way in which the disorder leads to a financial system crisis could be explained.

An interesting research could be conducted by testing the prognostic values of this model type. It would be necessary to determine if model created on macroprudential indicators base can provide timely information about onset of crisis probability. Creation of prognostic models would enable the regulation which would be aimed to balance the business cycle, unlike the intervention which is aimed to repair the collapse of financial market consequences. Although we could not avoid business cycle recession, a timely information about aggravation of conditions on financial market and system risk increase could enable better entry into recession of business cycle phase.

Notes

- (1) It is recognized that the original market disruption was caused by the expansion of mortgage loans that are following the process of securitization put into circulation in the financial market. Securitized bonds represented financial assets of underrated risks, highly sensitive to movements in the real estate market.
- (2) Logarithming, i.e. equating the natural logarithms of the left and right sides of the equation it is possible to transform the equation into a form that is easier to interpret and process the data. For a detailed look at this process (Kvesić, 2012: 321-232).
- (2) Croatian National Bank; The financial system of the Republic of Croatia http://www.hnb.hr/financijska_stabilnost/hfinancijka_sustav-1.htm

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Annexes

Macroprudential indicators of financial stability of Bosnia and Herzegovina

Review of macroprudential indicators	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP, real annual growth rate (%)	3,80	6,30	3,90	6,10	6,00	5,60	-2,70	0,80	1,00	-1,20	1,60
Current balance of balance of payment (% GDP)	-19,40	-16,30	-17,10	-7,80	-9,00	-14,10	-6,50	-6,10	-9,70	-9,30	-5,50
Reserve ratio towards foreign debt	0,70	0,86	0,97	1,34	1,69	1,48	1,19	1,03	0,96	0,91	0,95
Average annual inflation rate	0,60	0,40	3,80	6,10	1,50	7,40	-0,40	2,10	3,70	2,10	-0,10
Height of average annual interest rates	10,50	9,90	9,00	7,70	7,00	7,40	8,10	7,80	7,10	6,70	-
Public debt by GDP unit	27,70	25,50	25,30	21,10	18,00	17,00	21,50	25,30	25,80	27,80	28,30

Source: Statistics of Central bank of Bosnia and Herzegovina.

Macroeconomic stability indicators of financial system of Croatia

Review of macroprudential indicators	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP, real annual growth rate (%)	5,40	4,10	4,20	4,80	5,20	2,10	-7,40	-1,70	-0,30	-2,20	-0,90
Current balance of balance of payment (% GDP)	-6,20	-4,20	-5,20	-6,50	-7,20	-8,80	-5,10	-1,10	-0,90	-0,10	0,90
Reserve ratio towards foreign debt	0,33	0,28	0,29	0,29	0,28	0,22	0,23	0,23	0,24	0,25	0,28
Average annual inflation rate	1,80	2,10	3,30	3,20	2,90	6,10	2,40	1,10	2,30	3,40	2,20
Exchange rate on 31.12. (HRK: 1 EUR)	7,65	7,67	7,38	7,35	7,33	7,32	7,31	7,39	7,53	7,55	7,64
Height of average annual interest rate	4,50	4,50	4,50	4,50	4,88	9,00	9,00	9,00	7,83	7,00	7,00
Public debt by GDP unit	36,30	38,20	71,20	73,90	76,80	84,30	100,40	103,30	102,60	102,10	104,70
Index of real estate prices	67	74,4	82,8	97,5	109,2	113	108,8	100	96,3	97,3	81,2

Source: Statistics of National Bank of Republic of Croatia.