WHAT DEFINED THE DEPTH OF THE DECLINE IN THE CRISIS PERIOD?

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The paper discusses the factors that determined the significant cross-country variation of the economic recession during the crisis period. Regression analysis was carried out for a sample of 172 countries; in addition, the groups of developing and oil-producing countries are considered separately. The results obtained showed that factors representing three different sources had a significant impact on the depth of the recession: financial and trade channels for the spread of crisis shocks, as well as the presence of economic imbalances in the pre-crisis period. The constructed model has rather high explanatory properties. The contribution of various factors to the economic recession is calculated for developing countries and countries with emerging markets on average, as well as for Russia. Based on the results obtained, recommendations are proposed to reduce the vulnerability of the Russian economy to future crises.

Key words: crisis, recession factors, financial and trade shocks, cross-country analysis.

Keywords: crisis decline factors, financial and trade shocks, regression analysis.

1. Introduction

The global economic crisis of 2008-2009, provoked by problems in the financial system of developed countries, led to an unprecedented drop in production in the post-war history: the decline in world GDP in 2009 was 0.6% (and when calculated on the basis of market exchange rates - 2, 0%). The growth of the world economy slowed down significantly already in 2008 (down to 3.0% compared to 5.2% in 2007). At the same time, the flows of goods and capital between countries sharply decreased. The volume of international trade contracted by 10.7% in 2009, and net capital inflows to developing countries fell in 2008-2009. 3.5 times.

The uniqueness of the crisis is also in the fact that it covered almost the entire world: a drop in production, according to the results of 2009, was recorded in half of the countries (91 out of 183 included in the database of the IMF World Economy Review (IMF, 2010a), while in 2007, there were only three such coun-

tries), growth slowed down in 2009 compared to the pre-crisis 2007 in 166 out of 183 countries. The acceleration has been seen in only a few of the poorest countries in Africa and in select countries recovering from external and internal conflicts, such as Afghanistan and Zimbabwe. At the same time, the dynamics of production in 2008-2009. characterized by high cross-country variation. So, excluding the countries of the last specific group, the five countries leading the fall in 2009 showed a decrease in GDP for an average of 15.3 p.p. in year; The GDP of the leading growth countries increased by an average of 9.0 percentage points. in year. The difference in growth rates between leaders and outsiders was 24.3 percentage points. against 20.3 p.p. in 2007; the standard deviation of growth rates increased to 4.8 p.p. (compared to 4.0 p.p. in 2007).

Чем определялась глубина спада в кризисный период?

анализу дифференциации кризисного спада

Значимые переменные, включенные в уравнение	Число стран в выборке	R^2
Кредитный рычаг, режим курсовой политики, рост кредитования (слабая зависимость), присоединение к ЕС (дамми переменная)	40	0,64
Привлечение кредитов из развитых стран, доля продуктов питания в экспорте	93	0,24–0,26
Краткосрочный внешний долг	29	0,46
Сальдо счета текущих операций, рост частного кредита (оба показателя в % ВВП), логарифм душевой величины ВВП в 2007 г.	162	0,44
Те же	87	0,44
Сальдо счета текущих операций в 2006 г., качество регулирования финансового сектора, логарифм душевой величины ВВП в 2007 г.	75	0,41
Качество регулирования финансового сектора	45	0,46
Задолженность перед иностранными банками, внутренний спрос торговых партнеров, международные резервы (по отношению к сумме краткосрочного долга и сальдо счета текущих операций)	41	0,29

The pronounced differentiation of countries by the scale of the crisis recession gave impetus to the study of possible reasons for the observed differences (Berkmen, Gelos., Rennhack et al., 2009; Blanchard., Das, Faruqee,

2010; Lane, Milesi-Ferretti, 2010; Rose, Spiegel, 2009, 2010; IMF, 2010b). If at the first stage of studying the crisis, economists set the task of identifying the general factors that determined the recession in the world economy, then in the above series of works, a different logic is used. The authors try to find out how the countries that experienced the greatest recession differed from the countries where the recession was relatively weak. At the same time, both the parameters of the economy and the characteristics of economic policy can be included in the

Результаты регрессий на широких выборках

Спецификация	M1	M2
Выборка	Все страны	Все страны без малых и беднейших
Доля экспорта в ВВП	−1,747** (0,880)	−1,874* (1,059)
Сальдо текущего счета	6,071** (2,460)	5,136 (3,821)
Подушевой ВВП	−0,028*** (0,010)	0,007 (0,014)
Фиксированный курс	0,131 (0,447)	0,024 (0,559)
Фиксированный курс* дамми для экспортеров нефти		0,176 (1,209)
Дамми ограничений на потоки капитала		0,263 (0,497)
Частный долг/ВВП		−0,675*** (0,220)
Рост в торговых партнерах		0,878*** (0,270)

number of analyzed variables, which makes it possible to assess the effectiveness of its various options.

The dependence of the recession on certain characteristics indicates that they are directly or indirectly related to crisis mechanisms. The quantitative parameters of the constructed equations allow one to compare the significance of various channels of the crisis propagation. Research findings can be of practical value: they show which variables need to be controlled in order to reduce the depth of future crises, and how different economic policy options affect the resilience of the economy.

The previous discussion of the origins of the crisis (see, for example, (Blanchard, 2008; CEPR, 2008)) can be summarized as follows. In developed countries, the main role was played by a combination of conditions prevailing in the financial sector in the 2000s: low interest rates, massive capital inflows, increased financial leverage, accelerated lending, weakening government control over some segments of the financial system and new financial instruments. The result was an excessive growth in demand (overheating of the economy) in many countries, which would sooner or later require correction, an excessively rapid accumulation of debt, a decline in the quality of loan portfolios, and a general instability of the financial sector (often hidden for the time being). The key channels for transferring the crisis to developing countries are recognized, firstly, reduction of domestic and foreign lending (which is determined by the rapid reduction in leverage and the "flight of creditors to quality" as a result of a radical reassessment of financial risks), and secondly, trade shocks (associated with a decrease in demand from the first developed, and then most of the rest countries). This led to a contraction in export, investment, consumer, and in some cases, government demand.

Quantitative studies of the factors of the crisis are still at an early stage. First, only recently there have been estimates of changes in GDP for 2009, which accounts for the bulk of the recession in the crisis. Secondly, according to the authors themselves, the quality of explanation of intercountry differences obtained so far cannot be considered satisfactory, which indicates the need to continue research. Third, the results of different studies are often similar at the level of general conclusions, but there are serious differences in assessing the role of specific factors depending on the used recession indicator, sample of countries, etc.

The present work contributes to the considered problems in several directions. This is one of the first studies to use post-year 2009 GDP data to apply a slightly different measure of recession. Further, previous studies have shown that the decline in oil-producing countries is poorly explained by general factors (which led some authors to exclude this group of countries from the sample). This article is the first to attempt to examine the factors of decline within a group of oil-producing countries. The quality of some of the models obtained in this work is superior to the previously published versions. Finally, the equations constructed are used to discuss the factors behind the decline in the Russian economy.

2. Results of previous studies

In one of the first works on the problem under consideration (Rose, Spiegel, 2009), the following general concept was formulated, within the framework of which all subsequent studies fit.

The consequences of the crisis are described by a set of variables y*ij* (where i means a country, j is one of the crisis effects). In most studies, the analysis is limited to indicators related to the decline in production (although this decline is also described by a whole set of indicators). The size of the effect depends on such unobservable (latent) influences*ξi*, such as a decrease in the availability of credit resources (equation (1)). In this case, the impacts are determined by a combination of the observed variables x*ik*representing external shocks, parameters of the state of the economy, etc. (equation (2)). Substituting equation (2) in (1), we exclude latent variables from consideration, and the problem is reduced to constructing a relationship between the effect of the crisis and the factors x*ik* according to cross-country data.

The published works on the factors of differentiation of the crisis recession differ in the indicators of the crisis recession used, the sample of countries, and the set of potential factors. Here is a brief overview of the results.

All the many indicators of the impact of the crisis on production that have been used can be divided into two groups. Some studies use one or another estimate of the dynamics of GDP, while others study the deviation of this dynamics from the expected growth rates or from the trends prevailing before the crisis. The second approach seems preferable, since it is he who measures the actual impact of the crisis, while in the first approach the analyzed indicators are partially determined by the dynamics that developed in the pre-crisis period, and only partly by the impact of the crisis itself.

Several indicators are considered as indicators of production dynamics: change in GDP in 2008–2009, assessment of GDP growth rates in 2009 according to the consensus forecast, decline between the peak and the bottom of production. The "background" growth, from which the crisis deviation was counted, was also determined in several ways: as the IMF forecast (or consensus forecast for the corresponding period, prepared before its beginning), as the average economic growth rates for 1995-2007. or for 2005-2007.

Potential factors of differentiation of the crisis recession can be divided into several groups related to different channels of the potential impact of the crisis.

Trade channel. It includes two categories of variables: a) describing the trade shock to which various countries were subjected, and b) describing the vulnerability of the economy to trade shocks.

It turned out to be useful to decompose the impact to which the economy is exposed through the channels of international trade into two parts: a price shock (ie, a change in prices for exported and imported products) and a "volume" shock (a change in the physical volume of external demand). Price shocks were described as individual changes in the terms of trade or changes in prices for certain types of commodities. Volume shocks were calculated by aggregating changes in production or domestic demand in trading partner countries. As for the potential vulnerability of countries to foreign trade shocks, it was characterized by the degree of openness of the economy, the ratio of exports to GDP, and the commodity structure of exports.

Financial channel. The size of a financial shock (i.e., a reduction in the availability of credit) is determined by a combination of several categories of factors: a) a general reduction in cross-border capital flows, b) the course of the crisis in a given country, c) exogenous characteristics of the financial system and the economy as a whole, not related to the course of the crisis ... We are obviously only interested in the factors of the third group. These mainly include indicators of the state of the economy on the eve of the crisis, which determine the financial stability of the country, its "margin of safety" before possible shocks. In particular, this group of variables includes: current account balance, external debt in different definitions (full, private, short-term), gold and foreign exchange reserves, stock market growth ("bubbles" in the stock market created conditions for a sharp decline in the value of securities,

Imbalances in the economy. It is generally recognized that one of the sources of the crisis was the expansiveZionist macroeconomic policy, manifested in credit pumping, rapid growth in external debt, the appearance of bubbles in the stock and real estate markets, etc. The imbalances accumulated before the crisis can influence the decline in production in several ways. First, excessive domestic demand (overheating of the economy), sooner or later, inevitably leads to its subsequent correction. And the more the demand is "inflated", the greater, other things being equal, is the correction. Second, work on the analysis of the causes of the international financial crisis showed that one of the central places among such causes was occupied by the excessive growth of leverage. The more values it reached in a country in the pre-crisis period, the more correction was required to return it to normal values. Thirdly, large fiscal deficits or public debt indicate the need to adjust government consumption and / or transfers, while surplus and accumulated reserves suggest that the government has the ability to mitigate the impact of the crisis by offsetting the decline in private demand with tax cuts or increased government spending. In the studies under consideration,

this group of factors included: the size of the leverage, budget balance, government debt, inflation rates, the dynamics of lending in the pre-crisis period, the dynamics of the stock market growth. offsetting the decline in private demand by lowering taxes or increasing government spending. In the studies under consideration, this group of factors included: the size of the leverage, budget balance, government debt, inflation rates, the dynamics of lending in the pre-crisis period, the dynamics of the stock market growth. offsetting the decline in private demand by lowering taxes or increasing government spending. In the studies under consideration, this group of factors included: the size of the leverage, budget balance, government debt, inflation rates, the dynamics of lending in the pre-crisis period, the dynamics of the stock market growth.

Economic policy regime. The policy regime used on the eve of and during the crisis largely determines, on the one hand, the scale of accumulated macroeconomic risks, and on the other hand, the economy's ability to adapt to crisis shocks.

The most important are the following characteristics.

1. Exchange rate regime. It can be expected that the use of a floating exchange rate allows the economy to better adapt to external shocks.

2. Using the inflation targeting regime. This regime implies greater flexibility in exchange rate policy, so it may also be preferable in times of external shocks.

3. The quality of regulation of the financial system. Reflects a wide range of characteristics: regulatory restrictions on financial risks, the quality of prudential supervision, requirements for the transparency of financial institutions, etc.

Of course, our proposed classification of factors is conditional, in addition, some of them operate through several channels. However, their structuring is necessary for further discussion of the qualitative conclusions from the results obtained.

A general idea of the results obtained in the main works is given in table. 11... Even a brief review shows that factors associated with financial shocks (such as the dependence of the economy on external financing measured in one way or another) and imbalances accumulated in the pre-crisis period (short-term external debt, excessive increase in leverage, overheating of the economy) are mainly significant. ... This allowed some authors (Berkmen, Gelos, Rennhack et al., 2009; Blanchard, Das, Faruqee, 2010) to draw a general conclusion that in most cases the financial channel played the main role in the spread of the crisis. The trade channel significantly influenced production in those developing countries that are less integrated into the global financial system. Several studies

have also identified the significant impact of the policy regime. So, in the work (Berkmen, Gelos, Rennhack et al., 2009), the authors found that a flexible exchange rate regime helps to better cope with shocks, and the authors (Rose, Spiegel, 2010) concluded that high quality regulation of the financial sector mitigates the impact of the crisis. Description of variables and data

This paper examines the factors of the recessionary crisis for a sample of 172 countries represented in the database of the IMF World Economy Survey 2007–2010. (with the exception of a few countries in which there were military and / or internal political conflicts - such as Zimbabwe, Afghanistan, or for which key data were missing). The sample contains 23 developed and 149 developing countries.

As the main indicator of the crisis recession, we used the difference between the actual average growth rates in 2008-2009.

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1 Note that, along with the equations presented, some of the studies under consideration contain a large number of regressions. In particular, (Rose, Spiegel, 2009, 2010) use the principle of constructing all possible equations for the maximum possible number of explanatory and explainable variables and the growth rates predicted by the IMF before the active phase of the crisis (for 2008 - the forecast from April 2007, for 2009 - forecast from April 2008). This variable seems to have important advantages over other previously considered indicators of the crisis, since it allows us to take into account the following important circumstances:

- by the time the crisis began, different countries were at different stages of the economic cycle (in many countries, the economy was overheating). At the same time, in 2008, inertial dynamics still played an important role (the correlation of growth rates with growth in 2007 or with average indicators for 2005–2007 was 0.53);

different groups of countries are characterized by different standard rates and volatility of production growth. So, for developed countries, lower values of these indicators are typical.

The differences between the main ways of measuring the impact of the crisis on production can be illustrated by the example of Azerbaijan. The growth rates in this country were in 2008-2009. 10.0%, according to this indicator, the country was among the world leaders and ranked third. However, this high growth rate was significantly (18.5 percentage points) below the average for the 2005-2007 period. According to this criterion, Azerbaijan ranked second to last.

The production slowdown was partly due to the stabilization of oil production and is therefore predictable. Due to this, the deviation of GDP growth from the expected level was half as much and amounted to 9.3 percentage points. The variable we are using is different from all the previously used ones. It is closest to work (Berkmen, Gelos, Rennhack et al., 2009), however, in contrast to it, we use factual,

It is striking that almost all of the countries on the list represent the former Soviet Union, including Russia as the “leaders” of the recession. The list contains three oil-producing countries and one developed one. Note that the list includes economies with significant recession (countriesin the Baltics, Ukraine), a moderate recession against the background of expected rapid growth (Georgia, Russia) and countries with high but below forecasted growth (Azerbaijan, Angola). Noteworthy is the fact that among the "leaders" of the recession were almost all countries that had a record current account deficit before the crisis (in 2007, its ratio to GDP was 15 for Lithuania, 18 for Estonia, 20 for Georgia, Latvia - 22%). In all likelihood, countries with such an external account deficit are doomed to collapse if the situation on international financial markets deteriorates. It is more difficult to understand the principles by which the circle of countries was determined that relatively painlessly survived the crisis. The top five were Ethiopia, Malawi, Rwanda, Uruguay and Oman. In general, these are countries that are minimally integrated into the system of international finance,

As in other works, we also considered alternative indicators of the crisis recession, using them to test the robustness of the results obtained. This is the growth data for 2008-2009. (or only for 2009) minus growth in the pre-crisis (2005–2007) or longer term (1995–2007) period.

The following indicators are considered as potential factors of decline in this paper.

Trading channel

- *Changes in the terms of trade* in the IV quarter. 2008 (the passage of the "bottom" most of the prices for raw materials) compared to the II quarter. 2008 (passing the peak of oil prices). It characterizes the external price shock.

*Aggregated deviation of the magnitude of the crisis recession from the forecasts in*countries-trading partners in 2008-2009 It characterizes a “volumetric” trade shock.

Export share in GDP in 2007 This indicator measures the vulnerability of an economy to trade shocks.

Financial channel

Current account balance in 2007... For exporters of hydrocarbons, the balance was cleared of "opportunistic" export revenues2... The construction of such a variable is due to an attempt to identify the “structural” size of the current account balance, which characterizes the potential dependence of oil-producing countries on external financing at oil prices corresponding to long-term average values.

External debt (total; private; short-term) as a percentage of GDP at the end of 2007

Amount of gold and foreign exchange reserves as a percentage of GDP at the end of 2007

Imbalances in the economy

Lending growth in the pre-crisis period (change in percentage points of GDP for 2004-2007).

Balance budget in percent of GDP in 2007 (for oil-exporting countries - non-oil balance in percent of GDP).

State debt percent of GDP (2007).

Sovereign wealth funds in percent of GDP (at the end of 2007).

Inflation rate (2007).

General measure of pre-crisis overheating of the economy - the difference between the average growth rates in 2006-2007 and 2001-2005.

Stock market capitalization growth (change in percentage points of GDP in 2004-2007). Reflects the possibility of excessive growth in the value of assets.

Economic policy regime

Exchange rate regime. Two options were distinguished here: a fixed or a relatively flexible exchange rate (floating or managed floating).

Restrictions on capital inflows (binary classification based on the 2007 IMF report).

Additionally, per capita GDP in 2007 and regional dummy variables were used as control variables. The sources of information were data from the IMF,

World Bank, OECD, World Trade Center and national agencies. 4. Construction of cross-country equations for the variation of the crisis recession All countries

In the first step, an attempt was made to identify the factors of recession for the widest sample of countries. As shown in column 1 of table. 3, the current account balance, the share of exports in GDP and GDP per capita turned out to be significant and had the expected sign. No significant impact of the exchange rate regime and restrictions on capital flows was found in such a large sample. The quality of the explanation for the differentiation of the crisis recession cannot be considered satisfactory (R2 = 0.10).

In this regard, small economies with a GDP volume of less than $ 3 billion in 2007 were excluded from the sample (mainly, these are the poorest countries in Africa and the dwarf states of the Caribbean). Some of the previous studies also excluded countries with low per capita or total GDP (IMF, 2010b). Explanatory variables were added such as growth deviation in trading partner countries and the ratio of private external debt to GDP (specifications with short-term debt and total external debt were also considered, but in this case the coefficients were less significant and the quality of the explanation was worse). The results are shown in column 2 of table. 3. As can be seen, all the coefficients have the expected sign, with the exception of GDP per capita, which lost its significance after excluding the poorest countries, who, on average, were the least affected by the crisis; growth in trading partners and debt / GDP ratios are highly significant; the significant impact of exchange rate policies and restrictions on capital inflows remains unclear. The explanatory power of the model has improved significantly (while keeping only the variables of the first specification R2 would rise to 0.18).

The robustness of the results for the M2 model was tested using alternative dependent variables - growth in 2008–2009. or 2009 minus average growth in 1995–2007 or 2005–2007. In all of these specifications, the coefficients of the variables significant in the original specification retained their sign; in two cases, restrictions on capital flows became significant (with the expected sign); the proportion of the explained variation turned out to be somewhat larger (R2 = 0.41ё0.43). This shows that the variant of determining the size of the crisis recession, which we use as the main one, is more difficult to model.

When analyzing the factors of decline, it seems justified to further narrow the sample due to its heterogeneity. For example, most developing countries, as you know, unlike developed ones, survived the initial phase of the crisis practically without consequences due to the relative isolation of their financial systems from problem assets. During the active phase of the crisis, a significant

number of developing countries suffered from the deterioration of the terms of trade, while for the vast majority of developed countries, they improved. Such differences in the data are indeed traced: for example, when specification (2) is limited for a subsample of developed countries, the previously significant coefficients turn out to be insignificant (except for the coefficient for external debt, which, however, also loses its significance when Ireland is excluded from the subsample). In this regard, further analysis was carried out separately for developed and developing countries (including countries with emerging markets); a group of hydrocarbon exporting countries is additionally considered.

Calculations aimed at identifying the main drivers of recession for developed countries led to mostly negative results: in addition to private debt and the fixed rate dummy, other variables (including public sector debt and budget deficits, which, as one would expect, could influence the potential size of the anti-crisis measures and, thus, the magnitude of the recession) were found to be insignificant under at least two possible specifications of the dependent variable. The explanatory qualities of the model using significant variables are low given the small size of the subsample (R2 = 0.30). In the following, more substantive results obtained from a sub-sample of developing countries are described in detail.

Rdeveloping countries

The sample of developing countries included 149 economies. When studying it, the variables considered earlier were added: changes in the terms of trade, growth in lending in the pre-crisis period, inflation in 2007, budget balance. These variables turned out to be insignificant in the "large" sample, however, due to the peculiarities of the spread of the crisis in developing countries, one might expect that some of them would be significant for this sample. A priori, one would expect that countries less affected by the fall in commodity prices experienced less recession. Countries with higher credit growth (a possible sign of overheating economies) were more likely to experience a stronger recession. The coefficient for inflation as a negative characteristic of pre-crisis macroeconomic stability should be negative,

During the calculations, it turned out that the introduction of new variables negatively affects the significance of some previously used variables, in particular, the current account balance. This is likely due to the significant negative correlation between this variable and lending growth (–0.47): in many countries, current account deficits reflected significant inflows of foreign bank capital that stimulated lending. Also insignificant (or insignificant in some specifications) is the ratio of exports to GDP.

The following were consistently significant in all regressions, as well as when using alternative specifications of the dependent variable: private sector debt, credit growth, and growth of trading partners. The change in the terms of trade turned out to be weakly significant for some and weakly insignificant for other variants of the dependent variable, while the coefficients always have the expected sign and are resistant to the addition of new regressors. These four variables were ultimately chosen as the basic factors of the decline (Table 4, model M3). The corresponding model is hereinafter referred to as "base".

In contrast to the results obtained in (Berkmen, Gelos, Rennhack et al., 2009), it is not possible to reveal the dependence of the recession on the exchange rate policy regime in the considered subsample of countries (Table 4, model M4). The hypothesis that countries that impose restrictions on capital flows were less affected by the crisis was also not confirmed. The influence of pre-crisis inflation is insignificant (this result does not depend on the specification of the dependent variable).

By analogy with the work (Blanchard, Das, Faruqee, 2010), an additional factor of external financial vulnerability was also considered - short-term debt. The results are shown in column 3 of table. 4 (model M5). Changing the specification does not improve the explanatory properties of the model; the significance of the debt ratio decreases; there is a slight increase in the significance of the coefficient under the terms of trade.

In the aforementioned work (Blanchardetal., 2010), as well as in the analytical section of the EBRD report (EBRD, 2009), the hypothesis was also put forward and tested that, all other things being equal, countries with a predominance of debt obligations to banks of developed countries in the structure of external debt less recession. The basis for this hypothesis was the fact that large Western banks had a significant "margin of safety" and made significant injections of resources into their subsidiaries in developing countries. In both works, this hypothesis was confirmed. In our study, when debt to banking organizations and other external debt are included in the regression separately, both corresponding coefficients are significant and negative, but the coefficient for debt to banks is higher in modulus (however, Wald's test does not reject the hypothesis of equality of coefficients). Thus, the findings of these studies appear to be volatile with respect to changes in sample size (Blanchardetal., 2010) and changes in the dependent variable (the EBRD report used the difference between growth in 2009 and average growth in 1999-2008.) ...

As in a number of previous works, we considered it appropriate to consider the sample with excluded hydrocarbon exporting countries. The explanatory

properties of the model have improved markedly. Indicator R2 increased to 0.57, which cannot be explained solely by reducing the sample size to 66 countries3...

The results indirectly indicate that the development of the decline in production in oil-producing countries had its own specifics. The next section attempts to analyze the factors that explain the differentiation of recession between different oil-producing countries.

WITHoil exporting countries

When studying oil exporting countries, it seems justified to modify the factors described above. First, the current account balance is used, cleared of "opportunistic" oil and gas exports, and secondly, the budget balance is replaced by the non-oil balance (which better reflects the level of fiscal discipline and, in addition, contains information on the level of oil revenues poured by the state into the economy). Further, instead of the ratio of exports / GDP and changes in the terms of trade, the ratio of oil exports to GDP can be used (since the second variable can be expected to be insignificant due to its small variation in the subsample). Of particular interest is the inclusion in the number of explanatory variables of the share of the oil and gas sector in GDP; the sign of the coefficient for it, however, is not obvious a priori. On the one hand, the larger this share, the greater the dependence of the economy on oil revenues; on the other hand, with a large value of this variable, the influence of oil and gas revenues on the “full volume” of the real economy is probably not so great - the volume of the non-oil sector is small, and the physical volumes of hydrocarbon supplies from many countries, although reduced, but insignificantly. Finally, it is important to take into account that most of the oil exporting countries in the pre-crisis period accumulated a significant amount of sovereign funds, which could be used to stimulate the economy during the crisis. The example of Norway is indicative in this respect, which, in the conditions of the crisis, resorted to additional - in addition to the fund's profitability - spending from the fund and following the results of the crisis had quite good indicators of a drop in GDP of 1.5%, and of unemployment - no more than 3.1%. with a large value of this variable, the influence of oil and gas revenues on the “full volume” of the real economy is probably not so great - the volume of the non-oil sector is small, and the physical volumes of hydrocarbon supplies from many countries, although reduced, but insignificantly. Finally, it is important to take into account that most of the oil-exporting countries in the pre-crisis period accumulated a significant amount of sovereign funds, which could be used to stimulate the economy during the crisis. An illustrative example in this regard is the example of Norway, which during the crisis resorted to additional - in addition to the fund's profitability -

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The resulting sample includes 24 countries, of which one (Norway) is developed. An attempt to use a modified baseline model for developing countries (using the full external debt due to the limited availability of data for a number of Gulf countries) leads to negative results (Table 5, model M7). In addition to small variation in terms of trade, this effect may be due to the lower income elasticity of demand for raw materials compared to demand for manufacturing products, which may lead to insignificant growth rates in trading partner countries. The inclusion of additional variables does not improve the quality of the model (Table 5, model M8 - a number of fiscal variables are included). When examining all factors, only two are the growth in government spending as a percentage of GDP in 2004-2007. and the ratio of capital inflows to GDP in 2007 - significantly affect growth, but the signs of the corresponding coefficients contradict the hypothesis about the influence of pre-crisis overheating on the recession. Only the pre-crisis overheating variable is consistently significant in all specifications. It should be borne in mind, however, that this variable may not be strictly exogenous, since the rapid growth in 2005–2007. could have a positive effect on the IMF forecasts for 2008-2009.

In the future, calculations were also carried out using an alternative dependent variable, which takes into account the dynamics of GDP not in 2008-2009, but only in 2009. The motivation for this is as follows: the initial variable was built taking into account the fact that many countries found themselves in a recession already at the end of 2008 d. However, most of the oil exporting countries showed strong growth in 2008, and in some of them (Qatar, Oman, Equatorial Guinea), this growth significantly exceeded the IMF forecasts. The use of an alternative variable thus allows one to study the actual effect of the crisis. The models built on its basis are distinguished by a greater explanatory power; In addition to the overheating variable, the lending growth variable and the dummy variable for the Persian Gulf region turn out to be persistently significant (Table 5, model M9).

Attempts have been made to explain the higher performance of the Gulf countries with the help of their characteristic objective indicators (exchange rate policy, restrictions on capital flows, a high share of the oil sector in GDP), but

they were unsuccessful (for example, Angola, where the role of the oil sector is also especially large, turned out to be one of the leaders in the fall). Perhaps, the resistance of these countries to external shocks (due to the very low cost of oil production) and the significant spread of non-market mechanisms in their economies played a role.

5. Impact of the crisis on lending and capital flows

It was noted above that both the present work and earlier studies concluded that the financial channel is important in the spread of the crisis. However, these conclusions are based on indirect evidence, such as the negative impact on production of indicators of the economy's dependence on external financing. In fact, it is assumed that the stronger this dependence, the more the capital inflow will decline and the lending will shrink. Let's check if this logic works.

One of the significant factors in our equations was the growth of lending in the pre-crisis period. Excessive growth in lending may mean that banks issued loans for high-risk projects, the profitability of which could significantly decrease during the crisis period. In this case, the volume of "bad" assets increases, and further lending slows down sharply. The "reversal of capital flows" plays an important role, as in many developing countries foreign banks are the most important source of financial resources. Finally, lending can be influenced by the general level of financial stability in the country; the ratio of international reserves to GDP was used as its characteristic. Regression analysis shows that these factors are indeed significant. However, when excluding China from the sample, characterized by a high level of reserves and, at the same time, a record growth in lending in 2009, the ratio at reserves becomes insignificant. After excluding reserves, the model becomes resistant to further exclusion of countries from the sample (Table 6, column 1).

The decline in capital inflows has clearly been one of the most important factors in the recession for many developing countries. To eliminate the problem of endogeneity, the dynamics of capital inflows was analyzed on the basis of pre-crisis indicators of external vulnerability - the current account balance and the ratio of short-term debt to GDP, as well as the openness of the capital account. If the first two factors really turn out to be significant predictors of "capital flight" during the crisis period, then the possibility of free capital transactions again turns out to be an insignificant factor (Table 6, column 2). Thus, we received confirmation of the hypothesis that the factors included in our models are indeed associated with the main indicators reflecting the negative impact on the economy through the financial channel - capital reversal and credit contraction.

Comparison of the baseline model with the equations obtained in previous works shows that, as in the article (IMF, 2010b) (and unlike most other studies), we constructed a regression in which all three main channels are represented by significant factors. That said, our finding applies to a sample of 78 developing countries, while a similar result (IMF, 2010b) applies to a more homogeneous and smaller sample of 41 emerging market economies. Despite this, our model explains much better the differentiation of the recession scales, having R2 = 0.49, compared to R 2 = 0.29 in the specified article.

The role of individual factors in cross-country variation in decline can be estimated by calculating the product of the coefficient for each variable by its standard deviation. The results show that the largest contribution is made by private external debt (1.0 pp); the growth of trading partners explains 0.8 pp, and the growth of lending - 0.7 pp. variations (the component in this subsample is 3.1 pp). The trade channel turns out to be a significant, although not the dominant factor in differentiating the scale of the crisis recession across countries.

The resulting basic model also makes it possible to decompose the scale of the crisis recession (and not its variation, as above) into separate channels, taking into account both the size of various shocks and their impact on production. Table 7 shows the calculated contribution to the decline in production of each factor for the considered subsample of 78 countries on average, as well as for 10% of outsider countries and 10% of leading countries. In general, for all countries, the trade channel explains 65% of the decline, while the share of the financial channel and pre-crisis imbalances account for 22 and 13%, respectively. We will get different conclusions if we look at how the model explains the difference between the worst decile of countries from the entire sample: the financial and trade channels explain about 40% of the observed difference, and imbalances - the remaining 20%.

Thus, the key general conclusion of our study is that the recession was determined by a set of factors related to the three main channels (financial, trade and cumulative imbalances) and had a comparable impact on production. At the same time, the role of the trading channel turns out to be much greater than in previous publications. The basic and some other specifications found a significant effect of both the reduction in the physical volume of external demand and the terms of trade on the decline in production. Note that the effect of trade shocks does not crowd out, but complements the action of other channels, which also remain significant.

How can you explain the difference between these conclusions and most of the previously obtained results? In our opinion, this may be determined by the

expansion of the period during which the dynamics of production is recorded. The various channels for the spread of the crisis should not be regarded as alternative; in fact, they were linked by complex interactions, complementing each other. At the initial stage of the crisis, it seems that the main role was played by factors related to the financial system. At the next stage, judging by our results, the contraction in international trade came to the fore (which, in fact, became a derivative shock caused by the initial contraction in demand)4... Both the scale of external influences (in particular, capital turnover) and the economy's response to them, at all stages, were largely determined by the imbalances accumulated in the economy. This picture allows us to combine the conclusions of earlier works with our results, removing the apparent contradiction between them.

Let us note the rather good explanatory properties of the basic model. The sample of our base M3 model is comparable to the P2 and P7 models from previously published works, which either analyzed data for a significantly smaller number of countries, or significantly lower*R* 2... The M6 model is based on a sample close to the sample of the P5 model, having a higher R value compared to it.2... The unexplained part of the recession can be attributed to such individual factors as the flexibility of the economy (its ability to adapt to shocks), the "quality" of the financial system, the actions of the government and the central bank during the crisis, the degree of trust of economic agents in the policy of the authorities, support (or lack thereof) from international financial organizations, etc.

From table. 7 shows that the relative accuracy of forecasting the decline in the leading countries is much worse than in the rest of the sample. This suggests that while bad results during a crisis provided a general explanation, good results were largely determined by individual circumstances. For some countries, this could be the receipt of official development assistance (Ethiopia), for others - strict state regulation of the economy (Belarus), etc.

7. Recession factors for Russia

Judging by the factors we included in the basic model, we must conclude that a deep decline in production in our country was natural.

Financial factors: private external debt at the end of 2007 amounted to $ 261.4 billion (20.2% of GDP, which is significantly higher than the median value for the sample - 11.2% of GDP), while at the end of 2003 it was only 76 , $ 7 billion. The current account deficit (cleared of "excess" oil and gas export revenues) amounted to 5.6% of GDP. Based on these data, the model of changes in

capital inflows described above predicts a fall in GDP by 5.5 percentage points. In fact, it amounted to 11.0 percentage points. due to the presence of a number of factors specific to Russia (in particular, a significant direct dependence on oil prices and their changes, as well as the exchange rate policy pursued by the Central Bank).

Trading factors: the decline in the countries - trade partners of Russia amounted to 6.9%. It should be noted, however, that actual exports in physical terms decreased by only 4.7%. In contrast to countries exporting mainly manufacturing products, the main negative shock for Russia was the shock to the terms of trade (the deterioration of which was 33.8% in Q4 2008 compared to Q2).

Economic policy factors: it can be concluded that in the pre-crisis period the necessary measures were not taken to prevent overheating of the economy. For example, Russia was one of the few oil-producing countries in which government spending in 2003-2007. grew as a percentage of GDP. In 2007, the non-oil budget deficit amounted to 5.2% of GDP. Exchange rate policy, along with capital account liberalization in 2006, contributed to an increase in volatile short-term capital inflows and an increase in foreign exchange imbalances. The volume of lending increased from 16.8% to 37.8% of GDP in 2003-2007. (Taking into account the fall in capital inflows, the model considered above predicts a fall in the growth rate of the loans / GDP ratio in the amount of 2.4 percentage points; the real decline was 2.5 percentage points).

The decline in production in Russia was observed for three consecutive quarters: from the IV quarter. 2008 to II quarter. 2009 It began later than in most developed and a number of developing (mainly Eastern European) countries, which up to a certain point made it possible to speak of Russia (and emerging markets in general) as an “island of stability”. Indeed, the volume of foreign "bad" assets on the balance sheets of Russian banks was small; the role of foreign players in the Russian banking system (unlike, for example, the Baltic countries) was also insignificant. Under these conditions, the capital inflow to the emerging markets continued (for Russia it remained until July 2008) and the rise in energy prices. However, after the bankruptcy of Lehman Brothers in September 2008, investor appetite for risk declined sharply. their expectations about the outlook for emerging markets turned negative, which led to a "flight to quality", difficulties in refinancing external debt, and a fall in commodity prices. As a result, Russia found itself among the key emerging markets (Brazil, South Africa, Turkey), where the decline in GDP began in the IV quarter of 2008.

The obvious direct sources of the downturn for Russia were a trade shock and a stalled capital inflow. Indeed, oil prices in the IV quarter of 2008 fell by 52.5%, which led to a decrease in export revenues (and, accordingly, profitability in the fuel and energy complex) and budget revenues, negatively affected consumer expectations and investor expectations, and became an additional factor of capital outflow. ... The cessation of capital inflow was all the more painful since a significant part of investments and an ever-increasing part of consumption were provided at the expense of external funds in the pre-crisis years. The assumption by Russian companies of excessive foreign exchange risks in the context of a quasi-fixed nominal exchange rate did not allow for a rapid devaluation and mitigate the consequences of the crisis for export-oriented industries, which were already affected by the decline in demand.

Let's see how Russia and other countries compare in all indicators that played a significant role in the drop in production (Table 8). If we compare Russia with a sample of developing countries, then our country is between the median of the sample and 10% of outsiders in terms of two parameters (the size of external debt and a decrease in external demand), in terms of pre-crisis lending growth it is close to outsiders, and in terms of changes in the terms of trade, it significantly exceeds their.

Given above in table. 7 Estimates of the contribution of various factors show that more than 2/3 of the decline in Russia is associated with a trade shock. This is in line with the position of many experts (see, for example (Blanchard., Das, Faruqee, 2010)), who believe that a sharp deterioration in the terms of trade played a leading role in the decline in the Russian economy. Based on the analysis of the recession factors, the following recommendations can be formulated.

Trading factors. It is necessary to increase the diversification of exports by product group and region. Despite a slight drop in physical volumes of supplies, due to the effect of the terms of trade, nominal exports from Russia decreased to a greater extent than that of exporting countries of more high-tech products, which indicates that it is not profitable to maintain a raw material orientation, despite the presence of more stable demand. The benefits of geographic diversification are well illustrated by the examples of two Latin American countries, Chile and Mexico. In Chile's foreign trade, as of 2009, 14 countries had export shares exceeding 2%; while the shares of only two countries (USA and Canada) in Mexico's exports were above 2%. As a result of the crisis, the drop in GDP in Chile in 2009 amounted to 1.6%, and in Mexico - 6.5% (deviation from the growth forecast -3.7 and -5.4%, respectively).

Exchange rate policy... The flexibility of exchange rate policy should be increased (which has already been done in part by the Central Bank). Despite the fact that this paper failed to show a significant effect of exchange rate policy on the recession, the increased volatility of the nominal exchange rate weakens the inflow of speculative capital and the accumulation of external debt, thereby mitigating the potential consequences of the "sudden stop".

Money-credit policy... Effective and transparent monetary policy aimed at smoothing cycles can mitigate the impact of the crisis. The work (IMF, 2010b) also showed that countries targeting inflation were less affected by the crisis.

Strict monitoring of the financial system and, in particular, capital inflows. In the event of excessive lending growth or an increase in capital inflows not driven by fundamental factors, it is necessary to consider the possibility of increasing reserve requirements. Countercyclical capital requirements are also a potential measure, but implementation of this requirement requires a balanced approach to address the risk of slowing lending. In addition, it is possible to limit excessive external borrowing by companies with state participation.

Fiscal Policy must contribute to sustainable development without creating conditions for overheating the economy. It is necessary to contain the growth of expenditures on the basis of conservative budget planning and renew the application of strict budgetary rules. In addition to increasing the level of macroeconomic stability, tight fiscal policy further contributes to a decrease in short-term capital inflows (IMF, 2010c) and a weakening of the real exchange rate of the national currency (Arezki, Ismail, 2010)).

If these recommendations are fulfilled, Russia in the future (in the event of the next financial crisis) may no longer be among the outsiders, but among the leaders.

Reference:

Yudaeva K.V., Kozlov K.K. (2009): Factors behind the global decline in GDP and industrial production during the 2008 crisis // Journal of the New Economic Association. No. 1–2.

Arezki R., Ismail K. (2010): Boom-Bust Cycle, Asymmetrical Fiscal Response and the Dutch Disease. IMF Working Paper WP / 10/94.

Berkmen P., Gelos G., Rennhack R. et al. (2009): The Global Financial Crisis: Explaining Cross-Country Differences in the Output Impact. IMF Working Paper WP / 09/280.

Blanchard O. (2008): The Crisis: Basic Mechanisms and Appropriate Policies. MIT, Department of Economics Working Paper Series. No. 09-01.

Blanchard O., Das M., Faruqee H. (2010): The Initial Impact of the Crisis on Emerging Market Countries // Brookings Papers on Economic Activity. Spring.

CEPR (2008): The First Global Financial Crisis of the 21st Century. [Electronic resource] Access mode: http://vox.cepr.org/index.php?q=node/1378, free. Title from the screen. Language. English (date accessed: August 2010).

EBRD (2009): Transition Report 2009: Transition in Crisis? [Electronic resource] Access mode:
http://www.ebrd.com/russian/downloads/research/transition/TR09b.pdf, free. Title from the screen. Language. English (date accessed: August 2010).

IMF (2010a): World Economic Outlook. IMF, October, 2010.

IMF (2010b): How Did Emerging Markets Cope in the Crisis? [Electronic resource] Access mode:
http://www.imf.org/external/np/pp/eng/2010/061510.pdf, free. Title from the screen. Language. English (date accessed: August 2010).

IMF (2010c): Global Financial Stability Report. IMF, October, 2010.

Lane P., Milesi-Ferretti G. (2010): The Cross-Country Incidence of the Global Crisis. IMF Working Paper WP / 10/171.

Rose A., Spiegel M. (2009): Cross-Country Causes and Consequences of 2008 Crisis: Early Warning. NBER Working Paper 15357.

Rose A., Spiegel M. (2010): Cross-Country causes and Consequences of the Crisis: and Update. NBER Working Paper 16243.