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The Effect of the Inefficient Management of the Macro Credit Risks on the Genesis of the European Debt Crisis

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Abstract: The subject of the research paper is credit risk, i.e. the management of credit risks. Credit risk, is targeting the financial institutions, i.e. the credit providers, whether it comes to banks, governments or credit unions. The sovereign or macro credit risk, in some cases can generate financial and debt crisis if it is not adequately managed by risk managers. . The main objective of the paper is to investigate the impact of inefficient management of macro-credit risk on the genesis of the current European debt crisis. In other words, the research should give answer how the poor management of these risks could ultimately destabilize the financial system of the countries or the European Union and cause irreconcilable debt and financial problems, as well.

Basic methods used in the paper are: a positive analysis, chart analysis, dialectical approach, comparative analysis. The survey should serve to credit managers, and governments, how should the credit risk be managed in order to prevent all the possible financial shocks. The paper should give answers to the creators of the macroeconomic policies, more specifically to the creators of the monetary and fiscal policy in the country, how to manage the actual and potential credit risks, and how to manage future debt crisis.

JEL Classifications: E44, E63, F33, G32

Keywords: Credit risk, European debt crisis, budget deficit, sovereign risk, exposure, credit rating

1. Credit Risk

The credit risk, or the so-called risk of default, shows the probability that the debtor would not fulfill his obligations, i.e. to pay the underlying debt and interest according to the contractual terms of the creditor. In fact, the credit risk represents the influence of the changed debtor credit ability on the creditor's financial assets, at s specific period of time. The worst credit risk case is the occurrence of the so-called "default", where the debtor is not paying the debt on schedule, but will never repay the funds, which the lender is forced to write off claims against the borrower and search other ways mechanisms to fulfill his credit rights. This situation can occur naturally, as a result of bankruptcy of the debtor, or artificially, when the borrower does not want in any way to settle the debt because of any other reason, although it is required by law. Credit risk, generally speaking, can be divided into three elements [1]:

1) default risk
2) exposure risk
3) risk of recovery.

All these risks can generate financial and economic crisis, but the prime subject of analysis in the paper will be the effects of the macro-credit risk. As noted above, this risk occurs when a particular debtor country, in terms of international lending, will not be able to repay the country's debt to the specific trustee, or in extreme cases, will never be able to repay the debt (default). The macro credit risk, can occur in cases when a particular financial institution, which is not part of the government of that country, has to repay the foreign debt in the defined period, so as a result, the country's credit rating declines, which implicates problems, about the future crediting.

The credit risk of the country can be defined as the risk that arises when borrowers from other countries (primarily the government or any other institution) would be unable, or unwilling to meet its obligations to the bank in the other country. This risk can be caused by more global causes, such as the: significant political changes, natural disasters, external shocks and economic and debt crises. However, the macro credit risk has a particular importance for the countries that exist and take loans under certain economic union conditions and principles, or to be more accurate, the macro credit risk is of particular importance for the countries in the European Union.

The credit risk is the product of the following four factors:

- Risk of default (PD), which presents the probability that over some period of time, a default will occur in form of credit non-settlement by the borrower within 3 or more months. This probability is known as the probability of occurrence of a default (Probability of default - PD), and it can vary from 0 to 1.
- Loss given default-LGD. This risk, in fact determines the loss of the creditor in cases of exposure to the risk event, or in terms of the occurrence of a default by the debtor. This risk is expressed as a percentage of EAD (next factor). In the absence of any loss, this parameter would be 0%, and when the occurrence of the event happens, when the creditor would have lost the entire amount of funds, the LGD would be 100%.
- Risk of exposure, or exposure at default - EAD. The risk of exposure actually is the uncertainty about the potential risk at the time of occurrence of the default by the debtor. A typical example of such a risk exists in cases with derivative instruments swap trading, because one party can not quantify the potential risk of default's consequences on the other party in the future. The banks are using some contractual clauses and limits, in order to ensure this risk.
- LIP (period identification of losses), a factor which reflects the period between the occurrence of the loss and recover it.

In modern terms, the focus on the credit risk shifts from managing individual risks, to the overall risk management of the bank, known as the so-called portfolio management risk of the bank.

The basic credit risks that target the domestic state government towards foreign creditors debtors can generally be dispersed in three categories [2]:

1) Rejection of the credit obligation etc. the default. Statement of the country that will continue to pay the obligations of the home country.
2) Restructuring or re- negotiating the loan terms after previous bilateral agreement.
3) Change of the state government or other political reasons, when you can directly create a credit default event. In all these cases the credit risk of the foreign country drastically decreases.

The risk of the government default is known as a sovereign credit risk, which can target all the countries in the world, and if not properly managed, can create financial and debt crisis (like Greece and the debt crisis in the euro zone), and in the worst case scenario can contribute for

emerging bankruptcy of the debtor state. When a state faces ongoing budget deficits, the government can apply two methods to reduce the consequences. The first is the increase in the country taxes, and the second is internal and external borrowing. The first method, by definition, is less popular because results in imminent reducing of the purchasing power of the residents, who often are willing to punish the government in the next election (the effects of taxation are often submitted by current generations).

Therefore, the governments are often practicing the second method of borrowing, which unlike the previous method, does not targets the current, but the future generations [3], so that governments, not only would not be "punished" by the residents, but would be "rewarded" for the reducing the budget deficit and rising the fiscal expansion in the present time, as well.

The quantification of the credit risk is a relatively sophisticated operation, which is necessary to take matter some multiple indicators. Furthermore, for successful analysis of the country risk (macro credit risk), and in order to create a separate model, analysts have to collect the following data [4]:

- official state reserves data
- existing short – termed foreign and non-financial public sector and state liabilities data
- data and financial reports for the private banks, especially in terms of capital adequacy.

2. Credit Risk Management in the Euro zone

The financial system in the EU is known as a system dominated by financial intermediaries, particularly banks. Only in the UK, which is not a member of the Euro zone, the financial markets have the dominant role.

The financial intermediaries have emerged in the last two decades, since 1995, as a result of the integration processes in the EU, expansion of financial instruments and increased liquidity, as a result of the credit expansion. The introduction of the single market and the introduction of the single currency in 2001 year, have further contributed to the growth of the integrative processes in the Union and widened the scope of activities of financial intermediaries.

Table 1. The structure of the financial institutions in EMS [5]

Institution	1998	2000	2002	2004	2006	2008	2010	2011
Credit institutions	8320	7521	6906	6406	6130	6570	6334	6210
Money (Cash) founds	1516	1651	1620	1670	1470	1721	1474	1275
Central banks and other institutions	20	21	18	19	16	19	20	48
Total	9856	9193	8544	8095	7616	8310	7828	7533

The dominance of credit institutions, have only confirmed the importance of the credit risk for the financial stability of the EMS system. However after 2007, the number of depository financial institutions has decreased.

The credit boom has lasted until the beginning of the global financial crisis in the 2008, when banks significantly have reduced their lending activities and have suffered major consequences. After the crisis, the number of credit institutions in the EU has been reduced, in that period, a large number of banks and other credit institutions have been default or significantly reduced their lending capacity, or more precise, for the period from 2000 to 2010, the European banks' deposits

have been grown by 87 %, while loans by 65%, which, in other hand, has contributed to the decline in the loans - deposits ratio in the Euro zone.

Table 2. The total assets of credit institutions as a percentage of GDP from 1996 to 2003 [6]

Country	1996	1997	1998	1999	2000	2001	2002	2003
Germany	225,7	256,2	275,3	285,9	298,7	296,7	297,0	295,5
Greece	99,0	107,0	118,5	137,6	155,8	153,9	141,6	150,0
Ireland	153,3	261,3	302,1	337,8	345,5	367,9	363,7	413,5
Italy	145,3	155,6	143,2	147,0	151,8	152,0	160,6	163,4
Portugal	160,9	163,8	190,4	196,2	174,6	272,8	260,6	254,6
Spain	164,7	170,5	172,9	177,9	202,4	183,6	184,2	192,5
Great Britain	284,1	329,2	302,4	328,3	335,2	363,7	351,1	386,4
EU average	260,8	287,3	286,4	294,7	293,5	319,6	302,9	305,4

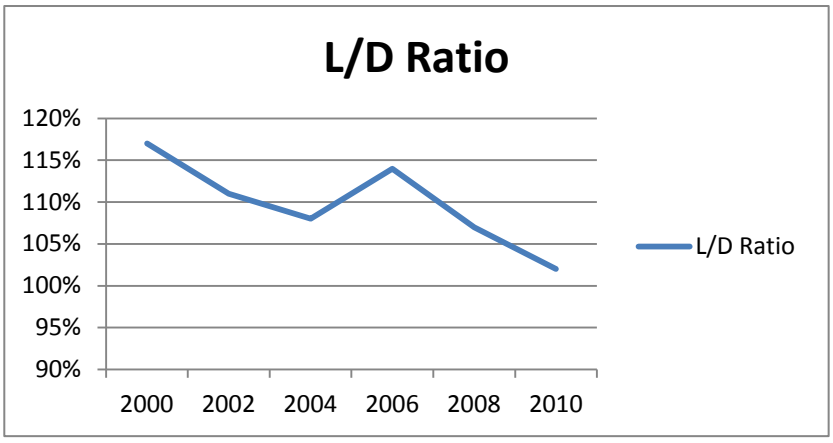

Figure 1. The loans – deposits ratio in Europe for the period from 2000 to 2010 [7]

Table 3. The total value of shares traded relative to GDP in EU markets during 2008 - 2011[8]

Country	2008	2009	2010	2011
France	115,3	52,1	57,6	53,2
Germany	85,7	39,1	42,8	48,8
Greece	14,1	16,1	14,7	8,5
Ireland	14,1	8,3	8,2	7,2
Spain	153,1	109,8	98,6	96,1
Sweden	132,0	96,2	95,0	93,7
Portugal	32,8	19,6	13,7	15,2

The loans reduction, was a consequence, and a cause of the crisis, at the same time. The dominance of credit institutions is confirmed by the relatively smaller volume of trading in the EU markets, and lower liquidity, unlike the U.S. and Japan systems. As noted, the EU markets were less

liquid than the U.S., markets, because the main financial sources for the companies were the bank loans, unlike the stocks, or other securities.

In the first few years, with the creation of the European monetary system (EMU), the number of loans, approves by the credit institutions, significantly rises in the EU, and therefore the indebtedness as well.

Table 4. The amount of loans granted by the EU credit institutions, 1997 to 2003[9], in billions $

Country	1997	1998	1999	2000	2001	2002	2003
Germany	205,2	218,1	227,0	237,8	144,4	140,9	139,9
Greece	35,9	42,4	49,9	62,4	62,1	66,8	71,4
Ireland	88,3	107,2	148,2	179,4	163,0	152,3	149,5
Italy	72,3	76,5	83,0	92,8	82,9	84,5	86,7
Portugal	78,5	99,9	130,7	162,7	132,1	135,7	135,7
Spain	83,2	94,2	107,2	124,5	100,6	104,2	110,5
Great Britain	121,6	120,0	145,8	163,4	132,6	131,7	139,1
EU Average	95,0	104,6	118,0	127,8	94,5	110,6	110,4

However, in the last decade, the number of the "bad loans" has increased, and therefore the total credit risk on micro and macro level. In fact, in this period, the lending activity of financial institutions, has been significantly declined, because of the financial and debt crisis, as well.

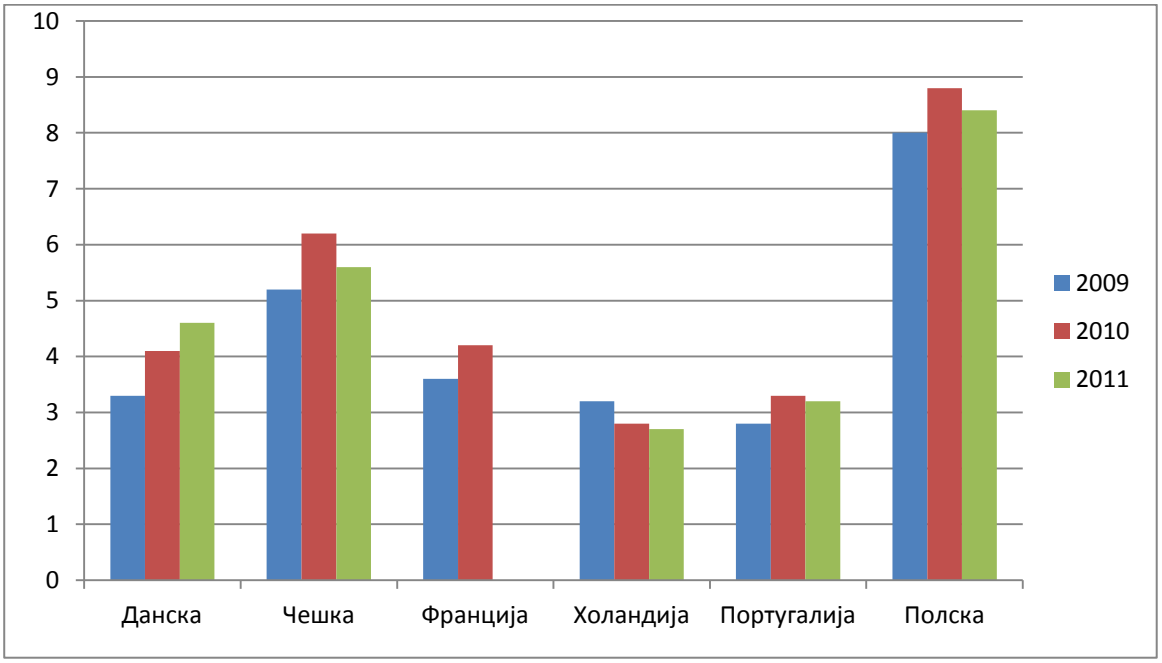

Figure 2. The percentage of the bad loans to total loans in the EU [10]

The increased bad loans ratio, has led to a decline in the credit ratings of borrowers institutions and governments in the Union. The reduced credit rating has meant that debtors need to pay a higher price, or a higher interest rate, for the future borrowings.

Table 5. The annual interest rates, in percentage, on the government bonds of Euro zone countries in 2011 and 2012 [11]

Country	January – 2011	December– 2011	January – 2012	December - 2012
EU Average	4,23	4,63	4,32	3,02
Belgium	4,14	4,35	4,11	2,10
Czech	3,98	3,70	3,39	2,12
Germany	3,02	1,93	1,82	1,30
Greece	**11,73**	**21,14**	**25,91**	**13,33**
Italy	4,73	6,81	6,54	4,54
France	3,44	3,16	3,18	2,01
Portugal	6,95	13,08	13,85	7,25
Spain	5,34	5,53	5,41	5,34

As can be seen from the table, the interest rates of the Greek bonds were the highest because of the largest credit risk and low probability of repayment of the country, Portugal, Italy and Spain, also had high interest rates, as well, that indicates us, that there is a large amount of macro credit risk in the monetary union, resulting in emerging the debt crisis, as a result.

3. The Impact of the Macro Credit Risks on the Emerging Euro zone Crisis 2010

The European debt crisis, at first, has emerged in Greece, when the Prime Minister Papandreou in the late 2009, has said that previous governments have covered up the size of the budget deficit, that de facto, was several times larger, on the other hand, the public debts haven't been transparently published and were also too large. When these arguments will be added to the fact that the Greek government have used the borrowed funds in a unproductive manner, that hasn't generated economic growth (GDP growth), it is logical to conclude that debt, which was 170% of GDP in 2013 [12], was difficult to return, and repay, so Greece was on the threshold of bankruptcy.

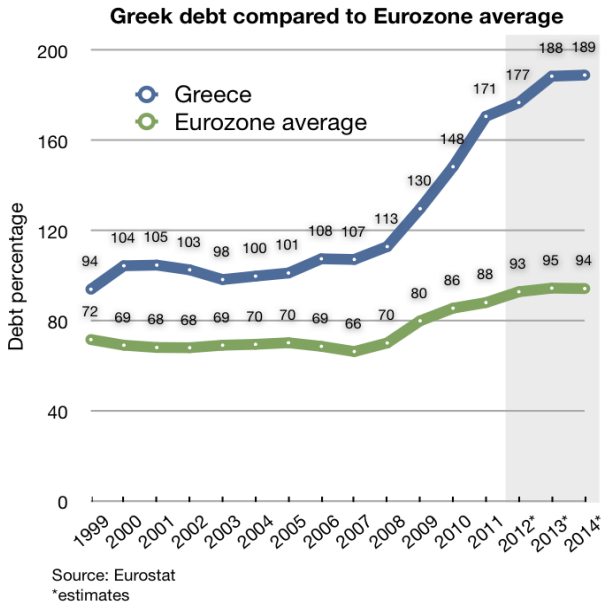

Figure 3. The Greek sovereign debt compared with the European average [13]

As you can see from the graph above, the Greek public debt in 2009 was 130% of GDP, or about $300 billion (twice higher than the allowed debt, by the "Copenhagen criteria"), and 170% from GDP in early 2013.Theese facts, don't give optimism for overcoming the crisis in Greece in the next period. High debt and huge budget deficit, could relatively easily be solved if Greece could leave the Union. However, this act, could be an example for other unstable economies, that might lead to the "destruction" of the monetary union and reducing the geostrategic importance of the European Union in international trends, which of course is unacceptable, primarily for France Germany, and the other countries, as well.

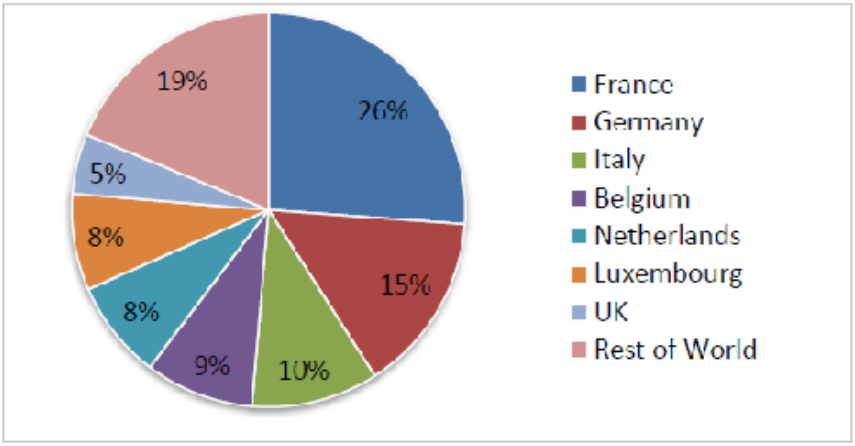

Figure 4. Structure of the Greek creditors in 2009 [14]
Source : *http://cadtm.org/Greece-Germany-who-owes-who-Part-2#nb5-9*

Greece was due mostly to German and French banks (41% of total debt), respectively, according to the Bank of International Settlements, Greece owed French banks 31 billion dollars, and 23 billion dollars to German banks. Almost 80% of the total external debt in 2009, Greece was due to the countries of the European Union, and that is the prime reason, why the bankruptcy of the Greek economy, was not a "feasible" resolution. According to the Financial times[15], the total Greece debt until 2010 was 236 billion dollars, or the main creditor nations and the corresponding amount are:

- 75 billion to French lenders
- 45 billion to German lenders
- 15 billion to British creditors,
- 9.7 billion to Portuguese lenders
- 8.9 billion for Italian lenders
- 8.5 billion towards Irish lenders

Based on this fact, we conclude that Greece has large credit exposure, especially to the French and German lenders, and therefore has incorporated large sovereign credit risk, which if not managed effectively, can be multiply the current crisis, and can cause another financial crisis through the channel of French and German lenders (where are the biggest European banks). In my opinion, if financial crisis, emerge in these countries, it would have disastrous consequences for Europe and the world, because the global financial crises almost always occur in Significant (large) countries.

Table 6. Greece's credit rating [16]

Foreign currency		**Local currency**	
Date	*Rating*	*Date*	*Rating*
2012-03-02	C	2012-03-02	C
2011-07-25	Ca	2011-07-25	Ca
2011-06-01	Caa1	2011-06-01	Caa1
2011-03-07	B1	2011-03-07	B1
2010-06-14	Ba1	2010-06-14	Ba1
2010-04-22	A3	2010-04-22	A3
2009-12-22	A2	2009-12-22	A2
2002-11-04	A1	2002-11-04	A1

From the table, we can realize that in a short period of only 2 years, the credit risks in Greece have significantly risen, and the credit rating has fallen from A to C. Other troubled countries are characterized by declining ratings, as well. The Spain's credit rating, in 2012, has declined to BBB - according to S & P, which automatically meant, that the country was on the brink of bankruptcy. For comparison, a year earlier, was Spain's rating was AA +, meaning that the country could not descend into trouble in the next time, which happened indeed. Also, the Ireland credit rating has fallen from AA-to BBB + for a period of one year, due to the large structural deficit and large state debt. The agency S & P, in 2011, has worsen the ratings of Portugal from A -to BBB, with indications of further reducing.

In the first quarter of 2013, Cyprus has faced a rating downgrade from CCC + to CCC, for comparison, in 2012, the government has had credit rating of Ba1, according to Moody's, or BB, according to S & P. The decline in ratings has meant emergence of macro credit risk, that needed to be efficiently managed.

On the other hand, in such a conditions, Greece's government has fallen in to the so-called "vicious circle of debt" and thus has brought uncertainty in the financial markets in Europe and in the world, as well. Shares lost its value, banks have reduced lending and mass withdrawal of foreign capital has happened, which even further decreased the liquidity in Greece and contributed to the emergence of an economic and social crisis, which in turn, has been manifested in increased unemployment, particularly in the public sector, reduced investment, social unrest and increased protests. However Greece was not the only Euro zone problem, with debt, and deficit issues. Spain, Portugal, Italy and Ireland, were in this group, as well.

Table 7. The debt in the Euro zone, according to the publisher, maturity and currency denomination, for the period 2006 to 2011 [17]

Year	Total	Executed from				Basic maturity			Residual maturity			Currencies	
		Central government	*state government*	*local government*	**rest**	**To 1 yr**	**Over 1 yr**	**Flexible rate**	**Till 1 yr**	**1 – 5 yr**	**Over 5 yr**	**Euro**	**Rest**
2006	68,7	55,4	6,5	5,3	1,4	7,3	61,4	4,4	14,3	24,2	30,1	67,9	0,7
2007	66,4	53,5	6,3	5,3	1,4	7,1	59,2	4,3	14,5	23,6	28,2	65,8	0,5
2008	70,2	56,9	6,7	5,3	1,3	10,0	60,2	5,0	17,7	23,5	29,1	69,3	0,9
2009	80,0	64,8	7,7	5,8	1,7	12,1	67,9	5,0	19,5	27,3	33,2	78,9	1,1
2010	85,4	69,2	8,3	5,9	1,9	13,0	72,4	5,2	21,2	29,3	34,9	84,2	1,1
2011	87,3	70,7	8,5	5,9	2,2	12,6	74,7	6,2	20,8	30,4	36,1	85,7	1,6

As noted, in this period, the general trend was the growth of the European Union debt, so the European debt crisis has emerged. The debt was due to inefficient management of the macro credit risk or more precisely, because of the declined credit rating, that has generated more expensive future borrowing, and the occurrence of the a vicious circle of debt.

As you can conclude, the risk growth and the inefficient management of credit risks (macro risks), can generate debt and financial crisis, which can be very quickly expanded over to the real and social sectors. We can conclude that the inefficient management of credit risks can generate financial crises through two channels:

- Approving loans without a detailed credit analysis in order to achieve greater profits, automatically means inefficient credit risk management and increased risks in the economy, through the growth of the "bad loans". Bad loans are written off assets that can distort the solvency of the less capitalized banks, especially in terms of reduced liquidity and recession trends in the economy. As we know, if one, two or more banks, declare bankruptcy, a systemic or banking crisis could be emerged, that can disrupt the financial stability of system.
- At the macro level, the international lenders have to effectively manage the credit risk in terms of assessing the credit rating of the borrower – country, analysis of economic potential, analysis of the current financial conditions and current debts of the same debtor, in order to prevent a possible debt crisis. If a debt crisis would emerge, the debtors Government would have difficulties to repay the past loans , and as a result of the worsen credit rating, and higher borrowing costs, bigger future interest rate , which would decrease the future creditworthiness.

4. Conclusion

Based on the research, we can conclude that the main reason for the genesis of the European debt crisis is exactly the inefficient management of the macro credit risk, which has risen the cost of borrowing, that created debt problems. Of course, there are other reasons for the crisis, but the research has confirmed the hypothesis, that there is a correlation between the inefficient management of credit risk and macro emergence of the debt crisis, which was the main purpose of this paper.

The survey should serve the economic policy makers, how to manage their credit commitments and principles, and how to conduct their credit policies and activities in the future.

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