

THE INFLUENCE OF COUNTRY RATINGS ON FOREIGN DIRECT INVESTMENT IN ROMANIA

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Abstract

It is well known that the country rating given by major rating agencies is an important factor that influences the behaviour of investors on a particular market. The paper aims to track the evolution of country ratings granted to Romania since 2000 and how they influenced foreign direct investments in our country.

Keywords: country risk, country ratings;

JEL classification: C20, G17, G24;

Introduction

First we will check the degree of correlation between the ratings of the three big agencies (Moody's Standard&Poor's and Fitch) and the foreign direct investments, then we will analyze the evolution of the received ratings and the investment flow year after year to see if ratings are in line with economic developments and to what extent investments are tracking country ratings

Methodology and Data Sources

In this paper it is intended to be assessed the impact of countries ratings on foreign direct investments. The paper is treated methodologically as a case study for Romania. For the period 2000-2017 the analysis is rather descriptive (thus using many figures) because the series of data is rather short, but for period 2007:M1-2017:M12 we used econometric analysis. In this sense, we will use two methods in order to understand and explain the connection between FDI and ratings. First, we have done a correlation matrix to see the link between FDI and Romania's sovereign risk ratings of three agencies: Moody's (SR-Moody's), S&P (SR-S&P), Fitch (SR-Fitch). Then, it will be constructed a regression equation to explain FDI according to sovereign ratings. After that, the Augmented Dickey-Fuller (ADF) test is used in order to examine the stationarity properties of the level and first difference of FDI and sovereign ratings. The data series is from National Bank of Romania (NBR) (for FDI express in million EUR, direct net investment) and Ministry of Public Finance of Romania. It would have been desirable to have data on inflows of foreign direct investment, but in their absence, we will use net investments that are net transactions involving financial assets and liabilities as direct investment between residents and non-residents; the minus sign indicated by the NBR is the net accumulation of liabilities of the nature of foreign direct investment. Since there have been some methodological changes in NBR statistics, we have adapted the older data to the Balance of Payments Manual and the International Investment Position of the IMF, 6th Edition, 2009 (BPM6). Finally, it is used the Granger causality test to see the direction of the correlation between FDI and Romania's ratings.

Results Obtained

In this paper, it is assessed the connection between Foreign Direct Investments (FDI) and country's ratings using a sample set of monthly data from Romania for the period of 2007-2017.

If we look at the situation of the FDI correlated with the sovereign ratings for Romania of main agencies, we can observe (Table 1) that, excluding the correlation between sovereign ratings between them, the correlation matrix shows that SR-S&P, SR-Moody's and SR-Fitch are rather

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equally correlated with FDI evolutions for Romania, but the values of correlation are rather poor. In the Figure no.1 it can be seen that FDI and ratings have not a clear trend.

Table 1. Title Matrix of correlation between FDI and sovereign ratings for Romania of main agencies for 2007:M1-2017:M12

	FDI flow	SR-Moody's	SR-S&P	SR-Fitch
FDI flow	1			
SR-Moody's	0.1843	1		
SR-S&P	0.1860	0.4820	1	
SR-Fitch	0.2115	-0.0879	0.6533	1

Source: Authors' calculations with data analysis tools.

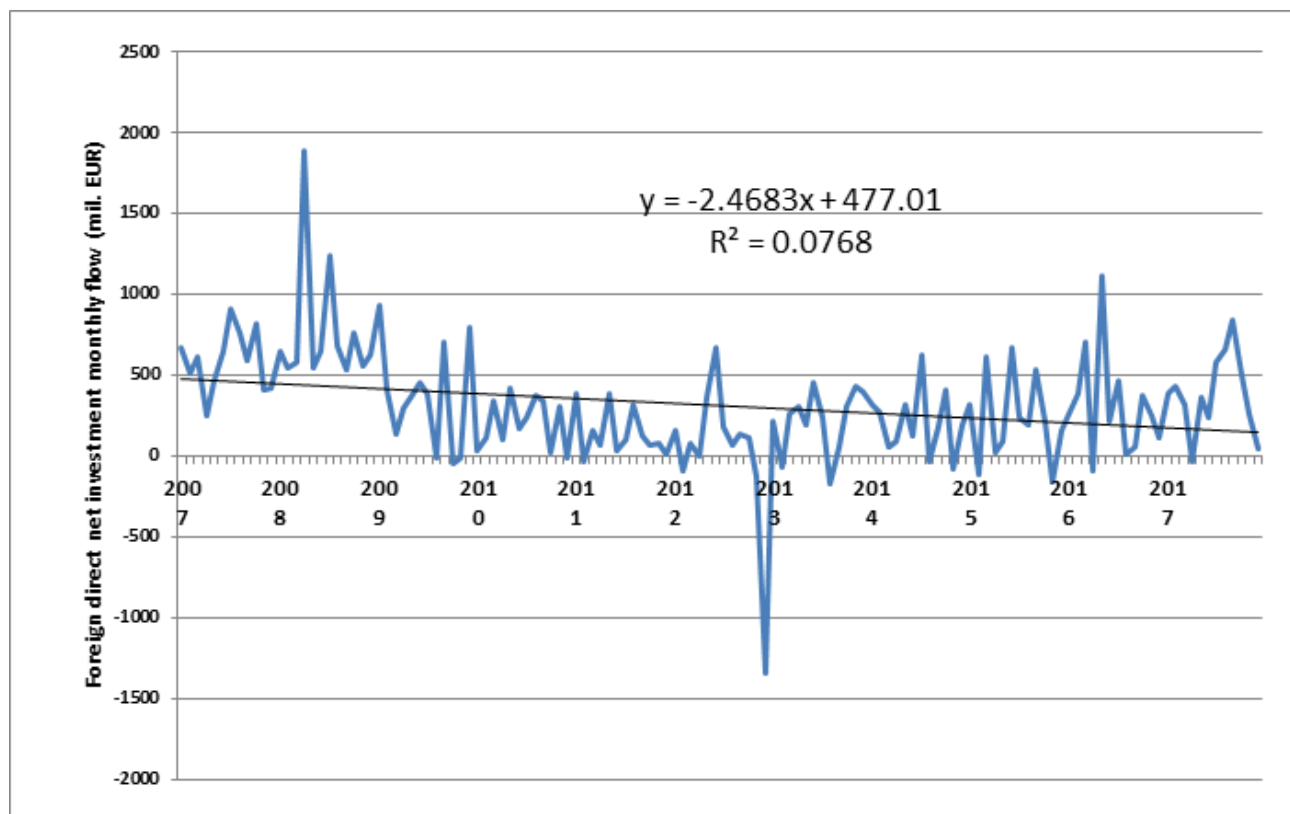
Data from NBR of Romania and Ministry of Public Finance of Romania

The paper tries to evidence the connection between FDI and sovereign ratings of Fitch, S&P and Moody's rating agencies, thus based on the results of correlation matrix the model is formulated as:

$$FDI_t = \beta_0 + \beta_1 SR\text{-}Moody's_t + \beta_2 SR\text{-}S\&P_t + \beta_3 SR\text{-}Fitch_t + \varepsilon_t \quad (1)$$

Where: FDI is the foreign direct investment (mil. EUR) in the year t, SR-Moody's_t is sovereign rating of Moody's the in the year t, SR-Fitch_t is sovereign rating of Fitch the in the year t, ε_t is an error term in the year t and β_0 , β_1 and β_2 are the equation's coefficients. Based on the established model, we design the regression equation (see Table 2).

Figure 1. Trends of monthly net FDI flow and Sovereign Ratings for Romania for 2007:M1-2017:M12



Source: Data from NBR and Ministry of Public Finance of Romania

Table 2. Regression equation in order to explain the relationship between FDI and sovereign ratings for Romania of main agencies for 2007:M1-2017:M12

Regression Statistics	
Multiple R	0.32
R Square	0.10
Adjusted R Square	0.08
Standard Error	326.93
Observations	132

	df	SS	MS	F	Significance F
Regression	3	1522304.80	507434.93	4.75	0.00
Residual	128	13681388.70	106885.85		
Total	131	15203693.50			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	5447.76	1465.03	3.72	0.00	2548.95	8346.57	2548.95	8346.57
SR-Moody's	-374.56	138.53	-2.70	0.01	-648.67	-100.45	-648.67	-100.45
SR-S&P	134.30	95.44	1.41	0.16	-54.54	323.15	-54.54	323.15
SR-Fitch	-191.11	69.04	-2.77	0.01	-327.71	-54.50	-327.71	-54.50

Source: authors' calculations with Excel data analysis; data from NBR of Romania and Ministry of Public Finance of Romania,

Analyzing the value of the determination coefficient or R², which is used to measure the intensity of the correlation between the endogenous variable and its determinants, it is observed that the value of 0.10 is rather poor. At the same time, with respect to the adjusted R², equal to 0.08 at the sample level, it can be suggested that there is no strong correlation between the variables in the model but the F significance and the associated probability or the p-values of independent variables are well below 0.05 (except the p-values of SR-S&P) which confirms that for those indicators, the null hypothesis H₀ can be rejected, thus the model is well specified.

In order to adjust the results (to increase adjusted R²), we used a Bayesian VAR Estimates for the expressed equation and the results contain also the methods of estimation of the volatility of statistical series (ARCH and GARCH). The adjusted determination coefficient of 0.827806 reflects the strong correlation between the model variables. The enormous difference between the two approaches reflects the fact that Bayesian VAR Estimates is a lot more accurate compared to the classical one.

Table 3. The Bayesian VAR estimation of the regression equation in order to explain the relationship between FDI and sovereign ratings for Romania of main agencies for 2007:M1-2017:M12

Bayesian VAR Estimates	
Date: 12/14/18 Time: 12:21	
Sample (adjusted): 3 132	
Included observations: 130 after adjustments	
Prior type: Litterman/Minnesota	
Initial residual covariance: Univariate AR	
Hyper-parameters: Mu: 0, L1: 0.1, L2: 0.99, L3: 1	
Standard errors in () & t-statistics in []	
	FDI_FLOW
FDI_FLOW(-1)	0.712416
	(0.047260)
	[15.07470]

Source: authors' calculations with Eviews 10

Table 3. The Bayesian VAR estimation of the regression equation in order to explain the relationship between FDI and sovereign ratings for Romania of main agencies for 2007:M1-2017:M12 (continuation)

FDI_FLOW(-2)	0.121785
	(0.040790)
	[2.985460]
SR_FITCH	-10.79278
	(7.31914)
	[-1.474600]
SR_MOODY_S	15.144400
	(8.939650)
	[1.694070]
SR_S_P	0.152144
	(11.574000)
	[0.013150]
R-squared	0.833145
Adj. R-squared	0.827806
Sum sq. resids	251496.500000
S.E. equation	44.855010
F-statistic	156.038200
Mean dependent	314.022900
S.D. dependent	108.093900

Source: authors' calculations with Eviews 10

Also, to adjust the model and make correct specification, we will perform the Augmented Dickey-Fuller unit root test in levels and recognized first differences in order to determine univariate properties of the used data series (See Table 4).

Table 4. Augmented Dickey - Fuller Unit Root Test and Stationary Results, for FDI and sovereign ratings for Romania, 2007:M1-2017:M12

Serial label	Level	Critical value		First difference	Critical value	
		5%	1%		5%	1%
FDI_Flow	Constant&Trend	-3.4450	-4.0307	Constant	-2.8839	-3.4816
SR_S_P	-3.7929	-3.4445	-4.0296	-15.0083	-2.8838	-3.4812
SR_MOODY_S	-3.0804	-3.4445	-4.0296	-11.3234	-2.8838	-3.4812
SR_FITCH	-1.4234	-3.4445	-4.0296	-11.3429	-2.8838	-3.4812
	-2.1588	-3.4445	-4.0296	-11.3401	-2.8838	-3.4812

Source: authors' calculations in Eviews10; data from NBR and Ministry of Public Finance of Romania

In Table 4 we could reject the null hypothesis of unit roots for FDI flow for trend with constant but we could not reject the null hypothesis in level form for trend with constant for SR_S_P, SR_Moody's and SR_Fitch. However, the null hypothesis was rejected when ADF test was applied to the first differences with intercept for FDI flow, SR_S&P, SR_Moody's and SR_Fitch. Thus, the calculated Augmented Dickey-Fuller test statistics are less than their critical values, suggesting that the variables are not stationary at level. The first differences of FDI flow, SR_S&P, SR_Moody's and SR_Fitch with constant are stationary, indicating that these variables are integrated of order one I(1).

For Granger Causality the results are presented in Table 5. When the probability is under 0.05 we can reject the null hypothesis, thus the FDI Flow does Granger cause SR_S_P and FDI does Granger cause SR_FITCH for Romania.

Table 5. Standard Granger Causality Test Results, for FDI and sovereign ratings for Romania, 2007:M1-2017:M12

Pairwise Granger Causality Tests

Date: 11/23/18 Time: 22:01

Sample: 1 132

Lags: 12

Null Hypothesis:	Obs	F-Statistic	Prob.
SR_MOODY_S does not Granger Cause FDI_FLOW	120	1.57508	0.1121
FDI_FLOW does not Granger Cause SR_MOODY_S		0.51073	0.9032
SR_S_P does not Granger Cause FDI_FLOW	120	0.90688	0.5432
FDI_FLOW does not Granger Cause SR_S_P		1.81509	0.0563
SR_FITCH does not Granger Cause FDI_FLOW	120	1.64262	0.0928
FDI_FLOW does not Granger Cause SR_FITCH		2.51458	0.0065
SR_S_P does not Granger Cause SR_MOODY_S	120	0.63157	0.8105
SR_MOODY_S does not Granger Cause SR_S_P		0.41132	0.9559
SR_FITCH does not Granger Cause SR_MOODY_S	120	0.56172	0.8674
SR_MOODY_S does not Granger Cause SR_FITCH		0.06429	1.0000
SR_FITCH does not Granger Cause SR_S_P	120	0.61502	0.8247
SR_S_P does not Granger Cause SR_FITCH		0.47898	0.9225

Source: authors' calculations in Eviews10; data from NBR and Ministry of Public Finance of Romania

Table 6. The evolution of country ratings and the level of foreign direct investment FDI and sovereign ratings for Romania, 2000-2008

YEAR	2000	2001	2002	2003	2004	2005	2006	2007	2008
FDI (Mil Euro)	1147	1294	1212	1946	5183	5213	9059	7250	9496
Standard & Poor's									
Data	Aug. 4	Mar. 5	Apr. 19	Feb. 27	Sep. 14	Feb. 01	Sep. 5	Apr. 5	Oct. 27
Action	PC	PC	R+	R+	R+, PC	PC	PC	PC	R-
Rating/Perspective	B-/St	B-/P	B+/P	BB-/P	BB+/St	BB+/P	BBB-/P	BBB-/S	BB+/N
Data		Jun. 07		Sep. 17		Sep. 06		Nov. 06	
Action		R+		R+		R+, PC		PC	
Rating/Perspective		B/P		BB/P		BBB-/St		BBB-/N	
Fitch									
Data	21 sept	14 nov	14 jun	18 dec	23 aug	-	31 aug	-	31 ian
Action	PC	PC	R+	R+	PC	-	R+	-	PC
Rating/Perspective	B-/St	B/P	B+/St	BB/St	BB/P	-	BBB/St	-	BBB/N
Data	Nov. 16		Oct. 30		Nov. 17				Nov. 09
Action	R+		R+		R+				R-
Rating/Perspectiva	B/St		BB-/St		BBB-/St				BB+/N
JRCA									
Data	May 29	Dec. 12	Dec. 18	Dec. 17	Nov. 15	Sep. 09	Nov. 29	-	Dec. 18
Action		PC	R+	PC	R+	R+	R+	-	R-, PC
Rating/Perspective	BB-	BB-/P	BB/St	BB/P	BB+/P	BBB-/St	BBB/St	-	BBB-/N
Moody's									
Data	-	Dec.	Dec.	Dec.	-	Mar.	Oct.	-	-
Action	-	R+	R+	R+	-	R+	R+	-	-
Rating/Perspective	-	B2	B1/St	Ba3	-	Ba1/Po	Baa3/St	-	-
Rating or persp. change(+/-)	3	5	5	5	4	4	4	2-	3-

Source: data from NBR and Ministry of Public Finance of Romania

Table 7. FDI and sovereign ratings for Romania, 2009-2017

YEAR	2009	2010	2011	2012	2013	2014	2015	2016	2017
FDI (Mil Euro)	3488	2220	1815	2138	2725	2 421	3 461	4517	4797
Standard & Poor's									
Data	-	Mar. 09	Nov. 29	-	Nov. 22	May 16	-		
Action	-	PC		-	PC	R+, PC	-	-	-
Rating/Persp.	-	BB+/St	BB+/St	-	BB+/P	BBB-/St	-	-	-
Fitch									
Data	-	Feb. 02	Jul. 04	-	-	-	-		
Action	-	PC	R+	-	-	-	-	-	-
Rating/Persp.	-	BB+/St	BBB-/St	-	-	-	-	-	-
JRCA									
Data	-	Dec. 17	-	-	-	-	Apr. 23		
Action	-	PC	-	-	-	-	PC	R+,PC	-
Rating/Persp.	-	BBB-/St	-	-	-	-	BBB-/P	BBB/St	-
Moody's									
Data	-	-	-	Jun.	-	Apr.	Dec.	-	Apr.
Action	-	-	-	PC	-		PC	-	PC
Rating/Persp.	-	-	-	Baa3/N	-	Baa3/St	Baa3/P	-	Baa3/St
Rating or persp. change(+/-)	-	3+	2+	1-	1	1	2	1+	1-

Source: data from NBR and Ministry of Public Finance of Romania

Legend:

“PC” - perspective change; “R-” - rating downgrade; “R+” - rating increase;
Perspective: “N” – negative; “P”- positive; “St” – stabile;

Remarks

Until 2008, the beginning of the global financial crisis, Romania was evaluated very often (even twice a year). During this period Romania has constantly received rising ratings. The period 2000-2008 has been for Romania a period of economic growth, GDP rising every year. Foreign investment (flow and balance) has also increased year on year. Although 2008 has been a good year for the Romanian economy with a GDP growth of 7.3% and direct foreign investment inflows of 9.5 billion euros, Romania's ratings has been deteriorated by 3 rating agencies.

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
FDI (mil Euro)	1147	1294	1212	1946	5183	5213	9059	7250	9496

In 2009, Romania has been in severe recession, GDP has decreased by 6.6% and foreign direct investment has diminished by 70%. Despite this situation, the rating agencies have not changed the outlook of Romania's ratings.

In 2010, Romania's negative economic performance has continued, (GDP has decreased by 1.1% and the FDI inflows have reached 2.2 billion Euros). Despite this, the three agencies that have downgraded Romania's ratings in 2008, now have slightly raise its ratings (change by perspective).

In the period after the beginning of the crisis, the frequency of assigning a rating has been considerably lower than before (which has been a period of exuberance - AAA ratings for unsecure financial products were easily granted) even though Romania's economic path is good, even very good if we compare Romania's economic growth to that of other countries, including those in the EU.

The ratings that Romania had before the crisis have been assigned again in 2014 by Standard & Poor's (BBB with stable outlook) and Moody's (Baa3 with stable outlook).

The JRCA agency only at the beginning of 2016 reassigns Romania the BBB rating with a stable perspective that Romania had in 2006-2007.

The BBB rating with a stable outlook assigned by Fitch in 2006 has not been reached by Romania until now, the current rating being smaller, BBB- with a stable outlook.

Romania's accession to NATO in 2004 and to the EU in 2007 has had an important role in receiving rising ratings in the period 2000-2008. Romania's accession to the European Union took place on 1 January 2007. This date was proposed at the Thessaloniki Summit in 2003 and confirmed in Brussels in June 2004. If until 2003 the value of the foreign investments inflows was constant and relatively small, from 2003 to 2008 they had an extremely rapid growth, with investments in 2008 being about 8 times higher than in 2002.

A direct effect of country's ratings deterioration for Romania, as well as of the global crisis, has been the decrease of the foreign investment inflows from 2008 to the present.

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017
FDI (mil Euro)	3488	2220	1815	2138	2725	2 421	3 461	4517	4797

In 2015, 2016, 2017, Standard & Poor's and Fitch hold unchanged Romania's country rating from 2014, while the ratings granted by JRCA and Moody's have a similar movement, growth-decrease by changing the perspective from stable to positive and then rebound.

The value of foreign direct investment has declined during the crisis, with FDI in 2011 being less than 20% of the value of 2008, when foreign investments inflows have reached a maximum for Romania.

From 2011, foreign direct investment inflows have had an upward trend until 2017, when although there are the highest post-crisis investments, their value has only reached 50% of foreign direct investment inflows in 2008.

One can see that the increase in the country ratings is reflected in an increase of direct investments inflows in the following year (e.g. 2001, 2003, 2004, 2005, 2006) except for the years 2002 and 2007 when the investments have been lower than in the previous year despite upgraded ratings granted previously.

Although in 2007 there are two negative announcements of Standard & Poor's rating agency referring to Romania's downgrading, in the following year, it will take place the largest foreign investment inflows in Romania after 1989.

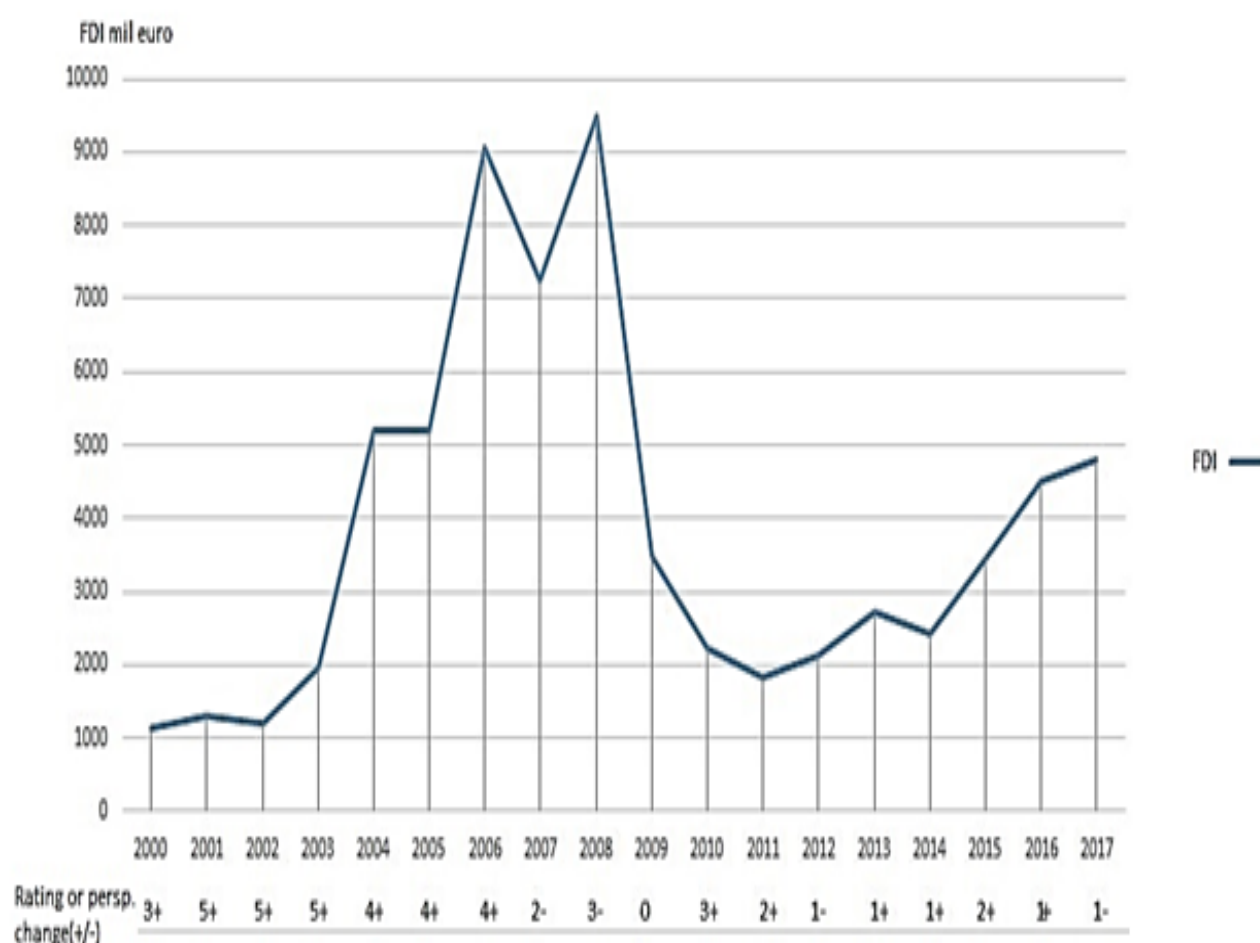
The 2008 crisis and the deterioration of the country's rating in 2008 resulted in a 3-year drop in foreign direct investment inflows (2009, 2010, 2011), and the country's raise of rating from 2010 did not influence positively next year's investment inflows.

Only in 2012, investments began to rise year on year with the exception of 2014 that can not be correlated with previous ratings.

The increase in FDI in 2016 and 2017 does not confirm the rating downgrade by changing the outlook from positive to stable of Moody's and JRCA (Explanation:

1. The expansive fiscal policy of Romania that has led to a substantial increase in the fiscal deficit, which is expected to generate an upward path in the public debt-to-GDP ratio.
2. Procyclical macroeconomic policies, which have led to a rapid rise in wages, a deterioration in price competitiveness, and an increase in the current account deficit.)

Figure 2. FDI flow and Change in Sovereign Ratings or Perspective for Romania between 2000 - 2017



Source: Data from NBR and Ministry of Public Finance of Romania

Conclusions

The article proposes an empirical analysis of foreign direct investment and the evolution of country ratings of the main international rating agencies (Moody's, S&P, Fitch).

If we look strictly at the econometric analysis on monthly data from 2007 (January) - 2017 (December) for Romania, we can see that the correlations between Net Foreign Direct Investment (FDI monthly flow) and the evolution of ratings of the main agencies (Moody's, S&P, Fitch) are rather weak. This is partly explained by a decrease in the net investment flow, but also by a relatively better rating of agencies in the analyses period.

If we look to the regression equation that connects the investments to the ratings of main international rating agencies (Moody's, S&P, Fitch) with the classical instrument of data analysis of Excel we can easily see that the intensity of the correlation between the endogenous variable and its determinants is rather poor, but the F significance and the associated probability or the p-values of independent variables are well below 0.05 which confirms that for those indicators, the null hypothesis H_0 can be rejected, thus the model is well specified. Thus, we got further and applied a more accurate Bayesian VAR Estimates for the expressed equation and the adjusted determination coefficient of 0.827806 reflects the strong correlation between the model variables.

Beyond the mild political tensions, Romania's economic and social realities are fairly good compared to the surrounding countries, but the realities are poorly reflected in ratings. Thus, according to some experts and us, the ratings of international rating agencies regarding Romania should have been much better. This aspect of course also reflects in the investment behaviour, and although, according to our Granger causality calculations, ratings do not influence the monthly

flow of net foreign direct investment, but only the monthly flow of net foreign direct investment influences S&P and Fitch ratings, yet it is difficult to say that there was no reverse link. These calculations should be interpreted with caution, given that the investments captured in the econometric analysis are also inputs and outputs and not just what should have been - only inflows of investments. This limitation of data availability should also be taken into account for our results.

As a number of policy-makers have highlighted, given that the ratings of major international agencies can "make up" or worsen the image of a country and influence capital inflows and the foreign investment behaviour, the question is how can be stopped the way of transmitting a bad image to the macroeconomic realities that the ratings agencies should just evaluate, not damage them. The answer to this question, in our opinion, should be reflected, at international level, in a more prudent interpretation and a more limited internalization of ratings evaluations of international rating agencies in all lending and investment decisions.

Future Directions to Be Approached

This type of analysis may be expanded to other countries or regions or involving many other explanatory variables for which there is an availability of data on foreign direct investments and countries ratings. The implications of ratings on foreign direct investments and other variables, although it seems to be of little importance in case of a positive economic development, in the event of macroeconomic shocks or even an economic crisis can prove its destructive capacities. Thus, this subject is an exciting area to explore further.

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