What makes a country a good debtor?

After a series of downgrades, all three credit rating agencies – Moody's, Standard & Poor's and Fitch Ratings – now list Hungary's sovereign debt in the lowest investment-grade category, with a negative outlook, meaning that a downgrade of just one more notch would place it in the speculative category. Due to the restrictions in investment policies, winding up in the "junk" category would have serious market consequences, reducing demand for both Hungarian government securities and the Hungarian currency, which, among other things, would mean that state debt could only be financed at the cost of higher yields and a weakening of the exchange rate. It is, therefore, imperative to implement the economic policy measures necessary to prevent such a downgrade. To understand the issues involved one needs to examine which are the key factors that could lead to a downgrade, and to see where, in general terms, an imaginary line could be drawn between investment grade countries and states classed in the speculative category due to their reputation as relatively poor debtors.

Countries with an investment grade rating can be separated from those in the speculative category using logistic regression,[1] which mainly differs from classic regression in that the result variable can only have two values[2]. When the model is estimated, of the numerous explanatory variables that may be presumed to play a role when deciding on credit ratings (inflation, per capita GDP in US dollars, gross and net state debt as a percentage of GDP, unemployment rate, net external debt as a percentage of GDP, base interest rate, CDS, current account balance), only two variables are significant – in other words, only these two variables affect the ratings – for a broad range of countries. One of these is gross state debt as a percentage of GDP which, through the extent of the interest burden (no direct data exists for the purpose of estimation in respect of any country) reveals the sustainability of public borrowing, while the other is per capita GDP in US dollars, which can be regarded as an indicator of the level of advancement. The emphasis on the state of advancement is due to the fact that the credit rating agencies use this as a benchmark when establishing countries' ratings, while in the case of developed countries a relatively high reallocation of welfare expenses gives greater scope for debt reduction.

For the two explanatory variables, the model's success rate is close to 84 percent, meaning that we correctly classified 92 of the 110 countries into the correct category. Chart 1 shows the countries by their actual credit rating (with investment-grade countries in green and speculative-grade countries in blue), together with the dividing line estimated by the model.

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[1] In this particular case logistic regression is applied as the classification procedure because there is no need to assume that the variables are normal, and neither is conformity of the variance-covariance structure within the group a prerequisite. If these conditions were fulfilled, it would be a simple matter, for example, to perform a discriminant analysis.

2 This of course makes it necessary to alter the estimation procedure. When incorporating the Logit model, we logarithmise the quotient of the probability of falling into either the investment or junk category, and then estimate it using the Maximum Likelihood method.

In the space occupied by the explanatory variables, as one would intuitively expect the line that divides the cluster inclines positively, which means that a higher per-capita GDP increases the likelihood of the country being placed in the investment category, while high public borrowing reduces this likelihood. The steepness of the line in absolute terms reflects the relative importance of the two dimensions. In the case of a horizontal line, the division would occur with regard only to GDP, with state debt an irrelevant factor. Therefore, based on the incline we can infer that the risk inherent in a high state debt also has a role. However, the dividing line is not so steep that the ratings of developed countries will be endangered in the near future due to an increase in the gross state debt.

Division of the countries based on per capita GDP and gross debt
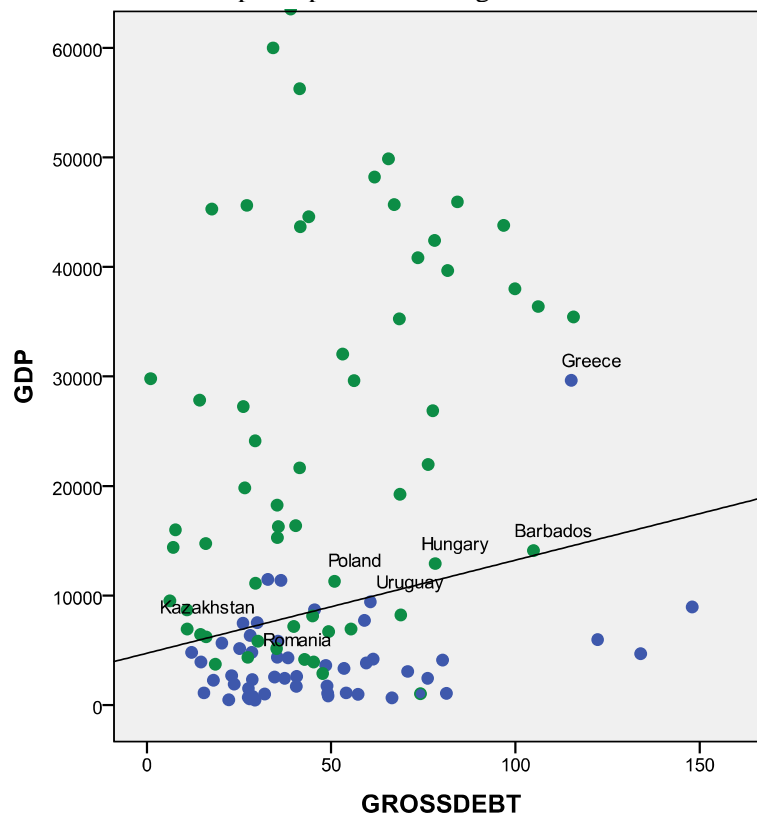
The blue countries above the line and green countries below the line are those whose classification has not been correctly predicted by the model. These errors could be explained to a certain extent by the omission of explanatory variables that significantly affect the rating of the given country, deviations in its classification among the different institutions, or possibly by expectations of an upgrade or downgrade. Morocco, for example, remains in the speculative category based on the Moody's valuation, although S&P[3] improved its rating to investment grade in 2010 citing its favourable debt dynamic. In Latvia the situation is reversed: Fitch has promoted the country to investment grade, but S&P's rating remains

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[3] In this model I classified the countries using their S&P ratings.

unchanged. In the case of Venezuela, due to numerous variables omitted from the model, the model failed to show its speculative rating which is mainly attributable to political risks.

Certain countries would clearly be in a different category according to the model

	GDP (per capita, mln USD)	Gross debt/GDP	S&P	Prob
Morocco	2882	48	BBB-	0,18
Thailand	3941	45	BBB+	0,23
Tunisia	4171	43	BBB	0,25
Venezuela	11383	36	BB-	0,72
Latvia	11466	33	BB+	0,74
Greece	29635	115	BB+	0,98

The extreme nature of Greece's position (compared to its rating, its per capita GDP expressed in USD is high) is a result of its membership in the Eurozone. Throughout the crisis, the protective shield of the Euro prevented the economy from adapting through currency depreciation. If the Greeks were to suddenly readopt the Drachma, then its immediate substantial depreciation would also significantly reduce GDP in USD terms, and Greece would move closer to the dividing line. Besides this, its lack of an independent monetary policy means that it is not possible to erode the debt with inflation, and therefore the risk of default is far greater than the model's explanatory variables would indicate.

Many countries occupy a position in the direct vicinity of the dividing line, which reflects the uncertainty of their classification. Examples of these are Turkey and Romania, whose proximity to the investment category in the model is in line with real-world market expectations regarding a potential upgrade. Hungary, on the other hand, teeters on the brink of a downgrade[4]. In order for the rating agencies to retract Hungary's downgrade, or to at least withdraw the negative outlook, on the basis of the model a rise in per capital GDP or a reduction in gross state debt would be required. Steps need to be taken, therefore, which would accomplish at least one of these two aims, without leading to any deterioration in the other variable. The reform package recently released by the government is reassuring on both counts, as its consistent execution could simultaneously raise potential growth and reduce the debt ratio.

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[4] Based the model, the probability of Hungary's being int he investment category is 60%.

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