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Comment on "Fundamentally Wrong: Market Pricing of Sovereigns and the Greek Financial Crisis"

Thanassis Kazanas, Elias Tzavalis *

Department of Economics, Athens University of Economics and Business, Greece

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ABSTRACT

Gibson's et al. (2013) provide evidence that credit ratings have exerted an independent influence on credit (sovereign) spreads for Greece beyond that implied by economic fundamentals. Based on the Markov Regime-switching model of Hamilton (1989), we show that this happens during the recent financial crisis regime, characterized by a higher mean and volatility of credit spreads. It is also true for Ireland and Portugal, also bailed out by their EU partners and IMF. We show that, for Greece and Portugal, the shift of credit spreads to their higher mean-volatility regime occurred before the collapse of Lehman brothers, thus discounting a higher price of sovereign credit risk for these two countries. In contrast to Ireland, this regime shift has not been triggered by a rating downgrades for Greece and Portugal. In this higher volatility regime, credit ratings seem to significantly influence future changes in credit spreads independently of economic fundamentals, for Greece and Portugal. For Ireland, they constitute the main factor of determining credit spreads.

1. Introduction

There is recently growing interest in investigating the determinants of credit (sovereign) spreads of EMU countries relative to Germany and, in particular, of Greece, Ireland and Portugal bailed out by their EU partners and IMF (see, e.g., Arghyrou and Kontonikas, 2012; De Santis, 2012; Bernoth and Erdogan, 2012; Afonso et al., 2013). Most of these studies show that the factors affecting the EMU credit spreads are associated with aggregate (mainly international), country-specific and contagion sources of risk. The country-specific risks are related to economic fundamentals such as fiscal and/or other macroeconomic imbalances, which increase the likelihood of a country to default on its sovereign debt.

Gibson's, Hall and Tavlas paper (2013) examines if credit ratings, announced by credit rating agencies, exert an independent impact on credit spreads, over-and-above that of the above economic fundamentals for Greece. This is an interesting question given that credit ratings are determined by movements in the above economic fundamentals such as fiscal imbalances, competitiveness, debt sustainability and economic growth. As aptly argued by De Santis (2012), credit ratings can also bring contagion risk to the force. The paper finds that, indeed, credit ratings have a significant impact on the EMU credit spreads for Greece, beyond that implied by economic fundamentals. Based on Kalman filter estimation procedure (or recursive least squares, see an earlier version of the paper), the authors indicate that this result is even stronger after the outbreak of the recent international financial crisis in year 2008.

* Corresponding author. Address: Department of Economics, Athens University of Economics and Business, 76 Patission Street, 104 34 Athens, Greece. Tel.: +30 2108203332.

E-mail address: e.tzavalis@aueb.gr (E. Tzavalis).

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In this short note, we examine how robust is Gibson's et al. (2013) above result with respect to explicitly modeling a regime shift in the relationship between credit spread and economic fundamentals. To this end, we re-estimate this relationship for Greece allowing for a regime shift in its conditional mean and volatility functions, based on Hamilton's (see Hamilton (1989)) Markov regime-switching model (MRS). This is also done for Portugal and Ireland, the two other countries bailed by their EU partners and IMF. The MRS model can reveal if the large in magnitude, time-varying changes of the coefficients of the credit spread and economic fundamental relationship of the above three EMU periphery countries, found by Gibson's et al. paper for Greece, can be explained by economic fundamentals or credit ratings in the different regimes of our sample, identified by applying the MRS model to our data.

2. Estimation of the credit spread – economic fundamentals relationship allowing for regime-switching

Table 1 presents estimates of the following credit spread relationship for the above three EMU-periphery countries, without allowing for regime-switching:

$$spr_{jt} = const_j + b_{j2}\frac{gd_{jt-1}}{gdp_{jt-1}} + b_{j3}\frac{ca_{jt-1}}{gdp_{jt-1}} + b_{j4}ipg_{jt-1} + b_{j5}\frac{gb_{jt-1}}{gdp_{jt-1}} + b_{j6}cr^{*}_{jt-1} + e_{jt}, \quad (1)$$

for j = {Greece, Ireland and Portugal}, where $spr_{jt} = r_{jt} - r_t^{GE}$ is the credit spread between the 10-year government bond yield of country j and that of Germany (GE), $\frac{gd_{jt-1}}{gdp_{jt-1}}$, $\frac{ca_{jt-1}}{gdp_{jt-1}}$ and $\frac{gb_{jt-1}}{gdp_{jt-1}}$ stand for the government deficit (gd), current account (ca) and government debt (gb) as ratio to GDP, respectively, IPG_{jt-1} is the annual growth rate of industrial production (ipg) and, finally, $cr^{*}_{jt-1} = cr_{jt-1} - average(cr_{jt-1})$ is a variable capturing the impact of a new rating at time $t-1$ (denoted as cr_{jt}) compared to the average ($average$) of those of the last twelve-months. To construct credit ratings variable cr_{jt}, we use the ratings assigned to each country j by Moody's, S& P and Fitch. We assign values of 22-1 to different rating of the above three agencies and we extract their common factor, based on principal components analysis. This approach of measuring cr_{jt} mitigates any small, indiosyncratic differences of ratings across the three agencies on our results. Our frequency of our data is monthly and covers period 2001:02–2012:12. The three ratio to gdp variables are given in quarterly basis, and thus have been interpolated, as in Gibson's et al. (2013).

The results of Table 1 indicate that there are economic fundamentals, such as $\frac{gb_{jt-1}}{gdp_{jt-1}}$, or $\frac{ca_{jt-1}}{gdp_{jt-1}}$ and ipg_{jt-1} for Greece at 10% level, which influence future credit spread changes one-period ahead. However, with the exception of $\frac{gb_{jt-1}}{gdp_{jt-1}}$, the other two variables have the incorrect sign. Apart from $\frac{gb_{jt-1}}{gdp_{jt-1}}$, the results of Table 1 also indicate that the credit rating news variable, cr^{*}_{jt-1}, has also an important effect on credit spread spr_{jt}. Its sign is also negative and it is consistent with the theory, meaning that a rating downgrade of a country's sovereign will lead to an increase of spr_{jt}. Note that, in terms of magnitude, the effects of cr^{*}_{jt-1} on spr_{jt} are found to be larger for Greece.

The results of the MRS specification of model (1) are given in Table 2. This specification assumes that all parameters of model (1) switch between two regimes, denoted as s_t = "0" and s_t = "1", respectively. The first regime is characterized by a lower level of the volatility and conditional mean functions of spread spr_{jt}, while the second by a higher. Note that the table presents estimates of the slope coefficient of cr^{*}_{jt-1} only in regime "1", given that these are found to be insignificant in regime "0".

The results of Table 2 and Fig. 1 lead to a number of interesting conclusions. First, the very small values of the transition probabilities between regimes "0" and "1", denoted as p_{01} and p_{10}, reported in the table indicate that there is a small transition probability across them. This result implies a high degree of persistency of each regime, during our sample. This can be also confirmed by the inspection of Fig. 1, which presents smoothed over-the-whole-sample estimates of the prob-

Table 1
Estimates of model (1).

$const_j$	$\frac{gd_{jt-1}}{gdp_{jt-1}}$	$\frac{ca_{jt-1}}{gdp_{jt-1}}$	ipg_{jt-1}	$\frac{gb_{jt-1}}{gdp_{jt-1}}$	cr^{*}_{jt-1}	$\overline{R}^2$
Greece						
−12.77	−0.04	0.13	0.27	0.14	−4.08	0.82
(−2.54)	(−0.49)	(1.75)	(1.87)	(2.69)	(−2.57)	
Portugal						
−1.36	0.03	0.013	−0.03	0.03	−2.94	0.90
(−2.17)	(0.85)	(0.34)	(−0.96)	(1.98)	(−6.11)	
Ireland						
−0.49	−0.014	−0.03	0.030	0.023	−1.87	0.90
(−1.28)	(−0.76)	(−1.10)	(1.31)	(2.01)	(−4.70)	

Notes: Sample period: 2001:02–2012:12, t statistics are in parentheses correct for White-heteroscedasticity and Newey-West standard errors allowing for one lag.