

## **Greek Fiscal Crisis and Repercussions** for the Property Market

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# Greek Fiscal Crisis and Repercussions for the Property Market

### Prodromos Vlamis<sup>#</sup>

#### **ABSTRACT**

The aim of the paper is to present a review of the fiscal imbalances and debt crisis in Greece and identify the possible links with the recent developments in the Greek property market. We follow a non-technical approach to discuss a number of factors that have contributed to the fiscal crisis that Greece has been experiencing since October 2009. We critically analyse both the "internal" causes of the deteriorating fiscal stance of the Greek economy (that is, the prolonged macroeconomic imbalances that the Greek economy faces and the credibility problem of macroeconomic policy) and the "external" factors that might have contributed to the Greek fiscal crisis (that is implications of the recent financial turmoil and the timing of the response of Europe to the Greek fiscal crisis). We then study the extent to which fiscal imbalances and the debt crisis have affected the Greek property sector.

One of the distinctive features of the paper is to critically discuss the direct and indirect effects of the prolonged macroeconomic imbalances on the Greek property sector. Our analysis indicates that the current fiscal stance of the Greek economy and the Greek property market crisis are intertwined. We believe that these results are useful and provide some evidence that current economic recession has a considerable adverse effect on the property sector in Greece.

<u>Keywords</u>: Greek Property Sector, Greek Fiscal Crisis

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# Greek Fiscal Crisis and Repercussions for the Property Market

#### 1. Introduction

The financial crisis that unfolded in mid-2008 led to a dramatic increase of public debt in many advanced economies. During the recent years, we have seen the transformation of the 2007 US subprime mortgage loan market crisis into a sovereign debt crisis in the Eurozone (Reinhart and Rogoff, 2009 and 2010). Greece and other periphery EMU countries (Ireland, Portugal and Cyprus) are severely hit by the sovereign debt "storm" (De Grauwe, 2010).

In late 2009 and early 2010, the ability of the Greek government to run large budget deficits for a very long period of time and to roll-over its debt has been questioned due to the perceived by the international capital markets high probability of sovereign default. The end result was an escalating cost of borrowing, which forced the Greek government to design and adopt a fiscal consolidation programme in order to reduce public debt and provide the framework to improve stability and growth of the economy (Kouretas and Vlamis, 2010).

The current Greek tragedy appears to have at least three key players. First, beyond any doubt the main responsibility for the debt crisis in Greece rests with the Greek governments and the existence of a weak political system that led to a constant mismanagement of the domestic economy adding government debt at a rate, which was much higher

than the rest of the Eurozone at a time that the level of the public debt has already been more than 100% of GDP.

Second, the financial markets and in particular the credit rating agencies have been very myopic in predicting the 2007 US sub-prime mortgage loan crisis. This failure led the credit rating agencies to an overreaction in their attempt to unveil potential sovereign debt crises. Greece and other periphery EMU countries were the natural targets since they had for a long period of time very large budget deficits. They kept downgrading Greece's sovereign debt rating due to the perceived by the international capital markets high probability of Greece's default and eventually, Greece was forced to withdraw from the international bond markets.

Third, a fair part of blame for the current situation is linked with the delayed reaction of the Eurozone governments as well as the European Central Bank (ECB hereafter). The Eurozone countries and in particular Germany failed to give a clear signal to the markets that they were willing to provide immediate political and financial support to whichever country was facing financial problems. One reason for this slow reaction is linked to the issue of whether a bailout of a country-member was allowed according to the EU Treaties. A stronger reason is the lack of political union in Europe, which has not as yet, in the fear of moral hazard issues, allowed the formation of a federal fiscal budget with a common fiscal policy within EU and an adjustment mechanism in place to deal with crisis at a supranational level. More recently, though, an attempt was made to set up rescue mechanisms of such kind (the European Financial Stability Facility and the European Stability Mechanism).

Also, the ECB did not have a clear strategy to fight the imminent debt crisis in early 2010; it did not provide a clear signal to the markets that it would keep accepting government bonds as collateral in liquidity provision even in the case that the credit ratings of the bonds have been downgraded below the A- threshold rating (Kouretas and Vlamis, 2010). It was only when it was made clear that the markets will keep speculating on the Greek bonds that the, at the time, President of the ECB, Jean-Claude Trichet announced that ECB will continue to accept Greek government debt as collateral, independently of the ratings assigned by the rating agencies.

As far as the Greek property market is concerned, this has always been one of the pillars of economic growth in Greece. The construction industry in particular was considered to be one of the most important sectors of the Greek economy (before the fiscal crisis) and this was not only because of its size (Kalfamanoli and Vlamis, 2010). It significantly affected the country's economic growth and because of that, its importance for the growth prospects of the Greek economy has never been questioned. More specifically, its contribution to the GDP since the year 2000 ranges between 6% and 8% (in both current and constant prices), while it employs more than 7% of the total country's labour force. Also, the construction sector affects heavily, although indirectly, other sectors of the Greek economy such as mining, building material, electrical equipment, etc. (Benos, Karagiannis and Vlamis, 2011).

The implementation of strict austerity programmes, from 2010 onwards, has caused substantial decrease in demand for goods and services pushing the Greek economy to a deep recession. Since there is a

feedback effect from the macroeconomy to the property sector (Karousos and Vlamis, 2008) individual sectors such as construction, real estate services etc. are expected to be negatively affected. In fact, quite a few companies that were considered as big players in the Greek real estate industry and used to be listed in the Athens Stock Exchange during the period 2000-2007, are now bankrupt.

The aim of this paper is first, to review and critically discuss the sources of fiscal imbalances and debt crisis in Greece. Second, although repercussions of the crisis cannot be entirely estimated since it is not over yet, we intend to provide a general overview of the recent developments in the real estate market in light of the current economic crisis. We do not try to prove here that there is a causal relationship -in econometrics terms- between macroeconomy and the property sector. We would rather like to present and analyse the likely negative effects that have been directed from the macroeconomy to the real estate market. To the best of the author's knowledge, none of the existing studies in this area provides systematic treatment of the Greek fiscal crisis as a contributory factor in explaining the current crisis in the Greek property market.

The paper is structured as follows: Section 2 presents a review of fiscal imbalances and the debt crisis in Greece. In Section 3, we present descriptive data regarding the recession in the Greek commercial real estate market. We also review the outcome of a survey conducted by the National Federation of the Greek Retailers showing the percentage of the retail shops that have ceased operation in the Attika region of Greece since August 2010 and we try to link these results with the likely

causes of the Greek property market crisis. Section 4 concludes the paper.

#### 2. The main causes of the current Greek fiscal crisis

There is no doubt that running consistently widening public deficits in combination with declining external competitiveness played a decisive role on the deteriorating fiscal stance of the Greek economylncreased public expenditure during the last decade, when Greece was experiencing high growth rates, has led to dramatic increase in borrowing requirements and high levels of accumulated public debt<sup>1</sup>. The lack of the necessary fiscal consolidation and the continuous false reporting of fiscal data have undermined the Greece's government credibility. In mid-October 2009, the newly elected government announced the budget deficit for 2009 was estimated to be 12.7% of GDP while the previous government was arguing in September 2009 that deficit would not be higher than 6.5% of GDP. The EU statistics agency, Eurostat, had retrospectively revised upward the Greek budget deficit for 2009 and this has been raised to 15.6% of GDP.

Moreover, the decline in competitiveness since EMU entry led to a persistent deficit in the current account (Malliaropoulos, 2010). Increased "twin deficits" together with the lack of structural reforms in home regarding labour market flexibility, social security and market competition, forced Greece to issue new bonds at short maturity periods and at higher interest rates compared to the "anchor" of the EMU, that is Germany. As a result, the ability of the Greek government to roll-over

<sup>&</sup>lt;sup>1</sup> The level of Central Government Debt as of 31.12.2009 amounted to €298.5 billion.

its debt has been brutally questioned due to the perceived by the international capital markets high probability of sovereign default.

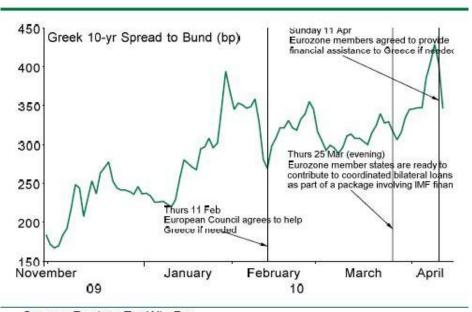
Other factors that contributed to the fiscal crisis, which Greece has been experiencing since October 2009, are exogenous and have to do with the implications of the recent financial turmoil and the timing of the response of Europe to the Greek fiscal crisis. More specifically, the Eurozone governments failed to give a clear signal indicating their readiness to support Greece, while the Greek fiscal crisis was escalating. Legal scepticism and questions like "are bailouts illegal?" were raised, mostly by Germany, for an issue which was partly political. However, there is nothing in the Maastricht Treaty that prevents EU Member States from providing Community financial assistance to a country in financial difficulty, with or without the support of an outside body. More specifically, Article 103a (section 2) of the Maastricht Treaty states that "where a Member State is in difficulties or is seriously threatened with severe difficulties caused by exceptional occurrences beyond its control, the Council may, acting unanimously on a proposal from the Commission, grant, under certain conditions, Community financial assistance to the Member State concerned" (Treaty on European Union, 1992).

While Eurozone policy makers were debating whether bailouts are illegal, at the same time there were some ambiguities about ECB's application of the minimum credit rating threshold in the collateral eligibility requirements for the purposes of the Eurosystem's credit operations in the case of marketable debt instruments issued or

guaranteed by the Greek government. These ambiguities created problems for financial institutions holding Greek government bonds.

Another exogenous factor that contributed to the instability of the Greek economy was the, at the time, lack of solidarity funds at an EU level. This lack of European solidarity was gradually mirrored in widening Greek spreads to German Bund. In the spring-summer of 2008, the spread of the 10-year Greek government bond yield against the German Bund ranged between 25 and 65 basis points. Then, following the general elections in October 2009, a dramatic increase of the spread was recorded when it was obvious that public debt was reaching an unsustainable level. Figure 1 shows how the 10-year Greek government bond yield against the German Bund fluctuated from early November 2009, just after the newly elected Social-democratic government came to power, until April 2010, when Eurozone members agreed to provide, if needed, financial assistance to Greece.

FIGURE 1: Greek 10-year bond yield spread to the German Bund - November 2009 - April 2010



Source: Reuters EcoWin Pro

On 11 February 2010, at an informal Summit, European leaders agreed to take coordinated action to ensure financial stability within the Eurozone, however, they did not produce a bailout plan for Greece. On 25 March 2010, the EU leaders agreed to provide bilateral loans pooled by the European Commission (the so-called "Greek Loan Facility") for a total amount of €110 billion (consisting of €80 billion provided by the euro-area Member States and €30 billion from the IMF) 3-year rescue package for Greece. The First Economic Adjustment Programme for Greece was adopted by the Eurogroup on 02 May 2010. The next day, the Governing Council of the ECB has decided to "suspend the application of the minimum credit rating threshold in the collateral eligibility requirements for the purposes of the Eurosystem's credit operations in the case of marketable debt instruments issued or guaranteed by the Greek government" (ECB, 2010) and that it will continue accepting the Greek government bonds until further notice (ECB, 2012a and 2012b).

On 9 May 2010, the European Financial Stability Facility (EFSF) was created by the Euro area Member States following the decisions taken within the framework of the Ecofin Council. It became fully operational in August 2010<sup>2</sup>. The EFSF's mandate is "to safeguard financial stability in Europe by providing financial assistance to euro area Member States within the framework of a macro-economic adjustment programme" (EFSF, 2013).

<sup>&</sup>lt;sup>2</sup> Later on, in October 2012, it was decided by the Euro area Member States to create a rather permanent rescue mechanism, the so called European Stability Mechanism, which entered into force on 8 October 2012.

On 27 October 2011, European leaders agreed on a 53 percent haircut of the Greek debt owed to private sector bondholders. The so called PSI<sup>+</sup> (private sector involvement plus) was successfully completed in March 2012. On 14 March 2012, the Euro area finance ministers approved financing of a Second Economic Adjustment Programme for Greece; the Euro area Member States and the IMF committed the undisbursed amounts of the "Greek Loan Facility" (that is the first economic adjustment programme) plus an additional €130 billion for the years 2012-14. Whereas the financing of the first programme was based on bilateral loans, it was agreed that - on the side of euro area Member States - the second programme would be financed by the EFSF (European Commission, 2013a).

As a result of all these developments, the total Central Government Debt outstanding as of 31.03.2013 was equal to €309.3 billion (Ministry of Finance, 2013a) and the debt-to-GDP ratio has been dramatically increased. More specifically, according to the Eurostat's Government finance statistics, the debt-to-GDP ratio (Table 1) has increased from 129.7% in 2009 to 148.3% in 2010 and 170.3% in 2011, while it dropped to 156.9% of GDP in 2012 (Eurostat, 2013). European Commission (2013b) argues that the debt-to-GDP ratio forecast will resume a declining path in 2014 and under the assumption that the Second Economic Adjustment Programme for Greece will be fully implemented, it is expected that Greece's general government debt would become lower than 120% of GDP by 2021.

TABLE 1: Eurostat's government finance statistics: Budget Deficit-to-GDP and Debt-to-GDP for EU-27

			balance			General gov		
	,	(net borrowing/lending of consolidated			(general government consolidated			
		general government sector)			gross debt)			
	2009	2010	2011	2012	2009	2010	2011	2012
EU-27	-6,9	-6,5	-4,4	-4,0	74,6	80,0	82,5	85,3
Euro area	-6,4	-6,2	-4,2	-3,7	80,0	85,4	87,3	90,6
Belgium	-5,6	-3,8	-3,7	-3,9	95,7	95,5	97,8	99,6
Bulgaria	-4,3	-3,1	-2,0	-0,8	14,6	16,2	16,3	18,5
Czech Republic	-5,8	-4,8	-3,3	-4,4	34,2	37,8	40,8	45,8
Denmark	-2,7	-2,5	-1,8	-4,0	40,7	42,7	46,4	45,8
Germany	-3,1	-4,1	-0,8	0,2	74,5	82,4	80,4	81,9
Estonia	-2,0	0,2	1,2	-0,3	7,2	6,7	6,2	10,1
Ireland	-13,9	-30,8	-13,4	-7,6	64,8	92,1	106,4	117,6
Greece	-15,6	-10,7	-9,5	-10,0	129,7	148,3	170,3	156,9
Spain	-11,2	-9,7	-9,4	-10,6	53,9	61,5	69,3	84,2
France	-7,5	-7,1	-5,3 -3,8	-4,8	79,2	82,4	85,8	90,2
Italy	-5,5	-4,5		-3,0	116,4	119,3	120,8	127,0
Cyprus	-6,1	-5,3	-6,3	-6,3	58,5	61,3	71,1	85,8
Latvia	-9,8	-8,1	-3,6	-1,2	36,9	44,4	41,9	40,7
Lithuania	-9,4	-7,2	-5,5	-3,2	29,3	37,9	38,5	40,7
Luxembourg	-0,8	-0,9	-0,2	-0,8	15,3	19,2	18,3	20,8
Hungary	-4,6	-4,3	4,3	-1,9 -3,3	79,8	81,8	81,4	79,2
Malta	-3,7	-3,6	-2,8		66,4	67,4	70,3	72,1
Netherlands	-5,6	-5,1	-4,5	-4,1	60,8	63,1	65,5	71,2
Austria	-4,1 -7,4	-4,5 -7,9	-2,5 -5,0	-2,5 -3,9	69,2	72,0	72,5	73,4
Poland	-7,4	-7,9	-5,0	-3,9	50,9	54,8	56,2	55,6
Portugal	-10,2	-9,8	-4,4	-6,4 -2,9	83,7	94,0	108,3	123.6
Romania	-9,0	-6,8	-5,6	-2,9	23,6	30,5	34,7	37,8
Slovenia	-6,2	-5,9	-6,4	-4,0	35,0	38,6	46,9	54,1
Slovakia	-8,0	-7,7	-5,1	-4,3	35,6	41,0	43,3	52,1
Finland	-2,5	-2,5	-0,8	-1,9	43,5	48,6	49,0	53,0
Sweden	-0,7	0,3	0,2	-0,5	42,6	39,4	38,4	38,2
United Kingdom	-11,5	-10,2	-7,8	-6,3	67,8	79,4	85,5	90,0
Iceland	-10,0	-10,1	-5,4	:	87,9	93,0	101,0	:
Norway	10,6	11,2	13,6	:	43,5	43,7	29,0	:
Croatia	-4,1	:	:	:	35,3	:	:	:
Turkey	-7,0	-2,6	:	:	46,1	42,4	:	:

<sup>(1)</sup> Data extracted on 22.04.2013.

Source: Eurostat (online data codes: tsieb080 and tsieb090)

Poul Thomsen, the IMF's mission chief for Greece, has recently commented that "while Greece's debt level is projected to remain high into the medium term, it will be on a clear downward path, and Greece's European partners have also promised to provide any additional debt relief required to keep it on this path, provided of course that Greece implements the program as promised. In concrete terms, they have committed to take any necessary measures to reduce the country's debt to 124 percent of GDP in 2020 and substantially below 110 percent in

2022, provided Greece meets its fiscal targets" <sup>3</sup>. Moreover, he added that "Greece has made very substantial progress in reducing its fiscal imbalances. It has undertaken a fiscal effort of close to 15 percent of GDP in underlying adjustment. This is large by any international comparison. And this year, Greece is on track to reach primary balance, so that spending—before you include interest payments—is equal to revenues. So, Greece has come to a much better situation on the fiscal side" (IMF, 2013a).

Final 2012 data confirmed that the primary fiscal deficit last year was narrower than the original programme target, at 6.3% of GDP (net of the 4% of GDP effect of bank recapitalizations), compared to the projected 7.3% in March 2012. Admittedly, the better-than-expected performance mainly stemmed from lower interest spending (down from €15bn, or 7.2% of GDP in 2011, to €9.7bn or 5.0% of GDP in 2012) following the successful completion of the March PSI<sup>+</sup> and the December debt buyback. The primary deficit, at 1.3% of GDP, stood broadly in line with the official forecast of 1.5% of GDP.

Data for the first four months of 2013 suggest this trend has continued (Ministry of Finance, 2013b). The central government budget deficit stood at €2.4bn fiscal year-to-date (April 2013), against a €7.2bn deficit in the same period of 2012. Moreover, revenues seem to be stabilizing, although at very low levels, in the past couple of months relative to a clear declining trend in the second half of 2012. The General Accounting

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<sup>&</sup>lt;sup>3</sup> Paul Thomsen's comment was made on the IMF Survey Magazine (June 5, 2013) on the occasion of the publication of the Fund's annual health check of the Greek economy. This publication was approved by the IMF's Executive Board on May 31, 2013, together with the third review of the IMF's €28 billion loan under the Extended Fund Facility.

Office of the Greek Ministry of Finance noted in the April budget press statement that revenues in the recent months had beaten the official targets for the first time. The development of the State Budget, until April 2013, makes apparent the intensification of fiscal adjustment efforts towards the target of a primary surplus of 4.5 percent of GDP or approximately €9.5 billion<sup>4</sup>.

Thus, it seems that public finances of the Greek economy gradually stabilise. However, major weaknesses and problems still impact the Greek government budget, including an inadequate tax collection mechanism and widespread tax evasion, the high unemployment rate, which is at record levels of 26% in 2012Q4 (Hellenic Statistical Authority, 2013a) and the economic recession for the year 2013, which is forecasted to reach 4.09% y-o-y (KEPE, 2013). Lastly, there is a growing discussion and concerns about: i) the likely shortfall in revenues in the years to come, ii) the determination of the fiscal gap for the period 2015-2016, which is currently estimated by the European Commission (2013c) to be at around 1¾% of GDP in 2015 and 2% of GDP in 2016 and by the IMF (2013b) to be at around €4.4 billion in 2015 and €6.5 billion in 2016, and iii) the necessary measures needed in order to cover that gap.

Gerry Rice, the Director of the Communications Department of the IMF, has recently commented that "...A gap is projected for after July 2014 but I think at this stage we want to take it one step at a time. We need to discuss the budget, we need to look at what exactly the financing needs would be, and what the financing gap would be in that context --

<sup>&</sup>lt;sup>4</sup> This target must be achieved by 2016.

also, to remind that the European partners have made commitments to provide adequate future financing for Greece, provided that the program is implemented" (IMF, 2013c).

# 3. The evolution of the Greek real estate market in light of the fiscal crisis

Published data by the Hellenic Statistical Authority (2013b) reveals that the Greek economy is in deep recession with the growth rate of GDP being -5.6% (measured in fixed prices, base year 2005) in 2013Q1 (in comparison to 2012Q1). This recession is reinforced by the existing negative psychology because the market participants are afraid of the not-yet-seen repercussions of the Greek debt crisis. Moreover, frequent changes to tax laws create uncertainty and reduce business confidence (Kalfamanoli and Vlamis, 2008). This is expected to affect negatively property transactions and, consequently, the companies engaged in the Greek construction sector, real estate services etc. Also, the so called "objective values" of real assets for both urban and rural areas are to be reviewed upwards -sometime between now and 2016- since they are unchanged since the year 2007. This might have a further negative effect on property transactions. Data that have recently been published by the Bank of Greece (2013a) shows that the volume of real estate sales continues to fall, from 74,586 in 2009 to 74,457 in 2010, 42,814 in 2011 and 29,584 in 2012 (Table 2).

<sup>&</sup>lt;sup>5</sup> The "objective value" of the real estate assets is, in fact, the "taxable value" of transactions in the Greek real estate market. Sometimes the "objective value" of a property is lower than its actual market value. To adjust for the difference between the objective value and the market value of a property, the former are frequently reviewed (particularly when Greek governments are short of tax revenues). "Objective values" for the different types of real estate assets are exogenously set by the Greek government and their estimation are theoretically based on prevailing market conditions (demand and supply).

TABLE 2: Volume of property transactions in Greece for 2009-2012 (in thousands)

	2009	2010	2011	2012
Volume of estimated property transactions (with financial institutions intermediation)	74,586	74,457	42,814	29,584
(%) percentage change	-35.7%	-0.2%	- 42.5%	-30,9%

Source: Bank of Greece (2013a).

The q-o-q picture for the volume of the property sales for 2012 and 2013 shows that they continue to fall, from 6,861 in 2012Q2 to 5,623 in 2012Q3 and 4,976 in 2013Q1 (Table 3).

TABLE 3: Volume of property transactions in Greece for 2012-2013 q-o-q (in thousands)

	2012Q1	2012Q2	2012Q3	2012Q4	2013Q1
Volume of estimated property transactions (with financial institutions intermediation)	6,594	6,861	5,623	10,506	4,976
(%) percentage change	-48.5%	-43.0%	-42.1%	27.3%	-24.5%

Source: Bank of Greece (2013a).

The crisis that the Greek property market is experiencing has also been crucially linked to the Greek banking crisis and the consequent credit crunch that has emerged; commercial banks are facing liquidity constraints and thus, since December 2010, they keep reducing the available funds to the domestic private sector (Bank of Greece, 2013b) (Table 4).

TABLE 4: Bank credit to the domestic private sector (percentage change)

Months	Year 2013	Year 2012	Year 2011	Year 2010
January	-3,2	-3,1	-0,7	3,6
February	-3,3	-3,2	-1.1	3,6
March	-3,2	-3,4	-1,3	3,5
April	-3,2	-3,4	-1,5	3,3
May	-3,1	-3,5	-1,7	3,0
June		-3,5	-1,7	2,3
July		-3,5	-2,1	1,9
August		-3,6	-2,1	1,6
September		-3,7	-2,1	1,0
October		-3,7	-2,4	0,7
November		-3,5	-2,7	0,3
December		-3,4	-2,9	-0,4

Source: Bank of Greece (2013b).

According to the most recent available data from the Hellenic Statistical Authority (2013c), the volume of the private and public building activity across the country (measured by the number of building permits) has decreased by 46% during the period April 2012 - March 2013 (in comparison to the period April 2011 - March 2012). Additionally, recently published data by the Hellenic Statistical Authority (2013d) reveals that the production index in construction has fallen by 19% in 2012Q4 (in comparison to 2011Q4)<sup>6</sup>.

<sup>&</sup>lt;sup>6</sup> Most of the Greek construction companies rushed to build new houses before the introduction of VAT on new residential buildings (effective from 01-01-2006). When they completed the construction of the houses in 2006-2007, demand for new houses had already started decelerating; people were more interested in buying second-hand houses (between 2-10 years old) rather than buying the more expensive brand new ones. The Greek construction companies are now unwilling to start selling in lower prices the stock of newly

As far as the commercial real estate sub-markets are concerned (Office market/industrial/logistics), they present the following features: a) tendency for renegotiation of the terms of the lease contracts, which very often leads to considerably lower rents for the lessee, b) reduced demand for new office, retail or industrial space because of the macroeconomic instability, which raises households' concern about future incomes and employment and c) higher yields for potential investors. Real estate market practitioners argue that this picture is expected to remain fairly similar for the year 2013 (Colliers International, 2012).

The implementation of strict austerity programmes since the year 2010 has been causing considerable decrease in demand for goods and services and the austerity programmes have pushed the Greek retail real estate sector into deep recession. Because of that, small and mediumsized retailers have been driven to bankruptcy. Thus, the current fiscal crisis has direct adverse effects on firm closure.

The National Federation of the Greek Retailers has conducted a survey regarding the retail shops that have ceased operation in the Attika region of Greece between August 2010 and March 2012. Results are presented in Table 5.

built houses that they own because if they do so, they will realize huge losses. As a result, there is excess supply of newly built houses on-sale around Greece, which is estimated to be around 150.000-200.000.

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TABLE 5: Percentage change of retail shops that closed down in the Attika Region of Greece between August 2010 and August 2012

Areas	August 2010	March 2011	August 2011	March 2012
City Centre-Athens	18	23.4	24.4	29.6
Marousi	16.3	17	19.5	17
Kifissia	11.8	21	23.8	23.7
Chalandri	17	22.3	20.5	20
Kolonaki	12.5	18.6	23.7	19.7
N. Ionia	14.7	17.8	21.2	28.1
Kalithea	13.5	16.8	19.6	22.7
Piraeus	11	17.6	22	27.3

<u>Source</u>: Data available from the National Federation of Greek Retailers (March, 2012).

In the eight major areas of the Attika region of Greece (City Centre-Athens, Marousi, Kifissia, Chalandri, Kolonaki, N. Ionia, Kalithea and Piraeus) there is an increasing tendency for closing down of retail shops, with percentages ranging between 11% in Piraeus to 29.6% in the City Centre of Athens. The severe increase in the percentage of retail shops that closed down in the City Centre of Athens between August 2010 and March 2012 can be attributed to a number of factors: 1) economic recession has hit the larger regions of Greece more severely (Hellenic Statistical Authority, 2010), 2) the increase in all different types of crime in the City Centre of Athens (Hellenic Police, 2012), and 3) the violent riots, against the introduction and implementation of harsh austerity measures, are usually taking place in the City Centre of Athens (National Federation of Greek Retailers, 2012).

As it is correctly pointed out in the Annual Report (p. 61) of the Governor

of the Bank of Greece for the Year 2011 (April 2012), the possibility of the Greek property market going out of the recession is crucially linked to market participants' expectations, improvement of the lending terms of companies and the recovery of the economy at large (Bank of Greece, 2012). It is very likely that it will take quite some time for the Greek property market to recover. This is the case because the factors that contributed to the exemplary growth performance of the Greek property sector, particularly after the year 2000, have now ceased to exist (Karousos and Vlamis, 2008).

Of primary importance was the contribution of the EU 2<sup>nd</sup> and 3<sup>rd</sup> Community Support Framework (CSF), which provided ample funding for public infrastructure. At the national level, all Greek regions enjoyed support from these programmes in terms of infrastructure investments, such as new roads and motorways, the railway network, airports, tourist sites, etc. (Benos, Karagiannis and Vlamis, 2011). The amount of money that Greece is expected to receive from the Fourth Community Support Framework for the period 2007-2013 is about €20 billion. Greece's share from the EU support framework is less than the money that Greece had previously secured with the three previous Community Support Programmes. A bigger share is now diverted to the new members of the EU which have substantially lower GDP compared to EU average (Karousos and Vlamis, 2008).

Second, during the 1990s and at the beginning of the new century, significant structural changes took place in Greece, which have had a certain effect on the Greek property sector. Starting from the international economic environment, the European Monetary Union was

underway through the implementation of stabilizing macroeconomic rules and policies that led to low cost of financing. Thus, a decline in interest rates made mortgage loans accessible and boosted demand for privately-owned housing. It is now expected that US and EU monetary authorities will increase interest rates in the medium to longer-term in order to deal with the likely inflationary pressures (ECB, 2011). Consequently, demand for new mortgage loans and household demand for newly built houses are expected to fall.

Third, the organisation of the Athens 2004 Olympic Games significantly boosted investment activity in Greece; construction of sports sites and development of public infrastructure projects. Fourth, the inclusion of new land in the National City Plan expanded the available space for new constructions mainly in the Capital city of Greece (Karousos and Vlamis, 2008).

## 4. Concluding comments

A number of factors have contributed to the fiscal crisis that Greece has been experiencing since October 2009. Some of these factors are endogenous; have to do with the structure of the Greek economy itself, the prolonged macroeconomic imbalances that the Greek economy faces and the credibility problem of macroeconomic policy. Other factors are exogenous and have to do with the implications of the recent financial turmoil, the functioning of the Eurozone itself and the timing of the response of Europe to the Greek fiscal crisis.

We briefly reviewed, in this paper, first the internal causes of the deteriorating fiscal stance of the Greek economy and then we discussed

the external factors that might have contributed to the Greek fiscal crisis. Whereas, in the short run, the attempt to ease the debt crisis came in the form of two rescue packages financed directly by EU and IMF (the first and the second bailout programme for Greece) and indirectly by the private sector bondholders, the solution to the Greek problem, in the long run, would be to redesign its economic and fiscal policies.

We also provided a general overview of the recent developments in the real estate market in light of the current economic crisis and tried to highlight and unveil the extent to which the current fiscal stance of the Greek economy and the Greek property market crisis are intertwined. It seems that fiscal imbalances of the Greek economy have negatively affected the Greek property sector; the implementation of strict austerity programmes designed by the Greek government, in order to reduce the budget deficit and stabilize public debt, caused a substantial decrease in demand for goods and services pushing the Greek economy and consequently the property market in deep recession.

#### References

- Bank of Greece (2012), "Annual report of the Governor of the Bank of Greece for the Year 2011" (in Greek), April, Athens, Greece.
- Bank of Greece (2013a), "Summary of the most important short-term indices available for the real estate market" (in Greek), March, Athens, Greece.
- Bank of Greece (2013b), "Bank credit to the domestic private sector: May 2013" Athens, Greece, available at: <a href="http://www.bankofgreece.gr/Pages/en/Bank/News/PressReleases/DispItem.aspx?Item\_ID=4298&List\_ID=1af869f3-57fb-4de6-b9ae-bdfd83c66c95&Filter\_by=DT">http://www.bankofgreece.gr/Pages/en/Bank/News/PressReleases/DispItem.aspx?Item\_ID=4298&List\_ID=1af869f3-57fb-4de6-b9ae-bdfd83c66c95&Filter\_by=DT</a> (accessed 18-07-2013).
- Benos, N., Karagiannis, S. and Vlamis, P. (2011), "Spatial effects of the property sector investment on Greek economic growth", Journal of Property Investment and Finance, Vol. 29, No. 3, pp. 233-50.
- Colliers International, "2012 Eastern Europe real estate review: Greece", Research & Forecast Report, March 2012.
- De Grauwe, P., (2010), "Crisis in the eurozone and how to deal with it", CEPS Policy Brief, Centre for European Policy Studies, Brussels, No.24, February, pp. 1-5.
- European Central Bank (2010), "ECB announces change in eligibility of debt instruments issued or guaranteed by the Greek government" Press release, 3 May, Frankfurt, available at: <a href="https://www.ecb.int/press/pr/date/2010/html/pr100503.en.html">https://www.ecb.int/press/pr/date/2010/html/pr100503.en.html</a> (accessed 18-07-2013).

European Central Bank (2011), Monthly Bulletin, March.

- European Central Bank (2012a), "Eligibility of bonds issued or guaranteed by the Greek government in Eurosystem credit operations" Press release, 8 March, Frankfurt, available at: <a href="https://www.ecb.int/press/pr/date/2012/html/pr120308">https://www.ecb.int/press/pr/date/2012/html/pr120308</a> 1.en.html (accessed 18-07-2013).
- European Central Bank (2012b), "ECB announces change in eligibility of debt instruments issued or guaranteed by the Greek government" Press release, 19 December, Frankfurt, available at: <a href="https://www.ecb.int/press/pr/date/2012/html/pr121219.en.html">https://www.ecb.int/press/pr/date/2012/html/pr121219.en.html</a> (accessed 18-07-2013).

- European Commission (2013a), "Financial assistance to Greece", Economic and Financial Affairs, Brussels, Belgium, available at: <a href="http://ec.europa.eu/economy\_finance/assistance\_eu\_ms/greek\_loan\_facility/index\_en.ht">http://ec.europa.eu/economy\_finance/assistance\_eu\_ms/greek\_loan\_facility/index\_en.ht</a> m(accessed 18-07-2013).
- European Commission (2013b), "The Second Economic Adjustment Programme for Greece update on progress and challenges", Commission Services, 17 May, Brussels, Belgium, available at: <a href="http://ec.europa.eu/economy finance/publications/occasional paper/2013/pdf/presentation-el-convergence-report-17-may-2013-en.pdf">http://ec.europa.eu/economy finance/publications/occasional paper/2013/pdf/presentation-el-convergence-report-17-may-2013-en.pdf</a> (accessed 18-07-2013).
- European Commission (2013c), "The Second Economic Adjustment Programme for Greece, Third Review July 2013", European Economy, Occasional Papers 159, Brussels, Belgium, available at: <a href="http://ec.europa.eu/economy\_finance/publications/occasional\_paper/2013/pdf/ocp159\_en.pdf">http://ec.europa.eu/economy\_finance/publications/occasional\_paper/2013/pdf/ocp159\_en.pdf</a> (accessed 29-07-2013).
- European Financial Stability Facility (2013), Brussels, Belgium, available at: <a href="http://www.efsf.europa.eu/about/index.htm">http://www.efsf.europa.eu/about/index.htm</a> (accessed 18-07-2013).
- Eurostat (2013), "Government finance statistics", European Commission, April, Luxembourg, available at: <a href="http://epp.eurostat.ec.europa.eu/statistics">http://epp.eurostat.ec.europa.eu/statistics</a> explained/index.php/Government finance stat <a href="istics#">istics#</a> (accessed 18-07-2013).
- Hellenic Police (2012), "Statistics for crime, trafficking, drug dealing and financial crime for the year 2011", Hellenic Ministry of Public Order and Citizen Protection, Press release 11-03-2012 (in Greek), Athens, Greece, available at: <a href="http://www.astynomia.gr/index.php?option=ozo">http://www.astynomia.gr/index.php?option=ozo</a> content&perform=view&id=12774&Ite mid=863&lang (accessed 11-07-2012).
- Hellenic Statistical Authority (2010), "Gross domestic product by Nuts II, III (Years 2005 2010)", (Provisional Data), Athens, Greece.
- Hellenic Statistical Authority (2013a), "Labour force survey—fourth quarter 2012", (Press release in Greek), Athens, Greece.
- Hellenic Statistical Authority (2013b), "Quarterly national accounts—first quarter 2013" (in Greek), Athens, Greece.
- Hellenic Statistical Authority (2013c), "Building activity (volume)—March 2013 provisional data", (Press release in Greek), Athens, Greece.
- Hellenic Statistical Authority (2013d), "Production index in construction fourth quarter 2011 provisional data" (Press release in Greek), Athens, Greece.

- IMF (2013a), "Greece makes progress, but more effort needed to restore growth", Survey Magazine: Countries & Regions, June 5, Washington D.C, available at: <a href="http://www.imf.org/external/pubs/ft/survey/so/2013/CAR060513A.htm">http://www.imf.org/external/pubs/ft/survey/so/2013/CAR060513A.htm</a> (accessed 10-06-2013).
- IMF (2013b), "Greece: Letter of intent, memorandum of economic and financial policies, and technical memorandum of understanding", July 17, Washington, D.C, available at: <a href="http://www.imf.org/External/NP/LOI/2013/grc/071713.pdf">http://www.imf.org/External/NP/LOI/2013/grc/071713.pdf</a> (Accessed 31-07-2013)
- IMF (2013c), Transcript of a Press Briefing by Gerry Rice, Director, Communications Department, July 11, Washington, D.C, available at: <a href="http://www.imf.org/external/np/tr/2013/tr071113.htm">http://www.imf.org/external/np/tr/2013/tr071113.htm</a> (accessed 19-07-2013)
- Kalfamanoli, K. and Vlamis, P. (2008), "The Greek real estate market for the interested foreign investors: prospects and problems" (in Greek), Journal of International Economy and Politics "Agora without Frontiers", Vol. 13, No. 3, pp. 194-211.
- Kalfamanoli, K. and Vlamis, P. (2010), "Trends, prospects and weaknesses of the Greek real estate market" (in Greek) pp. 61-89 in University of Piraeus (ed.) "Volume of Essays in Honour of the late Professor P. Livas", University of Piraeus Press, Greece.
- Karousos, E. and Vlamis, P. (2008), "The Greek construction sector: an overview of recent developments", Journal of European Real Estate Research, Vol. 1, No. 3, pp. 254-66.
- KEPE (2013), "Factor model forecasts for the short-term prospects in GDP" Greek Economic Outlook, Vol. 21, June, pp. 18-19, Economic Forecasting Unit, Centre of Planning and Economic Research, Athens, Greece,.
- Kouretas, G. and Vlamis, P. (2010), "The Greek crisis: causes and implications" Panoeconomicus, Vol. 57, No. 4, pp. 391-404.
- Malliaropoulos, D., (2010)," How much did competitiveness of the Greek economy decline since EMU entry?" Economy and Markets, No. 5, pp. 1-16, Eurobank Research, Athens, Greece.
- Ministry of Finance (2013a), Public Debt Bulletin (in Greek), General Accounting Office, March, Athens, Greece, available at: <a href="http://www.minfin.gr/contentapi/f/binaryChannel/minfin/datastore/7c/1c/42/7c1c4259b769c10b0d3f6d667d4e7e84c0aef03c/application/pdf/Bulletin No69.pdf">http://www.minfin.gr/contentapi/f/binaryChannel/minfin/datastore/7c/1c/42/7c1c4259b769c10b0d3f6d667d4e7e84c0aef03c/application/pdf/Bulletin No69.pdf</a> (accessed 10-05-2013).

- Ministry of Finance (2013b), State Budget Monthly Execution Bulletin (January April 2013), (in Greek), General Accounting Office, May, Athens, Greece, available at: <a href="http://www.minfin.gr/portal/">http://www.minfin.gr/portal/</a> (accessed 10-05-2013).
- National Federation of the Greek Retailers (2012), "A survey for the retail shops that closed down in the Attika region" (in Greek), March, Athens, Greece.
- Reinhart, C. and Rogoff, K. (2009), "The aftermath of financial crises", American Economic Review, Vol. 99, No. 2, pp. 466-72.
- Reinhart, C. and Rogoff, K. (2010), "Growth in a time of debt", American Economic Review, Vol. 100, No. 2, pp. 573-78.
- Treaty on European Union Maastricht Treaty (1992), EU Treaties, European Union Official Journal C 191, 29 July, available at: <a href="http://eur-lex.europa.eu/en/treaties/dat/11992M/htm/11992M.html">http://eur-lex.europa.eu/en/treaties/dat/11992M/htm/11992M.html</a> (accessed 10-08-2013).

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