

# Household debt developments and sustainability: a comparison between Greece and Spain

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## **Abstract**

*In this paper we compare private (and especially household) debt developments in Greece and Spain from 1970 onwards. Debt levels are low and stable until around the mid 1990s (starting from extremely low values in Greece and somehow higher in Spain), while they are increasing thereafter in nearly explosive terms indicating a structural break in the relevant time series. Revealing indications exist that bank deregulation and liberalization are the main causes for debt explosion, following common European rules culminating in the early 1990s. Financial deregulation permitted banks to move promptly and offer a wide spectrum of choices to ambitious (but not necessarily solvent) customers: mortgages, credit cards, consumer loans and so on. Every single step in the process of financial deregulation was accompanied by a higher level of household indebtedness. Moving up from the household level to the macroeconomic level, increased debt had been also a solution to stalling effective demand, possibly due to the recent inverse redistribution of income. However, debt persistence, strongly depicted in this paper, indicates future problems.*

**Keywords:** private debt, household debt, deregulation, debt persistence, structural break, financial crisis, debt sustainability.

JEL Classification: E44, E58, G01, G21, G28.

## **Introduction**

This paper aims at investigating aspects of private debt developments in Greece and Spain for a time span of about 30 to 40 years (30 for Spain and 40 for Greece). It partially follows and updates an earlier paper of the same authors (Georgopoulos et. al. 2008) which focused strictly on Greece. Our main purpose is to compare the two different time series of private debt and extract general conclusions covering both countries. We restrict our attention to the household component of the debt, somehow leaving the entrepreneurial one in the "dark side of the moon". Using various statistical and econometric techniques we endeavor to find possible explanations underlying the almost explosive

increase of household debt. It goes without saying that debt (of whichever type) lies behind and, in fact, co-produces the current world economic crisis. This is more so for the role of debt causing the present difficulties of the two countries under consideration<sup>1</sup>. This paper aims at providing some insights about the private and, especially, the household debt mechanism, which could be used for the design and implementation of a more sophisticated regulatory framework in order to prevent future recessions or crises.

## Literature review

Covering the vast and expanding literature concerning private and, especially, household debt is outside the scope of this paper<sup>2</sup>. It suffices here to mention some broad historical lines before we focus on Greece and Spain<sup>3</sup>. Historically, emerging capitalism did not support lending for consumption purposes (A. Smith, 1776), at least because of the reminiscences of the medieval and absolutist periods of European history, when debt burdened the shelves of the third class. This thrifty attitude was altered, mainly in the U.S.A., after the introduction of installment credit at the beginning of the twentieth century and the growth of per capita income to levels well above subsistence. This development fostered the idea that income and wealth accumulated over a lifetime will permit the repayment of debts contracted earlier. The new attitude in the era of the first globalization and, especially, in the roaring twenties produced (or, to say the least, contributed) to the 1929 crash. Joseph Schumpeter believed that the stock-market crash was inferior in significance and secondary to the bursting of a speculative bubble on property bonds in Florida (as is currently the case) which had a strong impact on banks: "Nothing is so likely to produce cumulative depressive processes as such commitments made by a vast number of households to an overhead financed to a considerable extent by commercial banks" (Schumpeter, 1939). According to Daniel Bell, the abolishment of the "protestant" spirit of capitalism and the introduction of a new hedonic-consuming spirit is a major contradiction in the workings of modern capitalism (Bell, 1976). After World War II new economic theories, mainly related to the names of Ando and Modigliani (1963) and M. Friedman (1957) managed to rationalize household indebtedness up to a certain point. But until well into the 1980s and 1990s, this constantly upward shifting trend was never considered to be a problem, not even a minor one, although here and there banking crises indicated a relationship between private debt, bank deregulation, capital movement liberalization and public bail-outs with taxpayers' money. There was a near unanimity in favour of the aforementioned policies, although it became almost apparent that bank deregulation (and its close associates i.e., capital movement liberalization etc.) were producing an enhanced rate of risk taking and expense-preference behavior among banks and their customers (as, for example, in the case of Savings and Loans industry in the USA in the 1980s - Akella and Greenbaum, 1988 and in the banking crises of Sweden and Spain among others). It was believed that they somehow produced improvements in bank efficiency and, through this, to economic activity and growth (Bertrand et.al., 2007).

<sup>1</sup> Difficulties highlighted by high spreads and borrowing costs.

<sup>2</sup> Indicatively, however, we mention research by Alpha Bank (2003) and Netherlands Bank (2003), Barnes and Young (2003), Berg (1994), Debelle (2004a), Tudela and Young (2005).

<sup>3</sup> In the above mentioned paper of Georgopoulos et. al. (2008) a more analytical theoretical introduction is provided.

## **Basic data - facts and the stages of banking deregulation in Greece and Spain**

### **(a) Greece**

Our data for Greece begin in 1970 with a total private sector's debt at 32.3% of GDP. Until 2000 (when it reached 44%), there was no major variability in the above ratio; only mild ups and downs can be observed with a minimum at 27.1% in 1994. It is worth taking a closer look at a more disaggregated level by examining entrepreneurial debt and household debt separately. Regrettably, we do not have precise quantitative data for the 1970 - 1989 period at this disaggregated level but only some qualitative information; more specifically, that in the above period, there were no major differentiation in the path of the two time series. From 1990 onwards, when we have official data, the two time series follow a rather diverging path. At the beginning, entrepreneurial debt was almost 6 times higher, while towards the end of this period the series have essentially converged. Examining it from a different point of view, entrepreneurial debt increased from one third to less than two thirds as a percentage of GDP from 1990 to 2008, while household debt exploded, rising almost ten times. These are strikingly different developments: although entrepreneurial debt does not really change from 1990 to 2000 (from 29% of GDP to 31.5%) and then moves upward to 55.5% in 2009 (which means a 90% increase in a twenty-year period), household debt jumps from 5.2 % in 1990 and 4.5% in 1993, to 12.5% in 2000. From there on household debt rises to 37.5% in 2006 just to land around an impressive 50% in 2009, i.e. 4 times higher than a decade before and an astonishing 1100% increase during the same twenty year period. The above facts lead to a intuitive conclusion: a structural break in the time series of household debt might be located somewhere between 1990 and 2000, probably closer to the beginning than to the end of the decade, as a result of major changes in the behavior of (a) households deciding about borrowing, (b) banks as far as lending is concerned, and (c) the government about imposing regulation. In section 4, for Greece we have no choice but to use the aggregate time series of private debt, not because of its inherent analytical superiority, but for purely computational purposes. But, still, we have to bear in mind that the main point of interest is not total private debt, but household debt and, especially, its basic component, i.e. mortgages. This means that we have to investigate mainly the determinants of mortgages if we want to understand total private debt developments more thoroughly.

Before we move to the technical part of our paper we must present in a compact form the main steps of bank deregulation in Greece during this period. At the beginning of the 1980s, the Greek banking sector was almost publicly owned, completely regulated by the Bank of Greece and the so called Monetary Committee. Banks, practically, were not motivated by profit, sales or asset maximization and the degree of competition in the sector was very low. Several steps were made from 1984 to 2003, when the whole process effectively ended, resulting to a complete liberalization of the banking sector. But we must mention from the beginning that the main steps took place between 1987 and 1994. In 1984 we have the first (and rather hesitant) steps, when the responsibility and initiative for financial decisions was transferred to the banks' CEOs. In 1985 we have the unification of some categories of centrally administered interest rates and the outset of the abolishment of credit restrictions. In 1986 the Central Bank Governor

D. Halikias acknowledged that the whole process was almost at the beginning<sup>4</sup>. 1987 was a crucial year: steps were made to liberalize bank interest rates and to abolish many quotas and quantitative restrictions. Centrally administered interest rates were retained for only a few banking activities: savings banks accounts, loans to SMEs and social housing programs. But, although the above steps have been important, a central obstacle to the complete liberalization and deregulation remained: the commitment of banks to allocate a predetermined (and significant) part of their disposables in order to finance public sector borrowing requirements. So we have to remember year 1987 as a milestone for interest rate deregulation. We will demonstrate below how the above policy changes were identified in our empirical analysis. During the 1988-1991 period, the deregulation process accelerated. In 1992, the bank disposables committed to finance public debt were further reduced, while in 1993 the above obligation was abolished altogether. Between 1993 and 1994 the aforementioned process was almost completed, while a few remaining restrictions at consumer credit ceilings were eventually abolished in 2003<sup>5</sup>. So, after 1987, when we had a major deregulation of interest rates, the second important step took place in 1994, when quantity restrictions and compulsory placing of bank disposables were abandoned. Below we will pinpoint years 1987 and 1994 as important turning points on the path of the Greek private debt, using neutral econometric and statistical techniques.

It is worth mentioning here that we first isolated years 1987 and 1994 as important turning points following our econometric methods and then discovered the explanation in the banking literature. This "discovery" follows the steps of a "hard science" like Physics and strongly encouraged us to continue our research in other countries as well (we picked Spain as an obviously similar case). However, it is interesting to mention that, at the end of the day, it is the Greek households which were mainly affected by the deregulation and the liberalization process, without totally disregarding the impact of this process on entrepreneurial debt.

#### **(b) Spain**

Our data on Spain are more precise but of smaller (although satisfactory) time span as we have obtained the time series of Spanish household debt from 1980 onwards. From 26.5% of Spanish GDP in 1982 it decreases to 23.7% in 1985 and then increases moderately to 31.5% in 1989, remaining almost stable up to 1995. From there on it increases steadily and in a spectacular fashion and it was over 80% in 2008 i.e. more than 2.5 times in about 12-13 years. Our first observation is that Spain's household debt was - and remained - constantly higher than the one in Greece as a percentage of GDP. This can be attributed to several micro or macro institutional reasons, but we speculate that a good part of the explanation lies in differences of the banking deregulation process in the two countries. The deregulation and financial market changes in the Spanish banking system can be summarized as follows:

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<sup>4</sup> This part of our paper draws heavily on the annual reports of the Greek Central Bank from 1984 to 2003. All our references are based on them.

<sup>5</sup> It is interesting to notice here that after the partial deregulation of credit cards and consumer credit in 1993, and strongly after the completion of the above process in 2003, the part of the private debt that is attributed to them, begun increasing by leaps and bounds.

1969

- Assets and liabilities interest rates as a function of the Central Bank discount rate
- Interbank rate, more than 3 year loan rates, more than 2 year industrial banks deposit rates free

1970

- Introduction of legal reserve requirement for banks, in line with a move to indirect management of the Bank of Spain.

1971

- Legal reserve requirement for savings banks. Introduction
- Investment coefficient for commercial and savings banks

1974

- Freedom for commercial banks to open branches nationwide. Segmentation of institutions liberalized. Prior legal and operational differentiations between industrial and commercial private banks is eliminated.
- More than 2 year loan and deposit rates free
- Savings banks: investment coefficient reduction

1975

- Branching liberalization. Expansion of saving banks is permitted.

1977

- More than 1 year loan and deposit rates free
- Investment coefficient reduction. A calendar for a gradual phasing out is introduced
- Savings banks: allowed to discount commercial paper and foreign exchange business

1978

- Entry of foreign banks, although restricted, in the retail segment (three branches only)

1979

- Long term financial coefficient is introduced. Private commercial banks are obliged to grant loans to market determined interest rates for a period longer than 3 years and to hold debentures of non-financial enterprises for an amount equal to 1.8% of eligible liabilities
- Investment coefficient tightening. The pace of reduction is reduced.

1981

- All assets (not subject to coefficient) rates free
- More than 6 month and ESP 1 million time deposit rates free
- Liabilities side commissions free
- Compulsory deposit at the Central Bank (increase in investment requirement)
- Dividend distribution: Liberalization
- Investment coefficient: Liberalization. The monthly rate accelerates.
- Financial coefficient: Tightening

1984

- Increase in reserve requirement
- New compulsory coefficient in public debt

1985

- New solvency regulation: Capital requirements as a function of asset risk (seven buckets)
- Savings banks free to open branches in their traditional regions
- Equalization of the investment coefficient for commercial and savings banks

1986

- Investment coefficient: Liberalization and substantially reformed. The total rate of the coefficient is unified and reduced to 23% of bank eligible liabilities, with banks' holdings of government securities and subsidized loans to social sectors set at 10% and 13%, respectively.

1987

- All interest rates and commissions free
- Reduction in the investment coefficient. Is set from 13% to 1% for financing exports and specially regulated loans and the remainder up to a total of 10% is allocated to banks' holdings of government securities.

1988

- Increase in loan loss provision requirements

1989

- Savings banks allowed to open branches nationwide
- A calendar to phase out definitely the investment coefficient

1990

- Strong consolidation (mergers) among savings banks
- Substantial reduction in the reserve requirement

1991

- Mergers among savings banks although quantitatively much less important
- Beginning of a strong development in mutual funds as a result of changes in taxation

1992

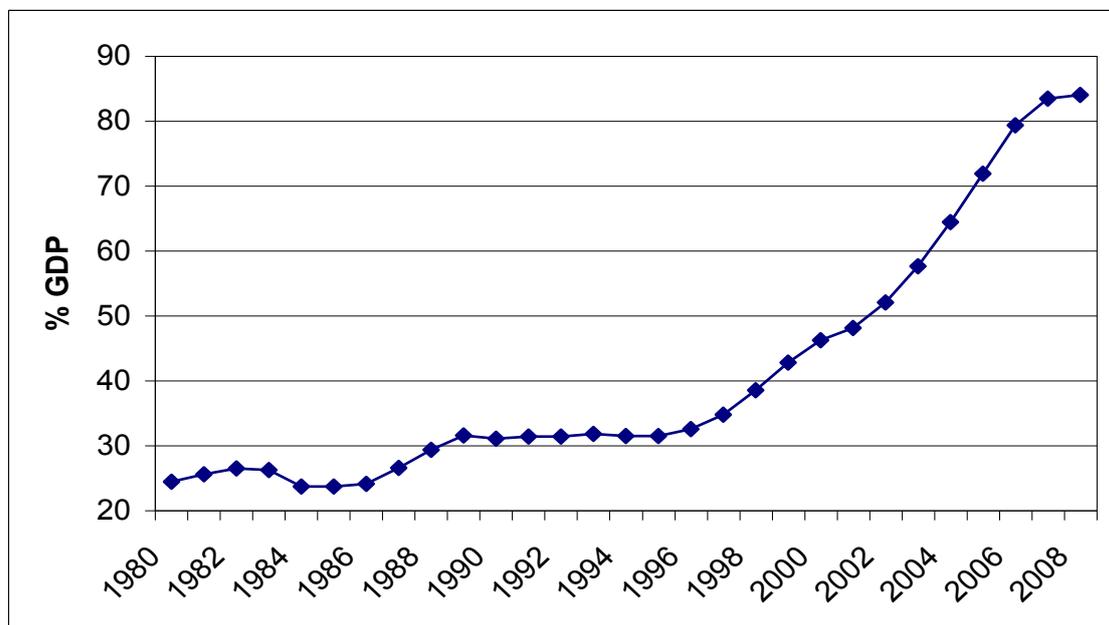
- Changes in capital regulation (adaptation to E.U. rules)

The historical overview above<sup>6</sup> summarizes the deep transformation of Spanish banking sector from a strongly regulated oligopoly in the 1960s and early to mid 1970s (with administratively fixed interest rates, compulsory investment coefficients, entry restrictions in geographical markets and high asymmetry between commercial and savings banks), to a highly liberalized market in the early 1990s when commercial and savings banks can freely compete on prices and services. Now we can intuitively observe and compare Greece with Spain before we embark on a formal technical presentation. It obviously signs a completely different situation before mid 1980s for the two countries. The banking sector in Greece remained heavily regulated during this period, while in Spain it was liberalized to a considerable extent. It is intriguing to note that during the same

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<sup>6</sup> We constructed this overview using a variety of sources and especially Salas V. and Saurina J (2003), and Caly M.A., Pastor G.C. and Pujol T. ed. (1993).

period household debt in Greece was almost non-existent (below 5% of GDP) while in Spain it was around 25%. It is not unreasonable to attribute the difference, at least partially, to the timing and speed of banking deregulation. The suspicion is strengthened if we consider the period after 1992-1993, when the two countries jointly almost completely liberalized banking services, following common European Union directives. From there on, as we already mentioned, household debt rose in Greece from around 5% to 50% and in Spain from around 25% to over 80%. These are extremely spectacular findings just to be coincidental. In the case of Spain, it is interesting to observe that household indebtedness was following almost devoutly the deregulation process which was lengthy, complicated and with reversals. In figure 1 we can observe a decline in the household debt ratio in 1984 which can easily be attributed to an increase in reserve requirements and the new compulsory coefficient in public debt which was introduced in the same year (see above).



**Figure 1: Household debt developments in Spain**

From there on, a new increase occurs at 1987 when all interest rates and commissions are liberalised and reductions were imposed on the investment coefficient. But some new constraints are introduced in the deregulation process around 1988 (increase in the loan loss provisions) which can explain a deceleration of debt for some years (from around 1989 to 1994 or 1995). This deceleration, but also in general the slow pace of indebtedness between early 1980s to mid 1990s (in comparison to the "crazy" race from mid 1990s on), can also partially be attributed to a hesitation or caution emerging from the supply side (the banks) to offer loans. This was the outcome of a deep Spanish banking crisis from 1978 to mid 1980s, which was also a result of the first years of deregulation. Having recent recollections from that period, where about one fourth of banks went bankrupt, bankers were cautious not to overshoot in loan provisions. But after some years, human short memory, deregulation and strong competition among various types of Spanish and foreign banks, managed to curb the preceding modest behavior, with the well known consequences.

## Summary of our previous econometric and statistical findings on Greece

In this section we present a summary of the main findings of our preceding paper (Georgopoulos et.al. 2008) about private indebtedness in Greece which are related with the purpose of the present paper. This way we facilitate comparisons and the derivation of general conclusions in the last section of this paper.

### (i) Identification of a break in the debt series

We used the methodology described by Perron (1997). Its advantage is that the break point is not considered known a-priori but is pinned down using the time series properties of the variable at hand. Our results are reproduced in Table 1 below.

**Table 1: Determining the break point in the private debt series**

	Type of break point		
	Change in the intercept	Change in the intercept and the slope	Change in the slope
<b>Criteria to determine break point</b>			
min t-stat for alpha=1	2004	1989	1994
max absolute value of the t-stat	1993	1991	1997
min t-stat for parameter change	1993	1991	1997

It is worth mentioning that in all cases the methodology produced a break in the series and with the partial exception of two sub-cases, our finding was that in the course of the 1990s there was indeed a break in the series of private debt. Even exceptions do not point to an entirely different picture. The first one, 1989, was well inside the deregulation period (around 5 years from its outset) and 2004 lies just at its formal end. So, after neutrally identifying that something really changed in the course of the private debt (something which was not all too evident and anticipated by economic theory<sup>7</sup>) we proceeded to the estimation of a "production function" type of equation.

### (ii) Identifying determinants of private debt

We tried the following explanatory variables: (a) GDP growth (which is also a proxy for future expectations of economic agents) (b) changes in real interest rates (with a negative sign expected for the estimated parameter) (c) the degree of concentration in the banking

<sup>7</sup> We must always remember that standard economic theory forecasts optimistically as a deregulation outcome, an increase of the efficient and effective use of scarce financial resources at the micro level and through this GDP growth at the macro level. Although there was some caution that in the micro level deregulation might encourage a riskier behavior from the banks, it was completely out of the question that a separated and conspicuous phenomenon would emerge out of this: the spectacular increase in private household-debt. And since no such conception was used, it comes as not a surprise that its macroeconomic outcomes were not studied -sometimes even not observed- in the 90s and after millennium. Even now private indebtedness is rarely mentioned as relevant and potentially dangerous, in sharp contrast to its cousin public one although the present world crisis has established some strong links between them.

sector (d) various institutional factors, which could be represented by a time trend, e) a deregulation dummy summarizing the importance of the deregulation process in debt determination and f) the lagged variable of private debt in order to capture the persistence in the time series of private debt.

We found that real interest rates, the lagged variable of private debt (this could have important policy implications, as it could, under specific circumstances, result to an explosive path of private debt<sup>8</sup>) and the dummy variable (with zeroes before 1994<sup>9</sup> and ones after) were of important explanatory power.

In order to further investigate the role of the interest rate, we constructed elasticities of the private debt regarding the real interest rate, only to discover that we had to make a distinction between two different periods: somewhere in the middle of the 1980s, private debt became more "responsive" to changes of the interest rates. This could be the product of the first steps of banking deregulation, and, more specifically, interest rate deregulation in 1987. As we mentioned above, we "identified" this turning point with the use of our econometric model and then we discovered the explanation in the reports of the Greek central banker. Following this, we estimated our original equation with a dummy for the coefficient of the interest rate at 1987.

The variable interest rate1 has zeroes after 1987 (including), while interest rate2 has zeroes before. Using this specification, we verified what we mentioned above, that there is significant difference between the "responsiveness" of debt to the interest rate. This sharp distinction between the two sub-periods speaks volumes for a new era in private debt completely disconnected with the past.

### **(iii) Causality tests**

Finally we proceeded to check for causality relationships. Our conclusions were that (a) there is a two-way causal relationship between GDP growth and private debt (b) interest rates do not affect private debt<sup>10</sup> (c) concentration in the banking sector<sup>11</sup> does not cause private debt. This finding reflects the fact that the Greek banking deregulation process, important as it was, did not alter significantly the bank market shares. This development effectively shows that bank competition was somehow restricted, whereas the profit maximizing principle was more directed toward households.

Let us now summarize the main findings which are relevant for the present paper: strong evidence exists that deregulation played an important, independent and not deductible role in explaining Greek private debt developments. One point of relevance was year 1987 (when interest rates were completely liberalized) to be followed by another

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<sup>8</sup> For example, the time series properties of private debt imply that, at least above some threshold values, debt would keep on increasing even if interest rates and other determining factors remained unchanged.

<sup>9</sup> It should be noted that this is the year of the almost complete deregulation of the banking sector. So, we can observe banking deregulation and a new era for household debt moving side by side.

<sup>10</sup> This result is probably due to the fact that we cannot distinguish (computationally) between the two periods before and after 1987 for the interest rate.

<sup>11</sup> As measured by the Herfindahl index.

(1994) when quantity restrictions or investment and financial coefficients were abolished. Furthermore, there is a significant probability that the private debt series strong persistence is an indication of potential problems in debt servicing and, eventually, that the causal relation between debt and GDP growth implies that it would be difficult to sustain growth when necessity will push to debt repayment.

### **Econometric and statistical findings on Spain**

We now proceed to our formal models for explaining household debt development in Spain.

#### **Identification of a break point**

In line with our previous paper, we first tried to find if there is a break in the Spanish household debt series. Using the Perron methodology (Perron, 1997) a break was found, with 1998 as the preferred year for this break. Alternatively, using the Bai and Perron (2003) methodology: (a) opting for one structural break, this would be in 2002 (b) opting for two breaks, they would be located in 1998 and 2004 (table 2).

**Table 2: Determining the break point in the household debt series**

	<b>Type of break point</b>		
	Change in the intercept	Change in the intercept and the slope	Change in the slope
<b>Criteria to determine break point</b>			
min t-stat for $\alpha=1$	2001	1998	1998
max absolute value of the t-stat	2001	1998	1998
min t-stat for parameter change	2001	1998	1998

#### **Comparison with Greece**

If we somehow intuitively try to compare the two countries it is evident that the break in the case of Spain is identified at a point in time later than in Greece (2-4 years). To start with, we must carefully analyze the deregulation process per se in the two countries. Although the two processes were completed at around the same time (1993) due to imperative E.U. directives, their courses were different. The course of Greece was short, abrupt and linear without notable reversals, so it is easier to identify a break point between the late 1980s to mid 1990s, which means that the statistical break point of private debt absolutely coincides with the actual years of deregulation. Things are a little bit different in the case of Spain. There, the deregulation process was lengthy, relatively smooth and with reversals here and there. Above all, a severe banking crisis between late 1970s to mid 1980s rendered banking lending cautious. The

combined outcome of the above factors<sup>12</sup> was that a break point was really found with a lag of some 5 years after the whole course of the deregulation finished. It is reasonable to consider that the banking crisis per se and the enhanced restrictions-regulations which followed it, had almost a 10-year lasting impact before fading out and it also understandable to see that the statistical break point must come after the end of the deregulation years. Using a metaphor from another science, sociology, coming from a great thinker, Max Weber, we can refer to the case of Greece as the ideal type of the Spanish one, i.e. Greece case is a "pure" prototype of the Spanish one, managing to produce the same thing in a more concrete, precise and without disturbing factors, form.

#### Determinants of household debt

Subsequently we turn our interest to household debt determinants using two different OLS formulations, with slightly differing, but equally satisfying outcomes.

In order to account for household debt developments, and using insights from relevant research, we assume that these developments are the result of (a) real GDP (b) changes in real interest rates (c) general government deficit (in order to capture the potential effects of fiscal stimuli)(d)past debt values (in order to assess the importance of persistence). Results are summarized in table 3 below.

**Table 3: Determinants of household debt in Spain**

Dependent variable: Debt (% GDP)

Method: Least Squares				
Sample(adjusted): 1981 2008				
Included observations: 28 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.21	0.04	5.86	0.0000
Real GDP	0.0003	8.34E-05	3.17	0.0045
Interest rate	-0.006	0.002	-3.14	0.0048
Dummy (1996)	-0.03	0.013	-2.49	0.0207
General government deficit	0.01	0.002	6.39	0.0000
Debt lagged once	5.72E-07	3.80E-08	15.07	0.0000
R-squared	0.99	Adjusted R-squared		0.99

Taking on board the results for the existence of breaks in the debt series, we also tried a dummy variable for each year in the 1996 -

<sup>12</sup> And of the limitations of our statistical data: we must not forget that our data begin at 1980 when the deregulation process was completing its first phase. That means that endeavoring to find a structural break with data after 1980 when the deregulation process initiated, although hesitantly, in the late 1960s, we ought to face some difficulties. Clarity is thus expected to be of a lower quality in comparison with Greece.

2004 period. We obtained our best results using a dummy for 1996. The variability of the dependent variable is largely explained by the explanatory variables (as indicated by the adj.  $R^2$ , the t-statistics and the results of the F-test). All estimators have the expected signs and are statistically significant at conventional levels of significance. Serial correlation up to third degree is not present (tested using a Lagrange Multiplier test)<sup>13</sup>. There is a positive relationship between real GDP and household debt (possibly incorporating the effect of expectations), while private agents react in an economically rational way to changes in interest rates. Fiscal stimuli seem to positively affect household debt, while there are strong signs of persistence.

**Discussion of results: deregulation and the role of the fiscal stimulus**

To save time and space we will not comment further on the evident explanations as, for example, the important role of the interest rate. The most interesting findings are 1) that the deregulation dummy (with a better fit in 1996, somehow closer to the end of deregulation process around 1993, than 1998 which was indicated with the above mentioned statistical method of the break point), has an independent explaining power, beyond interest rates, real GDP, etc in the sense of capturing "residual" factors. We basically tend to interpret it (at least partially), as the outcome of the elimination of the investment and financial coefficients (quantity restriction or quotas). After the fading out, as we already explained, of the negative environment for loan lending due to the Spanish banking crisis, the "zeroing" of the coefficients and the free float of foreign capital<sup>14</sup>, a new era for bank loans has emerged and it is captured by the D1996 dummy 2) as in the Greek case, the lagged debt variable exhibits strong persistence in the household debt series, implying potential repayment problems in the future 3) a new interesting (and somehow difficult to interpret) finding in the Spanish case is the positive impact of the deficit variable. Public spending seems not to have crowding out effects on household debt as it would be expected following a conventional approach. If we examine it closely, public spending (even investment) is supposed to crowd out private investment and consumption because of the scarcity of financial resources and (depending on where someone stands in the ideological spectrum) leads to lower rates of growth. Now in the Spanish case, we see the exact opposite outcome: "crowding in" rather than "crowding out" of private spending. How can this happen? It is assumed that if the increase in government spending is financed by a tax increase, the tax increase would tend to reduce private consumption. If, on the other hand, the increase in government spending is not accompanied by a tax increase,

<sup>13</sup> Another serious issue to consider is the possibility of a spurious relationship. Time series used for our estimation are indeed integrated, but they are also co-integrated (tested using the Engle-Granger methodology, Engle and Granger, 1987). In this case, it has been proved that the estimators are "super-consistent" and can be used for inference.

<sup>14</sup>This picture is in line with internal European Union assessments: 'Although the pace and pattern of change varied across individual countries it is possible to distinguish between a highly regulated E.U. banking system that existed in most countries up until the mid to late 1980s, followed by a transitional phase from the late 1990s to 1993. The final phase, de-regulated/re-regulated era, refers to the period from transition to 1994 when almost all E.U. Directives introduced prior to that date had been implemented into national Law' (see European Commission, The Single Market Review Series Subseries II - Impact on Services Credit Institutions and Banking Summary p. 1 By: Economic Research Europe Ltd. & (PACEC).

government borrowing to finance the increased government spending would tend to increase interest rates, leading to a reduction in private investment and/or consumption. In Spain nothing of the above seems to be happening. Since government spending was in the form of deficit spending, there were no tax increases and therefore it was financed through borrowing. But then we would expect rises in interest rates. But we did not observe a trend along these lines, especially after 1995 when the major wave of household debt realized. The trick here lays in relatively abundant foreign capital inflows, generated by (among others) the E.U. bank deregulation directives. The inflows managed to sustain the interest rate to a minimum, simultaneously satisfying deficit spending by the government and debt spending by households. Subsequently, the crowding out effect did not happen at all. But since "there is no free lunch" a price has to be charged and this was the explosion in the Spanish household indebtedness. If one agrees on the above, nevertheless a question remains: no crowding out, but crowding in? This phenomenal contradiction is easily interpreted if we carefully examine the previous explanation and, furthermore, introduce the deceptive or illusory wealth effect coming from two sources: house price increases and government deficit spending. Without increases in taxation, no rise in interest rates and with an illusory wealth effect coming from house prices rising, public deficit spending had been translated by households in an almost one to one increase on their indebtedness. This is so because the increased financial resources which the state released into the economy via deficit spending, were dully and illusory conceptualized by the Spanish households as increased wealth. Now in combination with the house price wealth effect, these developments made Spanish households extremely optimistic and prodigal adding volumes in their debt.

#### **Using an interest rate dummy**

We now turn to our second OLS formulation which differs slightly from the above one (Table 4). We will comment just on the differences with the previous formulation, which lies on the introduction of another dummy: the D1996RATE which has zeros between 1980 and 1995 and the values of interest rates afterwards. In line with our OLS formulation for Greece, which we mentioned above, we have to make a distinction between two different periods: somewhere in the middle of the 1990s, private debt became more "responsive" to changes in interest rates. This "extra" responsiveness, captured by the dummy variable, beyond the normal impact of interest rates on household debt (which is captured by the interest rate variable) - must be attributed to specific characteristics introduced by the deregulation era. Essentially, we can understand the enhanced power of real interest rates to explain private debt after 1995, because of the permanently bigger role that debt was to play in the life of households afterwards. When someone owes a small amount or nothing, it is easier for him to proceed with a new debt irrespectively of how high is the interest rate. When this person becomes heavily indebted, usually with variable interest rates, one must take decisions for new loans after carefully considering interest rates. And this is not the only explanation: we should also mention that banks, after 1990 and especially after the millennium, focused on household loans and dramatically increased advertisements and sales promotion with an eye to consumers. Last but not least, human mimicry must not be forgotten and the attitude of "keeping up with the Joneses" (for sociologists) or, alternatively, the "relative income" hypothesis (Duesenberry, 1949), otherwise known as the Duesenberry effect (for economists).

Briefly, when having a better house becomes "the new game in town", everyone is now more sensitive to interest rate movements and scrutinizes available options very carefully. Let us remind the wider public's focus on stock prices and Stock Exchange and especially the "dot.com" mania 10-15 years ago, which now is almost completely lost. If someone was running an estimation with amounts to GDP invested in the Stock Exchange as the dependent variable and the stock prices as the explanatory one, divided in two sub-samples, one before and one after the international stock market crash at 2000-2001, one would surely observe a strong differentiation in their respective explanatory power. This would be so, exactly because at the time stocks were the "new game in town".

**Table 4: Determinants of household debt in Spain (cont.)**

Dependent Variable: Debt (% GDP)

Method: Least Squares				
Date: 04/01/10 Time: 09:56				
Sample(adjusted): 1981 2008				
Included observations: 28 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.21	0.033	6.53	0.0000
Real GDP	0.0002	6.75E-05	3.42	0.0024
Interest rate	-0.004	0.002	-2.64	0.0148
Interest rate dummy (D1996RATE)	-0.007	0.002	-3.14	0.0047
General government deficit	0.010	0.0016	6.10	0.0000
Debt lagged once	5.66E-07	3.54E-08	15.99	0.0000
R-squared	0.996024	Adjusted R-squared	0.995120	

### **Brief comparison between Greece and Spain, generalizations and concluding remarks**

As we mentioned in section 2, a certain chain of events was standardized in economic theory: deregulation (and its close companions) were producing increased competition and through it they were increasing GDP; or to put it slightly differently, competitive banking markets provide easier access to credit at lower costs that, in turn, can lead to more borrowing by a broader range of agents, a fact which promotes economic growth (Petersen and Rajan, 1995). We can name this the virtuous or sustainable path to economic growth via deregulation. This way of reasoning, typical from the 1970s to the 1990s, somehow masked another possible road to economic growth (growth materialized mainly in the 1990s and the 6-7 first years after the millennium). This was from deregulation to increased competition (but not as a *sine qua non* condition), to increased risk taking, sometimes pushing banking behavior to legal limits or even breaking them, to increased private (and especially) household debt, to enhance in other ways stalling effective demand and through it to economic growth. We

can name this the vicious or unsustainable way to economic growth via deregulation. When we were writing our aforementioned paper in late 2007, we were emphasizing in our concluding remarks:

Last but not least, the mutual causal relationship of private debt and GDP growth, implied by the causality tests, is also alarming (in combination with the persistence of debt), pointing at the possibility of a situation where debt is a central constituent - an era with short horizon, if we take the bubble characteristics of debt under consideration (Georgopoulos et. al., 2008).

Although today the risky or even dangerous road of private debt as the indispensable intermediate of recent economic growth and its shortcomings is more recognizable than 2-3 years ago (at least in a considerable number of countries), it is still a long way to attain the kind of academia and policy consensus which is a prerequisite in order to present an alternative economic road to growth. Just for the sake of example, we were and we still are witnessing the agonizing government endeavors to sustain and even enhance bank loans to the private sector in many places around the western world. It is like giving alcohol to the drunkard and we do not believe it is going to work, except in a very short horizon. It must be firstly understood that debt was well behind recent economic growth (and deregulation behind debt), secondly that this situation was unsustainable and thirdly to begin an international campaign to alter this particular economic course.

In our present paper, in line with our previous one, we can point at two important findings: the first refers to the role of the particular deregulation process in the two countries. Although, the deregulation process, was in broad lines sketched by E.U. directives, and the E.U. directives were in turn the outcome of a bigger, almost worldwide, process of liberalization, deregulation etc., nevertheless some discretion remained in the hands of the national and regional monetary authorities. Wherever it was exercised prudently, household debt remained a secondary problem. Regulation plays a central role in avoiding bank crises and household over-indebtedness. As we can see from the Italian case (Crook, J. Hour, Hochguertel, S., 2007) where household indebtedness has been prohibited, some prudent regulatory provisions (as for example a relative large down payment and ironically but revealingly, a certain degree of inefficiency as for example a high lending transaction cost), managed somehow to delay the indebtedness process, if not canceling it at all. Italy's relative inefficiency as a virtue must not be terrorizing us. Since the efficient extremities of the banking system almost managed to crash the international economy the last two years, less efficient techniques to spread catastrophe is good news for the all of us. If Italy's case is a mixed lesson in regulatory prudence and inefficiency, two other cases observed by Nobel laureate Paul Krugman recently (Krugman P. 31-1-2010, and 11-4-2010) are strong indications of regulatory prudence. He compares banking developments in two nations, USA and Canada and two US States, Georgia and Texas. He found that in Canada and Texas, where the regulatory bodies where stricter and frugal and the whole banking process dull and boring (in his own words), things did not run wild, although all other things were almost the same. USA and Canada faced the same international environment; they incorporated banks "too big to fail" and interest rates extremely low for too long, or a monetary policy too accommodating. In Canada,

regulatory bodies prohibited sub-prime lending, but in USA they did not. Also, Texas and Georgia had the same financial derivatives, securitization processes etc., and while Georgia did not even have the problem with banks "too big to fail", nevertheless it experienced a severe banking crisis. Our two papers on bank deregulation and private-household debt also strongly indicate that the deregulation process, at least in the form it materialized in recent years, is partially responsible for household debt expansion. Wherever we used deregulation dummies, in interest rates or in general, indicating canceling of quotas and coefficients, the outcome was the same: strong statistical significance. We can conclude, with some reservations, that deregulation is somehow accounting for a significant degree of household indebtedness. Nevertheless, there are cases, where deregulation fever was lower although the general international and national environment was almost identical - at least in the Western world. Finding what lies behind cautious behavior here and there - and the opposite- may reveal the deeper roots of the present crisis - but this out of the scope of our present research.

The second finding of our research is the persistence of debt: past debt seems to determine the present debt irrespectively of other factors. These are not good news, if we consider that household debt reached high levels almost everywhere in western world. It means that we are going to live with it in the foreseeable future. And high indebtedness means strong possibility of failures and bankruptcies, low levels of effective demand and, consequently, low growth potential. Measures to relieve households from debt burden have to be introduced, if we do not like the above dull future.

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