Economic Watch

Financial Systems

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Economic Analysis

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What are the determinants of loan interest rates in EMU countries?

Heterogeneous transmission of monetary policy in the Eurozone

The estimates carried out reveal the heterogeneous transmission of monetary policy in the European Monetary Union (EMU) via the analysis of the determinants of retail credit interest rates. All the countries form their prices based on the official rates, the short and long-term ends of the interest-rate curve and the sovereign risk premiums. Except in the case of France, where the prices of all its portfolios are formed taking into account short and long term parts of the interest-rate and risk premium curves, the other countries tend to have one or more portfolios where there is no reference either to the short or the long end, or to the sovereign risk premium. Therefore, the transmission of monetary policy to loan interest rates is not homogeneous in Europe.

This heterogeneity can also be seen in the multipliers of the official interest rates, the Euribor, the long-term rates and the risk premiums, and in the size of the commercial policy term (the part not explained by the rates) applicable in each country and portfolio. But there is a common qualitative element to all of the countries: the bigger size of the commercial policy term in the consumer portfolio, compared to the mortgage and corporate portfolios, due to its credit profile and credit guarantees. Therefore, due to the crisis banks are charging higher prices for their loans than they would due in according to current funding conditions (which are linked to their sovereign rates), partly due to uncertainty.

Finally, we have noted that the international financial crisis has had an effect on the formation of portfolio interest rates basically through changes in the sensitivity to the sovereign risk premium and the commercial policy term. It has also been observed that countries where the rise in lending rates has been more substantial are generally the peripherals and France; whereas the effect was minor in Germany, Belgium and Finland. Given this, there is an understandable concern of all economic agents to reduce pressures on the sovereign debt and to return it to levels closest to those of a Monetary Union. The debate on the banking and fiscal union has the aim of achieving a more integrated monetary union.

At the same time, higher lending rates are making access to credit for solvent demand more difficult in peripheral countries, and thus slowing the speed of the economic recovery. This is compatible with the need to deleverage of the private sector in some peripheral countries, as non-productive lending has to be reduced and credit to solvent demand increased. In contrast, in the core countries laxer prices are leading to conditions that will have to be monitored closely in order to avoid credit bubbles.

Too strict credit conditions in peripheral countries could foster non-banking finance, with the risks that shadow banking involves for the stability of the system.

The relaxation of sovereign risk premiums should foster the normalization of credit rates in the short-term, particularly given that in the economic context providing finance to solvent productive activities is crucial for peripheral countries to return to a positive growth path. In the long term, the banking and fiscal union will be essential to align elasticities in different countries.

In short, the European credit markets are fragmented, and lending rates formation is heterogeneous. Moreover, the crisis has widened these differences, basically implying higher lending rates in the peripheral countries and France.

The structure of lending rates

A variety of concepts are involved in the formation of lending rates by the credit institutions that operate in the Economic and Monetary Union: a) the risk-free interest rate, associated with the official cost of money imposed by the monetary authority; b) the funding cost, associated with the marginal cost of the main source of funding and with the sovereign risk; c) the credit risk cost; d) the operational cost; e) fees and commissions; and f) the margin.

As series synthesizing all these factors are not available, we have estimated models using official rates, the Euribor (12 months Euribor) and the 10-year government bond rate, which will synthesize the rate curve. However, as we have seen, the EMU is not a perfect monetary union and the specific sovereign risk of each country has become a determining factor when it comes to discriminating the price and availability of finance in each country after the spring of 2010. The countries in the core and north of Europe have reduced their sovereign risk to below their fundamental levels, while the peripheral countries have seen their costs increase significantly and their access to finance decrease. As a benchmark of what the sovereign risk would have been in a possible perfect monetary union we have taken the rates of the 10-year German sovereign debt as a 'benchmark' up to March 2010, when we consider the sovereign crisis began due to pressures on the Greek debt. Starting in April 2010 we have added the negative premium (or bonus) that the German debt seems to be receiving due to the asset flight from peripheral to core markets. To determine this premium we have estimated a decomposition of the interest rates on German debt into underlying short, medium and long-term factors according to their theoretical determinants (see the Appendix for more information). Taking the long and medium-term factors[1] we obtain a reference for what the debt interest rates should be and thus of the premium.

We are therefore going to analyze the relationship between the interest rates of new credit operations to households (consumer and mortgage) and corporates loan portfolios (with Eurostat as the source) for the main EMU countries (Germany, Italy, Spain, Belgium, Portugal and Finland) using the official ECB rate (tof), the spread between the Euribor and the official rate (spr12m = euribor12m - tof), the spread between the interest rate on government debt in the theoretical monetary union and the Euribor (spr_uem = interest rate on government debt in the theoretical monetary union - Euribor12m), and the spread between the debt of the theoretical monetary union and the sovereign debt of each country (spr_sob = interest rate on the debt of the theoretical monetary union - interest rate on the country's sovereign debt)[2], using error correction models (ECM) for monthly data since 2003 with the following long-term structure:

$$\text{Loan portfolio interest rate}_t = \text{Constant} + \beta 1\ tof_t + \beta 2\ spread12m_t + \beta 3\ spr_uem_t + \beta 4\ spr_sob_t \quad [1]$$

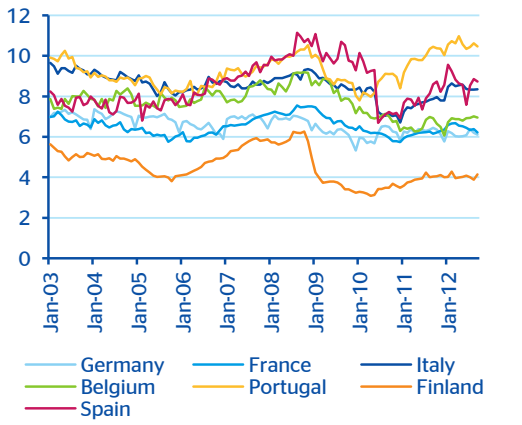
where, $\beta 1$ is the sensitivity to official ECB monetary policy interest rates, $\beta 2$ the sensitivity to marginal cost of interbank finance, $\beta 3$ the sensitivity to a benchmark of the theoretical longest term common finance of a hypothetical perfect monetary union, and $\beta 4$ the sensitivity of specific long-term finance in each country, where the constant will try to reflect the rest of the aspects, which we relate to the commercial policy of the financial institutions. Therefore, we have included all the commercial policy aspects and credit and operational risk costs in the constant term of the equation, which implies the assumption that this will remain stable in the long term. However, there have been changes in commercial policy since 2003, above all in the wake of the financial crisis that began in the summer of 2007. We have incorporated variables in the short-term component of the equation that include some specific characteristics of each portfolio, such as seasonality. It has also been necessary to correct for the methodological change caused by the entry into force in June 2010 of European Commission

1: The long and medium-term factors and the average short-term factor from the Lehman event in September 2008 to March 2010, as it is considered a factor that is external to the EMU. This correction with a short-term element also ensures a smooth transition where series are linked.
2: Liquidity restrictions variables have not been included, as the ECB full allotment was available in the period analyzed. No deleveraging factors have been introduced either, as the lower supply of new credit is not necessarily shown in their prices. Finally, the effect of the deterioration of asset quality is incorporated in the monetary policy variable.

Regulation 290/2009, which deals with the interest rates applied by financial institutions to deposits and loan products.

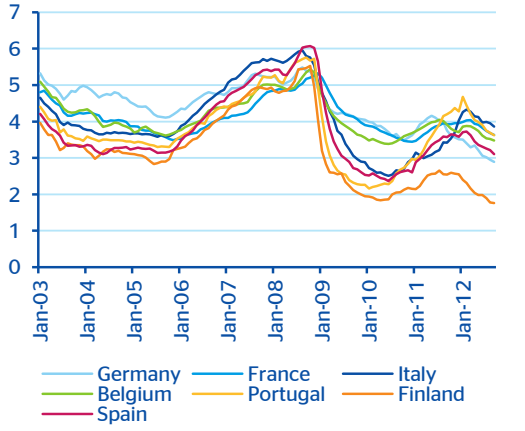
Charts 1 to 3 show the interest rates of the three loan portfolios during the period under analysis for the selected countries. In the consumer portfolio we see that in the 2003-2012 period the average rate was 7.39%, with a dispersion of 1.67 percentage points (pp). In this portfolio is easy to detect the effect of the methodological change caused by Regulation EC 290/2009 for Spain and Italy, where interest rates fell starting in June 2010. We can also see the different behavior of Finland, with a rate that is clearly below those of other countries. Housing loans show an average rate during the period of 3.93%, with a dispersion of 0.88 pp, around half the average and the dispersion of the consumer portfolio. Finally, the corporate portfolio has an average of 4.54%, and a dispersion of 1.19, somewhat higher than the mortgage portfolio but significantly below the consumer portfolio; and with Portugal standing out clearly higher than the rest of the countries. This order in the portfolio averages (consumer, corporate and mortgage) shows the risk profile and credit guarantees of these products in the Monetary Union. The dispersion of portfolios also points to the specificities or differentiating elements of each portfolio and their treatment in each country.

Chart 1
EMU: Consumer loan rates.
New operations (%)



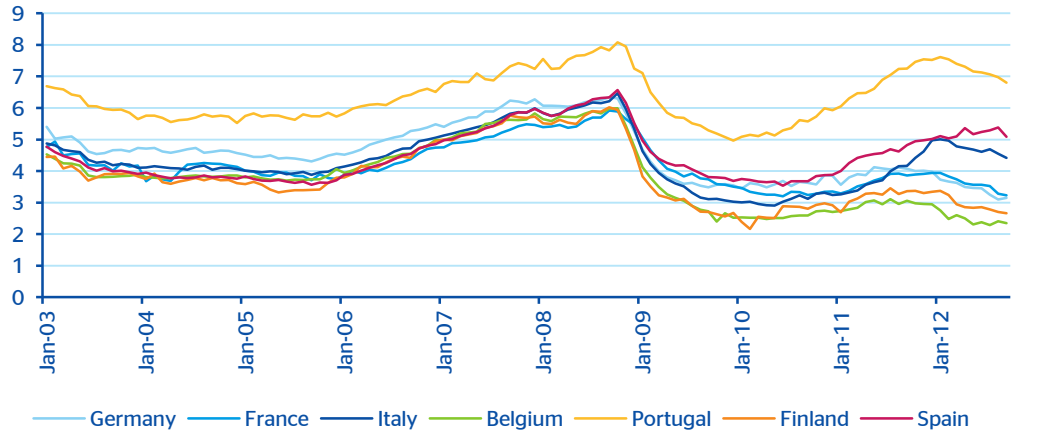
Source : Eurostat

Chart 2
EMU. Housing loan rates.
New operations (%)



Source: Eurostat

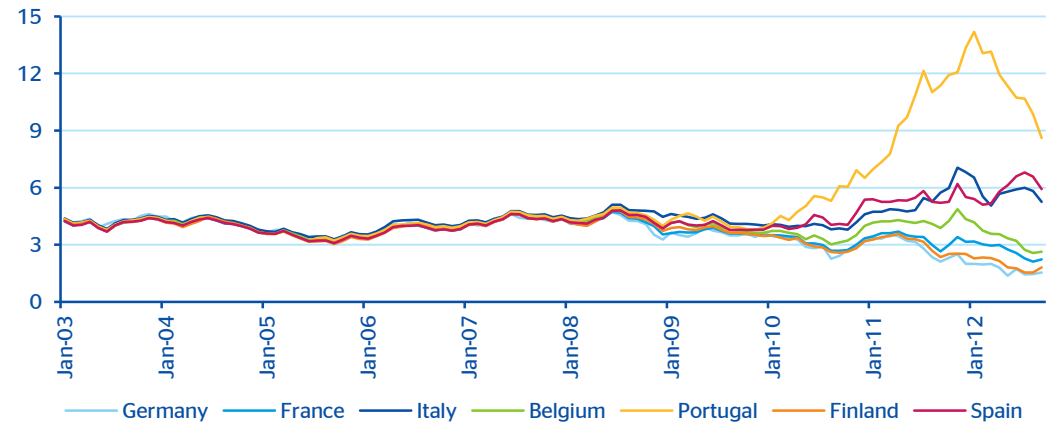
Chart 3
EMU. Corporate loan rates. New operations (%)



Source: Eurostat

Chart 4 presents the interest rates on 10-year sovereign debt in the selected countries during the period under analysis. It clearly shows that yields were similar until the Lehman crisis in September 2008, and the dispersion increased after the spring of 2010.

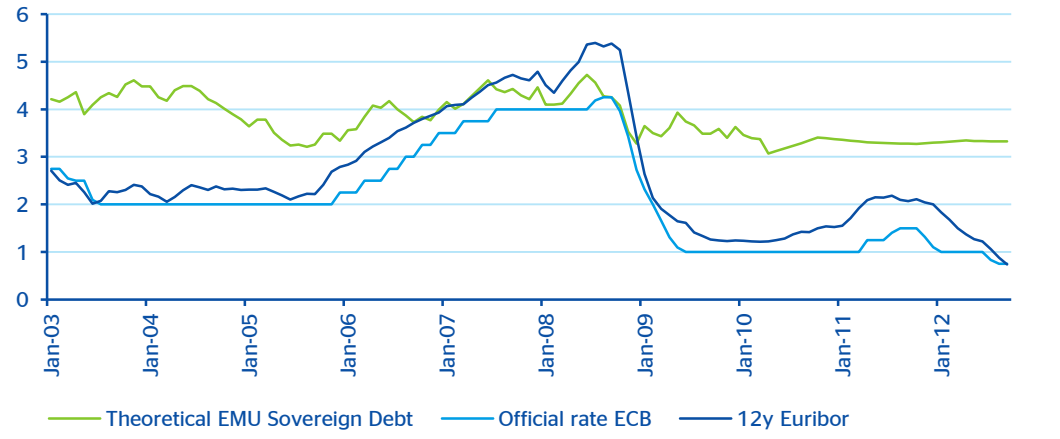
Chart 4
EMU. 10-year sovereign debt rates (%)



Source: Haver

Chart 5 shows the basic reference rates, the official ECB rates, the 12-month Euribor and the benchmark rate for the sovereign debt of an integrated Monetary Union. As we have pointed out earlier, this benchmark series is the German 10-year sovereign rate. Starting in the spring of 2010 we have added an estimate of the underlying medium and long-term factors in order to estimate the premium that the German debt is receiving due to the flight to quality.

Chart 5
EMU. Interest rates (%)



Source: ECB, Haver and BBVA Research

Table 1 shows the average and standard deviation for two periods (up to Lehman Brothers, and to September 2012) of the spread between the Euribor and the benchmark of long-term rates of the theoretical union (spr_uem) and the spread between the sovereign debt of each country and the theoretical debt of the monetary union (spr_sob). The average spread against the Euribor ranges from 87 basis points (bps) until Lehman to 159 bps until the end of the sample, due to the fall in the official ECB rates since then. It is also interesting to see how the specific spread of each country and the theoretical debt rate, spr_sob, has changed substantially for the peripheral countries: until Lehman the spreads were practically zero or even negative (Spain, -7 bps; Italy, 12 bps; and Portugal, 2 bps). Then, they increased up to

levels that were clearly higher than in the theoretical perfect EMU, as is the case with Portugal, at 392 bps, Spain and Italy at around 140 bps and even Belgium, at 38 bps. In the case of core and Nordic countries, Germany's debt interest rates are on average nearly half a point lower during the period than those that the country should have had, followed by Finland at an average of around 33 bps lower and France with an average of 13 bps lower. Thus our tables provide us with an initial view of the effects of the sovereign crisis on the countries' risk premiums. The debt interest rates of the countries in the European core (Germany, France and Finland) have performed better than those of a hypothetical integrated monetary union; while the peripheral countries (Portugal, Spain and Italy) have seen their rates increase substantially more than expected.

Table 1
Statistics on the average and standard deviation of the spr_uem and spr_sob spreads

In percentage points									EMU
2003 to Aug 2008		**Spain**	**Germany**	**France**	**Italy**	**Belgium**	**Portugal**	**Finland**	**spr_uem**
Spr_sob	Average	-0.07	0.00	-0.07	0.12	-0.02	0.02	-0.08	0.87
	STD	0.01	0.0	0.01	0.02	0.01	0.02	0.02	0.12
Sep 2008 to Sep 2012									
Spr_sob	Average	1.37	-0.49	-0.13	1.36	0.38	3.92	-0.33	1.59
	STD	0.14	0.09	0.06	0.13	0.07	0.50	0.09	0.12

Spr_uem = T10_uem - euribor 12m; Spr_sob = 10-year country debt rate - T10_uem
T10_uem = 10-year German debt rate + German risk premium (from April 2010 on)
German premium = Underlying long and medium-term factor of 10-year German debt interest rates - 10-year German debt interest rates.
Source: BBVA Research

The transmission of monetary policy

Table 2 shows the estimates of the different long-term factors that have an effect on the formation of loan prices based on the structure of the equation [1] for the period January 2003 to September 2012.

Table 2
Determinants of consumer, mortgage and corporate loan interest rates. New business

Period	**Spain**			**Germany**			**France**			**Italy**			**Belgium**			**Portugal**			**Finland**		
2003 - Sep 2012	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**
Commercial policy (pp)	1.76	0.81	--	2.95	1.68	1.66	2.82	0.54	--	5.48	0.91	--	3.69	1.74	1.30	5.74	--	3.77	0.42	--	0.49
Tof	1.68	1.02	1.29	1.16	0.76	1.03	0.86	1.12	1.24	0.80	1.18	1.47	1.37	0.70	1.04	0.81	1.22	0.81	1.29	1.17	1.18
Spr12m	3.21	0.96	1.60	-0.22*	0.87	0.59	1.91	1.26	1.21	0.60	0.01*	-0.06*	0.36*	0.82	0.42	1.39	0.73	0.70	1.34	0.60	0.81
Spr_uem	1.85	0.09*	0.44	0.81	0.58	0.35	0.73	0.71	0.69	0.80	0.21	0.50	0.64	0.32	0.10*	0.54	0.36	0.05*	0.73	0.28	0.30
Spr_sob	1.32	0.36	1.22	0.48	0.52	0.17	0.57	0.48	0.46	0.57	0.64	1.05	0.76	0.03*	-0.25	0.18	0.12	0.18	-0.53	-0.03*	-0.13
Regulation EC 290/2009 (pp)	-2.83	-0.09	-0.16	1.06	--	0.15	0.37	0.23	0.54	-1.14	-0.19	--	--	0.24	--	0.67	0.81	0.75	0.26	0.20	0.24
Seasonality	Yes	No	No	Yes	No	Yes (1)	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	Yes	No	No	No

(*) Not significant to 20% confidence; -- Significantly equal to zero; (1) From 2009 to Sep 2012; Regulation EC 290/2009 in force from June 2010
Tof= official ECB rate; Spr12m = 12m Euribor - tof; Spr_uem = T10_uem - 12m Euribor; Spr_sob = 10-year country debt rate - T10_uem
T10_uem = 10-year German debt rate + German premium (from April 2010 on)
German premium = Long and medium term underlying factor of 10-year German debt rates - 10-year German debt rates (observed)
Source: BBVA Research

We can see that all the countries take the official ECB rate (tof) as the main reference for forming loan rates. Nearly all the countries and portfolios also have the short end of the curve (spr_12m) as a reference, except for the consumer portfolios of Germany and Belgium and the mortgage and corporate portfolios in Italy. In addition, nearly all the countries use as a long-

term reference the theoretical level of an integrated monetary union (spr_uem), except for the mortgage portfolio in Spain (closely indexed to the Euribor) and the corporate portfolios in Belgium and Portugal.

Finally, the countries' own sovereign spread against the theoretical debt rates of an integrated union (spr_sob) has some of influence on the formation of interest rates in all the countries and nearly all the portfolios, except for the mortgage portfolios of Belgium and Finland.

The negative sign of the sensitivities of the corporate portfolios in Belgium and Finland is notable; however, the contribution to the rates also depends on the average value taken by the sovereign spread, i.e. the average value of spr_sob in the period under consideration. As can be observed in Table 1, these spreads were extremely low up to the Lehman crisis and have remained negative in Germany, France and Finland since then, so their contribution has implied a reduction in credit rates for Germany and France, but an increase in Finland. In other words, for Finland having a negative premium on the sovereign debt has not meant a reduction in loan portfolio rates. Meanwhile, for peripheral countries, the increases in the risk premiums have pushed up the interest rates of the loan portfolio, mainly in Spain, Italy and Portugal.

Another interesting feature, although only in the short-term, is the presence of seasonality in all the consumer portfolios except in Portugal and Finland, and in the corporate portfolios of Spain, Portugal, and since 2009 Germany.

Credit institutions set the prices of their loan portfolios according to key interest rates and, in general terms, the different short and/or long-term references on the interest-rate curve, taking into account the sovereign risk premium. The different portfolios have their peculiarities. For example, in Spain and Portugal the mortgage portfolio, and in Belgium the corporate portfolio, do not have a reference of long-term rates (spr_uem) but of the risk premium (spr_sob). Another example is that in Germany the consumer portfolio and in Italy the mortgage and corporate portfolios do not have references of the short end of the interest-rate curve (spr12m) but of the long end and the risk premium. Thus the transmission of ECB monetary policy is not homogenous and there are specific national factors that are related in general to the main funding sources of the entities, as banks' ratings tend to be capped by the sovereign rating.

Multipliers of the reference rates

Table 2 also allows us to classify the countries-portfolios with respect to the multipliers associated with the respective reference interest rates. Thus, beginning with the values of the multipliers of the official rate (tof) we can group together the countries and portfolios into three groups: 1) those that present multipliers that are clearly lower than 1 (under 0.85), such as the mortgage portfolios of Germany and Belgium, the consumer portfolios of Italy and Portugal and the corporate portfolio of Portugal; 2) those that are around 1 (over 0.86 and under 1.15), such as the mortgage portfolio of Spain, the corporate portfolio of Germany, the consumer and mortgage portfolios of France, and the corporate portfolio of Belgium; and 3) those that are clearly higher that 1 (over 1.15), such as the consumer and corporate portfolios of Spain, the consumer portfolios of Germany and Belgium, the corporate portfolios of France and Italy, the mortgage portfolios of Italy and Portugal and all the portfolios of Finland.

Keeping the same quantitative criterion, the multipliers of the Euribor spread (spr12m) below 1 correspond to the corporate portfolio of Germany, the consumer portfolio of Italy and the mortgage and corporate portfolios of Belgium, Portugal and Finland. The mortgage portfolios of Spain and Germany have multipliers of around 1. And for the third group with multipliers higher than 1 we have Spain in the consumer and corporate portfolios, all the portfolios of France, and the consumer portfolios of Portugal and Finland.

Finally, the multipliers of the long-term rates have been broken down into two terms: one that goes from the Euribor to the benchmark of an integrated theoretical monetary union, spr_uem; and the other one from this reference to the 10-year debt rates specific to each country, spr_sob. In both cases, all the multipliers are less than 1, except for the consumer portfolio of

Spain and the spr_uem multiplier of the corporate portfolio, in which they are higher than 1. As pointed out before, the parameters of spr_uem in the mortgage portfolio in Spain and in the corporate portfolios of Belgium and Portugal are not significant; nor does the parameter of spr_sob in the mortgage portfolios of Belgium and Finland.

The commercial policy of financial institutions

Table 2 will also allow us to understand some aspects of the commercial policy term of the financial institutions in the monetary union (those aspects that cannot be captured with references to interest rates). One characteristic that is repeated throughout the portfolios in all the countries is that the quantitative importance of the commercial policy term in the consumer portfolio tends to be higher than in the rest of the portfolios. This relative importance is linked to the risk profile and the guarantees this kind of loans. We have a range that goes from 0.42 percentage points (pp) in Finland to over 5 pp in Portugal and Italy, with a core of around 3 pp in Germany, France and Belgium. Spain is at the lower end with 1.76 pp. The crisis has triggered an increase in this term, pushing up loan prices due to their current funding conditions, and partly due to uncertainty.

The commercial policy term for the corporate portfolio also presents contrasts. In some countries it is not present (Spain, France and Italy), although it may have been replaced temporarily by official interest rates and short-term spreads higher than 1 (higher than 1.15). In other words, in these countries the commercial terms may not be constant anymore, as they are linked to the main interest rate reference. In other countries there is a range of these terms from 0.49 pp in Finland to 1.30 pp in Belgium and 1.66 pp in Germany.

Finally, there is no commercial policy term in mortgages in countries such as Portugal and Finland, but multipliers higher than 1 are found in the ECB official rates. As we have seen in the corporate portfolio, it seems that for these two countries it may have been replaced by the official rates. In the rest of the countries this term ranges from around 1.70 pp in Germany and Belgium to 0.8-0.9 pp in Spain and Italy, to 0.54 pp in France.

To sum up, the consumer portfolio in all the countries has commercial policy terms substantially higher than the rest of the portfolios. This seems to be related to its risk profile and its guarantees. The shorter term of these loans makes it easier to adjust their commercial policy. In addition, the terms of the corporate and mortgage portfolios are much lower than those of consumer loans, and in some cases the official rate and/or the Euribor have been replaced by multipliers higher than 1.

The impact of the international financial crisis

The estimates in Table 2 already include the effects of the successive phases of the financial crisis, which began in the summer of 2007 and are quantifiable from September 2008, with the collapse of Lehman Brothers. The crisis has had an impact on the multipliers and on the commercial policy term.

To see the effect of the different phases of the crisis on each of the portfolios we have carried out the following test: 1) we have re-estimated the models with a sample until August 2008, a month before the crisis deepened (see Table 3 in the Appendix[3]); 2) we have launched a projection starting at this point until the latest observed data, Sep 2012, i.e. 49 months ahead; 3) we have compared this projection with the observed value, taking into account the effects of the methodological change introduced by Regulation EC 290/2009; and 4) we have evaluated how significant this difference is in terms of standard deviations.

3: Table 5 also includes the estimate until the start of the sovereign crisis (March 2010) to show that there are no major changes in the parameters.

Table 3 shows that the rates have been above expected levels in general terms in all the portfolios of peripheral countries (Spain, France, Italy and Portugal), and below expected or as expected in Germany, Belgium and Finland. However, there are three exceptions: the consumer portfolio in Spain, Italy and Finland. Spain and Italy have rates below expectations, and thus a negative sign in the difference. This has to do with the statistical effect of the sovereign spread, which has a decisive contribution of nearly 4 pp for Spain and 1.7 pp for Italy in the projection period, as its parameter has doubled (see Table 3 of the Appendix) and the variable has increased its average considerably (see Table 1). If we eliminate these effects of the projection, the difference would have had a positive sign. With respect to the consumer portfolio of Finland, as we saw in Chart 1 it has a level that is clearly below the rest of the countries. Besides, the multiplier of the sovereign spread has changed its sign, from 0.72 (see Table 4 in the Appendix) in the pre-crisis period to -0.53 for the whole period (Table 2).

Table 3
Forecast lending rates, origin Aug 2008, horizon Sep 2012

September	Spain			Germany			France			Italy			Belgium			Portugal			Finland		
2012	Cons.	Hous.	Corp.	Cons.	Hous.	Corp.	Cons.	Hous.	Corp.	Cons.	Hous.	Corp.	Cons.	Hous.	Corp.	Cons.	Hous.	Corp.	Cons.	Hous.	Corp.
Forecast %	12.07	1.62	4.10	7.48	3.84	3.62	5.52	2.78	2.36	9.52	1.49	3.55	7.88	3.31	2.58	7.62	3.15	5.28	2.34	1.58	2.82
Observed %	8.74	3.1	5.09	6.11	2.89	3.15	6.22	3.63	3.23	8.39	3.86	4.42	6.95	3.48	2.35	10.47	3.62	6.80	4.14	1.76	2.66
Difference (O-F) pp	-3.33	1.48	0.99	-1.37	-0.95	-0.47	0.70	0.85	0.87	-1.13	2.37	0.87	-0.93	0.17	-0.23	2.85	0.47	1.52	1.80	0.18	-0.16
(O-F)/ STD.	-11.5	29.6	12.4	-7.4	-23.8	-6.5	4.1	12.3	7.0	-5.1	45.6	12.4	-4.4	1.9	-3.8	11.9	6.7	15.2	16.4	2.6	-1.8

Source: BBVA Research

Thus we can see how the financial crisis has had an upward effect on interest rate formation in the portfolios of Spain, France, Italy and Portugal; while they are down or practically unchanged in Germany, Belgium and Finland. Given this, there is an understandable concern of all economic agents to reduce pressures on the sovereign debt and to return it to levels closest to those of a Monetary Union. The debate on the banking and fiscal union therefore has the aim of achieving a more integrated monetary union.

At the same time, higher lending rates are making access to credit for solvent demand more difficult in peripheral countries, and thus slowing the speed of the economic recovery. This is compatible with the need to deleverage of the private sector in some peripheral countries, as non-productive lending has to be reduced and credit to solvent demand increased. In contrast, in the core countries laxer prices are leading to conditions that will have to be monitored closely in order to avoid credit bubbles.

Too strict credit conditions in peripheral countries could foster non-banking finance, with the risks that shadow banking involves for the stability of the system.

The relaxation of sovereign risk premiums should foster the normalization of credit rates in the short-term, particularly given that in the economic context providing finance to solvent productive activities is crucial for peripheral countries to return to a positive growth path. In the long term, the banking and fiscal union will be essential to align elasticities in different countries.

In short, the European credit markets are fragmented, and lending rates formation is heterogeneous. Moreover, the crisis has widened these differences, basically implying higher lending rates in the peripheral countries and France.

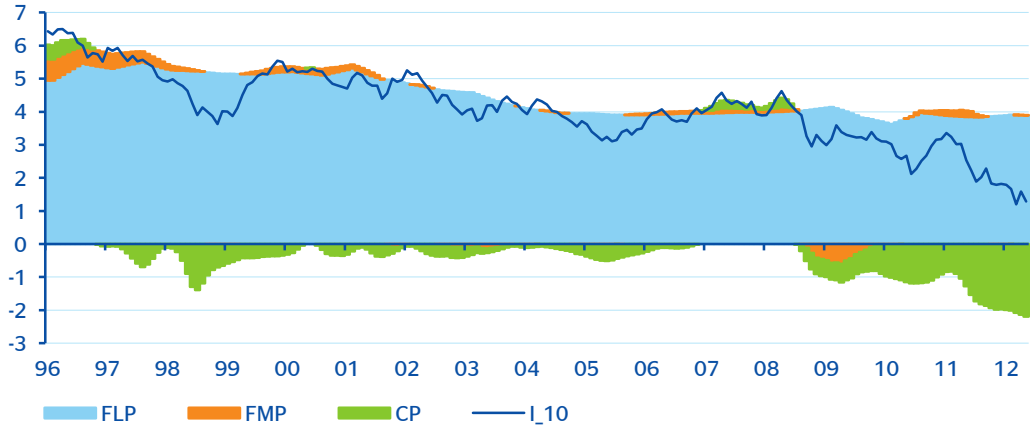
Appendix

1. Methodology for obtaining the underlying factors of German sovereign debt rates

The aim of the model is to identify the underlying (unobservable) factors associated with the economic fundamentals of a structural (medium and long term) and temporary (short term) nature for the interest rates on the German long-term sovereign debt (10 year). The dynamics of each factor are explained by observable variables that are theoretically associated with these fundamentals (medium and long-term growth and inflation expectations, market volatility and expectations of official short-term rates).

A space-state methodology has been adopted for this estimate. This methodology not only obtains unobserved variables (the factors mentioned above), but can handle observations of different frequencies (in this case monthly, quarterly, half-yearly and annual), and with coefficients that vary over time (mainly those of the short-term factor).

Chart 6
Germany. 10-year sovereign debt: decomposition



Source: BBVA Research

2. Estimate until the Lehman Brothers crisis (Aug 2008)

Table 4
Formation of consumer, mortgage and corporate loan interest rates. New operations

Period	Spain			Germany			France			Italy			Belgium			Portugal			Finland		
2003- Aug 2008	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**
Commercial policy (pp)	1.36	0.94	0.82	5.22	1.78	2.04	2.69	--	--	2.63	1.49	1.31	5.47	1.52	1.62	5.95	1.00	3.74	--	--	0.49
Tof	1.80	0.96	1.70	0.51	0.77	0.94	0.98	1.17	1.28	0.54	1.00	1.09	0.61	0.78	0.96	0.78	0.93	0.83	1.36	1.14	1.20
Spr12m	3.95	1.22	0.85	-0.29*	0.78	0.50	1.37	0.79	0.88	0.81	0.49	0.34	1.03	0.69	0.31	1.31	1.00	0.67	1.05	0.75	0.58
Spr_uem	1.75	-0.03*	0.22	0.41	0.57	0.27	0.78	0.76	0.77	0.72	0.04*	0.24	0.70	0.32	0.09	0.45	0.10*	0.01*	0.83	0.32	0.33
Spr_sob	2.86	0.61	0.63	N/A	N/A	N/A	0.93*	0.57*	1.47	1.27	-0.34	0.34*	3.82	-0.29*	0.06*	-0.17*	-0.41*	0.39*	0.72	0.16*	0.02*
Seasonality	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	Yes	No	No	No

(*) Not significant at 20% confidence level; N/A = not applicable; -- Significantly equal to zero;
Tof= Official ECB rate; Spr 12m = 12m Euribor - tof; Spr_uem = T10_uem - 12m Euribor; Spr_sob = 10-year country debt rate - T10_uem
T10_uem = 10-year German debt rate + German premium (from April 2010 on)
German premium = Long and medium term underlying factor of 10-year German debt rates - 10-year German debt rates (observed)
Source: BBVA Research

3. Estimate to the start of the sovereign crisis (Mar 2010)

Table 5
Formation of consumer, mortgage and corporate loan interest rates. New operations

Period	Spain			Germany			France			Italy			Belgium			Portugal			Finland		
2003-March 2010	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**	**Cons.**	**Hous.**	**Corp.**
Commercial policy (pp)	1.55	0.84	--	1.76	1.71	1.69	2.59	0.57	--	6.49	1.82	1.18	5.38	1.41	1.25	5.83	0.83	3.85	--	--	0.41
Tof	1.72	1.01	1.39	1.42	0.76	1.04	0.95	1.16	1.26	0.52	0.94	1.13	0.76	0.81	1.06	0.77	0.98	0.79	1.34	1.18	1.12
Spr12m	3.37	1.05	1.00	0.23*	0.86	0.51	1.75	1.03	1.07	0.92	0.38	0.37	0.53	0.71	0.39	1.54	0.82	0.71	1.08	0.50	0.78
Spr_uem	1.86	0.07*	0.45	1.06	0.57	0.34	0.83	0.73	0.76	0.57	-0.07*	0.25	0.45	0.42	0.10*	0.51	0.17	0.03*	0.74	0.29	0.32
Spr_sob	2.14	0.17*	1.76	N/A	N/A	N/A	0.99*	0.85	1.57	-0.47	-0.27*	0.06*	1.36	0.56	-0.36	-0.10*	-0.36	0.04*	0.01*	-0.10*	0.11*
Seasonality	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	Yes	No	No	No

(*) Not significant at 20% confidence level; N/A = not applicable; -- Significantly equal to zero;
Tof= Official ECB rate; Spr 12m = 12m Euribor - tof; Spr_uem = T10_uem - 12m Euribor; Spr_sob = 10-year country debt rate - T10_uem
T10_uem = 10-year German debt rate + German premium (from April 2010 on)
German premium = Long and medium term underlying factor of 10-year German debt rates - 10-year German debt rates (observed)
Source: BBVA Research

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