

## 45. Fair value

Fair value is based on market prices, whenever these are available. If market prices are not available, as occurs regarding many products sold to clients, fair value is estimated through internal models based on cash-flow discounting techniques. Cash-flows for the different instruments sold are calculated according to its financial characteristics and the discount rates used include both the market interest rate curve and the current conditions of the Bank's pricing policy.

Thus, the fair value obtained is influenced by the parameters used in the evaluation model that have some degree of judgment and reflects exclusively the value attributed to different financial instruments. However it does not consider prospective factors, as the future business evolution. Therefore the values presented cannot be understood as an estimate of the economic value of the Group.

The main methods and assumptions used in estimating the fair value for the financial assets and financial liabilities are presented as follows:

### **Cash and deposits at central banks and Loans and advances to credit institutions repayable on demand**

Considering the short term of these financial instruments, the amount in the balance sheet is a reasonable estimate of its fair value.

### **Loans and advances to credit institutions, Deposits from credit institutions and Assets with repurchase agreements**

The fair value of these financial instruments is calculated discounting the expected principal and interest future cash flows for these instruments, considering that the payments of the instalments occur in the contractually defined dates. This update is made based on the prevailing market rate for the term of each cash flow plus the average spread of the production of the most recent 3 months of the same. For the elements with signs of impairment, the net impairment of these operations is considered as a reasonable estimate of their fair value, considering the economic valuation that is realized in the determination of this impairment.

For resources from Central Banks it was considered that the book value is a reasonable estimate of its fair value, given the nature of operations and the associated short-term. The rate of return of funding with the European Central Bank is -0.4% as at 31 December 2018 (31 December 2017: 0.00%).

For the remaining loans and advances and deposits, the discount rate used reflects the current conditions applied by the Bank on identical instruments for each of the different residual maturities (rates from the monetary market or from the interest rate swap market).

### **Loans and advances to customers without defined maturity date**

Considering the short maturity of these financial instruments, the conditions of the portfolio are similar to conditions used at the date of the report. Therefore the amount in the balance sheet is a reasonable estimate of its fair value.

### **Loans and advances to customers with defined maturity date**

The fair value of these instruments is calculated by discounting the expected principal and interest future cash flows for these instruments, considering that the payments of the instalments occur in the contractually defined dates. For loans with signs of impairment, the net impairment of these operations is considered as a reasonable estimate of their fair value, considering the economic valuation that is realized in the determination of this impairment.

The discount rate used is the one that reflects the current rates of the Bank for each of the homogeneous classes of this type of instruments and with similar residual maturity. The discount rate includes the market rates for the residual maturity date (rates from the monetary market or from the interest rate swap market, at the end of the period) and the spread used at the date of the report, which was calculated from the average production of the three most recent months compared to the reporting date.

### **Resources from customers and other loans**

The fair value of these financial instruments is calculated by discounting the expected principal and interest future cash flows for the referred instruments, considering that payments occur in the contractually defined dates. The discount rate used reflects the current conditions applied by the Bank in similar instruments with a similar maturity. The discount rate includes the market rates of the residual maturity date (rates of monetary market or the interest rate swap market, at the end of the period) and the actual spread of the Bank. This was calculated from the average production of the three most recent months compared to the reporting date.

As at 31 December 2018, the average discount rates for Loans and advances to credit institutions, Loans and advances to customers, Resources from credit institutions and Resources from customers are analysed as follows:

	Loans and advances to credit institutions	Loans and advances to customers	Resources from credit institutions	Resources from customers
EUR	-0.44%	2.77%	0.44%	0.02%
AUD	n.a.	n.a.	1.85%	2.34%
CAD	n.a.	n.a.	1.70%	2.31%
CHF	n.a.	n.a.	n.a.	-0.35%
CNY	n.a.	n.a.	n.a.	2.79%
DKK	n.a.	n.a.	n.a.	-0.14%
GBP	n.a.	3.64%	n.a.	1.09%
HKD	n.a.	2.29%	n.a.	1.98%
MOP	n.a.	n.a.	n.a.	2.14%
NOK	n.a.	n.a.	n.a.	1.57%
PLN	n.a.	n.a.	n.a.	1.83%
SEK	n.a.	n.a.	n.a.	0.17%
USD	2.87%	3.84%	2.74%	2.97%
ZAR	n.a.	n.a.	7.20%	7.38%

As at 31 December 2017, the average discount rates for Loans and advances to credit institutions, Loans and advances to customers, Resources from credit institutions and Resources from customers are analysed as follows:

	Loans and advances to credit institutions	Loans and advances to customers	Resources from credit institutions	Resources from customers
EUR	-0.09%	3.70%	0.60%	0.08%
AUD	n.a.	n.a.	n.a.	2.08%
CAD	n.a.	1.66%	n.a.	1.90%
CHF	n.a.	n.a.	n.a.	-0.37%
CNY	n.a.	n.a.	n.a.	3.95%
DKK	n.a.	n.a.	n.a.	-0.02%
GBP	0.80%	3.39%	n.a.	0.80%
HKD	n.a.	1.51%	n.a.	1.16%
MOP	n.a.	1.25%	n.a.	1.51%
NOK	0.80%	4.36%	n.a.	1.25%
PLN	n.a.	n.a.	1.88%	1.95%
SEK	n.a.	n.a.	n.a.	0.02%
USD	1.98%	2.80%	2.02%	2.10%
ZAR	7.22%	n.a.	n.a.	7.58%

## **Financial assets and liabilities measured at fair value through profit or loss (except derivatives), financial assets at fair value through other comprehensive income (IFRS9) and financial assets available for sale (IAS39)**

These financial instruments are accounted for at fair value. Fair value is based on market prices ("Bid-price"), whenever these are available. If market prices are not available, fair value is estimated through numerical models based on cash-flow discounting techniques, using the market interest rate curve adjusted for factors associated, predominantly credit risk and liquidity risk, determined in accordance with the market conditions and time frame.

Market interest rates are determined based on information released by the suppliers of financial content - Reuters and Bloomberg - more specifically as a result of prices of interest rate swaps. The values for the very short-term rates are obtained from similar sources but regarding interbank money market. The interest rate curve obtained is calibrated with the values of interest rate short-term futures. Interest rates for specific periods of the cash flows are determined by appropriate interpolation methods. The same interest rate curves are used in the projection of the non-deterministic cash flows such as indexes.

When optionality is involved, the standard templates (Black-Scholes, Black, Ho and others) are used considering the volatility areas applicable. Whenever there are no references in the market of sufficient quality or that the available models do not fully apply to meet the characteristics of the financial instrument, specific quotations supplied by an external entity are applied, typically a counterparty of the business.

### **Financial assets measured at amortised cost - Debt instruments (IFRS 9)**

These financial instruments are accounted at amortised cost net of impairment. Fair value is based on market prices, whenever these are available. If market prices are not available, fair value is estimated through numerical models based on cash-flow discounting techniques, using the market interest rate curve adjusted for factors associated, predominantly credit risk and liquidity risk, determined in accordance with the market conditions and time frame.

### **Hedging and trading derivatives**

All derivatives are recorded at fair value. In case of derivative contracts that are quoted in organised markets their market prices are used. As for derivatives traded "Over-the-counter", it is applied methods based on numerical cash-flow discounting techniques and models for assessment of options considering variables of the market, particularly the interest rates on the instruments in question, and where necessary, their volatilities.

Interest rates are determined based on information disseminated by the suppliers of financial content - Reuters and Bloomberg - more specifically those resulting from prices of interest rate swaps. The values for the very short-term rates are obtained from a similar source but regarding interbank money market. The interest rate curve obtained is calibrated with the values of interest rate short-term futures. Interest rates for specific periods of the cash flows are determined by appropriate interpolation methods. The interest rate curves are used in the projection of the non-deterministic cash flows such as indexes.

### **Debt securities non subordinated issued and Subordinated debt**

For these financial instruments the fair value was calculated for components for which fair value is not yet reflected in the balance sheet. Fixed rate instruments remunerated for which the Group adopts "hedge-accounting", the fair value related to the interest rate risk is already recognised.

For the fair value calculation, other components of risk were considered, in addition to the interest rate risk already recorded, when applicable. The fair value is based on market prices, whenever these are available. If market prices are not available, fair value is estimated through numerical models based on cash-flow discounting techniques, using the market interest rate curve adjusted by associated factors, predominantly credit risk and trading margin, the latter only in the case of issues placed on non-institutional customers of the Bank.

As original reference, the Bank applies the curves resulting from the market interest rate swaps for each specific currency. The credit risk (credit spread) is represented by an excess from the curve of interest rate swaps established specifically for each term and class of instruments based on the market prices on equivalent instruments.

For own issued debts placed among non institutional costumers of the Bank, one more differential was added (commercial spread), which represents the margin between the financing cost in the institutional market and the cost obtained by distributing the respective instrument in the owned commercial network.

The average reference yield curve obtained from market prices in Euros and used in the calculation of the fair value of subordinated issues placed in the institutional market was 7.18% (31 December, 2017: 6.76%). Regarding the subordinated issues placed on the retail market it was determined a discount rate of 2.64% (31 December, 2017: 2.01%). For senior and collateralised securities placed on the retail market, the average discount rate was 0.36% (31 December 2017: 1.06%).

For debt securities, the fair value calculation focused on all the components of these instruments, as a result the difference determined as at 31 December 2018 is a positive amount of Euros 12,432,000 (31 December 2017: a positive amount of Euros 8,613,000), and includes a receivable amount of Euros 857,000 (31 December 2017: a payable amount of Euros 158,000) which reflects the fair value of embedded derivatives and are recorded in financial assets and liabilities held for trading.

As at 31 December 2018 and 2017, the following table presents the interest rates used in the definition of the interest rate curves of main currencies, namely EUR, USD, GBP and PLN used to determine the fair value of the assets and liabilities of the Bank:

	2018			
	Currencies			
	EUR	USD	GBP	PLN
1 day	-0.43%	2.75%	0.75%	1.44%
7 days	-0.40%	2.55%	0.78%	1.44%
1 month	-0.41%	2.57%	0.80%	1.54%
2 months	-0.38%	2.61%	0.85%	1.58%
3 months	-0.36%	2.72%	0.96%	1.62%
6 months	-0.29%	2.81%	1.08%	1.69%
9 months	-0.23%	2.88%	1.18%	1.72%
1 year	-0.23%	2.74%	1.29%	1.74%
2 years	-0.18%	2.65%	1.16%	1.82%
3 years	-0.07%	2.58%	1.22%	1.91%
5 years	0.20%	2.57%	1.30%	2.12%
7 years	0.47%	2.62%	1.36%	2.29%
10 years	0.82%	2.70%	1.43%	2.48%
15 years	1.17%	2.79%	1.51%	2.75%
20 years	1.35%	2.82%	1.55%	2.88%
30 years	1.41%	2.81%	1.54%	2.88%

	2017			
	Currencies			
	EUR	USD	GBP	PLN
1 day	-0.43%	1.42%	0.47%	1.47%
7 days	-0.43%	1.50%	0.51%	1.47%
1 month	-0.42%	1.63%	0.50%	1.55%
2 months	-0.39%	1.65%	0.56%	1.58%
3 months	-0.38%	1.70%	0.61%	1.62%
6 months	-0.32%	1.83%	0.72%	1.71%
9 months	-0.27%	1.90%	0.81%	1.72%
1 year	-0.26%	1.88%	0.88%	1.80%
2 years	-0.15%	2.06%	0.78%	2.03%
3 years	0.01%	2.15%	0.89%	2.22%
5 years	0.31%	2.23%	1.03%	2.50%
7 years	0.57%	2.30%	1.14%	2.70%
10 years	0.89%	2.38%	1.27%	2.94%
15 years	1.25%	2.47%	1.41%	3.25%
20 years	1.42%	2.51%	1.46%	3.37%
30 years	1.50%	2.52%	1.43%	3.37%

The following table shows the fair value of financial assets and liabilities of the Bank, as at 31 December 2018:

(Thousands of euros)

	2018				
	Fair value through profit or loss	Fair value through reserves	Amortised cost	Book value	Fair value
<b>Assets</b>					
Cash and deposits at Central Banks	-	-	1,682,922	1,682,922	1,682,922
Loans and advances to credit institutions repayable on demand	-	-	186,477	186,477	186,477
Financial assets at amortised cost					
Loans and advances to credit institutions	-	-	2,044,730	2,044,730	2,055,465
Loans and advances to customers (i)	-	-	30,988,338	30,988,338	30,950,023
Debt instruments	-	-	2,641,291	2,641,291	2,647,759
Financial assets at fair value through profit or loss					
Financial assets held for trading	695,752	-	-	695,752	695,752
Financial assets not held for trading mandatorily at fair value through profit or loss	1,589,899	-	-	1,589,899	1,589,899
Financial assets designated at fair value through profit or loss	33,034	-	-	33,034	33,034
Financial assets at fair value through other comprehensive income	-	6,996,892	-	6,996,892	6,996,892
Hedging derivatives (ii)	92,891	-	-	92,891	92,891
	2,411,576	6,996,892	37,543,758	46,952,226	46,931,114
<b>Liabilities</b>					
Financial liabilities at amortised cost					
Resources from credit institutions	-	-	8,372,537	8,372,537	8,375,877
Resources from customers (i)	-	-	34,217,917	34,217,917	34,230,293
Non subordinated debt securities issued (i)	-	-	1,198,767	1,198,767	1,211,199
Subordinated debt (i)	-	-	825,624	825,624	839,676
Financial liabilities at fair value through profit or loss					
Financial liabilities held for trading	295,695	-	-	295,695	295,695
Financial liabilities designated at fair value through profit or loss	3,603,647	-	-	3,603,647	3,603,647
Hedging derivatives (ii)	68,486	-	-	68,486	68,486
	3,967,828	-	44,614,845	48,582,673	48,624,873

(i) - the book value includes the effect of the adjustments resulting from the application of hedge accounting;

(ii) - includes a portion that is recognised in reserves in the application of accounting cash flow hedge.

The following table shows the fair value of financial assets and liabilities of the Bank, as at 31 December 2017:

	(Thousands of euros)				
	2017				
	Fair value through profit or loss	Fair value through reserves	Amortised cost	Book value	Fair value
<b>Assets</b>					
Cash and deposits at Central Banks	-	-	1,291,663	1,291,663	1,291,663
Loans and advances to credit institutions repayable on demand	-	-	156,460	156,460	156,460
Financial assets at amortised cost					
Loans and advances to credit institutions	-	-	1,254,472	1,254,472	1,257,994
Loans and advances to customers (i)	-	-	31,349,425	31,349,425	29,622,473
Debt instruments	-	-	2,007,520	2,007,520	2,017,085
Financial assets at fair value through profit or loss					
Financial assets held for trading	770,639	-	-	770,639	770,639
Financial assets designated at fair value through profit or loss	142,336	-	-	142,336	142,336
Financial assets available for sale	-	6,692,982	-	6,692,982	6,692,982
Financial assets held to maturity	-	-	342,785	342,785	339,902
Hedging derivatives (ii)	18,804	-	-	18,804	18,804
	931,779	6,692,982	36,402,325	44,027,086	42,310,338
<b>Liabilities</b>					
Financial liabilities at amortised cost					
Resources from credit institutions	-	-	7,825,051	7,825,051	7,753,210
Resources from customers (i)	-	-	32,135,035	32,135,035	32,146,967
Non subordinated debt securities issued (i)	-	-	1,440,628	1,440,628	1,449,241
Subordinated debt (i)	-	-	1,021,541	1,021,541	1,127,749
Financial liabilities at fair value through profit or loss					
Financial liabilities held for trading	381,380	-	-	381,380	381,380
Financial liabilities designated at fair value through profit or loss	3,843,645	-	-	3,843,645	3,843,645
Hedging derivatives (ii)	112,352	-	-	112,352	112,352
	4,337,377	-	42,422,255	46,759,632	46,814,544

(i) - the book value includes the effect of the adjustments resulting from the application of hedge accounting;

(ii) - includes a portion that is recognised in reserves in the application of accounting cash flow hedge.

The Bank classified the financial instruments recorded in the balance sheet at fair value in accordance with the hierarchy established in IFRS 13.

The fair value of financial instruments is determined using quotations recorded in active and liquid markets, considering that a market is active and liquid whenever its stakeholders conduct transactions on a regular basis giving liquidity to the instruments traded. When it is verified that there are no transactions that regularly provide liquidity to the traded instruments, valuation methods and techniques are used to determine the fair value of the financial instruments.

### **Level 1 - With quotation in active market**

In this category are included, in addition to financial instruments traded on a regulated market, bonds and units of investment funds valued on the basis of prices disclosed through trading systems.

The classification of the fair value of level 1 is used when:

- i) - There is a firm daily enforceable quotation for the financial instruments concerned, or;
- ii) - There is a quotation available in market information systems that aggregate multiple prices of various stakeholders, or;
- iii) - Financial instruments have been classified in level 1, at least 90% of trading days in the year (at the valuation date).

### **Level 2 - Valuation methods and techniques based on market data**

Financial instruments, when there are no regular transactions in the active and liquid markets (level 1), are classified in level 2, according to the following rules:

- i) - Failure to comply with the rules defined for level 1, or;
- ii) - They are valued based on valuation methods and techniques that use mostly observable market data (interest rate or exchange rate curves, credit curves, etc.).

Level 2 includes over-the-counter derivative financial instruments contracted with counterparties with which the Bank maintains collateral agreements (ISDAs with Credit Support Annex (CSA)), in particular with MTA (Minimum Transfer Amount) which contributes to the mitigation of the counterparty credit risk, so that the CVA (Credit Value Adjustment) component is not significant. In addition, derivative financial instruments traded in the over-the-counter market, which, despite not having CSA agreements, the non-observable market data component (i.e. internal ratings, default probabilities determined by internal models, etc.) incorporated in valuation of CVA is not significant in the value of the derivative as a whole. In order to assess the significance of this component, the Bank defined a quantitative relevance criterion and performed a qualitative sensitivity analysis on the valuation component that includes unobservable market data.

### **Level 3 - Valuation methods and techniques based on data not observable in the market**

If the level 1 or level 2 criteria are not met, financial instruments should be classified in level 3, as well as in situations where the fair value of financial instruments results from the use of information not observable in the market, such as:

- financial instruments which are not classified as level 1 and which are valued using evaluation methods and techniques without being known or where there is consensus on the criteria to be used, namely:

- i) - They are valued using comparative price analysis of financial instruments with risk and return profile, typology, seniority or other similar factors, observable in the active and liquid markets;
- ii) - They are valued based on performance of impairment tests, using performance indicators of the underlying transactions (e.g. default probability rates of the underlying assets, delinquency rates, evolution of the ratings, etc.);
- iii) - They are valued based on NAV (Net Asset Value) disclosed by the management entities of securities/real estate/other investment funds not listed on a regulated market.

Level 3 includes over-the-counter derivative financial instruments that have been contracted with counterparties with which the Bank does not maintain collateral exchange agreements (CSAs), and whose unobservable market data component incorporated in the valuation of CVA is significant in the value of the derivative as a whole. In order to assess the significance of this component, the Bank defined a quantitative relevance criterion and performed a qualitative sensitivity analysis on the valuation component that includes unobservable market data.

The following table shows, by valuation levels, the fair value of financial assets and liabilities of the Bank, as at 31 December 2018:

	(Thousands of euros)			
	2018			
	Level 1	Level 2	Level 3	Total
<b>Assets</b>				
Cash and deposits at Central Banks	1,682,922	-	-	1,682,922
Loans and advances to credit institutions repayable on demand	186,477	-	-	186,477
Financial assets at amortised cost				
Loans and advances to credit institutions	-	-	2,055,465	2,055,465
Loans and advances to customers	-	-	30,950,023	30,950,023
Debt instruments	122,601	226,848	2,298,310	2,647,759
Financial assets at fair value through profit or loss				
Financial assets held for trading	52,280	349,504	293,968	695,752
Financial assets not held for trading mandatorily at fair value through profit or loss	-	-	1,589,899	1,589,899
Financial assets designated at fair value through profit or loss	33,034	-	-	33,034
Financial assets at fair value through other comprehensive income	6,381,244	461,681	153,967	6,996,892
Hedging derivatives	-	92,891	-	92,891
	8,458,558	1,130,924	37,341,632	46,931,114
<b>Liabilities</b>				
Financial liabilities at amortised cost				
Resources from credit institutions	-	-	8,375,877	8,375,877
Resources from customers	-	-	34,230,293	34,230,293
Non subordinated debt securities issued	-	-	1,211,199	1,211,199
Subordinated debt	-	-	839,676	839,676
Financial liabilities at fair value through profit or loss				
Financial liabilities held for trading	-	295,677	18	295,695
Financial liabilities designated at fair value through profit or loss	678,192	-	2,925,455	3,603,647
Hedging derivatives	-	68,486	-	68,486
	678,192	364,163	47,582,518	48,624,873



The following table shows, by valuation levels, the fair value of financial assets and liabilities of the Bank, as at 31 December 2017:

	(Thousands of euros)			
	2017			
	Level 1	Level 2	Level 3	Total
<b>Assets</b>				
Cash and deposits at Central Banks	1,291,663	-	-	1,291,663
Loans and advances to credit institutions repayable on demand	156,460	-	-	156,460
Financial assets at amortised cost				
Loans and advances to credit institutions	-	-	1,257,994	1,257,994
Loans and advances to customers	-	-	29,622,473	29,622,473
Debt instruments	-	-	2,017,085	2,017,085
Financial assets at fair value through profit or loss				
Financial assets held for trading	73,575	409,153	287,911	770,639
Financial assets designated at fair value through profit or loss	142,336	-	-	142,336
Financial assets available for sale	4,610,516	219,114	1,863,352	6,692,982
Financial assets held to maturity	52,383	287,520	-	339,903
Hedging derivatives	-	18,804	-	18,804
	6,326,933	934,591	35,048,815	42,310,339
<b>Liabilities</b>				
Financial liabilities at amortised cost				
Resources from credit institutions	-	-	7,753,210	7,753,210
Resources from customers	-	-	32,146,967	32,146,967
Non subordinated debt securities issued	-	-	1,449,241	1,449,241
Subordinated debt	-	-	1,127,749	1,127,749
Financial liabilities at fair value through profit or loss				
Financial liabilities held for trading	-	381,044	336	381,380
Financial liabilities designated at fair value through profit or loss	763,919	-	3,079,726	3,843,645
Hedging derivatives	-	112,352	-	112,352
	763,919	493,396	45,557,229	46,814,544

For financial assets classified at level 3 recorded in the balance sheet at fair value, the movement occurred during the year 2018 is presented as follows:

(Thousands of euros)

	2018						
	Financial assets					Total	Financial liabilities held for trading
	held for trading	not held for trading mandatorily at fair value through profit or loss	at fair value through other comprehensive income	available for sale			
<b>Balance as at 31 December 2017</b>	287,911	-	-	1,863,352	2,151,263	336	
Impact of transition to IFRS 9	-	1,832,493	30,859	(1,863,352)	-	-	
<b>Balance on 1 January 2018</b>	287,911	1,832,493	30,859	-	2,151,263	336	
Gains / (losses) recognised in profit or loss							
Results on financial operations	4,637	(29,082)	-	-	(24,445)	-	
Net interest income	17	-	897	-	914	-	
Transfers between levels	2,735	-	79,081	-	81,816	(332)	
Increase / (reduction) share capital	-	(182,497)	-	-	(182,497)	-	
Purchases	-	7,117	60,694	-	67,811	14	
Sales, repayments or amortisations	(1,332)	(38,508)	(19,789)	-	(59,629)	-	
Gains / (losses) recognised in reserves	-	-	2,235	-	2,235	-	
Exchange differences	-	376	-	-	376	-	
Accruals of interest	-	-	(10)	-	(10)	-	
<b>Balance as at 31 December 2018</b>	293,968	1,589,899	153,967	-	2,037,834	18	

For financial assets classified at level 3 recorded in the balance sheet at fair value, the movement occurred during the year 2017 is presented as follows:

(Thousands of euros)

	2017			
	Financial assets			Financial liabilities held for trading
	held for trading	available for sale	Total	
<b>Balance on January 1</b>	604,211	1,965,328	2,569,539	63,779
Gains / (losses) recognised in profit or loss				
Results on financial operations	42,739	7,788	50,527	-
Net interest income	-	2,045	2,045	-
Impairment and other provisions	-	(70,059)	(70,059)	-
Transfers between levels	(350,191)	-	(350,191)	(55,730)
Purchases	469	378,869	379,338	332
Sales, repayments or amortisations	(9,317)	(423,644)	(432,961)	(8,045)
Gains / (losses) recognised in reserves	-	3,027	3,027	-
Accruals of interest	-	(2)	(2)	-
<b>Balance as at December 31</b>	287,911	1,863,352	2,151,263	336