



Credit Case Study:

Analyzing European Bank Non-Core Assets

Introduction

This paper presents a case study of investment dynamics and opportunities in European non-core assets ("NCAs") and illustrates early stages in our investment process as applied to these assets.¹

Specifically, the following pages describe how we generally seek to:

- Source and filter the deals in our pipeline to identify the best opportunities
- Assess intrinsic value and parse portfolio characteristics
- Determine optimal pricing
- Model stress scenarios that may have significant impact on asset value

To demonstrate how certain aspects of the investment process have worked in practice, we take a closer look in this case study at a large portfolio of Spanish NCAs. This portfolio consisted primarily of loans to small and medium enterprises ("SMEs").

The portfolio described over the following pages, which we will refer to as the "Spanish NCA portfolio," consisted of 421 loans with a face value of approximately €175 million, held by a regional Spanish bank.

Investment Approach

Strong sourcing relationships and quantitative analytical capabilities are foundations of our investment process, which aims for maximum scope and efficiency in evaluating potential deals.

- In the sourcing process, we seek deal flow from advisers, bank management teams, servicers, and lawyers in our network. We have strong, direct relationships in these fields, as demonstrated by the numerous sellers with whom we have completed multiple transactions.
- The NCA portfolios we have favored typically consist of numerous, relatively small loans that may be secured by a variety of collateral. This heterogeneous quality of the underlying loans can make such portfolios more difficult to value and restructure. In our experience, such portfolios often are less-competitively bid than those composed of smaller numbers of relatively large loans backed by other assets, such as commercial real estate-backed transactions.
- We have designed and built proprietary data collection and quantitative systems to assist practitioners in core activities, such as identifying/sourcing potentially attractive opportunities, due diligence and structuring, post-deal management, and exit. These efforts have helped to build a database that tracks approximately 65 million loans, representing more than \$12 trillion in balances.
- Our first pass on all deals is typically based on in-house analysis using a statistical approach, which we believe produces meaningful results while streamlining the process and avoids the costs that would be incurred by outsourcing these steps.
- Once we have selected the deals we want to consider for a binding offer, we engage outside vendors and commence a more robust loan-by-loan analysis.

Note: This paper is authored by the D. E. Shaw group. Certain first-person statements (i.e., those using "we" or "our") relate to the D. E. Shaw group generally, while others relate to the firm's Asset-Backed Strategies team (the "ABS team") specifically. In particular, it should be noted that the investment process and approach described herein are deployed by the ABS team.

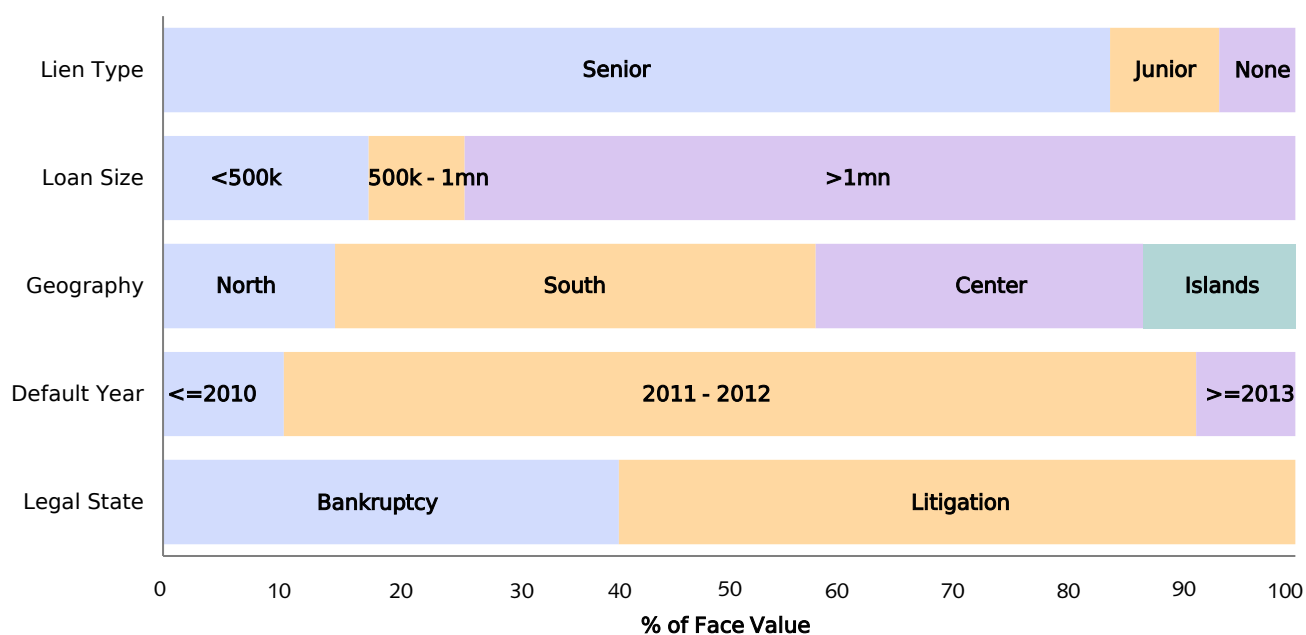
¹ "Non-core assets" is intended to cover non-core asset classes from which U.S. or European financial institutions have been withdrawing under competitive or regulatory pressures. The term "non-core assets" includes loans and other receivables, performing and non-performing, as well as assets that typically back bank loans and securitizations. While there is no settled definition of a "non-core asset," in general, these assets can be thought of as no longer being part of the owner's core business and/or as being offered for sale.

Each NCA portfolio is analyzed according to the set of characteristics we consider most relevant to the intrinsic value of each loan and its associated collateral.

- To assess the value of the loans in each NCA portfolio, we consider typical market factors such as jurisdiction, loan status, collateral type, lien type, loan size, geography, default year, and legal state, on a loan-by-loan basis. In the Spanish NCA portfolio, the predominance of secured loans entailed significant analysis of underlying collateral.
- We estimate collateral values based on various inputs, drawing heavily on our proprietary datasets. In the Spanish NCA portfolio, we assigned collateral value only to real estate, so we describe below the estimated market value of relevant collateral as real estate value ("REV") as of the time of our due diligence of the portfolio.
- We pay close attention to the legal state of each asset, which can materially impact the purchase price (see "Scenario Analysis" below). For each asset in the Spanish NCA portfolio, either the debtor was subject to a bankruptcy proceeding (*i.e.*, a Spanish "concurso") or the applicable loan was subject to litigation.

The Spanish NCA portfolio consisted primarily of secured SME loans

Country	Investment Funding Date	Primary Asset Type	Face Value (€ mn)	Number of Positions	Avg Face Value per Position (€ mn)	Real Estate Value (€ mn, est)
Spain	September 2016	SME Loans	174.7	421	0.41	85.8



Source: the D. E. Shaw group. Please see the notes at the end of this document for key information regarding this chart.

Real estate collateral supporting SME loans in NCA portfolios can take a variety of forms, including residential, commercial, and industrial properties as well as land.

- The collateral for the Spanish NCA portfolio was primarily developed property, which consisted mainly of residential real estate, and smaller amounts of commercial and industrial property as well as land. The following are three examples of non-land collateral that supported SME loans in this portfolio.

Purchase Price of Loan	€29,941	Purchase Price of Loan	€64,146	Purchase Price of Loan	€59,999
Face Value of Loan	€107,392	Face Value of Loan	€676,257	Face Value of Loan	€162,352
Collateral Type	Residential	Collateral Type	Commercial	Collateral Type	Industrial
Location	Sevilla, Andalucía	Location	Girona, Cataluña	Location	Sevilla, Andalucía



Source: the D. E. Shaw group. Please see the notes at the end of this document for important information regarding the tables and images above.

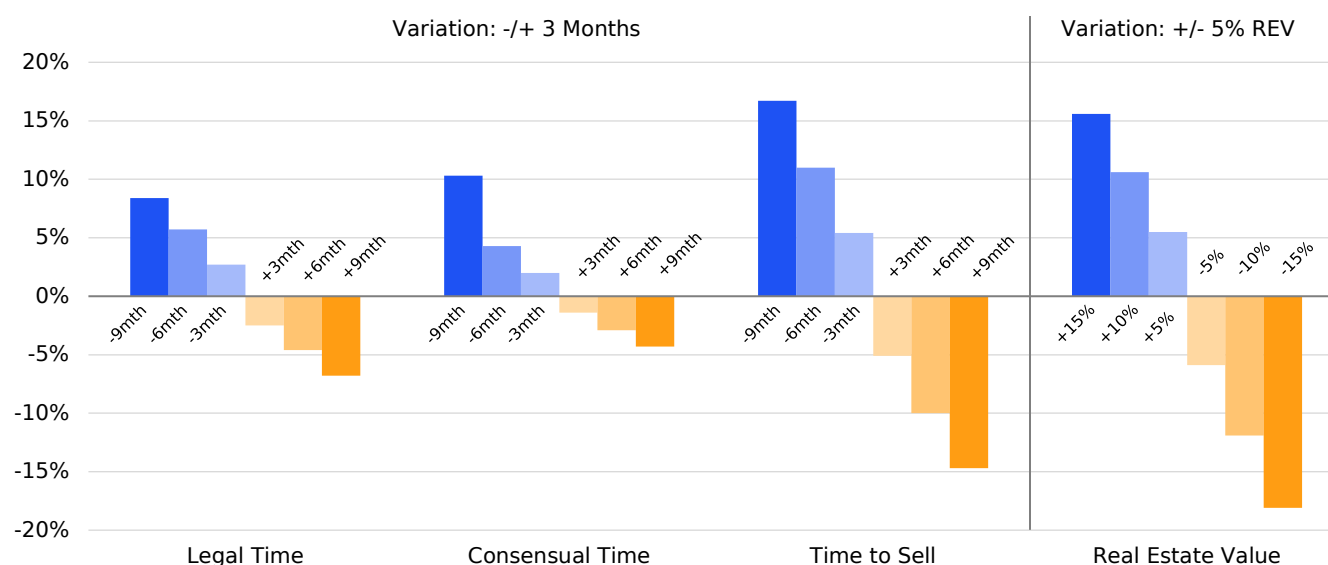
Scenario Analysis

In the underwriting process, we consider not only what each loan and collateral component in the portfolio is worth, but also the difficulty of extracting that value.

- As part of our data-driven approach, we apply a proprietary risk framework to assess the portfolio’s modeled return targets in light of possible fluctuations in a range of variables.
- The chart below shows the percentage change in the acquisition cost of the portfolio—*i.e.*, total investment cost, including taxes and deal-related expenses but excluding currency hedges—required to maintain the portfolio’s modeled return in each stress-test scenario.
- The model stress-tests three-, six-, and nine-month variations in the average time required to (i) resolve legal proceedings, (ii) reach consensual settlements with debtors, and (iii) sell collateral after ownership transfers to the investor. The chart compares these fluctuations with the impact on acquisition costs of 5%, 10%, and 15% variations in REV.

Our portfolio analysis indicated that faster asset sales may be worth more than a sizable upside surprise in REV.

Percentage Change in Acquisition Cost to Maintain Modeled Return



Source: the D. E. Shaw group. Please see the notes at the end of this document for key information regarding this chart.

Bidding

We select portfolios to bid on, and structure those bids, with the aim of purchasing assets well below our estimate of market value as of the time of our due diligence of the portfolio.

- We believe that our many years of experience in the European NCA space help us to purchase NCAs at a significant discount, providing meaningful downside protection and enabling us to produce attractive and idiosyncratic risk-adjusted returns for our investors.
- In September 2016, we bought the Spanish NCA portfolio for less than a quarter of face value, and at a price that was less than half of our estimate of total REV.

We bought the Spanish NCA portfolio at a significant discount to both face value and our estimate of REV

Segmentation	# Loans	# Debtors	Face Value	Real Estate Value (est.)	Bid Price*	Price/Face Value	Price/REV
Secured NPLs	390	90	€ 162.9	€ 85.8	€ 39.7	24.4%	46.3%
- Senior Lien	350	83	€ 146.1	€ 74.6	€ 35.1	24.0%	47.0%
- Junior Lien	40	7	€ 16.8	€ 11.2	€ 4.6	27.6%	41.4%
Unsecured NPLs	31	8	€ 11.8	N/A	€ 0.1	1.2%	N/A
Total	421	98	€ 174.7	€ 85.8	€ 39.8	22.8%	46.4%

All euro amounts in millions.

* The "Bid Price" figures presented above exclude €3.1 million of taxes for the entire portfolio, as well as deal-related expenses.

Past performance should not be considered indicative of future performance. No assurances can be given that any aims, assumptions, expectations, and/or goals described in this document will be realized.

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Notes

Notes to Entire Document

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Notes to Chart on Page 2

This chart summarizes some of the key statistics and characteristics that we typically consider to try to assess the value of loans in a NCA portfolio. The figures in this chart are presented as of the time we performed due diligence on the Spanish NCA portfolio.

The *Investment Funding Date* is the date as of which the purchase price was paid to the seller of the Spanish NCA portfolio.

The *Country and Primary Asset Type* associated with the Spanish NCA portfolio have been assigned in the sole discretion of the D. E. Shaw group. Such assignments may reflect subjective judgments and/or criteria of the D. E. Shaw group that may change (possibly materially) from time to time without notice to recipients of this document.

The *Face Value* figure presented in this chart reflects the unpaid principal balance of the Spanish NCA portfolio (as is customary in representing the face value of Spanish loans).

The *Real Estate Value* figure presented in this chart reflects our estimate of the market value of real estate pledged as collateral to support secured loans in the Spanish NCA portfolio.

The *Lien Type* and *Loan Size* factors presented are based on each individual loan in the Spanish NCA portfolio.

The *Geography* factor presented is based on the geography of each debtor associated with the Spanish NCA portfolio. If a debtor's location is not available, the face value associated with the respective debtor's portfolio is classified as "Other."

The *Default Year* factor is based on the earliest default year of each debtor associated with the Spanish NCA portfolio. If a debtor's portfolio includes loans that have different default years, the entire face value of the respective debtor's portfolio is categorized based on the earliest default year of the loans in the respective debtor's portfolio.

The *Legal State* factor is based on the legal status of the loans associated with each debtor in the Spanish NCA portfolio. If a debtor's portfolio includes loans that are in different legal states, the entire face value of the respective debtor's portfolios is categorized based on the legal status of the most senior loan lien position in the respective debtor's portfolio. "Bankruptcy" means the debtor of a particular loan is in an insolvency (*i.e.*, bankruptcy, or, in Spanish, a "*concurso*") proceeding, and the loan is subject to the terms of that insolvency proceeding. "Litigation" means that the bank has initiated a legal proceeding in order to recover the asset securing a loan.

Notes to Data and Images on Page 3

Purchase prices presented on this page (a) are as of the date the portfolio was purchased, (b) were agreed on an asset-specific basis with the seller (*i.e.*, the seller knew the purchase price we allocated to the loan related to each property as of the date of purchase), and (c) exclude taxes and deal-related expenses.

The images on this page showing the collateral underlying each loan were provided by the relevant servicer, broker, and/or adviser of the Spanish NCA portfolio.

Notes to Chart on Page 4

This chart shows how much, in percentage terms, the acquisition cost of the Spanish NCA portfolio would have needed to change from the base case scenario in order to maintain such portfolio’s modeled return. The figures reflect the analysis of the Spanish NCA portfolio and the modeled return in connection with our due diligence of such portfolio. We typically conduct this analysis at various points during the due diligence of a portfolio in order to better understand how resilient such portfolio may be to different shocks. The analysis combines our own empirical data with data from servicers and vendors; such data may be inaccurate or incomplete at the time of any such analysis and is subject to revision.

Notes to Table on Page 4

This table presents key portfolio metrics of the Spanish NCA portfolio as of the time of our due diligence of the portfolio. The *Real Estate Value* figures presented in this table reflects our estimate of the market value of real estate pledged as collateral to support secured loans in the portfolio or the market value of real estate owned in the portfolio, as applicable. The *Bid Price* figures presented in this table represent the value paid to the selling institution and exclude €3.1 million of taxes for the entire portfolio, as well as acquisition-related deal expenses. The total cost borne to acquire the portfolio included such taxes and expenses.

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