Valuing Distressed Assets

China Practices and Pricing Approaches for NPL Portfolios

A Buy-Side Perspective on Personal NPL Portfolios Valuation

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Agenda

ZSAMC: China's Leading Personal NPL Acquirer

Consumer Finance NPL Business Landscape

5.5M+	¥57.8B+	¥32.3B+	46
Managed Debtor Accounts	Managed Principal	Outsourced Principal	Outsourced Collection Agencies

Business Milestones

- **2020** Consumer Finance NPL Market Research team established
- **2021** Tech subsidiary founded; first NPL package acquired
- **2022** Strategic cooperation with Ant Group
- **2024** Partnerships with top fintech companies; PBOC credit reporting system connected
- **2025** Market outsourcing launched; Service platform Phase I live

Full-lifecycle Integrated Management Platform

Asset Scale
71 NPL packages; ¥33.8B principal; 2.5M+ accounts; 8.1M+ cases

Recovery Track Record
516K+ repayments totaling ¥959M; 57.9K+ settlement certificates

Compliance Excellence
23-person dedicated customer service center;
138K+ calls handled; 95.6% answer rate; 99%+ complaint resolution rate

Diverse Partnerships
Joint-stock banks, city commercial banks, consumer finance cos., trusts & internet platforms

Key Characteristics of Personal NPL Portfolios

What makes personal unsecured NPL portfolios amenable to statistical and data-driven valuation

High Volume

Vast number of granular loans; individual account-level analysis is infeasible — portfolio-level statistical methods are required

Homogeneous

Consistent in product type, credit policy, risk controls, and collection approach — enabling peer-group comparison

Stable Recovery

Recovery rates exhibit statistical regularity across observation windows — historical patterns can inform forward projections

Well-Dispersed

Small individual balances with geographic spread;
low aggregate recovery volatility — reducing portfolio-level risk

Personal NPL Portfolio Valuation Methodologies: Overview

Method	Core Logic	Best For	Key Assumption	Priority
Data-driven Valuation (Static Pool Fitting)	Predict future cash flows using historical recovery data of similar assets; Sub-pools by delinquency, balance, borrower profile	Homogeneous unsecured personal NPL portfolios, credit-type ABS	Historical data reliably simulates future; stable macro environment	**Preferred**
Market Approach	Reference comparable market transaction prices with adjustment coefficients; Requires ≥3 comparable deals; Adjusts for portfolio, loan, borrower, and originator differences	Portfolios with active market & comparable transactions	Active, transparent market; differences between portfolios are quantifiable	Supplementary
Expert Judgment	Experienced professionals score & estimate based on qualitative factors	Data-deficient or non-standard asset portfolios	Expert experience can capture qualitative risks not in data	Last Resort

Selection Logic: When static pool data is available and reliable, prioritize Static Pool Analysis. When external factors are quantifiable, use them to adjust static pool results. When market transactions are active and comparable, incorporate the Market Approach as a cross-check.

Data-Driven Valuation: Methodology Pipeline

CORE METHOD

01 Data Collection → 02 Data Cleaning → 03 Static Pool Selection → 04 Sub-Pool Segmentation → 05 Recovery Rate Estimation → 06 Recovery Rate Adjustment → 07 Portfolio Aggregation

STAGE 1–3: DATA FOUNDATION

Data Collection

Borrower profile, account & loan data, collection records and credit bureau data

Data Cleaning

Primary key checks, missing value treatment, outlier detection, and business logic validation to ensure data integrity

Static Pool Selection

Choose acquirer pool, originator pool, or third-party pool as the historical benchmark for recovery curve calibration

STAGE 4–7: ANALYTICAL ENGINE

Sub-Pool Segmentation

Segment via variable correlation (e.g., overdue days × balance grid), scorecard modeling, unsupervised clustering (k-means, hierarchical), or other ML algorithms (decision trees, random forests, gradient boosting) to minimize intra-pool variance and maximize inter-pool differentiation

Recovery Rate Estimation & Adjustment

Apply recency-weighted averaging; fit recovery curves via parametric models (log/exponential/power-law/polynomial) or time series models (ARIMA, GARCH); adjust for portfolio-pool divergence, macro-industry overlay, and seasonal calibration

Portfolio-Level Aggregation

Map each account to its matched sub-pool; apply adjusted recovery curves to project gross cash flows; deduct collection, regulatory, and operational costs; discount net cash flows at buyer's cost of capital with profit margin reserve

Assumption

Historical recovery patterns from similar pools can reliably predict future recovery, assuming stable disposal strategies and macroeconomic conditions.

Principle

"Segment first, predict within segments, then aggregate" — Finer segmentation reduces within-group variance and improves prediction accuracy.

Case Study: Consumer NPL Portfolio Valuation

Based on a real commercial acquisition of a consumer loan NPL portfolio from a major bank

STATIC POOL FITTING METHOD

Portfolio Snapshot — Bank A, 2026 Q1 Consumer Loan NPL Portfolio Transfer

¥398.5M	¥186.5M	2026/2/10	7,909	47,822	¥50,383	837	38	Never Litigated
Outstanding Principal	Outstanding Interest	Transaction Cut-off Date	No. of Borrowers (All Unsecured)	No. of Contracts (All classified as Loss)	Avg. Principal per Borrower	Wtd. Avg. Overdue Days	Wtd. Avg. Ages	Litigation Status

Valuation Walkthrough

1 Sub-Pool Segmentation

The originator did not provide its own static pool. A proxy static pool from a comparable lender was used as the valuation basis (60-month observation window). Segment by loan amount (<¥0.5K, ¥0.5-1K, ¥1-2K, ¥2-3K, ¥3-5K, ¥5-10K, ¥10-20K, >¥20K) and overdue period (<360d, 360-720d, >720d), creating 8 x 3 sub-pools.

2 Historical Recovery Fitting

Use weighted average with 'near-weighted' principle — recent vintages carry more weight.

3 Recovery Rate Adjustment

Smooth volatility via curve fitting. Adjust for macroeconomic outlook, originator-specific risks, and current collection environment. Actual collections during the interim period showed a monthly recovery rate of 0.42%, slightly above the model projection 0.41% — providing validation.

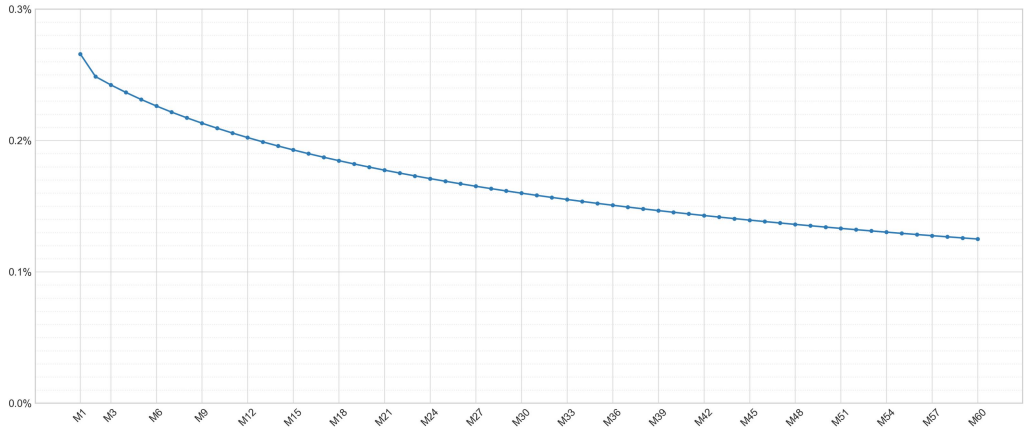
Valuation Results

Item	Amount (¥M)	% Principal
Gross Recovery Forecast (5yr)	**63.9**	**16.05%**
– Collection Fees (37% for 720d+)	(23.7)	
– Cost of Capital (5.9% p.a.)	*Discounted*	
– Profit Margin Reserve (10%)	*Reserved*	
Final Bid Price (Net Valuation)	**32.3**	**8.12%**

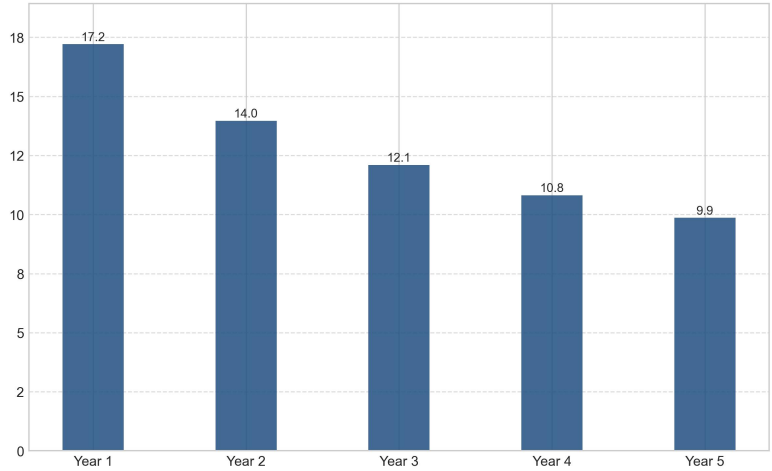
Case Study: Recovery Curve & Cash Flow Projection

STATIC POOL FITTING METHOD

Projected Net Recovery Rate (% of Principal)



Annual Gross Recovery (¥M)



Insight: ~48% of total recovery is concentrated in the first 18 months post-acquisition. Front-loaded cash flows reduce capital cost risk but amplify the importance of initial collection deployment speed.

Valuation Uncertainty — What Drives Real Recovery?

Actual recovery outcomes are shaped by factors across the full credit lifecycle and the broader economy

Pre-Lending

- Originator's underwriting standards
- Borrower screening & credit scoring
- Interest rate & fee structures
- Regulatory compliance (rate caps)

During Loan Servicing

- Early warning & monitoring
- Restructuring & forbearance
- Communication quality
- Delinquency management

Post-Default Recovery

- Collection strategy & intensity
- Legal enforcement efficiency
- Outsourcing partner capability
- Regional judicial environment

Macroeconomic Environment

- GDP growth & employment
- Consumer confidence index
- Regulatory policy changes
- Real estate & asset prices

Valuation is not absolute — it is relative to the buyer's disposal capabilities and resources.

Static pool models assume stable conditions, but real-world recovery is affected by shifting macro cycles, regulatory changes, and collection infrastructure. Continuous model iteration with actual recovery feedback is essential.

AI-Driven NPL Valuation: Beyond Static Pool Dependency

Joint research project with Fudan University — building a universal, borrower-feature-based recovery prediction model

Challenge: Static Pool Limitations

- Static pool data often unavailable, incomplete, or mismatched to buyer's collection capability
- Coarse segmentation fails to reflect borrower-level heterogeneity
- Cannot capture multi-dimensional recovery drivers: borrower demographics, debt structure, macroeconomic conditions

Solution: Universal AI Valuation Model

A **borrower-level recovery prediction model** built on a **progressive three-layer architecture**, spanning the **full NPL portfolio lifecycle**.

- **Portable** — Transfers across portfolios
- **Granular** — Borrower-level, not pool-level
- **Independent** — No reliance on seller static pools

Three-Layer Model Architecture

L1 Base Recovery Prediction — Current Focus

Borrower features • Asset features • Macro indicators

L1 RESEARCH PROGRESS

DATA FOUNDATION
3.36M Borrowers
119.5M repayment records (2022–2025)

FEATURE ENGINEERING
22 Features
Borrower demographics, debt structure, repayment behavior, collection intensity & macro indicators

ENSEMBLE LEARNING
89.2% MSE reduction
Stacking: LR, CART, NN, SVM, Mahalanobis

INTERPRETABILITY
SHAP decomposition
Top drivers: total arrears, remaining balance, overdue duration & rolling 12-month repayment history

L2 Disposal Strategy Overlay — Future Phase

Collection • Litigation • Restructuring intensity modeling

Quantify impact of different disposal strategies (phone collection, litigation & restructuring) at varying intensity levels on recovery outcomes

L3 Institutional Capability Overlay — Future Phase

Infrastructure • Regional expertise • Operational capacity

Incorporate buyer-specific collection infrastructure, regional expertise, staffing, and operational capacity for institution-adjusted valuations

Thank You

10TH IPAF TRAINING SEMINAR

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