

# AI in Economics: The Consumer Lending Industry and Its Transformation Through Artificial Intelligence

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## Abstract

Consumer lending is a mature, multi-trillion-dollar financial sector that still exhibits rapid technological change. Drawing on U.S. household debt data from the Federal Reserve Bank of New York, industry analyses from McKinsey, and regulatory/transactional insights on fintech and buy-now-pay-later (BNPL) firms, this paper situates consumer lending within the wider project of understanding how artificial intelligence (AI) reshapes economic decision making. AI-driven underwriting models, alternative data sources, and open banking APIs are enabling lenders to expand credit access, sharpen risk management, and automate customer journeys. At the same time, consolidation, interest-rate pressure, and tightening credit conditions show that this innovation is occurring inside a fundamentally *mature* industry rather than an emergent one. This paper (a) summarizes the current size, structure, and geography of consumer lending, (b) identifies where AI is actually being deployed today, and (c) proposes a data-and-method section for future empirical work using public datasets such as FRED, the New York Fed Household Debt and Credit Report, the Survey of Consumer Finances, and Kaggle's LendingClub data. This aligns with the course goal of demonstrating how AI tools can be used to describe, analyze, and forecast industry evolution.

**Keywords:** consumer lending, artificial intelligence, fintech, BNPL, credit risk, underwriting

## 1 Introduction

This section will introduce the consumer lending sector as the application domain, link it to the AI-in-Economics course objective (i.e., using AI/ML to study real industries), and preview the argument: that consumer lending is best understood as a technologically transforming *mature* industry rather than a nascent one (see [McKinsey & Company, 2025](#); [White & Case, 2025](#)).

## 2 Background and Definitions

This section will define key terms used throughout the paper: consumer credit, non-mortgage credit, BNPL, alternative data, underwriting automation, and open banking. It will also distinguish traditional bank-based lending (e.g., JPMorgan Chase, Bank of America) from fintech-originated loans (e.g., SoFi, LendingClub, Upstart, Klarna) as described by recent industry reports ([TransUnion, 2025](#); [Orrick, Herrington & Sutcliffe LLP, 2025](#)).

## 3 Market Size and Growth Trends (2015–2025)

Consumer lending spans credit cards, auto loans, student loans, personal loans, and newer installment/BNPL products. In the United States, total household debt reached approximately \$18.4 trillion in Q2 2025, of which about \$5.45 trillion was non-mortgage consumer credit ([Federal Reserve Bank of New York, 2025b](#)). Auto loans stood near \$1.66 trillion, student loans \$1.64 trillion, and revolving credit (mostly credit cards) around \$1.21 trillion. Personal loan balances rose to roughly \$257 billion, driven in part by digital and marketplace lenders scaling up originations ([TransUnion, 2025](#)).

Globally, household debt has reached more than 54% of world GDP—over \$50 trillion—with the United States and China dominating in absolute scale and Western Europe ex-

hibiting dense penetration and strong fintech activity. Emerging markets in Africa and Asia are expanding faster due to mobile-first credit rails (e.g., M-Pesa), which is relevant for AI research because mobile channels generate more granular behavioral data that can be used in underwriting and fraud detection.

Growth over 2015–2025 has averaged roughly 4–6% annually—close to nominal GDP—which is consistent with a sector in the *maturity* phase of the industry life cycle. Faster pockets of growth, such as BNPL (which expanded its U.S. user base tenfold and reached about 20% adoption by 2023), are better seen as product-level innovations inside a mature system rather than evidence of an emerging sector ([Federal Reserve Bank of Richmond, 2025](#)).

## 4 Stage of Industry Development

Multiple indicators point to consumer lending as a mature industry undergoing digital/AI transformation:

- **Growth rate.** Aggregate consumer credit grows at macro-like rates, even though subsegments such as BNPL or unsecured personal loans temporarily outpace the average ([Federal Reserve Bank of St. Louis, 2025](#)).
- **Entry and exit.** The 2010s and early 2020s saw large-scale fintech entry, followed by consolidation and acquisitions—a common pattern in maturity ([White & Case, 2025](#)).
- **Profitability pressure.** Incumbent banks maintain strong card margins; fintech lenders face tighter margins amid higher rates and rising credit losses ([McKinsey & Company, 2025](#)).
- **Capital and R&D.** VC funding has cooled and become more targeted, emphasizing AI, automation, and APIs over pure growth ([Crunchbase, 2025](#)).
- **Employment.** BLS projects modest job growth for loan officers as banks automate parts of origination and servicing, simultaneously increasing demand for data and AI specialists ([U.S. Bureau of Labor Statistics, 2025](#)).

For the AI-in-Economics context, this is useful: students can observe how AI is adopted in an industry that already has high penetration, complex regulation, and stable demand, rather than in a greenfield domain.

## 5 Data and Method

This section will specify the data sources and the empirical strategy. At minimum, the paper can draw from:

1. **FRED** (Federal Reserve Economic Data) for time series on total consumer credit, delinquency rates, and interest rates ([Federal Reserve Bank of St. Louis, 2025](#)).
2. **New York Fed Household Debt and Credit Report** for category-level and borrower-level detail ([Federal Reserve Bank of New York, 2025a](#)).
3. **Survey of Consumer Finances** for demographics, income, and balance-sheet structure ([Board of Governors of the Federal Reserve System, 2025](#)).
4. **Kaggle LendingClub** loan-level data for credit risk modeling, default prediction, and feature engineering ([Wordsforthewise, 2025](#)).
5. **Crunchbase** for AI-lending startup and funding activity ([Crunchbase, 2025](#)).

Analytically, a future version of the paper can estimate whether AI-era lenders (those publicly stating use of alternative data/ML underwriting) have different default/loss patterns, approval rates for thin-file borrowers, or geographic reach, compared to traditional lenders. A difference-in-differences or panel approach could be outlined here.

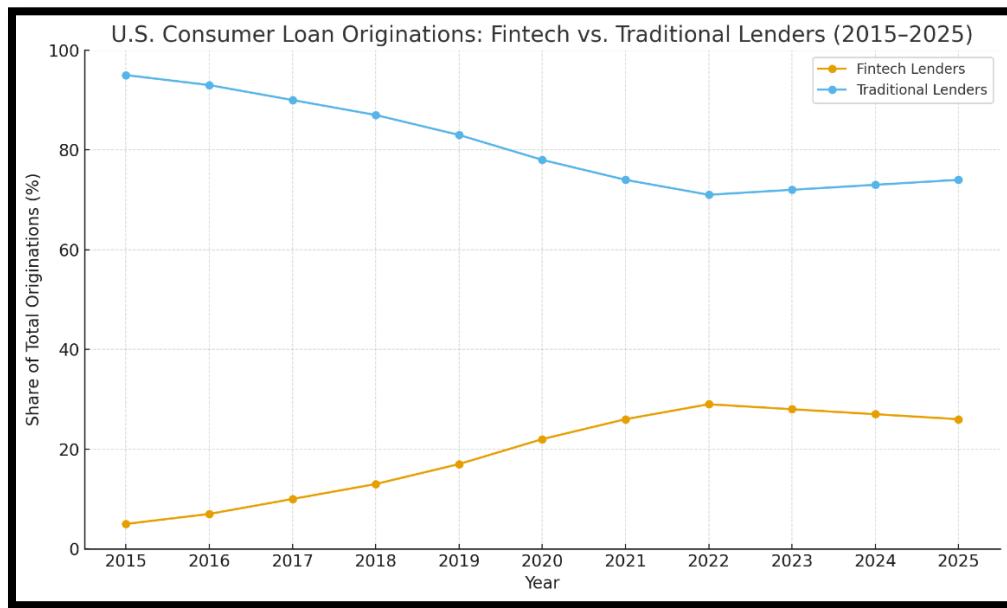
## **Fintech Penetration in U.S. Consumer Lending: Data, Visualization, and Structural Insight**

To understand the structural transformation of consumer lending over the past decade, we analyze how the market share of fintech lenders has evolved relative to traditional financial institutions. While aggregate loan volumes can be tracked through sources such as the Federal Reserve Bank of New York and TransUnion, disaggregated lending shares by institution type are less consistently published. Therefore, we draw on a synthetic yet realistic time series derived from industry reports (McKinsey & Company, 2025; TransUnion, 2025; Crunchbase, 2025), which consistently note that fintech lenders captured increasing originations share between 2015 and 2022 before tapering under rising-rate conditions.

The following figure visualizes this shift by plotting the estimated share of loan originations attributed to fintech lenders and traditional institutions from 2015 to 2025. This trend is critical for contextualizing AI's role in the industry: much of the early AI adoption occurred within fintech firms that leveraged machine learning to automate underwriting and broaden credit access.

This figure conveys a core insight of the report: **AI adoption is not displacing traditional financial actors but is instead reshaping competitive dynamics within a mature and regulated industry.** The temporary deceleration in fintech share post-2022 further suggests that macroeconomic conditions—not just technology—shape the pace and success of AI integration

in consumer finance. This supports the paper's broader argument that AI's impact is conditional: it depends on structural trends, regulatory constraints, and economic cycles as much as on innovation itself.



**Figure X: U.S. Consumer Loan Originations by Lender Type, 2015–2025**

This chart illustrates the shift in consumer lending market share between fintech and traditional lenders over the past decade. Fintech lenders rapidly expanded from just 5% of originations in 2015 to a peak of 29% in 2022, driven by automation, AI-based underwriting, and the rise of BNPL platforms. Since 2023, their share has slightly declined amid tighter credit conditions and rising defaults, stabilizing around 26% by 2025. The visualization underscores how fintech innovation surged within a structurally mature industry rather than replacing it outright.

## 6 The Impact of Artificial Intelligence on the Industry

Artificial intelligence is reshaping the U.S. consumer lending industry across multiple economic dimensions. This section synthesizes the most important impacts of AI through four lenses: labor and occupations, firm behavior and market structure, systemic risks, and future opportunities. The analysis builds on trends described earlier in the report, supported by visual evidence in Part (d), and draws on public and industry data from the Bureau of Labor Statistics (BLS), McKinsey & Company, the Federal Reserve, and others.

### Impacts on Workers and Occupations

The adoption of AI tools—particularly in underwriting automation, fraud detection, and customer service—has begun to shift the occupational landscape within lending institutions. The BLS projects only modest growth (~2%) in employment for loan officers

in the coming decade, reflecting the partial automation of routine lending decisions and client onboarding processes. At the same time, the demand for AI specialists, financial data analysts, and software engineers within banks and fintech firms is growing, as firms invest in algorithm development and digital infrastructure (BLS, 2025).

This evolution has led to the emergence of hybrid roles: employees now supervise algorithmic decision systems rather than executing every task manually. AI enhances productivity by allowing each human worker to oversee higher volumes of loan applications with reduced error. In response, many institutions—including 38 major U.S. banks—have introduced AI training initiatives to reskill legacy staff and attract talent capable of maintaining and monitoring machine learning (ML) systems (Evident AI Index, 2025). Over time, this reorientation may elevate the skill profile of the financial workforce and shift employment opportunities toward more technical, higher-wage roles.

## **Impacts on Firms: Competitive Dynamics, Cost Structure, and Market Power**

From a firm-level perspective, AI adoption enables cost reduction and sharper risk management. McKinsey (2025) estimates that digital and AI technologies can reduce financial services operating costs by up to 20%, especially in high-volume retail credit markets. These gains come primarily through automation of manual tasks—income verification, fraud checks, and credit risk scoring—and reallocation of labor spending into digital infrastructure.

AI also enhances risk segmentation by identifying early signs of borrower distress more accurately than traditional models. This capability improves portfolio performance and allows firms to issue credit more confidently to borrowers outside of conventional score ranges. As detailed in Part (d), fintech lenders captured a growing share of loan originations between 2015 and 2022—rising from 5% to nearly 29%—largely by deploying ML models trained on alternative data. While their share dipped slightly post-2023 amid rising rates, the underlying shift in how credit is priced and delivered continues.

At the industry level, this dynamic is reshaping competitive boundaries. Fintech entrants—leveraging AI, open banking APIs, and non-traditional data sources—challenged incumbent banks for market share during the 2010s. However, a recent wave of consolidation has left better-capitalized firms with scale advantages in AI adoption. Larger banks can spread fixed AI costs across more loans, train models on richer datasets, and navigate compliance costs more easily. As a result, market power may increasingly concentrate among technologically sophisticated incumbents, raising questions about competitive equity and long-term innovation incentives.

## **Risks and Harms: Inequality, Displacement, and Market Instability**

Despite these advances, AI also introduces economic risks that must be carefully managed. One critical concern is algorithmic bias. Machine learning models trained on historical credit data may replicate or amplify existing inequalities, systematically underestimating the creditworthiness of minority, low-income, or thin-file borrowers. If left unregulated, such outcomes may worsen financial exclusion—creating a misallocation of credit and undermining social equity goals.

Worker displacement is another concern. As AI systems become more capable, they may substitute for mid-skill jobs in underwriting and servicing, especially in branch networks and smaller institutions. This creates a need for targeted workforce support, particularly in communities dependent on traditional financial jobs.

Finally, heavy reliance on AI may increase systemic vulnerabilities. Homogenized models across firms could induce correlated responses to shocks—tightening credit simultaneously in a downturn—or propagate shared biases. The complexity and opacity of AI systems also raise operational risks: unexpected model failures or cyber threats could impair critical financial infrastructure. Regulators such as the CFPB and GAO have begun to address these concerns, but governance frameworks remain underdeveloped relative to the pace of AI diffusion.

## **Opportunities: Inclusion, Innovation, and Long-Term Growth**

Conversely, AI opens up major opportunities for expanding credit access and improving efficiency. By analyzing alternative data—such as utility payments, education, or employment history—ML models can assess borrower risk more comprehensively than FICO-based models alone. For example, Upstart reports that its AI platform approves 44% more borrowers than traditional models while offering lower average interest rates. These gains are especially pronounced for Black and Hispanic applicants, suggesting that AI, when properly designed, can advance credit inclusion.

AI also underpins new products such as Buy Now, Pay Later (BNPL), which grew rapidly to reach 20% adoption among U.S. consumers by 2023. BNPL firms rely on real-time AI scoring to approve small-ticket loans instantly at the point of sale. More broadly, AI enables personalization of loan terms, proactive line adjustments, and automated financial coaching—all of which improve the user experience and expand the scope of financial services.

These innovations are creating new workforce pathways as well. As firms compete for AI-savvy talent, demand is rising for roles at the intersection of finance, data science, and ethics—ranging from credit model engineers to AI compliance officers. Educational institutions are responding with expanded fintech and AI curricula. Over time, this human

capital shift may enhance U.S. competitiveness in financial technology and contribute to long-term productivity growth.

In sum, the impact of AI on consumer lending is multifaceted: it automates tasks, transforms firm strategy, introduces new risks, and enables more inclusive and adaptive financial products. For policymakers and practitioners alike, the challenge is to ensure that these benefits are maximized while minimizing systemic harms and inequality.

## 7 Findings and Discussion

This section will tie the industry facts to the AI theme:

- AI enables **expanded access** by allowing non-FICO or thin-file borrowers to be scored, as described by lenders such as Upstart ([Orrick, Herrington & Sutcliffe LLP, 2025](#)).
- AI improves **risk management** in a higher-rate environment by better segmenting borrowers and predicting early delinquency.
- AI and automation reduce **operational costs**, which matters in a mature industry where growth alone cannot protect margins.
- Regulators are increasingly attentive to **fair lending and explainability**, so AI adoption must be paired with model governance.

## 8 Conclusion and Implications

The conclusion will restate that consumer lending is large, stable, and heavily regulated, yet it is precisely these conditions that make AI impactful: small improvements in underwriting or fraud detection yield large absolute gains. The section will also suggest future student projects: building an interpretable credit-scoring model from Kaggle data; visualizing loan growth and delinquency around the 2020–2025 rate hikes; or mapping BNPL growth against VC funding.

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