MOODY'S ANALYTICS

ANALYSIS
FEBRUARY 2023

Prepared by

David Fieldhouse
David.Fieldhouse@moodys.com
Chief Economist

Alex Hedgren
Alex.Hedgren@moodys.com
Research Associate

Contact Us

Email
helpeconomy@moodys.com

U.S./Canada
+1.866.275.3266

EMEA
+44.20.7772.5454 (London)
+420.224.222.929 (Prague)

Asia/Pacific
+852.3551.3077

All Others
+1.610.235.5299

Web
www.economy.com
www.moodysanalytics.com

Credit Cards Enter Choppy Waters

Introduction

Balances and delinquencies will rise quickly for all borrowers. By the end of 2022, more accounts were delinquent than at any point since 2010. The percentage of credit card delinquency eclipsed the previous post-financial crisis high-water mark set in December 2019, a period often used to represent the last “normal” times before the pandemic sent economic data out of whack. Lenders had hoped the credit card market would return to normal, but recent trends show troubling signs.

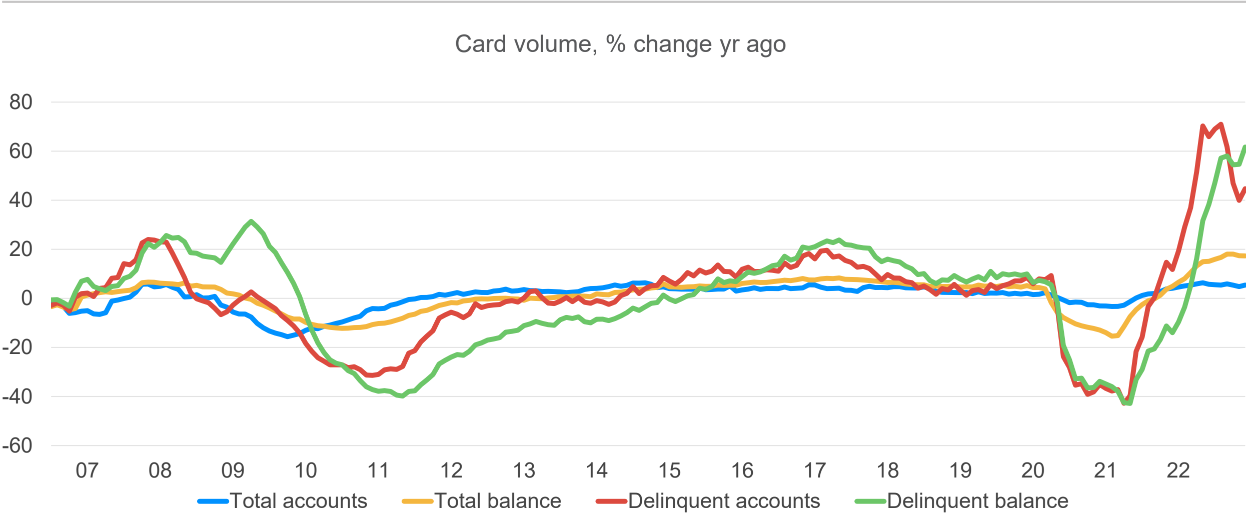
Credit Cards Enter Choppy Waters

BY DAVID FIELDHOUSE AND ALEX HEDGREN

Balances and delinquencies will rise quickly for all borrowers. By the end of 2022, more accounts were delinquent than at any point since 2010. The percentage of credit card delinquency eclipsed the previous post-financial crisis high-water mark set in December 2019, a period often used to represent the last "normal" times before the pandemic sent economic data out of whack. Lenders had hoped the credit card market would return to normal, but recent trends show troubling signs.

The rise in delinquency was rapid. The number of delinquent accounts increased by almost 45% over the last year and is up more than 5% compared with the end of 2019. Smaller, riskier accounts are always the first to show signs of distress, and they are flashing warning signs. Prudent lenders maintain limited exposure to these accounts and are quick to cut lines when there is trouble. However, it is much harder for lenders to reduce risk in larger lines, as it is difficult to identify who suddenly will not be able to pay. Because of this dynamic, delinquent balances typically lag delinquent accounts. Delinquent balances have been increasing since last year, up more than 60%, and are still accelerating.

Chart 1: Delinquent Balance Growth Accelerates

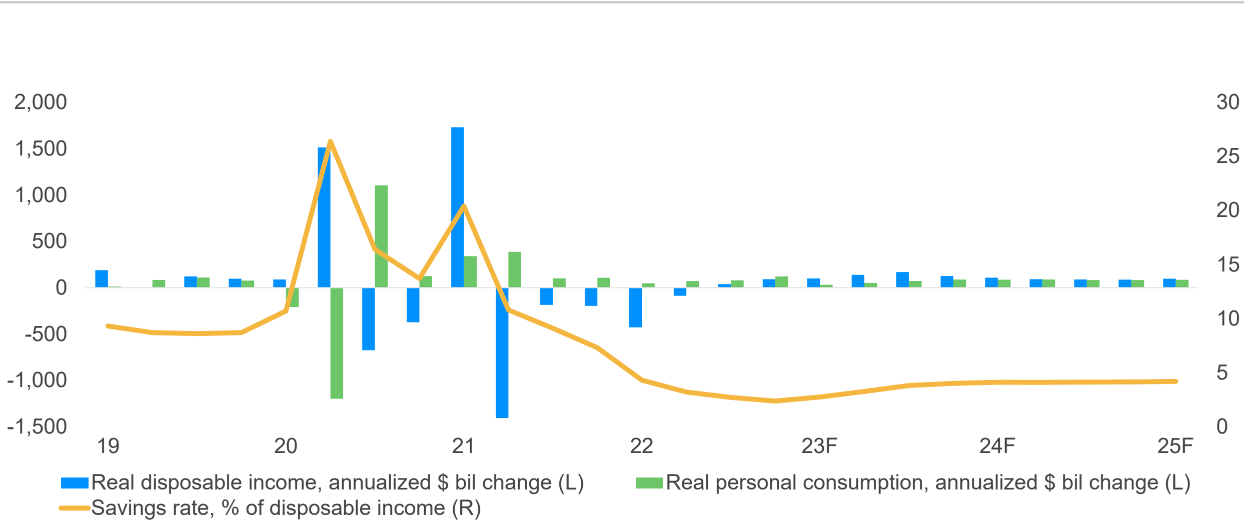


Sources: CreditForecast.com, Moody's Analytics

The record growth in delinquent balances is concerning because the record pace of balance and account growth of the pandemic recovery has only started to roll over. Lenders have begun tightening standards to rein in smaller, risky accounts, but reducing risk in more creditworthy accounts with more significant balances is more complicated. The quality of these larger balances plays a role in determining exactly how worrisome they are to creditors and whether losses surge above average. Given the amount of stimulus and credit score inflation, it is difficult to determine how risky these borrowers are. As economic growth slows in 2023, delinquent balances will continue to grow, and lenders should remain on guard.

Economic forces driving balance growth and delinquencies higher

The growth in credit card balances can be initially attributed to the growth in spending. The pandemic took a large bite out of U.S. consumer spending that lasted about a year. Consumer spending roared back in the pandemic recovery as consumers exorcised their substantial pent-up demand after lockdowns. As the recovery slowed, real spending receded to its pre-pandemic trend, but nominal spending is much higher. This distinction is not semantic: Inflation is detrimental to consumers as it essentially absorbs all income growth. Though nominal wage growth is above where the Federal Reserve would like it to be to cool inflation, the change in real disposable income is still negative year over year. With incomes down, consumers tap into savings or lean on credit to finance spending.

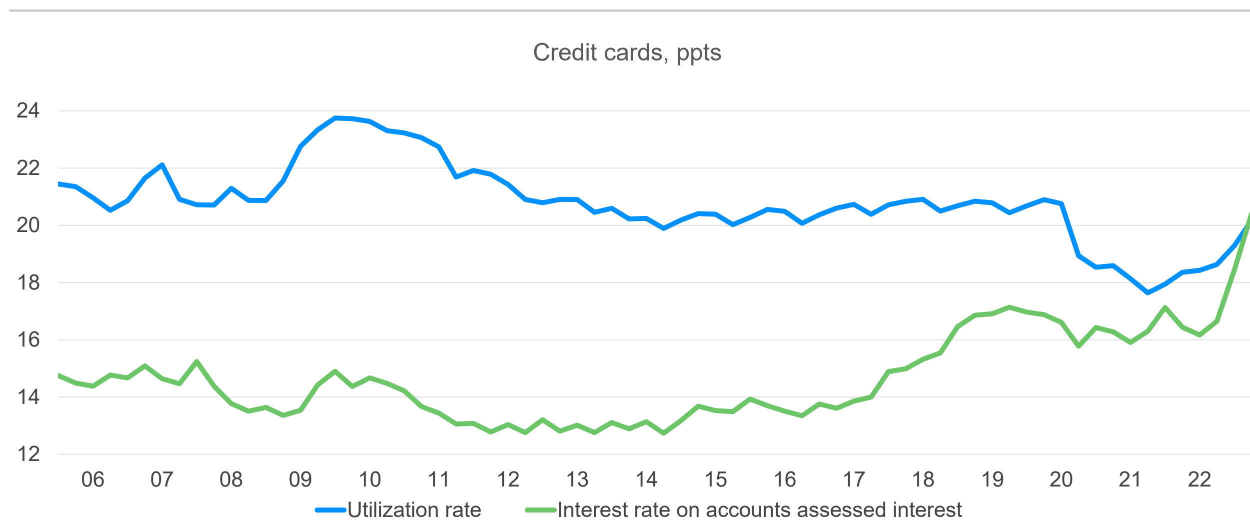


The impact of inflation on spending, at least so far, has been less than might be expected. That is because of excess savings accumulated by consumers during the first year and a half of the pandemic, thanks to generous stimulus payments and a lack of services to spend on. Consumers are using those savings now to limit the impact of high inflation on their spending. How much longer they will be willing and able to do this remains an open question. A heavier reliance on credit may be necessary for consumers who depleted their excess savings, an ever-increasing share since September 2021, when Moody's Analytics estimates excess savings peaked. Even consumers who have not depleted their excess savings or those who are treating them as illiquid wealth are increasingly leaning on credit to offer short-term flexibility in trying financial times.

Households are not saving, and it will only get worse. In mid-2022, the U.S. savings rate hit its lowest level since the financial crisis. Though the causes differ from then, this savings rate cannot be sustained without increasing risk and hardship. Eventually, the pandemic-generated excess savings will be exhausted, and increased borrowing will drive up balances and utilization. A greater share of credit card accounts are fully utilized today than were before the pandemic, even with the extraordinary account growth since. Credit card payment rates have also declined from their recent record highs, indicating consumers may not be able to keep up as well with the extraordinary debt growth as they were before. Until spending returns to sustainable levels relative to income, credit card usage will continue to increase.

Credit card debt has become very expensive, and this will drive credit card usage up. Along with inflation spending, the other main driver of the increased debt burdens is extraordinarily high interest rates. Credit card interest rates, in particular, are the highest on record. Still-climbing card utilization rates will reach levels not seen since the early 2010s when assessed credit card interest rates fell below 14%. Today, the average assessed credit card interest rate is 20%, and rates are not expected to peak until early next year. The extra-ordinary levels especially pressure vulnerable borrowers who revolve their credit card debt and carry a balance from month to month.

Chart 3: Has Borrowers' Interest Peaked Yet?



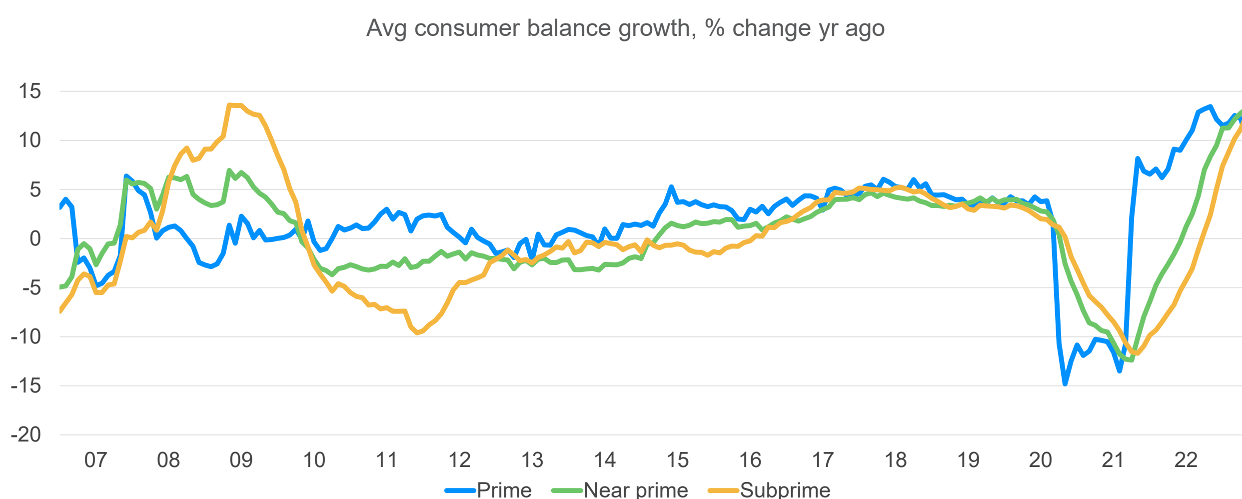
Sources: Federal Reserve, CreditForecast.com, Moody's Analytics

Inflation impacts all types of borrowers

An odd feature of this recovery is the rapid balance growth among prime borrowers. Whether it is satisfying pent-up demand, maintaining a lifestyle, or negative wage growth, prime borrowers continue to spend remarkably. The average prime consumer's balance has been growing at almost 10% since last year, a rate that is only starting to roll over after the sudden reopening of the economy. Further, the share of accounts with a balance has grown faster in the prime space, eclipsing pre-pandemic levels. Subprime borrowers are borrowing heavily too, but that is more expected than the prime borrowers' growth.

Inflation is regressive, as lower-income consumers must spend a greater share of their incomes on price increases for essential goods and services. Incomes are correlated with credit scores, so subprime borrowers

Chart 4: Prime Consumer Balances Still Growing Fastest



Sources: Equifax, Moody's Analytics

need to use a higher percentage of their incomes to deal with inflation than prime borrowers. Lower-income segments also have less in the way of excess savings to offset these price increases. This buffer is deteriorating fast and, by one estimate, has been eliminated at the lowest income levels. Perhaps unsurprisingly, balances are fastest in the lowest income cohorts as these households feel the brunt of inflation. That these segments have not blown past pre-pandemic delinquency rates in the face of bleak conditions is a good sign. Employment is still substantial, and wage growth has been highest among the lowest-income individuals.

Another reason prime borrowers have been somewhat insulated from inflation and contracting real income is their considerable excess savings. High-income consumers and prime borrowers accumulated the most excess savings during the pandemic because their foregone spending on travel and other services during lockdowns, which instead translated into savings, far outstripped that of any extra government transfer payments to lower-income and subprime consumers. Excess savings have allowed higher-income consumers to keep spending in the inflationary environment, but the reserves are drying up quickly.

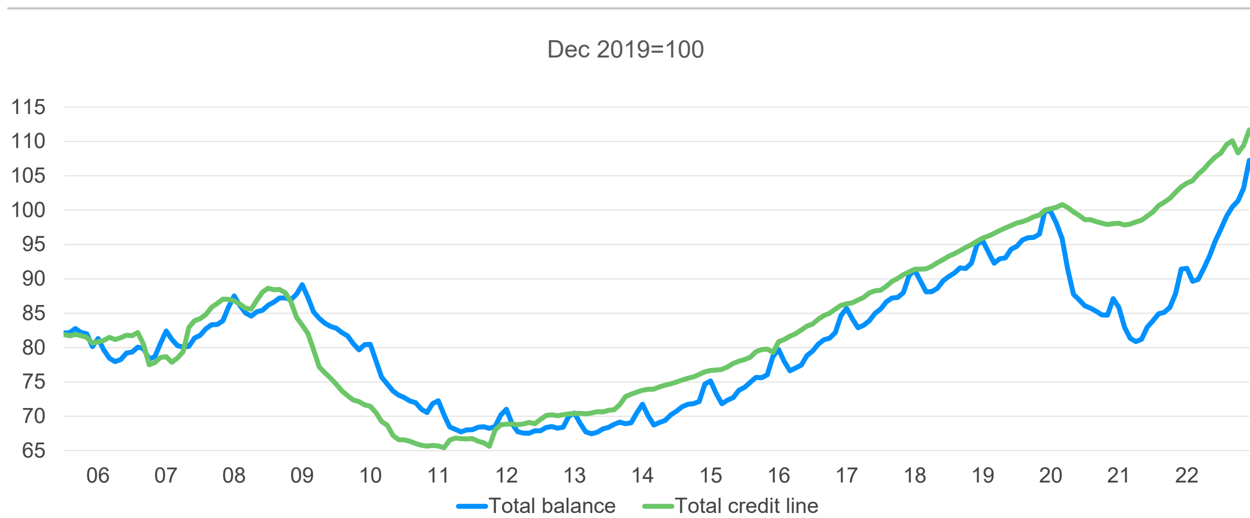
The prevailing narrative has been that the pandemic recovery is a K-shape. Higher-income consumers continue to power economic growth through considerable spending, while lower-income consumers struggle comparatively more to keep up amid rising inflation. The rising balances and card usage rates suggest there may be more risk in the prime space than previously thought. Lenders may have trouble identifying the risk to this population.

Lenders compete for borrowers with poor results

As debt burdens and associated risk are expected to continue rising, lenders must remain guarded against the increased risk in the market. Lenders are beginning to pull back, as evidenced by the deceleration in account growth reported by senior loan officers. Tightening standards on new loans is the easier part of the battle. It is difficult to detect who among large, existing accounts will lose the ability to pay. The crop of existing loans has run up balances at a historic pace, yet utilization is still below pre-pandemic levels at both ends of the credit score spectrum. In aggregate, the supply of credit grew even faster than the demand for it over the past three years. Borrowers are likely to catch up soon, especially utilizing existing credit now

that it is tougher to access new credit. With increased line sizes, lenders need extra care to manage risk, as troubled borrowers have more room to run up balances.

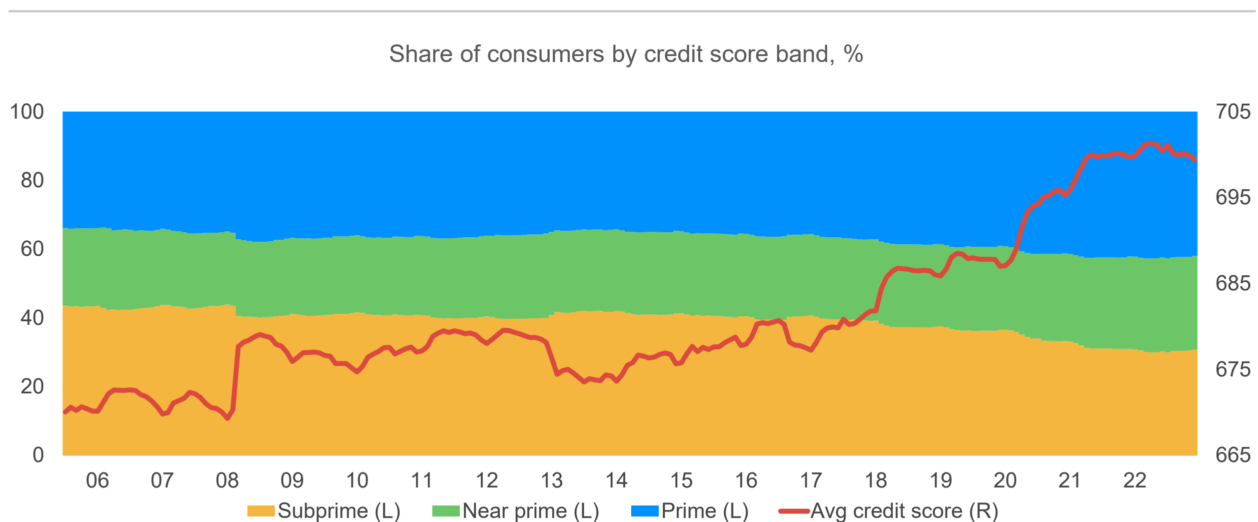
Chart 5: Credit Lines Outpace Balance Growth



Sources: CreditForecast.com, Moody's Analytics

While lenders are no doubt tightening the credit spigot for subprime borrowers, prime growth remains resilient and broadly supports credit growth. However, prime borrowers look riskier than previously thought, as they are not immune to inflation. More spending is required to keep up with lifestyle and exorcise pent-up demand. Though prime borrowers are not financially stressed in the same way for various reasons, they are financing their spending with credit cards nonetheless. The share of credit cards with a balance is growing faster in the upper end of the credit score spectrum than at the lower end. As most of the volume is in the prime space, this represents a significant upward shift in card usage.

Chart 6: High Vantage Point

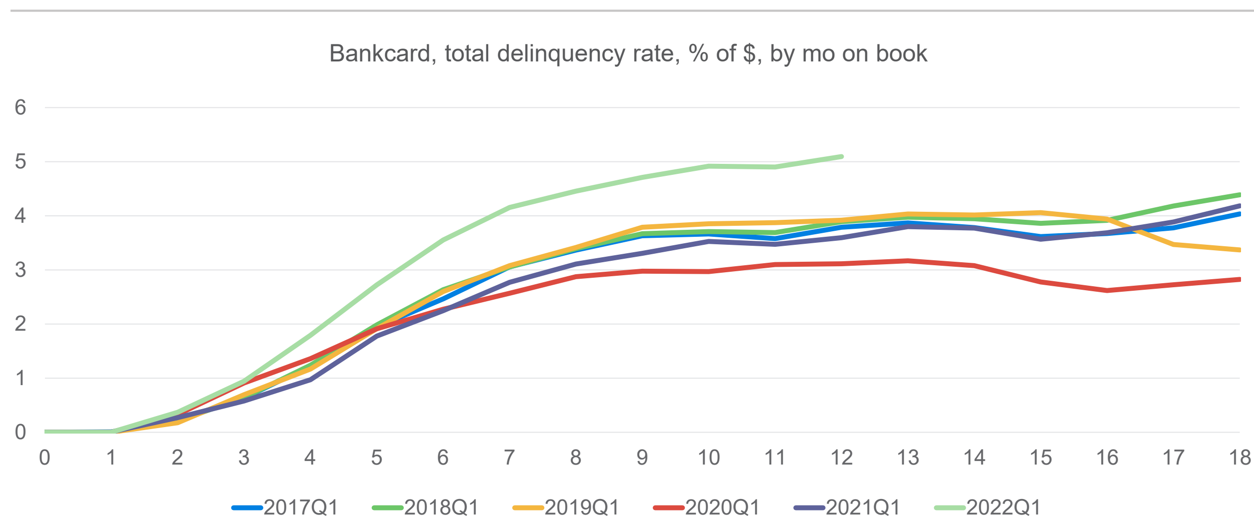


Sources: CreditForecast.com, Moody's Analytics

Though a feature before the pandemic, another kind of inflation, credit score inflation, took off during it. The average credit score has fallen below 700 after eclipsing the mark for much of 2022, more than 10 points higher than the plateau late in the 2010s. The share of consumers considered prime and near prime widened noticeably as those considered subprime fell. While it is true that most consumers were in better financial shape during the pandemic, other measures have shown a much more significant deterioration in credit conditions over the past year. If lenders were not careful about the shifting credit score distribution, they could overestimate the creditworthiness of certain parts of the distribution.

Lenders must remain guarded against consumer credit-specific risks, as their competition for borrowers yields poor results. Post-pandemic cohorts are performing much worse than all other groups in the last five years, which include several cohorts seasoned during periods not characterized by abnormally low delinquency rates. That bankcard account and credit-line originations broke records in 2022 should give lenders further pause, as these underperforming cohorts are large.

Chart 7: Delinquencies by Origination Vintage (Q1)



Sources: Equifax, CreditForecast.com, Moody's Analytics

Cannot ignore macroeconomic risks

Most of the risks mentioned above have begun materializing in a year of decelerating yet still-positive growth, though they warrant prudence in any climate. However, most forecasts, including that of Moody's Analytics, expect a further economic slowing in 2023. Many economists and business leaders are now outright expecting a recession. Moody's Analytics still hopes the economy can avoid a recession over the next year, but the odds are about 50/50 now. Of course, the economy also faces many other risks not as directly related to consumer credit, and a recession would exacerbate the effects above. A policy misstep by the Fed or an unexpected economic or geopolitical shock are top-of-mind risks and could tip the economy into a recession. The typical recession is accompanied by job and income losses, which directly lead to significant credit defaults in their own right.

Of particular concern to credit card borrowers and lenders are record-high interest rates on credit cards. The interest rates dictate that borrowers who carry a balance month to month or fall behind on payments will have more trouble paying down debt than before. The high-interest rates are unlikely to abate until the Fed has signaled it is satisfied with the course of inflation. This could be contrary to a typical recession, in which monetary policy can become accommodative at the outset.

Prime borrowers, again though the lower risk in absolute terms, are more susceptible to the symptoms of a recession. That is to say, delinquencies and losses would increase faster among prime borrowers than sub-prime borrowers in a weakening job market. Today's high interest rates and tight financial conditions primarily impact manufacturing, construction, and many white-collar industries. Some of the most high-profile layoffs in this business cycle have been in the high-paying tech industry. Job losses are particularly damaging when credit decisions assume a steady stream of future income.

Quantifying risk in unfamiliar territory

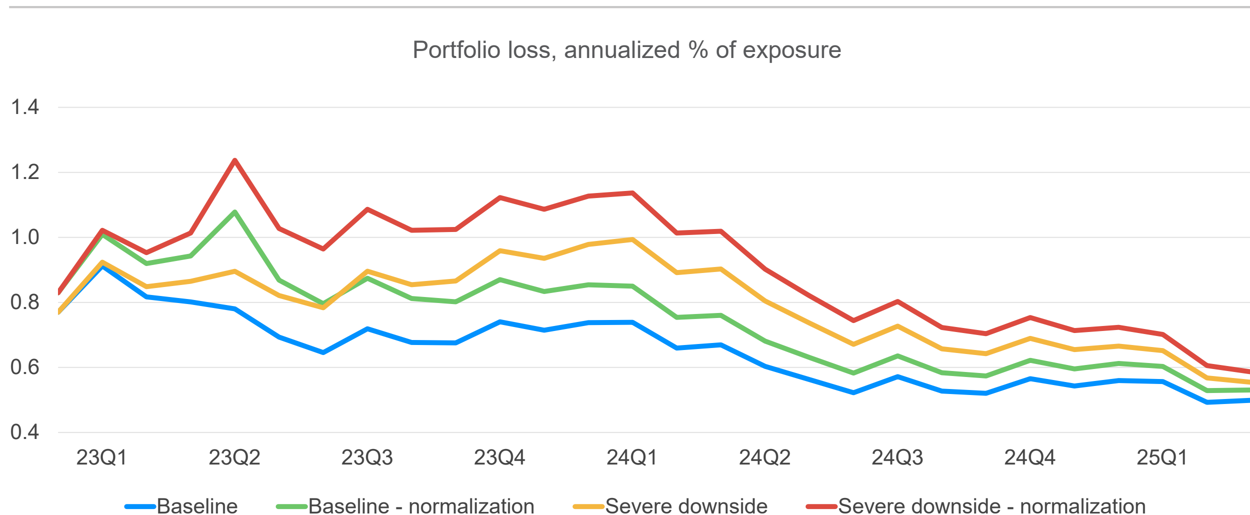
Though it may not be possible to quantify every risk facing the credit card market, we highlight a few of the critical dangers below. In addition to accounting for the macroeconomic impacts of a recession this year, we take steps to address some of the extraordinary conditions among borrowers today. We then fore-casted losses on the portfolio using a credit-loss model that relies upon credit score, age, utilization and macroeconomic drivers.

First, we normalize credit scores to their pre-pandemic level. We calculated the average increase in credit scores over the last three years for a consumer in each of 10 credit score bands in December 2022. As con-sumers' credit scores typically increase as they age, we subtract the average increase over three years using data going back to 2005. On average, credit card consumers saw an increase of more than 8 points during the pandemic era, above what they would typically expect. We then subtract each credit score bucket's average from the consumer's current score to get an adjusted credit score.

Second, we normalize account utilization to pre-pandemic levels. While balances accelerate, utilization has not moved as quickly, partly thanks to lax lending standards and lenders' willingness to extend credit lines. We expect credit limits to hold steadier as lenders are more cautious in this environment, and balances will continue to rise. This would increase borrower utilization. To account for this possibility, we shocked a market portfolio of credit cards by a utilization multiplier, calculated as the ratio between utilization at the end of 2019 to that at the end of 2022, segmented by credit score band and whether the card was a bank card or a retail card. This was a 4.4% shock on average but up to about a 10% shock in the lower credit score buckets.

We then projected losses on the normalized and the base portfolio using a credit-loss model that relies upon credit score, age, utilization and macroeconomic drivers. Based on utilization and credit score nor-malization, we found that baseline losses were expected to rise by more than 15% through 27 months. The residual losses peak in early 2023, as the assumed utilization shock is emphasized by the typical jump in spending around the holiday season. In the short term, the normalized portfolio has higher loss rates than the base portfolio under a recession scenario, even without the associated job losses. However, the lower-quality, normalized portfolio has consistently higher losses within each economic scenario.

Chart 8: 2019-Normalized Portfolio Shows Higher Losses



Sources: Equifax, CreditForecast.com, Moody's Analytics

One way or another

The pandemic recovery was the fastest recession recovery in history. Consumers quickly returned to pre-pandemic spending levels, and credit card balance growth has followed at an unsustainable rate. Delinquencies, which lag balance growth, are rising at record levels as inflation squeezes borrowers. The heightened risk this poses to the subprime population is well understood. Still, the risks in the prime population should also be properly evaluated, particularly when the possibility of a recession that threatens white-collar jobs looms.

Recent cohorts of new credit cards are performing much worse than prior cohorts. The cause is likely a combination of the increased supply and demand of credit in the recovery. Also, the strong-but-temporary financial benefits to consumers from the pandemic may have created a false sense of security, reinforced by risk metrics like credit scores around borrowers. Lenders were eager to reestablish credit card portfolios after the drop in spending during the pandemic, and borrowers' desire to spend and confrontation with inflation has been well documented.

Balance growth will be quelled one way or another. The Fed and tightening financial conditions should reduce spending demand eventually. The longer it takes for spending to slow, the more balance growth we should expect. The supply side is more up to the lenders themselves. Early indications are that even as lending becomes more profitable in the high-interest rate environment, credit card lenders are tightening faster than expected. This should slow growth, but it should also rein in the risk on the following cohorts to balance out the loose lending of the past year.

About the Authors

David Fieldhouse is a director in the Content, Economics and Structured Analytics Division of Moody's Analytics. His responsibilities include developing and validating models of retail loan performance for financial institutions. He also provides regular analysis and commentary on consumer credit markets. David has a PhD from the University of Western Ontario.

Alex Hedgren is a research associate in Predictive Analytics at Moody's Analytics' in West Chester, PA. Previously, he was a senior analyst at Cornerstone Research, working on corporate litigation matters pertaining to assets, markets and big data. He has experience working at the U. S. Securities and Exchange Commission and the American Institute of Physics. He graduated cum laude with a BSc in economics and finance and a minor in statistics from the University of Maryland.

About Moody's Analytics

Moody's Analytics provides financial intelligence and analytical tools supporting our clients' growth, efficiency and risk management objectives. The combination of our unparalleled expertise in risk, expansive information resources, and innovative application of technology helps today's business leaders confidently navigate an evolving marketplace. We are recognized for our industry-leading solutions, comprising research, data, software and professional services, assembled to deliver a seamless customer experience. Thousands of organizations worldwide have made us their trusted partner because of our uncompromising commitment to quality, client service, and integrity.

Concise and timely economic research by Moody's Analytics supports firms and policymakers in strategic planning, product and sales forecasting, credit risk and sensitivity management, and investment research. Our economic research publications provide in-depth analysis of the global economy, including the U.S. and all of its state and metropolitan areas, all European countries and their subnational areas, Asia, and the Americas. We track and forecast economic growth and cover specialized topics such as labor markets, housing, consumer spending and credit, output and income, mortgage activity, demographics, central bank behavior, and prices. We also provide real-time monitoring of macroeconomic indicators and analysis on timely topics such as monetary policy and sovereign risk. Our clients include multinational corporations, governments at all levels, central banks, financial regulators, retailers, mutual funds, financial institutions, utilities, residential and commercial real estate firms, insurance companies, and professional investors.

Moody's Analytics added the economic forecasting firm Economy.com to its portfolio in 2005. This unit is based in West Chester PA, a suburb of Philadelphia, with offices in London, Prague and Sydney. More information is available at www.economy.com.

Moody's Analytics is a subsidiary of Moody's Corporation (NYSE: MCO). Further information is available at www.moodysanalytics.com.

DISCLAIMER: Moody's Analytics, a unit of Moody's Corporation, provides economic analysis, credit risk data and insight, as well as risk management solutions. Research authored by Moody's Analytics does not reflect the opinions of Moody's Investors Service, the credit rating agency. To avoid confusion, please use the full company name "Moody's Analytics", when citing views from Moody's Analytics.

About Moody's Corporation

Moody's Analytics is a subsidiary of Moody's Corporation (NYSE: MCO). MCO reported revenue of $5.5 billion in 2022, employs approximately 14,000 people worldwide and maintains a presence in more than 40 countries. Further information about Moody's Analytics is available at www.moodysanalytics.com.

© 2023 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S CREDIT RATINGS AFFILIATES ARE THEIR CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MATERIALS, PRODUCTS, SERVICES AND INFORMATION PUBLISHED BY MOODY'S (COLLECTIVELY, "PUBLICATIONS") MAY INCLUDE SUCH CURRENT OPINIONS. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT OR IMPAIRMENT. SEE APPLICABLE MOODY'S RATING SYMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S CREDIT RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS, NON-CREDIT ASSESSMENTS ("ASSESSMENTS"), AND OTHER OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. AND/OR ITS AFFILIATES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS DO NOT COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS, ASSESSMENTS AND OTHER OPINIONS AND PUBLISHES ITS PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS, AND PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS OR PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND PUBLICATIONS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the credit rating process or in preparing its Publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY CREDIT RATING, ASSESSMENT, OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any credit rating, agreed to pay to Moody's Investors Service, Inc. for credit ratings opinions and services rendered by it fees ranging from $1,000 to approximately $5,000,000. MCO and Moody's Investors Service also maintain policies and procedures to address the independence of Moody's Investors Service credit ratings and credit rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold credit ratings from Moody's Investors Service, Inc. and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moodys.com under the heading "Investor Relations — Corporate Governance — Charter Documents Director and Shareholder Affiliation Policy."

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors.

Additional terms for Japan only: Moody's Japan K.K. ("MJKK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJKK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJKK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any credit rating, agreed to pay to MJKK or MSFJ (as applicable) for credit ratings opinions and services rendered by it fees ranging from JPY100,000 to approximately JPY550,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.