

Tapping Home Equity

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Income and Spending Trends Around Cash-Out Refinances and HELOCs

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Abstract

Approximately two thirds of American families own a home and for most homeowners, their house is also their most important source of wealth. Homeowners are currently sitting on historically high levels of home equity and the potential withdrawal of this home equity has important implications for consumption at the macroeconomic and household levels. In this report, we examine the extent to which liquidating home equity boosts consumption, as well as how income dynamics around equity extraction may play a role in influencing households' decision to draw from this source of wealth. Using loan-level servicing data from Chase mortgage customers combined with corresponding Chase deposit account data from 2012 to 2018, we create a sample of more than 50,000 homeowners who either obtained a cash-out refinance or drew on a home equity line of credit (HELOC). We find that for homeowners who cash-out refinanced, most refinanced into a lower interest rate but a

higher monthly payment because of a larger loan balance. Also, after controlling for secular trends, homeowners who obtained a cash-out refinance had no change in income whereas homeowners who extracted equity via a HELOC experienced declining income. For both groups, consumption spiked considerably as soon as the liquidated equity flowed into the bank account but quickly settled to steady state-levels at a higher level, 5 percent and 7 percent above baseline for HELOCs and cash-out refinances, respectively. After one year, cash-out refinance homeowners spent 33 percent of their total equity extracted while those with a HELOC spent 47 percent overall. For both sample groups, these marginal propensities to consume (MPCs) were highest for younger homeowners and those with higher loan-to-values (LTVs). Taken together, these findings have important implications for macroeconomic and housing policies.

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The mission of the JPMorgan Chase Institute is to help decision makers—policymakers, businesses, and nonprofit leaders—appreciate the scale, granularity, diversity, and interconnectedness of the global economic system and use timely data and thoughtful analysis to make more informed decisions that advance prosperity for all.

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Executive Summary

Approximately two thirds of American families own a home, making the housing market an important source of economic activity and an important vehicle through which monetary policy is transmitted to the real economy. For most homeowners, their house is their most important source of wealth—an asset that can build in value as a mortgage is paid down. As such, homeowners may tap into this wealth—their home equity—when

the need arises. Household behavior around the withdrawal of home equity has important implications for consumption at the macroeconomic level and for the efficacy of monetary policy. And, from a household finance perspective, liquidating home equity responsibly can play an important role in smoothing consumption when homeowners are faced with income disruptions or consumption spikes.

In this report, we use loan-level mortgage servicing data combined with administrative deposit account data to ask: to what extent does liquidating home equity boost consumer demand? We also examine the income dynamics around equity extraction in order to understand the role that a household's financial situation may play in influencing their decision to extract equity from their home.

Data Asset

From a universe of more than 16 million Chase mortgage customers between 2012 and 2018, we created a sample of over 50,000 customers who (1) withdrew equity from their home through either a Chase-to-Chase cash-out refinance or a Chase home equity line of credit (HELOC) that they borrowed against, and (2) also had a Chase deposit account.

From a universe of over



16 MILLION

Chase mortgage customers (2012 to 2018)

Requirements for cash-out refinance sample

Includes Chase mortgage customers who:

- Refinanced to another Chase mortgage between 2012 and 2018 and took cash out
- Are Chase deposit core customers: those who had at least five transactions each month in their Chase deposit account
- Have mortgage and deposit data available for eighteen months before and twelve months after the cash-out refinance

Final sample: **16,000** homeowners

Requirements for HELOC sample

Includes Chase mortgage customers who:

- Had a HELOC and made at least one draw between 2012 and 2018
- Are Chase deposit core customers: those who had at least five transactions each month in their Chase deposit account
- Have mortgage and deposit data available for eighteen months before and twelve months after the first HELOC draw

Final sample: **37,000** homeowners

Source: JPMorgan Chase Institute

Finding One

Most homeowners who cash-out refinanced switched into a longer loan with a lower rate but a higher monthly payment due to the new larger loan balance.

Among our cash-out refinance sample, we find that the largest group of homeowners ended up with a higher monthly payment despite having refinanced into a loan with a lower interest rate and longer term. This higher monthly payment was the result of withdrawing cash through a larger loan. Homeowners appeared to be prioritizing a need for a large amount of cash immediately over a lower monthly payment over time.

	Pre-refinance	Post-refinance	Median difference
Principal balance	\$144,769	\$195,000	\$46,429
Interest rate	4.50%	4.00%	-0.38 pp
Term (years)	24.2	30.0	3.7
Monthly payment	\$881	\$1,091	\$125

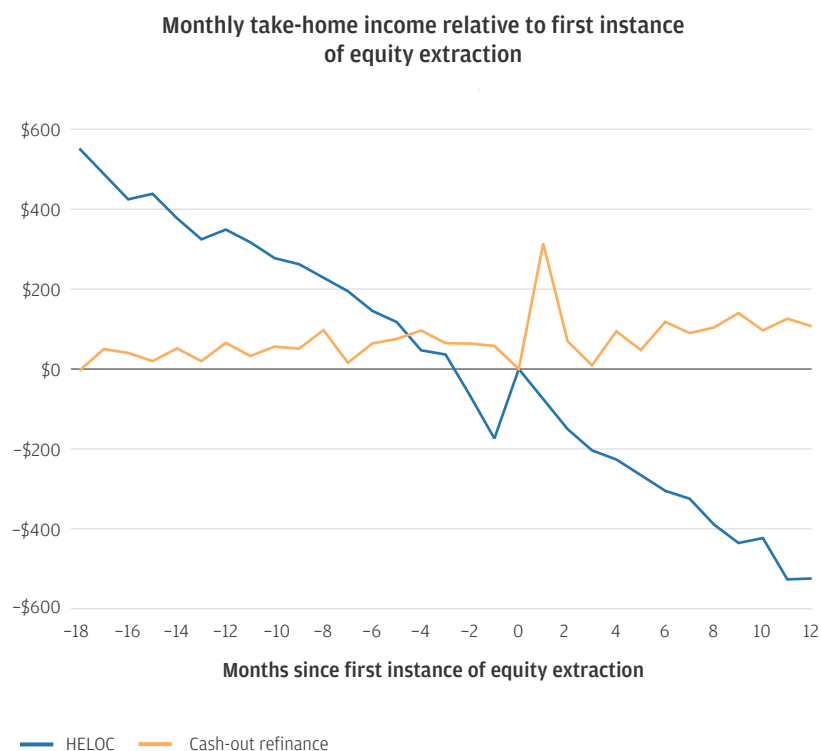
Note: All values shown are medians. The median is calculated for each column separately so the median difference is not necessarily equal to the difference between the medians.

Source: JPMorgan Chase Institute

Finding Two

After controlling for secular trends, homeowners who obtained a cash-out refinance had no change in income whereas homeowners who extracted equity via a HELOC experienced declining income.

Using an event study framework that accounts for time trends, we find that those who drew equity via HELOCs experienced falling income around the time of a draw, whereas the path of income for those who cash-out refinanced was flat. These patterns help us to understand which homeowners use these different products to access home equity and under what circumstances—though it is important to note that these results are specific to a rising interest rate environment, where refinancing is less appealing than it is when interest rates are falling.

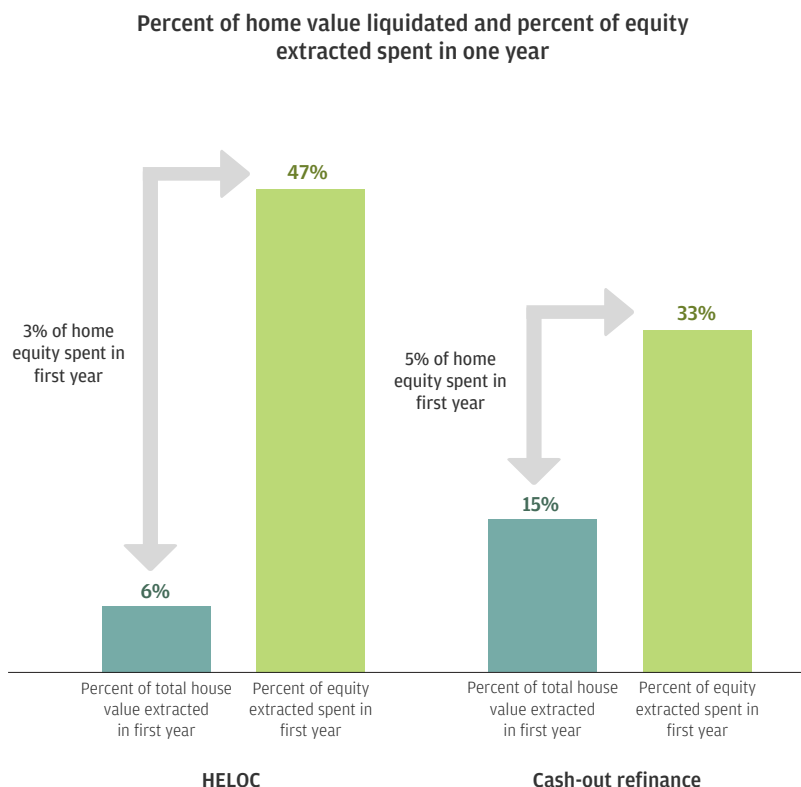


Source: JPMorgan Chase Institute

Finding Three

Spending spiked immediately upon receiving cash and quickly tapered to a level above baseline. Within a year, homeowners who cash-out refinanced spent 33 percent of the total equity liquidated (5 percent of home value) while homeowners with a HELOC spent 47 percent (3 percent of home value).

For both cash-out refinances and HELOCs, we find that consumption increased dramatically in the month that the first instance of home equity extracted hit the homeowner's deposit account. Then, just as quickly, consumption settled to a level that is higher than baseline spending for both cash-out refinances (7 percent higher) and HELOCs (5 percent higher). After one year, the marginal propensity to consume (MPC) out of liquidated home equity was 33 percent for homeowners with a cash-out refinance and 47 percent for homeowners with a HELOC.

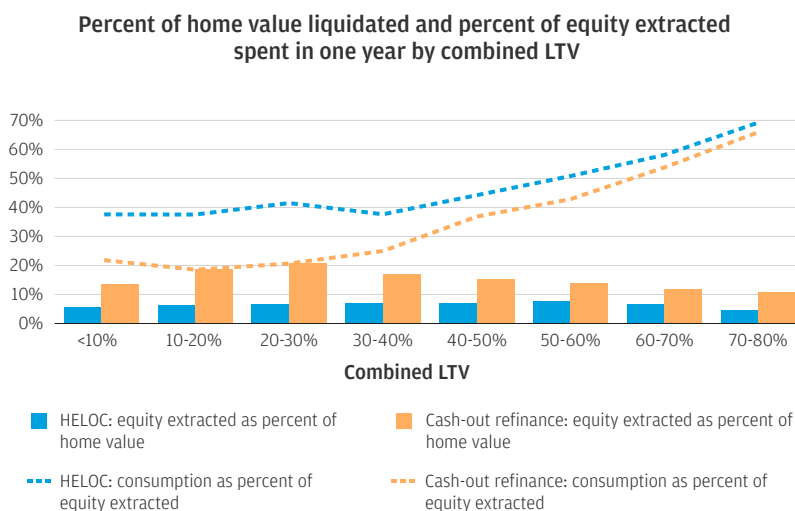


Source: JPMorgan Chase Institute

Finding Four

The largest consumption responses for both cash-out refinances and HELOCs were from younger homeowners and those with higher loan-to-value ratios.

For both cash-out refinances and HELOCs, those with higher combined loan-to-value (CLTV) ratios—that were closer to limits often required by lenders—and younger homeowners spent the largest fraction of the equity that was extracted. These homeowners are most likely to be credit-constrained and have lower income.



Source: JPMorgan Chase Institute

Implications

Our results suggest that policies facilitating access to home equity withdrawal could have significant macroeconomic effects because the consumption response to this liquidity from home equity is large.

For this reason, removing frictions and barriers to home equity withdrawal would improve the transmission of monetary policy to the real economy through both the housing wealth effect channel (as equity extraction is the mechanism that links home price appreciation to increased consumption) and the refinancing channel (as the spending response to additional cash on hand complements the response to lower monthly payments).

Significant barriers have kept equity withdrawal activity low since the Great Recession, including supply and demand factors (see discussion in Farrell et al. 2020) and well-documented frictions to refinancing. The current low levels of equity extraction activity compared to historically high levels implies that if some of these barriers were removed to allow for greater equity withdrawal, there could be large macroeconomic effects on consumption. Indeed, Black Knight estimates that as of the first quarter of 2020, there is \$6.5 trillion of home equity that is available to be liquidated among homeowners with a mortgage.

The ability to liquidate wealth from one's home may be especially important for homeowners if they have substantial home equity but face

economic uncertainty, as is the case during the COVID-19-induced recession. Households are sitting on historically large quantities of home equity and, in contrast to the Great Recession, have not seen their home equity positions erode thus far. Given the importance of cash flow dynamics and liquidity for consumption and staying current on debt payments, continued access to home equity could play an important role in helping homeowners weather economic downturns by providing needed liquidity. In the current interest rate environment, refinancing in particular could provide liquidity through lower monthly payments and/or a large infusion of cash. Of course, the benefits of liquidating home equity must be balanced against maintaining responsible lending practices, all the more difficult in an uncertain economic climate.

Understanding the inherent complexities the private sector faces in maintaining access to home equity withdrawal for homeowners, the public sector may want to consider government backed alternatives that allow homeowners to access the illiquid wealth in their homes if experiencing income disruption in order to avoid more costly impacts to families or the overall mortgage market. A federally guaranteed home equity product or program similar to the Home Affordable Refinance Program (HARP) implemented after the housing market crash in the late 2000s could help more homeowners who would benefit from refinancing actually do so.

Introduction


Approximately two thirds of American families own a home and for most families, their home is their largest source of wealth. The housing market is an important source of economic activity and vehicle through which monetary policy is transmitted to the real economy. Borrowing against home equity is a key mechanism by which households can increase their consumption as their housing wealth increases (Mian and Sufi 2014). In addition, liquidating housing equity can play an important consumption smoothing function for individual families in economic downturns when used responsibly. In this report, we describe the income and consumption dynamics of homeowners around the event of home equity withdrawal to inform our understanding of the role housing wealth plays in the financial lives of families and the economy.

Families can extract equity from their homes in several ways, two of which are by cash-out refinancing and drawing on a home equity line of credit (HELOC). While cash-out refinancing refers to liquidating some home equity in the process of refinancing the first lien, HELOCs are a second

lien which provide homeowners with an open line of credit. As we describe in Box 1, for homeowners seeking liquidity, the choice between a cash-out refinance and a HELOC carries trade-offs, causing one or the other to provide greater benefits depending on individual circumstances.

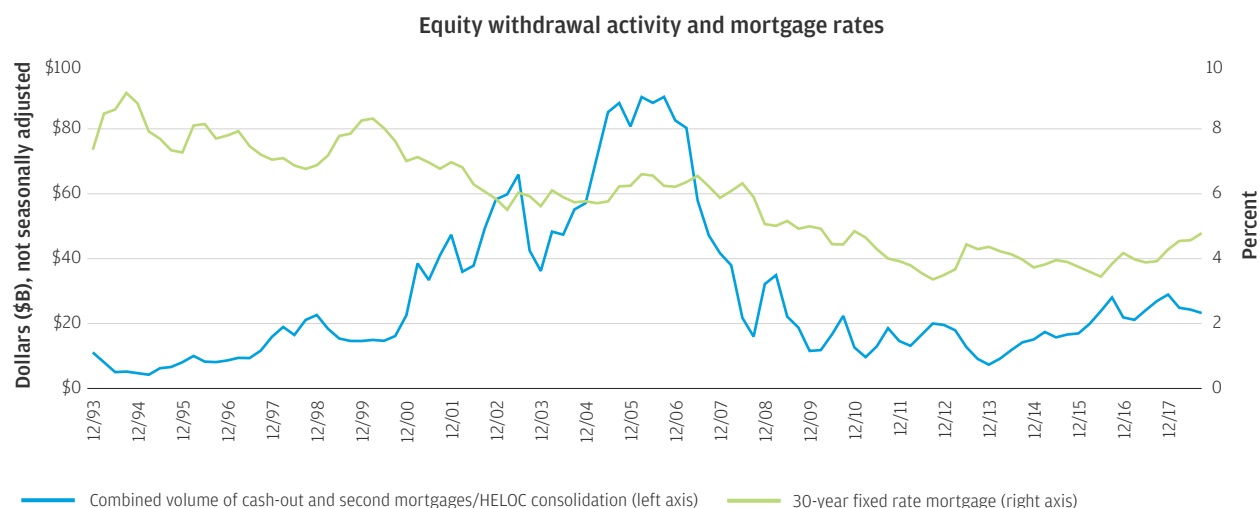
Understanding the impact of home equity extraction is important as it may amplify the ability of monetary policy to affect consumption, the largest component of Gross Domestic Product (GDP). Through changes to short term interest rates, monetary policy directly impacts the incentives around both refinancing and second liens. Lower interest rates make refinancing attractive for some homeowners and reduce the costs of borrowing a larger amount. Lower rates on second liens also make these products cheaper for homeowners who do not find refinancing to be a good fit. As shown in Figure 1, the prevalence of equity extraction generally tracks inversely with mortgage interest rates. As the 30-year fixed rate (shown by the blue line) goes down, equity withdrawal (shown by the green line) goes up and vice versa. During the housing boom and financial

crisis, that relationship broke down. Lending practices had been relaxed and housing prices became inflated. Families had turned to their homes as a source of cash, drawing out much of the equity they built up as equity withdrawal soared to historic highs.¹ After the financial crisis, new regulations tightened lending practices in order to protect both borrowers and lenders from riskier loans that were less likely to be repaid. Even as housing prices appreciated after the Great Recession and the level of home equity held by households surpassed pre-recession highs, the amount of equity extracted remained low. Equity extraction activity has since resumed its relationship with interest rate movements.



What role does housing wealth play in the financial lives of families and the economy?

Figure 1: Except for the housing boom in the mid-2000s and the financial crisis beginning in the late 2000s, equity withdrawal increased when mortgage rates decreased and vice versa.



Note: This chart shows equity extraction activity (measured as the combined volume of cash-out refinances and second liens or HELOC consolidations as reported by Freddie Mac²) along with 30-year fixed rate mortgage interest rates.

Source: JPMorgan Chase Institute, Freddie Mac, Federal Home Loan Mortgage Corporation (accessed via Haver Analytics)

Interest rate policy can influence homeowners to extract equity from their homes and that extracted equity can increase consumption through two channels—the refinancing channel and the housing wealth effect channel. The refinancing channel posits that household consumption reacts positively to decreases in monthly mortgage payments and any equity that is liquidated.³ The housing wealth effect is the ability of home price inflation to translate into consumption increases. Although the housing wealth effect was significant for pre-Great Recession periods, we estimate a near zero housing wealth effect after the Great Recession due to low levels of equity extraction during this period even as home equity held by households surpassed pre-recession highs (Farrell et al. 2020).⁴

Homeowners currently have historically high levels of home equity along with relatively healthy loan-to-value (LTV) positions—the median LTV among mortgage holders nationally decreased

from 71 percent in 2011 to 59 percent in 2018 (latest year of data available).⁵ This means that in the current COVID-19-induced recession, homeowners potentially have a large store of illiquid wealth that they could tap into in order to smooth consumption and maintain debt payments. As of the first quarter of 2020, household ownership of home equity was estimated at \$19.7 trillion. While not all of this housing wealth is eligible for homeowners to draw upon, much more could potentially be liquidated even in light of more restrictive eligibility requirements since the Great Recession. In this report, we seek to understand the extent to which home equity could boost consumer demand if families were able to access this wealth, and the role of equity extraction for boosting consumption during both economic expansions and contractions. We also examine the income dynamics around equity withdrawal in order to understand the role of individual households' financial situation in influencing their decision to extract equity from their home.

To provide this analysis, we use administrative banking data between 2012 and 2018 to create a sample of de-identified Chase mortgage holders who also had a Chase deposit account and who obtained either a cash-out refinance or HELOC during this period. By pairing high-frequency, transaction-level deposit account data with loan-level mortgage data for a sample of over 50,000 homeowners, we are able to directly and precisely measure the immediate consumption response to equity extraction. Furthermore, we observe a number of mortgage holder characteristics, allowing us to explore heterogeneity in consumption response by the age and LTV of the borrower.

We find that cash-out refinances usually resulted in a higher monthly payment even though most homeowners refinanced into a lower mortgage rate and longer-term loan due to the amount of equity that was extracted. Those who cash-out refinanced withdrew more than twice as much equity at one time as homeowners with a HELOC did in the year after their first draw.

We also find that the path of income around equity withdrawal was different for homeowners who obtained a cash-out refinance as opposed to a HELOC, consistent with the notion that borrowers sought these options for different reasons. After controlling for common trends, those who drew on a HELOC experienced declining income whereas those who obtained a cash-out refinance had flat income trends.

Consumption spiked immediately after receiving cash from the cash-out refinance or HELOC draw but then quickly tapered to a level above baseline. After one year, homeowners who cash-out refinanced spent 33 percent of their total equity extracted or 5 percent of their home's value, while those with a HELOC spent 47 percent or 3 percent of home value overall. Furthermore, consumption responses were larger for those who are younger and have high LTV ratios.

Our consumption results suggest that more home equity extraction could have significant macroeconomic effects. While low levels of equity extraction activity have been observed in the years following the Great Recession, the consumption response to drawing on equity in our data was

large and levels of home equity are currently at historical highs. Black Knight data indicates that there is currently \$6.5 trillion worth of tappable home equity among homeowners with a mortgage, meaning homeowners can maintain at least 80 percent LTV.

Removing frictions and barriers to home equity extraction would facilitate the transmission of monetary policy to the real economy through both the housing wealth effect and refinance channels. Equity extraction is the mechanism that links home price appreciation to increased consumption, and, as we show in this report, the spending response from cash out refinances is significant even when they yield a higher monthly payment.

From the perspective of individual households, the ability to liquidate home equity may be especially important when they hold substantial home equity but face economic uncertainty, as is the case during the COVID-19-induced recession. So far in this downturn, unlike during the Great Recession, homeowners have not seen their home equity positions erode. Given the importance of cash flow dynamics and liquidity for consumption and staying current on

debt payments, continued access to home equity could be the bridge that allows homeowners to weather certain economic downturns. Importantly, with very low and falling interest rates, refinancing in particular has the potential to play a large role in increasing liquidity for homeowners through lowering monthly mortgage payments and/or providing a large infusion of cash. Of course, lenders and homeowners both have key roles to play in maintaining responsible lending practices, which is all the more difficult in an uncertain economic climate.

As it may be difficult for the private sector alone to maintain access to home equity for homeowners, the public sector may want to consider government-backed alternatives, such as federally-guaranteed home equity products that allow homeowners to access the illiquid wealth in their homes if experiencing income disruption. Programs similar to the Home Affordable Refinance Program (HARP), which were implemented after the housing market crash of the late 2000s could also help homeowners who would benefit from refinancing overcome the associated frictions.

Box 1: Accessing Home Equity: Cash-out Refinances and Home Equity Lines of Credit

Among a homeowner's options for accessing home equity are obtaining a **cash-out refinance** or taking out a second lien such as a **home equity line of credit (HELOC)**.⁶

A **cash-out refinance** allows a homeowner to change the interest rate on their mortgage, potentially extend the term of their loan, and trade illiquid home equity for a lump sum of cash. This is done by paying off an original loan with a new, larger loan, the difference between the two being cash that the borrower can pocket. If current mortgage rates are lower than when a mortgage holder's original loan was obtained, refinancing is attractive as it allows the homeowner to finance their home through a lower interest rate loan with a potentially longer term, which would result in lower monthly payments. Through this process of replacing their mortgage loan, the monthly payment could also increase depending on the relative size of the new loan.⁷ It is worth noting that a homeowner with an adjustable-rate mortgage (ARM)—which has a set initial interest rate period followed by recurrent rate resets—may be interested in refinancing even to a higher rate loan as their initial fixed rate period expires if the homeowner believes that future rates will be higher than current rates. These homeowners may choose to cash out during this process as well.

While cash-out refinances replace a first loan entirely, a **home equity line of credit (HELOC)** is a second lien. It does not change the terms on the underlying first lien. Instead, it functions as a source of credit that enables a homeowner to draw against their home equity repeatedly over a set period of time and up to a certain dollar amount equal to an approved percent of the home value. During the draw period for a HELOC (usually lasting ten years), monthly payments are made against both principal and interest for any amount spent. A subsequent repayment period (usually within twenty years) involves monthly payments on the outstanding balance.⁸ Because HELOCs do not alter the first lien, they do not allow homeowners to take advantage of lower mortgage interest rates as a cash-out refinance would. Also, as a second lien, HELOC lenders are subordinate to the first lien for repayment, making interest rates on these products higher than on first liens. However, in many cases the interest rate on a HELOC is lower than interest on other potential sources of credit, such as a personal loan or credit card, because a HELOC is secured against the value of the

home. This option may therefore be attractive if the interest rate obtained is lower than could be for a personal loan or other source of credit or if one's existing mortgage rate is already lower than prevailing mortgage rates (making a cash-out refinance irrational). Finally, HELOCs can provide certain tax advantages that other loans do not.⁹

Both cash-out refinances and HELOCs have requirements and costs that might prevent a borrower from extracting home equity. Most lenders generally require a homeowner's combined loan-to-value (CLTV) ratio—the amount owed across all loans as a fraction of appraised home value—to be no more than 80 percent for conventional loans.¹⁰ In addition, homeowners must consider closing costs associated with refinancing, which can be similarly high to that for a purchase loan for a cash-out refinance because a new loan is being originated, though these costs can be rolled into the new balance. HELOCs, on the other hand, tend to have much lower or almost no closing costs but may have fees associated throughout the life of the loan, such as annual membership fees or transaction fees each time a draw is made.¹¹

Previous Literature

Few papers have attempted to measure the effect of home equity withdrawal on consumption. The most direct evidence comes from Beraja et al. (2018), which finds that the probability of car purchases increases two months after refinancing and that the effect is twice as large for cash-out refinances as it is for non-cash-out refinances. While car purchases can proxy for total consumption, our deposit account data provides a much more direct and comprehensive view of consumer spending. Other studies have provided evidence on categories of spending that increase after equity extraction but have not quantified by how much. Using data from 1990 to 2007, Greenspan and Kennedy (2007) find that homeowners spend equity extracted via HELOCs evenly among categories of personal consumption expenditures, home

improvements, and debt consolidation, whereas those who extracted equity through cash-out refinances tended to use the funds primarily for home improvements and repayment of non-mortgage debt. Similarly, Mian and Sufi (2011) find that from 1997 to 2010, borrowers who extracted home equity most likely used the funds for home improvement and consumption. Studies that have examined refinancing broadly, rather than cash-out refinancing specifically, suggest that the consumption response to equity withdrawal is large and that there is heterogeneity based on borrower characteristics. Borrowers who are likely more liquidity- or credit-constrained (such as younger homeowners) are most responsive to the cash flow shock of a refinance (Mian and Sufi 2014; Wong 2019;

Abel and Fuster 2018). Mian and Sufi (2011) yield similar findings for those who extracted home equity.

Overall, this literature suggests that while a substantial amount of consumption can be generated through home equity withdrawal, especially for certain groups and particular types of consumption or debt payment, direct measurement of the effect of equity extraction on consumption is still lacking. In addition, no studies examine income dynamics around these events. Therefore, we contribute to this literature by combining administrative mortgage and deposit account data to measure the MPC out of equity extracted and describe differences in income patterns for those choosing to extract equity either through a cash-out refinance or a HELOC.

Data Analysis

To better understand household income and consumption dynamics around equity extraction events, we create two samples of Chase customers using de-identified administrative banking data from October 2012 to December 2018: (1) homeowners with a Chase mortgage who cash-out refinanced into another Chase mortgage and (2) homeowners with a Chase HELOC who actively drew against it. For both of these samples, we also require homeowners to have had a Chase deposit account so that we are able to observe take-home income and consumption around the time of home equity withdrawal. Further details on the assembly of these samples are in the Data and Methodology section. Take-home income, which reflects the

income after taxes and other payroll deductions that is deposited into one's checking account, includes labor income, government benefits, tax refunds, capital and retirement income, ATM deposits, check deposits, and other electronic deposits. Similarly, we measure consumption as all deposit account outflows minus transfers to investment and savings accounts.¹²

Table 1 shows that our sample of homeowners with a HELOC is twice as large as our sample of homeowners with a cash-out refinance. Importantly, those with a HELOC only extracted around \$20,000 over the course of one year, while those with a cash-out refinance extracted more than twice as

much. The median age of homeowners in both of these samples was high, at 55 and 59 for cash-out refinances and HELOCs, respectively. Interestingly, those who drew on a HELOC in our sample waited over six years to make their first withdrawal. One possible reason for this is that we created the sample by looking for those homeowners who make their first withdrawal between 2014 and 2017, so as to include those for whom we can view income and consumption for at least eighteen months before and twelve months after the withdrawal. Given the dramatic decrease in HELOC originations after the Great Recession, our sample would naturally pick up more homeowners who have been holding HELOCs that originated much earlier.

Table 1: Summary statistics show that homeowners who drew on HELOCs extracted less than half as much equity in one year as those who cash-out refinanced.

	Cash-out refinances (pre-refinance)	HELOCs (at time of equity extraction)
Number of homeowners	16,501	37,408
Loan characteristics		
House value	\$327,959	\$335,943
Time to maturity (years)*	24.2	22.9
Interest rate**	4.50%	4.38%
		5.74%
Combined LTV***	45.0%	44.5%
Time to first extraction (months)	-	75
Demographics		
Monthly take-home labor income	\$4,214	\$3,681
Age	55	59
Amount of equity extracted in one year		
Dollar amount	\$46,429	\$3,681
As percent of house value	14.8%	6.5%

Note: All values shown are medians.

* Time to maturity for the HELOC population is on underlying mortgage loan.

** For HELOCs, the first interest rate is on the underlying loan while the second is on the HELOC.

*** For HELOCs, combined LTV is only calculated for loans where we also have data on a first lien

Source: JPMorgan Chase Institute

Finding One

Most homeowners who cash-out refinanced switched into a longer loan with a lower rate but higher monthly payment due to the new larger loan balance.

We first turn to those homeowners in our sample who obtained a Chase-to-Chase cash-out refinance between 2014 and 2017¹³ to understand pre- and post-refinancing loan characteristics and how monthly payments changed. We find that the largest group of homeowners with a cash-out refinance had a higher monthly

payment afterwards, despite a lower interest rate and longer loan term. This higher monthly payment was the result of withdrawing cash through a larger loan. In other words, the median homeowner was prioritizing a large cash infusion now over a steady monthly stream of greater disposable income. It is important to note that cash-out refinancing was relatively rare over the time period that we studied. At the end of 2018, the combined volume of cash-out and second mortgages/HELOC consolidation

was \$23.3 billion¹⁴ while the total amount of home equity owned by households was \$18.1 trillion¹⁵. In Table 2, we show the median levels of and median changes in key mortgage variables before and after cash-out refinancing, including term length, principal balance, loan origination balance, interest rate and type, and monthly payment. Pre-refinance values are calculated two months before the old loan ends and post-refinance values are calculated two months after the new loan begins in our data.

Table 2: In the typical cash-out refinance in our data, the interest rate decreased but loan term, loan balance, and monthly payment each increased.

	Pre-refinance	Post-refinance	Median difference
Principal balance	\$144,769	\$195,000	\$46,429
Origination balance	\$154,397	-	-
Interest rate	4.50%	4.00%	-0.38 pp
Interest rate type (% fixed)	81.4%	93.7%	-
Term (years)	24.2	30.0	3.7
Monthly payment	\$881	\$1,091	\$125

Note: All values shown are medians. The median is calculated for each column separately so the median difference is not necessarily equal to the difference between the medians.

Source: JPMorgan Chase Institute

For the 16,000 homeowners who cash-out refinanced, the median household refinanced into a new 30-year loan and the loan term length increased by a median of 3.7 years. Refinancing also resulted in a median reduction in interest rates by 0.38 percentage points. However, even with these two factors, we did not see a reduction in monthly

payment. In fact, we saw a median increase in monthly payment post-refinance of \$125. This can be accounted for by a larger new loan that allowed homeowners to extract on average over \$46,000 in equity (or about 15 percent of home value)—making the refinanced loan larger than the first loan's principal

balance at origination. This would suggest that home price appreciation accounts for much of the equity accumulation during this time period and that homeowners are refinancing in order to access some of that equity growth.¹⁶

Interestingly, the percent of homeowners who held a fixed-rate mortgage increases from 81.5 percent to 96.3 percent after cash-out refinancing. Some homeowners with an adjustable-rate mortgage (ARM) may have been cash-out refinancing into a fixed-rate mortgage (FRM) to avoid the risk of a future rate increase. The period over which our sample was refinancing (2014 to 2018) was a time of generally increasing interest rates and in particular, one-year LIBOR, which is commonly used as a reference rate for ARMs, was almost monotonically rising over this period.

In Table 3, we present a view of our sample of cash-out refinances by both interest rate and monthly payment changes to better understand the range of motives for cash-out refinancing. Along with income dynamics described in Finding 2, these results help to elucidate the different circumstances under which

homeowners use cash-out refinances versus HELOCs. Overall, we see that 70 percent of homeowners who refinanced did so into a lower interest rate loan but 71 percent experienced an increase in their monthly payment.

The largest group of homeowners was Group B, which represents homeowners who refinanced into a lower rate loan with a modestly higher monthly payment. These homeowners appear to be composed of (1) those who were primarily motivated to refinance because of lower interest rates and then chose to take equity out of their home because they have the opportunity to do so and (2) those who were motivated by the need to extract equity and chose cash-out refinancing over HELOCs because prevailing mortgage rates were lower than their existing rate. Group D was similar to Group B but had a larger interest rate decrease and extracted a smaller amount

of equity so they ended up with a monthly payment that is slightly lower.

Group A experienced an interest rate increase and a large monthly payment increase, while Group C, a much smaller group, also experienced an interest rate increase.¹⁷ While almost half of the homeowners in Groups A and C started with ARMs, almost all had FRMs after refinancing, indicating that many of these homeowners were likely motivated to refinance not to lower their interest rate but to either obtain a fixed rate or, perhaps, “renew” the fixed part of their ARM. They may have been trading off a slightly higher interest rate and monthly payment to insure against the possibility of their ARM resetting to higher rates in the future. These homeowners also extracted the most equity of any group, which implies that another motivation could have been a greater need for equity despite an increase in interest rate.

Table 3: Seventy percent of homeowners who refinance enter into a new loan with a lower rate but 71 percent experience an increase in monthly payment.

		Interest rate		
		Increases (30%)	Decreases (70%)	
Monthly payment	Decreases (71%)	Group A: 24% of loans	Group B: 47% of loans	
			Interest rate increase and loan balance increase > term length increase	Loan balance increase > interest rate decrease and term length increase
		Median change in interest rate	0.50 pp	-0.63 pp
		Change in monthly payment	\$342	\$183
		Median amount of equity extracted	\$56,609	\$48,122
		Interest rate type (% fixed) before/after	55% / 99%	90% / 97%
	Decreases (29%)	Group C: 6% of loans	Group D: 23% of loans	
			Interest rate increase and loan balance increase > term length increase	Loan balance increase > interest rate decrease and term length increase
		Change in interest rate	0.63 pp	-0.81 pp
		Change in monthly payment	-\$278	-\$98
		Median amount of equity extracted	\$48,045	\$33,496
		Interest rate type (% fixed) before/after	75% / 73%	90% / 90%

Source: JPMorgan Chase Institute

Finding Two

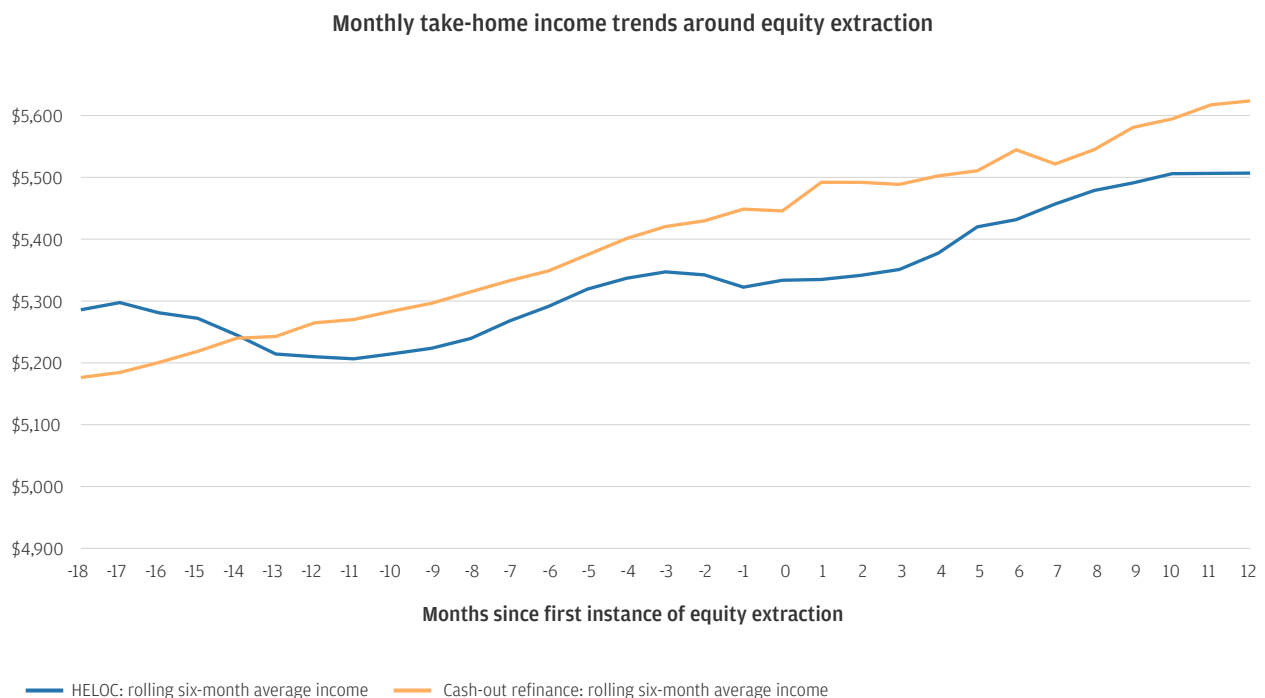
After controlling for secular trends, homeowners who obtained a cash-out refinance had no change in income whereas homeowners who extracted equity via a HELOC experienced declining income.

With our two samples of homeowners who extracted equity via cash-out refinances and HELOCs between 2014 and 2017, we use an event study framework to examine income trends in the one and a half years before and one year after equity withdrawal. We find that those who used HELOCs experienced

falling income once time trends are accounted for, whereas income was flat for those who cash-out refinanced. This finding sheds light on the type of homeowners who used specific products to access home equity, with the understanding that it is specific to the economic and interest rate environment. In a time where rates are rising, as was the case from 2014 to 2017, refinancing would have made less sense for a larger set of homeowners than in a falling rate environment. In the current COVID-19-induced recession, although mortgage interest rates

are at historically low levels, labor market conditions have deteriorated rapidly and credit has tightened, limiting access to home equity products. Therefore, income patterns for those refinancing may well look very different now than for the years we study. As shown in Figure 2, income levels were generally increasing over time for both our cash-out refinance and HELOC samples. To account for this secular growth in income, in our event study, we control for calendar time monthly fixed effects.¹⁸

Figure 2: Income is rising over time for both the HELOC sample and the cash-out refinance sample, so we control for these trends in our analysis of income.



Source: JPMorgan Chase Institute

Figure 3 shows the results of our event study, where we plot income in each month relative to income in month $t = 0$, when the first instance of equity extraction occurs. Note that the spikes at $t = 1$ for cash-out refinances and $t = 0$ for HELOCs are when the liquidated home equity hit deposit accounts.

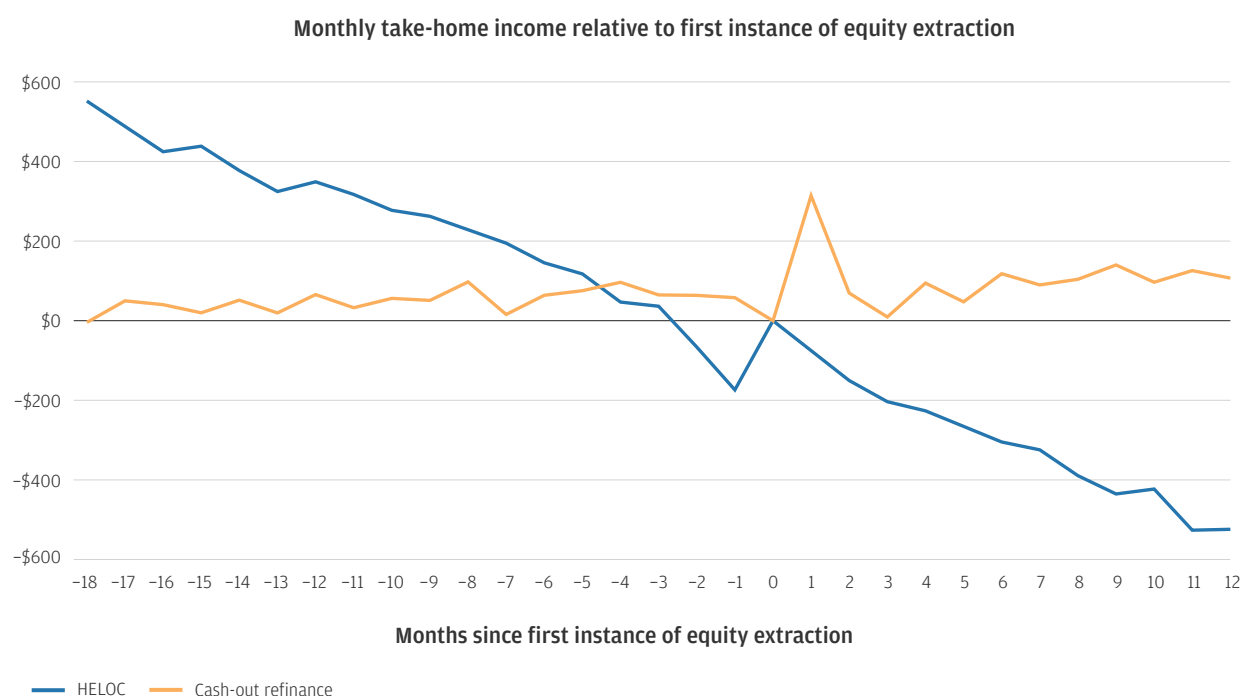
The results in Figure 3 show that after controlling for secular trends, average income was falling for those who drew on their home equity via a HELOC during the eighteen months prior to, and twelve months after, the initial equity withdrawal. In fact, over this thirty-month period, income fell by an average of \$1,076, which is a 30 percent decrease relative to median

baseline income (average median income from $t = -18$ to $t = -12$) of \$3,633. In addition, Figure 3 suggests that income may have been falling particularly rapidly at $t = -1$, the month before equity extraction. This income drop may have been the catalyst that caused the homeowner to draw on their HELOC after holding the line of credit open for so long.

On the other hand, for those doing a cash-out refinance, after controlling for calendar month fixed effects, income was on par with secular growth. The disparity between these two sets of results would be consistent with homeowners having used HELOCs more as consumption smoothing devices whereas those who tapped into

home equity via a cash-out refinance may have been driven primarily by an interest rate motive. Indeed, recall from Finding 1 that 70 percent of those with a cash-out refinance experienced a decrease in their interest rate and of those experiencing an increase in their interest rate, many refinanced from an adjustable-rate loan to a fixed-rate loan. Also, Table 1 shows that at the median, the first draw on a HELOC in this sample came more than six years after the HELOC was opened, suggesting households used this line of credit only when they needed to—that is, when they experienced income disruption.

Figure 3: After controlling for calendar month fixed effects, income was growing more slowly than secular trends among those who drew on their HELOC, whereas income is on pace with secular trends for those who cash-out refinanced.



Source: JPMorgan Chase Institute

Finding Three

Spending spiked immediately upon receiving cash and quickly tapered to a level above baseline. Within a year, homeowners who cash-out refinanced spent 33 percent of the total equity liquidated (5 percent of home value) while homeowners with a HELOC spent 47 percent (3 percent of home value).

Using a similar event study framework, we turn to the spending response. We find that consumption increased dramatically the same month that the first instance of home equity extracted hit deposit accounts and then just as quickly settled to a level that is higher than baseline spending for both cash-out refinances and HELOCs, by 7 and 5 percent respectively. Altogether, homeowners who extracted equity via a cash-out refinance spent 33 percent of the total equity liquidated in the first year while homeowners with a HELOC spent 47 percent. This represented 5 percent and 3 percent of their home value spent in one year, respectively.

We take a closer look at the shape of the consumption response and plot how consumption changed in the year and a half before and year after the first incidence of equity withdrawal. In Figure 4, we plot median spending, which is measured as deposit account

outflows minus transfers to savings and investment accounts during this thirty-month period.¹⁹

For both cash-out refinances and HELOCs, there was a large spike in spending when the cash is received by the household. For cash-out refinances, spending increased by \$2,791 dollars, which is a 52 percent increase over baseline ($t = -18$ to $t = -12$) and for HELOCs, spending increased by \$1,978 (36 percent) over baseline in the first month after receiving the cash.²⁰

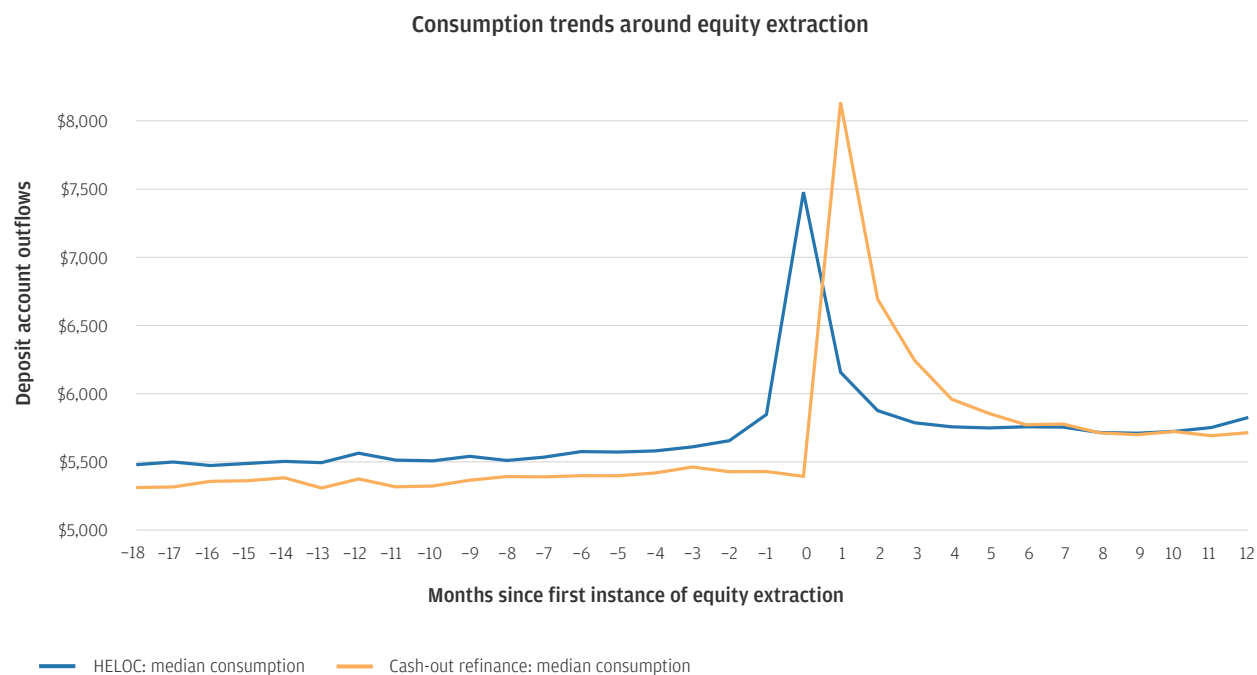
This initial large spike was not sustained in either case. After the first month, consumption levels started to fall dramatically but did not return to baseline levels. Instead, for cash-out refinances, by five months after the refinance, spending fell back to a roughly steady state level that was about \$400 (or 7 percent) higher than baseline. And for HELOCs, spending fell a bit faster to a steady state level by roughly three months after the draw that was about \$250 dollars (or 5 percent) above baseline. It is not clear how long this period of elevated spending lasts since we do not look beyond one year. It is reasonable to expect that, for cash-out refinances, spending might return to baseline

levels after the liquidated equity is exhausted. That would take a long time, however, if spending only increased by about \$400 per month in steady state and the median amount of cash withdrawn is over \$46,000. For HELOCs, however, the homeowner could go back for more cash to sustain an elevated level of spending by drawing on their open line of credit again. Furthermore, for HELOCs, there was a small amount of anticipatory spending increase in the three months (roughly \$350 over baseline by the month before equity extraction) before equity withdrawal, whereas that was not seen in the case of cash-out refinances.

For both cash-out refinances and HELOCs, there was a large spike in spending when the cash is received by the household.

Overall, as depicted in Figure 4, for both types of equity withdrawal, there was both a significant longer-term spending response and a very sharp and large initial response.

Figure 4: For both HELOCs and cash-out refinances, there was an immediate large consumption response that quickly fell back to a steady state level that remained materially above baseline spending.



Note: Deposit account outflows do not include transfers to investment and savings accounts.

Source: JPMorgan Chase Institute

Next, we quantify the amount of total equity extracted in one year and spent in that same year. It is useful when interpreting these results to recall the differences in the amount of equity that was extracted between HELOCs and cash-out refinances. As shown in Table 1, the median amount of equity extracted for a cash-out refinance was \$46,429, which is 14.8 percent of the home's value. For HELOCs, in the year after first withdrawal, a median total amount of \$20,018 was extracted, which was 6.5 percent of the home's value. Therefore, homeowners with cash-out refinances took out much more cash than those with HELOCs but, as shown in Figure 5, these homeowners also spent a smaller fraction of the cash that they received. Figure 5 shows the MPC out of equity received

in the first year after extraction. Those with a cash-out refinance spent 33 percent of the cash received whereas those with a HELOC spent 47 percent. Taking the product of the share of home value extracted and MPC reveals that those who drew on a HELOC spent 3 percent of their home value in the first year after the draw, whereas those who cash-out refinanced spent 5 percent of home value in the first year after the refinance.

Differences between the two products may be driving these differences in our results. Since HELOCs allow the household to draw again when they need more cash, homeowners may have been only taking as much as they needed at any given time to avoid paying interest on a loan before they need it. On the other hand, cash-out

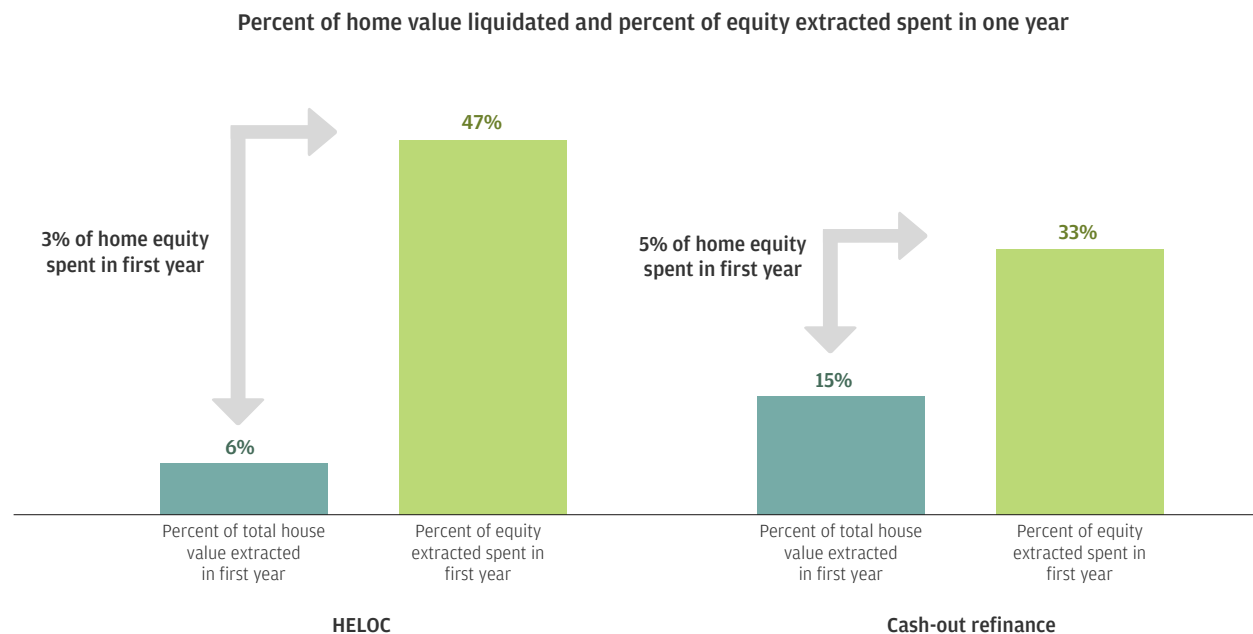
refinances are a one-time cash infusion event and so the household may have been motivated to take out much more equity. The homeowner may have been smoothing out consumption much more in the case of a cash-out refinance, so it may take several years to consume all of the cash withdrawn. Also, the decision to refinance could be very different than the decision to get a HELOC. An interest rate or monthly payment differential may have been driving the decision to refinance in the first place, so the primary goal may not have been to liquidate equity. Finally, the more adverse income trends we show in Finding 2 for HELOC homeowners may be partially responsible for the higher MPC relative to those who cash-out refinance.

While these MPCs are large enough to imply significant macroeconomic effects given the amount of home equity available to liquidate, the fact that both MPCs are less than 100 percent raises the question as to why homeowners are taking out so much money and paying interest on the loan if they do not intend to spend all of the cash. One possibility is that the cash-out refinance homeowners may be planning to spend down the

sum over a longer period of time. This, however, would not account for the HELOC population where the homeowner could have gone back for additional cash at any point in the draw period. However, recall from the summary statistics (Table 1) that the median time from origination to first withdrawal in our sample is sixty-five months, so these homeowners with a HELOC may have been getting closer to the end of their draw period

(typically ten years) and therefore have had less time to go back again for a second draw. Another possibility for both samples is that because these homeowners have so much home equity (about 45 percent LTV at the median), they want to build up a cash buffer or want to invest these funds since we do not count transfers to investments and savings accounts in our definition of consumption.

Figure 5: Homeowners who withdrew equity via a HELOC spent more of the cash received in the first year than those who cash-out refinanced.



Source: JPMorgan Chase Institute

Finding Four

The largest consumption responses for both HELOCs and cash-out refinances were from younger homeowners and those with higher loan-to-value ratios.

Next, we look at how the amount of cash that is extracted and how the consumption response varies by borrower characteristics. Consistent with the idea that younger homeowners and those with higher LTVs are more likely to be credit-constrained and lower-income, we find a larger consumption response for younger and higher LTV borrowers.

As shown in Figure 6, we see that for cash-out refinances, both the lowest LTV households and higher LTV households extracted less equity as a fraction of their home's value. For HELOCs, homeowners across the LTV spectrum liquidated a fairly consistent amount of equity and only those at the higher end of the LTV spectrum extracted less. This relationship makes sense for those with higher LTVs as these homeowners had less equity in their homes and, given that there were typically combined LTV limits on equity extraction, those at the upper end of the LTV distribution faced a more immediate constraint

on how much they can borrow. Since homeowners who cash-out refinanced were withdrawing a larger fraction of their home's value, they approached this constraint at lower LTV levels than those with HELOCs.

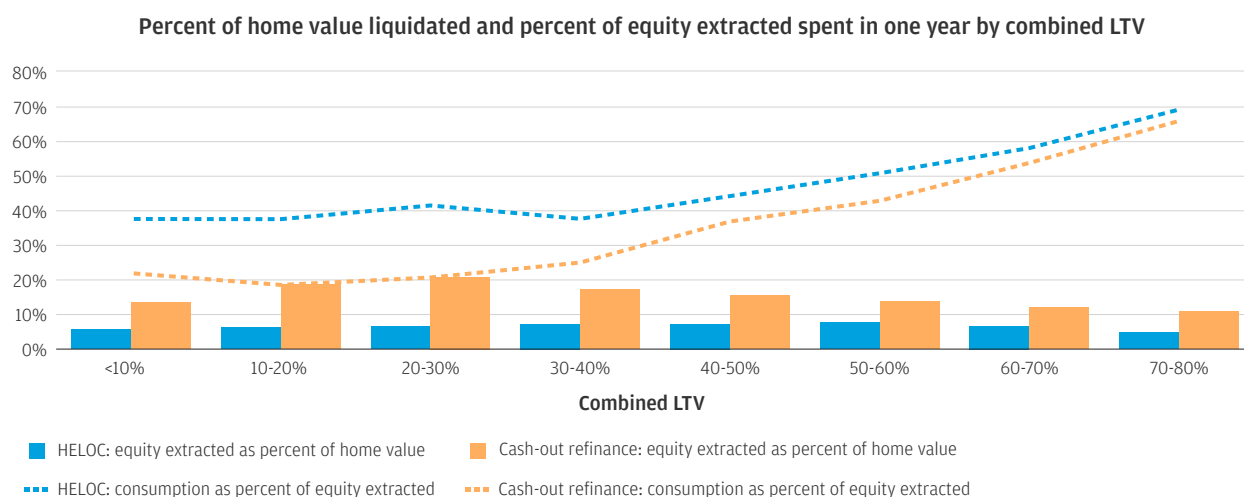
Those with higher LTVs also spent a larger share of the equity they withdrew in the first year. This pattern held for both cash-out refinances and HELOCs. For HELOCs, the MPC ranged from 38 percent at the lower end of the LTV distribution to 69 percent at the higher end of the LTV distribution. For cash-out refinances, the MPC ranged from 22 percent at the lower end to 66 percent at the higher end. These results imply that, as a percent of home value, the lowest LTV homeowners consumed the least (2.2 percent for HELOCs and 3.0 percent for cash-out refinances) and the highest LTV homeowners the most (3.3 percent for HELOCs and 7.2 percent for cash-out refinances). This relationship between spending and LTV is in line with the idea that those with higher LTVs are likely to be younger, lower-income, and more credit-constrained.

Consistent with other research (Fuster et al. 2017), our results suggest that those with higher LTVs have greater

demand to fuel consumption through home equity withdrawal than those with lower LTVs (and, therefore, more equity to extract). Indeed, low rates of equity extraction during this time period may be due to not just supply constraints (tightened credit standards after the Great Recession), but also demand factors, given that homeowners may have been less credit-constrained than in years leading up to the recession. This pattern of a lower incidence of equity withdrawal may be viewed as more financially healthy for the housing market as some concerns exist that negative equity positions (the possibility of which could be increased with home equity withdrawal) cause default. However, recent research suggests that strategic default is unlikely (Ganong and Noel 2020).²¹

Those with higher LTVs have greater demand to fuel consumption through home equity withdrawal than those with lower LTVs.

Figure 6: Those with lower LTVs extract more equity but those with higher LTVs consume more of the equity extracted.

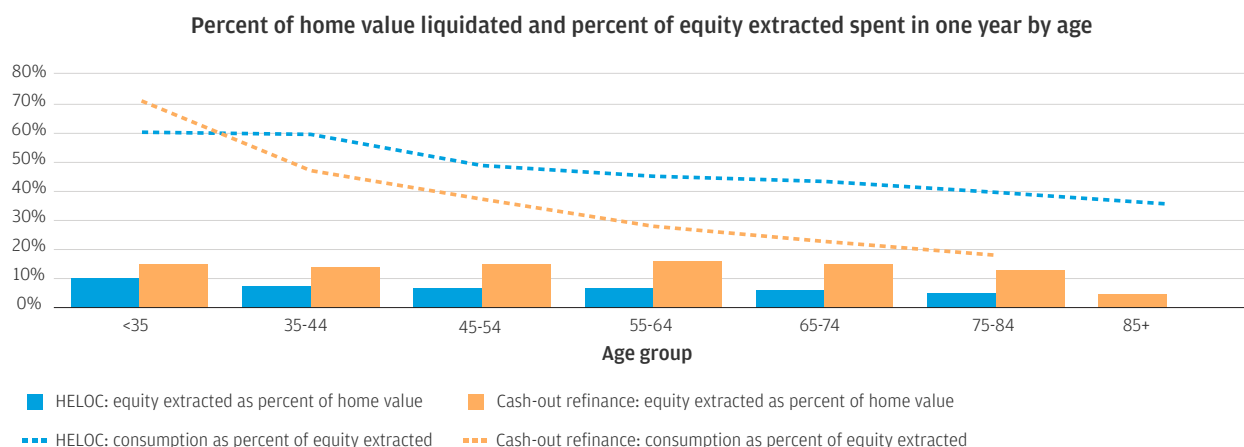


We look at these same outcomes for equity extracted and spent by homeowner age in Figure 7. The fraction of home value extracted in cash-out refinances was fairly consistent across the age spectrum. However, older homeowners were likely to have more expensive homes than the youngest, so those who were middle-aged and older were likely extracting the most in dollar terms. Among other needs, one possible use of this age group for extracted equity

could have been to fund education expenses for their children. In contrast, for HELOCs, it was the youngest who were withdrawing the most as a fraction of their home's value and the oldest who were withdrawing the least. In interpreting these results, it is important to keep in mind that the bulk of equity extraction activity was happening among older homeowners as the median age for these groups is 55 for HELOCs and 59 for cash-out refinances.

The MPC results by age are consistent with the LTV results in this finding. For both HELOCs and cash-out refinances, it was the youngest (who likely also had higher LTVs) who had the highest MPCs out of the liquidated equity extracted. Therefore, as a percent of home value, the youngest homeowners consumed the most (6.2 percent for HELOCs and 10.5 percent for cash-out refinances) and the oldest homeowners the least (1.6 percent for HELOCs and 2.4 percent for cash-out refinances).

Figure 7: For both groups, the youngest homeowners spent the largest fraction of equity extracted within one year.



Note: There was not enough sample in the 85+ group in the cash-out refinance sample to include it in our analysis.

Source: JPMorgan Chase Institute

Implications

In this report, we use de-identified loan level mortgage data linked to account level deposit account data to investigate income and consumption trends around equity extraction events, specifically cash-out refinances and a home equity line of credit (HELOC). We find that for homeowners who obtained a cash-out refinance, most refinanced into a lower interest rate and longer loan term but a higher monthly payment because of the higher loan balance. Also, after controlling for secular trends, homeowners who obtained a cash-out refinance had no change in income whereas homeowners who extracted equity via a HELOC experienced declining income. For both groups, consumption spiked considerably as soon as the liquidated equity hits bank accounts but quickly settled to steady state-levels that are 5 percent and 7 percent higher than baseline for HELOCs and cash-out refinances, respectively. After one year, homeowners who obtained a cash-out refinance spent 33 percent of their total equity extracted while those with a HELOC spent 47 percent overall—and for both sample groups, these MPCs were highest for younger homeowners and those with higher LTVs. Taken together, these findings have important implications for macroeconomic and housing policies.

Our results suggest that policies facilitating access to home equity withdrawal could have significant macroeconomic effects because the consumption response to this liquidity from home equity is large.

This underscores the importance and effectiveness of monetary policy

as transmitted through the housing wealth effect and refinancing channels. Previous JPMorgan Chase Institute research finds that the housing wealth effect is much smaller for the post-Great Recession period than for prior periods and that this difference may be attributed to a decrease in home equity extraction activity (Farrell et al. 2020). Our results and results from Mian and Sufi (2014) both point to the dependency of the housing wealth effect on homeowners borrowing against home equity in order to increase consumption in the wake of rising housing wealth. Furthermore, the refinancing channel depends on lower monthly payments and/or liquidating home equity to increase consumption. Our results shed light on the circumstances under which families tend to liquidate housing wealth and demonstrate that the consumption effects of equity extraction are large.

Importantly, many borrowers whose consumption response may be largest do not always make the decision to refinance because of frictions associated with the process (e.g., knowing that it is a good time to refinance and taking the time to do so, documentation requirements, etc.). This is especially true for those who might obtain a cash-out refinance. Keys et al. (2014) examine a large sample of U.S. homeowners in 2010 who appear able to refinance and would benefit from doing so but do not, costing the median household who fails to refinance around \$11,500 lost in savings. Abel and Fuster (2018) examine homeowners eligible to refinance through the Home Affordable Refinance (HARP) program

following the Great Recession and find that the characteristics which make one's consumption most responsive to refinancing also predicted a low probability of doing so. These findings contrast with the period during the housing market boom, when those with liquidity needs were more likely to withdrawal equity (Bhutta and Keys 2016). While these frictions may not be as relevant for homeowners who seek to refinance specifically with the motive of taking out equity, they may prevent those refinancing primarily to lower their interest rate from safely extracting equity as a by-product of doing so. Important to this point, our results in Finding 1 are consistent with lower interest rates being the motive for most homeowners who cash-out refinance (in the period studied).

Finally, the historically high levels of home equity owned by households implies that greater equity extraction could have a meaningful macroeconomic effect on consumption, should there be change to the demand and supply factors that have kept equity withdrawal low (see Farrell et al. 2020 for a discussion). Black Knight estimates that the amount of home equity that homeowners with mortgages could borrow against (while maintaining at least 20 percent equity) rose to an all-time high of \$6.5 trillion in the first quarter of 2020.²² With the Bureau of Economic Analysis measuring personal consumption expenditures for 2020 Q1 at \$14.5 trillion, our estimated one year MPCs out of equity extracted of 33 percent for cash-out refinances and 47 percent for HELOCs would imply that household liquidation of even a small

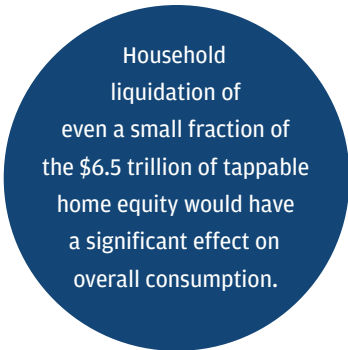
fraction of the \$6.5 trillion of tappable home equity would have a significant effect on overall consumption.

The ability to liquidate wealth from one's home may be especially important for homeowners if they hold substantial home equity but face economic uncertainty, as is the case during the COVID-19-induced recession.

Homeowners are in relatively healthy equity positions with the median LTV among mortgage holders having decreased to 59 percent in 2018 from 71 percent in 2011 (American Housing Survey). Our results here and in prior research demonstrate the importance of cash flow dynamics and liquidity for consumption. In this report, we have shown that there is a significant consumption response both in the immediate- and medium-term when households receive a large sum of cash from home equity withdrawal. In contrast, we show in previous research examining the housing wealth effect that during the recent economic expansion, homeowners increased consumption very little as their housing wealth appreciated likely because they were unwilling or unable to liquidate that housing wealth (Farrell et al. 2020). Separate prior research finds that homeowners with adjustable-rate mortgages (ARMs) increase their consumption considerably in response to interest rate resets that result in lower monthly payments (Farrell et al. 2017). Finally, our research on mortgage delinquencies shows that liquidity is an important determinant of the ability to stay current on mortgage payments—more important than income level, home equity level, or payment burden, in particular (Farrell et al. 2019).

Altogether, these results underscore the important role that continued access to home equity could play in helping homeowners to weather economic downturns, both in terms of

maintaining consumption and making debt payments. Of course, lenders must originate the products that allow for this access responsibly; similarly, borrowers must use the products responsibly. This is all the more difficult in an uncertain economic climate, especially in the current recession, for example, as provisions in the Coronavirus Aid, Relief, and Economic Security (CARES) Act passed in March 2020 restrict reporting of missed payments to credit bureaus making it even harder for lenders to evaluate borrowers.



Household liquidation of even a small fraction of the \$6.5 trillion of tappable home equity would have a significant effect on overall consumption.

In the current environment of very low and falling interest rates, refinancing has the potential to play a large role in increasing liquidity for homeowners facing COVID-related financial uncertainty. A substantial segment of homeowners are likely able to reduce their monthly payments by refinancing and, accordingly, refinancing volume has surged. Freddie Mac estimates \$400 billion (2019 inflation adjusted dollars) in single-family first lien refinances in the first quarter of 2020, which is roughly double that of the first quarter of 2019.²³ However, given the many well-documented frictions associated with refinancing, it is likely the case that some homeowners who could benefit from refinancing have not yet done so. Freddie Mac's data shows that the refinancing volume in 2020 Q1 was lower than many prior years and about one third of that in 2003 Q3. In

addition, with an extremely weak labor market that may take years to recover, many homeowners would likely benefit from using this opportunity to do a cash-out refinance given the paltry cash buffers families across the income spectrum hold in their checking and savings accounts (Farrell et al. 2019). Indeed, Black Knight data as of 2020 Q1 shows that 90 percent of households with tappable home equity (an LTV less than 80 percent) have first lien rates that are higher than current mortgage rates indicating that they had yet to take advantage of refinancing into a lower rate. Furthermore, the number and volume of cash-out refinances remained low and actually fell.²⁴

With the inherent difficulties of relying on the private sector to enable homeowners to borrow against their home equity during an economic downturn, policymakers could consider government-backed alternatives such as federally-guaranteed home equity products that allow homeowners to access the illiquid wealth in their homes to smooth their consumption in the event of income disruption. Policies such as unemployment insurance (UI) can also play a similar role in providing liquidity for homeowners, but UI requires homeowners to become unemployed; an income disruption however can affect homeowners who remain employed. As documented extensively in Institute research, high levels of volatility is a norm even in strong economic conditions such as those we have experienced over the most recent decade-long expansion and are likely exacerbated in the current environment. In addition, bringing back programs similar to the Home Affordable Refinance Program (or HARP) created after the Great Recession could help reduce frictions associated with refinancing, allowing more homeowners to take advantage of extremely low current mortgage rates.

Given the disparate impacts of the current crisis across demographic groups, more tailoring may be necessary to increase the availability and ultimately the use of these products.

The median age in our cash-out refinance sample was 55 and in our HELOC sample was 59. This is consistent with the finding in Fuster et al. (2017)²⁵ that a larger share of home equity ownership now lies with older and high credit score homeowners. In a post-Great Recession world with stricter combined LTV limits on equity extraction²⁶, this would naturally lead to a result whereby only a segment of the population who is less credit-constrained is able to liquidate housing wealth that they have built when faced with income disruptions or a particularly large expense. These considerations are important given our result that those who spend the most out of equity extracted are the youngest homeowners.

Furthermore, in the current recession, minority and lower-income households have been harder hit financially. In this case, those who could benefit the most from equity extraction are the least

likely to have equity available to extract and the least likely to have products available for use to extract any equity that they have. Public and private entities could consider housing policies that would allow greater and more equitable access to homeownership for the entire population as well as responsibly facilitate the use of home equity products. Mortgage reserve accounts (Farrell et al. 2019) are one instrument that could help to make homeownership more stable and more accessible to low-and moderate-income borrowers as well as those with less wealth (e.g., Black borrowers). Indeed, enabling a smaller homeownership gap now would mean that more Americans have the opportunity to build up housing wealth for the future.

Finally, it is important to consider that the need to access home equity may become a more necessary lifeline for families as other government support expires. As we consider what our data show about the state of household finances for different segments of the population during the early months of the COVID-19-induced recession, the need for equity extraction may

not be very high as of the time this report is being written. JPMCI data (Cox et al. 2020) show that checking account balances are rising during the early months of the pandemic as a result of government stimulus and expanded unemployment insurance benefits, coupled with a large decrease in spending. This result of increased household liquidity may be very temporary, however, especially as government support falls off. As the recession drags on, borrowing against existing high levels of home equity could become more attractive to homeowners and serve as an important mechanism to enable consumption smoothing. As one example, equity extraction could be an important lifeline for older borrowers, as there is evidence that high-income families are experiencing some wage cuts and older workers are most likely to be let go from their jobs without being rehired quickly (Cajner et al. 2020). On the other hand, as we noted above, those who are hit hardest by the current crisis—minorities and lower-income households, for example—are least likely to have home equity to extract.

Data Asset and Methodology

For this report, the JPMorgan Chase Institute assembled a de-identified data asset of Chase customers to measure how a change in housing wealth impacted consumption. In conducting this research, we went to great lengths to ensure the privacy of customer data.

Box 2: JPMC Institute—Public Data Privacy Notice

The JPMorgan Chase Institute utilizes rigorous security protocols to ensure all customer information is kept confidential and secure. Our strict protocols and standards are based on those employed by government agencies and we work with technology, data privacy, and security experts to maintain industry leading standards. There are several key steps the Institute takes to ensure customer data are safe, secure, and anonymous, including:

- Removing all unique identifiable information—including names, account numbers, addresses, dates of birth, and Social Security Numbers—before the Institute receives the data.
- Putting in place privacy protocols for researchers, including rigorous background checks and strict confidentiality agreements. Researchers are contractually obligated to use the data solely for approved research and may not re-identify any individual represented in the data.
- Disallowing the publication of any information about an individual, consumer, or business. Any data point included in any publication based on the Institute's data may only reflect aggregate information.
- Storing data on secure servers and under strict security procedures such that data cannot be exported outside of JPMorgan Chase's systems. The data are stored on systems that prevent them from being exported to other drivers or sent to outside email addresses. These systems comply with all JPMorgan Chase Information Technology Risk Management requirements for data monitoring and security.

The Institute prides itself on providing valuable insights to policymakers, businesses, and nonprofit leaders. But these insights do not come at the expense of JPMorgan Chase customer privacy or security.

Constructing our Samples

For this analysis, we use two samples of de-identified Chase customers. Using mortgage and deposit account data from October 2012 to December 2018, we identified customers who fell into one of the two following categories: (1) Chase-to-Chase

cash-out refinance homeowners and (2) homeowners with a Chase HELOC who actively draw against it.

In order to identify Chase-to-Chase cash-out refinance homeowners, we found those homeowners in our mortgage servicing data who had two loans that were adjacent to each

other in date. That is, the second loan started on the same day that the first one closed. Furthermore, to establish that the second loan is a refinance of the first loan rather than a sale followed by a new purchase, we checked that the properties associated with the two loans were in

the same zip code. Lastly, to establish that it was a cash-out refinance, we required that the starting loan size of the second loan be larger than the ending loan size of the first loan.

Chase HELOC customers were identified from mortgage servicing data based on the product type. We were able to filter for those who actively draw against their HELOC based on the balance on the HELOC.

For both of these samples, we also require that homeowners have a Chase deposit account so we can observe take-home income and consumption. Take-home income is measured using deposit account inflows and reflects the income after taxes and other payroll deductions that is deposited into one's checking account, which includes labor income, government benefits, tax refunds, capital and retirement

income, ATM deposits, check deposits, and other electronic deposits. Consumption is measured as all deposit account outflows minus transfers to investment and savings accounts.

The sample used in this report is a subsample from our report on the housing wealth effect from 2012 to 2018. Please see Farrell et al. (2020) for further descriptive statistics and comparisons to public data.

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Endnotes

- 1 Between 2003 and 2006, households withdrew \$880 billion in total home equity through cash-out refinances, HELOCs, and closed end second (CES) mortgages and equity withdrawal reached a peak in late 2006, with almost \$90 billion extracted.
- 2 According to Freddie Mac, this represents “the total increase in the principal balances of refinanced first-lien mortgages, inclusive of cash-out amounts, the consolidation of existing second mortgages or Home-Equity lines of credit into the first lien, and loan origination costs that are rolled into the principal balances. It is calculated using Freddie Mac’s estimate of prime, conventional mortgage originations volume, the refinance share of originations, and of the average increase in the principal balance from refinanced loans.” These data can be found at http://www.freddiemac.com/news/finance/refi_archives.htm.
- 3 Not all homeowners take cash out so while the first part applies to all who refinance, the second part only applies to a subset. Importantly, for homeowners who cash-out refinance, there is an interaction between these two effects because cash-out refinancing increases the loan size, which may offset some, all, or more than all of their monthly payment savings from refinancing.
- 4 From 2012 to 2018, the annual average combined volume of cash-out refinances and second liens or HELOC consolidations was \$18 billion, as reported by Freddie Mac. This muted activity, a small fraction of the \$90 billion peak, can be explained by a combination of supply and demand factors (including credit availability and homeowner characteristics) that have changed since the Great Recession, as discussed in prior JPMorgan Chase Institute research (Farrell et al. 2020).
- 5 American Housing Survey.
- 6 A homeowner could also obtain a home equity loan, a reverse mortgage, or sell their home, though we do not examine those options in this paper.
- 7 Homeowners who wish to replace their mortgage exclusively to lower their interest rate and/or monthly payment may obtain a “rate and term refinance,” for which they would not seek to increase their loan balance to a degree that would allow for residual cash to be pocketed.
- 8 [Chase](#), [Discover](#), [US Bank](#), [Bank of America](#)
- 9 <https://www.schwab.com/resource-center/insights/content/is-interest-on-heloc-still-tax-deductible#:~:text=Under%20the%20new%20law%2C%20home,the%20home%20loan%20debt%20limit.>
- 10 A conventional mortgage loan is one that is not provided through a government program (such as the Federal Housing Administration), though it could be guaranteed by a government-sponsored enterprise such as Fannie Mae or Freddie Mac. Conforming conventional loans have a maximum loan amount set by the government. For more, see: <https://www.fhfa.gov/Media/PublicAffairs/Pages/FHFA-Announces-Maximum-Conforming-Loan-Limits-for-2020.aspx>; CLTV differs from LTV in that LTV does not include the second lien but only the primary mortgage.
- 11 <https://www.consumer.ftc.gov/articles/0227-home-equity-loans-and-credit-lines>
- 12 In this sense, payments on other debt, such as credit card debt, would be considered consumption in that it is categorized along with account outflows.
- 13 Because we require a year and a half of pre-refinance data and a year of post-refinance data to look at income and consumption trends in Findings 2 through 4, refinances that occur in 2012, 2013, and 2018 would not qualify.
- 14 Freddie Mac Quarterly Refinance Statistics: <http://www.freddiemac.com/research/datasets/refinance-stats/index.page>
- 15 Federal Reserve Flow of Funds, accessed via St. Louis Fed FRED: <https://fred.stlouisfed.org/series/OEHRENWBSHNO>
- 16 See “[The Housing Wealth Effect in the Post-Great Recession Period: Evidence from Big Data](#)” for a discussion of home price and home equity appreciation during this period. From 2012 to 2018, home prices increased about 50 percent nationally.
- 17 Group C is a very small group that includes those who saw their interest rate increase and, paradoxically, monthly payment fall despite extracting equity. One potential explanation for this outcome could be a large increase in term length.
- 18 We start with a balanced panel of homeowners who are in the sample for eighteen months before and twelve months after the first (and only, in the case of cash-out refinances) incidence of equity withdrawal at $t = 0$. At the homeowner level, we regress monthly take-home income on fixed effects each event-month (the leave out group is $t = 0$) and each calendar month to control for increasing income over time.

Intuitively, this analysis compares the income of those drawing on their HELOC or doing a cash-out refinance to those engaging in those activities at different times in our study.

- 19 Unlike the income analysis, we do not use a regression framework with fixed effects because we do not observe a trend in the raw data over time. Similar to the income analysis, we do use a balanced panel of homeowners who are in the sample for the entire period and the first (and only, in the case of cash-out refinances) incidence of equity withdrawal is at $t = 0$.

- 20 For HELOCs, the liquidated equity hits the deposit account at $t = 0$, but for cash-out refinances, the liquidated equity comes at $t = 1$.

- 21 Simple strategic default describes a variety of behaviors that involve homeowners choosing to not to pay their mortgage even when they are able to do so because what they owe on their mortgage is more than what their home is worth.

- 22 <https://www.blackknightinc.com/blog-posts/tappable-equity-refi-incentive-hit-record-highs-while-cash-outs-fall/>

- 23 http://www.freddiemac.com/research/insight/20200706_refi_trends_first_quarter_2020.page

- 24 <https://www.blackknightinc.com/blog-posts/tappable-equity-refi-incentive-hit-record-highs-while-cash-outs-fall/>

- 25 <https://libertystreeteconomics.newyorkfed.org/2017/02/the-evolution-of-home-equity-ownership.html>

- 26 Cash-out refinancing is generally not available with a CLTV above 80 for conventional loans, or 85 for Federal Housing Administration loans.

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