Mortgage Credit Performance Amidst Higher Inflation

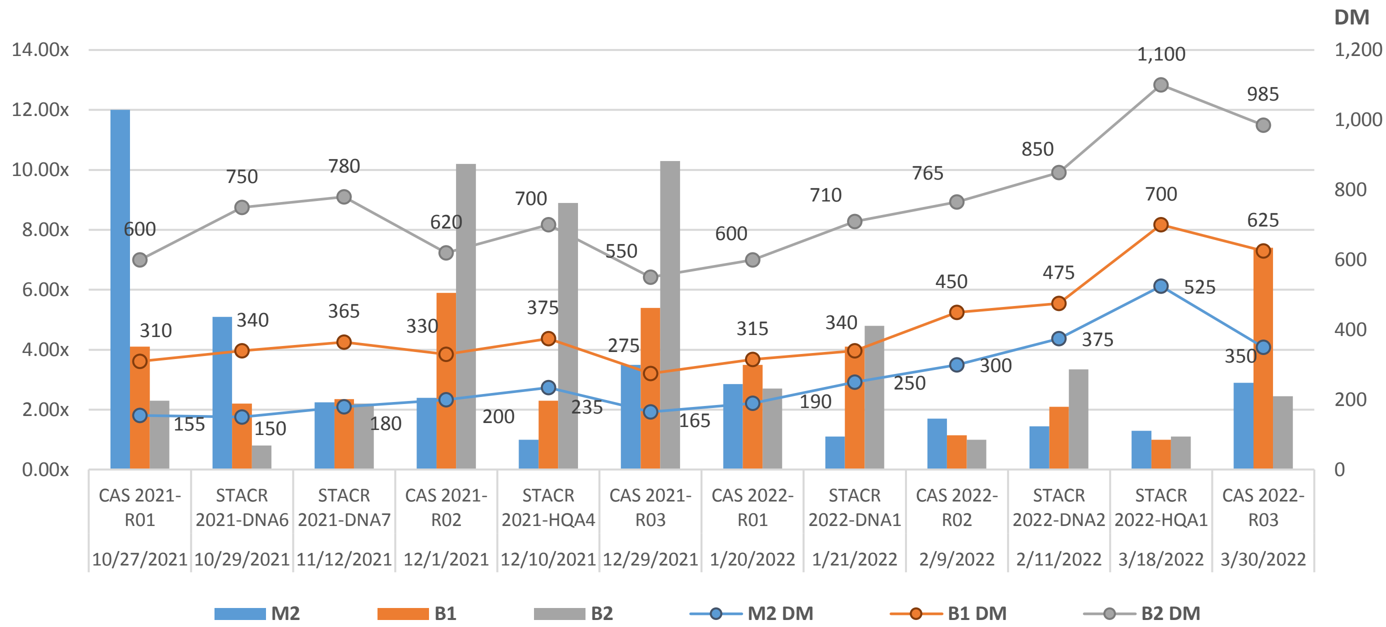
Is Higher Inflation Contributing to Recent CRT Spread Widening?

FALCONBRIDGE Capital

March 23rd , 2022

Investment Opportunity - Credit Risk Transfer Securities

Figure 1: Discount Margins increased as market jitters resulted in lower Subscription Levels (Left Axis).



A **Market "Technicals" are creating an attractive opportunity to deploy capital.**

- Increased market volatility, wider spreads and rising short-term rates, coupled with strong housing fundamentals are creating an attractive opportunity for investors looking to gain mortgage credit exposure through **Floating-Rate Credit Risk Transfer ("CRT")** debt securities issued by the U.S. Housing Agencies, Fannie Mae and Freddie Mac. **(Please reference accompanying CRT Overview for more details).**

B **Contributing Factors: Recent Spread Widening Explained**

- Uncertainties surrounding the ongoing war in Ukraine.
- Pent-up supply of deal issuances. Potential influx of product as Fannie Mae carries on with their credit transfer program following a ~24-month hiatus.
- Perception that persisting inflation may result in longer-term negative implications related to credit performance of marginal borrowers whose residual incomes are being squeezed.
- Liquidity Premium for nascent market sector.

C **Mitigating Factors: Fundamentals Remain Strong**

- **Strength of the housing and U.S. labor market.**
- **Continued supply-demand imbalances of available housing stock.**
- **Strict underwriting guidelines.**
- **Minimal risk layering**.

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Source: Freddie Mac, 1010data, Urban Institute, FBC. Note: CAS and STACR Structure differences contribute to the variance in DM levels.

➢ **The effects of inflation and rising oil prices on mortgage credit performance vary across loan characteristics.**

Credit Risk Transfer (CRT)

A The underlying fixed-rate Agency loans are well-diversified, exhibit limited risk layering and offer compensating factors that minimize credit risk.

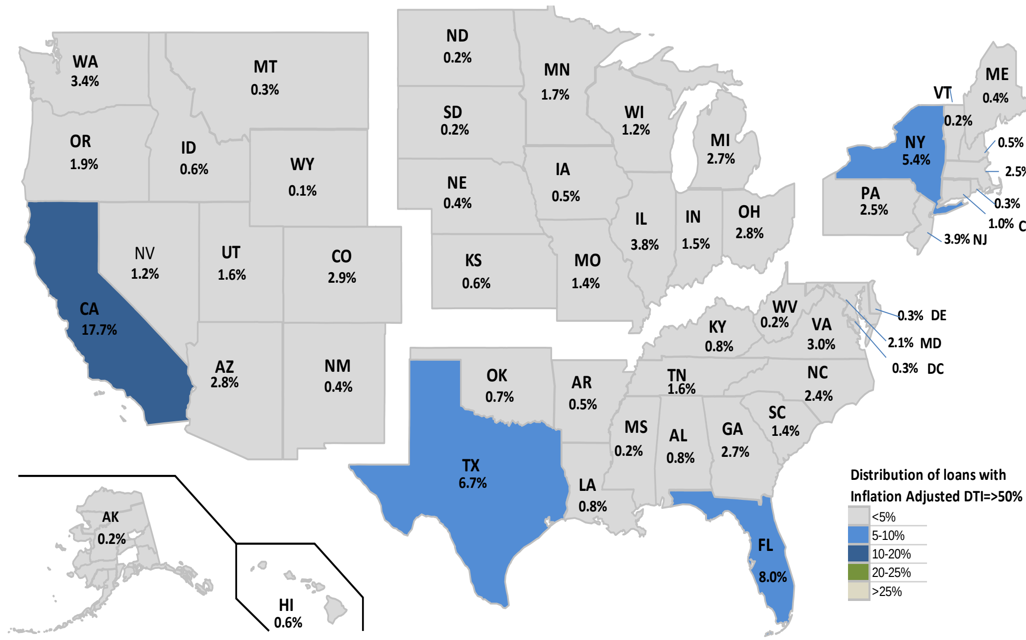
B The recent inflation shock and surging oil prices are secondary effects impacting residual incomes of most households since 100% of the underlying mortgages are fixed-rate and meet underwriting standards of the Housing Agencies that require Full Documentation.

C The impact on lower income borrowers is disproportionately greater, nonetheless.

- **We estimate that roughly 10%[1] of the borrowers in recently originated pools may fall in this category.**
  - Inflation/gas price increases are being accounted for as an immediate decrease in borrower's disposable income and treated as additional debt due immediately, thus negatively affecting the Debt-to-Income ("DTI") ratios.
  - We assume that those with Inflation Adjusted DTIs of 50% or higher are potentially at most risk as they suffer inflation inequality.

Please refer to Appendix A for more details.

Figure 2: Distribution of loans with Inflation Adjusted DTIs =>50%.



[1] Estimated Inflation Adjusted DTI Methodology/Assumptions:

- All estimates are based on the population of loans in STACR deals originated since 2018.
- Based on historical norms, housing expenses are assessed at 27% of our typical borrower's income.
- Gas prices are estimated to have increased from \$2.6 to \$4.75 (applied to ~15K miles annually, at 24 miles/gallon).
- Cumulative inflation of ~11% over past two years (applied to ~\$23K most spend annually on food, utilities, healthcare, etc.)
- Wages are estimated to have increased 5.9% (YoY change in private sector nominal average hourly earnings as of February 2022).

Source: Freddie Mac, 1010data, Urban Institute, Bureau of Labor Statistics, EPI analysis of Bureau of Labor Statistics, FBC.

Post-Crisis Underwriting Guidelines and Standards are Extremely Tight

Mitigating Factors

A It's important to note that higher DTI doesn't in and of itself mean an imminent default, however, may potentially result in added stress regarding the management outstanding debt obligations.

- As illustrated in Figure 3, historical defaults remained muted in loans with mitigating factors, including high FICO and lower LTV, even during the Great Financial Crisis.
- **Based on our estimates, only 0.39% of the recent population has Inflation Adjusted DTIs of greater than 50% and low FICO scored of <=700.**
    - **Also, wealth effect from the recent Home Price Appreciation is expected to avoid potential defaults.** Home Price Index (HPI) Adjusted LTVs average 60% for loans in this group, further supporting low default probability.

Figure 3: Actual Cumulative Default Rate (%) for Full Documentation Loans Originated in 2001-2002.

		FICO					
DTI	CLTV	>740	(700-740]	(660-700]	(620-660]	(580-620]	<=580
(0-30)	(0-68]	0	0	1	3	5	11
(0-30)	(68-78]	0	1	2	3	7	12
(0-30)	(78-82)	0	1	2	3	6	10
(0-30)	[82-90]	1	1	2	5	9	13
(0-30)	(90-95]	1	2	4	8	12	16
(0-30)	above 95	3	5	9	17	31	43
[30-40)	(0-68]	0	1	1	3	5	9
[30-40)	(68-78]	0	1	2	4	7	12
[30-40)	(78-82)	0	1	2	4	6	11
[30-40)	[82-90]	1	1	3	5	9	14
[30-40)	(90-95]	1	2	4	7	11	14
[30-40)	above 95	3	5	8	17	29	43
[40-50)	(0-68]	0	1	2	3	4	8
[40-50)	(68-78]	1	1	2	4	7	12
[40-50)	(78-82)	1	1	2	4	7	12
[40-50)	[82-90]	1	2	3	5	10	15
[40-50)	(90-95]	2	2	4	8	12	15
[40-50)	above 95	3	5	9	18	29	44
50 & above	(0-68]	0	1	1	3	5	8
50 & above	(68-78]	1	1	2	3	6	12
50 & above	(78-82)	1	1	2	4	6	8
50 & above	[82-90]	1	2	4	6	9	14
50 & above	(90-95]	2	3	5	8	14	17
50 & above	above 95	4	6	8	15	20	20

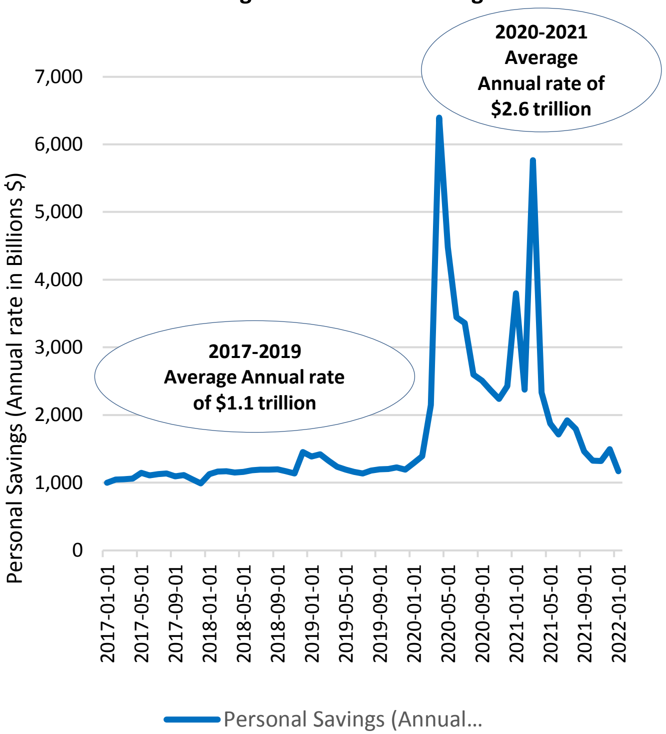
Source: Freddie Mac, 1010data, Urban Institute, FBC.

Inflation will affect savings and discretionary spending. Mortgage credit performance will remain strong.

Savings

The savings rate surged during the pandemic as a result of the federal government's aid, and as people reduced their discretionary spending. By our estimates, U.S. households accumulated approximately $2.8 trillion in excess savings[1], thus providing a cushion against high inflation.

Figure 4: Personal Savings



[1]Excess Savings – Personal Savings annual rate averaged $2.6 trillion in 2020-2021 and was, on an annual basis, ~$1.4 trillion higher relative to pre-pandemic levels. Total excess savings = $1.4 trillion annual excess * 2 (over two years) = $2.8 trillion.

Discretionary Spending

As inflation rises and interest rates increase, many are expected to cut their spending on non-essentials like restaurant meals and takeout, clothing, travel, entertainment, and durable goods. Evidence of slowdown on Durable Goods already evident in Figure 6 below.

- Mortgage interest rates are fixed for the term of the loan, and payment amounts remain unchanged as Fed continues to increase rates.
- Quality of underwriting and employment situation are key contributors to mortgage credit performance.

Figure 5: Consumer Spending Expectations

Average percent chance of household purchasing each item over the next four months.

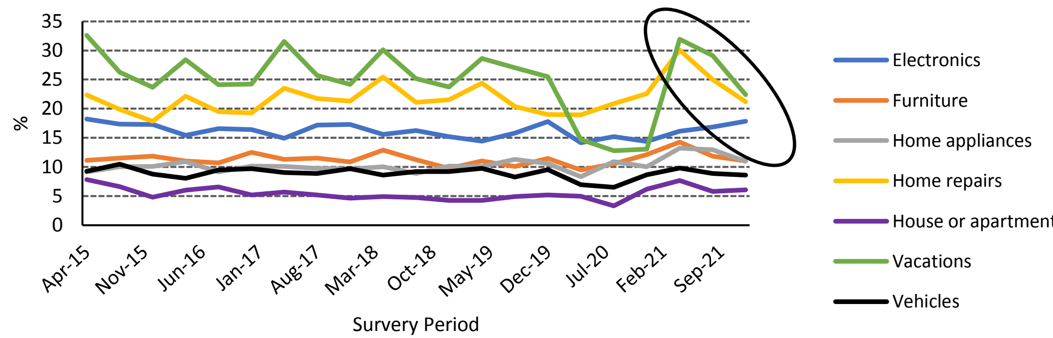
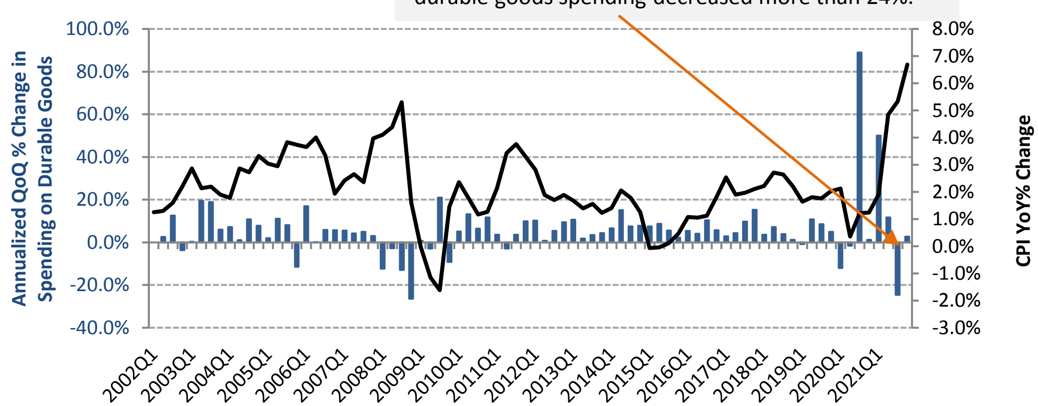


Figure 6: Durable Goods

In 2021Q3, while the inflation increased to 5.4%, durable goods spending decreased more than 24%.



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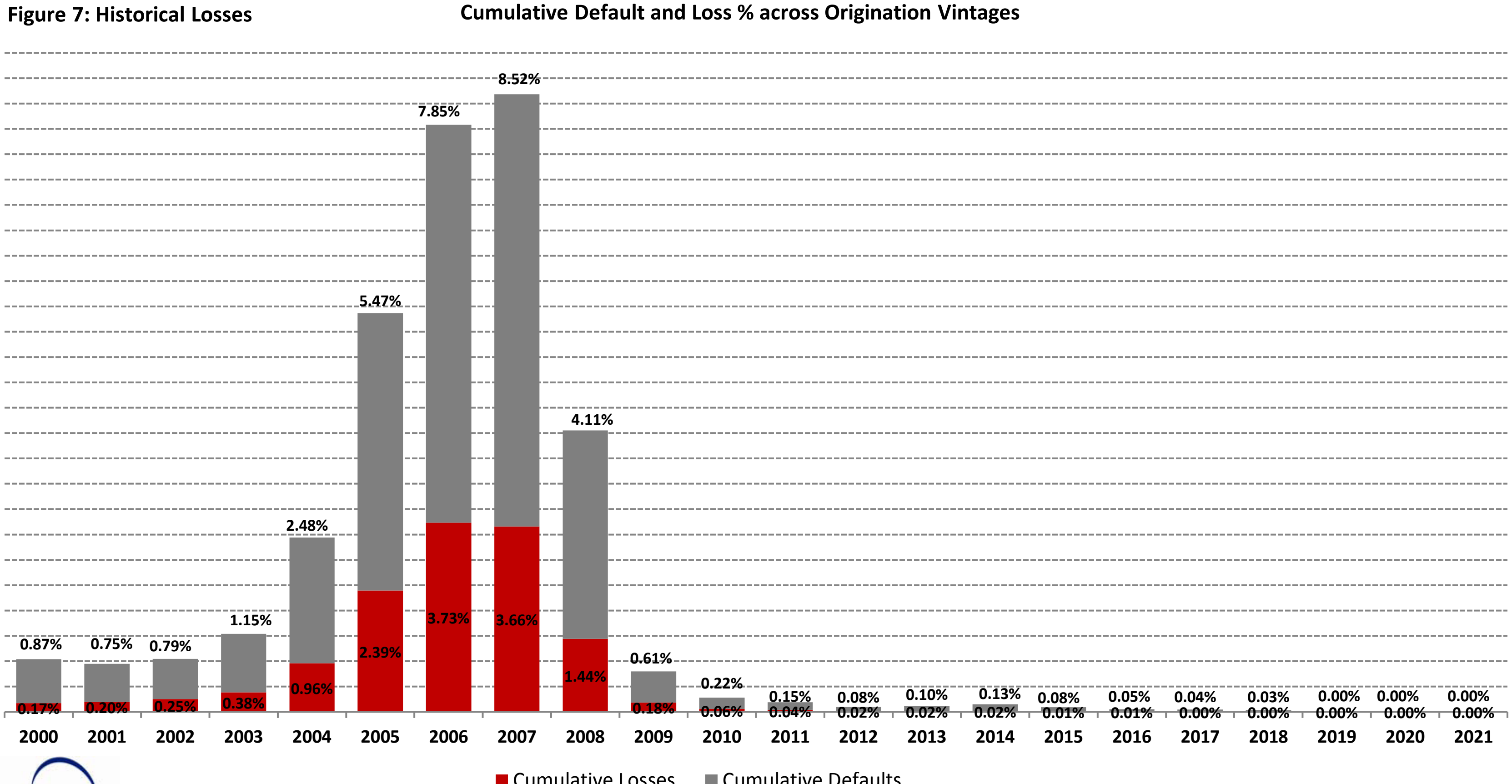
Sources: New York Fed SCE (Survey of Consumer Expectations) Household Spending Survey (Dec'21), U.S. Bureau of Economic Analysis, Federal Reserve Economic Data, FBC.

Conclusion

Inflationary pressures are expected to have minimal implications on underlying Credit Performance

- Post-Great Financial Crisis underwriting guidelines require 100% Full Doc loans.
- Strict adherence to guidelines by mortgage originators is demonstrated by the credit performance over the past decade. See Figure 7 below.
- Wealth effect due to recent home price appreciation is adding to borrower's willingness to meet mortgage obligations and avoid losing built-up equity.
- Diminution in residual income for some borrowers will result in slow down in discretionary spending.
- Standardized forbearance program in place to assist borrowers seeking payment plan restructuring will avoid any unexpected increases in defaults.

Figure 7: Historical Losses



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Sources: Fannie Mae, FBC.

Appendix A – Agency Collateral Profile

- **Negative effects of high inflation will mostly affect loans with lower balances, lower FICO and higher DTI cohorts.**
  - **Based on our estimates, approximately 10% of the pool of Agency loans originated since 2018 have Inflation Adjusted DTIs =>50%.**
  - **However, only 0.39% of the recent population has Inflation Adjusted DTIs => 50% as well as low FICOs (<=700).**

Balance Range	Fico Range	Orig. DTI Range	% Bal	WA Orig. DTI %	WA Inflation Adjusted DTI %	Est. DTI Change	Curr 60+%	Orig. LTV%	HPI Adjusted LTV%
<=100,000	<=680	<=40	0.14%	30.10	43.29	13.19	3.36	80.91	62.28
		> 40 <=45	0.05%	43.12	55.80	12.68	3.59	79.35	60.68
		> 45	0.01%	47.92	59.77	11.85	3.69	77.54	55.86
	> 680 <=720	<=40	0.25%	30.17	43.42	13.25	1.61	83.32	63.93
		> 40 <=45	0.09%	43.06	55.92	12.86	2.55	82.60	63.17
		> 45	0.03%	47.90	60.14	12.24	2.31	79.94	58.51
	> 720 <=760	<=40	0.33%	29.38	42.44	13.06	0.87	82.46	62.68
		> 40 <=45	0.10%	43.03	55.72	12.69	1.46	82.06	62.03
		> 45	0.05%	47.96	60.22	12.25	1.28	80.01	58.55
	> 760	<=40	0.56%	27.83	39.98	12.14	0.41	79.55	57.91
		> 40 <=45	0.12%	42.98	54.64	11.66	0.67	79.78	56.85
		> 45	0.08%	47.95	59.08	11.13	0.66	78.81	54.50
> 100000 <=150000	<=680	<=40	0.34%	31.45	39.84	8.39	3.09	79.68	63.18
		> 40 <=45	0.14%	43.13	51.38	8.25	3.24	79.66	62.56
		> 45	0.03%	47.87	55.67	7.80	5.13	77.30	56.79
	> 680 <=720	<=40	0.76%	31.17	39.73	8.56	1.31	82.65	65.63
		> 40 <=45	0.31%	43.11	51.54	8.43	2.37	83.11	65.51
		> 45	0.11%	47.99	56.17	8.17	2.18	80.16	61.12
	> 720 <=760	<=40	1.12%	30.21	38.84	8.63	0.70	82.40	65.32
		> 40 <=45	0.37%	43.05	51.53	8.48	1.42	83.16	65.41
		> 45	0.20%	47.95	56.27	8.33	1.48	80.76	62.19
	> 760	<=40	1.89%	28.32	36.85	8.53	0.31	79.87	62.64
		> 40 <=45	0.40%	42.97	51.32	8.35	0.57	80.79	62.57
		> 45	0.28%	47.94	56.15	8.21	0.75	79.40	60.71
> 150000 <=200000	<=680	<=40	0.45%	32.00	38.26	6.27	2.52	78.65	63.31
		> 40 <=45	0.22%	43.18	49.36	6.17	3.40	79.21	62.97
		> 45	0.04%	47.96	53.78	5.81	5.04	77.01	57.51
	> 680 <=720	<=40	1.19%	31.63	38.03	6.40	1.19	81.83	65.84
		> 40 <=45	0.53%	43.13	49.44	6.31	2.24	82.77	65.86
		> 45	0.17%	48.00	54.14	6.14	2.02	79.56	61.68
	> 720 <=760	<=40	1.91%	30.58	37.03	6.45	0.53	82.05	65.83
		> 40 <=45	0.66%	43.07	49.45	6.38	1.09	83.34	66.31
		> 45	0.35%	47.97	54.24	6.26	1.52	80.59	63.08
	> 760	<=40	3.46%	28.46	34.89	6.44	0.23	79.61	63.57
		> 40 <=45	0.74%	42.98	49.32	6.34	0.58	81.22	64.15
		> 45	0.52%	47.95	54.22	6.26	0.62	79.29	61.95

Balance range	Fico range	Orig. DTI range	% Bal	WA Orig. DTI	WA Est. DTI	Est. DTI Change	Curr 60+%	Orig. LTV	HPI Adjusted LTV
> 200,000 <=300,000	<=680	<=40	0.84%	32.31	36.78	4.47	2.35	78.43	64.15
		> 40 <=45	0.44%	43.21	47.62	4.41	3.43	79.08	63.90
		> 45	0.06%	48.03	52.13	4.10	6.71	77.00	58.09
	> 680 <=720	<=40	2.72%	31.76	36.31	4.55	1.06	81.45	66.41
		> 40 <=45	1.24%	43.13	47.63	4.49	2.03	82.48	66.61
		> 45	0.40%	47.96	52.37	4.40	2.36	79.43	62.97
	> 720 <=760	<=40	4.97%	30.63	35.22	4.59	0.46	81.86	66.61
		> 40 <=45	1.71%	43.09	47.63	4.54	1.15	83.34	67.30
		> 45	0.89%	48.01	52.49	4.48	1.18	80.53	64.21
	> 760	<=40	9.96%	28.44	33.02	4.59	0.18	79.65	64.72
		> 40 <=45	2.05%	42.98	47.51	4.53	0.52	81.60	65.69
		> 45	1.42%	47.97	52.47	4.51	0.60	79.74	63.78
> 300,000 <=500,000	<=680	<=40	0.95%	32.43	35.30	2.87	2.48	78.57	65.01
		> 40 <=45	0.57%	43.28	46.12	2.84	3.99	79.16	64.92
		> 45	0.07%	47.98	50.63	2.65	9.07	76.07	58.83
	> 680 <=720	<=40	3.62%	31.88	34.82	2.94	1.13	80.55	66.48
		> 40 <=45	1.76%	43.16	46.07	2.91	2.17	81.50	66.83
		> 45	0.58%	48.01	50.86	2.86	2.66	78.34	63.25
	> 720 <=760	<=40	7.55%	30.67	33.66	2.98	0.47	80.53	66.39
		> 40 <=45	2.62%	43.08	46.03	2.95	1.20	81.88	67.11
		> 45	1.38%	47.98	50.90	2.92	1.36	79.20	64.43
	> 760	<=40	17.12%	28.59	31.59	3.00	0.17	78.87	65.08
		> 40 <=45	3.51%	42.96	45.93	2.97	0.49	80.47	66.02
		> 45	2.45%	47.94	50.90	2.95	0.62	78.78	64.37
> 500,000	<=680	<=40	0.18%	32.45	34.40	1.96	2.04	76.13	65.61
		> 40 <=45	0.11%	43.36	45.28	1.92	3.58	76.98	65.62
		> 45	0.01%	48.07	49.87	1.79	5.22	74.50	61.50
	> 680 <=720	<=40	0.85%	32.03	34.00	1.97	1.12	78.14	66.87
		> 40 <=45	0.43%	43.19	45.13	1.94	2.53	78.91	67.17
		> 45	0.17%	48.05	49.94	1.89	2.57	76.23	64.11
	> 720 <=760	<=40	2.28%	30.96	32.93	1.97	0.55	78.22	66.62
		> 40 <=45	0.82%	43.06	45.01	1.94	1.39	79.38	67.33
		> 45	0.48%	47.99	49.91	1.92	1.47	77.25	65.32
	> 760	<=40	5.60%	29.43	31.41	1.98	0.17	77.02	65.61
		> 40 <=45	1.30%	42.97	44.90	1.94	0.58	78.22	66.47
		> 45	0.93%	47.95	49.87	1.92	0.71	76.87	65.30

Source: Freddie Mac, 1010data, FBC.

Inflationary pressures are expected to have minimal implications on Jumbo borrowers' ability to meet their debt obligations.

- Jumbo borrowers have ample cash reserves and sufficient residual income to compensate for high inflation.
- Extremely tight underwriting guidelines; collateral has minimal risk layering.

Balance Range	FICO Range	Orig. DTI Range	% Bal	WA Orig. DTI %	WA Inflation Adjusted DTI %	Est. DTI Change	Curr 60+%	Orig. LTV %	HPI Adjusted LTV %
<=1,000,000	<=700	<=40	0.00%						
		> 40 <=45	0.00%						
		> 45	0.00%						
	> 700 <=720	<=40	1.84%	31.50	32.70	1.21	0.0%	60.92	54.15
		> 40 <=45	0.73%	41.82	43.62	1.80	0.0%	59.71	50.53
		> 45	0.00%						
	> 720 <=760	<=40	8.20%	31.49	32.68	1.19	0.0%	62.34	53.96
		> 40 <=45	1.83%	41.63	43.25	1.62	0.0%	64.22	56.29
		> 45	0.00%						
	> 760	<=40	33.44%	29.86	31.02	1.16	0.0%	59.77	52.18
		> 40 <=45	3.37%	41.83	43.55	1.72	0.0%	61.47	53.46
		> 45	0.00%						
> 1,000,000 <=1,500,000	<=700	<=40	0.00%						
		> 40 <=45	0.00%						
		> 45	0.00%						
	> 700 <=720	<=40	1.22%	30.03	30.98	0.95	0.0%	59.31	56.97
		> 40 <=45	0.67%	42.14	43.48	1.34	0.0%	64.46	60.86
		> 45	0.00%						
	> 720 <=760	<=40	7.25%	30.99	31.74	0.75	0.0%	61.91	56.27
		> 40 <=45	1.62%	42.31	43.54	1.23	0.0%	62.15	57.52
		> 45	0.07%	45.00	46.49	1.49	0.0%	46.06	46.06
	> 760	<=40	25.92%	30.25	31.11	0.87	0.0%	60.98	54.77
		> 40 <=45	4.23%	41.96	43.23	1.27	0.0%	62.21	57.47
		> 45	0.15%	45.21	46.66	1.45	0.0%	45.83	45.83
> 1,500,000	<=700	<=40	0.00%						
		> 40 <=45	0.00%						
		> 45	0.00%						
	> 700 <=720	<=40	0.57%	32.76	33.24	0.48	0.0%	57.00	51.50
		> 40 <=45	0.40%	43.06	43.93	0.86	0.0%	52.88	52.88
		> 45	0.00%						
	> 720 <=760	<=40	1.28%	27.38	27.76	0.38	0.0%	57.27	51.41
		> 40 <=45	0.62%	42.83	43.75	0.92	0.0%	65.22	63.78
		> 45	0.00%						
	> 760	<=40	4.75%	27.66	28.08	0.42	0.0%	58.96	55.19
		> 40 <=45	1.83%	42.60	43.49	0.89	0.0%	58.44	56.38
		> 45	0.00%						

Source: FBC's Whole Loan Trading Program.

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