NatEquity, Inc. National Equity Access for Senior Homeowners

NatEquity Knowledge Base

NatEquity Reverse Mortgages are Unique and Ratable in Securitized Portfolios

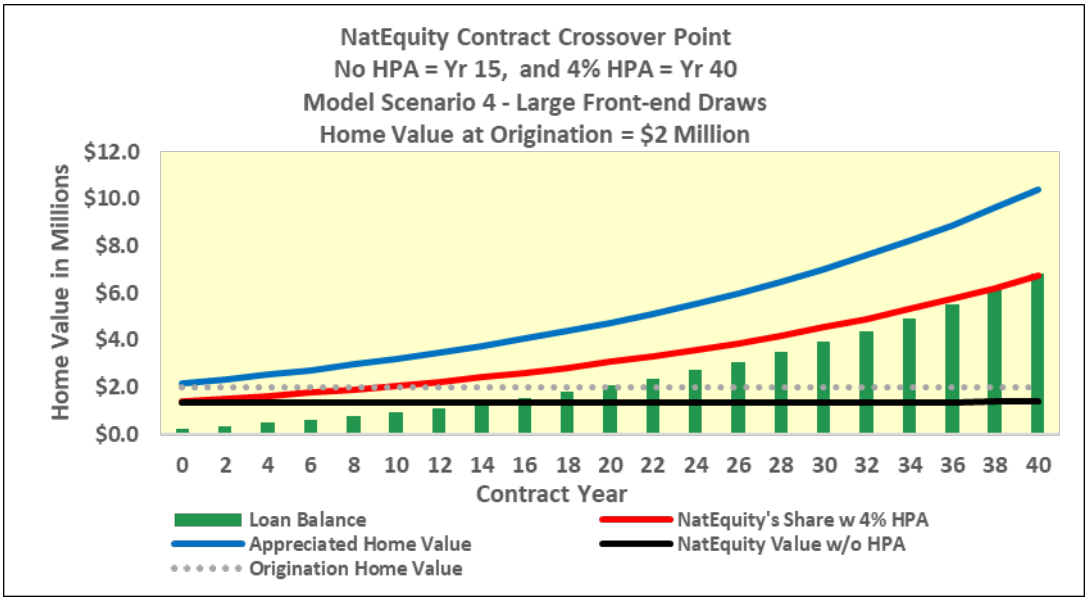
NatEquity is bringing back private jumbo reverse mortgages to unserved high value coastal California's 6 million senior households with $22 trillion of home values[i]. These equity access products address the fresh start and monthly income needs of aging in place seniors living in homes averaging $2.5 million. Retired schoolteachers and other professionals living on fixed incomes without W-2 income are not qualified borrowers except under reverse mortgage rules. The government HECM reverse mortgage program with a $1 million cap is available but not priced for the high value market. California's Prop. 13 froze their property taxes at 1978 levels until their home is sold – not something they want to do.

Except for a lapse in mortgage quality and improper portfolio pricing[ii] that led to the 2008 mortgage crisis, the mortgage market thrives because of strong underwriting due diligence and quality properties that can be securitized and sold to institutional buyers. NatEquity's private jumbo reverse mortgages differ from private products available for the last 20 years and from government guaranteed HECM reverse mortgages. The NatEquity shared appreciation loan is modeled after successful products offered by Transamerica HomeFirst from 1992-2000. Peter Mazonas, NatEquity's founder, was the founder, principal product designer and CEO of Transamerica HomeFirst. Not since the Transamerica products have private reverse mortgages qualified for investment grade ratings where rated securities were sold to institutional buyers. Today such rating is possible only by eliminating or quantifying the six key risk factors:

1. Creating a floor value for a pool of loans by applying downside protections for monies to be collected at loan maturity,
2. Having proven pricing IP and methodology to measure and price mortality to know with sufficient certainty when contracts will mature and monies will be collected in each loan,
3. Selectively originating loans in zip codes with strong prospects for continued economic growth to support consistent future home price appreciation,
4. Having a consistent and repeatable methodology that is statistically sound to continuously revalue loans and their portfolios at the present value of future predictable portfolio cash flows and lastly,
5. Uniformly underwritten loans on homes with relatively similar economic characteristics, and
6. Well maintained properties devoid of fraud that are resale ready.

NatEquity's founder has drawn upon his 35 years of experience as founder of Transamerica HomeFirst (THF) and since then to perfect the product design and methodologies to address the above four risk factors:

1. Creating a floor value is accomplished by pricing each loan with fixed rate accrued interest and placing a reasonable cap of 4% on compound cumulative home price appreciation to be collected at loan maturity. Annual compound appreciation above 4% cap is held in a reserve account to be drawn upon at contract maturity in the event cumulative HPA is less than 4%. For the last 37 years in NatEquity's coastal California market average annual HPA has been 6%+[iii] and the reserve account on all but a few loans would go to the homeowner at contact maturity. Only loans originated and maturing within the same 18-36 month flat or down cycle would be affected. The below charts show the outcomes for a single loan and aggregate contract reserve values for target zip codes after the worst down cycle (2009-2011) in recent California history.



15-Year House Price Appreciation of Targeted Bay Area and Los Angeles Zip Codes

SF Bay Area Targeted Zip Codes	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Actual Year-end Home Value	$888,143	$857,286	$831,143	$895,571	$1,016,071	$1,218,143	$1,365,000	$1,523,143	$1,567,929	$1,751,786	$1,885,714	$1,892,286	$1,936,000	$2,231,429	$2,384,143	$2,349,929
Actual Compos it HPA this Year	1%	-3%	-3%	8%	13%	20%	12%	12%	3%	12%	8%	0%	2%	15%	7%	-1.00%
1/2 Cumulative Actual HPA		-$15,429	-$28,500	$3,714	$63,964	$165,000	$238,429	$317,500	$339,893	$431,821	$498,786	$502,071	$523,929	$671,643	$748,000	$730,893
Cumulative Due NatEquity a 4%		$17,763	$36,236	$55,449	$75,429	$96,209	$117,821	$140,296	$163,671	$187,981	$213,263	$239,556	$266,901	$295,340	$324,917	$355,676
Surplus (Deficit) HPA Carried Over		-$33,191	-$64,736	-$51,734	-$11,465	$68,791	$120,608	$177,204	$176,222	$243,841	$285,523	$262,515	$257,027	$376,303	$423,083	$375,217

Los Angeles Targeted Zip Codes	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Actual Year-end Home Value	$1,281,000	$1,253,714	$1,226,429	$1,146,143	$1,282,429	$1,631,714	$1,752,286	$1,976,429	$2,215,286	$2,475,286	$2,873,714	$2,902,143	$3,242,857	$3,544,857	$3,815,815	$3,892,131
Actual Compos it HPA this Year	2%	-2%	-2%	-7%	12%	27%	7%	13%	12%	12%	16%	1%	12%	12%	8%	2%
1/2 Cumulative Actual HPA		-$13,643	-$27,286	-$67,429	$714	$175,357	$235,643	$347,714	$467,143	$597,143	$796,357	$810,571	$980,929	$1,131,929	$1,267,407	$1,305,566
Cumulative Due NatEquity a 4%		$25,620	$52,265	$79,975	$108,794	$138,766	$169,937	$202,354	$236,068	$271,131	$307,596	$345,520	$384,961	$425,980	$468,639	$513,004
Surplus (Deficit) HPA Carried Over		-$39,263	-$79,551	-$147,404	-$108,080	$36,591	$65,706	$145,360	$231,074	$326,012	$488,761	$465,051	$595,967	$705,949	$798,769	$792,561

2. Having proven pricing IP and methodology is something Peter Mazonas has been working on for 35 years. The Transamerica loan portfolios were sold to and securitized by Lehman Brothers (SASCO-RMs) using actuarial predictions to estimate when each borrower would lose between 2 and 3 "activities of daily living" (ADLs). This statistical methodology relied upon Society of Actuaries large population mortality table data known to be inaccurate on an individual level but was sufficient in 2000 to convince Moody's and Fitch to issue Aaa ratings to the SASCO-RM pools[iv] of Transamerica private jumbo reverse mortgages.

In 2009 Mazonas worked with Eric Stallard at Duke to understand Stallard's published works in predicting the trajectory of morbidity and mortality in individuals over age 65. This led to writing and validating computer code that replicated the Stallard algorithms. These algorithms use a data structuring methodology known as Longitudinal Grades of Membership (GoM) to apply machine learning pattern recognition to 76 questions that have as many as seven possible responses. Each assessment by the model draws from more than 30 million possible unique responses to questions about ADLs, instrumental ADLs, cognitive, medical and lifestyle questions. The methodology has been proven and revalidated to predict the trajectory of morbidity and mortality in individuals at a more than 96% consistent accuracy rate[vvi].

3. Selectively originating loans in zip codes with strong prospects for continued economic growth to support consistent future home price appreciation. Historic home price appreciation reflects the local and regional economy. NatEquity will target the twelve coastal counties of California which have enjoyed 4% and higher compound appreciation for the last 50 years. For the last 37 years consistent Case Shiller / CoreLogic data measures this appreciation at above 5% annually[vii]. Coastal California is the economic engine which has made California the 5th largest world economy.

4. Having a consistent and repeatable methodology. The above mortality predictive IP, known as the Longevity Cost Calculator (LCC), has been combined with 250-year-old Bayesian Inference[viii] to create a peer reviewed and published (2011) valuation methodology[ix] first presented to the SEC in 2009[x]. This methodology is at the heart of SEC Rule 2a-5, published in December 2020[xi], and effective in 2024. Rule 2a-5 requires Level 1,2 and 3 assets to be valued at the "predictable" discounted fair value of future portfolio cash flows. All real estate and mortgage products are Level 3 assets or liabilities. Non-government guaranteed reverse mortgages are Level 3 assets where the future value is dependent upon an "unobservable" / "unknowable" future event – the death and/or moveout of the homeowner(s). The word predictable has been added above because when a predicable measurement methodology is consistently applied and higher probability is demonstrated, the reporting entity can use a lower discount rate to determine the NPV, thus accreting value.

5. Uniformly underwritten loans on homes with relatively similar economic characteristics. Probability / credibility theory tells us when you have similarly underwritten contracts consistency is the key to achieving the desired credibility. Thomas Bayes hypothesized in 1750 that as you gathered more information you can infer the accuracy of your hypothesis. Longley-Cook's work on credibility theory quantified this for insurance underwriting in 1950s[xii]. Credibility theory says that when you underwrite risk in a consistent manner, the probability of being within an acceptable range increases with more units. Practicality suggests having enough units, augmented by other credibility tools, will achieve a desired

acceptable range. This degree of uniformity can be measured in the below table based on Longley-Cook (1962).

Credibility and Event Counts

Maximum Acceptable Departure from the Expected Count	Probability of Observed Count Falling Within the Acceptable Range		
	90%	95%	99%
	Minimum Required Expected Count		
+/–2.5%	4,329	6,146	**10,616**
+/–5.0%	**1,082**	1,537	2,654
+/–7.5%	481	683	1,180
+/–10%	271	384	663
+/–20%	68	**96**	166
+/–30%	30	43	74
+/–40%	17	24	41
+/–50%	**11**	15	27

Source: Based on Longley-Cook (1962).

6. Well maintained properties devoid of fraud that are resale ready. NatEquity only writes loans to responsible seniors who are borrowing to maintain the quality of their home and adds monthly cash flow for living expenses. More than 30 years ago Peter Mazonas was asked by the White House to lead a team from Transamerica to design a commercial government reverse mortgage program. The home equity conversion (HECM) program the government ultimately decided to use relied on a government guaranty to enhance user acceptance by cutting costs with the guaranty as the backstop. Over the years this resulted in a $14 billion accrued program liability[xiii] and substantial underwriting fraud[xiv]. The lack of adequate loan servicing led to 32,000 loan foreclosures in 2014[xv] and the bankruptcy of good companies under the weight of non-conforming loans[xvi].

   NatEquity's long held belief is that not making loans to seniors in despair yields quality portfolios. Up front loan advances for property improvement and continued hands-on servicing to make necessary improvements means resale ready homes continue to appreciate in value and can be sold at the highest value.

   Transamerica HomeFirst pioneered and Mazonas patented both the private monthly income reverse mortgage and the line of credit "House Money" products[xvii]. The conservative fresh start and monthly income loans outsold the "House Money" product 15:1 because it is what seniors want. Not until after the 2008 mortgage crisis and the Fed's non-QM exclusion for reverse mortgages did the "House Money" line of credit product evolve into a lump sum loan to refinance existing debt. These loans were securitized, but later product variants remain as "hold until maturity" loans in private portfolios.

In summation: if you cannot securitize loans and sell them in quality portfolios to institutional buyers - markets never grow to scale.

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[i] Based upon 2022 California Department of Finance data extracted from the 2020 U.S. Census.
[ii] *Moral Hazard and Mispricing Systemic Risk in the Lead-Up to the 2007 Subprime Mortgage Crisis in the United States*, Georgi Rusinov, University of Cambridge, 2016, Illinois Wesleyan University Press, Vol 12 | Issue 1. Print
[iii] Census track and zip code data gathered for selected communities from California Board of Realtors data and Compass Realty statistics.
[iv] Copy of SASCO RM rating at https://www.NatEquity.com/Press
[v] https://scholars.duke.edu/display/pub800091 Stallard, E., 2007. Trajectories of Morbidity, Disability, and Mortality among the U.S. Elderly Population: Evidence from the 1984-1999 NLTCS. *North American Actuarial Journal* 11(3):16–53. http://www.soa.org/library/journals/north-american-actuarial-journal/2007/july/naaj0703-2.pdf
[vi] https://www.ncbi.nlm.nih.gov/pubmed/24064468
A New Algorithm for Predicting Time to Disease Endpoints in Alzheimer's Disease Patients, Qolamreza R. Razlighi, Eric Stallard, Jason Brandt, Deborah Blacker, Marilyn Albert, Nikolas Scarmeas, Bruce Kinosian, Anatoliy I. Yashin and Yaakov Stern, Journal of Alzheimer's Disease 38 (2014) 661-668 DOI 10.3233/JAD-131142 IOS Press.
Personalized predictive modeling for patients with Alzheimer's disease using an extension of Sullivan's life table model, E. Stallard, B Kinosian and Y Stern, Alzheimer's Research & Therapy (2017) 9:75.
[vii] Based on Federal Reserve Bank of St Louis (FRED) data supplemented by zip code data compiled by Compass Realty and its predecessors.
[viiiviii] https://en.wikipedia.org/wiki/Bayesian_inference For readers not familiar with Thomas Bayes' theorem from 1750s, I recommend the New York Times Article referenced below and two recent books: *The Signal and the Noise*, Nate Silver, Penguin Press, 2012; *and The Theory That Would Not Die: How Bayes' Rule Cracked the Enigma Code, Hunted Down Russian Submarines, and Emerged Triumphant from Two Centuries of Controversy*, Sharon Bertsch McGrayne, Yale University Press, 2011. Also: *The Odds, Continually Updated*, F. D. Flam, New York Times, September 29, 2014.
[ix] http://link.springer.com/article/10.1057/gpp.2011.25 *Longevity Risk in Fair Valuing Level-Three Assets in Securitized Portfolios*, Peter Macrae Mazonas, Patrick John Eric Stallard, Lynford Graham, the Geneva Papers (2011) 36, 516-543. Doi: 10.1057 / gpp 2011.25. http://www.palgrave-journals.com/gpp/journal/v36/n4/abs/gpp201125a.html Copies available upon request.
[x] www.NatEquity.com/Press/ November 2, 2009. Washington D.C. Testimony before the SEC
[xi] *Good Faith Determination of Fair Value*, Securities and Exchange Commission, 17CFR Parts 210 and 270, 12/3/2020
[xii] For readers not familiar with credibility theory, the attached link is a readable summary: https://www.soa.org/globalassets/assets/files/resources/tables-calcs-tools/credibility-methods-life-health-pensions.pdf
[xiii] Bank Think: *FHA borrowers pay steep price to keep reverse mortgage program afloat*, Brian Chappelle, American Banker, December 12, 2017
[xiv] *HUD Policies Did Not Always Ensure That HECM Borrowers Complied with Residency Requirements*, HUD Inspector General Audit Report 2014-PH-0001, September 30, 2014
[xv] Ibid, Bank Think, American Banker, December 12, 2017.
[xvi] *Fixing the Home Equity Conversion Mortgage Program, a Fraying Lifeline for Senior Homeowners*, Lim Parrott, Laurie Goodman, and Ted Tozer, Urban Institutes, January 2023.
[xvii] View at: https://natequity.wordpress.com/wp-content/uploads/2019/07/reverse-mortgage-processing-system-us6012047-1.pdf