

WILEY FINANCE

Reverse Mortgages and Linked Securities

The Complete Guide to Risk, Pricing, and Regulation



Edited by
Vishaal B. Bhuyan
VB Bhuyan & Co.

Reverse Mortgages and Linked Securities

Founded in 1807, John Wiley & Sons is the oldest independent publishing company in the United States. With offices in North America, Europe, Australia and Asia, Wiley is globally committed to developing and marketing print and electronic products and services for our customers' professional and personal knowledge and understanding.

The Wiley Finance series contains books written specifically for finance and investment professionals as well as sophisticated individual investors and their financial advisors. Book topics range from portfolio management to e-commerce, risk management, financial engineering, valuation and financial instrument analysis, as well as much more.

For a list of available titles, please visit our Web site at www.WileyFinance.com.

Reverse Mortgages and Linked Securities

*The Complete Guide to Risk,
Pricing, and Regulation*

VISHAAL BHUYAN



WILEY

John Wiley & Sons, Inc.

Copyright © 2011 by Vishaal Bhuyan. All rights Reserved.

Published by John Wiley & Sons, Inc., Hoboken, New Jersey.

Published simultaneously in Canada.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning, or otherwise, except as permitted under Section 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or authorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923, (978) 750-8400, fax (978) 646-8600, or on the Web at www.copyright.com. Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, (201) 748-6011, fax (201) 748-6008, or online at www.wiley.com/go/permissions.

Limit of Liability/Disclaimer of Warranty: While the publisher and author have used their best efforts in preparing this book, they make no representations or warranties with respect to the accuracy or completeness of the contents of this book and specifically disclaim any implied warranties of merchantability or fitness for a particular purpose. No warranty may be created or extended by sales representatives or written sales materials. The advice and strategies contained herein may not be suitable for your situation. You should consult with a professional where appropriate. Neither the publisher nor author shall be liable for any loss of profit or any other commercial damages, including but not limited to special, incidental, consequential, or other damages.

For general information on our other products and services or for technical support, please contact our Customer Care Department within the United States at (800) 762-2974, outside the United States at (317) 572-3993 or fax (317) 572-4002.

Wiley also publishes its books in a variety of electronic formats. Some content that appears in print may not be available in electronic books. For more information about Wiley products, visit our web site at www.wiley.com.

Library of Congress Cataloging-in-Publication Data:

Bhuyan, Vishaal B., 1983-

Reverse mortgages and linked securities : the complete guide to risk, pricing, and regulation / Vishaal Bhuyan.

p. cm. — (Wiley finance series ; 577)

Includes index.

ISBN 978-0-470-58462-0 (hardback)

1. Mortgage loans, Reverse—United States. I. Title.

HG2040.15.B48 2011

332.7'22—dc22

2010023295

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

To FIFA
1999–2008

Contents

Preface	xi
Acknowledgments	xvii
List of Contributors	xix

PART ONE

Reverse Mortgage Basics	1
CHAPTER 1	
Reverse Mortgage Primer	3
Loan Disbursements	4
Overview of Lender Challenges	6
Summary	6
CHAPTER 2	
The History of Reverse Mortgages: An Insider's View	8
Formative Years	8
Private Programs	9
First Lifetime Reverse Mortgages	10
Fannie Mae Stakes a Claim to the Marketplace	12
Roots of the Securitization of Reverse Mortgages	13
Summary	15
Notes	16
CHAPTER 3	
HECM Explained: Reverse Mortgages Originated via the Home Equity Conversion Mortgage (HECM) Program	17
Legislative History and Program Fundamentals	18
Disbursing Funds and Calculating Loans and Interest	19

Changes to the Program Following the 2008 Act	21
Consumer-Focused Elements of the Program	24
Summary	26
Notes	28
PART TWO	
Underwriting and Risk Analysis	33
CHAPTER 4	
Underwriting Reverse Mortgages	35
Underwriting Life Expectancy	36
Life Settlement versus Reverse Mortgage Underwriting	37
Simplicity of the Current Reverse Mortgage	
Underwriting Process	37
Why Does Underwriting Matter?	38
Proposed Elements of Reverse Mortgage Underwriting	38
Summary	42
CHAPTER 5	
Risk Mitigation from Existing and Proposed Financial Products	43
Reverse Mortgage Risks	46
Agency versus Nonconforming Loans	48
Summary	53
Notes	54
CHAPTER 6	
Longevity Risk and Fair Value Accounting	55
Longevity Cost Calculator™ as a Loan Underwriting and Pricing Tool	61
Reverse Mortgage Loan Pricing Using the Longevity Cost Calculator	74
Existing Accounting Framework	75
Suggested GAAP-Compliant Methodology to Standardize Life Settlement Underwriting	77
Summary	78
Notes	79

CHAPTER 7**Risk Mitigation: Available Hedges and Products in
Development for Risk Transfer 81**

Hedging Crossover Components in the Capital Markets	82
Insurance Solutions	86
Summary	90
Note	90

CHAPTER 8**Criteria for Rating U.K. Reverse Mortgage-Backed Securities 91**

Overview of Reverse (Equity Release) Mortgages	91
Reverse Mortgage-Backed Securitization	92
Mortality Assumptions	93
Prepayment Assumptions	94
House Price Increase Assumptions	95
Costs and Sale Period	97
Summary	97

PART THREE**Tax Treatment 99****CHAPTER 9****U.S. Federal Income Tax Aspects of Reverse Mortgages 101**

What Is a Reverse Mortgage?	102
Deductibility of Interest Payments on Reverse Mortgages	102
Securitization of Reverse Mortgage Loans via REMIC Structures	103
Practical Observations Regarding	
Investment Reverse Mortgage REMIC Securities	105
Summary	106
Notes	107

PART FOUR**Reverse Mortgages in Context 109****CHAPTER 10****Unlocking Housing Equity in Japan 111**

Implementation in the Japanese Context	112
Feasibility of Reverse Mortgages in Japan	117

Summary	121
Notes	124
CHAPTER 11	
The Secondary Market in Home Equity Conversion Mortgages	127
The Reverse Mortgage to Liquidate Home Equity	127
HECM: A Financial Innovation	130
Cash Flows, Risk, and Uncertainty	131
The Secondary Market for HECM	132
HECM Securitization	134
Longevity Risk Embedded in HECM	137
The Constraints of the Underlying Asset	140
Concluding Remarks	145
Summary	146
APPENDIX A	
Housing Wealth Among the Elderly	149
Wealth in Housing	149
Owner-Occupancy Rates	152
How Risky Is Housing Wealth?	153
Do the Elderly Decumulate Their Housing Wealth?	155
Notes	159
APPENDIX B	
Reverse Mortgage Analytics	161
Determining the Payout Values: Practical Considerations	162
Computing Payout Values: An Example	163
Notes	165
Glossary	167
About the Author	171
About the Contributors	173
Index	181

Preface

Over the past few years, seniors and soon-to-be retirees (Baby Boomers) have lost tremendous value in their retirement plans and especially in their home values. In addition to the depreciation of assets held by this group of Americans, unprecedented amounts of leverage used to finance their daily living, automobile purchases, and children's educations, as well as to purchase primary and even secondary residences in many cases, have left a large number of older Americans on the brink of financial ruin.

The *Baby Boomers* (born between 1946 and 1960) currently comprise 26 percent of the population of the United States or roughly 78 million people. Encompassing two cohorts (people born between 1946 and 1955 make up the first cohort and the second cohort, aka "Generation Jones," is made up of people born from 1956 to 1964), the Boomer generation is one of the largest and wealthiest demographics in U.S. history. According to a study conducted by McKinsey & Company, the wealth of the Baby Boomers can be attributed to three major factors:

1. Size
2. Social change
3. Education

Clearly, the sheer size of the Baby Boomers cohort allowed them to generate more income on a collective basis, being that this generation is some 50 percent larger than the previous generation. Baby Boomers have earned an estimated \$2 trillion more (roughly \$3.7 trillion) than the previous generation had at the same age. Moreover, the Baby Boomers were the first generation to experience a much higher number of female workers, which also meant women having children at a later age and staying in the workplace for longer periods of time. Finally, the Boomer generation was one of the most educated generations to that point, which allowed them to capitalize on many economic and technological shifts.

Despite the awesome earning power of the Baby Boomers, this group of Americans is grossly undersaved. This financial unpreparedness was merely amplified by the global credit crisis; according to the Center for Economic

and Policy Research, over 18 percent of Boomers had negative equity in their homes, and Boomers ages 45 to 54 lost an estimated 45 percent of their median net worth, and those ages 55 to 65 lost roughly 38 percent.

The financially vulnerable Baby Boomers are now facing an even worse crisis, as the U.S. government borrows record amounts of debt, thus jeopardizing the Social Security, Medicare, and Medicaid programs. In the United States, Social Security and Medicare currently account for roughly 7 percent of the GDP, but within the next 25 to 30 years these programs will account for nearly 13 percent, essentially the majority of the entire federal budget as Baby Boomers move toward retirement.

The aging crisis in America, and in other developed nations such as the U.K. and of course Japan, will put tremendous strain on an already-weak federal balance sheet. In *The Age of Aging*, UBS Senior Economic Adviser, George Magnus, states:¹

The number of people aged over 60 is expected to reach one billion by 2020 and almost two billion by 2050, some 22 percent of the world's population. In Japan, this age group is expected to double to about 38 percent of the population, only a few percentage points higher than it is expected to be in China. In Europe and America it will account for about 28 percent and 21 percent respectively. And those aged over 80 are expected to account for about 4 percent of the world's population, four times as big as now.

He continues to write:

These changes in age structure are going to lead to significant changes in dependency, which in turn will have enormous economic and financial consequences. Dependency ratios are defined as the number of old or very young people as a percentage of the working age population, that is, those aged 15–64.

Most developing countries will still have falling dependency ratios for the next 20 years because youth dependency is falling, and old-age dependency isn't rising especially fast yet. Western countries, on the other hand, have completed the decline in youth dependency and now face a rapid increase in old-age dependency.

With so much uncertainty in the reliability of government-run social safety nets, many Americans (as well as Europeans and Japanese) must rely on themselves to generate sufficient supplemental income to maintain their standard of living, pay down debts, or someday retire. In many cases, Baby Boomers continue to take care of *their* retired parents and their adult

children who continue to live at home. These Kids in Parents' Pockets Eroding Retirement Savings ("KIPPERS," as coined in the U.K.), which is a phenomenon directly attributed to the success of the Baby Boom generation, are merely further strangling a financially strapped demographic that is desperately in need of liquidity.

As health-care costs rise and these Boomers realize that they cannot rely on their children or the government for financial support, they will turn to liquidating assets (that still have value) to fund their health-care and retirement costs. Currently the Boomers are the largest consumers of prescription medication in the United States. Seniors over the age of 65 spend on average \$3,899 per year on health care and Boomers will spend roughly 22 percent of the U.S. GDP over the next 10 years to meet their medical needs.

In a post-credit crisis preretirement era, however, Boomers may not have enough time or sufficient capital to earn back the losses they have incurred in their equities and real estate portfolios to budget for increases in medical expenses or retirement costs. This will give rise to one of the greatest bull markets in history—*reverse equity transactions* (i.e., reverse mortgages and the secondary market for U.S. life insurance policies).

REVERSE EQUITY TRANSACTIONS

A *life settlement* is a transaction in which a senior citizen, usually 65 years and older, sells his or her existing life insurance policy to an institutional investor, through a state-licensed intermediary known as a *provider* for more than the cash surrender value but less than the death benefit. The investor makes an offer on the policy based on the expected life expectancy of the individual. Once the transaction is complete, the investor continues to make all future premium payments until the maturity of the policy, at which point the death benefit of the policy is paid out to the investors. The legal foundation for the life settlement market was established in 1911 by Justice Oliver Wendell Holmes, who deemed life insurance an asset similar to real estate, stocks, bonds, or gold, which could be sold to a third party. Holmes wrote about life insurance: "Life insurance has become in our days one of the best recognized forms of investment and self-compelled saving." The life settlement market is currently estimated at roughly \$16 billion and is estimated to grow to roughly \$160 billion over the next few years, according to Conning Research.

Transactions such as life settlements and reverse mortgages will allow seniors to tap into equity in their homes and life insurance policies that are largely independent from traditional creditworthiness metrics such as FICO credit scores and income levels. These transactions are instead based on the

projected life expectancy of the individual(s). Simply put, the shorter the life expectancy for an individual the higher the payment she may receive for her life insurance policy or the higher the amount she may be eligible to borrow from a reverse mortgage.

Although life settlements and reverse mortgages differ in many ways, the longevity-linked asset class offers institutional investors steady returns that are largely uncorrelated to more traditional markets. Life settlements, and synthetic longevity-mortality structures, offer returns almost completely isolated from the real estate, equities, commodities, and bonds markets. Although reverse mortgage investment profits (or losses) are linked directly with the relative value of the underlying homes, the credit rating of the borrowers is not as important as in the traditional mortgage market. Therefore, a portfolio of reverse mortgages or a reverse mortgage-backed security is vulnerable mainly to longevity risk, the risk of longer-living borrowers, and home price risk. A complete list of all associated risk will be discussed in detail later in this book.

Although the concepts of life settlements and reverse mortgages have been in existence for quite some time, these transactions are now more important than ever. Over the next 5 to 10 years, the reverse mortgage will play an increasingly important role in the market for structured financial products and a strong grasp on the part of financial services firms and asset managers of longevity- and mortality-linked securities will be vital to compete in the modern marketplace.

The purpose of this introductory book is to create a foundation for understanding the mechanics of the reverse mortgage transaction (for information on life settlements and longevity finance, please reference *Life Markets: Trading Mortality and Longevity Risk with Life Settlements and Linked Securities*, also published by John Wiley & Sons). The book covers a wide array of reverse mortgage-specific topics from the history, taxation, and actuarial underwriting to the rating methodology and analysis of reverse mortgage-backed securities. Chapters are pulled from the foremost experts in their specific fields and the contributors to book are highly regarded in the longevity/mortality-linked markets.

There are four parts to *Reverse Mortgages and Linked Securities*. Part One provides the reader with a formal introduction to the asset class touching on basic concepts, the history of reverse mortgages, and a discussion of the Home Equity Conversion Mortgage (HECM), which accounts for the majority of loans in the reverse mortgage market today.

Part Two deals with the actuarial underwriting of reverse mortgages and other associated risks. As it is discussed at length in the book, reverse mortgages are actuarially dependent as opposed to credit dependent, so

understanding the various methodologies of determining life expectancy is critical. The section also discusses interest rate and housing price risks and also offers up possible risk mitigation solutions. It may be confusing as to why the chapter called “Longevity Risk and Fair Value Accounting” is in Part Two, as opposed to Part Three, but despite the title, the chapter serves in understanding the development of actuarial analysis. Part Two also includes Standard & Poor’s rating mythology for reverse mortgage–backed securities, which focuses on the risks of these assets.

Part Three establishes the tax treatment of reverse mortgage borrowers and lenders, and investors in reverse mortgage–backed securities.

Part Four puts reverse mortgages into varying contexts, first discussing the viability of the reverse mortgage product in Japan, and then comparing the economics of reverse mortgages to other products such as life settlements and home equity lines of credit.

Appendix A, “Housing Wealth among the Elderly,” is a simple discussion of the wealth possessed by seniors in the United States, Australia, and Japan.

Appendix B, “Reverse Mortgage Analytics,” provides another view on the quantitative aspects of reverse mortgages. Although the subject matter in this section is discussed in previous sections, it is isolated in this appendix for quick reference.

At the end of each chapter I provide a very brief commentary on the subject matter discussed by the contributing author. The purpose for doing this is to emphasize certain key points or offer up some further considerations and discussion points.

NOTE

1. George Magnus, *The Age of Aging: How Demographics Are Changing the Global Economy and Our World*, (Hoboken, NJ: John Wiley & Sons, 2008).

Acknowledgments

I would like to thank all of the co-authors who took the time to make highly insightful contributions to the book. Thank you again for helping to shape and nurture the *life markets*.

List of Contributors

Vishaal B. Bhuyan
Managing Director
VB Bhuyan & Co. Inc.

Micah Bloomfield
Partner
Stroock & Stroock & Lavan LLP

Chris DeSilva
Managing Partner
Risk Capital Partners, LLC

Mike Fasano
President
Fasano Associates

Kai Gilkes
Analyst
Standard & Poor's

Victoria Johnstone
Analyst
Standard & Poor's

Apea Koranteng
Analyst
Standard & Poor's

Peter Mazonas
Managing Member
Life Settlement Financial, LLC

Olivia S. Mitchell

Chair, Department of Insurance & Risk Management
The Wharton School, University of Pennsylvania

Karen Naylor

Analyst
Standard & Poor's

Nemo Pererra

Co-Founder & Principal
Risk Capital Partners, LLC

John Piggott

School of Economics
University of New South Wales

Andrea Quirk

Analyst
Standard & Poor's

Joseph R. Selvidio

Associate
Stroock & Stroock & Lavan LLP

Charles Stone

Associate Professor
Brooklyn College
City University of New York
Department of Economics

Boris Ziser

Partner
Stroock & Stroock & Lavan LLP

Anne Zissu

Professor
Citytech
City University of New York
Department of Business
The Polytechnic Institute of New York University
Department of Financial Engineering