Reverse Mortgages

Reverse Mortgages are instruments designed for older homeowners; they allow the equity in a home to be monetized. At the initiation of the reverse mortgage, a homeowner elects to take out either a lump sum payment, a fixed monthly payment for life, or can have access to a line of credit. The reverse mortgage loan must be paid in full when the last surviving borrower dies, moves, or sells the home.

Reverse mortgages take 3 forms:

1. HECM (Home Equity Conversion Mortgages), insured by the FHA
2. Fannie Mae Home Keeper Reverse Mortgages
3. Proprietary reverse mortgages

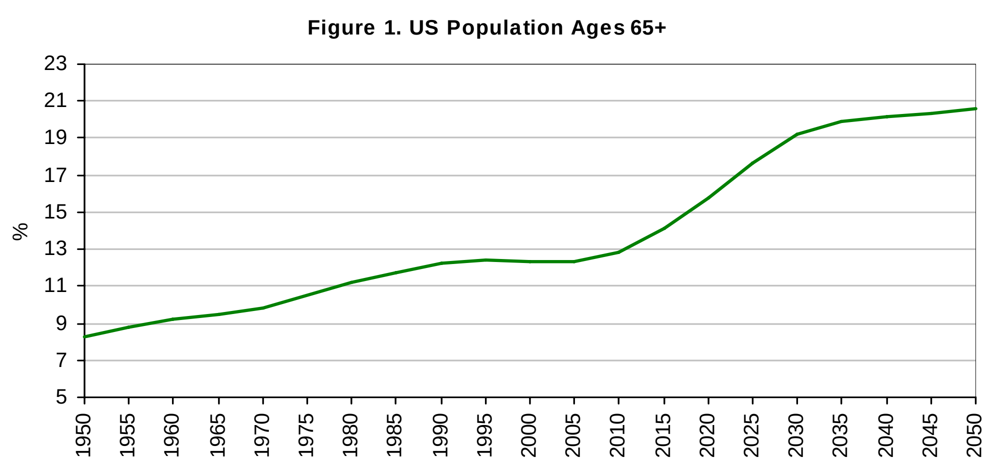
In this article, we look at the characteristics of reverse mortgages. These products, while still a very small part of the U.S. mortgage market, have shown robust growth the past 2 years. Moreover, with changing U.S. demographics, we expect their popularity to increase considerably over the next few years.

In this article, we first take a quick look at U.S. demographics. We then go into the characteristics of reserve mortgages. Finally, we review the three types of reverse mortgage programs, emphasizing the HECM product insured by the FHA (since more than 90% of total origination to-date has been in that product).

Demographics

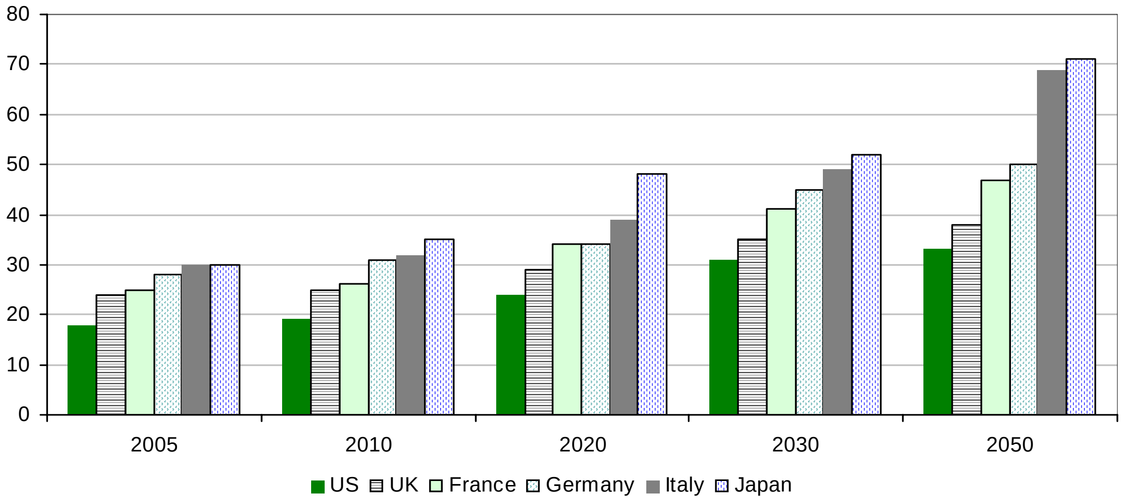
There is no question that reverse mortgages should command far more focus than they have. Their market potential is strongly on the upswing. To take out a reverse mortgage, a borrower must be 62 years of age or older. And the oldest of the baby boomers reach age 62 in 2008.

It is easy to quantify that as the baby boom generation moves toward the geriatric ward, it will cause a large shift in the % of the U.S. population over age 65. Figure 1 (at right) shows that over the last 25 years (from 1980 to 2005), the % of the U.S. population aged 65 and older has expanded from 11.2% to 12.3%. It will be 14.1% in 2015, 17.7% in 2025 and 19.2% in 2030.



And as our colleague George Magnus shows in a very interesting UBS Investment Research Study "How Are Demographics Changing the Global Economy" (April 6, 2006) - - the aging of the population is very common across the globe. Figure 2 (next page) shows "old age dependency" ratios—that is, the % of the population over 65 as a % of the working population. Note that in the U.S., the old age dependency ratio will rise from 18% in 2005 to 31% in 2030. Other industrialized countries will exhibit similar rises (from 24 to 35% in the UK, 25 to 41% in France, 28 to 45% in Germany, 30 to 49% in Italy and 30 to

Figure 2. Old Age Dependency (over 65's as % of labor force)



52% in Japan). What makes the U.S. unique is that (quoting Magnus' report, page 35):

> *"American has one of the-if not the–most expensive healthcare systems in the world. U.S. spending on healthcare is about two times as much per person as in the whole of the OECD on average, but despite this, life expectancy is not higher than elsewhere."*

With the aging of the U.S. population, we would expect products, such as reverse mortgages, designed for the over 65 crowd, to become ever more popular. Moreover, with the increasing "old age dependency ratio", it is reasonable to expect changes in Medicare and Social Security such that older individuals have even more reason to tap into the accumulated equity in their homes in the years ahead.

How Does A Reverse Mortgage Work?

In a reverse mortgage, the homeowner receives cash, either as an up-front payment, as a monthly payment, or as a line of credit. That money is not taxable (technically it is considered a loan advance, not income), and can be used to live on. It does not impact Medicare or Social Security Benefits. It *could* potentially impact Medicaid benefits. The loan amount will depend on the age of the borrower (younger borrowers receive less money), the appraised home value, current interest rates, and the lending limit in a particular area, if applicable. The mortgages can be prepaid at any time.

Reverse mortgage loans are generally payable in full when the last surviving borrower dies or sells the home. The mortgage may also come due if the borrower moves (first 2 bullets) or defaults (second two bullets). If:

- the borrower permanently moves to a new principal residence
- the last surviving borrower fails to live in the home for 12 months in a row due to physical or mental illness
- the property deteriorates, except for reasonable wear and tear, and the borrower fails to correct the problem
- the borrower fails to pay property taxes or hazard insurance, or violate any other borrower obligation.

A simplified example, shown in Table 1 (next page) will make this more clear. A 75 year-old borrower has taken out a reverse mortgage. Assume the house is now worth $250,000, the borrower has $200,000 of equity and a mortgage for $50,000. This simplified example neglects up-front fees, mortgage insurance (when applicable), assumes a fixed interest rate (when interest rates on this product are gener-

Table 1. Reverse Mortgages: A Simple Example

Borrower Age: 75 years old
Recent Appraised Home Value: $250,000
Mortgage: $50,000
Equity: $200,000
Estimated Annual HPA: 5%
Estimated Annual Interest Rate on Loan: 7% (.5654% per month)

Option 1: Lump Sum Payment
Loan Amount $144,590
Cash Available: $94,590

Option 2: Monthly Payments
Monthly Loan Payment (without lien) $1021
Monthly Payment (after lien paydown) $668

	Borrower Chooses Option 1: Dies at 80	Borrower Chooses Option 1: Dies at 90
Proceeds from Sale of House: 5% HPA	319,070 = 250,000 x [(1.05)^5]	519,732 = 250,000 x [(1.05)^15]
Less: Accreted Value of Loan at time of death	202,793= 144,590 x [(1.005654)^60]	398,917= 144,590 x [(1.005654)^180]
Money Back to Estate	116,277	120,815
	Borrower Chooses Option 2: Dies at 80	**Borrower Chooses Option 2: Dies at 90**
Proceeds from Sale of House: 5% HPA	319,070 = 250,000 x [(1.05)^5]	519,732 = 250,000 x [(1.05)^15]
Less: Accreted Value of $50,000 loan (to pay off 1st lien)	70,126 = 50,000 x [(1.005654)^60]	137,947= 50,000 x [(1.005654)^180]
Less: Future Value of Monthly Payments @ $668/month	47,828	208,990
Money Back to Estate	201,116	172,795

ally variable), and gives the borrower a choice of only two payment options: taking the cash all up-front or taking the cash in the form of a monthly payment upfront. If the borrower chooses to take out a payment up-front in lump sum form (Option #1), then based on age, value of home and interest rate, the maximum amount that can be received up-front is $144,590. He must then apply $50,000 to pay down the first mortgage. That frees the borrower from making further interest payments on the mortgage, and leaves him with $94,590 of cash. By contrast, if the borrower chooses monthly payment option (Option #2), the mortgage will be paid off, and the borrower will receive a monthly payment of $668. [*NOTE*: If there was no first lien, the borrower would have received $1021 per month.]

Table 1 first looks at the case in which the borrower elects to take Option #1, the up-front payment, and dies at 80, exactly 5 years (60 months) after taking out the loan. We assume the house has appreciated by 5% per annum, and is now worth $319,070. The loan ($144,590) must be repaid with interest. Assuming an annual interest rate of 7% (equivalent to a monthly rate of 0.5654%), the estate must repay $202,793 (144,590 x ((1.005654)^60)). Thus, the $116,277 difference ($310,070 house value – $202,793 loan repayment) flows back to the estate. The far right section of Table 1 shows the scenario in which the borrower elects to take the up-front payment, and dies at age 90, exactly 15 years (180 months) after taking out the reverse mortgage. We assume the value of the house is $519,732, (reflecting 15 years of 5% home price appreciation) and the accreted value of the loan is $398.917. Thus, $120,815 reverts to the estate.

Now let us consider the case in which the borrower elects the monthly payment option (Option #2). The borrower must take $50,000 up-front in order to pay off the first lien. Given the borrower's age, appraised home value, interest rate, *etc*., our borrower can receive a payment of $668 per month. Thus, when the borrower dies, both the accreted value of the loans plus the future value of the monthly payments must be subtracted from the terminal value of the property. If the borrower dies at 80, exactly 60 months after the mortgage was taken out, he would owe $47,828, the future value of 5 years (60 months) of monthly payments, plus an accreted loan amount of $70,126 (on the original $50,000 loan). Thus, $201,116 reverts back to the estate ($319,070 from the sale of the house - $70,126 to pay back the cash lien - $47,828, the future value of the monthly payment stream). If the borrower dies at 90, the value of the property would be higher, but the future value of the original $50,000 loan would be higher, and a lot more monthly payments have been made to the borrower. Under these circumstances, Table 1 shows the estate is then left with $172,795.

Programs

There are 3 basic types of reverse mortgage programs:

1. Home Equity Conversion (or HECM) Mortgages
2. Fannie Mae Home Keeper (FMHK) Mortgages
3. proprietary reverse mortgage products

The HECM Program

The HECM program is offered by the Federal Housing Administration (FHA) a division of the Department of Housing and Urban Development, and all HECM mortgages are FHA-insured. This is the by far the largest of the reverse mortgage programs, and has experienced very robust growth, as can be seen in Table 2 (at right). In fiscal year 2003, there were only 18,097 reverse mortgage loans endorsed. This number doubled to 37,829 loans in fiscal year 2004, and 43,131 in fiscal year 2005. For the first half of fiscal year 2006 (October 2005-March 2006), loan endorsements are 33,191, suggesting volume of 66,000 for the full year.

Table 2. HECM Loans Endorsed

Fiscal Year	# of Loans Endorsed
2001	7,781
2002	13,049
2003	18,097
2004	37,829
2005	43,131
2006*	33,191

*1st half through March.

To be eligible for a HECM loan, a borrower must be aged 62 or over and live in the home as a principal residence. Empirically, we find that most of the borrowers that take out HECM loans are considerably older than the minimum age. Table 3 (at right) shows that the largest single borrower concentration of age at origination is in the 76-80 year old group. In fact, borrowers aged 71-85 comprise 68% of the HECM loan recipients. This data should be viewed as indicative, not comprehensive. It was provided to UBS by a major originator of HECM products, and captures a sample of the loans made by this originator.

Table 3. HECM Borrower Age

Borrower Age	%
61 - 65	3
66 - 70	14
71 - 75	22
76 - 80	25
81 - 85	21
86 - 90	10
91 - 95	3
>96	1
Total	100

The home must be a single-family residence in a 1- to 4-unit dwelling, a condominium, or part of a planned unit development (PUD). Some manufactured housing is eligible. Table 4 (at right) shows the property type breakdown of HECM loans (data again provided by one major originator). Note that 84% are single family properties, while another 9% are condominiums.

Table 4. HECM Property Type Breakdown

Property Type	%
Single Family	84
Condomimium	9
Pud Detached	3
Two Family	2
Manufactured Housing	<1
Townhouse	<1
Three Family	<1
Four Family	<1
Total	100

Payment Options

A HECM mortgage can be taken out in any of the following forms:

- *Tenure* - Equal monthly payments as long as at least 1 borrower lives and continues to occupy the property as a principal residence
- *Term* - Equal monthly payments for a fixed number of months selected.
- *Line of Credit* - Unscheduled payments or installments, drawn down at times and in amounts of the borrower's choosing until the line is exhausted. This line will grow over time.
- *Modified Tenure* - Combination of line of credit *and* monthly payments for as long as the borrower remains in the home
- *Modified Term* - Combination of a line of credit *and* monthly payments for a fixed period.

The up-front payment, regardless of purpose (to pay off a first lien, or take a vacation) is considered to be a part of the line of credit. Table 5 (at right) shows the product breakdown for a major originator of HECMs; over 80% of HECM borrowers selected a line of credit, while 13% selected either tenure or modified tenure. In our simplified example in Table 1, we wanted to show deterministically how the reverse mortgage would impact the estate. Thus, we included only 2 options: a line of credit in which the amount was drawn down immediately, and a modified tenure, in which the up-front payment was used to pay off the first lien. *In reality, borrowers have far more flexibility than we indicated in our example.*

Table 5. HECM Product Breakdown

Product	%	WAC
Line of credit	81	5.68
Tenure	8	5.77
Modified Tenure	5	5.72
Modified Term	5	5.66
Term	2	5.76
Total	100	5.69

Under the conditions of a reverse mortgage, when the house is sold, or no longer used a primary residence, the borrower or their heirs will repay the drawn portion of the credit line (or monthly payments) plus interest to the lender. The remaining value of the house belongs to the estate. It is possible that home price appreciation might be low enough, and the borrower might live long enough, that the price of the house is less than the accreted value of the outstanding loans. For example, assume in Table 1 that our 75 year-old borrower selected Option 2, receiving a $50,000 up-front payment to cover the first lien, and additional payments of $668 per month. If that borrower died at 90, he would owe $346,937 ($137,947 from the up-front loan and $208,990 from the monthly payments). If the house value had appreciated 2% per annum (rather than the 5% we assumed in Table 1), the appreciated house value would be $336,467, or approximately $10,500 less than the amount due on the reverse mortgage. From on investor's point of view, this is not an issue: Government insurance would cover this, as the loans are FHA insured. From a borrower's point of view, it is also not a concern, as the loans are non-recourse.

The interest rate on the HECM loan is generally reset either monthly or annually, based on [1-year CMT + a margin]. Table 6 (at right) shows the distribution of these margins for a major originator of HECMs. The weighted average margin is 1.51% over the index. For 96% of the loans, the margin is in the range of 1.00-1.50%.

Table 6. HECM Margin Distribution

Margin(%)	%	WAC
1.001 - 1.500	96	5.68
1.501 - 2.000	0	5.55
2.001 - 2.500	4	5.74
3.001 - 3.500	0	7.09
Total	100	5.69
Minimum	1.05%	
Maximum	3.10%	
Weighted Average	1.51%	

In addition to the interest expense, the borrower must pay a Mortgage Insurance Premium (MIP) for the FHA insurance. This premium is equal to [2% of the up-front amount + an annual premium equal to 0.5% of the loan amount]. The mortgage insurance premium is meant to guarantee that if the loan servicer goes bankrupt, the government will step in and make future payments. The MIP also guarantees that if there is any shortfall between sales price and repayment amount, the government will make up the difference. In addition to the MIP, reverse mortgages also carry *application fees*, *origination fees*, and often a *monthly servicing fee*. These charges are generally paid by the reverse mortgage, and the costs are added to the principal and paid at the end, when the loan is due.

How Much Can Be Borrowed?

The amount that can be borrowed depends on a borrower's age, the current interest rate, and the appraised value of the home. Moreover, the maximum size of a HECM mortgage will depend on the maximum HUD loan limit. This varies by county, and is adjusted annually. Currently, the maximum is $362,790 for single family homes in high cost areas and $200,160 for rural areas. That is, the limit in high cost areas is 87% of the conventional limit of $417,000. It is 48% of the conventional limit in low cost areas. The implications of these limits are clear—if two borrowers of the same age applied for a loan at the same time, one with a home value of $362,790 and another with a home value of $1,000,000, they would both receive exactly the same HECM loan. When there is more than one borrower, the loan amount in a HECM mortgage is determined solely by the age of the younger borrower.

Table 7 (top, next page) illustrates the amount that can be drawn out under the HECM program. These calculations assume the home is located in a high cost area, and were computed using the calculator that can be found on the Wells Fargo website *www.wellsrm.com*. (Wells Fargo is a major originator of reverse mortgages). Thus, if a home was appraised for $250,000, a 65 year-old borrower would have a credit line available for $116,568; the credit line would be $144,590 if the borrower were 75, and $174,894 if the borrower were 85. Similarly, if the tenure option was selected, a 65 year-old borrower would receive $744/month, a 75 year-old borrower would receive $1021/month, and an 85 year-old borrower would receive $1568/month. If the home appraised for $1,000,000, the FHA loan limits would be binding, limiting the amount the borrower could receive. Thus, a 65 year-old borrower would have a credit line of $172,286, which is only 46% higher than that available on a $250,000 home.

Fannie Mae Home Keeper

The Fannie Mae Home Keeper Mortgage Program is Fannie Mae's conventional market alternative to the HECM product. It works much like a HECM; the borrower can receive fixed monthly payment for life (*i.e.*, for as long as the borrower occupies the home as his/her principal residence), a line of credit, or any combination of monthly payments or a line of credit. However, the Fannie Mae Home Keeper can be used for a broader array of alternatives, including condominiums that are not FHA-approved and new home purchases. The latter is particularly important, as HECM Mortgages require that borrowers have been in their home for at least a year. Let us assume a 75 year-old man wants to sell his home in Philadelphia, with a value of $150,000, and buy a $200,000 home in Florida. To avoid a mortgage

Table 7. HECM Reverse Mortgage Options

City/State:	**Montclair, NJ**
County:	**Essex**
Home Value:	**$ 250,000**
Liens:	**0**

	Birth Year	**1944**	**1941**	**1936**	**1931**	**1926**	**1921**	**1916**
	Age	**62**	**65**	**70**	**75**	**80**	**85**	**90**
1	Cash Available	108,971	116,568	130,034	144,590	159,775	174,894	189,273
	Loan-to-Value	43.6%	46.6%	52.0%	57.8%	63.9%	70.0%	75.7%
2	Monthly Income Available	684	744	864	1,021	1,236	1,568	2,190
3	Line of Credit:							
	Creditline Available	108,971	116,568	130,034	144,590	159,775	174,894	189,273
	Annualized Growth Rate	7.22%	7.22%	7.22%	7.22%	7.22%	7.22%	7.22%
	Creditline Value In 5 Years	154,403	165,168	184,247	204,873	226,389	247,811	268,185
	Creditline Value In 10 Years	218,777	234,030	261,064	290,288	320,775	351,129	379,997

City/State:	**Montclair, NJ**
County:	**Essex**
Home Value:	**$ 1,000,000**
Liens:	**0**

	Birth Year	**1944**	**1941**	**1936**	**1931**	**1926**	**1921**	**1916**
	Age	**62**	**65**	**70**	**75**	**80**	**85**	**90**
1	Cash Available	161,305	172,286	191,730	212,715	234,555	256,216	276,686
	Loan-to-Value	16.1%	17.2%	19.2%	21.3%	23.5%	25.6%	27.7%
2	Monthly Income Available	1,012	1,100	1,275	1,501	1,815	2,297	3,201
3	Line of Credit:							
	Creditline Available	161,305	172,286	191,730	212,715	234,555	256,216	276,686
	Annualized Growth Rate	7.22%	7.22%	7.22%	7.22%	7.22%	7.22%	7.22%
	Creditline Value In 5 Years	228,557	244,116	271,666	301,401	332,346	363,037	392,042
	Creditline Value In 10 Years	323,847	345,893	384,929	427,061	470,908	514,395	555,492

payment on the new home (as the borrower's income is very limited), the borrower would have to use the entire $150,000 proceeds from the sale of the Philadelphia home, plus another $50,000 in savings. If the borrower does *not* have the $50,000, he could *not* buy the new home (unless he qualifies for and is able to obtain a regular mortgage). But the borrower could seek an FMHK reverse mortgage, which can be used to bridge the $50,000 difference.

Note that even though the loan limits are higher for Fannie Mae programs than the FHA programs, the amount that can be drawn out under the Fannie Mae Home Keeper Program is usually *less* than what can be drawn out under the HECM program. This is illustrated in Table 8 (top, next page). A 65 year-old borrower with a home worth $250,000 could draw out $116,568 under the HECM program, while the Fannie Mae HomeKeeper would only allow $42,817. These numbers were again obtained using the financial calculator on *www.wellsrm.com*.

The interest rate on the Home Keeper mortgage is determined as a spread above an index rate—the current weekly average of the 1-month secondary market CD rate, which is published by the Federal Reserve. The rate on the Fannie Mae Home Keeper mortgages adjusts monthly.

Proprietary Products

There are a number of lenders that offer proprietary mortgage products. As on the HECM and FMHK products, the interest rates are variable. These proprietary products generally build in additional protections to make sure the accreted value of the loans will not be higher than the home value. *First*, these proprietary products do not have a tenure option, as the lenders are unwilling to absorb

Table 8. Program Comparison

	Home Value:	$ 250,000			$ 250,000		
	Birth Year	1941			1921		
	Age	65			85		
		FHA/HUD Monthly	Fannie Mae HomeKeeper	Proprietary Reverse Mortgage Program	FHA/HUD Monthly	Fannie Mae HomeKeeper	Proprietary Reverse Mortgage Program
1	Cash Available	116,568	42,817	42,709	174,894	136,990	115,734
	Loan-to-Value	46.6%	17.1%	17.1%	70.0%	54.8%	46.3%
2	Monthly Income Available	744	336	N/A	1,568	1,334	N/A
3	Line of Credit:						
	Creditline Available	116,568	42,817	42,709	174,894	136,990	115,734
	Annualized Growth Rate	7.22%	N/A	5.00%	7.22%	N/A	5.00%
	Creditline Value In 5 Years	165,168	42,817	54,508	247,811	136,990	147,709
	Creditline Value In 10 Years	234,030	42,817	69,568	351,129	136,990	188,518

	Home Value:	$1,000,000			$ 1,000,000		
	Birth Year	1941			1921		
	Age	65			85		
		FHA/HUD Monthly	Fannie Mae HomeKeeper	Proprietary Reverse Mortgage Program	FHA/HUD Monthly	Fannie Mae HomeKeeper	Proprietary Reverse Mortgage Program
1	Cash Available	172,286	74,901	178,134	256,216	231,524	470,234
	Loan-to-Value	17.2%	7.5%	17.8%	25.6%	23.2%	47.0%
2	Monthly Income Available	1,100	587	N/A	2,297	2,255	N/A
3	Line of Credit:						
	Creditline Available	172,286	74,901	178,134	256,216	231,524	470,234
	Annualized Growth Rate	7.22%	N/A	5.00%	7.22%	N/A	5.00%
	Creditline Value In 5 Years	244,116	74,901	227,349	363,037	231,524	600,151
	Creditline Value In 10 Years	345,893	74,901	290,161	514,395	231,524	765,961

the risk that the borrower will live long enough that total payments may be higher than the value of the house. *Second*, the growth rate on the line of credit may be freely altered by the lender. These protections are important to the investor, as there is no government guarantee on these loans.

From the borrower's perspective, the big advantage of the proprietary products is they do not have a loan limit. *Thus, for a home with a high appraised value, the borrower is often better off with a proprietary product.* This can be seen in Table 8, which compares the HECM product (found on *www.wellsrm.com*) with a proprietary reverse mortgage offering from Financial Freedom (created using the reverse mortgage calculator on *www.financialfreedom.com*). Financial Freedom is another major originator of reverse mortgages. Note that for a home valued at $250,000, the HECM product gives the borrower (regardless of age) a much larger line of credit than the proprietary product offered by Financial Freedom. For a home valued at $1,000,000, a 65 year old borrower can have a marginally larger line of credit using the proprietary product ($178,134 versus $172,286). An 85 year old borrower would have a huge advantage using a proprietary product versus a HECM ($470,234 versus $256,216).

Conclusion

This article provides a brief introduction to the reverse mortgage market. We believe that traditional MBS investors will be well rewarded for taking the time to understand this new sector. Reverse mortgage products have become much more popular over the past few years, and will continue to grow in importance. This growth will be further aided by changing demographics. Moreover, over the past year, there have been several securitizations of reverse mortgages. As reverse mortgage products grow in popularity, we expect the number of originators offering them, as well as their securitization volumes, to increase. ♦