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Analytics

Quantitative Research

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Why is the Primary Mortgage Rate Not Declining?

The spread between the primary rate at which mortgages are issued to borrowers and the secondary market rate at which TBA's and mortgage pass-through securities are collateralized is a key input to the Agency prepayment model and hence to our measurements of OAS's, durations, and other key analytics. By historical standards, this spread today is at unprecedented levels. In light of this, we have recently performed a careful analysis of its drivers in terms of the economics of mortgage origination, the competitive structure of the mortgage origination market, and the analytics of the current TBA par coupon. In this article we describe the current policy and bank profitability environment, take a detailed look at the dynamics of origination profitability, and explain how these factor into the Agency prepayment model's projections, culminating with a review of valuation results from the enhanced model.

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The policy and mortgage origination profit environments

On September 13, the Federal Reserve announced its anticipated "QE3" program, under which it committed to buying mortgage securities on the secondary market for an indefinite period. Bolstered by this demand, prices of Agency-backed mortgage securities have rallied significantly. Meanwhile, the profitability of mortgage origination for large banks has increased dramatically in 2012 from already elevated levels in 2011. These outcomes may have been policy goals in and of themselves: by lowering the yields on relatively less risky Agency-guaranteed mortgages, the Federal Reserve encouraged investment in riskier asset classes such as equities; and by increasing profit margins on mortgage origination, the Federal Reserve contributed to the long term health and capitalization of the banking sector. However, one other policy goal, improving the health of the housing market by lowering borrower costs, relies upon the transmission of lower mortgage spreads in the secondary

market to the policy goal—lower borrower costs in the primary lending market. This has not happened because of capacity constraints in the industry. Our analysis suggests that in terms of impact to the housing market, public policy would be more effective if it were directed towards streamlined refinancing or other direct measures rather than at lowering the secondary mortgage rate. Additionally, the analysis sheds light on the sustainability of current profit levels on mortgage origination by identifying how much of the current profit is super normal relative to historical industry experience. We specifically look at three large mortgage originators (Wells Fargo, JP Morgan Chase, Bank of America), and analyze PHH in more detail in the appendix.

We assess the relative effectiveness of this policy by comparing the dynamics of the spread between the rate that homeowners pay on a typical mortgage and the secondary market mortgage yield in "equilibrium" (i.e., absent the policy intervention) to the spread in the current, policy impacted environment. A large fraction of the reduction in the so called "secondary market mortgage rate" has not been passed on to mortgage borrowers, and instead mortgage originators have benefited tremendously from the Federal Reserve's mortgage purchase program. This conclusion cannot be reached simply by noting that the primary-secondary spread is high by historical measures, because a number of other structural changes in the mortgage market have occurred over the past few years which render direct comparison of today's primary-secondary spread to historical levels inaccurate. In fact, while current profits are high by historical norms, they have not increased one-for-one with the increase in the primary-secondary spread since the financial crisis. Approximately 60% of the widening can be attributed to structural changes in the market and to normal lags in originators' response to increased demand for refinancing. The Agencies have increased the guarantee fee they charge to insure MBS by an average of 20 bps/year and an additional 50 bps upfront; the value of servicing rights (the spread retained by the servicer who collects monthly payments from the borrower and passes it on to the investor) has declined due to the adoption of Basel III capital guidelines; and the capital cost to warehouse mortgage loans prior to securitization has increased. To add to the complexity, the current production coupon trades at a price above $104 (Figure 2), and therefore assessing the primary-secondary spread requires estimating the hypothetical coupon at which a pass through would trade at par. Nonetheless, the profit margins reported by the major originators have increased further this year from already elevated levels. Assuming a 10% capital charge[1] and a window of 60 days to originate and sell the loans, banks with scale are generating close to 150% return on equity (see Figure 1). If net margins were to return to a historically reasonable level of 100 bps (ROE of approximately 60%), the primary rate would drop by approximately 40 bps from the current level.[2]

FIGURE 1. ESTIMATED PROFITABILITY OF THE MORTGAGE BUSINESS FOR SELECTED ORIGINATORS

	Net income from retail channel origination (bps, upfront)		Retail income as % of total	Annualized ROE
	2011	YTD	YTD	YTD
Wells Fargo	1.1%	1.8%	50%	108%
Chase	1.4%	2.6%	77%	156%
BAC	0.6%	2.9%	100%	174%
PHH	1.0%	2.5%	71%	149%

Source: Stanford Bernstein, Stern Agee, company presentations. See appendix 2 for an analysis of PHH margins. Wells and BAC only provide revenues. We estimate income assuming a 2% underwriting cost for retail, and retail channel income from the overall income assuming retail generates 1% more income than correspondent. We chose the 3 largest originators that provide mortgage origination revenues (Citi does not), and a specialized originator (PHH) that we use for an in-depth analysis in the appendix.

The economics of the primary mortgage rate

The primary mortgage rate is the rate charged for a good quality mortgage.[3] In order to better understand the drivers of the primary rate, we look at the economics of a large mortgage originator. The typical exit strategy for an originator on this type of loan is to sell it into the secondary market. Therefore, it is customary to compare the primary mortgage rate against the "current coupon", i.e. the rate on a par-priced MBS. The difference between these two rates (Figure 2, Row 1, 2, and 3), the primary-secondary spread, was at an all-time wide of 118 bps in mid-October.

In Figure 2 we estimate the profit margin from originating mortgages on three representative dates. The illustration compares recent results (October, 18th, 2012) with a "normal" period (2005) and a period of relatively high refinancing demand (2002). While the primary-secondary spread is now 118 bps, a 70 bps increase over the "normal" primary-secondary spread (Row 3, Figure 2) actual profit margins as a percentage of the loan balance have increased by about 3 points (Row 14, Figure 2).

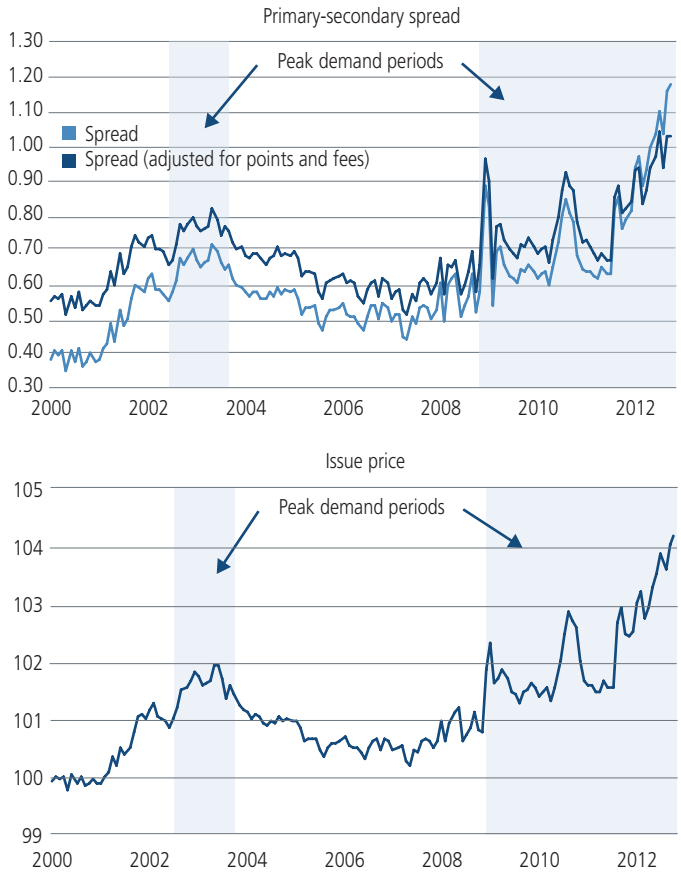
The increase in the primary-secondary spread has in part been driven by increases in origination costs. Agency fees, in particular, have added 25-30 bps. We show a breakdown in Figure 4 and discuss it in more detail below. Consequently, while the primary-secondary spread has widened by 70 bps/year, only 40 bps/year of this has translated into increased profits.

FIGURE 2. THE ECONOMICS OF THE RETAIL ORIGINATION OF A GOOD QUALITY 30 YEAR CONVENTIONAL CONFORMING MORTGAGE

		18 Oct 2012*	20 Oct 2005	10 Oct 2002	Notes
Coupon to sell into TBA	1. Loan Rate	3.37%	6.10%	5.98%	Primary mortgage rate from the Freddie Mac survey
	2. *Synthetic par coupon*	2.19%	5.62%	5.32%	*This is estimated from the price of the securitized coupon (Row 7). See appendix for details.*
	3. **Primary-secondary spread (1) – (2)**	**1.18%**	**0.48%**	**0.66%**	
	4. Guarantee-fee	0.35%	0.15%	0.15%	Based on FHFA study (through 2011), adjusted for 20 bps of increases.
	5. Servicing fee	0.25%	0.25%	0.25%	Yearly fee retained by the mortgage servicer
	6. Securitization coupon (1) - (4) - (5)	2.77%	5.70%	5.58%	For illustration purposes. Actual coupon will be 50 bps increments (E.G., 2.5%, 3.0%)
Margin given the TBA pride	7. TBA price of (6)	$104.20	$100.38	$101.51	Interpolated price of the securitization coupon (6) for previous Friday-Tuesday (30-day settle, delay adjusted)
	8. Points paid by borrower	$0.70	$0.50	$0.60	From the same Freddie Mac survey
	9. LLPA	$(0.50)	$0.00	$0.00	Loan Level Price Adjustment: upfront fee to the GSEs for >740 FICO, 75-80 LTV mortgage
	10. MSR value	$1.50	$1.50	$1.50	Estimated value of the Mortgage Servicing Rights[4]
	11. **Gross margin (7) - 100 + (8) + (9) + (10)**	**$5.90**	**$2.38**	**$3.61**	
	12. Origination fees	$0.15	$0.15	$0.15	Paid by the borrower
	13- Production cost	$(2.00)	$(1.50)	$(1.50)	Cost has increased as underwriting has become more complex and rejections have increased. This is for a retail loan, third party origination (correspondent) will be substantially more expensive.
	14. **Net profit margin (11) + (12) + (13)**	**$4.05**	**$1.03**	**$2.26**	

Hypothetical example for illustrative purposes only. *Values for 2012 are for a large originator that owns a servicer. Originators that need to sell servicing will make about 50 bps lower margins. Smaller originators with limited direct retail access will also have higher production cost (+50 bps?).
Sources: FHFA, Fannie Mae, Freddie Mac, PIMCO.

FIGURE 3. ISSUE PRICE AND PRIMARY-SECONDARY SPREAD OVER TIME



Note: The issue price is a part of the margin calculation. It is the price of the TBA at the primary rate less 40-60 bps depending on agency yearly fees. The adjustment for points and fees accounts for the points paid by the borrower, and for the Agency fees (upfront and yearly fees). Source: Freddie Mac, FHFA, Barclays, PIMCO.

Agency fee increases: FHFA has increased guarantee fees twice this year (additional 20 bps per year) in an effort to increase profitability of the GSEs. This is in addition to the 50bp average increases in the upfront LLPA fees charged since 2008. Further increases have been advocated by the current FHFA director.

Rate environment: Low rates contribute to increased demand for mortgages. However, supply is not keeping up, in part because of a lack of competition. Therefore, originators have a degree of pricing power. Taking the 2002/2003 refinancing wave as a reference, in periods of peak demand lenders can extract an additional 18 bps of spread. Should the current coupon rate increase, lenders would be unable to match the rate increases one-for-one, and this part of the margins would be erased even if competition remained low. However, at current rates, demand would remain elevated for a long time as the current average mortgage rate of all 30-year loans is 5.12% and it would take 3 years for it to decline by 1% at the current pace of refinancing activity.

Competition in the origination market: The rate environment is not the only driver of exceptional margins. We attribute 22 out of the 40 bps (see Figure 4) of super normal profits to lack of origination capacity, largely driven by Bank of America and Citigroup significantly reducing their originations and by barriers to entry in the market.

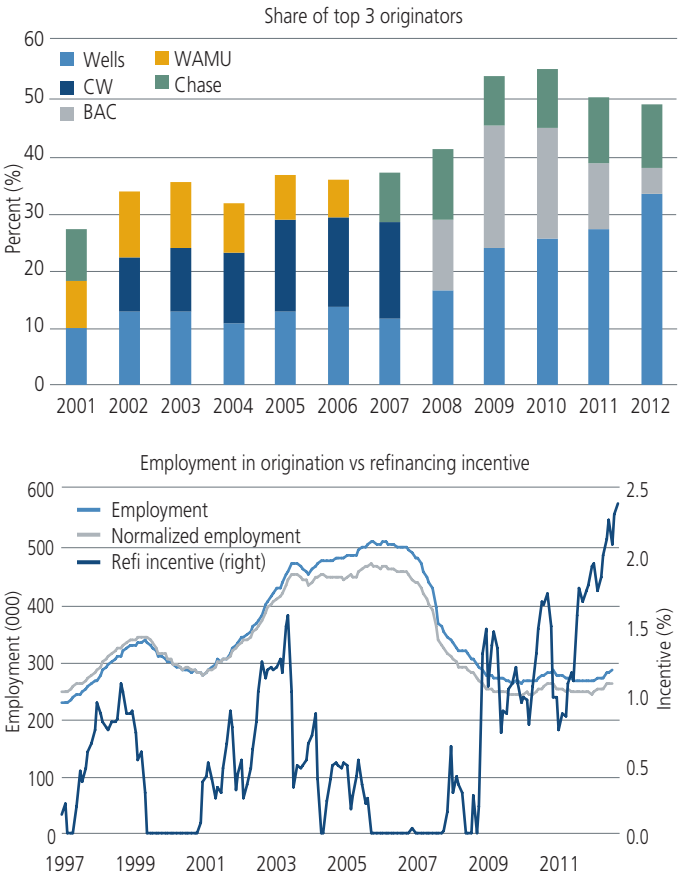
Bank of America has essentially eliminated its third party origination business (brokers and correspondents), and is focusing on its retail channel. It also is less price competitive than both Wells Fargo and Chase. Its share of mortgage originations has correspondingly dropped from 21.6% in 2009 to less than 5% this year. This loss of share is probably

FIGURE 4. QUANTIFYING THE DRIVERS OF THE PRIMARY-SECONDARY SPREAD WIDENING

Effect	Spread effect (bps per year)	Notes
Agency fees	+25 bps	+20 bps in guarantee fees and 50 bps upfront (LLPA, Loan Level Price Adjustment)
Additional production costs	+5 bps	Lengthened underwriting process and greater loan rejection rate from tighter underwriting standards
Supernormal margin (due to rate environment and barriers to entry)	+40 bps	A normal spread widening in high demand periods would be about 18 bps (compare 2002 to 2005)
Total	+70 bps	Overall change in primary-secondary spread vs history

voluntary and is linked to a combination of higher margins on loans originated through the retail channel and a response to ongoing negotiations with the GSEs about the financial settlement related to reps and warranty claims on loans originated by Countrywide prior to its acquisition by Bank of America. The bank has stated that it wants to reverse its drop in market share, targeting about a 10% share, in line with its share of deposits.

FIGURE 5. INCREASING CONCENTRATION IN THE ORIGINATION AND SERVICING BUSINESS



Note: Employment is from BLS ("Mortgage and nonmortgage loan brokers", plus "Real estate credit"). We normalize employment by number of households times homeownership rate. The incentive in the right chart is the average rate of the 30-year conforming universe less the current coupon, less 45 bps.

Source: Inside Mortgage Finance (top), BLS, Census, Fannie Mae, Freddie Mac (bottom).

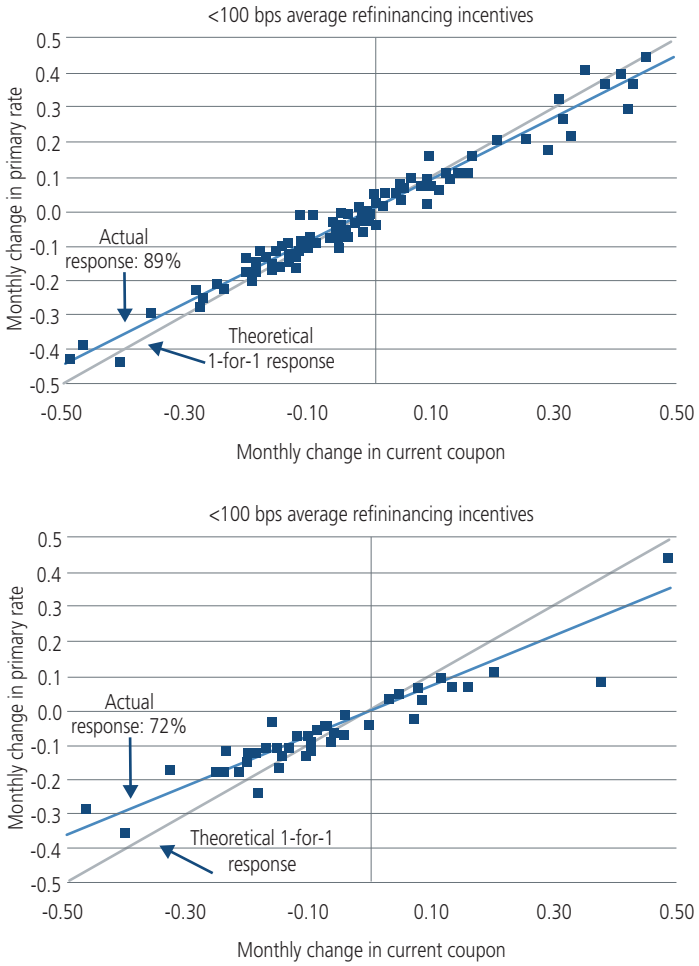
Currently, competition among the other lenders remains low. The top 2 originators make up 44% of the market, up from 20-30% pre-crisis (see Figure 5). One of the unintended consequences of various new regulations has been to create barriers to entry in the industry. By lowering the contribution of mortgage servicing rights (MSRs) to tier 1 capital, Basel III has lowered the attractiveness of mortgage origination. While arguably the "value" of the MSRs is unchanged if not higher in the current market environment, the market bid for MSRs is less than half of the pre-crisis values. Consequently, originators that cannot service mortgages have lower profits. The servicing industry is in turn dominated by the same players that top the origination charts. Furthermore, as profits in the industry increased, brokers and correspondents also increased their margins. Citibank, Chase, Bank of America are only marginally affected thanks to their large retail presence. Regulatory uncertainty,[5] finally, has made entry into the market predicated on today's elevated margins particularly risky for new participants. However, on balance, given the huge ROE that major originators are enjoying the capacity in the industry should increase.

The primary rate model

The primary rate model runs alongside our interest rate simulations to produce scenarios of the primary mortgage rate, which in turn drive our prepayment model. The primary rate is modeled by simulating the current par mortgage coupon, adding Agency fees and the profit margin. The primary rate is also assumed to respond to changes in the current coupon with a lag. Specifically, we make the following assumptions:

- **Agency fees stay at current levels.** This seems the more likely outcome as the current FHFA director would like to increase them further, while the administration opposes such increases.
- **The "normal" demand and supply effects are estimated based on historical data and are sensitive to interest rate changes as well as the average rate of the mortgage universe.** Primary rates respond to market changes with a lag. This sluggishness in rates is significant even when we look at monthly averages of rates (see Figure 6), with the effect stronger during periods of relatively high demand (high average incentive). This effect is related to the widening of the primary – secondary mortgage rate spread we observe in periods of peak demand.

FIGURE 6. PRIMARY RATE RESPONSE TO CHANGES IN THE CURRENT COUPON (2000-2012, MONTHLY CHANGES)

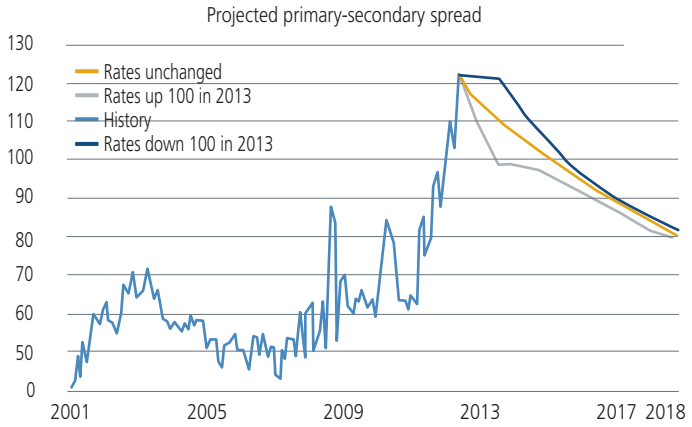


Note: Incentive is defined as the difference between the average rate of the 30-year agency mortgages and the current coupon, less 45 bps. Excludes months when current coupon changes more than 50 bps (for those few months the response is closer to one-for-one).

Source: Freddie Mac, PIMCO.

- **The competitive structure of the mortgage industry remains unchanged until the end of 2013; after 2013 competitive forces lower supernormal profits from 22 bps/year (ex- peak demand) to only 5bps/year over the following 3 years.** Bank of America currently has a very small share of origination so that any further pullback by them would have limited impact. Furthermore, it appears they intend to ramp up originations slowly. Even with sizeable barriers to entry the market is likely to become more competitive. However, the additional complexity of the regulatory environment will result in some degree of concentration in the industry; hence we do not expect margins to revert to their historical levels.

FIGURE 7. SAMPLE PROJECTIONS (FROM END OCTOBER 2012)



Hypothetical example for illustrative purposes only.
Source: Freddie Mac, PIMCO.

Change in projected rates and effect on valuations

As a result of this analysis we are changing our projection of mortgage rates in various ways. Overall, along the forward curve the primary rate is lower. While only the primary rate enters our prepayment projections, it is important to note that:

- **The current coupon is re-defined** and uses the methodology described in appendix A1. As of November 2nd, the new current coupon is 4 bps lower than the one we currently use (provided by the specialist desk).
- **The projections of the current coupon now depend on a slightly shorter duration amortizing swap.** The projected current coupon along the forward curve increases more than it did previously.
- **The primary-secondary spread projections change as discussed above.** Since we assume that industry capacity increases over the next few years, the primary secondary spread stabilizes at 80 bps, this is 40 bps lower than in our previous projections (see figure 7).

FIGURE 8. MODEL CHANGE EFFECT ON MORTGAGE PASSTHROUGH (TBA) VALUATIONS (NOVEMBER 2)

	OAS (bps)			ZVS (bps)			Duration (OAD, Yrs)			1-year CPR (%)			Long term CPR (%)		
TBA	Revised	Current	Δ	Revised	Current	Δ	Revised	Current	Δ	Revised	Current	Δ	Revised	Current	Δ
30-year Fannie Mae (FNCL)															
3.0%	-35	-32	-2	46	46	1	4.3	4.5	-0.2	17.3	15.8	1.6	23.3	20.1	3.3
3.5%	-37	-33	-4	56	57	-2	2.4	2.6	-0.2	27.5	26.1	1.4	29.5	26.7	2.8
4.0%	-43	-38	-5	29	37	-8	1.0	1.2	-0.2	42.4	41.4	1.0	38.7	36.8	1.9
4.5%	-33	-28	-5	11	19	-9	1.1	1.2	-0.1	44.3	43.7	0.6	40.4	39.3	1.1
5.0%	0	3	-3	27	34	-7	1.9	1.9	0.0	38.7	38.5	0.2	35.7	35.2	0.5
5.5%	37	39	-2	54	58	-4	2.2	2.2	0.0	34.6	34.5	0.1	34.3	34.1	0.3
6.0%	72	74	-2	86	90	-4	2.5	2.5	0.0	32.7	32.6	0.1	31.2	31.0	0.2
6.5%	63	64	-1	71	75	-4	2.4	2.4	0.0	31.5	31.5	0.0	30.7	30.6	0.1
15-year Fannie Mae (FNCI)															
2.5%	-15	-15	0	16	16	0	3.6	3.6	0.0	14.4	14.0	0.4	18.1	16.4	1.7
3.0%	-28	-30	2	14	16	-2	1.7	1.7	0.0	31.7	31.0	0.7	30.5	28.7	1.8
3.5%	-21	-24	3	11	15	-4	1.1	1.2	0.0	38.8	38.2	0.5	35.1	33.7	1.4
4.0%	-9	-10	2	11	16	-4	1.1	1.2	-0.1	38.9	38.5	0.4	35.0	34.1	1.0
4.5%	-5	-7	2	6	10	-4	1.1	1.1	-0.1	37.3	37.0	0.2	34.5	33.8	0.7
5.0%	-35	-36	2	-34	-33	-1	1.3	1.3	0.0	24.3	24.2	0.1	24.5	24.3	0.2
5.5%	80	79	1	81	82	-1	1.5	1.5	0.0	23.1	23.0	0.1	23.4	23.2	0.2
30-year Ginnie Mae (GNSF)															
3.0%	-21	-18	-3	30	29	1	6.2	6.3	-0.2	4.9	4.8	0.1	9.5	8.5	1.0
3.5%	-40	-36	-4	36	37	-1	3.0	3.4	-0.3	19.1	17.2	1.8	18.3	14.7	3.6
4.0%	-51	-45	-7	26	31	-5	0.9	1.2	-0.4	34.3	33.1	1.1	27.6	25.2	2.4
4.5%	-33	-27	-6	13	21	-8	1.0	1.2	-0.2	41.6	40.9	0.7	35.6	34.2	1.5
5.0%	-14	-9	-5	17	24	-7	1.1	1.2	-0.1	43.6	43.2	0.4	35.5	34.5	1.0
5.5%	57	59	-2	74	77	-3	2.4	2.4	0.0	33.5	33.4	0.1	28.8	28.4	0.4
6.0%	39	41	-2	50	53	-3	2.6	2.6	0.0	30.7	30.6	0.1	26.8	26.5	0.2
6.5%	68	69	-1	76	78	-3	2.7	2.7	0.0	29.6	29.6	0.0	26.1	25.9	0.2

Hypothetical example for illustrative purposes only. Current model is adjusted to match the current levels of the primary rate (+5 bps for 30-year, +11 bps for 15-year).

Source: PIMCO.

Another implication of the new model is that the distribution of future primary-secondary spreads is much tighter and skewed upwards. Since spreads tend to a baseline level that includes a reasonable profitability for originators, even when competition comes back and rates increase, we still require the primary-secondary spread to be slightly less than 80 bps (approximately 50 bps after adjusting for increases in the Agency fees). Since spreads can increase if rates rally but are floored when they back up, the average spread in the simulation is higher along the forward curve. This lowers the option cost.

The resulting effect on valuations is shown in Figure 8. Since the primary rate is lower and the market is currently priced at a premium, ZV spreads (ZVS, the spreads to swaps computed along the forward curve) are lower. Because in the simulations the primary rate will not drop as much on average, OAS's drop by less than the decline in ZV spreads. This effect is especially pronounced for 15-year mortgages (since they are more callable), where the impact of wider spreads when rates rally more than offsets the effect of the drop in ZV spreads.

Appendix 1: Computing the current coupon

The current coupon is the coupon on a hypothetical par-priced TBA. Besides its intrinsic value as a measure of current mortgage pass-through valuations, it serves a key role in PIMCO's Agency Prepayment Model, in which the primary rate, which drives refinancing opportunity, is modeled in terms of the evolution of the current coupon and the primary-secondary spread. Historically, we have used the mortgage desk's current coupon estimates, but we have recently developed a new methodology, described in detail here, for estimating the current coupon. Among other improvements, the new methodology provides a systematic framework that accounts for the fact that new mortgages are priced at a substantial premium.

There are two main steps in our approach. First, we determine the effective "daily issue" coupon, which represents the pass-through coupon at which issuance at the primary rate is occurring, in terms of an estimate of the "issue price," an estimate of where TBA's delivering collateral whose gross coupon is equal to the primary rate would be priced. A TBA paying the daily issue coupon will not typically be priced at par, and so we estimate the value of a coupon swap to determine the par coupon (See Figure A1).

Issue price: Each Thursday, when Freddie Mac publishes the Primary Mortgage Market Survey® (PMMS®), we find the TBA price that corresponds to the primary rate less 45 bps by interpolating the market observed TBA prices[6] (for FN 2.5s and 3s) from the previous Friday-Tuesday period. We use lagged average TBA prices to compensate for delays in publishing the survey and in originator rate sheet adjustments to changing market conditions. We smooth the issue price over time by averaging the current estimate of the issue price with the prior day's estimate, so that the issue price changes a little every day instead of adjusting only once every Thursday.

Issue coupon: Whereas the PMMS data is published only once a week, market prices are observed daily. Consequently, we use daily TBA prices to impute the issue coupon. The daily issue coupon will not equal the primary rate less 45 bps even on Thursday when the primary rate survey is published, because the issue coupon is determined based on same day TBA market, while the issue price looks back a few days to the market conditions behind the survey.

FIGURE A1: COMPUTING THE CURRENT COUPON (OCTOBER 25, 2012)

Primary rate (a)	3.41	From PMMS survey
Coupon to interpolate (b)	2.96	Primary rate (a) – 45 bps (for guarantee fee and servicing)
Issue price (c)	104.51	Interpolate (b) on previous Fri-Tue 30-day settle, delay adjusted TBAs
Smoothed issue price (d)	104.86	Average of latest issue price (c) and previous smoothed issue price
Coupon at issue price (e)	3.13	Interpolate (d) on same day 30-day settle, delay adjusted TBAs
Amortizing swap at issue price (f)	2.50	Rate on a swap priced at (d) (104.86), amortizing as a 30-year mortgage with 177 PSA
Amortizing swap at par (g)	1.85	Same as above, for a par-priced swap
Option cost (h)	-0.07	1.5 bps per point of premium (0.00015 x [(d) – 100.00]
Current coupon	2.41	(e) – [(f) – (g)] + (h)

Source: Freddie Mac, PIMCO.

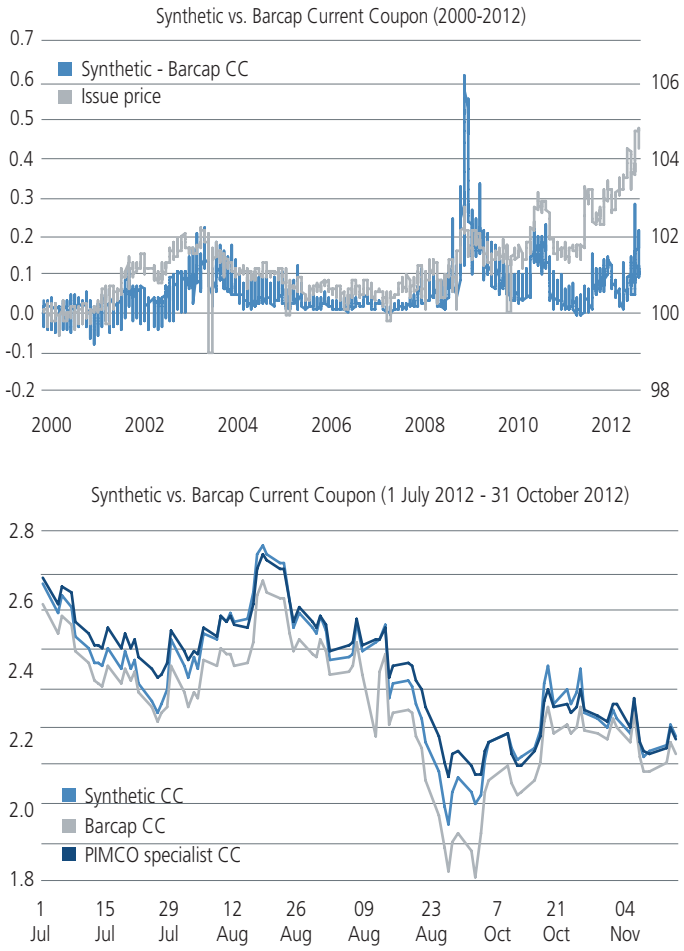
Coupon swap: Once we know the issue price and coupon, we need to determine the coupon for a par priced TBA. One way to do this would be to interpolate (or, in the current environment, extrapolate) the coupons that would correspond to a par price from traded TBA pricing. However, coupon swaps implied from market TBA prices capture not just the effect of changing the TBA coupon, but also different prepayment expectations among the various TBA deliverable mortgages. What we are after, instead, is the pass-through coupon at which a new issue mortgage, whose prepayments are independent of their price, would be priced at par. We estimate this coupon by finding the difference between the coupons on an amortizing swap that would have the daily issue price and the coupon on a par priced amortizing swap, with both amortizations done at a static PSA that reflects the expected prepayments on loans issued at the primary rate. This results in a wider coupon swap than the observed coupon swaps. While traded swaps close to par are usually about 2-2.5 points (price increase for up 50 bps in coupon), we use about 3-3.5 points.[7] Finally, we increase the coupon swap to reflect an estimate of the option cost, which we have calibrated to -0.07 bps per point of premium in the current market.

In Figure A2 we plot the difference between the estimated daily current coupon using the new methodology and the historical estimate of the current coupon from Barclays as well as our estimated daily issue price. We also show the new methodology's current coupon, the desk's current coupon estimates, and Barclay's current coupon estimates over the most recent history (since July, 2012). The new methodology produces a current coupon (Figure A2) very similar to that estimated by the dealer when the issue price is par, but higher when the issue price increases. This is a consequence of not using the market coupon swaps. The new current coupon is also usually higher than the one provided by the PIMCO specialist desk, though the difference is much smaller.

Appendix 2: Economics of mortgage originators: A deep dive into PHH corporation's profitability

Accounting results for large bank mortgage originators are often hard to interpret. Smaller originators like PHH give substantially more details in their quarterly reporting. Here, we drill deeper into results by PHH (a company with approximately 5% origination share).

FIGURE A2: COMPARISON OF CURRENT COUPON ESTIMATES FROM DIFFERENT SOURCES



Hypothetical example for illustrative purposes only.
Source: Barclays, PIMCO.

By looking at how the expenses and the share of correspondent loans change in the various quarters, we estimate a breakdown of these costs by channel:

- We find that retail originated loans cost about 40 bps to source, and attribute the balance of the sourcing costs to the correspondent business
- We estimate that correspondent loans require about 25 bps of expenses to process at PHH, and attribute the remainder to the cost of underwriting the retail loans

FIGURE A3: PROFITABILITY ANALYSIS OF PHH CORP (PHH) MORTGAGE ORIGINATIONS

	Q2-10	Q3-10	Q4-10	Q1-11	Q2-11	Q3-11	Q4-11	Q1-12	Q2-12	Q3-12
Priced in margin	1.36	1.90	1.68	1.27	1.22	1.78	1.82	2.74	2.89	3.30
Base servicing value	1.39	1.21	1.14	1.20	1.19	1.11	1.04	0.90	0.92	0.90
Total priced in margin	**2.75**	**3.11**	**2.82**	**2.47**	**2.41**	**2.89**	**2.86**	**3.64**	**3.81**	**4.20**
Scratch and dent	-0.04	-0.01	-0.14	-0.10	0.07	-0.02	-0.08	-0.07	-0.16	-0.25
Cost of sourcing loans	-1.08	-1.32	-1.40	-1.70	-1.05	-1.13	-1.41	-1.27	-0.87	-0.84
Total gain on loans	**1.63**	**1.78**	**1.28**	**0.67**	**1.43**	**1.74**	**1.37**	**2.30**	**2.78**	**3.11**
Direct expenses (commissions)	-0.40	-0.47	-0.35	-0.29	-0.46	-0.45	-0.38	-0.39	-0.48	-0.45
Indirect expenses (salaries)	-0.92	-0.67	-0.56	-0.67	-0.73	-0.57	-0.53	-0.62	-0.72	-0.70
Fixed expenses (overhead)	-0.26	-0.12	-0.08	-0.19	-0.25	-0.23	-0.20	-0.20	-0.22	-0.21
Total expenses*	**-1.58**	**-1.26**	**-0.99**	**-1.15**	**-1.44**	**-1.25**	**-1.11**	**-1.21**	**-1.42**	**-1.36**
Pre-tax earnings	**0.05**	**0.52**	**0.29**	**-0.48**	**-0.01**	**0.49**	**0.26**	**1.09**	**1.36**	**1.75**
Locks expected to close ($mm)	8,425	11,430	12,101	5,044	7,501	11,429	9,743	6,862	6,763	6,769
Share of correspondent	34%	41%	49%	42%	40%	43%	42%	42%	22%	22%
Adjustments										
MSR should be valued higher	0.41	0.59	0.66	0.60	0.61	0.69	0.76	0.90	0.88	0.90
Add 10 bps application fee (retail)	0.07	0.06	0.05	0.06	0.06	0.06	0.06	0.06	0.08	0.08
Adjusted pre-tax earnings	0.53	1.17	1.00	0.18	0.66	1.24	1.08	2.05	2.32	2.73
Retail (estimate)										
Origination cost	-2.34	-1.98	-1.98	-1.98	-2.11	-2.05	-1.88	-2.02	-1.96	-1.99
Sourcing cost	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40
Pre-tax earnings	0.52	1.42	1.20	0.79	0.61	1.23	1.44	2.22	2.43	2.81
Correspondent (estimate)										
Origination cost	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25
Sourcing cost	-2.38	-2.63	-2.43	-3.49	-2.03	-2.08	-2.79	-2.48	-2.51	-2.41
Pre-tax earnings	0.53	0.82	0.80	-0.67	0.74	1.25	0.58	1.81	1.93	2.44

All numbers are in percentage of locks expected to close, unless otherwise stated. Source: PHH company filings and presentations.
*Expenses are reported for all loans closed (some loans are closed for a fee instead of a sale).

While the cost to source retail loans is likely specific to the PHH agreements with the companies that provide the referrals, retail loans appear to otherwise cost about 200 bps to underwrite, while correspondent loans cost closer to 275 bps to source and process.

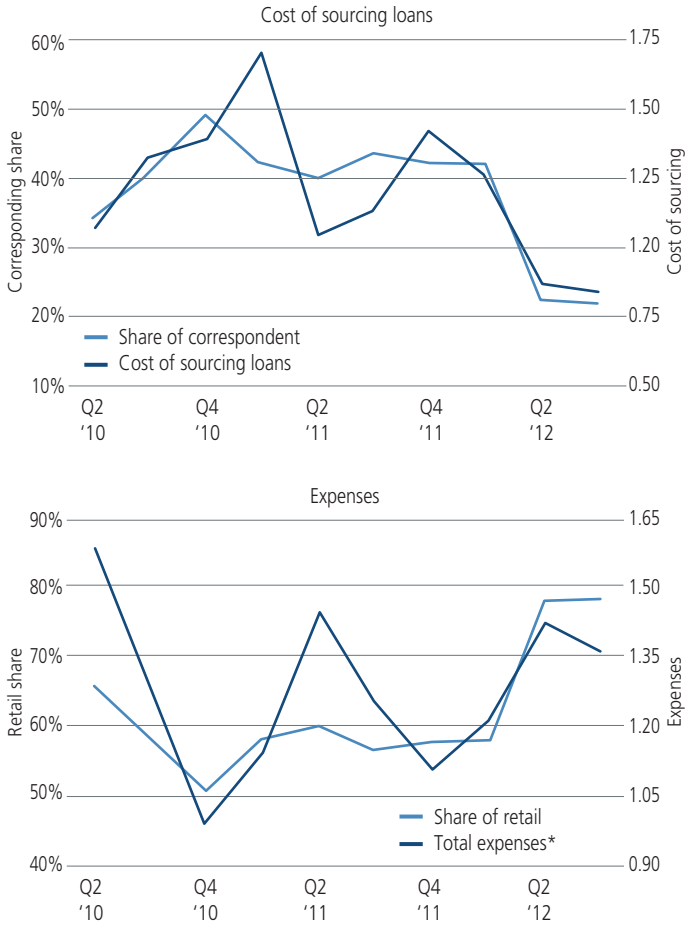
The analysis is shown in detail in Figure A3. The top part shows the results for the most part as reported by PHH; the bottom shows our adjustments and the estimated profitability by origination channel.

We make some adjustment in the top part of the table. The "gain on loans" results reported by PHH and their breakdowns include the loans that are currently being processed (rate locks expected to close), with an adjustment for actual vs realized closings, while the expenses are reported as dollar amounts. We ignore the adjustment for actual vs realized closings and we report expenses as a share of loans closed in the quarter.

Separately, we also increase the value of the servicing (MSR) and add back the application fees. PHH has been valuing new MSRs at decreasing multiples, but, as explained in footnote 4, we believe the intrinsic value of the MSRs has not been declining. The fees collected by PHH are reported separately as they mostly pertain to a different business. Here we add back a reasonable estimate per PHH presentations of the application fee.

The cost for PHH to originate loans comprises the cost of sourcing loans and processing expenses (commissions, salaries and overhead). Correspondent-sourced loans are expensive to source, but have very low processing costs as the correspondent does the underwriting. Retail loans are sourced through various agreements between PHH and banks or real estate companies. These loans are cheaper to source, but must be underwritten by PHH.

FIGURE A4. EXPENSES AND SOURCING COST BY SHARE OF EACH CHANNEL



Source: PHH filings and company presentations through October 2012, PIMCO.

[1]The minimum regulatory capital charge for prime quality residential mortgage loans is 4% (8% times 50% risk weight).

[2]For this calculation we use our estimates of net margin (Figure 2). Bank reported margins are likely increasingly conservative in more recent years.

[3]The primary rate is computed by Freddie mac through a survey of originators for a "good quality 80 LTV loan". The survey is conducted weekly, with data being collected Monday through Wednesday and published every Thursday. The survey also gives the typical points paid by the borrower.

[4]Servicers pay to receive the servicing fee (agencies require a minimum servicing fee). This is an estimate of value; actual bid and balance sheet valuations are now around 3x due to Basel III changes in capital treatment of MSRs. We argue that the intrinsic value is unchanged because prepayments and callability are low, there are fewer broker originated loans, so that servicing is unlikely to change hands upon refinancing, and the likelihood of future delinquency for newly originated loans is at an all-time low, reducing cost of servicing.

[5]Two definitions per the Dodd-Frank act, for example, still have to be finalized. The first, the qualified residential mortgage (QRM), could help non-agency mortgage originations by allowing lenders not to retain 5% of the credit risk upon securitization. The second, the qualified mortgage (QM), needs to be defined by the CFPB (Consumer Finance Protection Bureau) to let the lenders establish that the borrower has a reasonable ability to repay.

[6]For our calculations, her and below, we use 30-day settle, delay adjusted TBA prices.

[7]In practice, we compute the coupon change that brings the issue mortgage to par by looking at an amortizing swap. We amortize the swap at a PSA assumption that changes with the slope of the yield curve. We then compare the rate on the amortizing swap at the issue price and par. We also adjust the coupon by 1.5 bps for each point in price to account for the increased option value in premium bonds (even as prepayment assumptions do not change with price).

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