Redfin Mortgage Update

Mortgage Update

We formalized the decision to invest in a mortgage business at the October 2015 board meeting, and now expect to close our first loan in January 2017. The goal of this document is to update the board on the progress we've made since then, and to present a more precise description of the customer experience, our financials, and how to protect Redfin's balance sheet.

Redfin will start as a correspondent lender, underwriting our loans based on the guidelines provided by our correspondent investors, who are larger banks that will buy our loans. We'll fund loans from a warehouse credit line, sell the loans to our correspondent investors, and return the money to the warehouse for the next loan.

We have no choice but to start as a correspondent lender. Our initial partners will be Texas Capital and Republic Bank, who will in turn sell our loans to Fannie Mae and Freddie Mac. We'll sell loans directly to Fannie and Freddie by the middle of 2018, which will let us offer lower prices to our clients. In either event, we'll sell the servicing rights for the loan to bigger banks like Wells Fargo and J. P. Morgan Chase, so we're not responsible for collecting monthly payments or managing foreclosures.

The biggest news since last October is that we've hired Jason Bateman to run Redfin Mortgage. Jason was previously at BBVA where he managed almost $5 billion per year in loan originations. Prior to that, he helped Ally Bank build its mortgage business from the ground up. Jason is hiring the launch team and focusing on getting two warehouse lines and two correspondent investors ready for launch.

The engineering team, led by Alex Berezhnoy, is up to ten members, with Jim Lamb leading product management. The team has laid the groundwork to take a mortgage application online and close our first loan in January 2017, as we discussed last October. We'll decide on October 21 when we'll publicly announce Redfin Mortgage. Our preference is to wait until January once we've had the chance to close at least one loan, but we may need to do it sooner because Redfin will be entering its quiet period.

We've moved our headquarters from Seattle to Dallas, primarily because Dallas is a hub for mortgage companies, making it easier to recruit, but also because Jason has family commitments in the South. We'll serve all four major Texas markets at launch: Dallas, Houston, Austin, and San Antonio. As we expand to cover more markets, we expect to serve those customers from our Dallas hub as well, which will keep costs low.

Aside from the change in headquarters locations, many of our financial and staffing assumptions from last October have stood up to Jason's scrutiny. We did decide to slow our geographic expansion and revenue growth in 2017 and 2018. We want the R&D team and the senior mortgage operations team to work together to build our software, without getting consumed in the day-to-day of managing high loan volumes. When Title Forward launched, we closed 750 transactions in our first year at the expense of thinking long term about how to make the business as efficient as possible, and we want to avoid that.

In 2017, we plan to close 197 loans. Revenue will be $1.1M with an EBITDA loss of $5.7M. Our EBITDA expenses include all of our mortgage operations and engineering employees as well as inter-company charges for G&A support. This is $1M less in revenue than we forecast at the board meeting last October. We've sent our 2017 financial plan to our warehouse lenders who also need to sign off before the plan is completely final, although we don't anticipate any issues.

Between now and 2021, we'll need $16.2M to fund our R&D efforts and $18.4M to collateralize our warehouse line, for a total of $34.6M. Through 2018, we'll need $19.3M, with $12.1M for R&D and operations, and $7.2M to collateralize our warehouse line. Both the $19.3M through 2018 and the $34.6M through 2021 include the $5M we've already invested. Our 2021 forecast for capital requirements is in line with what we presented in October 2015, but the 2018 forecast is $3M more.

As discussed in our overview of the 2017 budget, in Q1 2018, our cash balance, less mortgage reserves, drops to a low of $25M. If we don't end up going public in 2017, we may want to consider a private round of $10M - $20M in the second half of 2017.

Initial Customer Experience

Pre-Approval

When we take our first mortgage application in December, we'll work with Redfin clients already touring with a Redfin agent. From December through Q1 2017, we'll provide price quotes by email and collect loan applications through a web form. Once the application has been submitted, a Redfin mortgage advisor will pick it up. She'll be the customer's primary point of contact, although she'll be supported by a team. She'll assess the customer's credit, and request supporting documentation to validate income and assets. The borrower will securely upload the additional documentation through our mortgage application portal.

Once the documents are uploaded, we'll issue a pre-approval decision within four hours during business hours. By the end of 2017, we'll integrate the software we need to issue a pre-approval decision within minutes for well-qualified borrowers, removing the need to upload W-2s or bank-statements. For clients with more complex profiles, like non-W2 sources of income, we'll issue same-day pre-approvals.

Originating the Loan

Once the buyer has an accepted offer on a property and a closing date, the clock is ticking. At launch, our goal is to close 99% of our loans on time, with no loans more than three days late. The only exceptions will be if the borrower fails to provide information in a timely manner, or the appraisal comes in late or below the purchase price. We feel confident we can close loans in 20 days or less, but we'll refer loans with very short timelines to other lenders.

The first step is to lock the loan's interest rate with one of our correspondent investors. The mortgage advisor will pull the current rates from our correspondent investors and we'll generate a formal Loan Estimate via DocuSign. The Loan Estimate includes the mortgage rate from our correspondent investor with the lowest price, plus our mark-up and fees, as well as related fees like title and escrow, along with any required disclosures.

If the borrower approves our Loan Estimate, we'll lock the loan's rate with the correspondent investor. The length of the lock is based on the closing date of the offer, but we'll generally try to lock for 30 days, since longer locks are more expensive.

The Loan Estimate is one of the most important documents in the transaction. Once a Loan Estimate is delivered to the borrower, certain fees cannot be changed. For example, if our Loan Estimate lists an origination fee of $500, that fee can't change at the closing. Any variance in fees between the Loan Estimate and the closing are generally paid by the lender, with some exceptions.

To hit our closing timelines, we'll typically order the appraisal as soon as our borrower's offer is accepted. If the deal is shaky, we may wait until after the inspection since appraisals are a few hundred dollars. The appraisal is the one lending cost we'll pass through to the borrower, which is very common. Once we have a better sense of our close rate, we may roll it into the cost of the mortgage to simplify the process.

Underwriting

Once the appraisal is back, underwriting will review the appraisal and the borrower's information. If any additional information is required, the mortgage advisor's team will reach out to the borrower, but our goal is to deliver a one-touch file to underwriting that can be approved on the spot.

Once underwriting has signed off, the mortgage advisor's team will prepare the closing package. The closing package contains the three most important documents in the transaction:

- The loan note: our contract with the borrower that lists the interest rate and payment terms

- The mortgage document: this secures the loan with the home the borrower is buying. It gives the correspondent investor who buys our loan the right to foreclose on the home, if the borrower doesn't pay
- The Closing Disclosure: this is a federally-mandated form that lists the final mortgage rate, our fees and any 3rd-party fees like title and settlement fees, as well as how much cash the borrower needs to bring to closing to complete the transaction

The mortgage rate and lending fees listed in the Closing Disclosure must match the rate and lending fees listed on the Loan Estimate in the origination step. This is how the government prevents lenders from quoting a low price up front and surprising a borrower with higher fees at the closing table.

Closing a loan where the fees on the Closing Disclosure don't match the Loan Estimate is a compliance violation and we may not be able to sell the loan for its full value after we settle the transaction. We'll discuss remediation below, in the section on protecting our balance sheet.

Once the closing package is prepared, our compliance department will perform one last quality check, and then clear the loan to close.

Closing and Funding

The day before closing, our warehouse lender will wire 98% of the loan amount from our warehouse credit line to the borrower's escrow account, held at the settlement company who is hosting the closing. We'll wire 2% of the loan amount from Redfin Mortgage's own bank account to the borrower's escrow account.

After closing, the settlement company will mail the signed note to the warehouse lender to hold as collateral for the money we've borrowed to fund the loan. The mortgage advisor's team will upload all the loan documents and details to the correspondent investor who is buying the loan.

After the correspondent investor has reviewed the loan for completeness, it'll buy the loan and the servicing rights and wire the loan amount plus our premium, known as a gain on sale, back to the warehouse lender. The warehouse lender couriers the note to the correspondent investor, replenishes our credit line with the original loan amount, and transfers our gain on sale into our operating account. The correspondent investor notifies the customer where to make monthly payments.

Loan Types

We want the fewest products that we need to serve the maximum number of borrowers. Exotic products like downpayment assistance, construction loans, or asset-only loans have unique and complex underwriting requirements that make them expensive to roll-out to our operations team. Because these loans are more complex, they also introduce more underwriting risk. When we launch, we'll offer conventional conforming Fannie Mae 15-year and 30-year fixed rate loans to well-qualified borrowers.

Through Q1 2017, or until we hit 12 loans per month, we'll test our technology and our processes on these loans that are simple to underwrite. In Texas, 60% of all Redfin homebuyers use conventional conforming loans and can be addressed with these products.

In Q2 2017, we'll address another 14% of Redfin's Texas customers through conforming adjustable-rate mortgages, loans with lower down-payments that require mortgage insurance, and jumbo loans. Our primary correspondent investor, Texas Capital, buys all of these types of loans, although we may explore other correspondents like Chase to get better pricing, especially for jumbo loans.

Pricing

Once we become a direct lender, we can use the combination of low customer-acquisition costs, lower pay per transaction to our mortgage advisors, and more closed loans per employee to deliver a lower price to the consumer. This is the same formula that has let us save consumers hundreds of millions in real estate fees and we can do it again in lending.

Until we become a direct lender, we won't be a price-leader because our correspondent investors will mark up the rate they offer us over what we could get directly from Fannie. However, we still want to offer competitive pricing from our very first loan, keeping our prices below the industry median.

We expect revenue per transaction to reach $7,100 by 2019 and to stabilize around $8,000 in 2021. This is because we'll launch Redfin Mortgage in high-priced West-Coast markets starting in Seattle in April 2020; we'll be live everywhere on the West Coast by January 2021.

This analysis assumes 2019 revenue per transaction. Mortgage revenue includes our gain on sale when we sell the loan and the servicing rights, either to a correspondent investor or directly to Fannie, and a buyer-paid closing fee. It's important to note that our economics won't change when we switch from being a correspondent lender to a direct lender, because we'll pass the cost reduction through to the borrower and offer lower rates.

	Avg. Loan Value	Redfin Rate Mark-up	Servicing Rights	Closing Fee	Avg. $/Deal
Conventional	$271K	1.10%	1.00%	$500	$6,086
Conventional	$503K	1.10%	1.00%	$500	$10,475

High-Balance					
FHA/VA	$351K	1.10%	1.00%	$500	$7,592
Jumbo	$630K	0.50%	1.25%	$500	$11,025
Blended	$337K				$7,117

Revenue per Transaction by Loan Type and Revenue Source

The consumer's total cost will be calculated from the rates offered by our correspondent investor, plus our mark-up, and the $500 closing fee. We compared recent rates from our primary correspondent investor, Texas Capital, plus our mark-up and fees, against rates and fees available on Zillow.com for several borrower profiles. We compare the results below using the annual percentage rate (APR) of the loan, which combines the rate and fees into a single number.

Purchase Mortgage (APR)	Redfin	Zillow Low	Zillow High	Redfin Cost vs. Zillow Low
$300K loan, 20% down, 740+ credit, house	3.40%	3.38%	3.66%	$360
$300K loan, 10% down, 720 credit, house	3.86%	3.73%	4.44%	$2,340
$300K loan, 10% down, 720 credit, condo	3.99%	3.88%	4.44%	$1,980

Competitive Pricing Comparison, Redfin vs. Zillow Marketplace

The difference in cost is the money the customer would need to pay up-front to get the same APR offered on Zillow.com. In all of these scenarios, we're slightly to significantly more expensive than the lowest rate, but thousands of dollars cheaper than the highest rate. It's worth noting that the lowest rates in the marketplace are from lenders you've never heard of before, and the rates from banks like J.P. Morgan Chase tend to be higher than Redfin.

It will be difficult to be price competitive consistently on jumbo loans because some banks use them as loss-leaders to attract high net-worth customers. Our goal is to be price competitive, but we'll refer customers to other lenders if we're not. In the financial model, we only ramp up to a 15% attach rate for jumbo loans over 18 months, as opposed to a 25% attach rate for conforming loans.

To monitor our pricing, we've subscribed to a benchmarking service from Optimal Blue, our technology vendor for aggregating mortgage rates from our correspondent investors. We'll be able to see how our prices compare to anonymized competitor data by state and loan type. We expect to have our monitoring set up by December.

How We Win

Redfin is the modern way to buy a home, and our goal now is to make sure Redfin Mortgage becomes the modern way to get a mortgage. We'll offer a digital mortgage with low-prices and short closing times that let our clients shop like cash buyers. We'll set the standard for service with mortgage advisors paid to put clients first.

Most of our business will be won when buyers are ready to get pre-approved. A simple application and rapid pre-approval decisions are the key. For our borrowers to shop like cash buyers, a Redfin Mortgage pre-approval needs to be the gold standard for sellers and listing agents evaluating our buyers' ability to complete a sale, in as little as ten days, with no surprises.

Our big bet to achieve this is automation. Everything from verifying income to delivering disclosures and ordering appraisals will be automated.

In addition to shortening closing times, automation will dramatically reduce the labor required to originate a loan. By 2020, we'll close 3.5 transactions per mortgage operations employee per month. According to the 2015 Mortgage Bankers' Association annual report, that's 50% more than the average for banks of similar size.

Any tech-savvy lender like Quicken or SoFi could build an automated application and origination process, and in both of these cases, they have a headstart on us on product development. Rocket Mortgage's massive "Push Button, Get Mortgage" marketing campaign has set consumer expectations that getting a mortgage can be simple, even from a phone.

We can take an automated, digital home-purchase further than Rocket Mortgage and the rest of the competition. Redfin customers will have an online Deal Room that tracks tasks, documents, and deadlines for their real estate, mortgage and title transactions in one place, providing a unified view of the purchase.

But we can't focus on automation to the exclusion of service. Quicken's satisfaction scores among Redfin's buyers have been low in the past. When things go wrong with a transaction, there isn't one person at Quicken responsible for the customer to close on time. Just like Redfin's real estate business, the technology will make the service better and the service will make the technology better.

Our brokerage and our site also give us an advantage because we'll have no customer acquisition costs and can pass that savings along to the customer. Redfin will close over $10B in buy-side transactions in 2017, and will have over 20M monthly unique visitors to Redfin.com. Based on what we spend for a brokerage deal, we estimate a non-bank lender like Quicken or SoFi will spend $1,000 or more per loan in customer acquisition costs. Retail banks often pay loan officers 50-75 basis points per loan to acquire new customers, or $1,500-$2,250, on a $300,000 dollar mortgage.

Plus, Redfin's average loan amount will be $400K, almost twice the national average. This will give us higher revenue per transaction and better gross margins to invest deeper in R&D over the long run.

R&D and Expansion Roadmap

Over the next three years, we'll pass through five phases as we develop our mortgage business. We'll expand from a correspondent lender manually originating conventional conforming mortgages in Texas to a fully-automated direct lender with 15-day closings, offering a suite of loan products, and covering all major Redfin markets in the Central and Eastern time zones. If we hit 15% gross margin in 2019, we'll expand the business aggressively to the rest of the U.S. in 2020 and 2021.

Launch: December 2016 - April 2017

Customer experience: when we launch in December, we'll have an online loan application and a secure site for borrowers to upload paystubs, tax returns and other required information. Price quotes will be sent on request by email and pre-approvals will take four hours for well-qualified borrowers. We'll only offer fixed-rate 30-year and 15-year conforming mortgages that can be sold to Fannie through a correspondent investor.

Mortgage advisor experience: we'll have basic lender tools for collecting all the data and documents and tracking the conditions we need to underwrite each loan. The rest of the origination process will be done manually using third-party tools to get underwriting conditions and mortgage rates, generate key documents like the Loan Estimate, and collect required information like the borrower's credit score and verification of employment. We'll close loans in 20 days because we'll close just a few loans each month.

Phase II: April 2017 - September 2017

Customer experience: we'll add adjustable-rate, low-downpayment mortgages, and jumbo loans. Price quotes will available online in real-time, but pre-approvals will still take two to four hours for well-qualified borrowers. During this phase the borrower will have to upload some documents manually, but we'll start to integrate the systems to automatically pull income, assets, credit, and liabilities.

Mortgage advisor experience: we'll integrate data from all of our third-party systems for underwriting conditions, mortgage rates, fees, credit scores, and all other elements we need to underwrite a loan. This should significantly reduce the amount of labor per loan. However, each loan will still be underwritten manually by an experienced underwriter. We'll close loans in 20 days, approaching the industry average productivity of two closes per employee per month.

Phase III: October 2017 - May 2018

Customer experience: By the end of 2017, we'll have automated the underwriting rules for well-qualified borrowers so we can offer online pre-approvals online in minutes. For borrowers with more complex situations, we'll issue same-day pre-approvals. Customers will be able to track all documents, deadlines, and tasks for their mortgage and real estate transactions in the Redfin Deal Room. We'll have a digital product that is significantly better than traditional lenders like Wells Fargo.

Mortgage advisor experience: By December 2017, we'll automate the process of underwriting the borrower's profile, although that process will still be manual for the appraisal and property. In early 2018, we'll begin automating the loan origination workflow. For example, two days before close, the borrower's credit will automatically be re-pulled by the system. As long as the credit is within the guidelines of the loan programs, we'll proceed to closing with no human intervention. We'll start closing simple loans in 15 days. By May 2018, productivity will be 2.4 closings per mortgage operations employee per month.

Phase IV: June 2018 - December 2019

Customer experience: We'll become a direct lender in June 2018. For conforming loans, our prices should improve by 10-50 basis points, or $300 to $1,500, on a $300,000 loan, depending on the borrower's credit and down-payment. Premium borrowers will get smaller improvements, and borrowers with lower credit and smaller downpayments will get bigger improvements. By the end of 2018, our online loan application will have most of our underwriting rules integrated, guiding the borrower to apply for the loan she can qualify for, rather than having her apply first and find out if she's approved later.

Mortgage advisor experience: Almost all of the loan workflow will be automated as well as the underwriting rules for more complex borrowing scenarios. At this point, we should be able to take a simple loan all the way to to closing, except for underwriting the property and appraisal, with almost no intervention from a mortgage advisor. Appraisals and closings will be scheduled on Redfin's Book-it-Now platform. Our mortgage team will be there to answer questions, clear roadblocks and prompt unresponsive borrowers to keep the process moving. We'll close in 15 days on average, with some loans closing faster. Our productivity will hit 3.5 closings per month by the end of this phase.

Phase IV: National Expansion

By the end of phase III, we'll be in nine Redfin markets in Central and Eastern time zones. Assuming we've hit our margin and productivity targets, it'll be time to scale the business. We'll continue to make incremental improvements to underwriting and workflow, but will spend most of the next two years bringing Redfin Mortgage to every market. We'll also open our system to all visitors to Redfin's website and applications, even those who are not working with a Redfin agent. We'll build a Deal Room for non-Redfin agents and clients to work with Redfin Mortgage and to track their transactions to closing. We may also consider adding re-finances in addition to purchase mortgages to fuel revenue growth and to cultivate long-term customer relationships.

Financials

2017 by Quarter

We'll launch with the four markets in Texas in December of 2016 and close our first loan in January 2017. We'll add Chicago at the end of Q3. Moving our launch from Seattle to Texas means fewer purchases to lend on and lower average loan amounts in our first year. Average Texas revenue per loan is $5,658 for the full year, compared to over $7,000 in Seattle.

We also slowed down our transaction and revenue growth in 2017 from the plan we presented last October, to let our mortgage operations team and engineers collaborate to build the best software possible, without getting consumed in the day-to-day of managing a high loan volume. As a result, revenue in our first year is only $1.1M, about half of what we presented to the board back in October. We'll lose $5.7M for the full year and need $10.8M in total capital, including the $5M that was already invested in 2016.

	Q1 2017	Q2 2017	Q3 2017	Q4 2017	FY 2017
Markets	4	4	5	5	5
Revenue / Deal	$4,579	$5,386	$5,585	$5,895	$5,658
Loans / Employee / Mo.	1.8	2.2	1.6	1.6	1.8
mortgage advisor OTE	$15K	$24K	$23K	$23K	$84K
Developers	9	10	11	12	12
Mortgage Heads	6	10	19	25	25
Loan Volume	$2.4M	$7.0M	$18.1M	$26.3M	$54M
Transactions	9	27	68	94	197
Revenue	$39K	$135K	$355K	$522K	$1.1M
Gross Margin	-958%	-294%	-136%	-97%	-168%
EBITDA	-$1.3M	-$1.4M	-$1.5M	-$1.6M	-$5.7M
Total Capital Required	$5.4M	$1.5M	$1.9M	$2.1M	$10.8M

Redfin Mortgage 2017 Financials, by Quarter

Gross margins are negative through 2017 and 2018 because of the cost of the executive team. Executive pay is 90% of revenue in 2017, dropping to 17% in 2018 and then 7% in 2019 as we gain scale.

The other major consideration for us is whether we're hiring fast enough in engineering to compete with Quicken and SoFi. Based on our roadmap, we feel confident we can deliver a great experience to borrowers by the end of 2017 and something truly unique by the end of 2018. But our competitors won't sit still. If Redfin outperforms its budget in H1 2017 or raises additional capital, we should revisit our R&D hiring plan. Hiring five to seven engineers in 2017 rather than the three currently budgeted would let us progress faster.

Redfin Mortgage 2021

A five-year financial forecast for a business that hasn't closed its first transaction is somewhat tenuous, but we want to be as thoughtful as we can about our gross margins and return on equity at scale. We expect to turn our first EBITDA profit of $2.3M in 2020 on $30.6M in revenue and $1.5B in loan volume. By 2021, we'll have gross margins approaching 40% and turn an EBITDA profit of $12.8M on revenue of $57.7M and almost $3B in loan volume.

	2017	2018	2019	2020	2021
Markets	5	7	9	14	18
Revenue / Deal	$5,658	$6,299	$7,117	$7,578	$7,992
Loans / Employee / Mo.	1.8	2.1	2.6	3.3	3.5
Mortgage advisor OTE	$82K	$104K	$128K	$153K	$165K
Developers	12	16	20	23	27
Mortgage Heads	10	37	68	107	182
Loan Volume	$54M	$276M	$736M	$1,535M	$2,909M
Transactions	197	930	2,183	4,266	7,631
Revenue	$1.1M	$5.5M	$14.7M	$30.6M	$57.7M
Gross Margin	-168%	-22%	16%	34%	39%
EBITDA	-$5.7M	-$6.4M	-$4.1M	$2.3M	$12.8M
EBITDA %	-541%	-117%	-28%	8%	22%
Total Capital Required	$10.8M	$8.5M	$7.0M	$5.6M	$2.8M

Redfin Mortgage Five-year Financial Forecast

At 39%, the 2021 gross margin is high, but we think it is achievable. This is higher than the 28% gross margins we presented last October, primarily because we were too conservative with revenue per loan. We added $700 in revenue per loan, or almost 10 points of margin based on using slightly higher and more realistic mark-ups for our loans. Even if margins turn out to be lower, we feel confident that we can make Redfin Mortgage a good business.

There are three key levers to drive profitability. The biggest lever is closings per employee. At BBVA, Jason's team closed $5B in loans per year with 500 employees, or $10MM per employee. Our 2021 forecast is $3B in loans with 200 employees, $15MM per mortgage operations employee. We believe that our technology will give us the advantage we need to achieve this productivity.

And, as we've already noted, our average loan amount of $400K is almost double the national average. We assume 200 basis points, or $8,000, in revenue per loan, compared to a national average of 306 basis points for similarly sized non-bank lenders. The increase in revenue per transaction in the table above is driven by expansion to more expensive markets, like Seattle and California. We don't intend to increase our prices above 200 basis points.

Finally, our variable loan compensation of $1,000 is $1,600 less per loan than the average reported by the MBA. By 2021, our mortgage advisors will make $165,000 in base plus bonus assuming 10 closed loans per month.

Return on Equity at Scale

We'll need $34M in capital to fund the mortgage business and collateralize the warehouse line through 2021. This plan is still speculative, but even if we give our gross-margin a haircut to 30%, we can hit an 21% ROE in 2021 at $60M in revenue.

After 2021, the additional cash we need to collateralize the warehouse grows more slowly than net income, so we won't need additional capital at that point. After 2021 our ROE should continue to increase as revenue grows. The table below shows our expected ROE at different revenue levels.

For this analysis, we assume marketing spending is 1% of revenue and R&D will settle at 10% of revenue. We also assumed that our effective tax rate over this period is 0% because Redfin's accumulated net operating losses will offset any tax liability for the next 5-10 years.

Revenue	$60M	$80M	$100M	$120M
Loan Volume	$3B	$4B	$5B	$6B
Gross Margin %	30%	30%	30%	30%
Marketing %	1%	1%	1%	1%
R&D %	10%	10%	10%	10%
G&A %	4%	4%	4%	4%
EBITDA %	15%	15%	15%	15%
EBITDA $	$9M	$12M	$15M	$18M
Net Income $	$7.2M	$9.6M	$12M	$14.4M
Leverage Ratio	15 to 1	15 to 1	15 to 1	15 to 1
Warehouse Size	$300M	$400M	$500M	$600M
Required Warehouse Collateral	$20M	$27M	$33M	$40M

Investors Equity	$34M	$34M	$34M	$34M
Return on Equity	21%	28%	35%	42%

Long-term Return on Equity by Revenue

The model above assumes 3% of revenue in stock-based compensation and a 15-to-1 leverage ratio on our warehouse line. That means we need one dollar in cash for every 15 dollars in our warehouse line. The model also assumes we can sell our loans to a correspondent or directly to Fannie or Freddie in an average of 24 days. This assumption is the biggest change since last October where we assumed it would take us closer to 50 days. By comparison, the national average for similarly sized lenders in 2015 was 20 days, according to the MBA annual report. After reading the report and talking to our correspondent investors, we realized our previous estimate was too conservative.

Here too, automation could give us an advantage. If we could drop our average holding time for a loan to 20 days or even 15 days, we could reduce the size of the warehouse we need and reduce our capital requirements by about 20% - 30% and make the business more capital-efficient.

Protecting our Balance Sheet

The main risk to our balance sheet is losses resulting from loan repurchases. A loan repurchase may occur if we sell a loan with a defect, like an incorrectly calculated borrower debt-to-income ratio, that doesn't meet our investors' guidelines. The risk of a repurchase increases as loan defaults increase, especially in the worst-case scenario like what we saw in 2008. The level of scrutiny on loans increases when the market worsens, and loan purchasers look for any issue, large or small, to get originators to buy back a loan.

The best way to reduce our repurchase risk is to build great underwriting and regulatory compliance processes and technology, and to originate the loans with the fewest possible defects. After Jason, our first two hires were our Director of Underwriting, Rhonda DeLuca, and our Director of Compliance, Bernardo Tolbert (no LinkedIn available).

Rhonda comes to us with 15 years of underwriting experience at correspondent originators and correspondent investors, and investigated fraud and compliance issues at Fannie Mae. Bernardo has 13 years of experience in mortgage and ran BBVA's quality control department for mortgage. At BBVA, Jason and Bernardo had a repurchase rate of 0.3%. Fannie Mae's average repurchase rate is 3.5%, but our financial model assumes a repurchase rate of 1% because of the team's track record.

Initially, our quality controls will be manual checklists. As our software for lending matures, these controls will be automated. Jumbo loans have more risk because of the larger loan size, so we'll start by getting the correspondent investor buying the loan to sign off before we close the transaction. This adds time to the transaction, so eventually we'll want to remove that step, but we'll walk before we run.

As good as we will be, defects will happen. When we are selling through a correspondent, often our investors will find the defect before the loan is purchased, and we'll have a chance to correct the issue. Sometimes that's as simple as collecting some additional documents from the borrower, which costs time and hassle for the borrower, but not money.

If we've made a major mistake like incorrectly calculating the borrower's income, we may need to buy down the rate of the loan on the borrower's behalf because we've promised the borrower a particular rate, even though she won't have enough income to support the monthly payments according to our investor's guidelines. That could cost 1% - 2% of the loan, depending on how bad our mistake is.

If a serious defect is identified after we've sold the loan, our investor may ask that we buy it back, which would place the loan on our balance sheet. Once a loan is repurchased, it can be sold on the scratch-and-dent market, which means that rather than selling it to a correspondent investor for a premium to the loan amount, we'll sell it for less than the loan amount. Selling loans to scratch-and-dent investors costs anywhere from 1% to 10% of the loan amount, depending on the severity of the defect.

Currently, we're setting aside six basis points, or $160 per loan in 2017, to remediate these issues. A 1% re-purchase rate and an average loss of 5% per re-purchase would be five basis points per loan, below our six-point set-aside. We think these reserves are sufficient to protect us and are an appropriate compromise between profits and risk mitigation.

In November 2014, Fannie Mae established a three-year limit on re-purchases for the loan originator as long as the borrower has made 36 timely payments. This limit on repurchase risk makes it easier to find insurance to limit our liability in a market downturn. In H2 2017, we'll investigate relationships with insurers to pay a fixed premium of up to six basis points on each loan when the loan closes, in lieu of the six-point set-aside. Some correspondent buyers like Wells Fargo already offer a program to pay a three to seven-point premium to remove buyback risk, which we'll also investigate.