

## Broker Compensation Patterns and Trends: 2005–2009

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**Abstract** Changes in the mortgage industry have been swiftly effected over the past few years. Many of the changes have come about as a response to the high level of observed delinquencies and defaults on residential mortgages as house prices plummeted, and others have evolved from continuing concerns about the treatment of borrowers during the mortgage origination process. The segmented mortgage industry of the early part of the decade, with loans being originated in the prime, subprime and government mortgage sectors, has been largely replaced with a bifurcated system. By year end 2010, the FHA/VA (government sector) combined with the conventional, conforming market share of originations was 90.8 %. In this paper, we examine some of the observed trends and changes in the types and levels of broker compensation that existed before the regulatory change that brought about the implementation of the Federal Reserve Board's (FRB) new loan officer compensation rule. Among other questions, we examine the variance in broker compensation across geographies, across lenders, across borrower types, and across loan products. The intent of this ex post analysis is to provide an understanding of the potential impacts of the declining broker industry on both access to mortgage loans and on the pricing of mortgage originations.

**Keywords** Mortgage lending · Broker compensation · Housing

### The Changes in the Market

That mortgage markets have shifted across many dimensions is understood. Just how dramatic some of those shifts have been is less well understood. The market in the earlier

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part of the decade (2004–2007) was divided between retail and wholesale loan origination production. Most large prime lenders had significant broker relationships and many subprime lenders used wholesale brokers exclusively to generate new loan volumes, with no (or very limited) retail operations. Current mortgage markets are comprised mainly of Federal Housing Association/Veterans Administration (FHA/VA) lending and conventional, conforming lending with FHA lending standards governed by the Department of Housing and Urban Development (HUD) and conventional, conforming market lending standards governed by Fannie Mae and Freddie Mac, or their conservator, the Federal Housing Finance Agency (FHFA). Both conventional/conforming and FHA loan products can be originated through retail or wholesale channels. However, over the past three years, substantial change occurred in the share of the wholesale channel's broker operations.

Much speculation revolves around whether the declining share is directly or indirectly attributable to the Federal Reserve Board's (FRB's) newly enacted and newly active loan officer compensation rules. For example, Mark Savitt, former President of the National Association of Mortgage Brokers (NAMB) stated recently, "Some people got out of the industry in anticipation of the rule. What happened is what we said would happen: the Fed has decimated an entire industry" (Muolo 2011). Other speculation links the mortgage channels to the products offered in the different market segments.

To demonstrate the fundamental shifts, we provide summary statistics by market (production) channel and by market segment using publicly available information. Observation of the trends in Table 1 clearly indicates that the changes have been significant.<sup>1</sup> The share of mortgages originated by brokers has fallen from a peak of 31.3 % in 2005 to a decade low of 11 % by 2010.

These changes reflect, in part, a dramatic shift in the market segments through which mortgages have been originated. The subprime sector, with its rapid growth from 2004 to 2006, virtually disappeared by 2010. That sector depended more extensively on wholesale originations than did the prime or government sectors. The change in market segmentation is shown in Table 2. Just as subprime reached its market share peak in 2005, so too did the share of the loans originated through wholesale brokers. In recent research, Berndt et al. (2010) suggest that the broker share of the subprime market was around 65 %.

At the same time that the subprime channel was increasing in share, the FHA/VA share of the market was declining quickly, reaching a low in 2006 (Courchane et al. 2009). By 2010, alternative products such as those in the subprime sector, or Alt A, had largely disappeared. The preponderance of home equity products had also declined from a high of over 14 % to a low in the decade of just over 3 %.

While the changes are easy to document, understanding the impact of the changes on the access of borrowers to mortgage markets and on the pricing of those products introduces considerable complexity. Using a composite dataset based on loans originated by several lenders, we compare loan products and market channels from 2004 to 2009. The intent of this exercise is to help policy makers and researchers better understand the likely impacts of some of the most dramatic market changes and to help focus public policy efforts on increasing borrower understanding of the mortgage products offered to them and originated for them. In this paper, we use a to

<sup>1</sup> Inside Mortgage Finance Publications (2011), p. 21.

**Table 1** Originations by market channel (dollars in billions)

Year	Retail	Broker	Correspondent	Total	Retail %	Broker %	Wholesale %
2000	395	292	361	1,048	37.7 %	27.9 %	62.3 %
2001	850	645	720	2,215	38.4 %	29.1 %	61.6 %
2002	1,185	845	855	2,885	41.1 %	29.3 %	58.9 %
2003	1,622	1,104	1,219	3,945	41.1 %	28.0 %	58.9 %
2004	1,205	903	812	2,920	41.3 %	30.9 %	58.7 %
2005	1,224	976	920	3,120	39.2 %	31.3 %	60.8 %
2006	1,120	880	980	2,980	37.6 %	29.5 %	62.4 %
2007	1,047	686	696	2,430	43.1 %	28.2 %	56.9 %
2008	726	295	479	1,500	48.4 %	19.7 %	51.6 %
2009	864	272	679	1,815	47.6 %	15.0 %	52.4 %
2010	791	173	606	1,570	50.4 %	11.0 %	49.6 %

examine the products, pricing, geographical distribution, and lender concentration through the wholesale broker channel. We do not examine the performance of the products, but focus, rather, on the *ex ante* distribution of risks and outcomes. As others have demonstrated, performance has been impacted so dramatically by changes in house prices that it is hard to link the *ex post* performance with the *ex ante* product choices.

### The Broker Channel

The wholesale lender channel depends on an origination strategy that links mortgage brokers or correspondents to the mortgage borrower. The borrower makes application through the broker, who initiates the process, forwards the application to the lender who will fund the loan, and often initiates the processing of appraisals, securing of

**Table 2** Originations by product (dollars in billions)

Year	FHA/VA	Conv/Conf	Jumbo	Subprime	Alt A	HEL	Total
2000	115	495	260	100	25	53	1,048
2001	175	1,265	460	160	40	115	2,215
2002	176	1,706	571	200	67	165	2,885
2003	220	2,460	650	310	85	220	3,945
2004	135	1,210	515	540	190	330	2,920
2005	90	1,090	570	625	380	365	3,120
2006	80	990	480	600	400	430	2,980
2007	116	1,151	348	191	275	349	2,430
2008	293	928	98	23	42	116	1,500
2009	451	1,185	92	4	6	77	1,815
2010	377	1,048	87	4	4	50	1,570

credit reports, and verification of income or employment. The broker may also offer alternative mortgage products to the borrower on behalf of one or many alternative lenders. The broker also works with the borrower to understand the relative pricing of one product compared to another. The lender, through this wholesale channel, can acquire the mortgage servicing rights for the mortgage without having to incur any of the fixed costs of retail lending.<sup>2</sup>

The relationship between the broker and the lender is nearly always that of independent contractor. As characterized by LaCour-Little (2009), the broker and borrower share a principal-agent type relationship. Historically, brokers provided services to the borrower in terms of the application for a mortgage and worked with lenders to originate the mortgages. This effort did not, in the research conducted by LaCour-Little, always result in the most advantageous interest rate for the borrower. In the period from 2004 to April 2011, brokers were compensated for their services through direct fees (or points) paid by borrowers and/or indirectly by lenders through the payment of yield spread premiums.<sup>3</sup> Table 3 describes volumes and market share activity among some of the largest lenders with wholesale/broker channel originations.

The structure of the industry and the share of loans originated through the wholesale/broker channel changed dramatically, dropping from a high of \$976 billion in 2005 to just \$173 billion in 2010. Not only did the dollar volume of loans originated through this channel drop considerably, but the lenders in the top ten rankings in this channel changed significantly. In 2004 and 2005, the channel was dominated by very large lenders with large subprime originations volumes in addition to their prime originations. Countrywide, Washington Mutual, Ameriquest, New Century, Option One, Fremont, Chase, IndyMac, and Wells Fargo all had considerable subprime volumes during at least some of the years from 2004 to 2006.<sup>4</sup> By 2007 and 2008, many of these lenders had ceased operations entirely or had been sold to others. Countrywide's lending operations moved to Bank of America in 2008, Wells Fargo merged with Wachovia, and Washington Mutual's assets were merged with JPMorgan Chase. Others such as Fremont, New Century, Ameriquest, Greenpoint, American Home, and Taylor Bean ceased operations entirely. As the wholesale channel was so well integrated with subprime loan product offerings, one question that can be examined is whether the loan products now being offered by the top ten wholesale producers has changed as well. If so, this may have important implications for the access to credit of those borrowers who do not/did not qualify for traditional, government insured or conventional, conforming loan products.

The willingness of lenders to continue offering products through the wholesale/broker channel may also have been impacted by a series of class action complaints addressed in lawsuits, brought against many of the top lenders listed in Table 3 below, alleging that lenders were responsible for discretion in pricing (loan officer/broker compensation) with respect to fees paid by borrowers to mortgage brokers during these years. With no ability to determine the cost basis for broker compensation

<sup>2</sup> These fixed costs include the costs of internal loan officers, the bricks and mortar costs of branches, and the marketing strategies that allow a retail lender to differentiate their products from other lenders.

<sup>3</sup> Loan officer compensation rules changed in April 2011.

<sup>4</sup> Inside Mortgage Finance Publications (2011), pp. 143–151.

**Table 3** Rankings of top wholesale/broker producers: 2004–2010

Rank	Bank	% Market share	% Own total	2010 (\$b)	Rank 2009	Rank 2008	Rank 2007	Rank 2006	Rank 2005	Rank 2004
1	Wells Fargo	19.20	8.50	\$33.22	1	2	5	3	3	5
2	Provident	14.70	94.50	\$25.38	2	9	16	na	na	na
3	US Bank	12.90	40.00	\$22.31	11	10	na	na	na	na
4	Bank of America	8.90	5.00	\$15.45	3	15	9	10	13	9
5	Flagstar	5.20	34.20	\$9.07	6	8	20	na	na	na
6	Citi, MO	5.20	13.50	\$8.99	12	3	3	6	12	
7	Fifth Third	4.40	37.40	\$7.58	10	na	na	na	na	na
8	AmTrust	4.30	68.90	\$7.40	4	5	13	na	na	na
9	MetLife	4.30	33.20	\$7.38	5	19	na	na	na	na
10	SunTrust	3.80	22.50	\$6.54	7	11	10	18	na	na
Estimated total for all lenders		100.00	11.00	\$173.00						

Source: Inside Mortgage Finance Publications (2011)

levels, lenders were left facing allegations about disparate impact but without the necessary data to address the claims.<sup>5</sup> Recent investigations by the Department of Justice (DOJ) have also focused on the determination of damages that may have been incurred by borrowers with loans originated through the broker channel. For example, the settlement between DOJ and American International Group (AIG) focused exclusively on the broker channel in a limited number of metropolitan statistical areas.<sup>6</sup> In the settlement between DOJ and AIG, the United States DOJ contended “that Defendants engaged in a pattern or practice of discrimination on the basis of race or color by allowing wholesale mortgage brokers to charge higher direct broker fees to African-American borrowers than to white borrowers for loans originated and funded by AIG FSB and/or WFL.” The Defendants denied all allegations and claims of discrimination, but in order to avoid the extensive costs of litigation, entered into a voluntary settlement that cost AIG \$1 million for credit counseling programs and up to \$6.1 million for any aggrieved person who may have suffered damages.

Given the important structural changes noted, we use loan level data to examine relationships among lenders and brokers in terms of the product offerings and geographical distribution of broker fee costs. We also look at the relationships between brokers and consumers, detailing products chosen and attendant fees.

Some of the hypotheses that we will test are the following:

- (1) Did lenders offer different products through wholesale and retail channels?
- (2) Did broker fees vary by product?

<sup>5</sup> See, for example, *Ramirez et al. v. GreenPoint Mortgage Funding, Inc.*, US District Court for the Northern District of California, Case 3:08-cv-00369-TEH and *Rodriguez et al. v. First Franklin Financial Corporation*, US District Court for the Northern District of California, Case 5:08-cv-01515-JW.

<sup>6</sup> See *United States v. AIG Federal Savings Bank and Wilmington Finance, Inc.*, US District Court, District of Delaware, Case 1:10-cv-00178-JJF.

- (3) Did broker fees vary due to competitive pressure (e.g., were they higher in MSAs with much competition compared to rural areas with little competition)?
- (4) Did broker fees vary by state level (perhaps due to impact of state based anti-predatory laws)?
- (5) How have product offerings changed for lenders in the absence of the subprime market? That is, for those lenders that still rank high in wholesale production, do they offer different products now in retail compared to wholesale channels?

Before addressing these explicit hypotheses, we turn to an examination of the literature which has focused on the broker/borrower/lender relationship in the past few years.

## The Literature

Two papers key to this literature were published recently—those by LaCour-Little (2009) and Woodward (2008). Both brought considerable understanding to the relationships between the broker and borrower and the broker and lender. Both, however, relied on data from 2000 to 2001 for testing the hypotheses they pose. LaCour-Little used data from two Florida banks in 2000 while Woodward used the data from the litigation proceedings from ABN-AMRO/Standard Federal combined with exclusively FHA data. These data preceded the rapid growth in subprime and they were also focused either on specific products (e.g., FHA) or specific geographies (e.g., Florida).

Similarly, a recent paper by Berndt et al. (2010) used data only from New Century, a strictly subprime lender with a focus on jumbo lending in CA. While they address a very interesting question about the ex post riskiness of loans originated through the subprime channel, the exclusivity of their data does not allow for the broader examination of wholesale lending practices made possible through our composite data across several lenders during the 2004–2009 period. While the papers suffered, individually and jointly, from being somewhat non-representative, the questions they posed are very important and cannot all be addressed by our research efforts.

These three papers raise some hypotheses that deserve mention here. Both LaCour-Little and Woodward focus importantly on the cost of mortgages originated by brokers. LaCour-Little poses the relationship between brokers and borrowers as that of a principal and agent.<sup>7</sup> He describes the typical relationship between the broker and borrower and empirically tests for differences in costs of origination for mortgages originated through the broker channel, compared to those originated through the retail channel. Given the time period of focus (2000), LaCour-Little cannot look at differential costs associated with the wide range of products offered through the subprime channel during the height of its market share in 2004–2007. Nonetheless, the question was (and remains) important, and he found that loans originated by brokers cost borrowers about 20 basis points more, on average, with the differential increasing for lower income borrowers and borrowers who are less credit worthy. LaCour-Little analyzes a sample of conforming, fixed rate loans. He is able to control for owner-occupancy status of borrower, loan term, the month in

<sup>7</sup> The study includes an extensive discussion of previous literature on the principal–agent relationship that will not be reproduced here.

which the loan is closed, FICO and loan-to-value ratio (LTV). Important factors missing from the analysis that might affect pricing in later years include adjustable rate loans, low documentation loans, origination by a subprime lender, the competition among brokers in particular geographies, and prepayment penalties among other factors. The model fits range from adjusted *R*-squared values of .19 for retail to .35 in his broker fixed effects model. This paper was one of the first to assess broker cost differentials and its conclusions suggested that further regulation of mortgage brokers, while perhaps warranted, may not lead to improved outcomes in terms of costs, given the incentives present in principal-agent relationships.

Susan Woodward provided significant research in this area as well. She first produced a working paper in 2003 which looked at the concept of consumer confusion around understanding the actual terms and costs of a loan closing. She followed this with the provision of a comprehensive analysis of FHA lending in 2008.<sup>8</sup> Woodward (2008) used data only from a national sample of 7,560 FHA mortgages, all of which were 30-year, fixed rate (FRM) and all of which were closed in May or June 2001. This study focused much of the thinking on how policy makers should consider closing costs and it carefully examined how the costs varied. Woodward included lender and broker services and costs and was able to link that to detailed information on borrower and loan characteristics such as the amount of the loan, interest rates, credit information, and race and ethnicity of both the borrower and the neighborhood in which the collateral existed. In her data, Woodward documents that average fees for brokered loans through the wholesale channel (\$4,000) were higher than the average for direct lender loans originated through the retail channel (\$3,150). She also noted that fees paid upfront (rather than amortized over the 30 year period of the loan) averaged \$1,400 in the retail and \$1,600 in the wholesale, brokered channel. Upfront cash charges paid by the borrower average \$1,400 for direct lender loans and \$1,600 for brokered loans. The variation in costs was examined by type of borrower and by state, with Nevada, Michigan, and Utah borrowers averaging \$2,500 more in closing costs than borrowers in the lowest cost state, Alaska. The conclusions drawn by Woodward were key to the debate on loan officer compensation regulatory change. That is, she found that the more complex the transaction, the higher the total costs and the higher the variability of costs. Lenders appeared to be influenced by financial literacy, offering borrowers in more well educated neighborhoods more competitive pricing.

While an important paper, Woodward's study, like that of LaCour-Little, suffers from having limited data (FHA product only), limited time (2000–2001), limited lender coverage, (FHA for Woodward and two conventional lenders for LaCour-Little) or geography (Florida—for LaCour-Little). The recent regulatory changes will apply to all wholesale channel brokered loans. To interpret their effectiveness, the establishment of a baseline over the past several years before the 2010 change is critical.

## Changes in Rules and Regulations

Passage of the Dodd-Frank Act brought into question many of the practices that lenders had relied upon over the past several years. No longer would no-

<sup>8</sup> See Woodward (2003) and Woodward (2008).

documentation and low-documentation mortgage products be made easily available. In fact, any residential mortgage lender must now make a reasonable and good faith determination of a borrower's ability to repay the mortgage at the agreed upon terms. While there is an exception to the ability to repay requirement, it is for mortgages classified as qualified.

Not only did Dodd-Frank change the rules (and liability assignments) of the game, so too did Regulation Z impact product offerings and channels. Known as the loan officer compensation regulation, the Federal Reserve System's Regulation Z required compliance for all residential mortgage loan applications received on or after April 1, 2011. According to the final rule, this regulation applies to "all persons who originate loans, including mortgage brokers and their employees, as well as mortgage loan officers employed by depository institutions and other lenders" (Board of Governors of the Federal Reserve System 2011). It "prohibits payments to loan originators which includes mortgage brokers and loan officers, based on the terms or conditions of the transaction other than the amount of credit extended" (Board of Governors of the Federal Reserve System 2011). The final rule further prohibits any person other than the consumer from paying compensation to a loan originator in a transaction where the consumer pays the loan originator directly. The Board is also finalizing the rule that prohibits loan originators from steering consumers to consummate a loan not in their interest based on the fact that the loan originator will receive greater compensation for such a loan. The final rules apply to closed-end transactions secured by a dwelling where the creditor receives a loan application on or after April 1, 2011. Under the rule, the amount of credit extended is deemed not to be a transaction term or condition of the loan for purposes of the prohibition, provided the compensation payments to loan originators are based on a fixed percentage of the amount of credit extended. However, such compensation may be subject to a minimum or maximum dollar amount. The minimum or maximum amount may not vary with each credit transaction. This entire regulation changes the compensation structure, and variability of the compensation structure, across brokers and loan officers from industry practice during the last decade.

To understand how these changes might impact the residential mortgage industry, we need to examine the specific characteristics of broker compensation and its relationship to retail loan officer compensation during the past decade. As much of the change observed, with the rise and fall of subprime and the attendant rise and fall of wholesale broker operations, took place during the latter half of the decade, we focus on the period from 2004 to 2009.

## The Data

There is little publicly available loan-level data that can be used to examine any questions regarding mortgage broker fees. Frequently used data collected under the Home Mortgage Disclosure Act (HMDA) do not include information on annual percentage rate (APR) or origination channel, much less lender fees, broker fees, and/or yield spread premiums (YSP). For this study, we use private data from lenders that allow us to uniquely answer questions regarding closing costs paid by borrowers from 2005 to 2009. The data include fields reported in HMDA, as well as information



on detailed broker fees, YSP, origination channel, APR, note rate, product type, documentation type, credit score, and loan-to-value ratio (LTV).

These data include aggregated loan-level from multiple lenders operating in both retail and wholesale channels from 2005 to 2009. For confidentiality reasons, we cannot report summary statistics for any individual lender, so we provide pooled comparisons with HMDA data in each year below. As displayed in the table, our data includes 5 % to 10 % of HMDA reportable loans per year and are very similar to HMDA on all observable metrics. The sample has broad geographic representation, including almost every MSA/MD and state/territory in every year.

## Trends Over Time

We present here a series of summary trends over time, with some discussion of reasons for the trends and possible implications for policy.

We provide below various further summary statistics for our sample.<sup>9</sup>

In Tables 4 and 5, we reported the proportion of loans, by loan characteristic, property location or demographic for all channels. In Tables 6 and 8, we report summary statistics over time by loan type (6) and (8) found in the wholesale channel. For these two tables, the wholesale channel percent and retail channel percent sum to 100. For example, for 2009, 20 % of all conventional loans are in the wholesale channel. 80 % is in retail. Tables 7 and 9, as compared to 6 and 8, have the wholesale channel as the entire population. The percentages of loan types sum to 100 % within the wholesale channel. For example, in Table 7, 99 % of the loans in the wholesale channel came through conventional lending with only 1 % in FHA/FA lending. By 2009, the percentages had changed significantly, with a full 25 % of wholesale lending focused on government loan originations insured, for the most part, by FHA. Most of the growth in FHA came about after the collapse of the subprime sector which depended heavily, as indicated earlier, on the wholesale/broker channel.

Also of note is the steady drop over this time period of conventional lending year by year in the wholesale, compared to retail, channel. The drop is not only due to the changed loan officer compensation as it began to decline considerably before the new regulations were promulgated. Likely the declining share of wholesale was driven first by the collapse of subprime while the share may be further eroded by the changing compensation regulations.

A striking change in 2009 within the wholesale channel, is the large share of refinance lending. Until 2009, the share of purchase money lending of all loans in the wholesale channel ranged from 45 % to 57 %, averaging 52 % over the full time period of our analysis. By 2009, however, the share of loans in wholesale that are for purchase money loans fell to under 25 %.

In Table 8, the complement is again the retail channel. Of all loans originated in 2005 through 2009, 52 % of those in the top 20 MSA/MD geographies were

<sup>9</sup> We remove loans with APRs greater than 20 and less than or equal to zero and broker fees or YSP greater than 10 %. We exclude loans not originated through traditional wholesale/broker or retail channels (e.g., correspondent loans).

**Table 4** Comparison of lender sample to public HMDA

	2005		2006		2007		2008		2009	
	Sample	HMDA	Sample	HMDA	Sample	HMDA	Sample	HMDA	Sample	HMDA
% of HMDA	6	100	7	100	10	100	9	100	5	100
Average income	96	96	104	104	110	107	101	103	109	105
Average loan amount	200	185	191	187	202	199	208	197	218	204
# of MSA/MDs	381	388	381	388	383	390	386	390	393	393
# of States/Territories	51	53	51	53	51	53	51	53	52	53
%Conventional	98	96	98	96	94	94	76	79	75	74
%Government	2	4	2	4	6	6	24	21	25	26
%Purchase	51	47	52	48	52	45	46	44	29	31
%Refinance	46	46	45	44	45	46	52	48	70	64
%Owner occ.	87	88	87	88	87	88	89	89	93	93
%First lien	88	83	84	78	86	83	97	93	100	97
%Second lien	12	17	16	22	14	17	3	7	0	3
%Single family	99	98	99	98	99	97	99	97	99	98
%Multifamily	0	0	0	0	0	0	0	0	0	0
%Manufactured housing	1	2	1	2	1	2	1	3	1	2
%Minority	32	29	35	31	28	27	23	22	17	19

originated through the wholesale channel.<sup>10</sup> The Top 20 list is based on the MSA/MDs with the largest application from HMDA in 2006. These MSA/MDs accounted for around 50 % of the total mortgage applications over the 2004–2009 time periods. By 2009, that percentage was just 25. Nearly 70 % of loans in the low and moderate income neighborhoods came from the wholesale channel in 2005; only 24 % were wholesale in these neighborhoods by 2009. During the peak of the subprime crisis, we observed 58 % of loans in high non-Hispanic white (NHW) concentration census tracts being originated in the wholesale channel (with 42 % in retail) and 67 % in high minority concentration census tracts being originated in the wholesale channel (with 33 % in retail). By 2009, as presented in Table 8, just 23 % of the loans in high minority census tracts are being originated through the wholesale channel.

If we focus on just the distribution of loans within the wholesale channel, we do not see, by 2009, a concentration of wholesale lending targeting very low income (low LMI) or high minority geographies (minority % > 80 %). In Table 9, in 2006, at the height of the subprime lending, just 3 % of wholesale loans were originated in low LMI neighborhoods and 10 % of wholesale loans were originated in high minority

<sup>10</sup> The top 20 MSAs were chosen based on volumes from the 2006 HMDA. They include Atlanta, Baltimore, Chicago, Dallas, Denver, Houston, Las Vegas, Los Angeles, Miami, New York, Oakland, Orlando, Philadelphia, Phoenix, Riverside CA, San Diego, Seattle, Tampa, and Washington DC.

**Table 5** Summary statistics

	2005–2009	2006	2007	2008	2009	2009
Avg APR	7.25	7.41	8.32	7.47	6.38	5.18
Avg broker fees (bps)	153	164	159	148	204	60
Avg YSP (bps)	93	105	123	110	105	45
Avg credit score	703	684	685	708	721	746
Avg LTV	70	70	67	68	76	73
%Retail	53	36	39	58	74	80
%Wholesale	47	64	61	42	26	20
%Jumbo loan amount	7	8	8	8	3	1
%Full documentation	56	52	47	49	78	95
Originations	3,925,593	882,666	945,853	1,071,704	615,118	410,252

neighborhoods. Over the entire time period, two-thirds of wholesale loans were originated to non-Hispanic white borrowers and a third to minority borrowers.

**Average Levels of APR**

Much of the focus around changes in the wholesale lending industry has been on the charges to consumers incurred in the origination of their loans. The fee income received by brokers in the wholesale channel can come directly from the borrowers

**Table 6** Retail and wholesale channels: percentage of all loans by loan type in the wholesale channel

	2005–2009	2005	2006	2007	2008	2009
Loan type						
Conventional	49	64	61	43	28	20
Government	23	50	47	20	21	20
Loan purpose						
Purchase	50	68	67	41	26	16
Home improvement	40	54	52	26	23	18
Refinance	43	60	54	43	27	21
Owner occupancy						
Owner occupied	46	64	60	42	26	20
Not owner occupied	49	66	64	39	28	15
Lien status						
First lien	46	64	60	42	27	20
Second lien	52	63	64	38	20	5
Property type						
One to four-family	47	64	61	42	26	20
Manufactured housing	40	54	53	33	28	22

**Table 7** Wholesale channel only: percentage of loans by loan type

	2005–2009	2005	2006	2007	2008	2009
Loan type						
Conventional	96	98	99	97	81	75
Government	4	2	1	3	19	25
Loan purpose						
Purchase	52	54	57	51	45	24
Home improvement	2	2	3	2	2	1
Refinance	46	43	40	47	53	75
Owner occupancy						
Owner occupied	87	87	86	88	88	95
Not owner occupied	13	13	14	12	12	5
Lien status						
First lien	88	89	83	87	98	100
Second lien	12	11	17	13	2	0
Property type						
One to four-family	99	99	99	99	99	99
Manufactured housing	1	1	1	1	1	1

(direct broker fees) or be paid the by lenders to the brokers (indirect broker fees often referred to as yield spread premiums (YSPs).) These fees comprise part of the calculation of the annual percentage rate on a loan and may vary by loan origination channel and by geography.<sup>11</sup> We look at the levels of APR by property location, specifically by location in an MSA/MD or outside an MSA/MD, as well as in the largest urban areas. In Table 10, we provide average APR levels for the retail and wholesale channels by year over the relevant time period.

We observe higher APRs on average during this time period in the wholesale channel, with the difference across all years and all loans being a bit over 100 basis points. The differential by 2009 has fallen to under 10 basis points—which may reflect changes in services over time provided by the brokers in the wholesale channel or the ease of originating loans under much stricter guidelines for approvals in 2009 compared to earlier years. With more standardized products (e.g., 30 year fixed rate, conventional, conforming or FHA loans predominantly), there is less need (or ability) for brokers to work with the qualification of marginal borrowers. Of course, the overall decline in rates also reflects the favorable interest rate environment of 2009 compared to 2006.

### Broker Compensation

We next examine total broker fees, which includes direct broker fees, YSP, and indirect broker fees. We also examine just YSP separately. Further work will examine trends for

<sup>11</sup> YSPs can either be paid as an upfront fee or be paid over time through a higher interest rate. In either way, they are captured in the APR calculation.

**Table 8** Retail and Wholesale channels: percentage of loans by property location and borrower demographic in the wholesale channel

	2005–2009	2005	2006	2007	2008	2009
MSA/MD status (%)						
Top 20 MSA/MD	52	68	65	47	31	25
Not top 20 MSA/MD	45	63	61	40	25	18
Out of MSA/MD	38	55	46	36	22	14
Urban/Rural status (%)						
Urban	52	69	66	47	30	24
Rural	39	54	51	36	22	15
Mixed urban/Rural	42	60	57	38	24	17
Relative income level (%)						
Low LMI	57	69	69	52	32	20
Moderate LMI	53	66	65	48	29	20
Middle LMI	46	63	59	41	26	18
Upper LMI	44	64	60	39	26	21
Racial/Ethnic composition of neighborhood (%)						
NHW %>80 %	43	61	58	38	25	19
NHW %≥50 %	44	63	59	40	26	19
Minority %>50 %	56	69	67	53	31	23
Minority %>80 %	59	68	67	57	32	23
Race/Ethnicity of borrower (%)						
Minority borrower	59	74	71	53	33	25
Non-Hispanic White (NHW) borrower	45	64	61	39	26	20

direct broker fees and the tradeoff between YSP and other forms of broker compensation. Tables 11, 12, 13, 14, 15, 16, and 17 present various dimensions across which we compare average fees paid by borrowers for loans originated in the wholesale/broker channel. Table 11 includes the information for total broker fees paid by geography. Table 12 presents that same information but just for the component of fees that is yield spread premium (or indirect broker compensation paid by the lender to the broker). Next, we present information on total broker compensation and indirect broker compensation, YSP (Table 13) by race/ethnicity. Tables 14 (total broker compensation) and 15 (YSP) present fees paid by loan type while Tables 16 (total broker compensation) and 17 (YSP) present fees paid by credit score and LTV categories.

We include in our data only observations where borrowers were charged positive broker fee or YSP amounts. As such, the average broker fee/YSP should be interpreted as the average broker fee/YSP, where a positive broker fee/YSP was charged.

In Table 11, for all loans, total broker fees averaged 219 basis points from 2005 to 2009. The rate did not vary much until 2009, remaining above 200 basis points in every year until 2009. The amounts are lower in areas with a lot of broker competition (top MSAs) and higher in rural areas without much competition. We observe, over time, higher rates in low and moderate MI neighborhoods with upper income neighborhoods paying less, on average than neighborhoods with lower incomes.

**Table 9** Wholesale channel only: distribution of loans by property location and borrower demographic

	2005–2009	2005	2006	2007	2008	2009
MSA/MD status (%)						
Top 20 MSA/MD	36	37	36	35	36	37
Not Top 20 MSA/MD	55	54	54	55	54	55
Out of MSA/MD	9	9	9	9	10	8
Urban/Rural status (%)						
Urban	51	51	51	51	50	47
Rural	6	6	6	7	7	7
Mixed urban/Rural	43	43	42	43	43	46
Relative income level (%)						
Low LMI	2	2	3	2	2	1
Moderate LMI	16	16	18	16	13	8
Middle LMI	50	51	51	51	50	44
Upper LMI	31	31	29	30	35	47
Racial/Ethnic composition of neighborhood (%)						
NHW %>80 %	50	49	48	50	55	62
NHW %≥50 %	79	78	76	78	83	89
Minority %>50 %	21	22	24	22	17	11
Minority %>80 %	9	9	10	10	7	3
Race/Ethnicity of borrower (%)						
Minority borrower	34	35	38	34	27	21
Non-Hispanic White borrower	66	65	62	66	73	79

Similarly, higher minority neighborhoods saw higher average total broker fees over this time period.

While Table 11 displays some very high level differences, those differences are considerably smaller if the focus turns to the lender paid or YSP fees. Table 12 shows that there is remarkably little variance in YSPs by any dimension over this time period and the rates by 2009 are just about 1 % of loan amount, on average.

We further segment average total broker fees by race and ethnicity. Again, the direct fees reflect much of the variance in total broker fees, with low variance due to YSPs.

The intent of this paper is not to attribute the variation in broker fees to any one cause, and certainly not to any underlying discriminatory behavior by lenders. In fact, it is impossible to get broker level specific data on costs incurred by brokers in the origination of the mortgage. One might infer that products more difficult to sell in the secondary market are harder to originate and that marginal borrowers might take more time and effort to qualify, but that cannot be shown with this data. What we can reflect is the average level of fee paid, segmented by characteristics of loans and borrowers such as loan type or credit score and/or LTV. Those results are shown in Table 14 below.

As shown in Table 14, government loans are more costly to originate through the wholesale channel than conventional conforming loans. This higher average level persists when looking only at YSPs. In terms of borrower, rather than loan characteristics, loans to borrowers with lower credit scores have, until 2009, been more costly

**Table 10** Average APR by year and property location

		2005–2009	2005	2006	2007	2008	2009
All loans	Retail	6.81	7.25	7.97	7.11	6.31	5.16
	Wholesale	7.77	7.51	8.54	7.96	6.59	5.25
Metropolitan area status							
In MSA/MD	Retail	6.80	7.26	8.00	7.11	6.30	5.16
	Wholesale	7.77	7.50	8.54	7.96	6.57	5.24
Out of MSA/MD	Retail	6.85	7.17	7.78	7.17	6.36	5.17
	Wholesale	7.81	7.56	8.55	7.97	6.70	5.35
Metropolitan Area Size							
Top 20 MSA/MD	Retail	6.85	7.31	8.05	7.12	6.28	5.16
	Wholesale	7.78	7.53	8.56	7.99	6.52	5.22
Not top 20 MSA/MD	Retail	6.77	7.23	7.97	7.10	6.32	5.16
	Wholesale	7.76	7.48	8.53	7.95	6.61	5.25
Urban and rural status							
Urban	Retail	6.90	7.41	8.10	7.13	6.33	5.20
	Wholesale	7.86	7.59	8.64	8.05	6.60	5.25
Rural	Retail	6.77	7.11	7.86	7.14	6.32	5.14
	Wholesale	7.70	7.47	8.44	7.89	6.65	5.31
Mixed urban/Rural	Retail	6.74	7.14	7.88	7.10	6.30	5.14
	Wholesale	7.68	7.42	8.45	7.87	6.57	5.23

to originate. Similarly higher LTV loans commanded higher broker fees. These results are consistent with the belief that more time and effort on the part of brokers to match borrowers to loan products that meet their needs might mean that the broker levies higher fees to complete the transaction. Again, the YSP portion of these fees does not vary as much by credit score or LTV as do broker direct fees. Under the new loan compensation regulations, only one type of payment can be received by the broker, and these tables might suggest that the ability of a broker to vary fees might be higher when receiving direct than indirect lender paid compensation.

**Probability of Obtaining a Loan through the Wholesale Channel**

Next, we implement some simple models to highlight loan, borrower, and property location characteristics associated with the choice of the wholesale channel. We do not attribute causal relationships to any of these estimations.

For example, while we find that borrowers who obtain mortgages for properties in urban locations are much more likely to have received a loan from a broker than from a retail loan officer in 2005, we do not (and cannot) control for the many factors that may explain why this happened.

We estimate logit models:

$$P(\text{Wholesale}|X) = \Lambda(\beta_0 + X'\beta) \tag{1}$$

**Table 11** Average total broker fees by property location (measured in basis points)

	2005–2009	2005	2006	2007	2008	2009
All loans	219	227	225	213	213	162
By metropolitan area status						
In MSA/MD	217	225	224	212	212	161
Out of MSA/MD	232	241	236	228	226	171
By metropolitan area size						
Top 20 MSA/MD	213	220	221	206	209	163
Not Top 20 MSA/MD	220	229	226	215	214	160
By urban and rural status						
Urban	223	230	231	217	215	161
Rural	231	242	236	226	224	170
Mixed urban/Rural	212	220	217	207	209	162
Relative income level						
Low LMI	261	268	265	255	255	188
Moderate LMI	251	256	254	244	249	191
Middle LMI	225	233	229	218	222	174
Upper LMI	191	200	197	186	186	147
Racial/Ethnic composition of neighborhood						
NHW>80	211	222	216	206	206	159
NHW≥50	212	221	217	207	207	160
Minority>50	244	248	251	237	241	177
Minority>80	261	266	266	252	260	188

where  $A(z) = \exp(z)/[1 + \exp(z)]$ ,  $X$  is a vector of loan, borrower, and property location characteristics, and  $\beta$  is a parameter vector. We calculate odds ratios of a given characteristic, as compared to a base characteristic, for each subgroup of factors. Odds ratios of one, greater than one, and less than one respectively imply that the probability of a borrower with loan characteristic  $X_i$  choosing a wholesale loan is equally, more, and less likely than the probability of a borrower with the base group characteristic obtaining a wholesale loan. Select results from this model are presented in Table 15.<sup>12</sup>

Some of the results are intuitive. Borrowers who chose government loans were less likely, until FHA had a large resurgence in 2008/2009, to obtain a brokered loan. Once subprime lenders virtually disappeared from the market, and government loans comprised a third of the market, the probability of receiving a brokered loan rose for those in the government segment. Similarly, borrowers in 2008 and 2009 were more likely to use a broker for refinance loan than for a purchase money loan.

<sup>12</sup> We also controlled for FSA/RHS loan, lien status, owner occupancy, MSA/MD or not, rural/urban, low income tracts, minority tract percentage and year. Other race categories were “missing,” and “other.” Odds ratios listed, with standard errors in parentheses are as follows: \*Significant at 10 %, \*\* Significant at 5 %, and \*\*\*Significant at 1 %).



**Table 12** Average YSP by property location

	2005–2009	2005	2006	2007	2008	2009
All loans	123	119	127	128	130	101
Metropolitan area status						
In MSA/MD	123	119	127	127	130	102
Out of MSA/MD	127	123	131	134	130	91
Metropolitan area size						
Top 20 MSA/MD	120	116	123	124	129	102
Not top 20 MSA/MD	125	121	130	129	131	102
Urban and rural status						
Urban	123	119	127	127	130	104
Rural	127	123	133	132	130	96
Mixed urban/Rural	123	119	127	128	129	100
Relative income level						
Low LMI	125	118	122	132	136	101
Moderate LMI	129	123	129	134	139	109
Middle LMI	126	121	130	131	133	104
Upper LMI	116	115	121	119	121	99
Racial/Ethnic composition of neighborhood						
NHW %>80 %	124	120	130	130	132	101
NHW %≥50 %	123	119	128	128	130	101
Minority %>50 %	125	122	125	128	131	105
Minority %>80 %	127	122	125	132	137	104

With respect to borrower credit and collateral characteristics, borrowers with generally higher LTVs had higher odds of having a wholesale loan until 2009. Similarly, focusing just on the annual fixed effects, in each year from 2005, it becomes less and less likely that a borrower would obtain a brokered loan. Credit

**Table 13** Average broker fees and YSPs by race/ethnicity

	2005–2009	2005	2006	2007	2008	2009
Average total broker fees						
African American borrower	261	266	261	256	271	191
Hispanic borrower	247	253	251	236	250	191
Minority borrower	237	242	243	231	232	164
Non-Hispanic White borrower	208	217	213	203	206	162
Average YSP (in basis points)						
African American borrower	132	124	129	141	151	110
Hispanic borrower	126	122	126	129	134	105
Minority borrower	126	121	126	131	134	110
Non-Hispanic White borrower	123	119	128	127	129	100

**Table 14** Broker fees and YSPs by loan and borrower characteristics (in basis points)

	2005–2009	2005	2006	2007	2008	2009
Average total broker fees						
Conventional	216	225	224	210	200	154
Government	277	308	315	317	273	201
Purchase	213	215	213	209	221	204
Refinance	224	240	239	218	206	149
First lien	226	232	235	222	215	162
Second lien	103	98	107	104	92	194
Average YSP						
Conventional	119	118	125	123	114	93
Government	180	214	217	231	172	141
Purchase	124	117	124	129	132	122
Refinance	122	123	132	127	127	93
First lien	130	126	136	136	133	101
Second lien	56	52	55	60	54	130
Average total broker fees by credit score and LTV						
300≤Credit Score<580	271	274	273	265	285	160
580≤credit score<620	254	255	255	248	285	170
620≤credit score<660	244	246	243	242	259	182
660≤credit score<700	225	230	226	220	229	186
700≤credit score<740	210	215	214	203	210	172
740≤credit score≤850	191	203	200	186	187	156
LTV≤80	208	219	216	199	193	154
80<LTV≤90	245	253	254	239	229	172
90<LTV≤95	252	252	261	256	243	188
95<LTV≤100	259	266	267	253	267	202
LTV>100	265	272	268	305	246	212
Average YSP by credit score and LTV						
300≤credit score<580	140	138	147	134	111	94
580≤credit score<620	149	138	151	155	170	117
620≤credit score<660	137	127	134	144	157	105
660≤credit score<700	120	112	119	126	132	108
700≤credit score<740	117	110	118	120	124	104
740≤credit score≤850	110	110	116	113	115	100
LTV≤80	113	114	118	115	110	94
80<LTV≤90	135	130	144	137	135	107
90<LTV≤95	153	131	157	174	155	122
95<LTV≤100	159	139	166	163	169	147
LTV>100	154	184	170	178	143	130

score impacts change over the time period with those with higher scores more likely to use the wholesale channel until 2006 and then less likely after that period.

**Table 15** Probability of having a brokered loan (odds ratios compared to base group reported)

	2005-2009	2005	2006	2007	2008	2009
Loan type (base group = conventional)						
FHA	0.481*** (0.003)	0.515*** (0.011)	0.530*** (0.011)	0.113*** (0.002)	0.427*** (0.005)	1.760*** (0.037)
VA	0.490*** (0.007)	0.456*** (0.018)	0.343*** (0.014)	0.261*** (0.008)	0.465*** (0.015)	1.581*** (0.055)
Purchase (base group = purchase money)						
Refinance	0.853*** (0.002)	0.830*** (0.004)	0.626*** (0.003)	0.979*** (0.004)	1.069*** (0.007)	1.539*** (0.017)
Race/Ethnicity (base group = non-Hispanic White)						
African American/Black	0.942*** (0.004)	0.937*** (0.008)	0.917*** (0.007)	0.950*** (0.008)	0.879*** (0.012)	0.822*** (0.018)
Hispanic/Latino	1.493*** (0.006)	1.632*** (0.014)	1.639*** (0.013)	1.503*** (0.011)	1.130*** (0.013)	1.053*** (0.020)
Asian	2.186*** (0.012)	3.403*** (0.051)	2.667*** (0.037)	1.890*** (0.019)	1.768*** (0.023)	2.020*** (0.034)
Credit score (base group = credit score <580)						
580 ≤ credit score <620	1.420*** (0.009)	1.825*** (0.019)	1.422*** (0.015)	0.580*** (0.009)	1.124*** (0.029)	0.397*** (0.022)
620 ≤ credit score <660	1.559*** (0.009)	2.618*** (0.026)	1.632*** (0.016)	0.308*** (0.004)	0.965 (0.023)	0.486*** (0.023)
660 ≤ credit score <700	1.471*** (0.008)	2.810*** (0.027)	1.830*** (0.018)	0.217*** (0.003)	0.732*** (0.017)	0.460*** (0.022)
700 ≤ credit score <740	1.509*** (0.009)	3.403*** (0.034)	2.016*** (0.020)	0.207*** (0.003)	0.677*** (0.016)	0.480*** (0.022)
740 ≤ credit score ≤ 850	1.202*** (0.007)	2.556*** (0.025)	1.489*** (0.015)	0.159*** (0.002)	0.598*** (0.014)	0.575*** (0.027)
Loan-to-value ratio (base group = LTV ≤ 80)						
80 < LTV ≤ 90	1.236*** (0.005)	1.011 (0.008)	1.076*** (0.008)	1.802*** (0.014)	1.453*** (0.014)	0.825*** (0.015)
90 < LTV ≤ 95	1.464*** (0.008)	1.216*** (0.016)	1.118*** (0.014)	1.735*** (0.017)	1.972*** (0.023)	0.881*** (0.021)
95 < LTV ≤ 100	1.151*** (0.006)	1.166*** (0.013)	1.098*** (0.012)	1.236*** (0.011)	1.283*** (0.018)	0.701*** (0.016)
LTV > 100	1.161*** (0.020)	1.370*** (0.060)	1.964*** (0.097)	1.103*** (0.040)	1.220*** (0.042)	0.699*** (0.028)
Observations	3,881,397	871,957	938,076	1,059,892	609,401	402,071
Adjusted R-sq.	0.118	0.069	0.073	0.071	0.036	0.040

**Table 16** Probability of having greater than average broker fees (bps) (odds ratios compared to base group reported)

	2005–2009	2005	2006	2007	2008	2009
Loan type (base group = conventional)						
FHA	2.029*** (0.023)	3.246*** (0.137)	3.611*** (0.156)	4.951*** (0.177)	1.435*** (0.032)	2.351*** (0.114)
VA	1.766*** (0.053)	1.657*** (0.106)	1.460*** (0.113)	2.202*** (0.153)	0.995 (0.058)	2.485*** (0.230)
Purchase (base group = purchase money)						
Refinance	1.034*** (0.004)	1.227*** (0.008)	1.160*** (0.007)	0.915*** (0.007)	0.837*** (0.010)	0.383*** (0.008)
Race/Ethnicity (base group = non-Hispanic White)						
African American/Black	1.450*** (0.010)	1.538*** (0.018)	1.527*** (0.017)	1.339*** (0.017)	1.569*** (0.039)	1.195*** (0.059)
Hispanic/Latino	1.575*** (0.008)	1.669*** (0.016)	1.614*** (0.015)	1.524*** (0.016)	1.583*** (0.031)	1.270*** (0.047)
Asian	0.878*** (0.006)	0.924*** (0.011)	0.926*** (0.012)	0.933*** (0.014)	0.766*** (0.017)	0.653*** (0.020)
Credit score (base group = credit score < 580)						
580 ≤ credit score < 620	0.838*** (0.008)	0.773*** (0.013)	0.806*** (0.014)	0.861*** (0.015)	2.097*** (0.097)	1.481*** (0.190)
620 ≤ credit score < 660	0.837*** (0.007)	0.705*** (0.011)	0.759*** (0.012)	1.017 (0.016)	2.310*** (0.099)	2.227*** (0.253)
660 ≤ credit score < 700	0.765*** (0.007)	0.609*** (0.009)	0.695*** (0.011)	1.003 (0.016)	1.902*** (0.081)	3.107*** (0.342)
700 ≤ credit score < 740	0.693*** (0.006)	0.522*** (0.008)	0.667*** (0.010)	0.918*** (0.014)	1.617*** (0.068)	2.781*** (0.302)
740 ≤ credit score ≤ 850	0.569*** (0.005)	0.448*** (0.007)	0.554*** (0.009)	0.713*** (0.011)	1.211*** (0.051)	2.612*** (0.282)
Loan-to-value ratio (base group = LTV ≤ 80)						
80 < LTV ≤ 90	1.250*** (0.007)	1.258*** (0.012)	1.245*** (0.012)	1.165*** (0.012)	1.349*** (0.022)	0.931* (0.035)
90 < LTV ≤ 95	1.497*** (0.012)	1.333*** (0.021)	1.394*** (0.023)	1.691*** (0.024)	1.515*** (0.030)	0.960 (0.052)
95 < LTV ≤ 100	1.385*** (0.010)	1.261*** (0.018)	1.373*** (0.020)	1.380*** (0.018)	1.662*** (0.042)	0.738*** (0.040)
LTV > 100	1.485*** (0.049)	1.524*** (0.103)	1.370*** (0.115)	1.887*** (0.156)	1.676*** (0.110)	0.682*** (0.061)
Observations	1,766,315	536,562	561,216	439,342	157,084	72,110
Adjusted R-sq.	0.128	0.122	0.160	0.114	0.081	0.073

**Table 17** Probability of having greater than average YSP (bps) (odds ratios compared to base group reported)

	2005-2009	2005	2006	2007	2008	2009
Loan type (base group = conventional)						
FHA	2.735*** (0.045)	9.669*** (1.048)	6.364*** (0.542)	14.326*** (1.023)	1.458*** (0.048)	4.745*** (0.321)
VA	1.800*** (0.085)	4.041*** (0.604)	1.616*** (0.207)	2.812*** (0.458)	0.928 (0.072)	2.656*** (0.296)
Purchase (base group = purchase money)						
Refinance	0.834*** (0.006)	0.896*** (0.013)	0.922*** (0.012)	0.746*** (0.010)	0.966** (0.020)	0.695*** (0.017)
Race/Ethnicity (base group = non-Hispanic White)						
African American/Black	0.836*** (0.010)	0.875*** (0.021)	0.928*** (0.020)	0.809*** (0.018)	0.970 (0.035)	0.881* (0.060)
Hispanic/Latino	0.910*** (0.010)	0.910*** (0.021)	0.954** (0.019)	0.913*** (0.018)	0.961 (0.029)	0.874*** (0.039)
Asian	1.127*** (0.019)	0.872*** (0.034)	0.985 (0.036)	0.973 (0.034)	0.969 (0.040)	2.108*** (0.076)
Credit score (base group = credit score <580)						
580 ≤ credit score <620	1.222*** (0.019)	1.029 (0.032)	1.039 (0.029)	1.297*** (0.037)	11.515*** (1.363)	0.460 (0.331)
620 ≤ credit score <660	1.243*** (0.019)	0.907*** (0.027)	0.868*** (0.023)	1.483*** (0.040)	15.888*** (1.843)	0.330 (0.224)
660 ≤ credit score <700	1.322*** (0.020)	0.825*** (0.025)	0.781*** (0.021)	1.909*** (0.051)	15.500*** (1.798)	0.476 (0.321)
700 ≤ credit score <740	1.425*** (0.022)	0.813*** (0.026)	0.766*** (0.022)	2.220*** (0.061)	16.616*** (1.931)	0.560 (0.378)
740 ≤ credit score ≤ 850	1.436*** (0.022)	0.836*** (0.026)	0.726*** (0.020)	1.902*** (0.051)	16.310*** (1.888)	0.795 (0.536)
Loan-to-value ratio (base group = LTV ≤ 80)						
80 < LTV ≤ 90	0.930*** (0.009)	0.874*** (0.019)	1.214*** (0.024)	0.750*** (0.014)	1.208*** (0.033)	0.947 (0.044)
90 < LTV ≤ 95	1.164*** (0.017)	0.851*** (0.029)	1.242*** (0.044)	1.095*** (0.032)	1.663*** (0.053)	0.975 (0.070)
95 < LTV ≤ 100	1.345*** (0.016)	0.864*** (0.021)	1.638*** (0.038)	1.760*** (0.039)	1.786*** (0.071)	0.886 (0.068)
LTV > 100	1.624*** (0.091)	1.205 (0.200)	1.472** (0.222)	1.162 (0.220)	3.170*** (0.301)	0.949 (0.120)
Observations	454,629	98,455	119,783	126,082	59,419	50,888
Adjusted R-sq.	0.084	0.071	0.098	0.109	0.069	0.053

Interestingly, African Americans were less likely than non-Hispanic whites to use brokers while Hispanics were more likely to use brokers. This may reflect the additional language services that can be offered by brokers with Latino backgrounds.

### Probability of Obtaining a Loan with Above Average Fees

We use similar models to examine characteristics associated with obtaining a broker fee or yield spread premium (YSP) above the average broker fee or YSP for each time period. Again we do not claim causality with these models, as they lack a proper set of controls for other factors that may influence broker fees or YSP charged, nor take into account choices borrowers make concerning their loan product which might influence fees. The models take the form,

$$P(\text{Broker Fees} > \text{Average Broker Fees}|X) = \Lambda(\beta_0 + X'\gamma) \quad (2)$$

$$P(\text{YSP} > \text{Average YSP}|X) = \Lambda(\gamma_0 + X'\gamma) \quad (3)$$

where  $\gamma$  is a parameter vector, and as in equation (1),  $\Lambda(z) = \exp(z)/[1 + \exp(z)]$  and  $X$  is a vector of loan, borrower, and property location characteristics. Results are presented in Table 16.

Borrowers with government insured loans are much more likely to pay higher fees than borrowers with conventional mortgage in every year. In 2007, they were nearly five times more likely to pay higher fees. Generally, there is little difference in fee levels for refinance loans compared to purchase money loans over the entire time period with odds close to one for the 2005–2009 period combined. As credit underwriting and pricing standards have tightened, we expect borrowers with higher credit scores and lower LTVs to pay lower fees. In any given year, we observe that those with higher credit scores are generally less likely to incur average broker fees above the average level. Borrowers with higher down payments and lower LTV ratios managed to pay lower average broker fees in most years. African American and Hispanic borrowers are more likely, across all years, to pay higher than average broker fees with the odds ratios declining for either group by 2009.

To address the question of whether broker fees might be used toward closing costs, we look (in Table 17) at the specific portion of broker fees that is paid by lenders to brokers when above par loans are delivered to the lenders. Dramatically higher odds of having a greater than average YSP occur in the FHA market across the time period. As FHA lending focused on first time and lower income borrowers with lower down payments, we would expect to see somewhat higher YSPs in that market. Minorities other than Asians are less likely to pay higher than average YSPs, regardless of the year.

### Summary and Conclusions

Given the importance of the wholesale channel for mortgage originations, the analysis devoted to that sector has been surprisingly low. This reflects in part that the

HMDA data, used for other loan level analysis, does not allow for differentiation between the wholesale and retail channels. This research attempts to fill in some of the gaps in understanding the differences between outcomes in mortgage products and prices for borrowers who choose to work with a mortgage broker and those who choose to work with retail loan officers. We find results that support some of the findings of previous researchers, with borrowers in the government sector of the mortgage market being more likely to obtain brokered loans and loans with higher broker fees and yield spread premiums.

We find that lower income and Hispanic borrowers are more likely to have broker originated loans while African Americans are less likely to obtain wholesale channel loans. Borrowers with lower credit scores and higher LTV ratios, reflecting less good credit and less available cash for down payments are more likely to obtain wholesale loans and more likely to have loans with higher fees. Considerable research remains to be done, but this provides a more comprehensive view of the wholesale channel and the costs associated with it than has been previously available.

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