



JMN Financial

Prepayment and Loss Modeling

2625 Townsgate Road
Suite 310
Westlake Village, CA 91361
805-413-8500
www.jmnfinancial.com

Prepayment/Loss Modeling

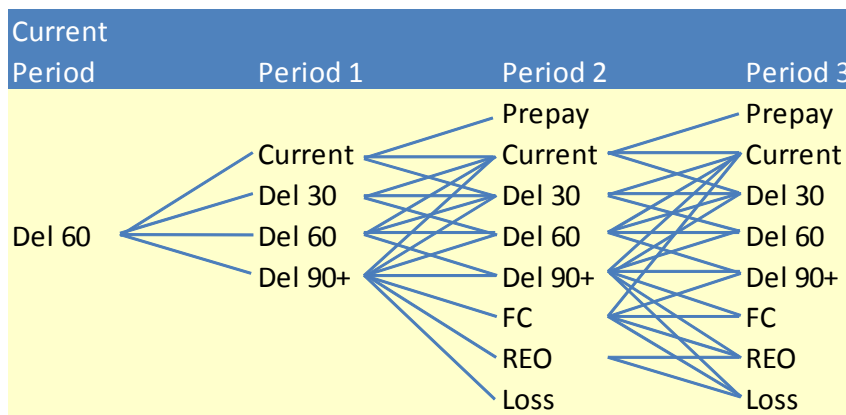
Introduction

JMN's Prepayment/Loss model is based on the experience of individual mortgage holders to a set of dynamic and static variables that influence a borrower's behavior over time. Some of the variables are related to the original credit quality of the mortgage while others reflect various economic environments (see table below).

Static Factors	Dynamic Factors
Original FICO	Current CLTV
Documentation	Refinance Incentive
Occupancy	Age
Loan Purpose	Payment Amount
Margin	Prepayment Penalty
Original Loan Size	

One of the key factors in determining borrower behavior, from both a prepayment and loss standpoint, is the estimated equity a borrower has in the property at each point in time throughout the life of the mortgage. Not only does the model dramatically increase the propensity of default when the borrower's equity becomes negative, but also dramatically decreases prepayments due to the borrower's inability to seek financing alternatives.

The nonlinear transition model is comprised of several sub-models that calculate the probability of moving from one state to another throughout the life of the mortgage (e.g., Current, 30 Days Delinquent, 60 Days Delinquent, 90+ Days Delinquent, Foreclosure, REO, Prepayment, and Loss). In all, there are 25 separate sub-models representing movements from one state to another that may be effected by a few or all of the static and dynamic factors previously discussed (see table below). Although computationally intensive, it is generally accepted that transition model produces the best estimate of losses given the current state is known (i.e., aged portfolios).



Transition Model Development

Each transition model is developed at the product level using historical data dating back 7 to 15 years. JMN acquires historical mortgage data from CoreLogic to create loan level adjusted time series data. The data is subsequently combined with Metropolitan Statistical Area (MSA) level housing price data from the Federal Housing Finance Authority (FHFA) and Cash Schiller Weiss to produce updated CLTV estimates throughout the time series. In addition, historical rate information such as LIBOR, Treasury and Mortgage rates are added to the time series dependant on the type of mortgage product being analyzed (see list of product models below).

ABS	MBS
Alt A Pay Option ARM	MBS 1/1 ARM
Alt A 1/1 ARM	MBS 2/1ARM
Alt A 2/1 Hybrid ARM	MBS 3/1 ARM
Alt A 3/1 Hybrid ARM	MBS 5/1 ARM
Alt A 5/1 Hybrid ARM	MBS 7/1 ARM
Alt A 7/1 Hybrid ARM	MBS Fixed
Alt A Fixed	MBS Second Lien
BC ARM	
BC Hybrid ARM	
BC Fixed	
Alt A Second Lien	

A statistical model is then use to perform a logistic regression analysis on the time series data. Each transition (e.g., Current to 30 Days Delinquent) represents a separate logistic regression analysis in which the statistically significant variables are determined. An example of a logistic regression computed in SAS has been provided below.

Pay Option ARM Current to 30 Days					
Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	0.80140	0.17110	22	<.0001
doc_stat	1	0.28720	0.00323	7,897	<.0001
adj_cltv	1	0.01530	0.00004	138,817	<.0001
fico	1	-0.00894	0.00003	89,598	<.0001
occ_stat	1	0.03780	0.00327	134	<.0001
purp_stat	1	-0.12460	0.00302	1,702	<.0001
high1_low2_bal	1	-0.12430	0.00335	1,377	<.0001
margin_stat	1	0.14260	0.00191	5,564	<.0001

Model Usage

For a given a HPI and rate scenario, each product model can be applied to loan level or aggregated data to produce monthly projections of the following output:

- Prepayment (CPR)
- Default (CDR)
- Loss
- Loss Severity
- Current
- 30 Days Delinquent
- 60 Days Delinquent
- 90 + Days Delinquent
- Foreclosure
- REO

The vectors can then be used to determine loan loss reserves, linked into 3rd party system or aggregated into single vectors to be fed into systems such as Intex.

Model Back Testing

On a monthly basis, all existing loans (approximately 4.5 million) are run through the roll rate model to produce one month projections throughout the entire transition matrix. The projections are then compared to actual results to get a sense of how well the model is performing and to signal any adjustments that might need to be made, either qualitative or quantitative, to enhance the models predictive ability going forward (see table below).

Model	POA	POA	POA	POA
Orig Year	2004	2005	2006	2007
Loans	23,676	107,805	185,706	83,253
UPB (000s)	8,562,382	41,608,003	75,499,116	35,619,711
C->PP Proj	0.4%	0.3%	0.3%	0.4%
C->PP Act	0.2%	0.2%	0.2%	0.4%
C->30 Proj	3.1%	4.3%	5.4%	5.2%
C->30 Act	3.0%	3.4%	4.4%	4.6%
30->C Proj	24.5%	20.2%	18.3%	17.9%
30->C Act	23.5%	21.4%	18.9%	19.3%
30->60 Proj	26.6%	33.1%	34.2%	38.2%
30->60 Act	27.4%	29.5%	31.9%	34.6%
60->C Proj	7.5%	5.2%	4.4%	4.6%
60->C Act	3.9%	5.4%	4.4%	3.9%
60->30 Proj	9.4%	7.6%	6.8%	7.0%
60->30 Act	13.2%	8.7%	8.9%	7.2%
60->90 Proj	38.2%	42.1%	48.2%	49.4%
60->90 Act	36.3%	41.1%	47.5%	49.2%
90->60 Proj	1.4%	0.9%	0.8%	0.9%
90->60 Act	0.7%	0.6%	0.6%	0.6%
90->FC Proj	13.9%	12.9%	12.3%	12.8%
90->FC Act	10.4%	11.6%	11.4%	13.3%
FC->REO Proj	4.5%	4.5%	4.5%	4.5%
FC->REO Act	4.4%	4.3%	4.6%	4.4%
REO->Dflt Proj	15.6%	17.0%	17.1%	16.7%
REO->Dflt Act	13.5%	15.2%	16.2%	16.3%
Sev Proj	51.0%	62.7%	63.4%	60.4%
Sev Act	47.0%	60.2%	64.5%	63.4%

