

Yield Book FN DUS model overview and performance

Agency CMBS

Overview

FN DUS is one of the largest multifamily lending programs with a current outstanding balance over \$330 billion. Yield Book FN DUS prepayment model is a loan-level model which provides clients with a tool to study and project prepayment speeds of FN DUS loans. This paper gives an introduction of the FN DUS product features and a discussion of major model components and prepayment behavior/drivers. Performance testing is done with an empirical study of actual vs. model-projected speeds for the recent vintages.

FN DUS introduction

Fannie Mae runs multifamily lending business primarily through the DUS (Delegated Underwriting and Servicing) Program with DUS lenders sharing losses with Fannie Mae.

- In general, a DUS pool is backed by a single DUS loan which has a single property as its collateral. DUS pools may be further securitized into DUS Megas or DUS REMICs (ACES).
- Most commonly, a DUS loan is amortized using 30-year schedule but paid back with a balloon payment at 10-year or 12-year maturity, subject to call protection over much of the loan term.
- Yield Maintenance (YM) is the main call protection type for FN DUS.

Snapshot of FN DUS origination from 2017 to 2019

	2017	2018	2019
Total UPB (\$B)	62.0	64.3	70.2
Avg LTV	67%	65%	66%
Avg DSCR	1.9	1.9	1.9
% Fixed Rate	84%	90%	92%
Avg Note Rate	4.32%	4.75%	4.19%
Avg Loan Size (\$M)	16.9	17.6	16.9

FN DUS led Agency CMBS origination volume in 2019 with \$70 billion UPB, more than Freddie K (\$62 billion) and GNMA Project Loans (\$15 billion)

Model considerations for FN DUS Fixed Rate

For FN DUS Fixed Rate pools, the Yield Book prepayment model takes into account the following factors:

- Loan term and length of YM: Prepayment behavior is driven by loan term and YM structure. Typically 10-yr loan term and 9.5 years of YM (followed by ½ year open period) as in 10/9.5, as well as 12-yr loan term and 11.5-yr YM (followed by ½ year open period) as in 12/11.5. Prepayment activity generally increases during YM period as the loan seasons and the size of YM penalty declines.
- Open Period: Speeds generally ramp up to open period and jump at the beginning of open period.
- The length of open period: Short open period DUS (typically 6 months) prepays faster approaching and in open period, comparing to long open period DUS (>7 months, typically 24 or 36 months as in 7/5s and 10/7s). Short open period borrowers have to find financing in a relatively short period of time, in contrast, the long open period borrowers have more time to consider their options.
- Interest rate: Rate refinance incentive has a relatively small effect due to the fact that the YM call protection is very punitive and typically overwhelms the refinance benefit. Rate refinance may start to make sense towards the end of YM period and entering the open period as the YM penalty decreases/disappears.

For 2019 vintage, 10/9.5s account for 49% of volume, following by 12/11.5s at 16%, and 15/14.5s and 7/6.5s each at 7%.

Model considerations for FN DUS ARM

FN DUS ARMs typically prepay faster than Fixed Rates. The Yield Book prepayment model also considers the following for FN DUS ARMs:

- Seasoning curve is split into two curves, one for longer ARMs (typically 10 years of loan term), and another separate seasoning curve for shorter ARMs (mostly 7 years). The short ARMs in general prepay faster than the longer ARMs.
- Two major prepayment penalty structures for 10-yr ARMs:
 1. First year lockout, followed by 1% penalty every year, the last 3 months of the tenth year is open.
 2. 5-5-4-4-3-3-2-2-1-1, no lockout period, last three months of the tenth year is open.
- Interest rate movement doesn't impact prepayment speeds of FN DUS ARMs as they are floating rate loans.

ARMs are roughly 10% of the production in recent years. They typically use prepayment penalty as call protection, instead of yield maintenance. 10-yr ARMs account for more than 80% of all ARMs.

Other model drivers

For both Fixed Rate and ARMs, here are the other drivers of prepayment included in the Yield Book FN DUS prepayment model:

- **Property Appreciation:** Property appreciation leads to higher prepayment with property selling or cash-out refinance. The model uses FRB Commercial Property Index (Federal Reserve Board).
- **Unemployment:** Rising unemployment rate slows down prepayment speeds for rental properties that cater to the workforce. Unemployment rate data from Bureau of Labor Statistics is used by the model.
- **Property type:** Multifamily, Coop, Manufactured Housing, Military Housing, Senior Housing, Student Housing. Multifamily and Student Housing prepay faster than the other property types.
- **Seasonality:** Similar to single-family prepayments, there's seasonality effect by calendar month.
- **Default:** Default is included as involuntary prepayment. Default projection is based on delinquency status, with unemployment used as a scaling factor to account for economic stress. YM or prepay penalty is not collected in case of default.

Delinquencies and losses were very low historically. Serious delinquencies only hit 0.56% in 2010 during the height of the financial crisis. For most recent years, it's been below 0.1%.

Performance testing

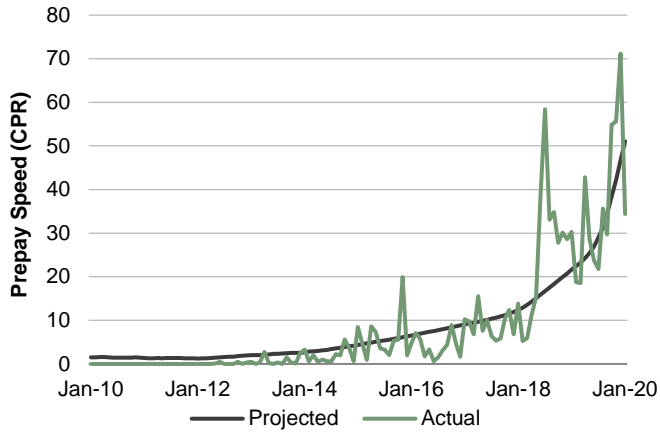
In the Appendix, we show the charts of model projected prepayment speeds comparing to actual speeds for some of recent vintages (mostly since 2010), including:

- Performance charts for FN DUS 10/9.5 for vintages 2010-2017.
- Performance charts for FN DUS HX (fixed rate with loan term less than ten years) for vintages 2013-2016.
- Performance charts for FN DUS ARMs for vintages 2014-2017.

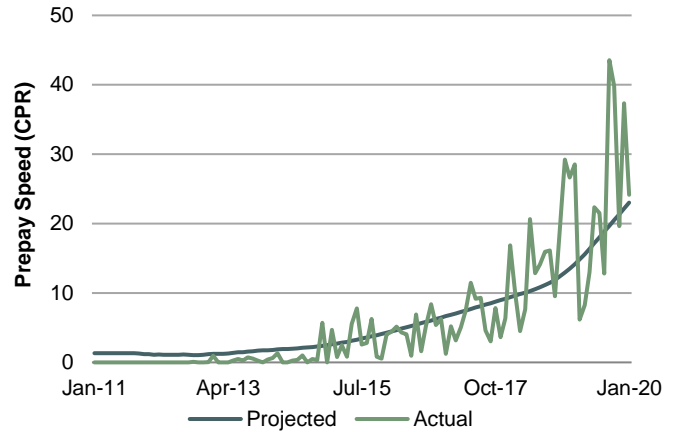
The testing results indicate that the performance of DUS model is mostly satisfactory across different FN DUS products and vintages.

Appendix – Performance charts

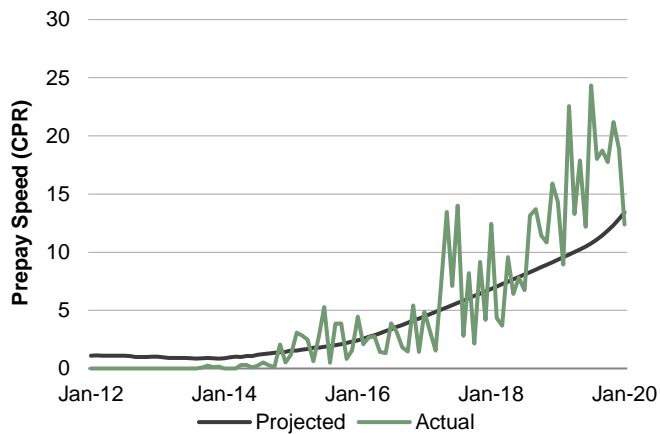
FN DUS 10/9.5 Vintage 2010, Projected vs. Actual



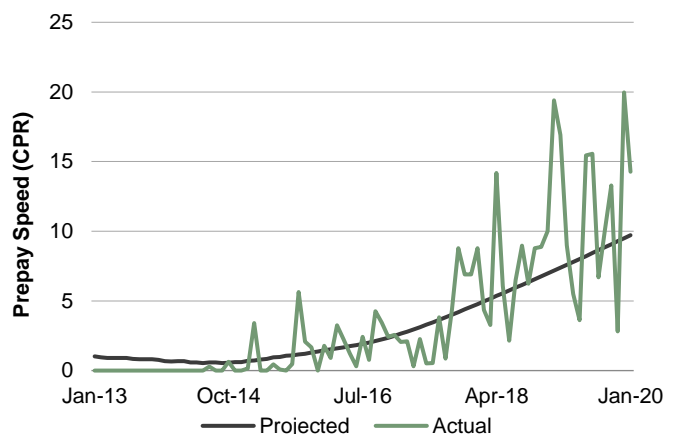
FN DUS 10/9.5 Vintage 2011, Projected vs. Actual



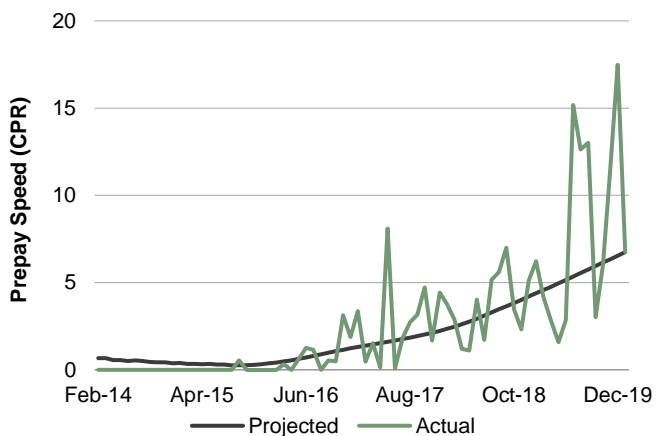
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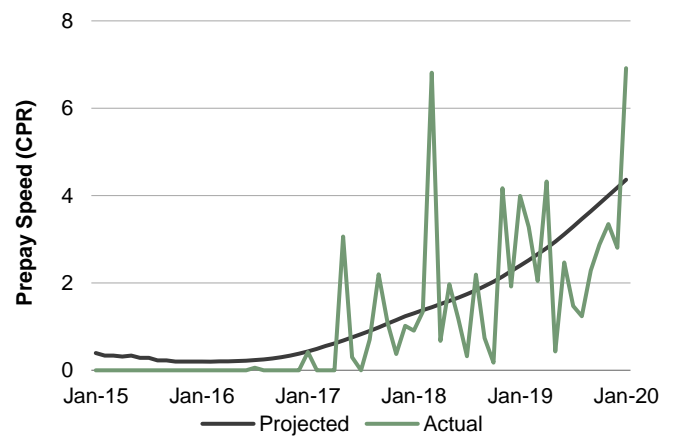
FN DUS 10/9.5 Vintage 2013, Projected vs. Actual



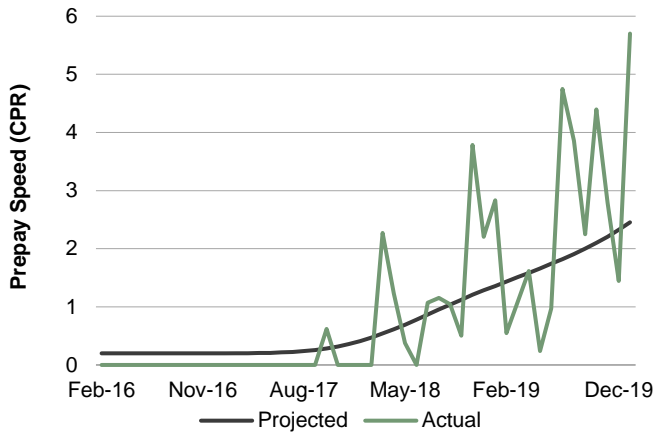
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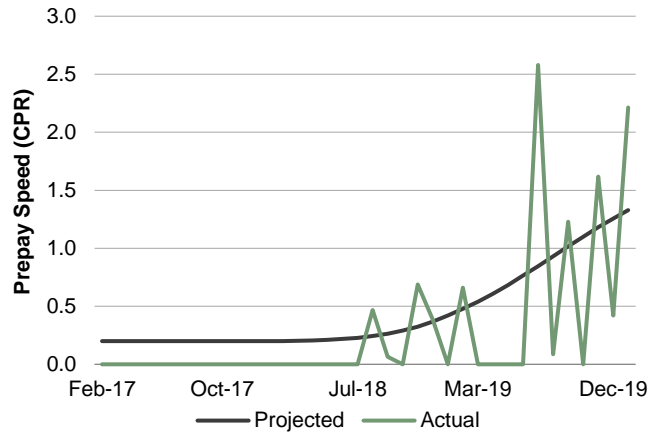
FN DUS 10/9.5 Vintage 2015, Projected vs. Actual



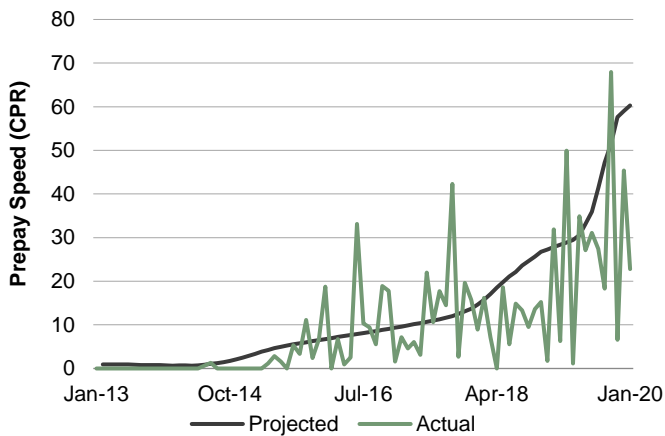
FN DUS 10/9.5 Vintage 2016, Projected vs. Actual



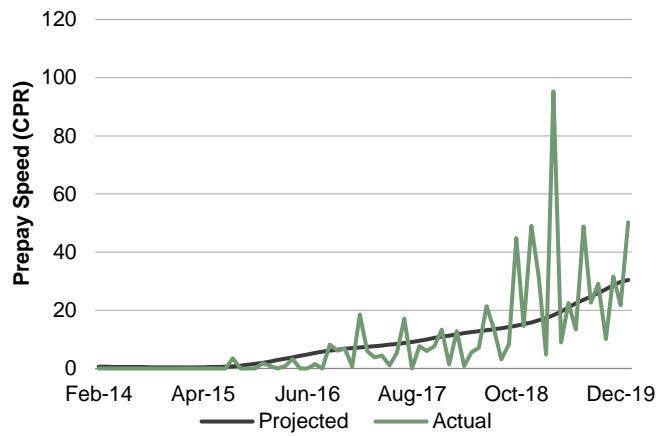
FN DUS 10/9.5 Vintage 2017, Projected vs. Actual



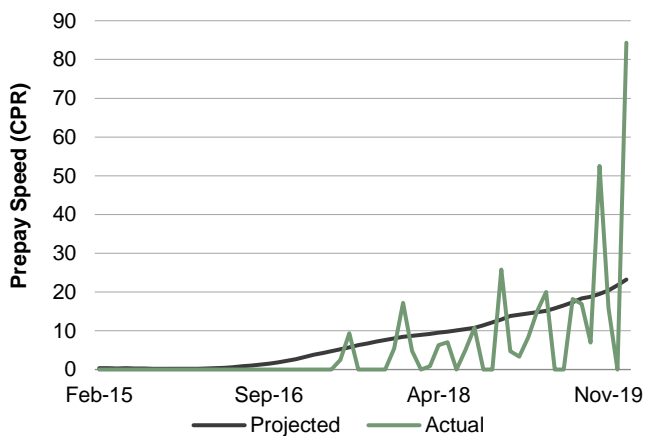
FN DUS HX Vintage 2013, Projected vs. Actual



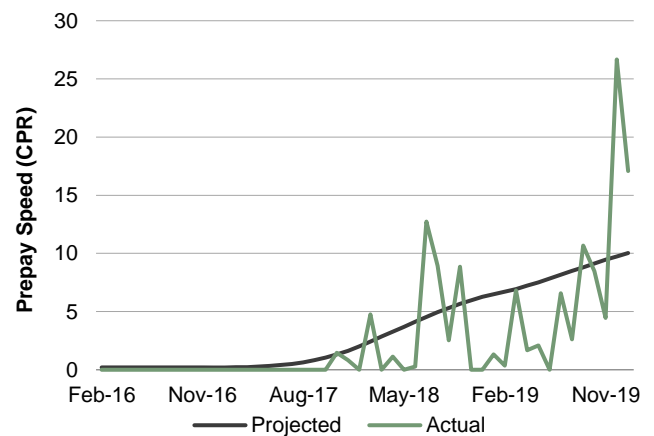
FN DUS HX Vintage 2014, Projected vs. Actual



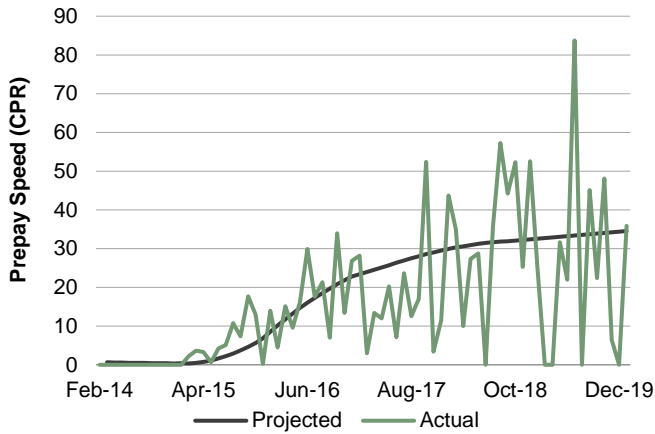
FN DUS HX Vintage 2015, Projected vs. Actual



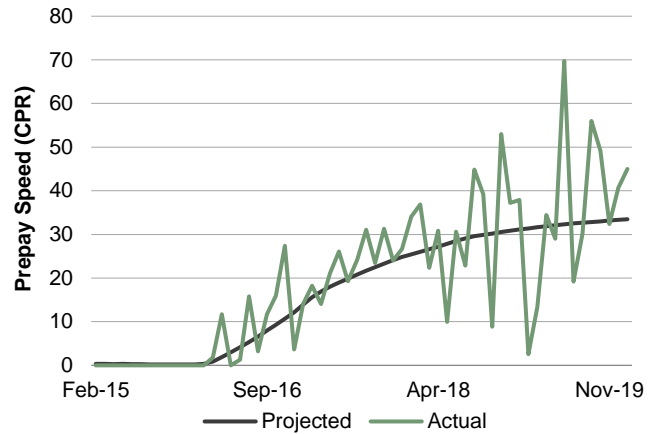
FN DUS HX Vintage 2016, Projected vs. Actual



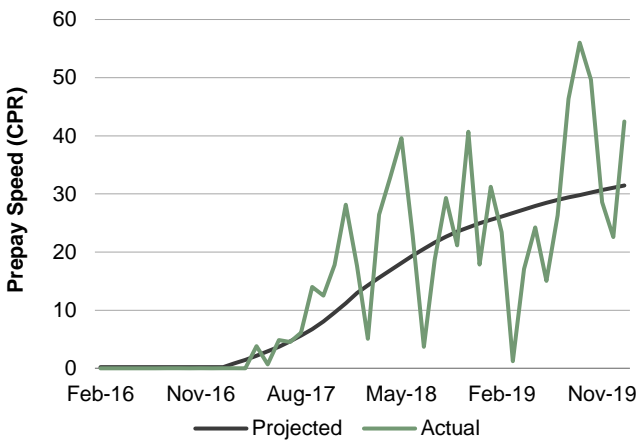
FN DUS ARMs Vintage 2014, Projected vs. Actual



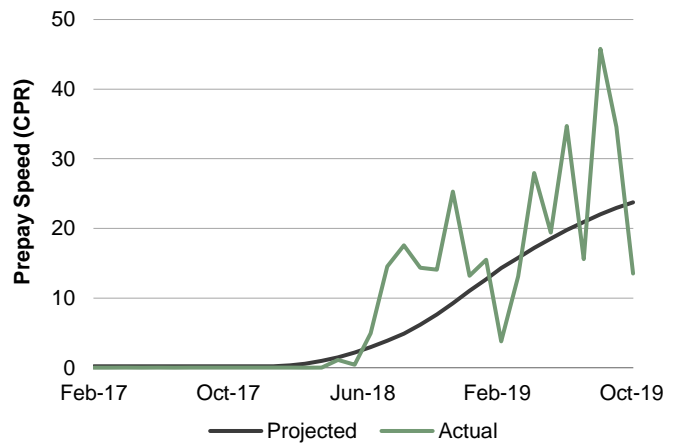
FN DUS ARMs Vintage 2015, Projected vs. Actual



FN DUS ARMs Vintage 2016, Projected vs. Actual



FN DUS ARMs Vintage 2017, Projected vs. Actual



Source: Yield Book as of 1/31/2020. Past performance is no guarantee of future results. Please see the end for important legal disclosures.

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Americas

+1 646 989 2200

EMEA

+44 20 7334 8963

Asia-Pacific

Hong Kong +852 2164 3333

Tokyo +81 3 4563 6346

Taipei +866 2 8726 9778

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