

Lunchtime Data Talk

Recent Research on Strategic Default

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Strategic Mortgage Default: The Effect of Neighborhood Factors

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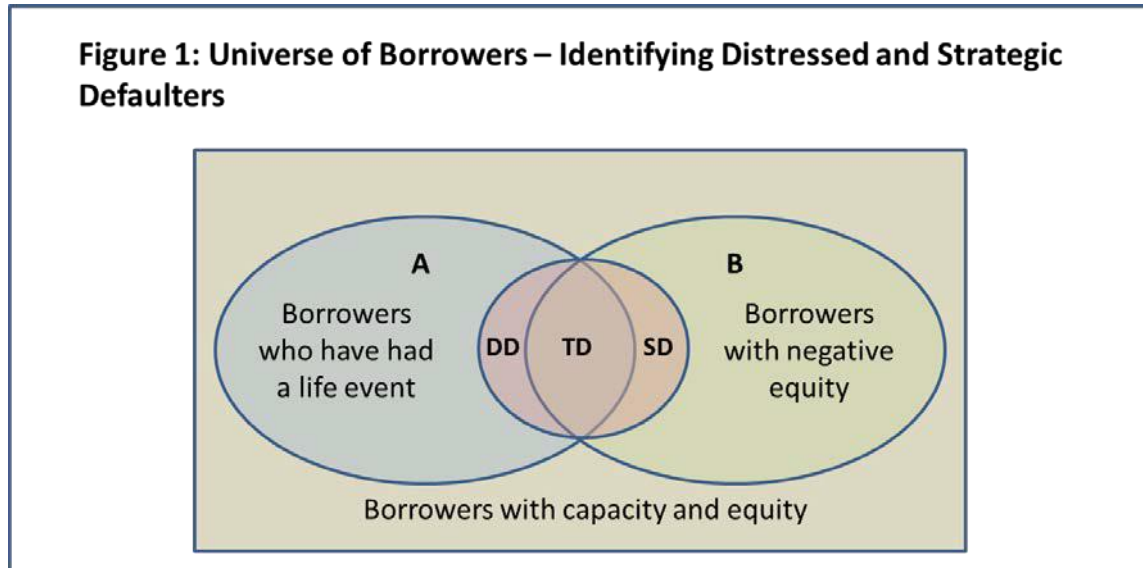
What is Strategic Default?

- Strategic default is a default in which the borrower has the ability to make monthly payments on his mortgage, but chooses not to do so, most likely for reasons of negative equity.
- The term strategic default was reintroduced by Experian-Oliver Wyman (2009) who use credit data to measure strategic default—individuals who remain current on the non-mortgage trades and roll straight from current to 180+ DPD on the mortgage trade.
- Existing studies of strategic default ignore important necessary conditions for it to occur, namely negative equity position and a lack of capacity to carry all debts, as evidenced most importantly by income or wealth capacity and related triggers.
 - Faced with a negative income shock that requires a choice about which debts to pay, a borrower may elect to pay all obligations except the mortgage. Such a decision may be perfectly rational since the mortgage is typically the largest debt payment and the borrower may continue to reside in the home for quite some time even after payments are missed. Without controlling for income shocks, such behavior would be classified incorrectly as strategic when it is not.

One Exception – Gerardi et al. (2013)

- Similar in spirits to our study in the sense of examining both mortgage payment history and income information to determine strategic default.
- Data: 2009 PSID Supplement on Housing, Mortgage Distress, and Wealth Data.
- Sample size: 2,830 households. # of 60+DPD: 109
- Methods: Linear probability model; Logistic regression model.
- Conclusion: strategic default rate is 13.9%.

Strategic Default



DD: Distress Defaulters who might be pushed into default by transactions costs

TD: Trigger Defaulters who are made up from trigger traditional defaulters

SD: Strategic defaulters

Why is Strategic Default Important?

- Understanding strategic default is important to:
 - ◆ Underwriters: originate the right loans for the right borrowers.
 - ◆ Investors: price risks for mortgages and MBS.
 - ◆ Regulators: public policy where taxpayer money is used for homeowner loan modification.
 - ◆ Servicers: collection methods for this segment of borrowers.
 - ◆ Non-mortgage lenders:
 - ▶ Should reduce credit card line for strategic defaulters?
 - ▶ Should raise rates on auto loans for strategic defaulters?
- In June 2010, Fannie Mae announced that strategic defaulters will be barred from Fannie Mae loans for 7 years from the date of foreclosure.
- In Oct 2012 and Sep 2013, the FHFA Office of Inspector General (OIG) assessed Fannie Mae's deficiency recovery process for borrowers who possess the ability to repay deficiencies
- Before we can treat strategic defaulters, we have to identify them **accurately.**

Unique Data Assets

- Created a panel data set that combines local market data and loan-level data contributed by the large mortgage servicers with credit bureau and income data provided by Equifax. CoreLogic Servicing database covers 87 percent of all mortgage obligations.
- The population of interest includes owner-occupied conventional purchase or refinanced loans on single-family residence that rolled to 60DPD for the 1st time during the June 2008 to March 2011 interval.
- Each loan was tracked for 6 months to determine if it rolled straight from current to 180DPD or worse.
- The sample size is about 850,000 loans, prior to matching with Equifax income data.
- Anonymously merge Equifax credit data to our data.

Unique Data Assets – Collateral / Local Conditions

- Loan characteristics include lien balance, origination date, property address, original and current LTVs, original and current loan balance, loan product, loan purpose, interest rate fields, occupancy status and loan status.
- Negative Equity: All property values were marked-to-market using CoreLogic's House Price Index. Analysis includes second liens.
- Local Conditions: Neighborhood foreclosure and strategic default rates were calculated to measure contagion.

Unique Data Assets – Credit

- Equifax consumer credit data were anonymously merged with the loan-level servicing database.

- Borrower performance on mortgage and non-mortgage credit accounts
 - ◆ # times 30+ DPD on mortgage and non-mortgage accounts over past 6 months and 12 months
 - ◆ Original and updated Vantage Scores

- Merged data file of mortgage loans and credit data contained 850,000 records.

Unique Data Assets - Capacity

- Equifax's TALX Solutions--Known as "The Work Number®"
 - ◆ The nation's largest central source of consolidated employment information.
 - ◆ More than 2,200 employers nationwide contribute payroll information to The Work Number database.
 - ◆ The Work Number reports only actual data—no modeled or aggregated information.

- Equifax's IXI Services' Income360 Data
 - ◆ Estimates income at the zip-code +4 level from assets as well as wages.
 - ◆ Produced twice a year, based on June 30 and Dec 31 snapshots of household assets.
 - ◆ Measures permanent or smoothed income rather than transitory income.

Framing Strategic Default

- We capture a borrower as a strategic defaulter if:
 - (1) The borrower had no delinquencies on any non-mortgage trade line at the time the mortgage became 60 days delinquent and for the following six months; (Experian-Oliver Wyman (2009 strategic default definition))
 - (2) The mortgage trade rolled straight from current to 180 days past due; (Experian-Oliver Wyman (2009 strategic default definition))
 - (3) There was negative equity at the time the mortgage trade became 60 days past due; Analysis includes second liens.
 - (4) And, there was no income shock—measured by an x% or more decline in income.

How Prevalent is Strategic Default?

Table 1: Measuring Strategic Default Incidence						
Group	I.	II.	III.	IV.a.	IV.b.	IV.c.
Definition of Default	Simple Default	Experian-Oliver Wyman Strategic Default	CoreLogic-Equifax Strategic Default on Negative Equity	CoreLogic-Equifax Strategic Default on Negative Equity & Capacity	CoreLogic-Equifax Strategic Default on Negative Equity & Capacity	CoreLogic-Equifax Strategic Default on Negative Equity & Capacity
	Loan went first-time 60+ DPD between June 2008 & March 2011	Group I. members that went straight to 180+ DPD while staying current on all non-mortgage tradelines	Group II. members whose total mortgage debt exceeds the value of the property (CLTV > 100%)	Group III. members that experienced no loss of income over 6 months prior to first default.	Group III. members that experienced loss of income ≤10% over 6 months prior to first default.	Group III. members that experienced loss of income ≤ 20% over 6 months prior to first default.
TWN Sample						
Number	135,025	28,499	22,347	12,956	18,857	19,653
% of Simple Defaulters who strategically defaulted	-	21.1%	16.6%	9.6%	14.0%	14.6%

- Strategic defaults are important, but not as prevalent as commonly reported.

Strategic Default by Key Attributes

Table 3: Strategic Default by Key Drivers (TWN Sample with 20% threshold for income shocks)

Updated CLTV	Strategic Default Rate	Refresh Vantage Score	Strategic Default Rate	Property State	Strategic Default Rate	Foreclosure Rate	Strategic Default Rate
[0,100]	0	[500,680]	4%	NV	32%	[0%,0.5%)	5%
(100,110]	15%	[681,720]	13%	AZ	26%	[0.5%,1.0%)	6%
(110,120]	19%	[721,760]	20%	CA	25%	[1.0%,2.0%)	10%
(120,130]	23%	[761,800]	27%	FL	18%	[2.0%,4.0%)	17%
(130,140]	25%	[801,840]	32%	MI	16%	4.0% +	22%
(140,150]	28%	[841,880]	35%	ID	13%		
(150,160]	31%	[881,920]	38%	OR	13%		
160+	33%	920+	38%	WA	12%		

Effects of Neighborhood Factors

■ Guiso, Sapeinza, and Zingales (2013)

- ◆ Use survey data and report that the willingness to default increases nonlinearly with the proportion of foreclosures in the same Zip code and that roughly 26 percent of existing defaults are strategic.

■ Tess Wilkinson-Ryan (2011)

- ◆ Use a sequence of experimental methods and find that the likelihood of strategic default increases for homes located in neighborhoods where the foreclosure rate is high.

■ Goldstein et al. (2011)

- ◆ Use a large sample of mortgages and find that foreclosures are contagious and that contagion is most prevalent among strategic defaulters. Unfortunately, use crude measures to identify strategic defaulters.

■ Frame (2010)

- ◆ Reviews the literature seeking to estimate foreclosure externalities, but all of the papers focus only on the impacts on prices not on behavior, i.e., default.

Theoretical Underpinnings

■ Specific Hypothesis

- ◆ A neighborhood that has experienced a high percentage of foreclosures is a less desirable place to live and thus increases the likelihood of default even among those borrowers that can still afford to make their payments.
- ◆ Motivated by a simple non-cooperative lending game with externalities that is an extension of Riddiough and Watt (1994). We introduce a second borrower and a second bank so we can explore the impact of the externality.

■ Implications

- ◆ Borrowers who are aware of the externality that results from foreclosure are more likely to default in the first place.
- ◆ If a bargaining solution is obtained, such a modification is less likely to be sufficient to prevent redefault compared to the no externality case, unless the bank explicitly recognizes and accounts for the lower cost of foreclosure faced by the borrower which is unlikely.

Conjecture on Strategic Default Contagion

Had moral aversion to default decayed over time and led to more strategic Default?

- Shiller (2010) argued that over time, strategic defaults are contagious and likely to grow:

“Strategic default on mortgages will grow substantially over the next year, among prime borrowers, and become identified as a serious problem. The sense that everyone is doing it’ is already growing, and will continue to grow, to the detriment of mortgage holders. It will grow because of a building backlash against the financial sector, growing populist rhetoric and a declining sense of community with the business world. Some people will take another look at their mortgage contract, and note that nowhere did they swear on the bible that they would repay.”

- We test Shiller’s conjecture with zip-code-level neighborhood strategic default rate.

Key Neighborhood Attributes

- ❑ **Foreclosure Rate:** From CoreLogic's LoanPerformance database and covers most of the ZIP codes in the nation.
 - Chose the 12-month cumulative foreclosure rate as the relevant measure since the number of foreclosure cases in one month within one ZIP code is very small and fluctuate widely from month to month.
 - To reduce the chance of getting a spurious result, the foreclosure rate is calculated as the ratio of the cumulative foreclosure cases in the past 12 months over the average loan count in the past 12 months.

- ❑ **Strategic Default Rate:** Calculated from the data.
 - Cumulative zip-code strategic default rate over the preceding 12-months at the month that each strategic default loan was last "current" and then started rolling to 180+ DPD.
 - Similar to the foreclosure rate, the strategic default rate is also volatile month over month.

Logistic Regression Results

Relationship between key attributes and strategic default:

Full documentation:	Negative (low doc loans more likely)
Refreshed Vantage Score:	Positive
Loan Age:	Positive at first, than Negative
CLTV:	Positive (greater negative equity increase likelihood)
Recourse states:	Negative (less likely in recourse states)
Current Mortgage Balance:	Positive

Logistic Regression Results

Table 4: TWN Sample: Important Factors that Determine Strategic Default - Logistic Regression Output				
	Model 1		Model 2	
	Coefficient	Avg. Marginal Effect	Coefficient	Avg. Marginal Effect
Neighborhood Foreclosure Rate (2 months prior to first-time 60 days past due)	3.0800	0.306	2.4439	0.260
Neighborhood Strategic Default Rate (2 months prior to first-time 60 days past due)	N/A	N/A	0.317	0.034

- Strategic-default neighbors can help potential strategic defaulters navigate the process with credible and visible information. Social stigma declines with the proportion of people strategically defaulting.
- A 5% increase in the local foreclosure rate is associated with a 1.3 percentage point increase in the probability of strategic default.
- An additional 5% increase in the local strategic default rate is associated with 15 bp increase in the probability of strategic default.

Strategic Default Flag or Score

- Our strategic default analysis can be converted to predictive analytics that have applications in loan origination, collections, and loss mitigation.
- A flag could be developed to identify individuals that **have** strategically defaulted and placed on a credit report in a similar way to a bankruptcy or tax lien flag.
 - Of course, consumers would have the right to ‘challenge’ the flag and have it removed if they can demonstrate that there was a ‘life event’ that caused them to default on their mortgage.
- A score could be used to triage delinquent borrowers so that those that are likely strategic defaulters can be offered different types of loan modifications, including principal reductions.
 - The score could be combined with a SAM or other feature to mitigate moral hazard risk.

Conclusions

- Strategic defaults are not as widespread as generally reported. Taking into account equity position and capacity triggers, in this case measured by income shocks, reduces the percentage of strategic defaulters from 21% to just 9% -14.6%. Indeed, our findings are in line with the 9 to 13% range reported by Barclay's Capital, and 13.9% by Gerardi et al. (2013), and far below the 26% reported by Guiso et al. (2013).
- Without considering equity position and capacity triggers, many distress defaults are mistakenly classified as strategic.
- Accurate identification of strategic defaulters has significant implications for all players – underwriters, investors, servicers, regulators, credit lenders.
- Still, as equity is the single most important predictor of strategic default behavior, principal reductions may be the most effective type of modification [see Das (2009) and Amherst (2011)].
- There is compelling evidence that strategic default is contagious.

