Household Finance Session:

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This session is about household default, with a focus on:

(1) Credit supply to individuals who have defaulted:

Brevoort and Cooper: Credit score recovery after foreclosure

Han, Keys and Li: Credit card offers after bankruptcy

(2) Determinants of default:

Ergungor and Moulton: Why do mortgages originated by banks have lower default rates?

Why do we care how much credit is extended post-default?

- **Households care -- it affects their decision on whether to default**

- **It teaches us something about what drives default**

  If there are long-lasting adverse effects, then default signals a ``risk type'' (preferences, resources, ability to plan) or shocks with more permanent effects, as opposed to e.g. exogenous house price declines.

- **It affects optimal policy:** Optimal policy balances: (White, JEP, 2007)

  - Need for consumption insurance --> Default should be easy.

  - Need to reduce moral hazard on the part of borrowers (defaulting has a negative externality on other borrowers via higher interest rates/reduced credit) --> Default should be hard.

  The stricter credit access/terms are post-default, the more pro-borrower legal rules for default should be.

Brevoort and Cooper: ``Foreclosure's Wake: the Credit Experiences of Individuals Following Foreclosure''

Objective: To understand ``how access to credit, as reflected in individual credit scores, is affected by foreclosure and whether these effects persist over time''.

Data: Enormous panel of US individual credit records from Equifax, quarterly from 1999-2010Q1. 345,360 individuals who had a foreclosure at some point between 2000 and 2009.

- ``Historical'' cohorts: Foreclosure in 2000-2006.

   ``Recent'' cohorts: Foreclosure in 2007-2009.

Findings:

(1) Credit scores in the foreclosure quarter are much lower than pre-delinquency scores

Down an average of 110 to 210 points.

More for higher pre-delinquency scores and for recent cohorts.

(2) Credit score recovery is quite slow -- and slower for higher pre-delinquency scores and for recent cohorts.

- After 2 years, historically, over 60% of pre-delinquency subprime borrowers' scores are back to their initial level. Only 10% of pre-delinquency prime borrowers' scores are back to initial level.

- For recent cohorts, about 5 to 10 pct points fewer have recovered by 2 years (depending on pre-delinquency score).

(3) Slow recovery is likely due to credit card and auto loan delinquencies remaining above pre-foreclosure levels as long as 5 years after foreclosure.

(4) Attempt to argue that effect of foreclosure on subsequent delinquencies are causal:

- Individuals with major mortgage delinquencies but no foreclosure have lower delinquency rates going forward than those with a foreclosure.
- High post-foreclosure delinquency rates even for a sample with no delinquencies for 12 quarters before six months prior to the foreclosure period.

(5) Strategic defaulters (due do house price declines) have higher delinquency rates post-foreclosure than others with foreclosures in the same time period.

Comment 1: The paper is struggling with causality

At the end of the paper, the authors suggest three interpretations of their finding that credit scores recover slowly due to persistently high post-foreclosure delinquencies:

a) A **causal impact** of foreclosures **on credit access/credit cost/wealth** making subsequent delinquencies more likely
b) A **causal impact** of foreclosures on **borrower repayment incentive** (why pay, low score anyway) or on non-payment stigma
c) Effects of foreclosure are **not causal** but due to a trigger event such as job loss, divorce, health shock. And effects of these shocks may be persistent.

Authors conclude that:

``With the data available, we are unable to identify the reasons for this change in behavior.''

``It is difficult to determine to what extent (if any) the effects documented in this paper are the result of the foreclosure process itself or other causes."

This should be discussed more upfront.

If the authors don't really like their own causality tests, then maybe don't show them.

(Comparison to a sample of delinquent borrowers who did not enter foreclosure is not convincing -- as the authors recognize, those who did not have foreclosure may just have smaller underlying shocks.)

Suggestion: Use judicial foreclosure instrument from Pence (2006) and Mian, Sufi and Trebbi (2010) to show causal effects of foreclosures.

- 21 states require a ***judicial foreclosure***: A lender must sue a borrower in court before conducting an auction to sell the property.

- In states without this requirement, lenders have the right to sell the house after providing only a notice of sale to the borrower (a ***non-judicial foreclosure***).

- States with non-judicial foreclosure have substantially higher rates of foreclosures per home owner and per mortgage delinquency.

- To my knowledge, credit score formulas do not differ by state.
 If not, then this is a useful instrument.

Comment 2: Credit scores are <u>not</u> a sufficient statistic for credit supply and credit terms

- Bankruptcy lowers credit supply dramatically, even controlling for credit score: Han, Keys and Li (2011).
- Makes sense in that bankruptcy increases default-probabilities (on new debt post-bankruptcy), even controlling for credit score: Cohen-Cole, Duygan-Bump and Montoriol-Garriga (2010).
- The same may be true for foreclosures.

Importantly, recovery in credits scores may substantially overstate recovery in credit supply and terms. Graphs from Han, Keys and Li (2011).

- As credit scores recover, the improvement in credit supply and terms is much weaker for bankruptcy filers than non-filers.

Share Receiving a Credit Card Offer By Bankruptcy Status

Mean Minimum Limit of Credit Card Offers
By Bankruptcy Status
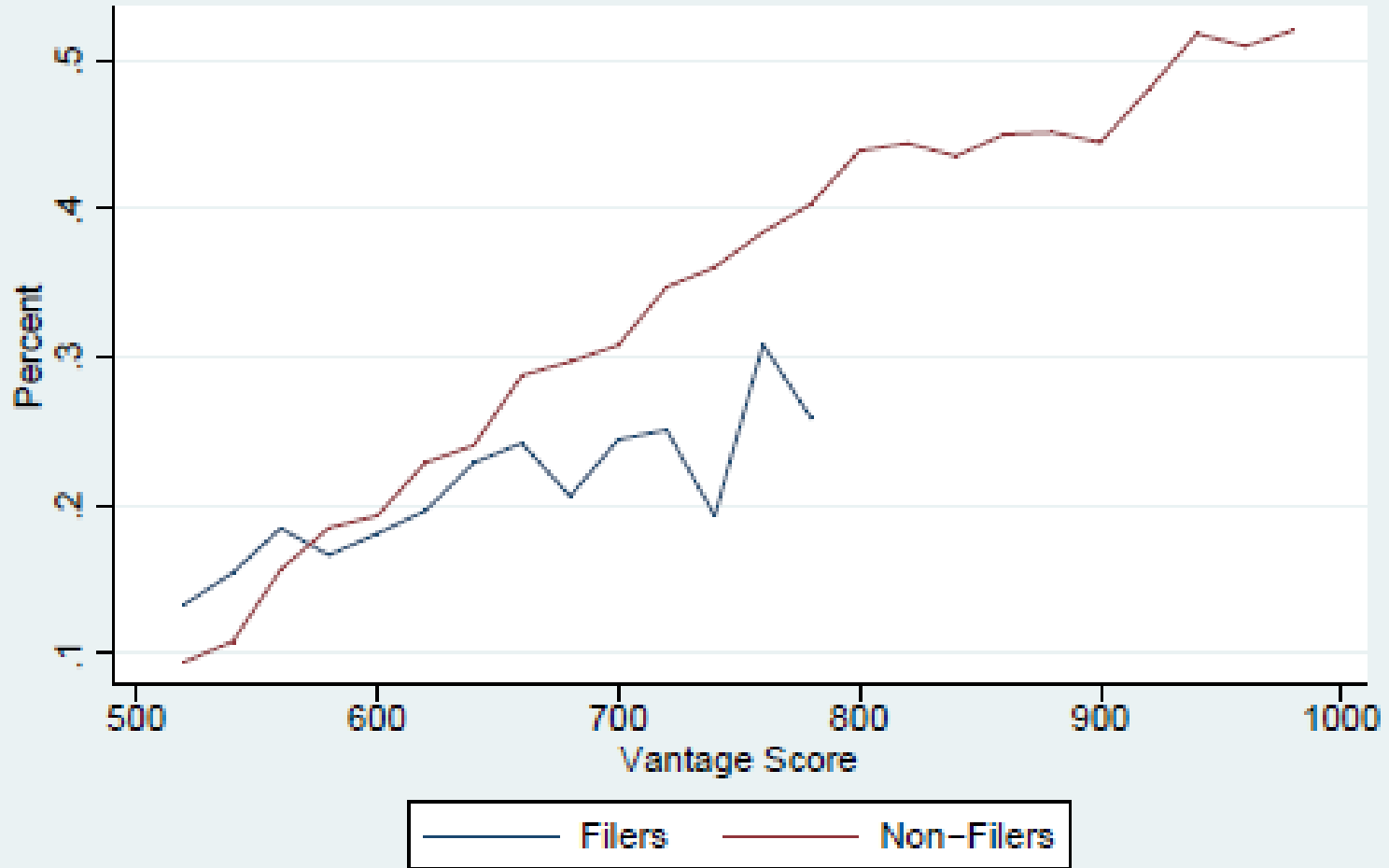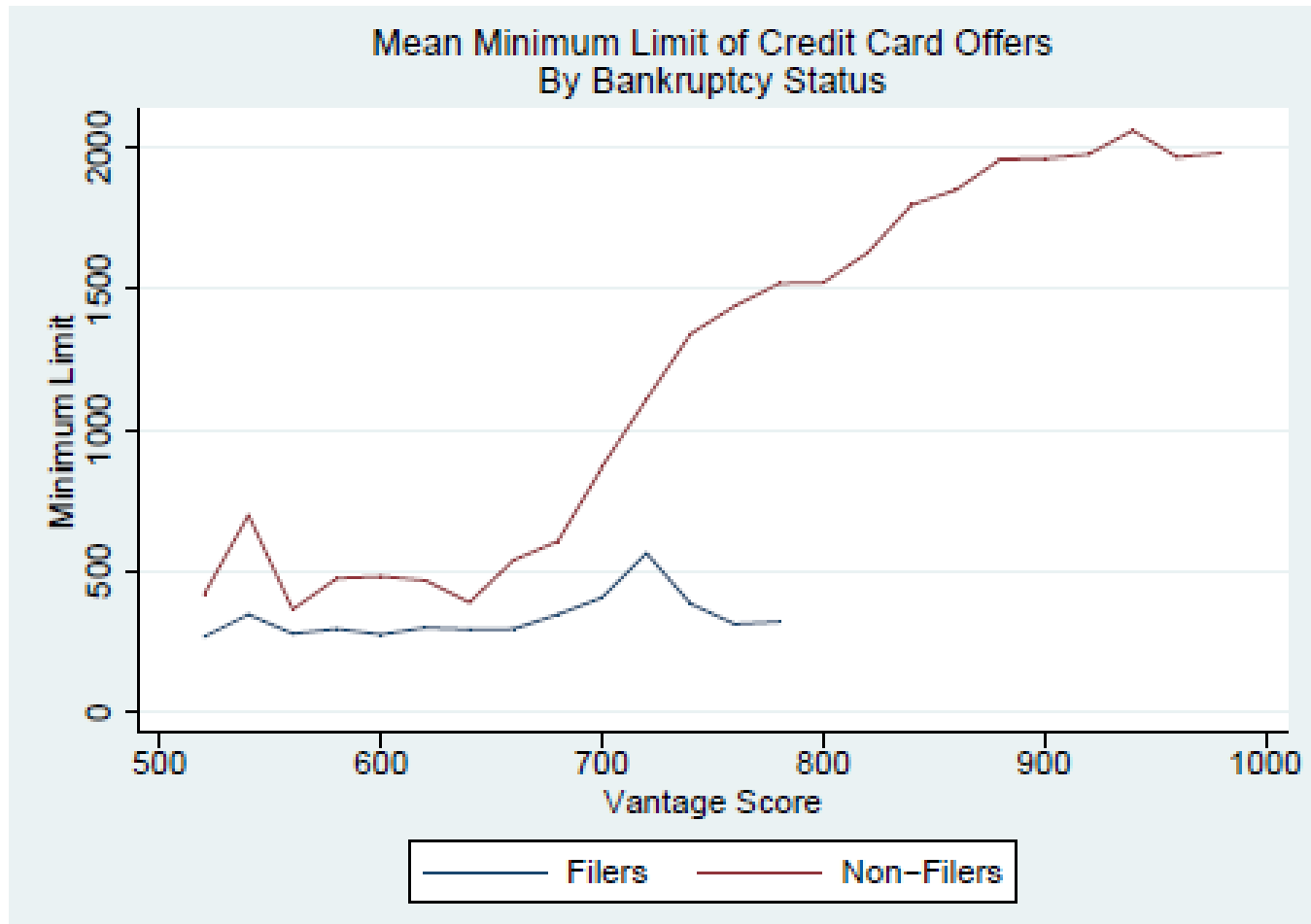
Suggestion: Ask Han, Keys and Li (2011) to check how these graph look for foreclosures (as opposed to bankruptcies).

Comment 3: Suggestion -- show how fast credit scores recover for people with no further delinquencies

- Currently the paper cites credit bureaus for saying that scores could recover quickly. Why not just look at the data! This would clearly show **whether slow credit score recovery is due to further delinquencies or not.**
- Would also be interesting to do this for **strategic defaulters** to see if scores recover faster or slower for strategic defaulters with no further delinquencies.

Comment 4: Suggestion -- merge in better demographic and economic controls at census tract level

As Cohen-Cole, Duygan-Bump and Montoriol-Garriga (2010) and Ergungor and Moulton (2011).

Han, Keys and Li: ``Credit Supply to Bankrupt Consumers: Evidence from Credit Card Mailings''

Question: Are bankrupt consumers excluded from the unsecured credit market?

Methodology: Analyze credit supply using novel data set on credit card mail offers.

Data:

- Mintel Comperemedia proprietory survey on credit offers to U.S. consumers. Includes detailed demographics. 3,000 consumers per month, repeated cross-sections, August 2009 to July 2010.
- Merged with credit history information from TransUnion.

Findings:

(1) Bankruptcy filers receive a lot of credit card offers, though less than observationally similar non-filers:

- 22 (40) percent of filers (non-filers) receive >=1 offer in a given month.
- With controls: Filers have a 7 pct point lower prob. of receiving at least one credit card offer in a given month. Driven by those >2 years past filing.

(2) But offers to filers are much less attractive than offers to non-filers.
Controlling for observables, including credit scores, filers have:

- 80 bps higher interest rate. 30 percent lower credit limit
- 50 percent lower probability of receiving any rewards (e.g. miles), yet are 50 percent more likely to pay annual fee.
- More ``shrouded costs'' than non-filers (worse terms for balance transfers, worse cash-back rates, higher minimum finance charges etc.)

(3) Filers benefit less from improving their credit scores (credit limits, terms).

Comment 1: The authors understate how bad filing for bankruptcy is for credit supply for two reasons

Reason A: Not meaningful to ignore indirect effects via credit scores

It is highly misleading when the authors conclude that ``**consumers that file for bankruptcy within the previous two years are at least as likely to receive credit card offers as comparable non-filers**''

- We care about the total effect of bankruptcy on credit supply, including the indirect effect via bankruptcy's effect on credit scores.

- If credit score happened to be a sufficient statistic for credit risk, and bankruptcy massively lowers the credit score, the current methodology would say that bankruptcy has **no effect** on credit **supply even if it has a huge effect.**

- Of course, if you don't control for credit score, you may worry that some unobservable (to us but not lenders) is driving both credit supply and bankruptcy. So **keep credit scores in regressions, but add rows reporting the total effect**.

- In particular, **ask Brevoort and Cooper to estimate the immediate effect of a bankruptcy filing on credit scores in their panel data.** Then use this to calculate the total effect of bankruptcy on the outcome variables as:

  Total effect of bankruptcy on outcome variable
  =Direct effect of being filer
  +(Immediate effect of a bankruptcy filing on credit score)
    *Effect of that credit score change on outcome variable

  (This will be more accurate for people filing recently.)

- Suppose bankruptcy lowers credit score by 150 points from 850 to 700. Then the effect of bankruptcy on the various outcome variables in Table 5 is:

	Having offer	Pre-approved	Interest spread	Min. limit	Having intro rates	Having annual fee	Having rewards
Direct effect of being filer	-0.068	-0.134	0.773	-472.07	-0.129	0.129	-0.429
VS 650-700	0.232	-0.067	-0.655	-177.08	0.198	0.007	-0.057
VS 800-850	0.385	0.249	-3.87	883.108	0.233	-0.268	0.211
Direct effect of being filer+ indirect effect via credit score	-0.221	-0.450	3.988	-1532.3	-0.164	0.404	-0.697

And total effects are large even for those who filed within the previous two years.

Comment 1: The authors understate how bad filing for bankruptcy is for credit supply for two reasons

Reason B: New credit offers are not equal to total credit supply.

- Authors emphasize that they are the first to measure credit supply rather than equilibrium amounts of debt (quantities) and equilibrium interest rates (prices).

- However, this is not exactly right: They are the first to measure NEW supply, not TOTAL supply.

- When the authors find that ``**consumers that file for bankruptcy within the previous two years are at least as likely to receive credit card offers as comparable non-filers''**

This doesn't mean that they face the same credit supply as non-filers, since **non-filers already have lots of cards** compared to people who just had theirs cancelled due to bankruptcy.

- You could in principle observe that filers receive *more* offers than non-files without this implying any difference in total credit supply!

Extreme example:
- Suppose people have very high (time) costs of switching cards.
- Non-filers already have lots of credit cards. Filers have none or not many (at first).
- Then it's more profitable to send offers to people who have no cards, i.e. people who just went bankrupt (and 20 year olds).
- Non-filers could get less offers because they have plentiful credit supply from their current lenders.

- **So what can we learn from studying offers:**

  - Something about who it is profitable to send cards to (perhaps less interesting)

  - A lot about terms of credit (interesting)

  - Not as much about total supply of credit.

Comment 2: Suggestion -- deemphasize analysis of effects by time since filing. This is not a good data set for analyzing that

- Everyone in the data are surveyed within 1 calendar year (August 2009 to July 2010)
- Therefore, those who filed longer ago will mechanically have filed in an earlier calendar year. So not clear which effect is being picked up.

For example:

- Those who filed 6-9 years ago are people who filed in 2000-2004, i.e. **before the 2005 bankruptcy reform**.
- They tend to get fewer offers with lower credit limits, but this may not mean that credit supply changes as you get **closer to the 8 year cutoff** for being able to file again.
- Instead, it may mean that **those who filed back when filing was easier are different** than those who filed after it got harder.

Ergungor and Moulton: ``Beyond the Transaction: Depository Institutions and Reduced mortgage Default for Low Income Homebuyers''

Question: Why are default rates on mortgages originated by banks lower, even controlling for credit scores, borrower characteristics and loan terms?

- Authors test for presence of an *information effect*: Local banks have soft information about borrower default risk.
- The alternative is some type of *institution effect* (e.g. banks don't want to take on as much risk for various regulatory reasons, but no specific test).

Predictions:

- Within banks, localness matters (more so for borrowers with low credit for which soft information likely matters more).
- Under the alternative bank vs. non-bank matters, localness does not.

Methodology: Estimate effect of lender on delinquency or default

- Interested in actual lender effect
- Control for predicted probability of picking particular lender. Instruments: Convenience (measured based on geographic proximity) and approval probability (measured as last year's denial rate of institution type).

Data:

- 18,370 loans to low and middle income borrowers made under Ohio's **mortgage revenue bond program** from 2005-2008.
- All loans have same terms and servicer at a given point in time.
- Servicing data from January, 2005-February 2011.

Findings:

- Controlling for observables, 1 pct point lower default rate (Table 5) for bank-originated loans than non-bank originated loans. Mean default rate is 7.3 percent.

- **There is a slight information effect overall:** Relative to non-bank loans...
  ...loans originated by a **local bank** (branch <2 miles from borrower's new or old address) have **1 pct point** lower default risk
  ...loans originated by a **non-local bank** have **0.7 pct point** lower default risk
  But local vs. non-local difference **not significant**.

- Evidence for an information effect is **stronger when focusing on local vs. non-local branches of large banks** (-1.3 pct point local vs. -0.4 pct point non-local) or when focusing on **subprime borrowers** (-3 pct point local vs. -1 pct point non-local).

Comment 1: It seems likely that an information effect should be present in bank mortgage lending

Evidence from Agarwal, Chomsisengphet, Liu, and Souleles (2009) shows strong reduction in default rate on **credit cards** the more involved the customer is with the lender:

(Avg default rate is 5.6% if no relationship. Marginals are in pct, not pct points.)

Table 2: Implications of Relationships for Default

Variable	Default			
	Coeff	Std Err	P-value	Marg Eff
R 1. Relationship				
Relationship Indicator	-0.3208	0.0859	<.0001	10.1%
R 2. Breadth of Relationships				
Number of Bank Relationships=1	-0.2628	0.0356	<.0001	1.6%
=2	-0.2307	0.0416	<.0001	3.1%
=3	-0.3258	0.1270	<.0001	6.3%
=4	-0.2539	0.1221	<.0001	9.4%
=5	-0.6404	0.3151	<.0001	10.6%
=6+	-0.6253	0.2465	<.0001	17.9%
R 3. Type of Relationships (Broad)				
Deposit Relationships	-0.2410	0.0672	<.0001	9.3%
Investment Relationship	-0.3366	0.1199	<.0001	14.1%
Loan Relationship	-0.0303	0.0129	<.0001	4.2%
R 4. Type of Relationships (Narrow)				
Checking Dummy	-0.1217	0.0391	<.0001	6.6%
Savings Dummy	-0.2743	0.0697	<.0001	8.0%
Brokerage Dummy	-0.2534	0.0891	<.0001	10.5%
CD Dummy	-0.4579	0.1237	<.0001	16.6%
Mutual Fund Dummy	-0.3714	0.0320	<.0001	14.9%
Home Equity Line Dummy	-0.0162	0.0047	<.0001	7.4%
Home Equity Loan Dummy	-0.0107	0.0047	<.0001	2.8%
Mortgage Loan Dummy	-0.0167	0.0052	<.0001	3.6%

Comment 2: But the current setting is not straightforward to analyze

Complication: Loans are all sold to a party that does not have the soft info.

Theory:
- o Need to generalize standard models of soft information **to setting with securitization**. Do prices reflect soft information in equilibrium?
- o How do things differ as a function of whether lenders are allowed to compete on loan terms or not (here the are not).

Empirical work:
- o Can **prices at which loans are sold to the master-servicer** be obtained. Do prices in fact reflect soft information?
- o Does the **regulatory setup** say anything about pricing? In general, clarify exactly **how this mortgage revenue bond program works.**
- o How are price patterns affected by the **master-servicer having monopoly power?**

- Pricing matters for **how much incentive local banks have to use their soft information** and for how results **generalize to unregulated setting**

  If soft information is not reflected in pricing, then all lenders should just approve everyone who qualifies (they receive a 1% origination fee).

- **Authors argue that** local banks would always use the soft information because they view themselves as having a long-term relationship with the borrower and it is not in the borrower's interest to borrow if he cannot repay. **But is it in the bank's profit maximizing interest to reject?**

Comment 3: Direct evidence that local banks *act on soft information* would be great

- Borrowers differ in credit risk based on observables:
  Borrowed from: Non-bank: 676. Non-local bank: 686. Local bank: 694

- Can we rule out that they don't simply differ in the same way based on unobservables and that this drives the results, with no active role played by originators?

- **We need to show that local banks act on their soft information:**
  (1) Sometimes reject despite favorable hard information:
  Does data on rejections exist? Complication: Borrower behavior adjusts.
  (2) Sometimes don't reject despite unfavorable hard information

  Related soft information tests in Hochberg, Ljungqvist and Vissing-Jorgensen (2010) in venture capital setting.