Credit Market Impacts of Land Titling in Nicaragua: Methodology & Emerging Challenges

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MCC Nicaragua Program

- Land Titling Program
- Rural Business Services (cluster/leader model)
- Which program combination will have the biggest impact?

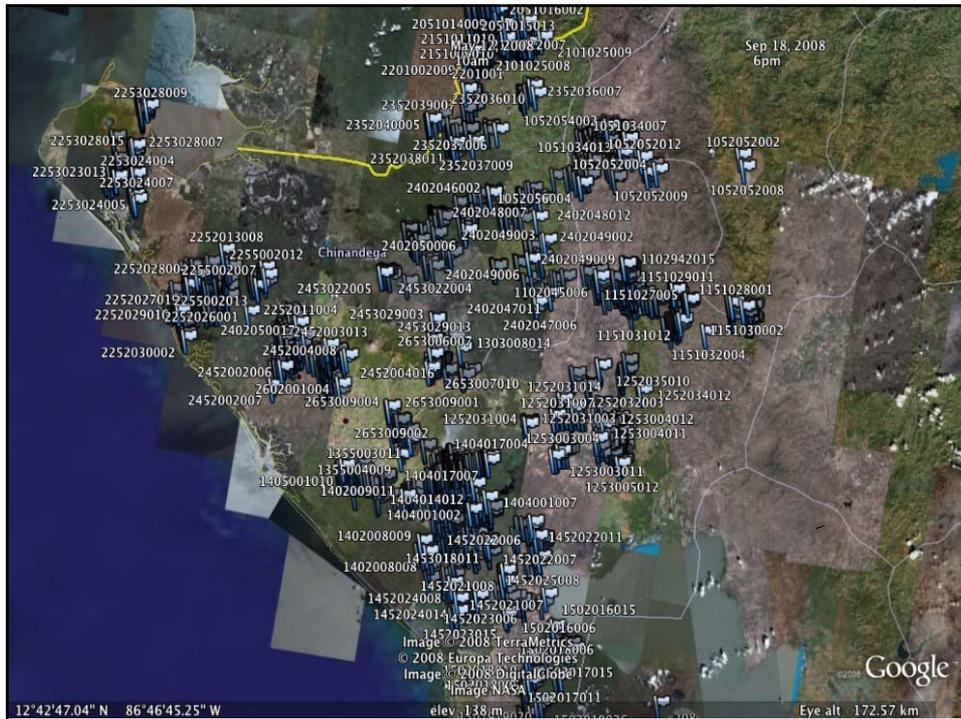|	Without Business Services	With Business Services
Without Title	Regime 1	Regime 2
With Title	Regime 3	Regime 4

Challenges to Answering this Question

- Reliable measurement of impacts for programs that are subject to self-selected (non-random) participation
- Heterogeneity of response to land title based on perceived security
  - Asymmetries in insecurity without title
  - Explicit preference for ill-defined/contestable rights?
- Let's look at each of these challenges in more detail ...

Basic Impact Evaluation Design

	Without Business Services until 2009	With Business Services by 2007
Without Title until 2009	*Late, Late*	*Late, Early*
With Title by 2008	*Early, Late*	*Early, Early*

- Randomized geographic roll-out
  - Pre-program identification of treatment clusters & eligible households within them
  - Random allocation to early/late status
  - Surveys of random sample of *eligible* producer households (~400/regime)

Effectiveness of Randomization

- Using baseline data (late 2007), let's look at randomization respect to business services:

Median Household Monthly Consumption	
Without Business Services until 2009	With Business Services by 2007
C$ 7,831	C$ 7,514

Effectiveness of Randomization

- In early areas can see self-selection by looking at the eligible who enrolled versus those who did not:

Median Household Monthly Consumption	
Without Business Services until 2009	With Business Services by 2007
C$7,831 — Participants C$7,884** / Non-partic. $7,568**	C$7,514

Full Randomization Scheme

	Without Business Services until 2009	With Business Services by 2007
Without Title until 2009	C$ 8,158	C$ 8,355
With Title by 2008	C$ 7,375	C$ 7,034

- Less effective randomization with titling blocks
- Program delays
- Alternative strategy
  - Randomized titling priority in high potential area
  - Randomized 'encouragement in less favored areas

Heterogeneity of Insecurity

Would You Invest with land sale document but not Formally Registered Title?		
	Current Title Status	*% Saying Yes*
Without Title until 2009 (716 households)	*All Land Fully Titled (279)*	**44%**
	Some Fully Titled (226)	**63%**
	No Titled Land(211)	**70%**
With Title by 2008 (884 households)	*All Land Fully Titled (266)*	**46%**
	Some Fully Titled (284)	**71%**
	No Titled Land (334)	**81%**

- General heterogeneity
- Selection into title

Analytical Strategy to Uncover Heterogeneous Impacts

- Switching Tobit Regression:

$$K_{i,07}^* = \begin{cases} \beta^I x_{i,07} + \delta^I T_{i,07} + \varepsilon_{i,07} \ if\,not\,\text{secure} \\ \beta^S x_{i,07} + \delta^S T_{i,07} + \varepsilon_{i,07} \ if\,\text{secure} \end{cases}$$

- Results using endogenous title:

	Insecure Regime	**Secure Regime**
Impact of Formally Registered title, δ	*0.44***	*0.17**

- Illustrative, but do not believe:
  - Self-selection of those with title
  - Further heterogeneity of those with & without credit & other business services

Stay Tuned for Future Results!

- ## Round 2 Survey in Field Now
  - Will allow evaluation of average effect of business program
  - Continuing delays for land titling
- ## Round 3 Survey in 2011
  - Allow deeper evaluation of time path of impact (see Keswell et al. presentation on south Africa earlier today)
  - Hopefully allow reliable inference on all four treatment regimes
  - Authoritative answer to Carter-Olinto "Getting Institutions Right for Whom" question (*Am J of Ag Econ*, 2004)