Discussion of "Data Breaches and Identity Theft" by William Roberds and Stacey L. Schreft

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[1] The views expressed in this discussion do not necessarily reflect the views of the Federal Reserve Bank of Richmond or the Federal Reserve System.

The Question

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No

The Idea

- Payment networks collect information (PID) to establish accounts.
- Networks choose quantity of PID and security.
- Identify theft - Steal PID from one network to open account in another network.
- Network does not take into account its choices on the other network.

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- Identify theft - Steal PID from one network to open account in another network.
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- EXTERNALITY

Like a crime protection externality, though a bit more to it.

Key Elements of Model

- Two distinct groups/networks of potential traders.
- No double coincidence of wants.
- Continuous time, but trades observed at discrete intervals.
  - Gives role for a credit system within network. (Kiyotaki-Wright without money!)
- Fraction of group are fraudsters. Steal PID data from one network to open account in other network (actually more complicated, but this is basic idea.)
- Found out with delay. Exclusion is penalty.
- Network takes actions to keep fraudsters out.

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Note: **NOT** looking at fraud internal to network (e.g. stealing a credit card number). That cost is internalized.

Network's Decisions

1. Screening

Network i collects d_i to open account, e.g.,

$$d_i = \{\text{NAME, BIRTH DATE, ADDRESS, SS\#}\}$$

A longer d_i

1. Raises cost to fraudsters of opening an account in your network.
2. But, if stolen easier to open account in other network.

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2. Data security

s_i - has value because i bears some of costs of fraud in other network. (Otherwise, $s_i = 0$!)

Equilibrium Conditions (Simplified)

Network 1

$$\max_{d_1, s_1} V_1(d_1, s_1, d_2, s_2)$$

Network 2

$$\max_{d_2, s_2} V_2(d_1, s_1, d_2, s_2)$$

Equilibrium is Nash. Not efficient.

Social Optimum solves

$$\max_{d_1, s_1, d_2, s_2} V_1(d_1, s_1, d_2, s_2) + V_2(d_1, s_1, d_2, s_2)$$

Analogies

Crime Analogy
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Results

1. Too much data collected (too large a d_i).
2. Too little security (s_i too low).

Is There Really an Externality Here?

I find the argument convincing.

Information has different properties than other commodities.

- Not used up.
- Easy to copy. Hard to prevent others from using.
- Often, public good properties.
- Here, public bad properties.

They Understate the Externality

Lots of PID outside payment networks.

- Hospitals, schools, government agencies, etc.

Effective security is Leontief

$$s = \min\{s_1, s_2, s_3, ..., s_n\}$$

Don't see a way around this. Unless someone develops an unfalsifiable technology for identity purposes.

At best can mitigate - Limits on what can be purchased, criminal penalties, etc.

Is This Externality Quantitatively Important?

- Lots of uncertainty about estimates.
- Schreft (2007) reports identity theft costs $61 Billion to consumers in 2006.
- Does not include prevention costs. These are big.

- Costs are big, but don't tell us how big the externality will be.
- Model is too stylized to make much progress on quantitative questions.
- I'll sketch out a different approach.

Devote Public Resources to Reduce Identity Theft? (Is Identity Theft Important for Macro Aggregates?)

Start with a representative agent and treat identity theft as a transfer that is financed by a linear consumption tax. (Similar to some kinds of fiscal stimulus.)

2006 Numbers

$$\frac{\text{Identity Theft Costs}}{\text{Personal Consumption Expenditure}} = \frac{\text{61 billion}}{\text{9.3 trillion}} = 0.66\%$$

Tax calculations give marginal benefit of reducing identity theft. For marginal cost need something else, maybe IT studies.

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Would then like to enrich this macro public finance model with a richer transaction structure, multi-dimensional consumption, transactions that don't happen because of identity issues, etc.