Analysis of eCrime in Crowd-sourced Labor Markets

Vaihbav Garg, Chris Kanich, and L. Jean Camp
Why eCrime?

• Kanich et al., Spamalytics: An Empirical Analysis of Spam Marketing Conversion. 
  Pharmaceutical Spam = $ 3.5 M

  Phishing = $ 178.1 M

• Stone-Gross et al., The Underground Economy of Spam: A Botmaster’s Perspective of Coordinating Large-Scale Spam Campaigns. 
  Fake Antivirus = $ 130 M
eCrime Solutions

• Deterrence Theory
  – Regulatory
    • Penalties ++
    • Prosecution ++
    • Graduated Response/SOPA/PIPA/ACTA
  – Technical
    • CAPTCHAs
    • IP Filtering
    • Virtual Machine/Fake Bots
eCrime: A Limited Understanding

- Why do individuals choose to engender profits through eCrime rather than by legal enterprise?
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Smuggling Theory of eCrime

• eCrime
  – Social welfare increasing
  – Prohibitive tariff
  – Suppresses legal enterprise

• Solution: Reduce the costs for legal enterprise!

• Transcription
• Translation
• Etc.
• Ipeirotis, Demographics of mechanical turk.
• Ross et al., Who are the crowdworkers?: shifting demographics in mechanical turk.
• 44.6% jobs not legitimate
• Search engine optimization
• Spam
• CAPTCHAs
• Social network links
• Etc.
• Motoyama et al., Dirty jobs: The role of freelance labor in web service abuse.
Macro-level Model

- Affordability
  - GDP per capita
  - GDP per capita by PPP

- Accessibility
  - Higher quality broadband
  - Reliable access
  - Urban population
Macro-level Model

- Affordability
- Accessibility
- Population
  - Total Population
  - Number of Internet Users
- Security
  - Secure Internet Servers (SIS)
  - SIS by population
Macro-level Model

- Affordability
- Accessibility
- Population
- Security
- English
- Legal Framework
  - Alleviates supply not demand
  - Impact of corruption
  - Deterrence and displacement
Future Work

- High participation vs. Low participation
- Theories of Crime Offline
- Longitudinal Analysis
- Predictive Models
- Other activities, e.g. botnets.
Summary

• Macro-level analyses
• Limited impact of deterrence
• Higher costs of legitimate enterprise
• Public policy implications
• Private enterprise implications