Policy Implications: Economist View on Software Innovation

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Challenges for researchers

◆ Software as a product? or software as a service?
  - Software as a product: zero marginal cost -> economy of scale, product innovation is important
  - Software as a service: labor intensive, process innovation is also important

◆ Supplier side: vertical fragmentation
  - OS -> Middleware -> Applications (-> Contents)
  - Platform competition

◆ Demand side: network externality and interactions
  - Users are interconnected each other
  - Supplier- user interactions -> new business models such as open source software and CGMs

Policy Instruments

◆ Innovation promotion policies

- R&D promotion: public funding to software projects
- Human capital development: IT skill standard, certifications, university industry linkages

◆ Framework condition policies

- IPR and competition policy
- IT and e-business infrastructure

Importance of human capital development

$$\ln\left(\frac{Y}{L}\right) = \alpha \ln\left(\frac{K_1}{L}\right) + \beta \ln\left(\frac{K_2}{L}\right) + \sum \lambda_i \times x_i + cons. + \varepsilon$$

	係数	標準誤差		係数	標準誤差	
資本装備率（固定資産）	0.0575	0.0128	***	0.0573	0.0127	***
資本装備率（ソフトウェア）	0.0956	0.0109	***	0.0951	0.0109	***
情報処理合格者割合1	0.0001	0.0000	*			
情報処理合格者割合2				0.0001	0.0001	**
ソフトウェア売上高ダミー	0.0499	0.0440		0.0462	0.0440	
定数項	−4.2369	0.1315	***	−4.2408	0.1312	***
サンプル数		439			439	
自由度修正済み決定係数		0.2322			0.2337	

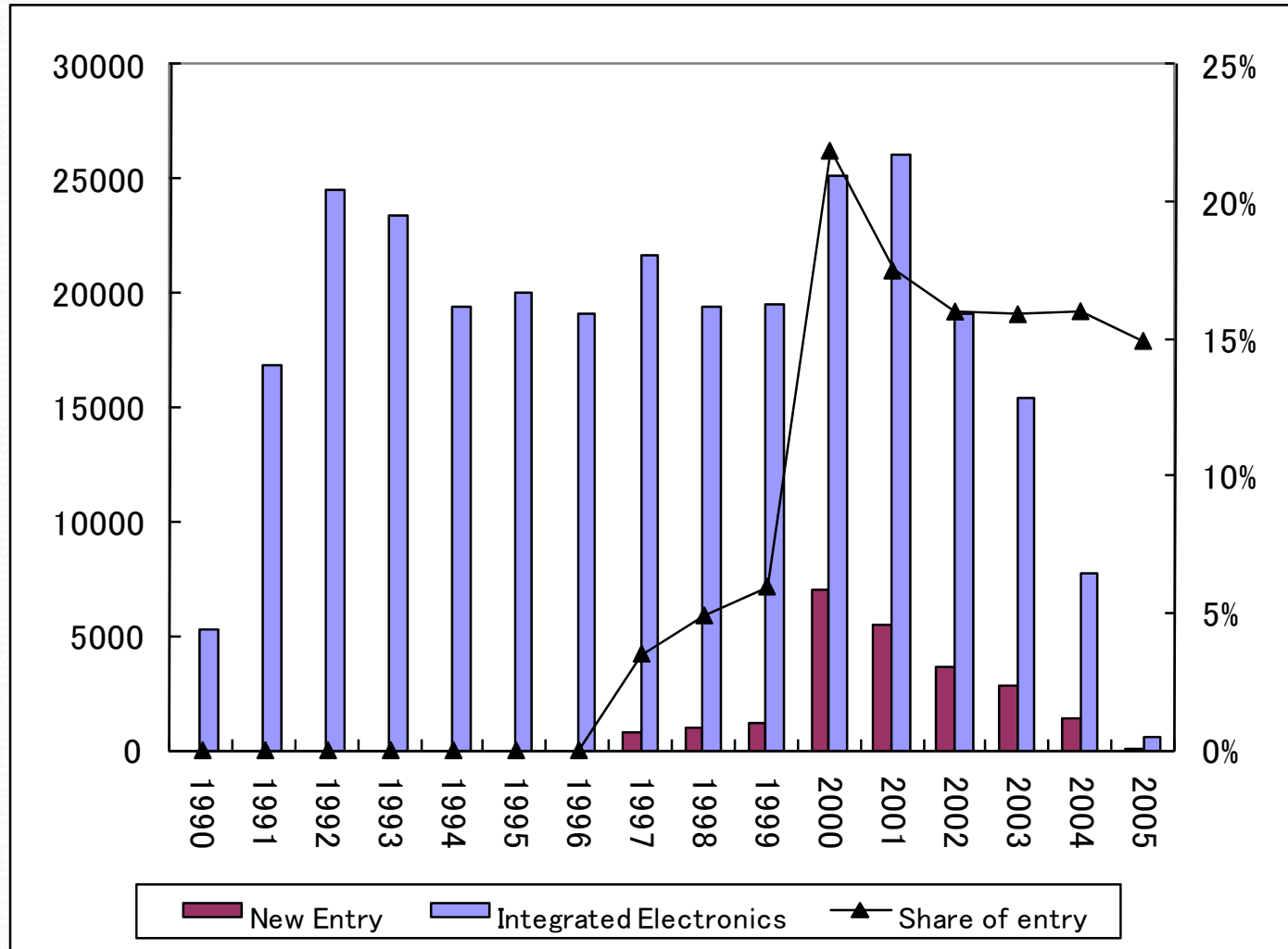(Minetaki and Motohashi, 2007, RIETI-DP-07-J-018)

Publicity of Skill Standards
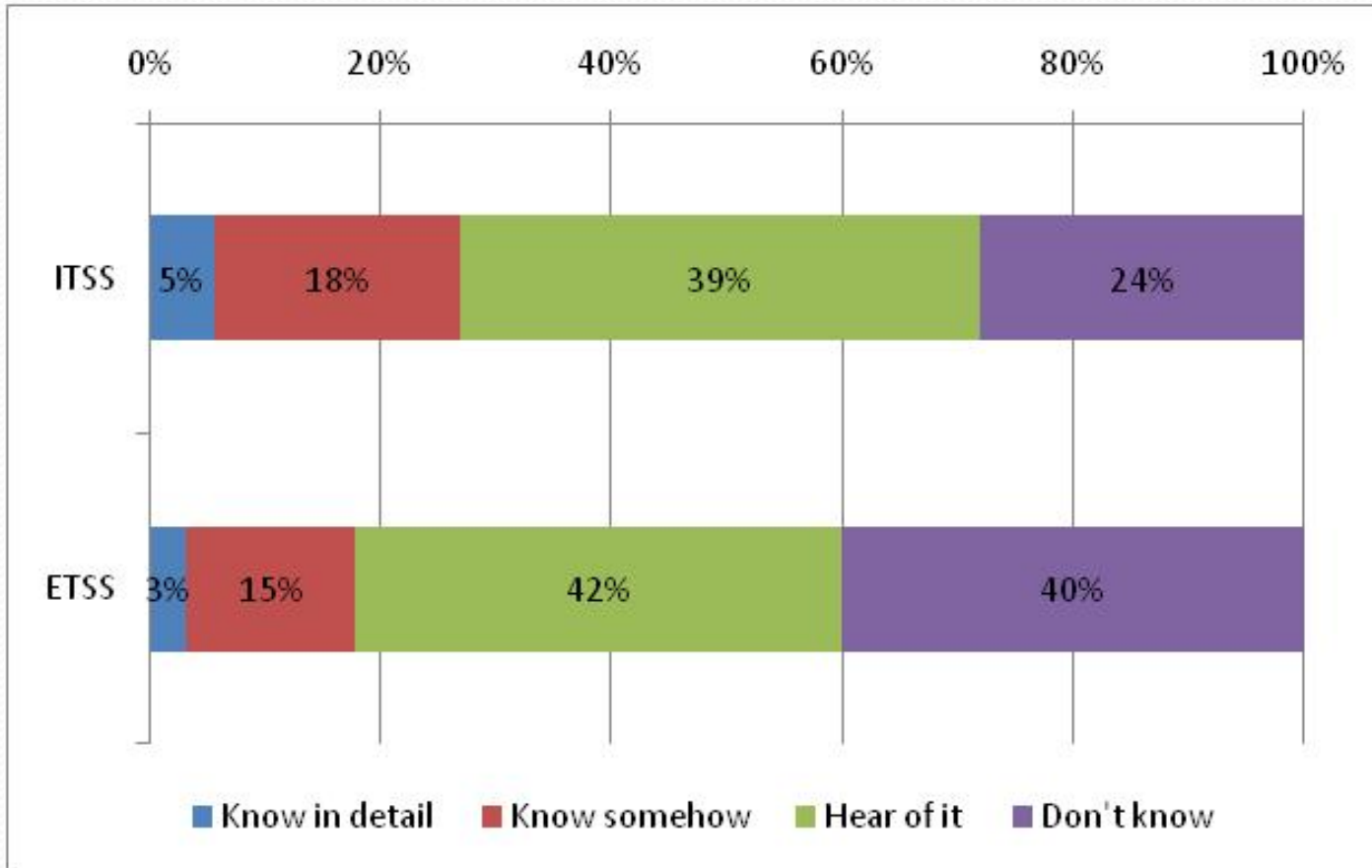
(IS Industry Management Survey: IPA)

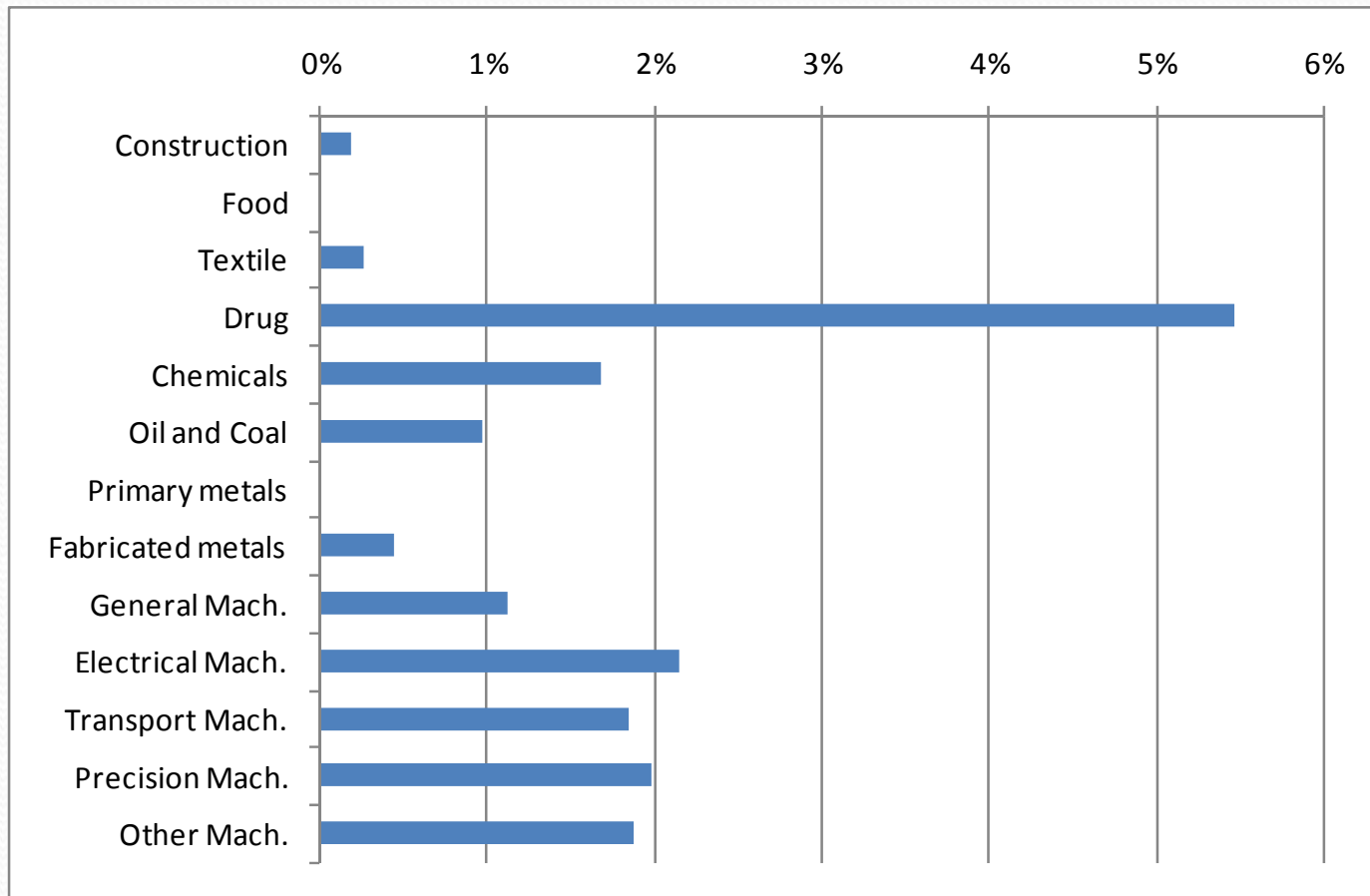# Stronger patents and software innovation
- software patent facilitates independent software houses' innovation -

(Motohashi, 2007)

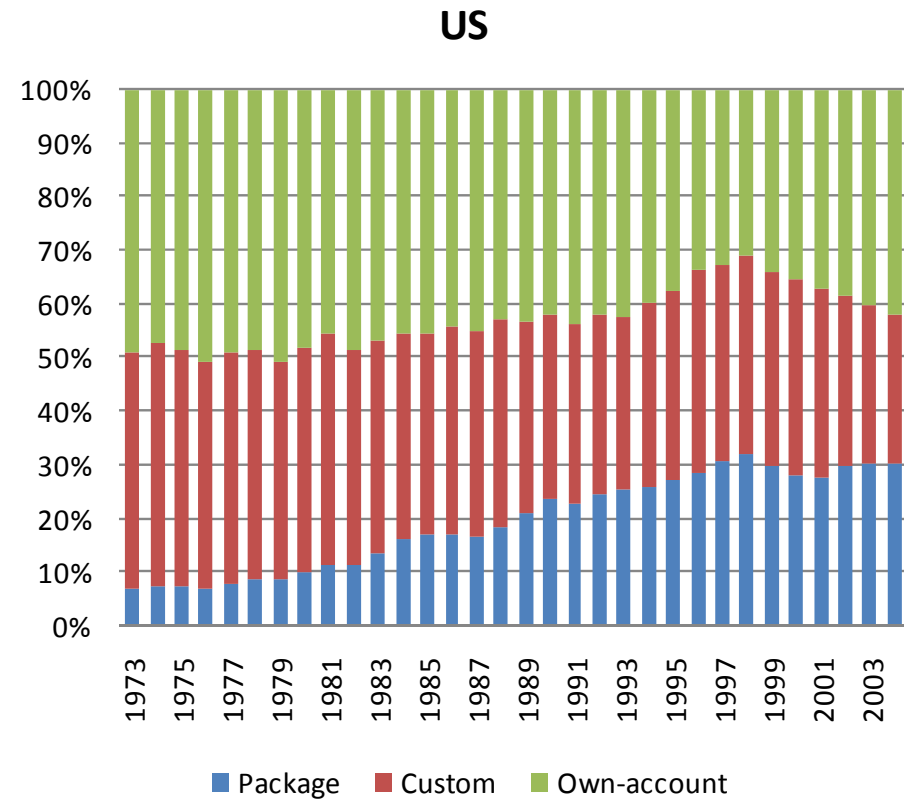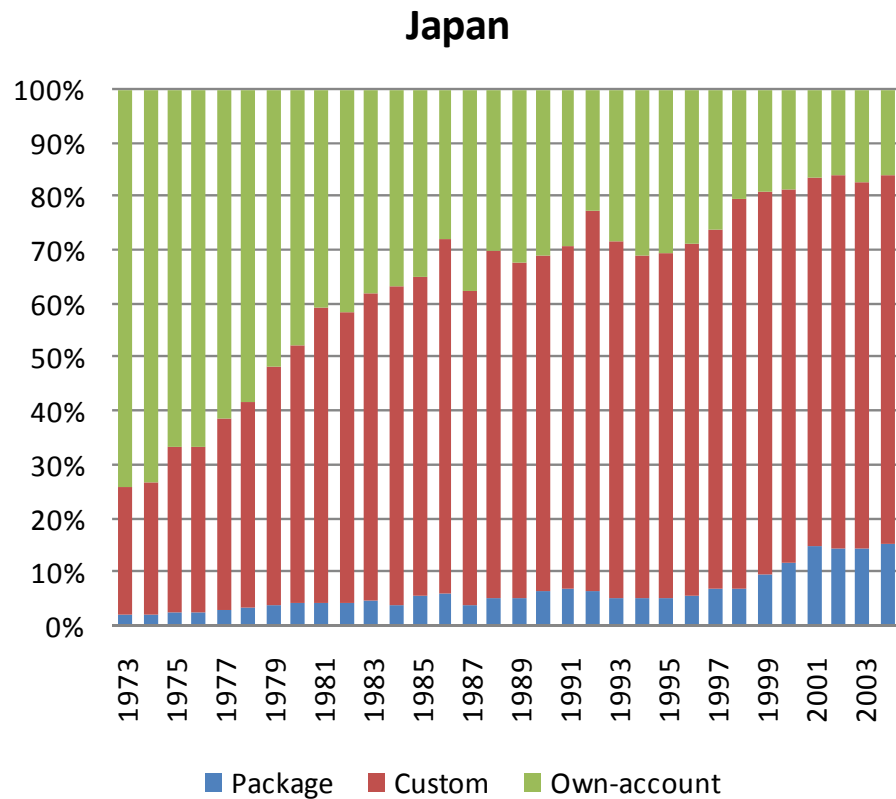# However, there is also downside story

Share of firms with patent infringements

Software Industry Structure in JP and US

(Jorgenson and Motohashi, 2005)

Country specificity in policy implications?

◆ Dependability issues (for IT service, custom made software) are important for Japan

◆ R&D and product development are important for US (entrepreneurship, venture capital, ..)

◆ Different strategies for IT service firms (high quality services v.s standardized service providers with substantial use of off-shore development)

◆ How about embedded software?: Same as computer software? (mobile phone….)