

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

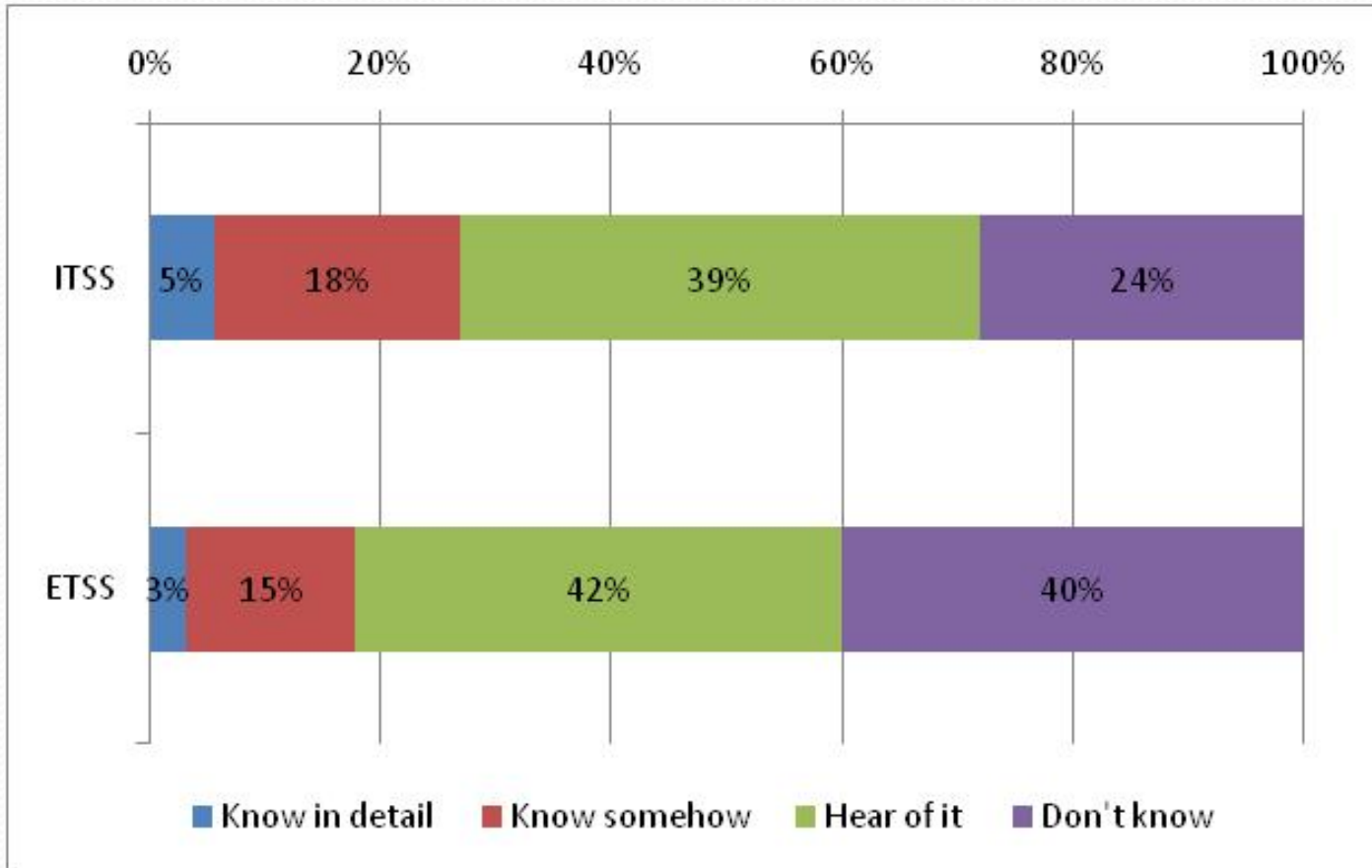
Importance of human capital development

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

	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)

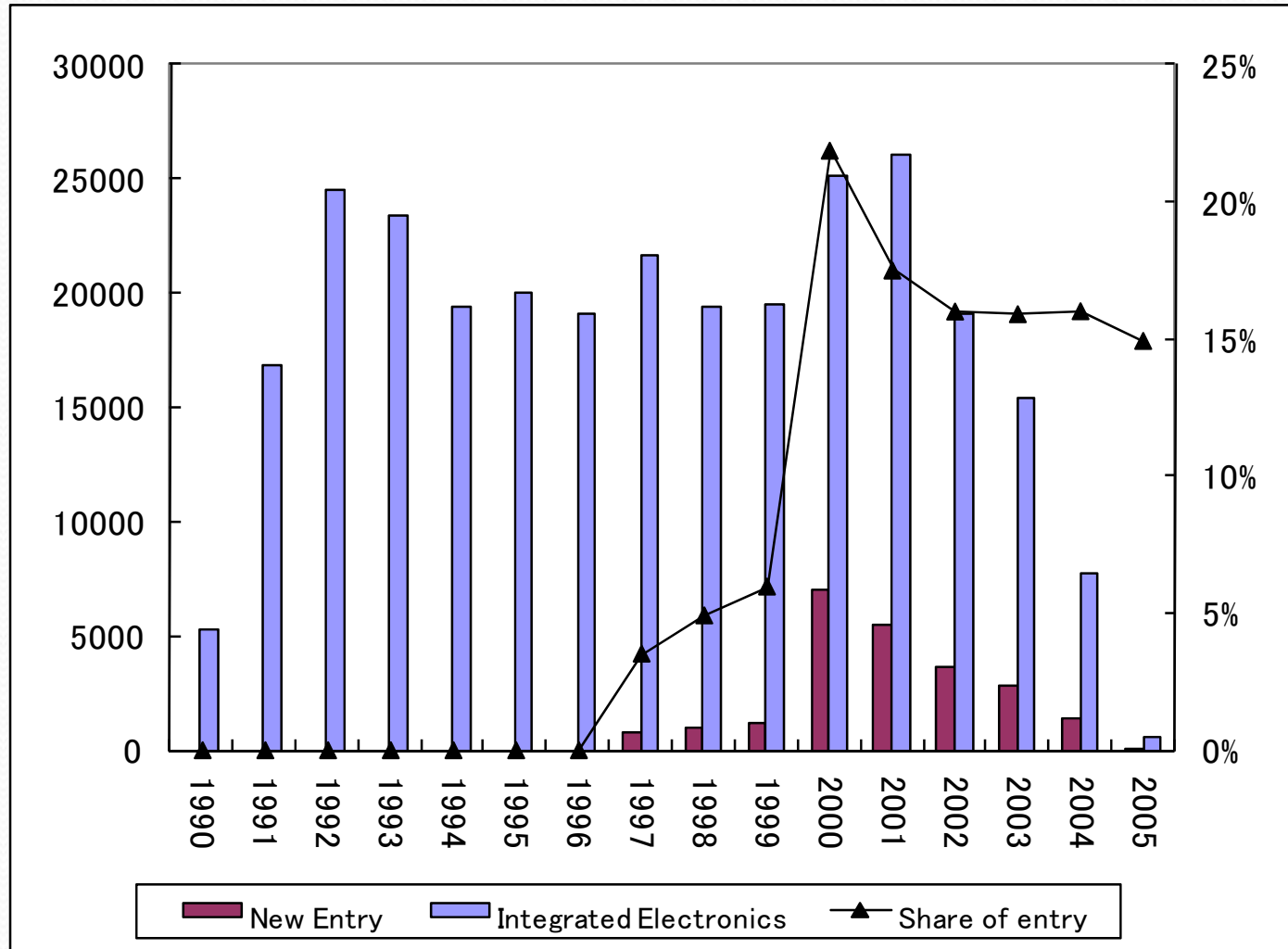
Publicity of Skill Standards



(IS Industry Management Survey: IPA)

Stronger patents and software innovation

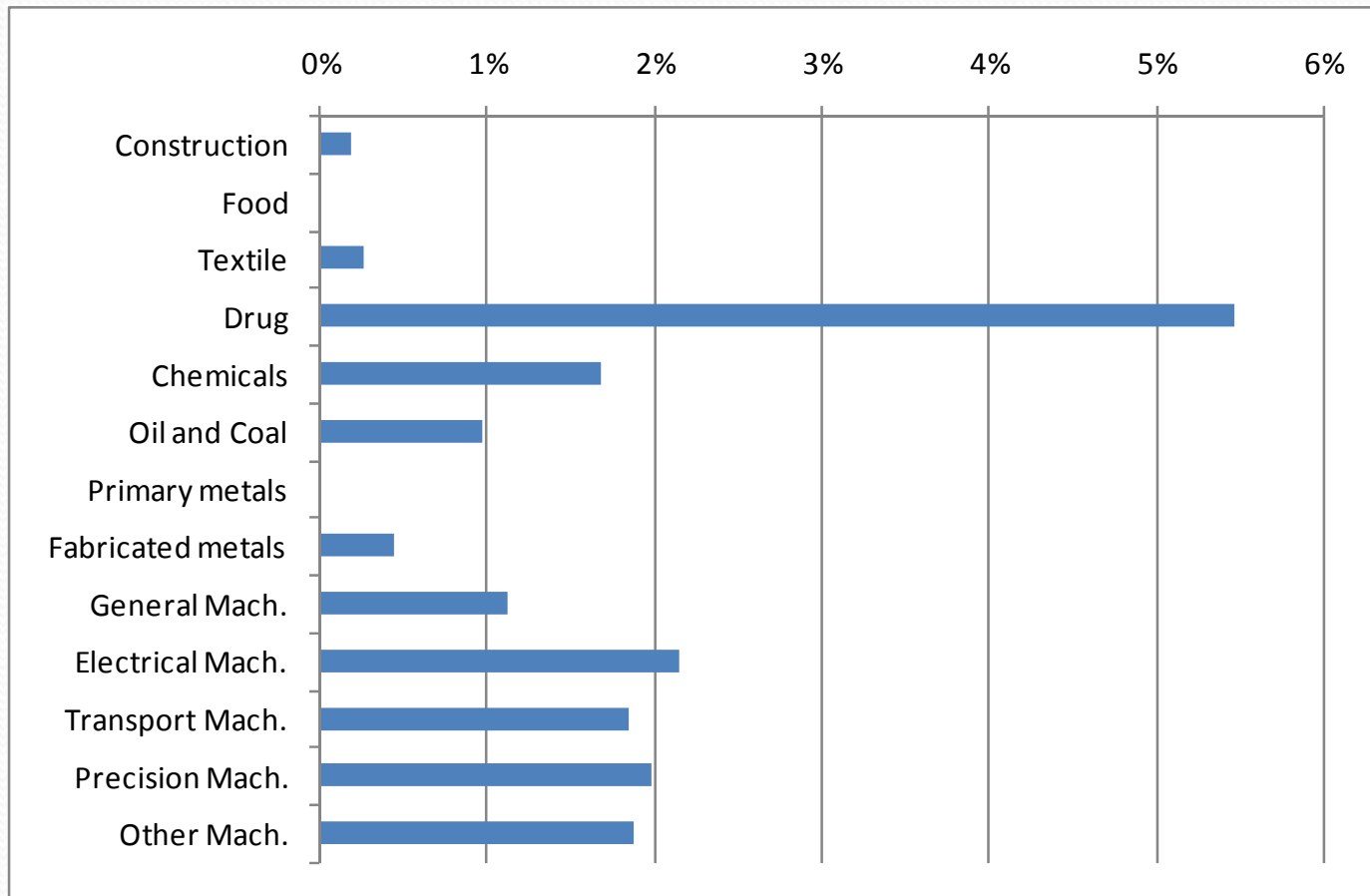
- software patent facilitates independent software houses' innovation -



(Motohashi, 2007)

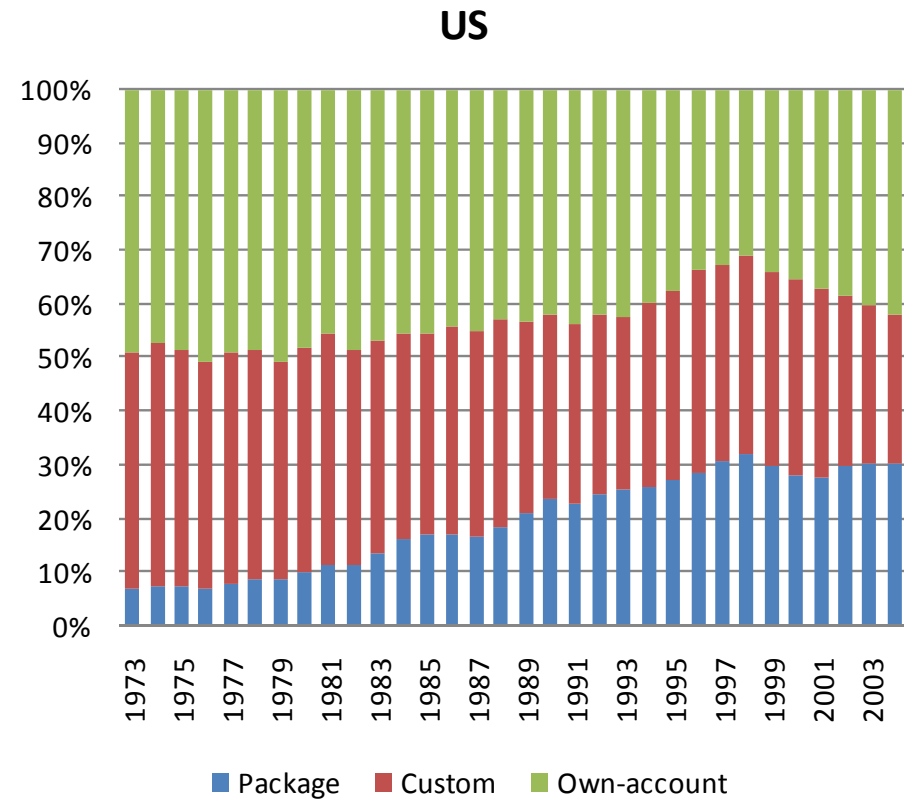
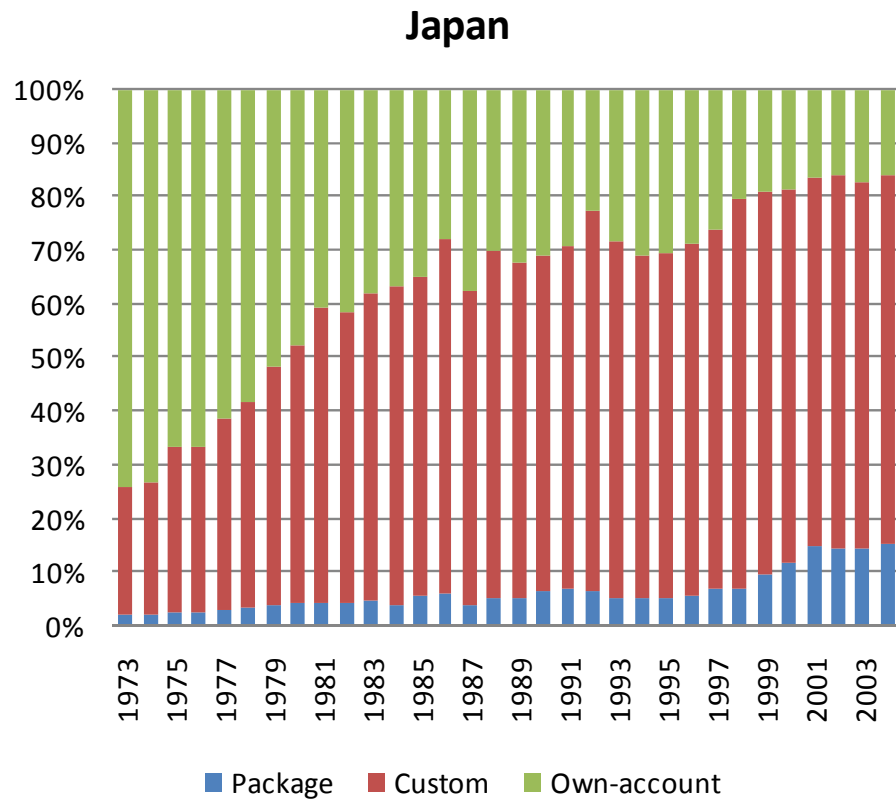
However, there is also downside story

Share of firms with patent infringements



(Survey of IPR Activities, JPO)

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....)