

**EE-402T “Entrepreneurship in Asian High-Tech Industries”
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2015 Asia Entrepreneurship Update

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**Background:
General Economic Conditions in Asia**

(CIA World Factbook) GDP of the top five national economies of the world – PPP

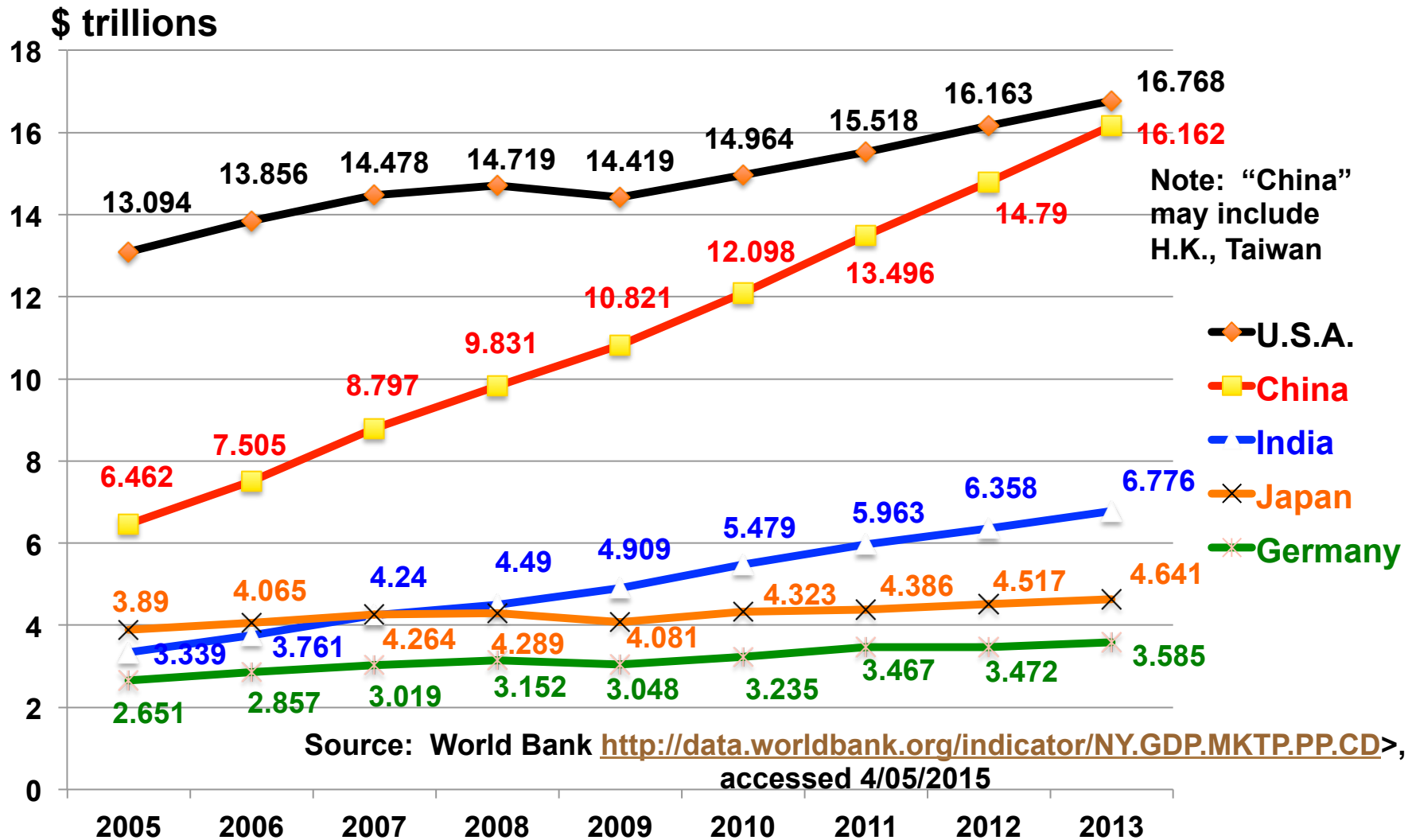
	2011 - \$ trillions	2011 GR - %	2012 - \$ trillions	2012 GR - %	2013- \$ trillions	2013 GR - %	GDP / person \$
World	82.24	3.8	84.78	3.1	87.18	2.8	13,100
1. U.S.A.	16.02	1.8	16.47	2.8	16.72	1.6	52,800
2. China	11.54	9.3	12.43	7.7	13.37	7.6	9,800
3. India	4.63	7.5	4.78	5.1	4.96	4.7	4,000
4. Japan	4.55	(-0.6)	4.64	2.0	4.73	2.0	37,100
5. Germany	3.18	3.4	3.21	0.9	3.23	0.5	39,500

- Ranking excludes EU (which would be #2 after U.S.A.)

Red = lower than World Average, Blue = greater

Estimated amounts in 2013 dollars, according to **PPP**
From: CIA World Factbook, data retrieved 4/03/2015

(World Bank) GDP of the big five economies



(CIA World Factbook) GDP of other Asia economies in the world's 50 largest

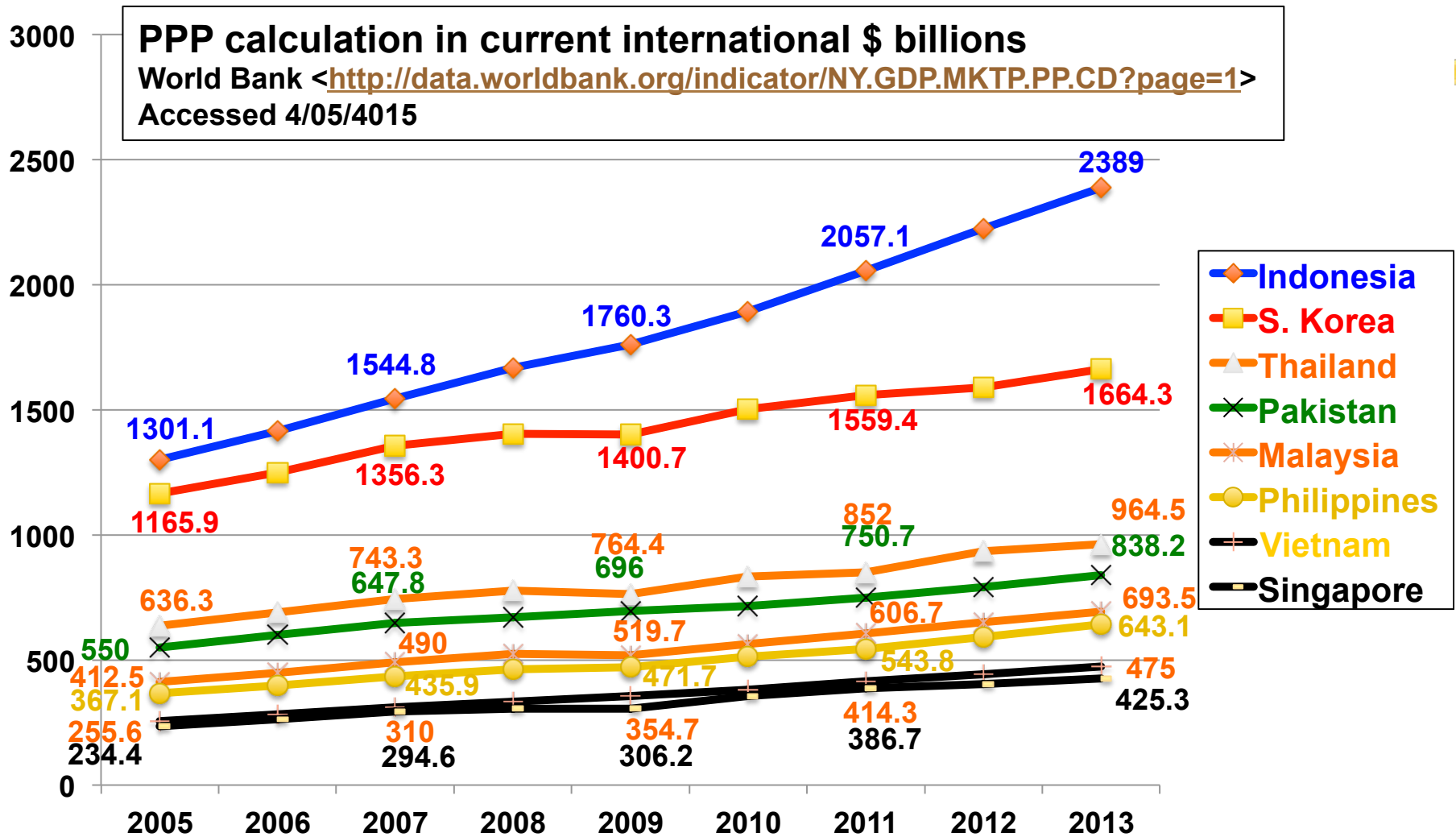
World ranking	2011 - \$ billions	2011 GR - %	2012 – \$ billions	2012 GR - %	2013 – \$ billions	2013 GR - %	2013 GDP / person \$
12. S. Korea	1,587	3.7	1,620	2.0	1,666	2.8	33,200
15. Indonesia	1,149	6.5	1,220	6.2	1,285	5.3	5,200
20. Taiwan	895	4.1	907	1.3	926	2.2	39,600
24. Thailand	614	0.1	654	6.5	674	3.1	9,900
26. Pakistan	531	3.7	554	4.4	574	3.6	3,100
29. Malaysia	475	5.1	502	5.6	525	4.7	17,500
31. Philippines	398	3.6	425	6.8	454	6.8	4,700
35. Hong Kong	365	4.9	371	1.5	382	3.0	52,700
38. Vietnam	324	6.2	341	5.2	359	5.3	4,000
40. Singapore	323	5.2	327	1.3	339	3.5	62,400

Red = lower than World Average, Blue = greater

- Not included: Middle East countries, Bangladesh (#43)
- Ranking excludes EU

Estimated amounts in 2013 dollars, according to PPP
From: CIA World Factbook, data retrieved 4/07/2014

(World Bank) GDP of selected Asia economies



Trends in recent GDP growth rates – 1

- ◆ **General world GDP expected to pick up again after slowdown in growth rates between 2011 – 2013**
 - ◆ (Real) GDP growth **2.5%** (2013) > **2.6%** (2014) > **3.0%** (2015)
 - ◆ World 50-year average (1962 – 2012) = **3.6%** / year
- ◆ **General rule: GDP growth tends to be slower in high income countries**
 - ◆ Infrastructure build-out in developing economies accounts for some growth
- ◆ **Some special situations**
 - ◆ Japan (2011) – Great East Japan Disaster
 - ◆ Thailand (2011) – Floods disaster, coup last year
 - ◆ Germany since 2012 – Greece and other Euro area challenges, although historically low yearly GDP growth
 - ◆ Lower price of oil hitting oil exporting countries

Trends in GDP – 2. Jumping-off points to China have begun to rebound after big drop

	2010 GR - % (calc. in 2012 dollars)	2012 GR - % (calc. in 2012 dollars / in 2013 dollars)	2013 GR - % (calc. in 2013 dollars)
Hong Kong	7.1	1.8 1.5	3.0
Singapore	14.8	2.1 1.3	3.5
Taiwan	10.7	1.3 1.3	2.2
S. Korea	6.3	2.7 2.0	2.8

- Big drop = concern about China's ability to manage its own slowdown? Now gradual return of confidence....
- **Hong Kong**: new agreements with China since 2013 under “Closer Economic Partnership Agreement” (2003) – RMB internationalization
- **Singapore**: largest rebound, may reflect government productivity policy: investments in pharmaceuticals, medical technology; continues to be financial hub for SE Asia as well as China
- Exports to Europe important to **S. Korea**, **Singapore** economy

Trends in GDP – 3: South & SE Asia steadily growing faster than world GR

	2010 GR - % (calc. in 2012 dollars)	2012 GR - % (calc. in 2012 dollars / in 2013 dollars)	2013 GR -% (calc. in 2013 dollars)
India	10.1	6.5 5.1	4.7
Indonesia	6.2	6.0 6.2	5.3
Thailand	7.8	5.6 6.5	3.1
Malaysia	7.2	4.4 5.6	4.7
Philippines	7.6	4.8 6.8	6.8
Vietnam	6.8	5.1 5.2	5.3

- SE Asia as lower-cost alternative to China (difficult market entry, slowdown uncertainty)
- Domestic market growth has kept SE Asian countries from being pulled down even more by world slowdown (which affects exports)
- **India:** World Bank predicts 5.6% growth (2014), 6.4% (2015)
- **Philippines:** rapidly expanding business process outsourcing industry



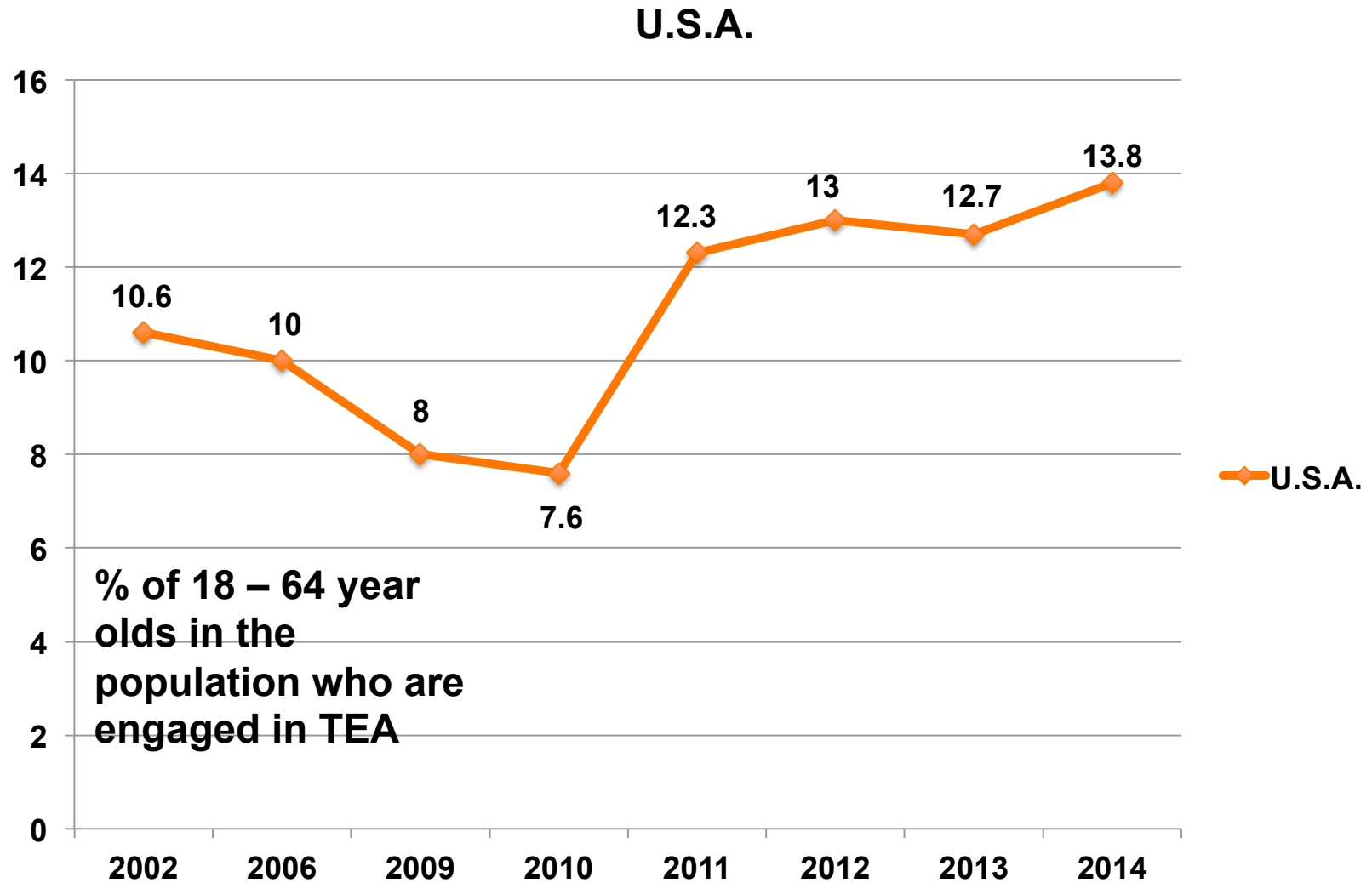
Entrepreneurial Activities in Asia: Data from Global Entrepreneurship Monitor

Global Entrepreneurship Monitor – Definition of “TEA Rate”

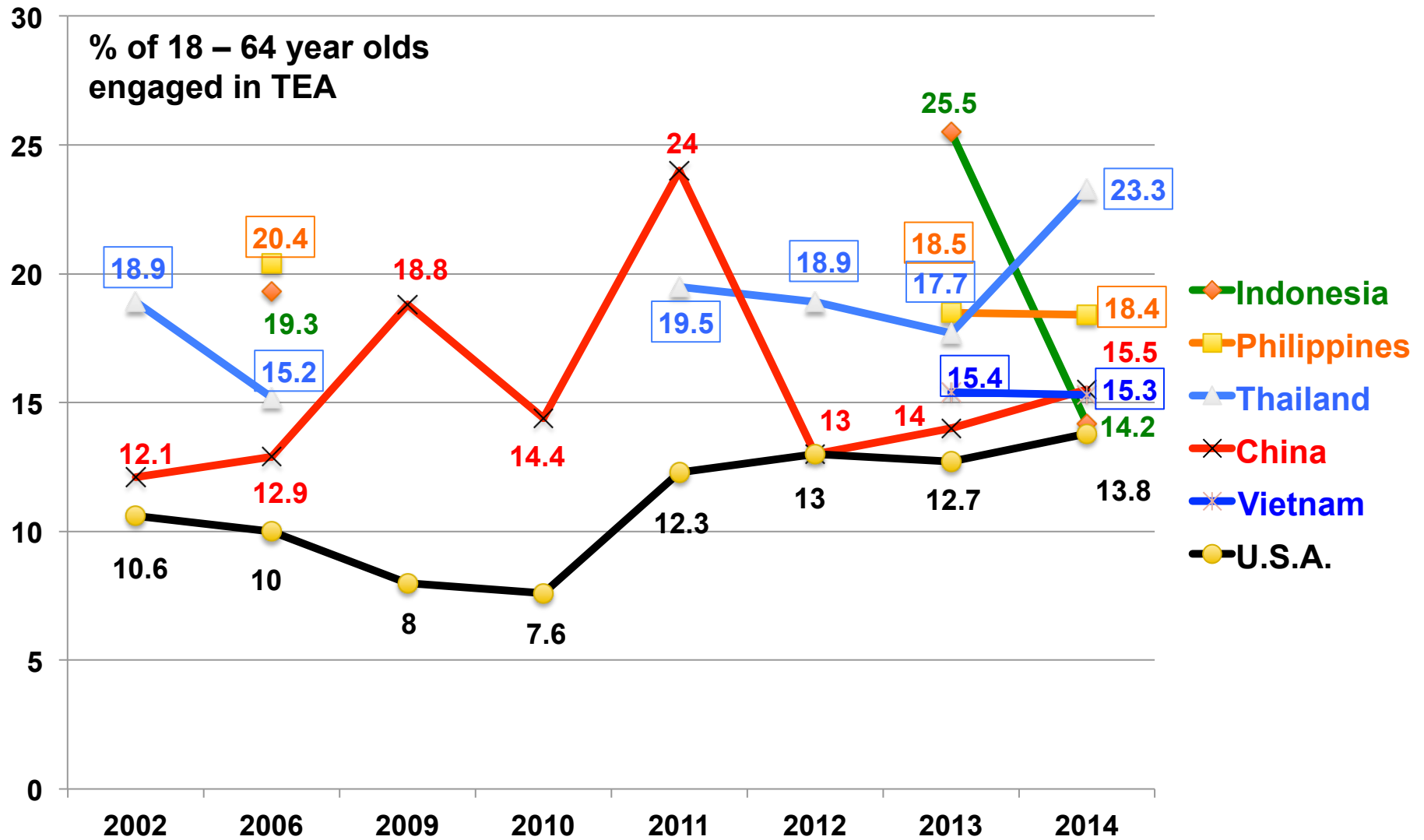
FIGURE 1.1 THE ENTREPRENEURSHIP PROCESS AND GEM OPERATIONAL DEFINITIONS



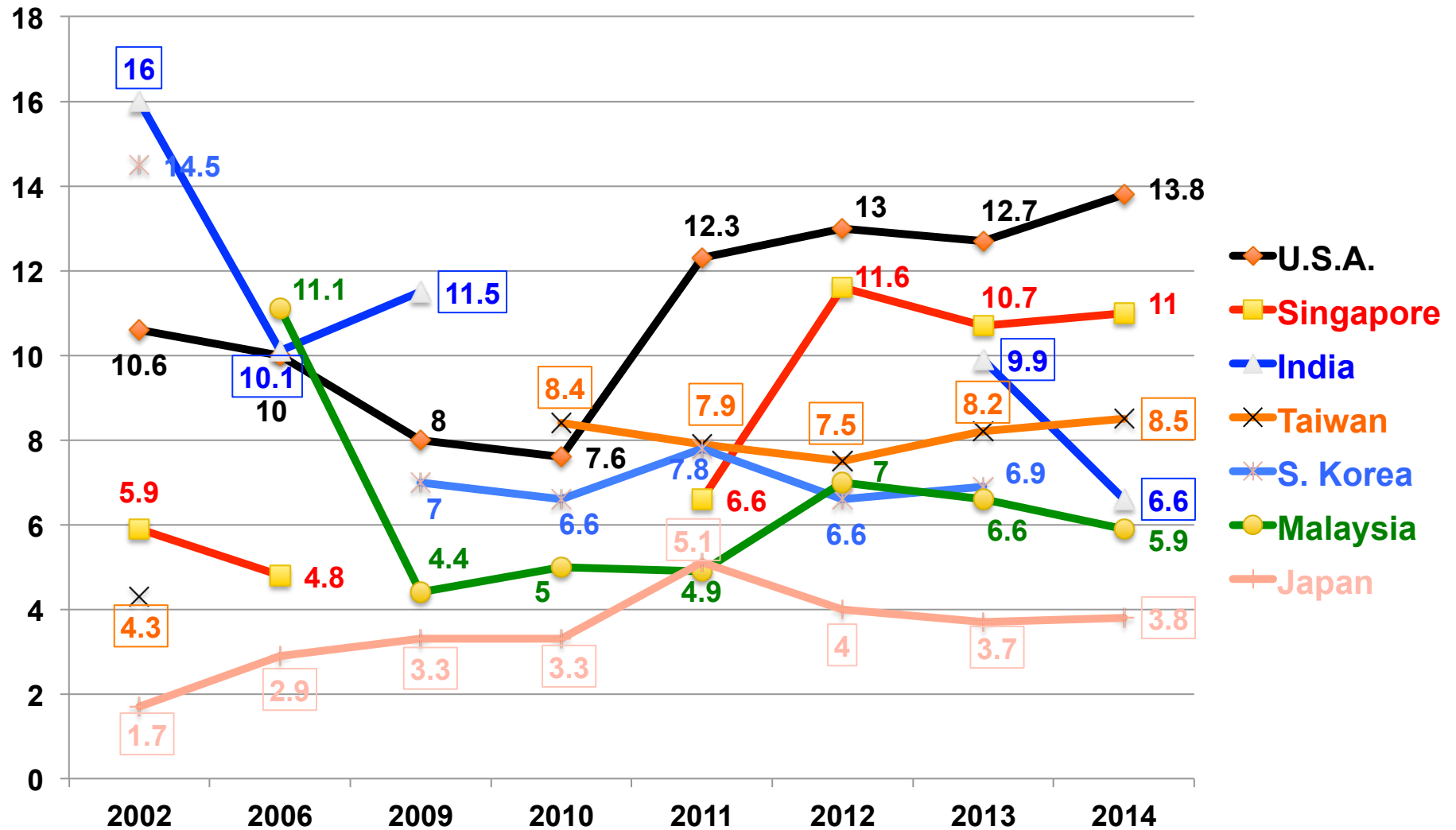
TEA Rate in U.S.A. since 2002



Asia countries with higher TEA rate than U.S.



Asia countries with TEA rate lower than U.S.

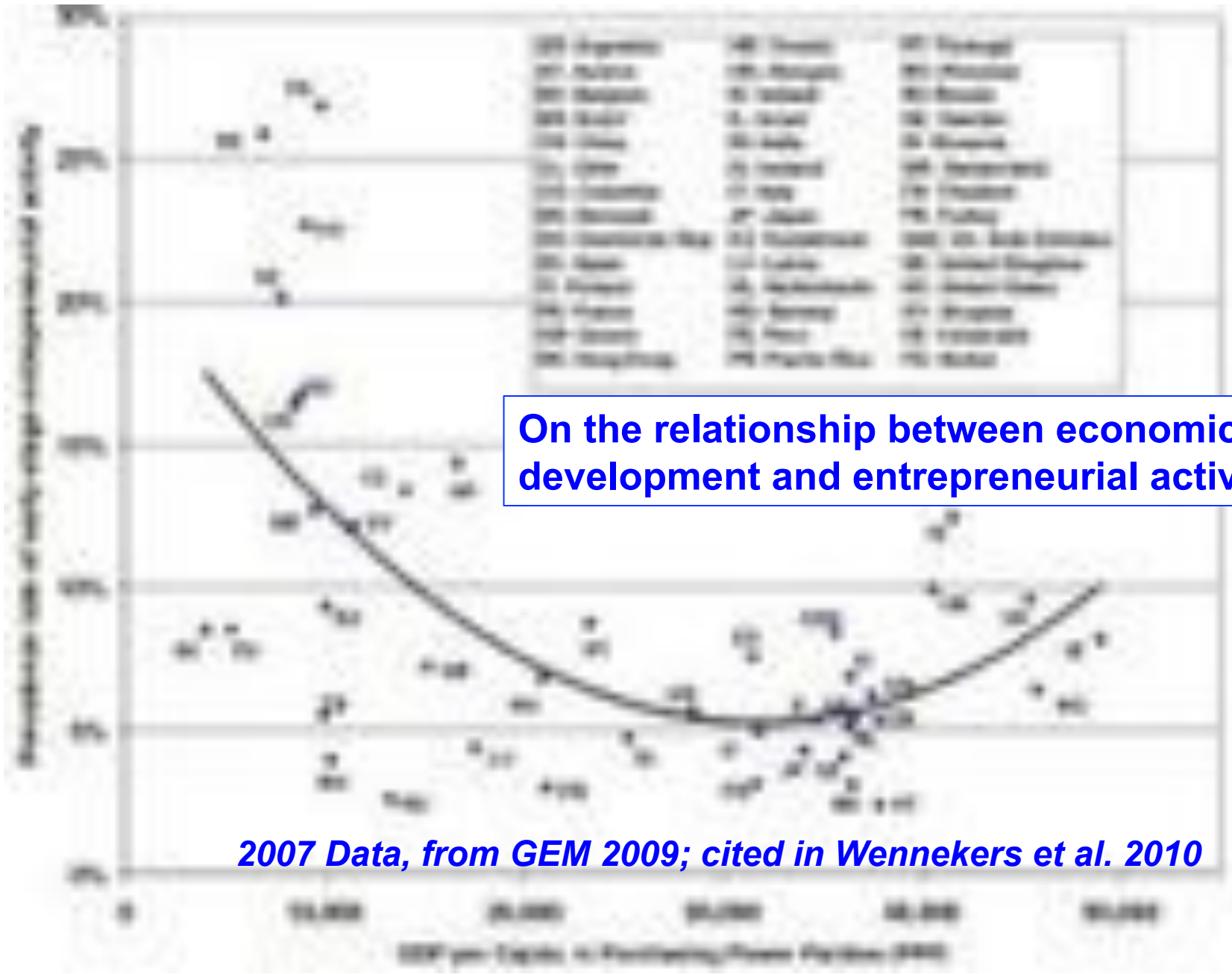


TEA rates and Asia countries' GDP / person

	TEA % (2013)	TEA % (2014)	GDP \$ / pers
Indonesia	25.5	14.2	5,200
Philippines	18.5	18.4	4,700
Thailand	17.7	23.3	9,900
Vietnam	15.4	15.3	4,000
China	14.0	15.5	9,800
USA	12.7	13.8	52,800

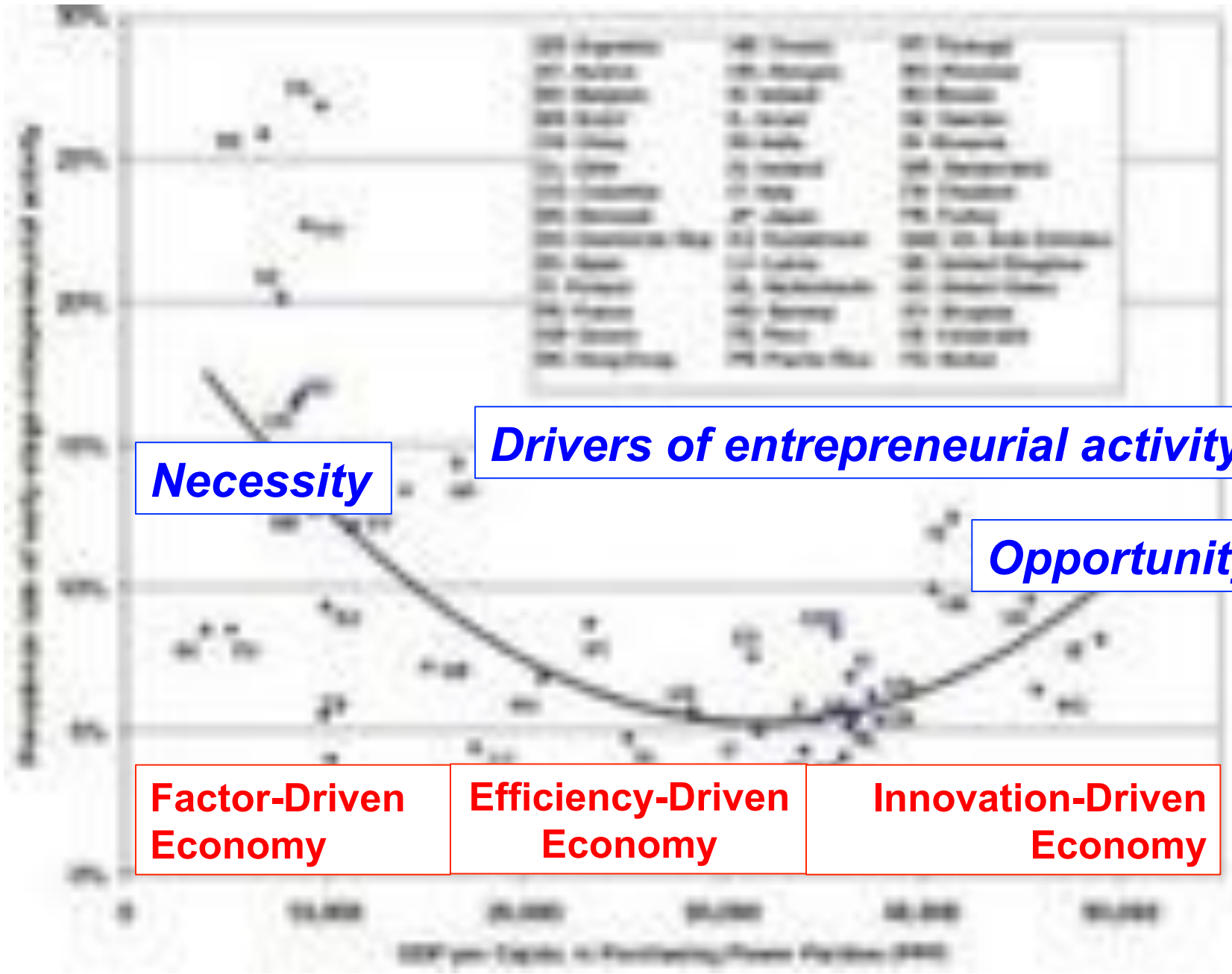
	TEA % (2013)	TEA % (2014)	GDP \$ / pers
USA	12.7	13.8	52,800
Singapore	10.7	11.0	62,400
India	9.9	6.6	4,000
Taiwan	8.2	8.5	39,600
S. Korea	6.9	N/A	33,200
Malaysia	6.6	5.9	17,500
Japan	3.7	3.8	37,100

- TEA rates higher than US correspond to lower GDP / person – follow expected pattern – Is this “Entrepreneurship of Necessity?”
- TEA rates lower than US are less clear: India, Malaysia surprisingly low -- Japan S. Korea, Taiwan expect higher TEA



On the relationship between economic development and entrepreneurial activity

2007 Data, from GEM 2009; cited in Wennekers et al. 2010



Necessity

Drivers of entrepreneurial activity

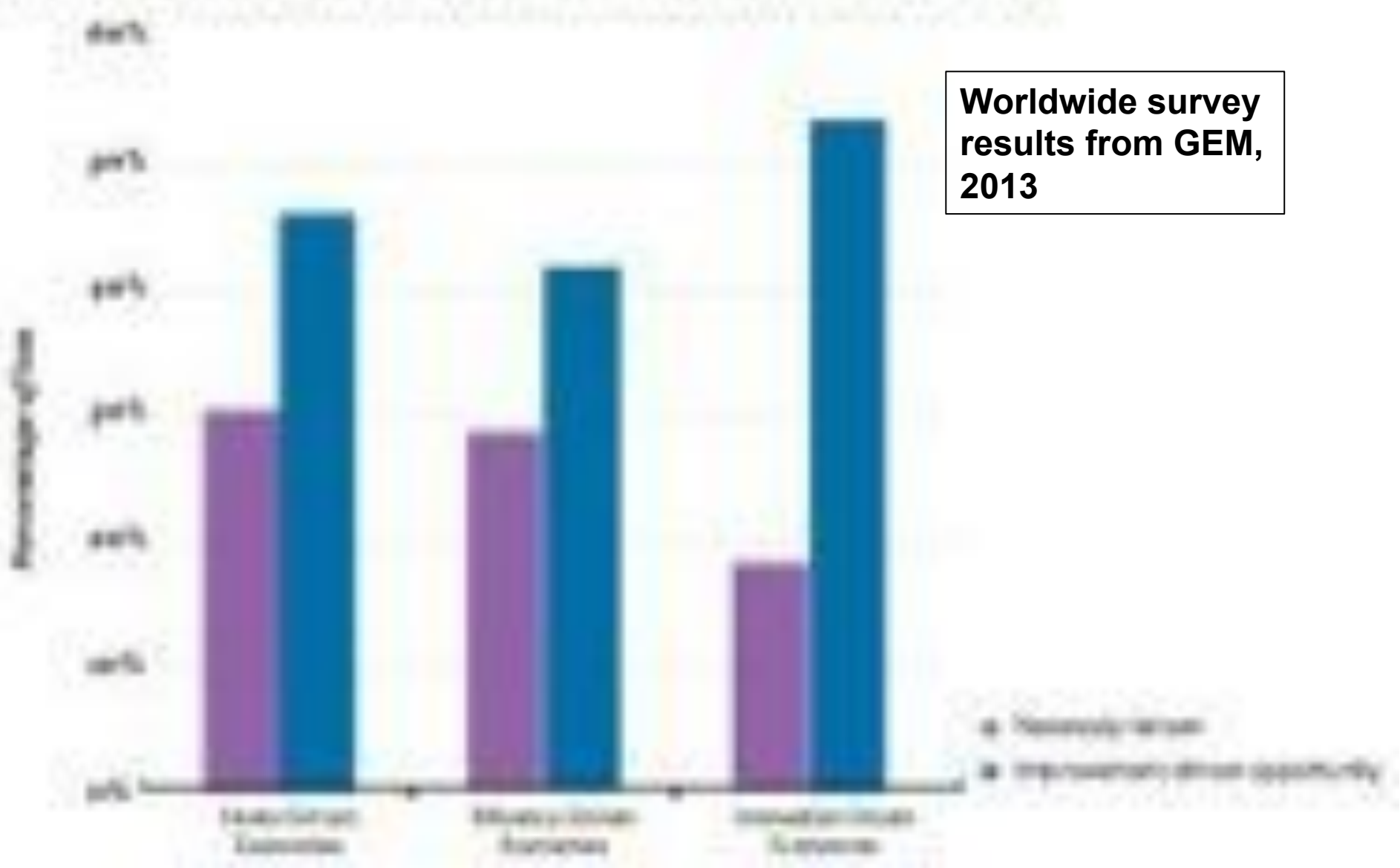
Opportunity

Factor-Driven Economy

Efficiency-Driven Economy

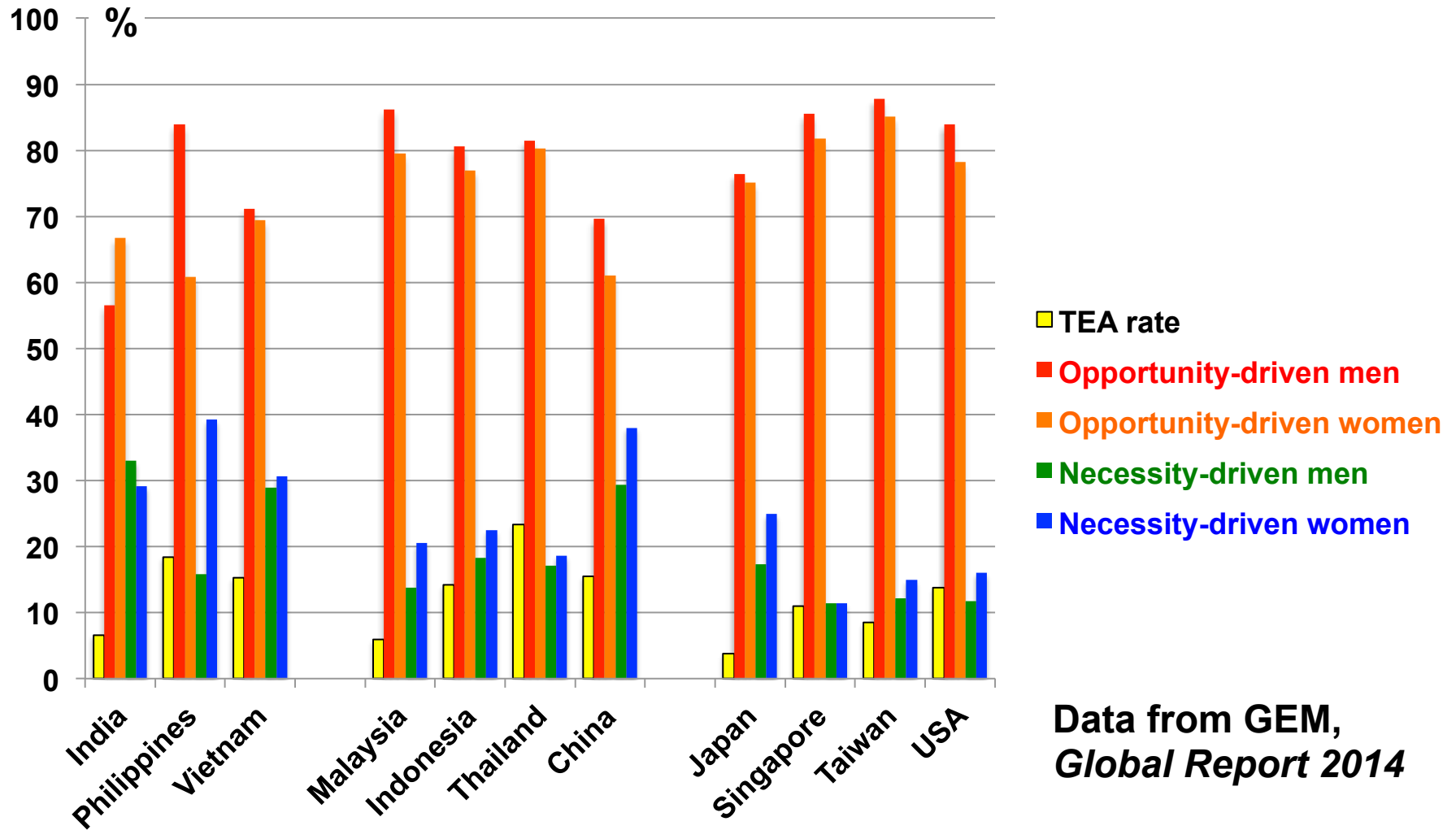
Innovation-Driven Economy

FIGURE 4.4 PERCENTAGE OF ENTREPRENEURS MOTIVATED BY NECESSITY AND OPPORTUNITY, BY PHASE OF ECONOMIC DEVELOPMENT, 2009



Worldwide survey results from GEM, 2013

Entrepreneurship is mostly opportunity-driven in Asia, even in high-TEA economies

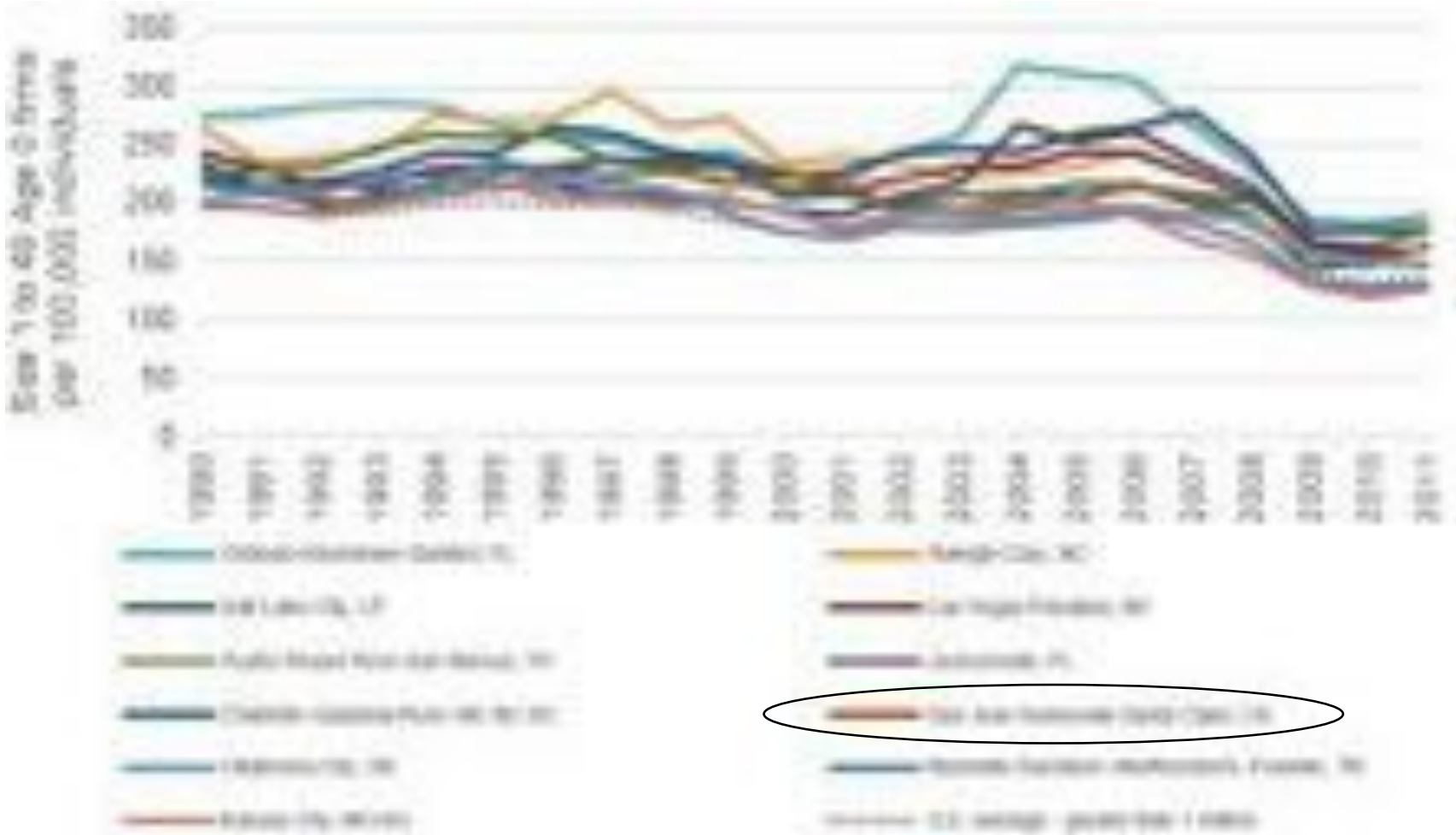




**Biggest differences in entrepreneurial
patterns in Asia & US:**

Not in creation but in growth and exit

Silicon Valley: famous for entrepreneurship, but rate of new company formation = ~ U.S. average



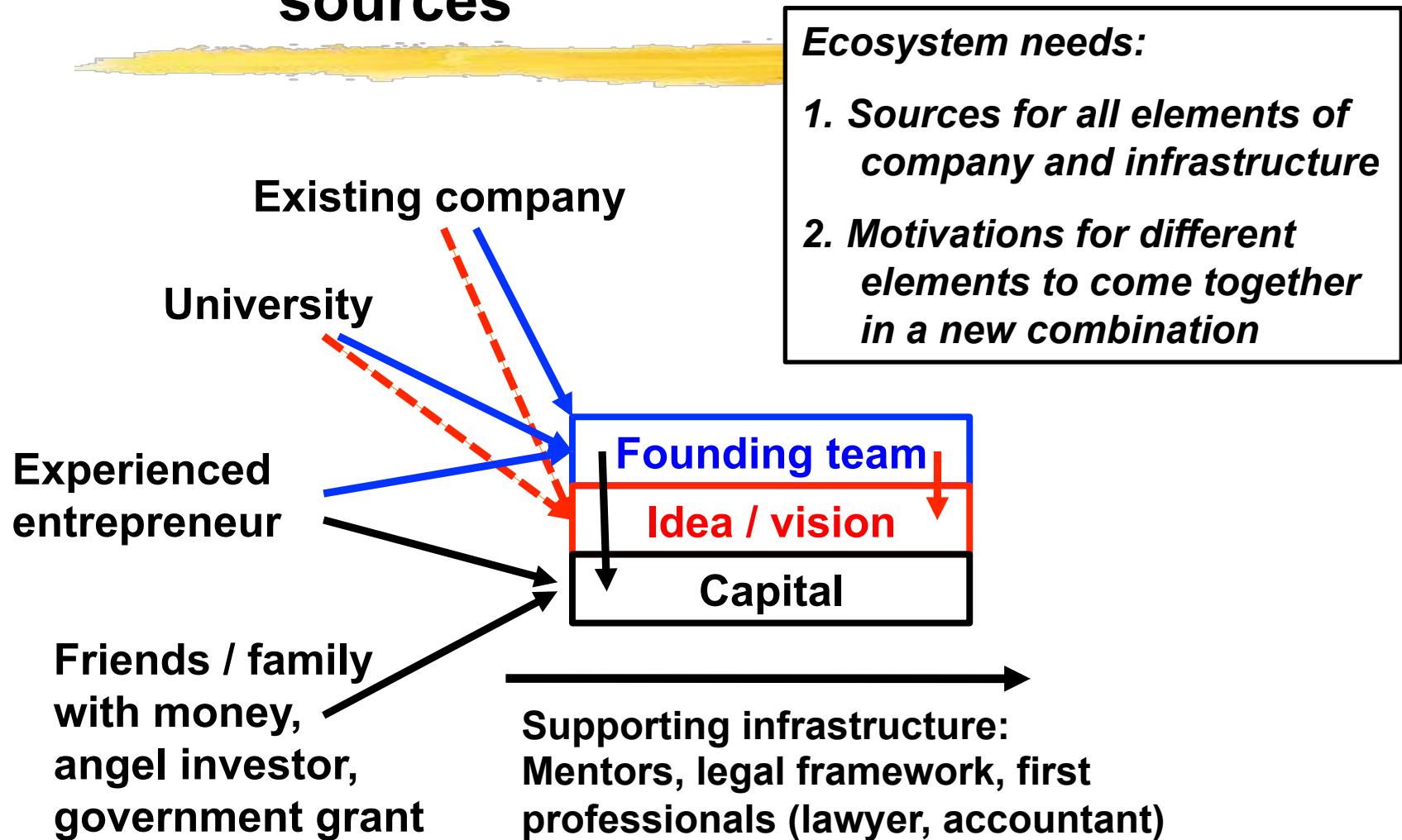
(Konczal 2013, Figure 21)

Silicon Valley reputation: waves of new industries – each with new world leader companies from S.V.

“Silicon Valley” term first used in 1971

	<i>Key S.V. industry</i>	<i>Disruptive innovation</i>	<i>Rising stars</i>
Early 1970s	Silicon wafer manufacturing	Silicon crystal growth	
Late 1970s	(Highly) integrated microelectronics	microprocessor	Intel, others
Early 1980s	New computer systems	RISC chip, new OS	SUN, Silicon Graphics
Late 1980s	Software	Relational databases, graphic user interface	Oracle
Mid 1990s	Internet	Hypertext	Netscape
Late 1990s	E-commerce	DSL, business enablers	Yahoo, eBay
Early 2000s	Web 2.0	Search engines	Google
Late 2000s	Social networking	New business models	Facebook, Twitter

Starting a Company: key elements and their sources



Comparing entrepreneurship ecosystems at creation stage

◆ Founding teams

- ◆ Demographics (age, prior knowledge / expertise, etc.)
- ◆ Sources of team – universities versus existing companies; what about experienced entrepreneurs?
- ◆ Dynamics: mobility of labor market, social attractiveness of entrepreneurship, career cost of failure

◆ Ideas / visions

- ◆ Come from perceived opportunities and perceived ability to succeed in a particular business segment
 - ◆ Why aren't there more advanced “high tech” ideas in China?
(Entrepreneurs and investors prefer quicker ways to make money....)
- ◆ Dynamics: mechanisms and incentives for tech and knowledge transfer

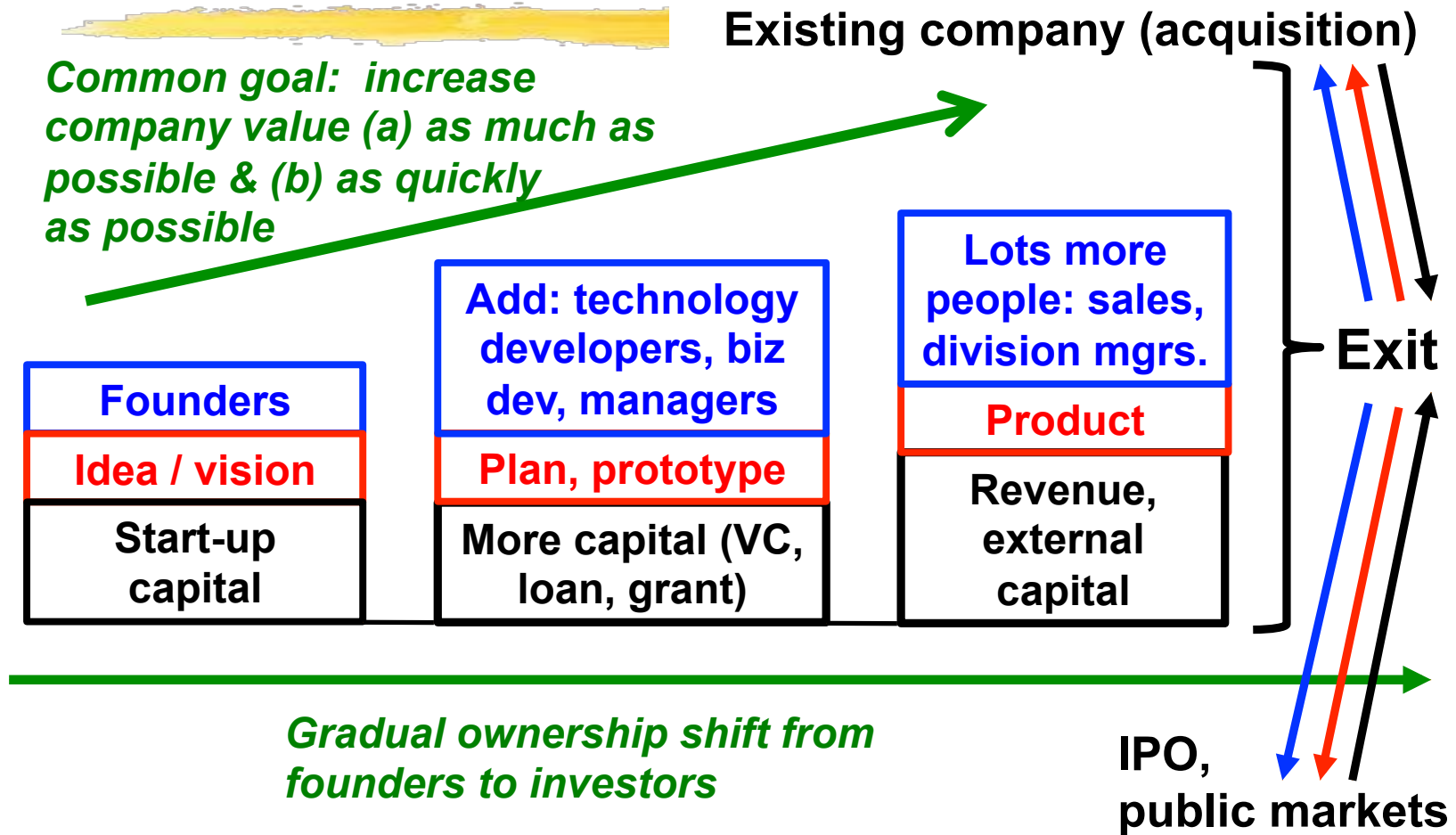
◆ Capital

- ◆ Sources, valuations & costs, conditions (e.g. personal guarantees)

◆ Infrastructure

- ◆ Legal system & case law interpretation, mentors, corruption issues, etc.

Silicon Valley: Actual Focus is on Growth & Exit



Comparing ecosystems for growth & exit

◆ People

- ◆ Availability to growing start-ups of quality workers, managers
- ◆ Management – investor relationship patterns (how much strategic hands-on involvement)
- ◆ Churn rate and career paths – among workers and founders

◆ Ideas

- ◆ Availability of facilities for prototyping, test marketing
- ◆ Most important factor: market access (B2B as well as B2C)

◆ Capital

- ◆ Sources, valuations, conditions for growth stage capital
- ◆ Patterns of ownership shift (from founders to investors)

◆ Exit

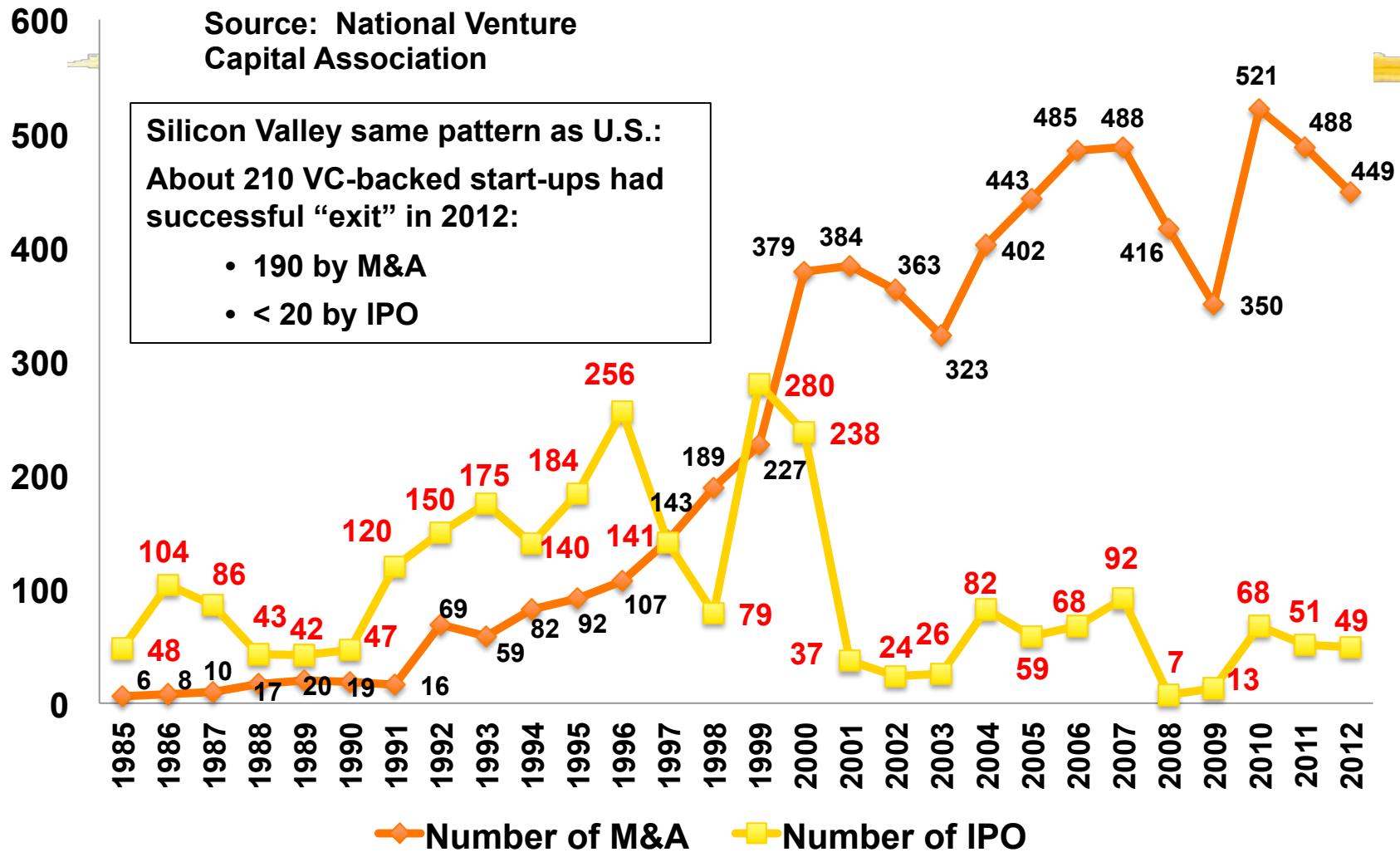
- ◆ Types (M&A versus IPO) and valuations; amount of money raised
- ◆ What happens after exit? (Silicon Valley: many people leave company and return to system to create next startup or become investors)

Recent example of Silicon Valley growth: Square, Inc.

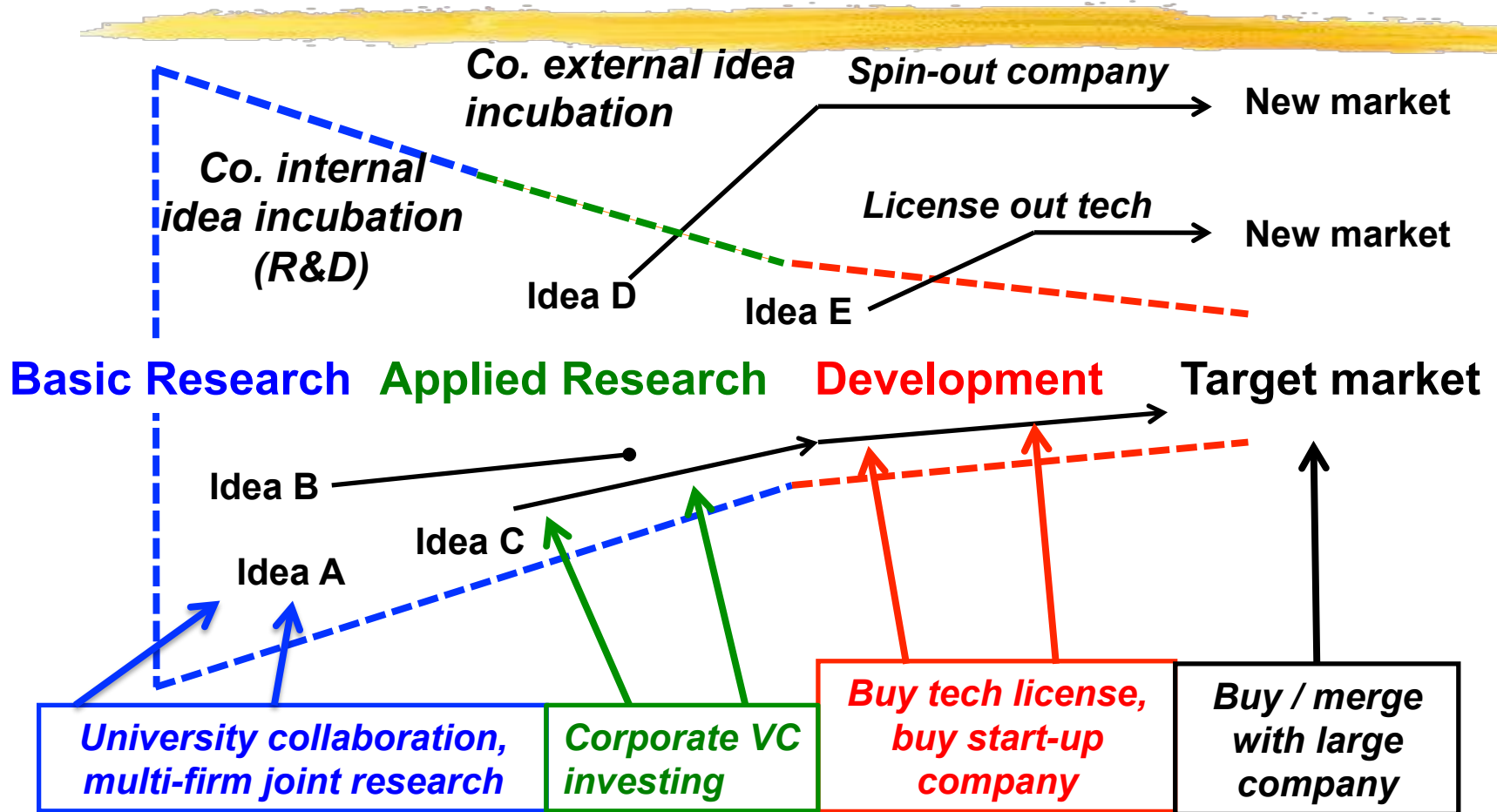
Credit card payment system for smart mobile devices; charges flat 2.75% commission (includes charge to credit card company)

Founded 2009 by Jack Dorsey, Tristan O'Tierney, Jim McElvey	(self-funded at Friends and Family, Angel stages?) Series A 11/2009 \$10 M	Service began 5/2010
	Series B 1/2011 \$27.5 M	
Approx. 150 employees (2011)	Series C 6/2011 and 12/2011 \$103 M	Approx. \$1 billion of payments processed (2011)
Approx. 400 employees (9/2012)	Series D 9/ 2012 \$200 M	Approx. \$8 billion of payments processed (2012 total, est.)
(currently 1,160 employees on LinkedIn)	Total funds raised (as of 5/05/2015): \$590.5 M Co. valued ~ \$ 6 billion (2014)	Revenue of \$500 M from about \$30 billion processed (2013)

VC-backed exits in U.S.: now most by M&A



S.V.: Role of startups in open innovation: sources of (often disruptive) ideas



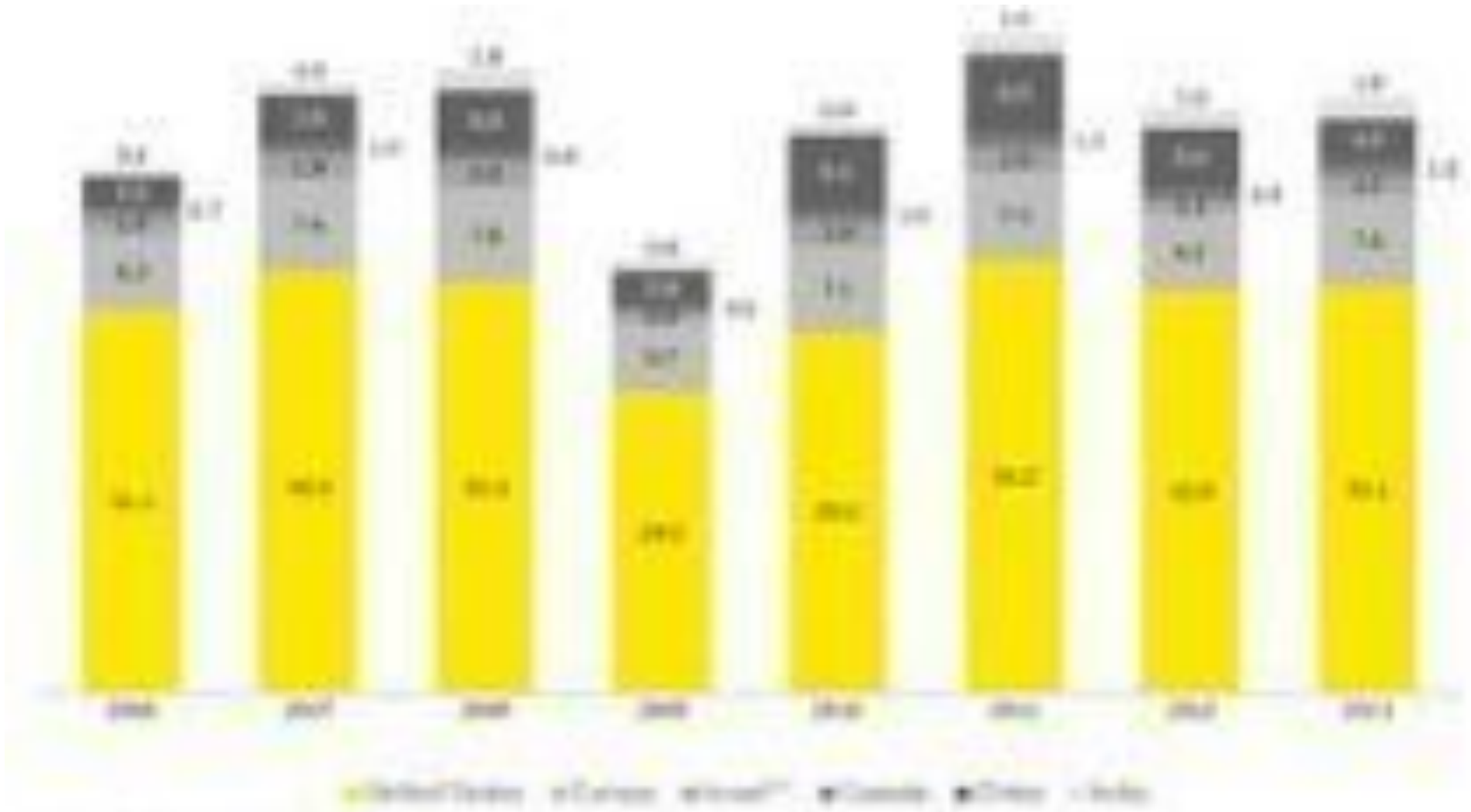
Google: big company practicing open innovation

- ◆ Company-internal R&D spending in the year from 2011Q4 – 2012Q3 = \$6.217 billion
 - ◆ 13.1% of revenues; average for software industries is 13.3%
- ◆ In 2011, Google made one large company acquisition
 - ◆ Motorola Mobility (2011, \$12.5 billion) was about present day business
- ◆ In 2011, Google made 24 start-up company acquisitions
 - ◆ Areas expected to be critical to Google business within two years or so
 - ◆ Probably spent around \$700 million (terms of some deals not public)
- ◆ Google established corporate VC fund (Google Ventures) 2009
 - ◆ Fund size \$100 million, increased to \$300 million in 2013
 - ◆ Makes minority investments in start-up companies (not complete ownership) that are 3 – 7 years from market
- ◆ Active supporter of university research at Stanford and elsewhere

Capital flow patterns in Asia


- ◆ **Friends and family money seems present in all economies**
- ◆ **Most Asia economies have insufficient angel investors**
 - ◆ **See following discussion of people: as much a mentoring problem as a financial problem**
- ◆ **Venture capital investments have grown in Asia (although some recent slowdowns)**
 - ◆ **May reflect new government policies promoting VC & innovation**
 - ◆ **But, selection of investments and investor-management relations in Asia economies tends to reflect traditional financial investing**
- ◆ **Exit patterns differ greatly**
 - ◆ **U.S.: 90% via acquisition, much larger IPOs, smaller % held by founders**
 - ◆ **S. Korea, Japan: 85 – 90% of exits are by IPO, entrepreneur may keep over 50% of stock**

Worldwide VC investments



Ernst & Young, Global Venture Capital Insights and Trends 2014


Recent Venture Capital in China – more detail



	2010	2011	2012	2013
VC raised (US\$billions)	22.0	15.6	4.4	2.0
VC invested (US\$billions)	6.1	6.5	5.0	3.5
# of rounds	388	404	261	314
Median round (US\$millions)	7.47	10.0	8.00	7.00
VC-backed IPOs	141	99	46	15
VC-backed M&A	18	11	11	20

Ernst & Young, Global Venture Capital Insights and Trends 2014

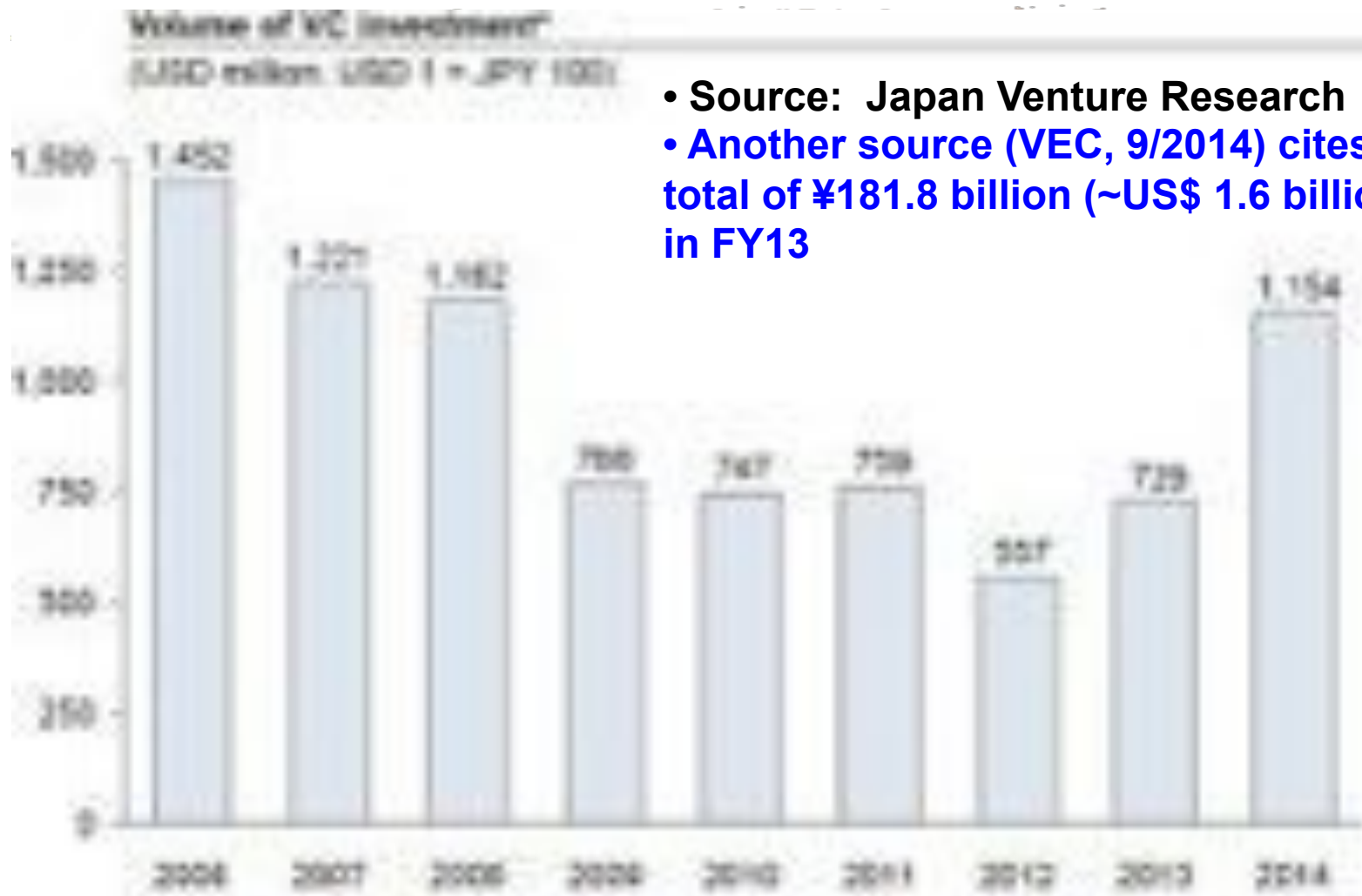
Recent Venture Capital in India – more detail



	2010	2011	2012	2013
VC raised (US\$ billions)	0.5325	0.0464	0.0195	0.0109
VC invested (US\$ billions)	0.9	1.5	1.6	1.8
# of rounds	116	180	227	222
Median round (US\$ millions)	7.25	5.15	3.97	4.00
VC-backed IPO	6	2	2	1
VC-backed M&A	16	6	16	13

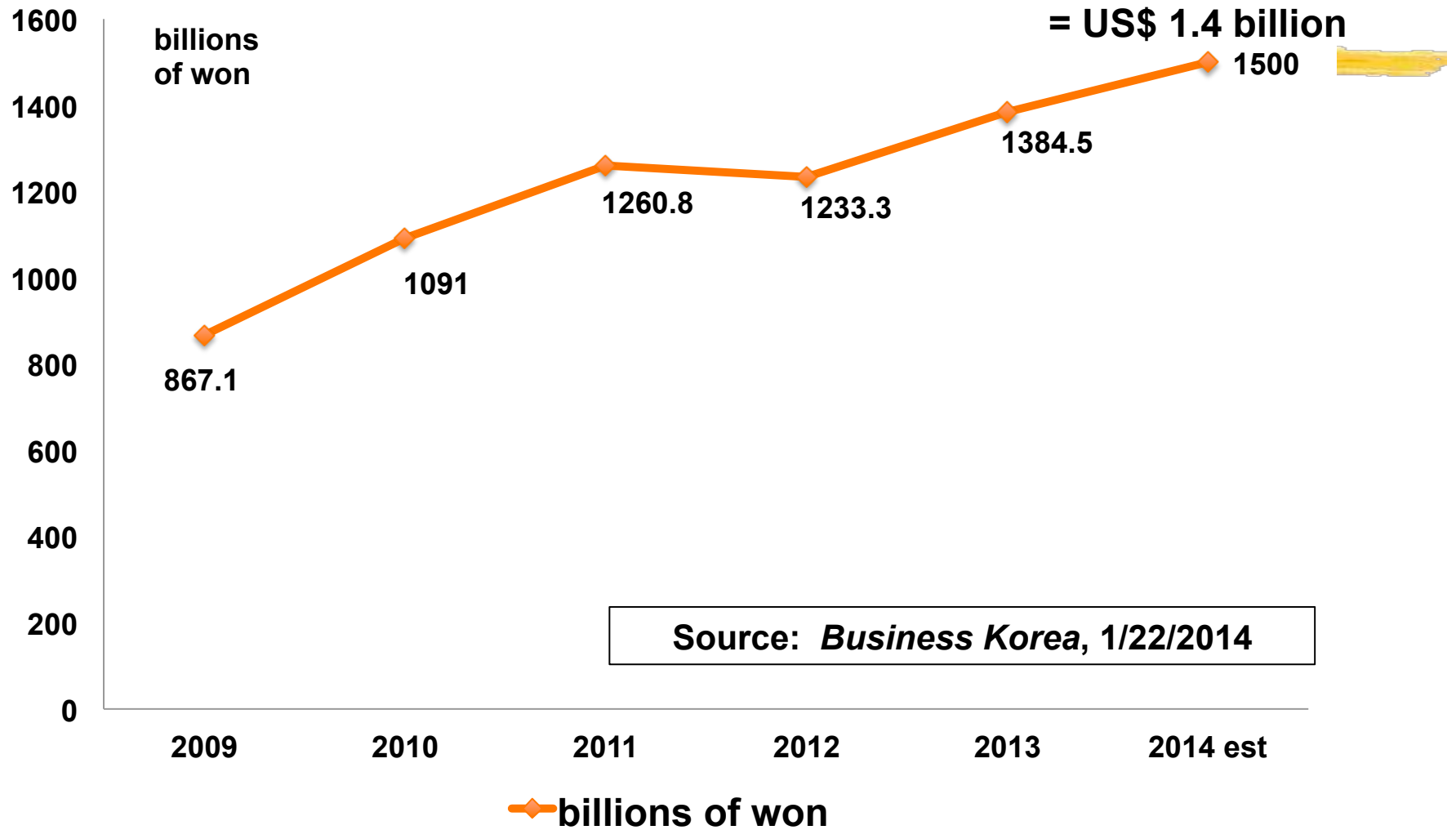
Ernst & Young, Global Venture Capital Insights and Trends 2014

Volume of Japanese Venture Capital Investments



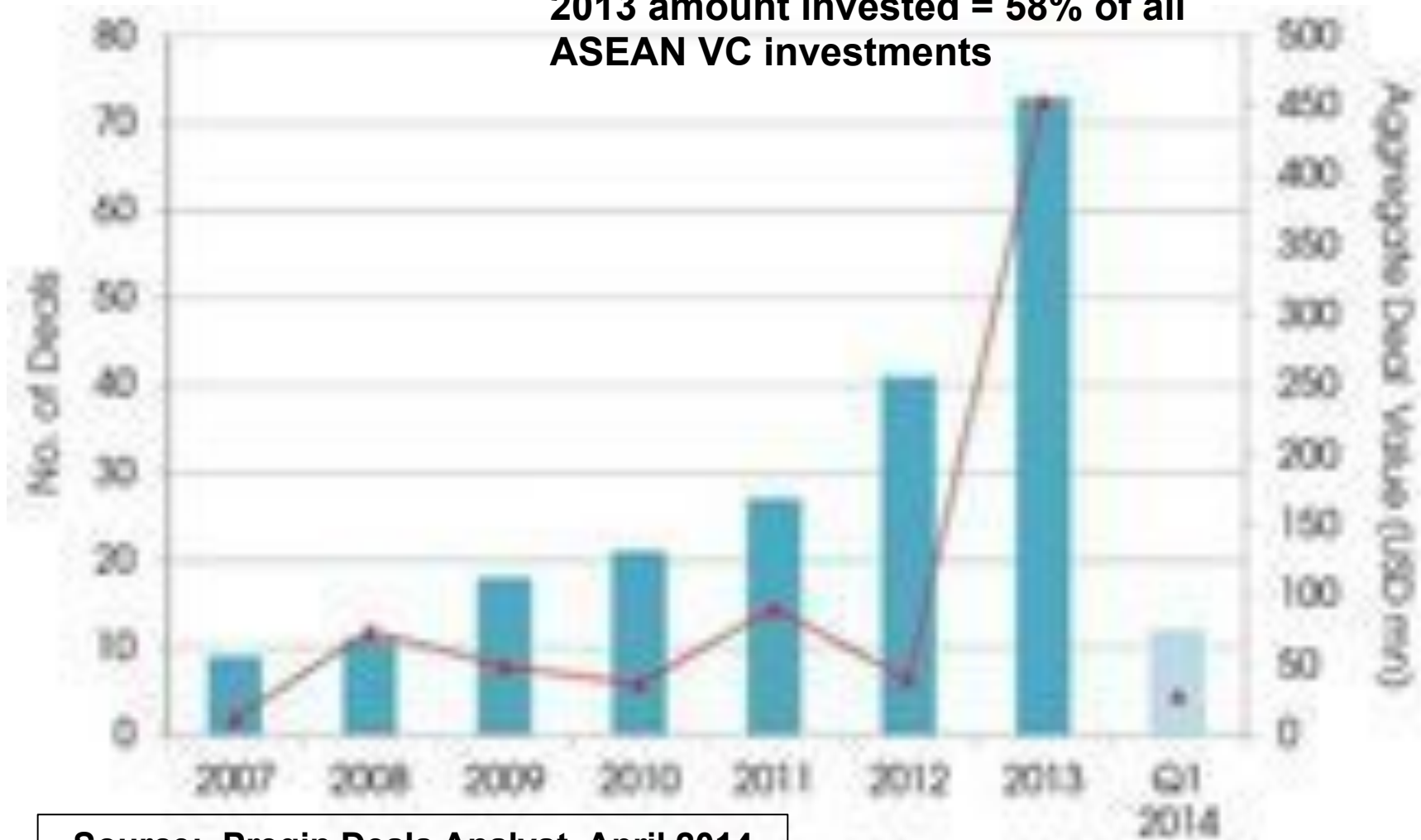
- Source: Japan Venture Research
- Another source (VEC, 9/2014) cites total of ¥181.8 billion (~US\$ 1.6 billion) in FY13

South Korean VC investments



Venture Capital Deals in Singapore

2013 amount invested = 58% of all ASEAN VC investments



Source: Preqin Deals Analyst, April 2014

People flow patterns in Asia



- ◆ **Entrepreneurs do exist everywhere**
- ◆ **Growth stage is the bigger problem: Asia labor markets tend to lack good people who are willing to work for (other people's) start-ups**
 - ◆ **Incentivization by start-up companies is not sophisticated (startup wages cheap, little equity – creates less team cohesion)**
 - ◆ **“BAT” (Baidu, Alibaba, Tencent) draining off good workers in China**
- ◆ **Social stigma: not only fear of failure, but also reluctance to go to a nonprestige company – family pressure**
- ◆ **Relative lack of mobility – career cost of failure high**
 - ◆ **Entrepreneurs tend to stay with their company after exit – relative lack of clear expectations about exit: so far, few serial entrepreneurs in Asia**

Idea and knowledge flow in Asia



- ◆ **Most Asia countries have focused on increasing IP output from universities, research institutions; emphasis on tech transfer**
- ◆ **Mentoring is not well-developed**
 - ◆ **Considerations of “face”**
 - ◆ **Less confrontational board – management relations**
 - ◆ **Confucian traditions of apprenticeship (imitate the master, don’t expect explanations or analysis)**
- ◆ **Start-up companies arguably have more difficulty getting to market in Asia (except China)**
- ◆ **Failure of open innovation systems – start-up companies lack recipients for ideas**
 - ◆ **Big companies may buy start-ups, but usually fail to capitalize on external idea**

Summary – Final Comments



- ◆ **Entrepreneurship in Asia is strongly opportunity-driven**
 - ◆ Even in “factor-driven economies”
- ◆ **People – especially in Asia – tend to focus on “creation” stage of entrepreneurship**
 - ◆ Also characteristic of studies of entrepreneurship, government policies
 - ◆ Similar to focus on creativity in innovation processes
- ◆ **Need more focus on growth, market access, and exit**
 - ◆ In research about entrepreneurship and in policies
- ◆ **What’s Next: international startups from Asia? Globalization?**