EE-402T Entrepreneurship in Asian High-Tech Industries
Stanford University, Tuesday, April 2, 2013

2013 Asia Entrepreneurship Update

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Outline

- Introduction: about this series, course credit
- Background: Recent trends in Asia economies
- Entrepreneurial activities and attitudes in Asia
- The environment for entrepreneurism in Asia
  - Flow of capital – VC and other options
  - Flow of people – labor force issues
  - Infrastructure

Welcome to everyone!

- Weekly public lecture / panel discussion series presented by the US-Asia Technology Management Center
  - Every Tuesday, through June 4, 2013
  - Major support from ISI – Dentsu, Inc.
  - See <http://asia.stanford.edu> for upcoming speakers, topics
- Mission: new information and insights into entrepreneurship in Asia high-tech industries
  - Habitat issues, trends, opportunities for the U.S.
- Available for credit to Stanford students
  - EE-402T "Entrepreneurship in Asian High-Tech Industries"
    - No pre-requisites, open to undergrads and graduate students
    - May be repeated in future years for credit; each series is separate

EE-402T Requirements for Credit

- Obtain Syllabus for official statement of credit requirements
- MAY BE DIFFERENT REQUIREMENTS THAN FOR OTHER SEMINARS
- A. On-site attendance at eight (8) of ten (10) session
  - Requirement A waived for SCPD students
  - Today fill out survey, then weekly sign-up sheet at auditorium
- B. Submit a comment / summary each week for nine (9) of the ten (10) sessions
  - Send comment by email within two weeks of the session
    - To me (Prof. Dasher) <rdasher at stanford dot edu>
    - Always cc to Tiphanie <gammontd at stanford dot edu>
  - Comment must provide evidence that you watched the session

Request to everyone (visitors and students) for today, 3/29

- Please fill out incoming-survey and leave with Siejen, Tiphanie, or me
  - Even if you have attended our series in the past
- For students registering for credit, the survey is your on-site attendance record for 4/02/2013
  - In addition, you will need to submit your comment / summary about the content of this session within two weeks

Background:
Selected Asia Economies

GDP of the top five national economies of the world

	2010 $ trillions	2010 GR - %	2011 $ trillions	2011 GR - %	2012 $ trillions	2012 GR - %	2012 GDP / person $
World total	77.71	5.1	80.61	3.7	83.23	3.3	12,500
U.S.A.	15.05	2.4	15.32	1.8	15.66	2.2	49,800
China	10.51	10.4	11.48	9.2	12.38	7.8	9,100
India	4.21	10.1	4.49	6.8	4.74	6.5	3,900
Japan	4.55	4.5	4.52	(-0.8)	4.62	2.2	36,200
Germany	2.99	3.7	3.10	3.0	3.19	0.9	39,100

- **Ranking excludes EU (which would be bigger than U.S.A.)**

Estimated amounts in 2012 dollars, according to **PPP**
2012 CIA World Factbook, data retrieved 4/01/2013

GDP of other Asia economies in the top 50

World ranking	2010 $ billions	2010 GR - %	2011 $ billions	2011 GR - %	2012 $ billions	2012 GR - %	2012 GDP / person $
12. S. Korea	1,524	6.3	1,579	3.6	1,622	2.7	32,400
15. Indonesia	1,074	6.2	1,143	6.5	1,212	6.0	5,000
19. Taiwan	856	10.7	890	4.0	902	1.3	38,500
24. Thailand	612	7.8	612	0.1	646	5.6	10,000
27. Pakistan	482	3.1	496	3.0	515	3.7	2,900
29. Malaysia	448	7.2	471	5.1	492	4.4	16,900
32. Philippines	383	7.6	398	3.9	417	4.8	4,300
35. Hong Kong	340	7.1	357	5.0	364	1.8	50,700
39. Singapore	305	14.8	320	4.9	327	2.1	60,900
41. Vietnam	288	6.8	305	5.9	321	5.1	3,500

- **Not included: Middle East countries**
- **Ranking excludes EU**

Estimated amounts in 2012 dollars, according to **PPP**
2012 CIA World Factbook, data retrieved 4/01/2013

Trends in recent GDP growth rates

- General world slowdown in growth rates between 2010 – 2012
  - (5.1% in 2010 > 3.3% in 2012)
  - 2010 rapid growth rates may have resulted in part from recovery after 2008 downturn (Lehman Shock)
- Some random sudden yearly drops
  - Japan (2011) – Great East Japan Disaster
  - Thailand (2011) – Floods disaster
  - Germany (2012) – EU financial crises ?
- Economic slowdown in China one factor in drastic slowdown of "jumping off" points to China – now below world avg. GR
  - Hong Kong (7.1% in 2010 > 1.8% in 2012
  - Singapore (14.8% in 2010 > 2.1% in 2012)
  - Taiwan (10.7% in 2010 > 1.3% in 2012)
  - S. Korea (6.3% in 2010 > 2.7% in 2012)

Trends in recent GDP growth rates – 2

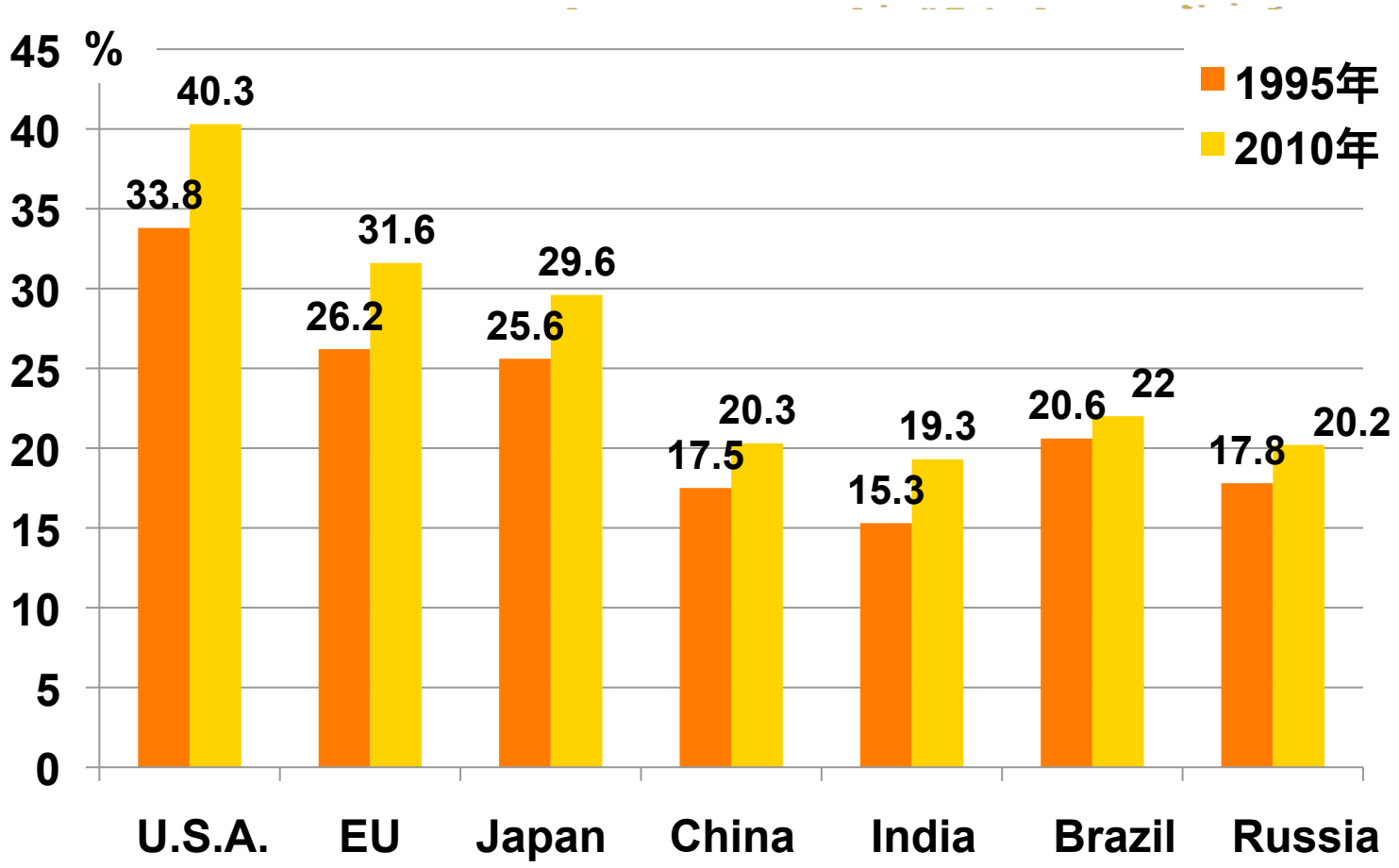
- Noticeable slowdown in India (10.1% in 2010 > 6.5% in 2012)
- Other SE Asia countries have slowed down, but maintain GR higher than world average – domestic market growth at same time as function in world supply chains?
  - Indonesia (6.2% in 2010 > 6.0% in 2012)
  - Thailand (7.8% in 2010 > 5.6% in 2012)
  - Malaysia (7.2% in 2010 > 4.4% in 2012)
  - Philippines (7.6% in 2010 > 4.8% in 2012)
  - Vietnam (6.8% in 2010 > 5.1% in 2012)
- In general, expect lower growth rates in more advanced economies
  - Infrastructure build-out fuels higher growth
  - China and India are remarkable: massive creation of domestic wealth, new middle class

What's going on?

- Shift in China economy
  - From "Gold Rush" to more focus on constraining domestic growth, bubble management
    - Shift in trade balance (current account surplus)
- Other factors that may have impacted growth in 2012
  - Political change in China, Japan, S. Korea
  - Territorial disputes over islands: has reduced Japan – other Asia trade
  - Other uncertainties: EU financial problems, U.S. elections (although economy starting out well in 2013)
- Still in early stages of transformation that will hit China, other (transitional or recently developed) Asia economies
  - Toward more emphasis on knowledge-intensive industries (movement toward innovation-based economic structure)

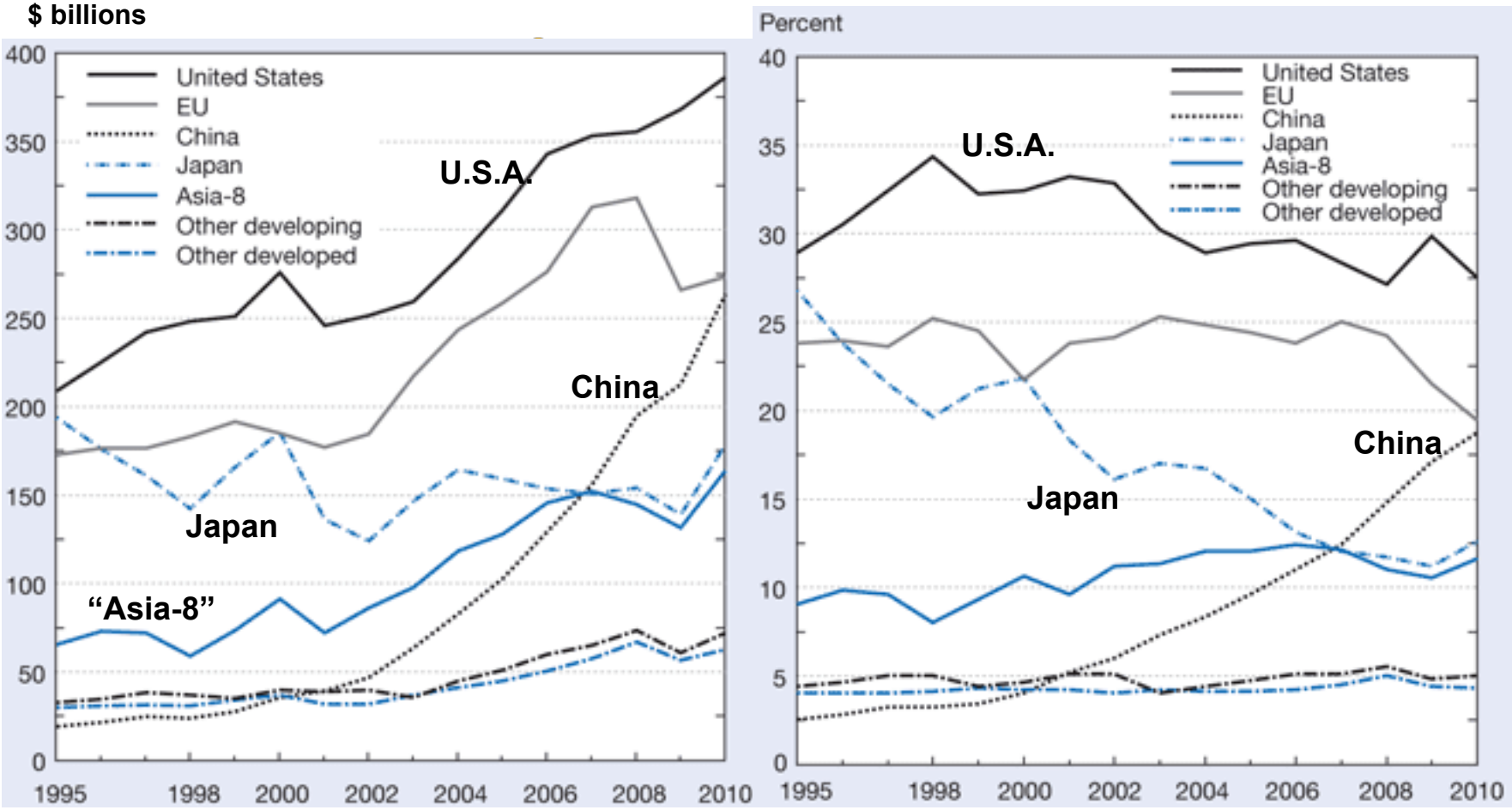
Share of GDP contributed by KTI industries

KTI = Knowledge and Technology Intensive Industries (OECD term)



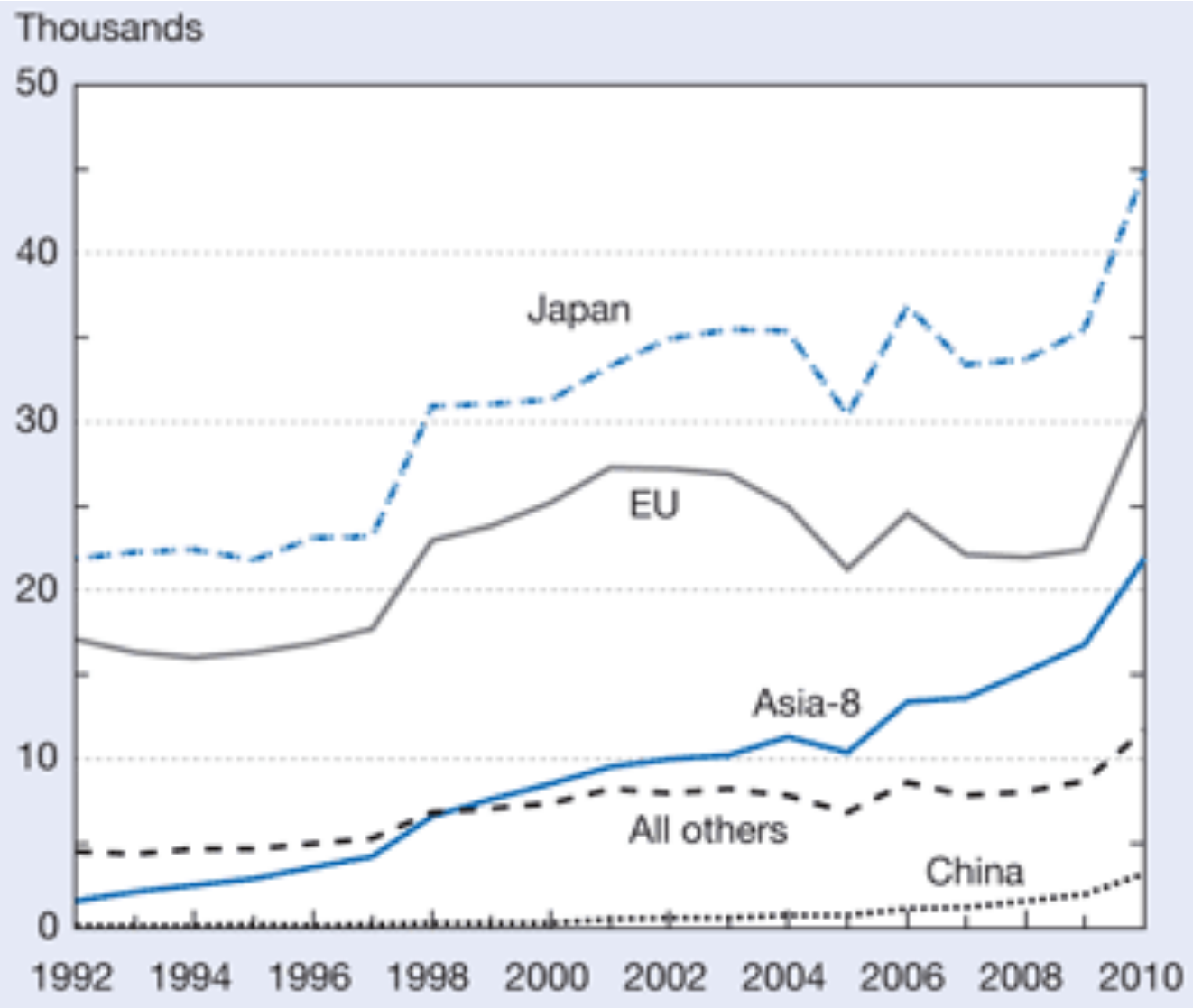
National Science Board, *Science and Engineering Indicators 2012*

Share of GDP contributed by high-tech manufacturing



National Science Board, *Science and Engineering Indicators 2012*

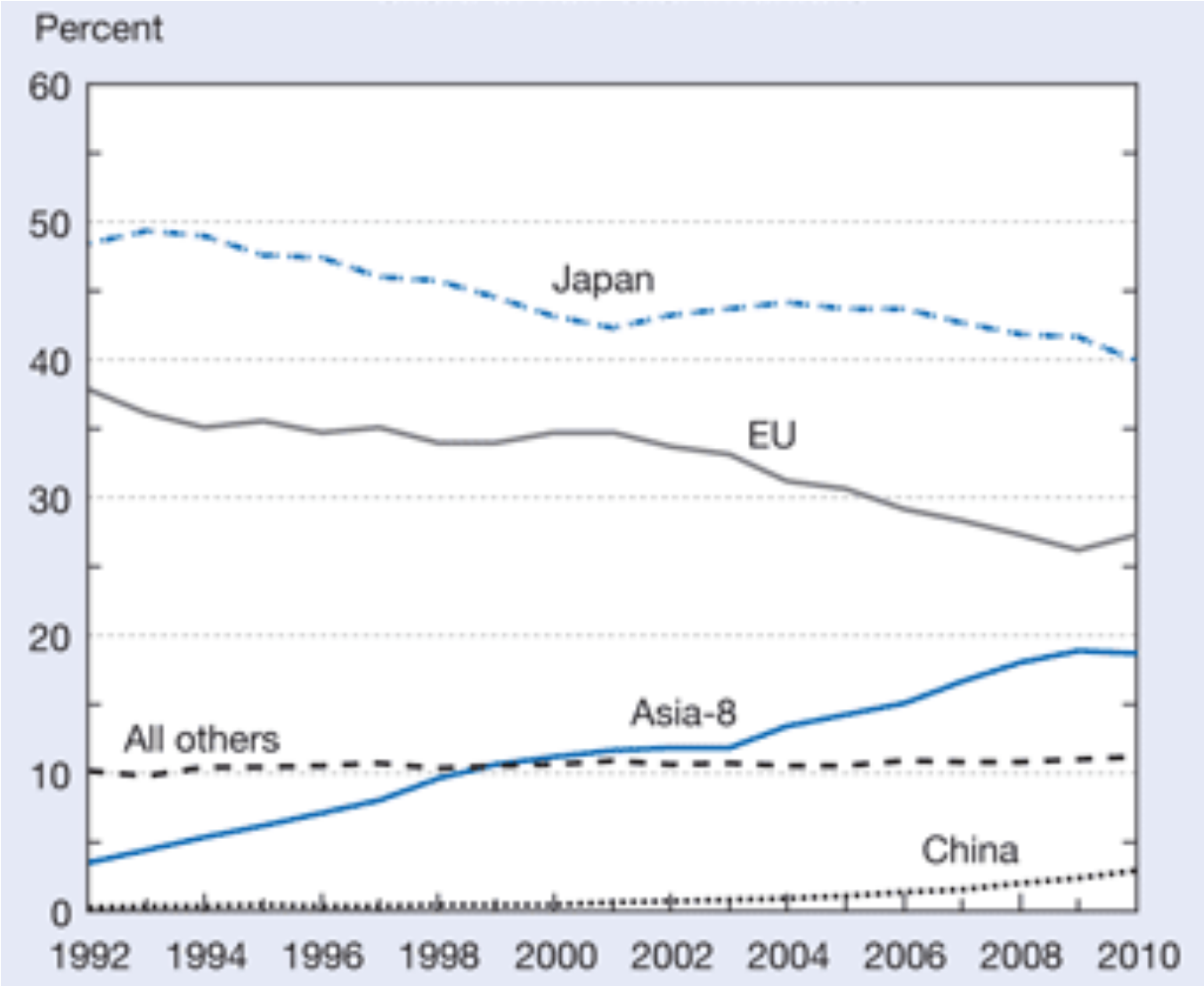
Number of new U.S. patent registrations whose first inventor has a foreign address



National Science Board, *Science and Engineering Indicators 2012*

Data from USPTO

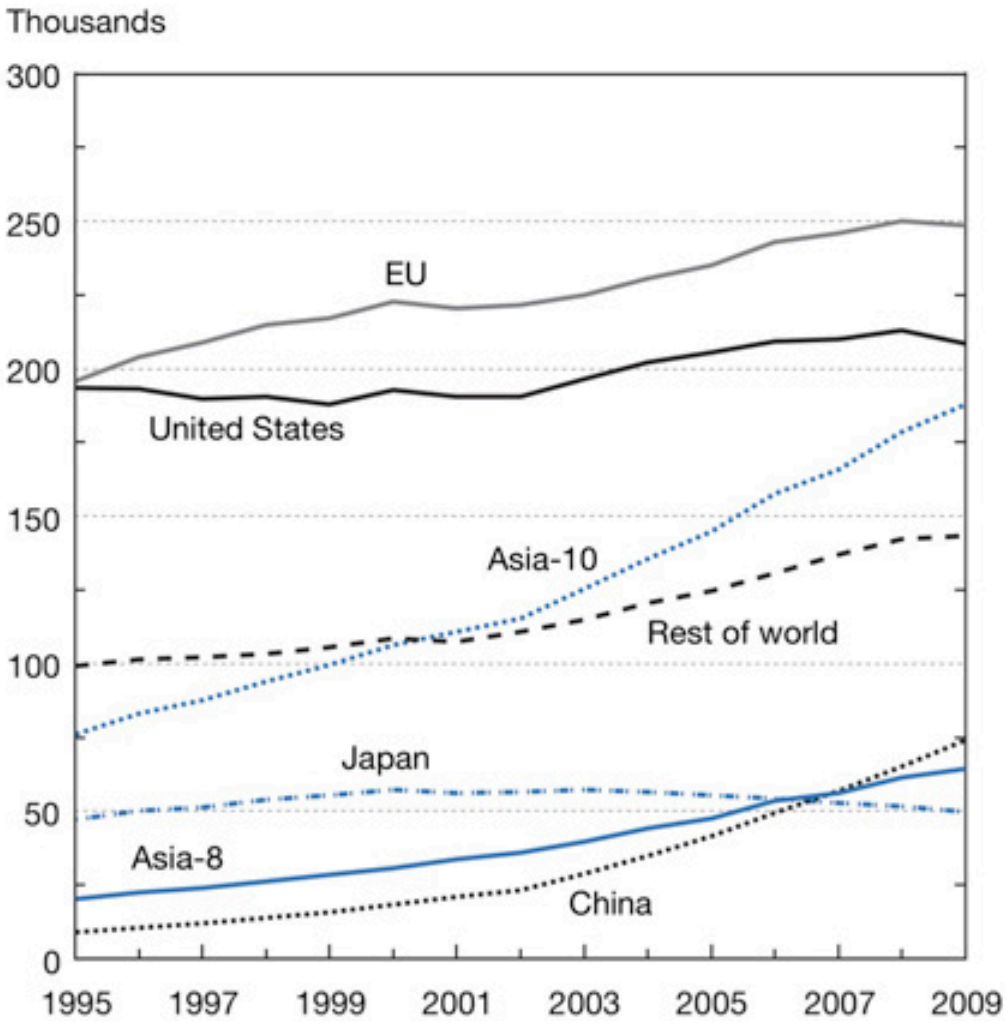
Share by country of new U.S. patent registrations whose first inventor has a foreign address



National Science Board, *Science and Engineering Indicators 2012*

Data from USPTO

Number of papers published in S&T journals



Asia-8 = India, Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand;
Asia-10 = Asia-8 plus China and Japan; EU = European Union

National Science Board, *Science and Engineering Indicators 2012*

Economic opportunities and macro- resource needs change at stages of economic development

	Factor-driven Economies*	Efficiency-driven Economies*	Innovation-driven Economies*
Social developments	Industrialization, urbanization	Labor and capital shortages, needs for higher skills	Wealth spreads throughout pop, high educ. level
Business opportunities	"Gold rush" to supply basic demands	Develop new markets - domestic or int'l	Fresh new ideas, "out of the box" thinking
Key competitive strengths	Get there first!	Efficiency, rapid scaling, high quality	Manage (allow) risk, early ID of great new ideas, sustain growth
Focus of new government policies	Basic laws, establish industry base	IPR, select & promote key industries	Stimuli to bridge over "valley of death"

* Terms from Global Entrepreneurship Monitor, chart & analysis original to RD

U.S. and major Asia markets are developing slightly different versions of Innovation-Based Economies

- U.S. = Silicon Valley at Stage 3, most other regions behind
  - Silicon Valley has symbiotic relationship
    (a) with high-growth markets in U.S. and world, and
    (b) with outsource partners worldwide
- Japan and Korea = Slowly moving from Stage 2 to Stage 3
  - Stage 2 was so successful – led to strong base of big corporations
  - Stage 3 looks more uncertain and risky: parents don't like this
- China = Moving from Stage 1 to Hybrid Stage 2-3
  - Explosive growth, clearly has been a Gold Rush
  - Trying to implement innovation capabilities but maintain manufacturing role in world supply chain (not let it flow offshore)
- India = Moving from Stage 1 to Stage 1-and-3 coexistence
  - Advanced tech, entrepreneurial islands alongside "bottom of pyramid"
  - Private sector drives economic development; public sector inefficient

Trends and attitudes toward entrepreneurial activity in U.S., Asia

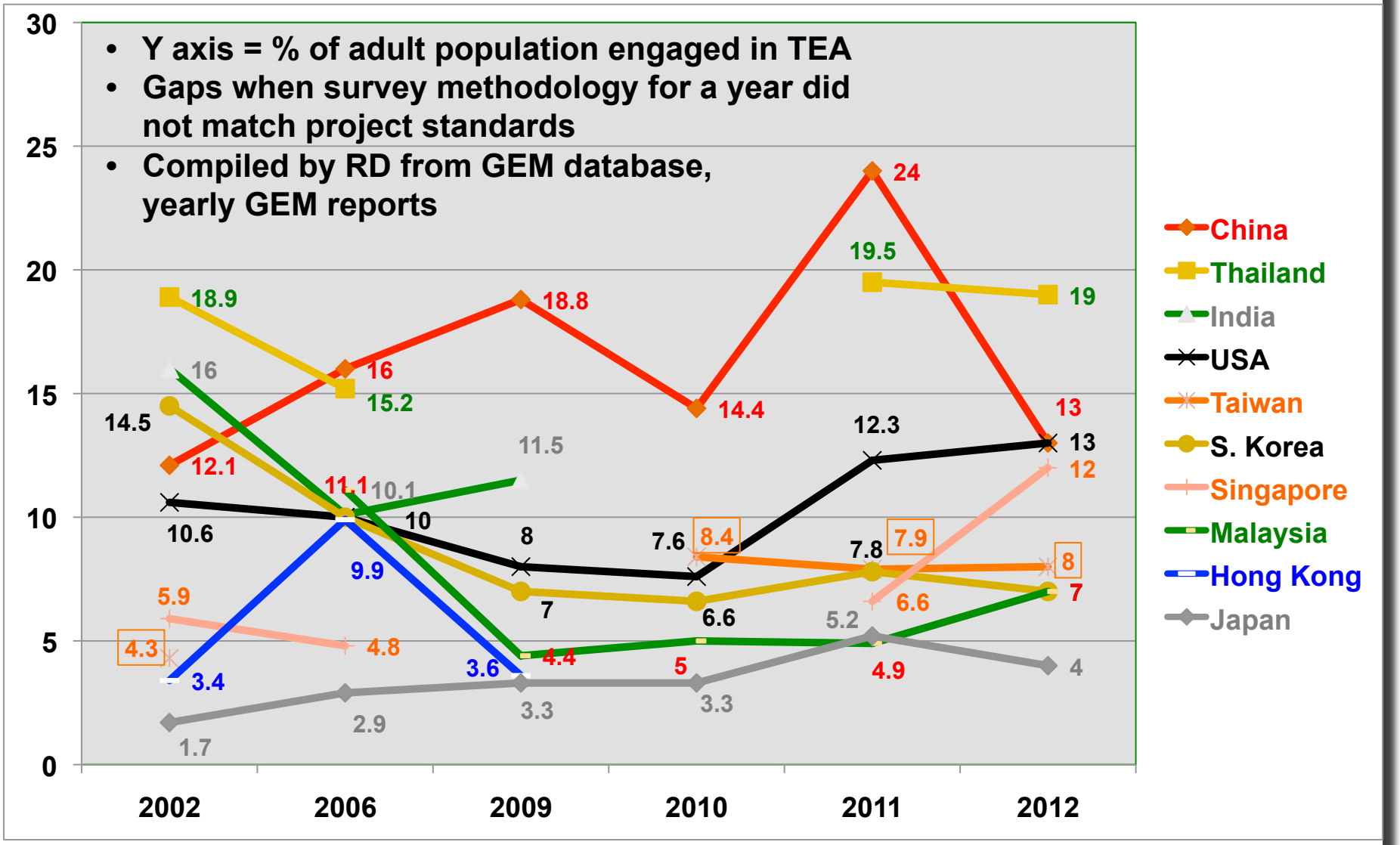
Data from Global Entrepreneurship Monitor
2012 Global Report

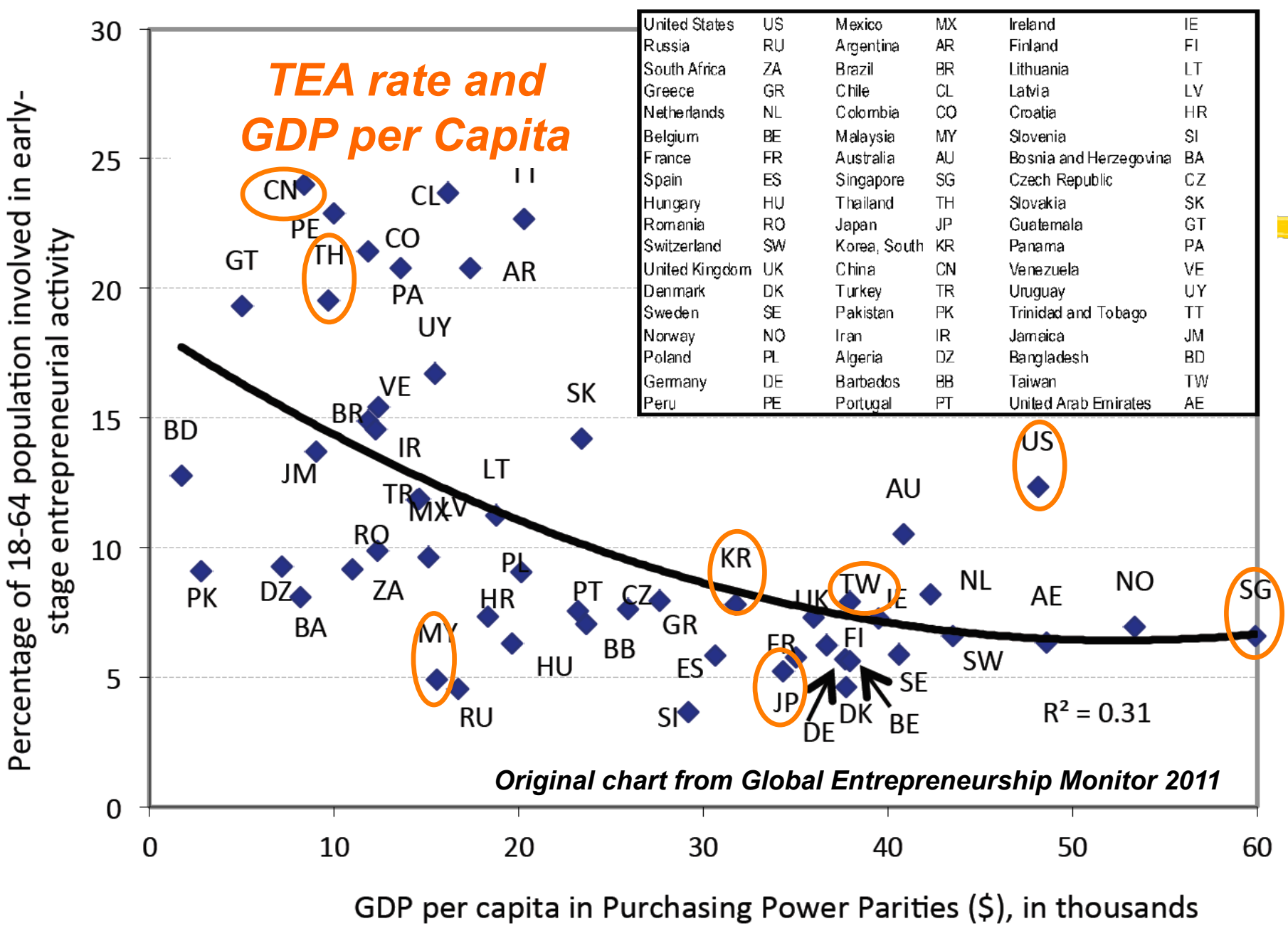
- **Global Entrepreneurship Monitor project founded and led by Babson College in partnership with London Business School**
  - **Yearly survey-based assessments of entrepreneurial activity, aspirations and attitudes of individuals in many countries since 1999**
  - **Now a consortium (~ $9 million / year) http://www.gemconsortium.org/**
- **2012 survey conducted in late spring – early summer 2012**
  - **198,000 adults (age 18 – 64) in 69 economies, conducted by national teams**
  - **"Adult Population Survey": Random representative sample of at least 2,000 people in each economy**
  - **"National Experts Survey": Separately polled selected national experts about the conditions influencing the nature and level of entrepreneurship in their economies**
  - **Data on following pages only from APS**

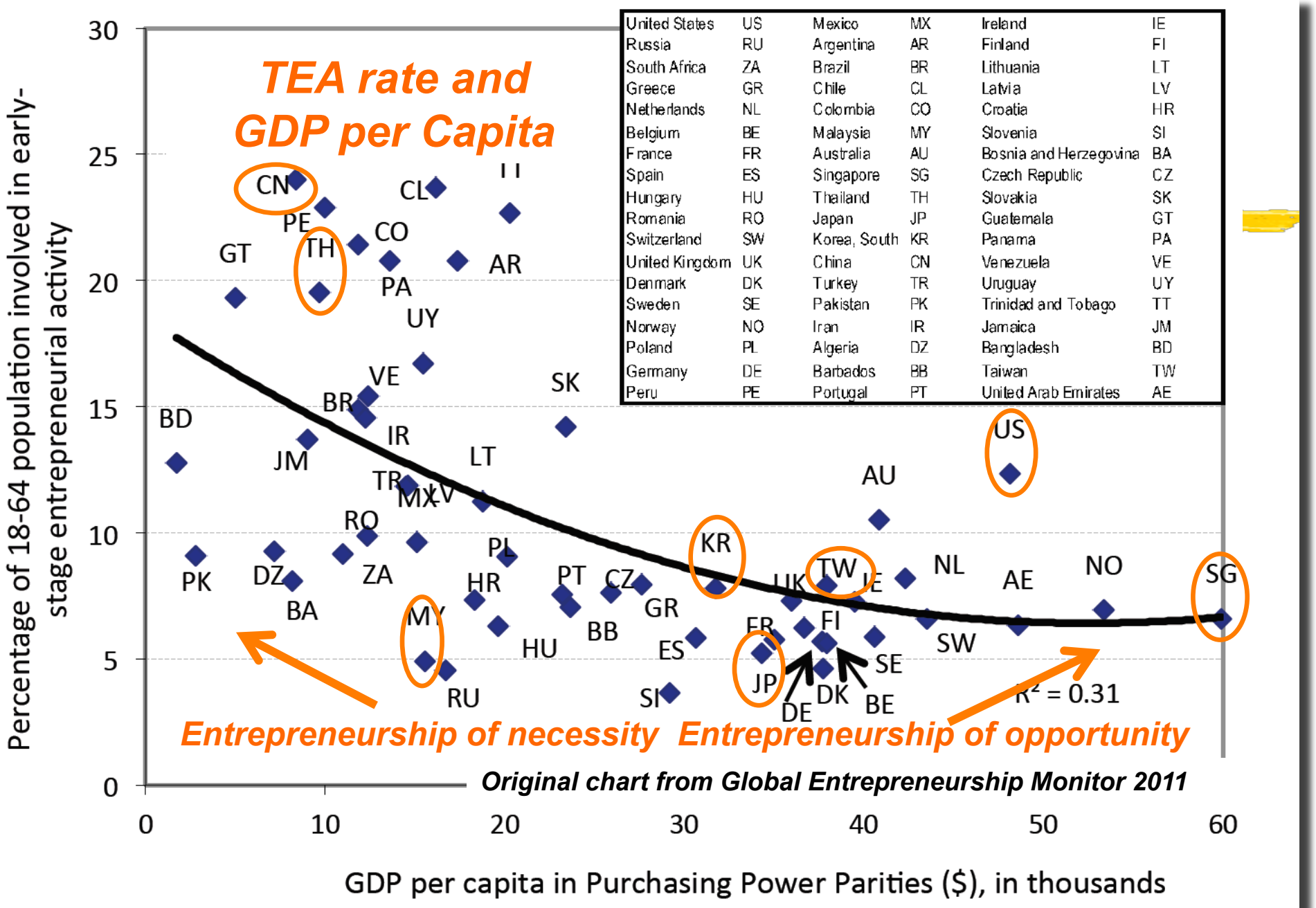
GEM technical term: TEA Rate

- **Total Early-Stage Entrepreneurial Activity (TEA Rate): Percentage of 18–64 age group who are either a nascent entrepreneur or owner-manager of a new business**
  - **Nascent Entrepreneur: actively involved in setting up a business s/he will own or co-own; this business has not paid salaries, wages or any other payments to the owners for the last three months**
  - **Owner-Manager of a New Business: (co-)owns and manages a running business that has paid salaries, wages or any other payments to the owners for at least three months but no more than 42 months**

TEA rates in U.S. and Select Asia Economies



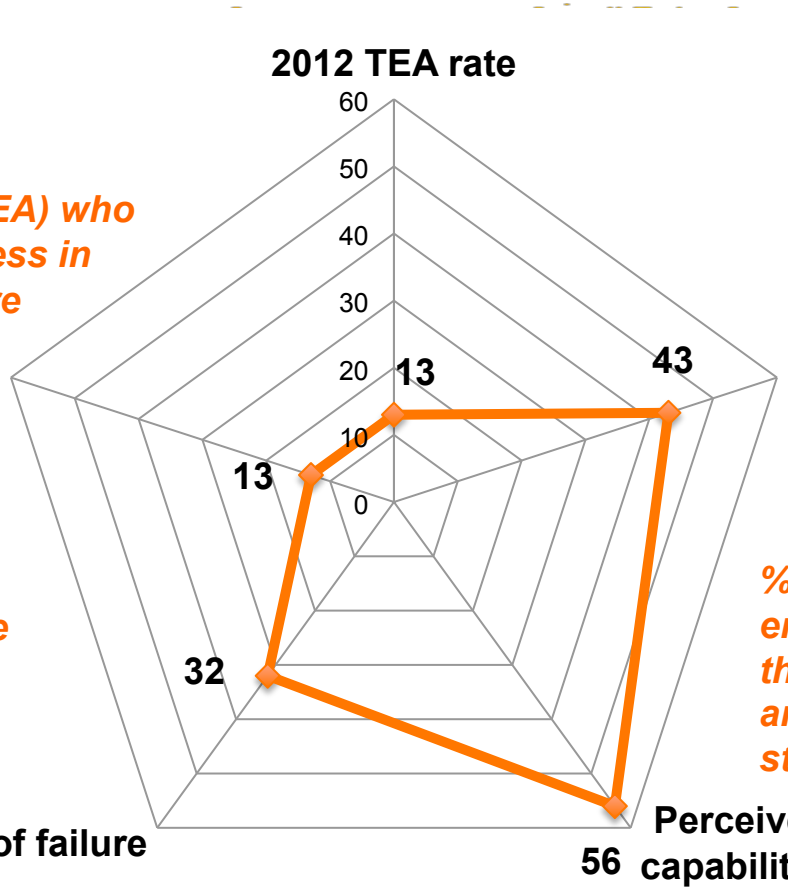

TEA rate and GDP per Capita
Percentage of 18-64 population involved in early-stage entrepreneurial activity
GDP per capita in Purchasing Power Parities ($), in thousands
0
5
10
15
20
25
30
0
10
20
30
40
50
60
R² = 0.31
Original chart from Global Entrepreneurship Monitor 2011
United States US
Russia RU
South Africa ZA
Greece GR
Netherlands NL
Belgium BE
France FR
Spain ES
Hungary HU
Romania RO
Switzerland SW
United Kingdom UK
Denmark DK
Sweden SE
Norway NO
Poland PL
Germany DE
Peru PE
Mexico MX
Argentina AR
Brazil BR
Chile CL
Colombia CO
Malaysia MY
Australia AU
Singapore SG
Thailand TH
Japan JP
Korea, South KR
China CN
Turkey TR
Pakistan PK
Iran IR
Algeria DZ
Barbados BB
Portugal PT
Ireland IE
Finland FI
Lithuania LT
Latvia LV
Croatia HR
Slovenia SI
Bosnia and Herzegovina BA
Czech Republic CZ
Slovakia SK
Guatemala GT
Panama PA
Venezuela VE
Uruguay UY
Trinidad and Tobago TT
Jamaica JM
Bangladesh BD
Taiwan TW
United Arab Emirates AE



Original chart from Global Entrepreneurship Monitor 2011

Baseline: Attitudes toward entrepreneurship in the U.S.A. (2012)

Value = % of respondents



% (not engaged in TEA) who plan to start a business in the foreseeable future

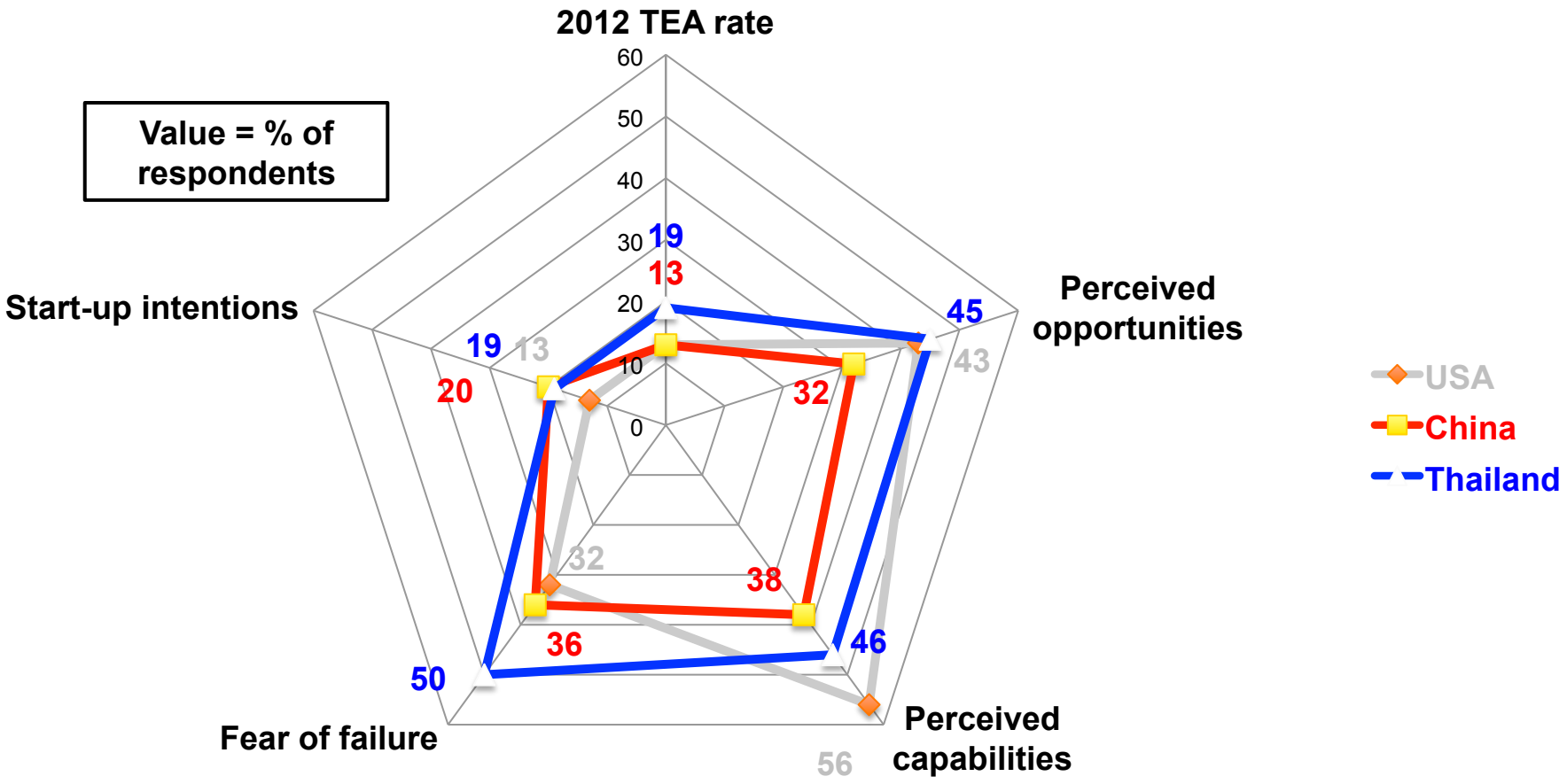
% of 18 – 64 age group (not engaged in TEA) who see good opportunities to start a firm in the area in which they live

% of 18 – 64 age group (not engaged in TEA) with positive perceived opportunities who indicate that fear of failure would prevent them from setting up a business

% of 18 – 64 age group (not engaged in TEA) who believe they have the required skills and knowledge to start a business

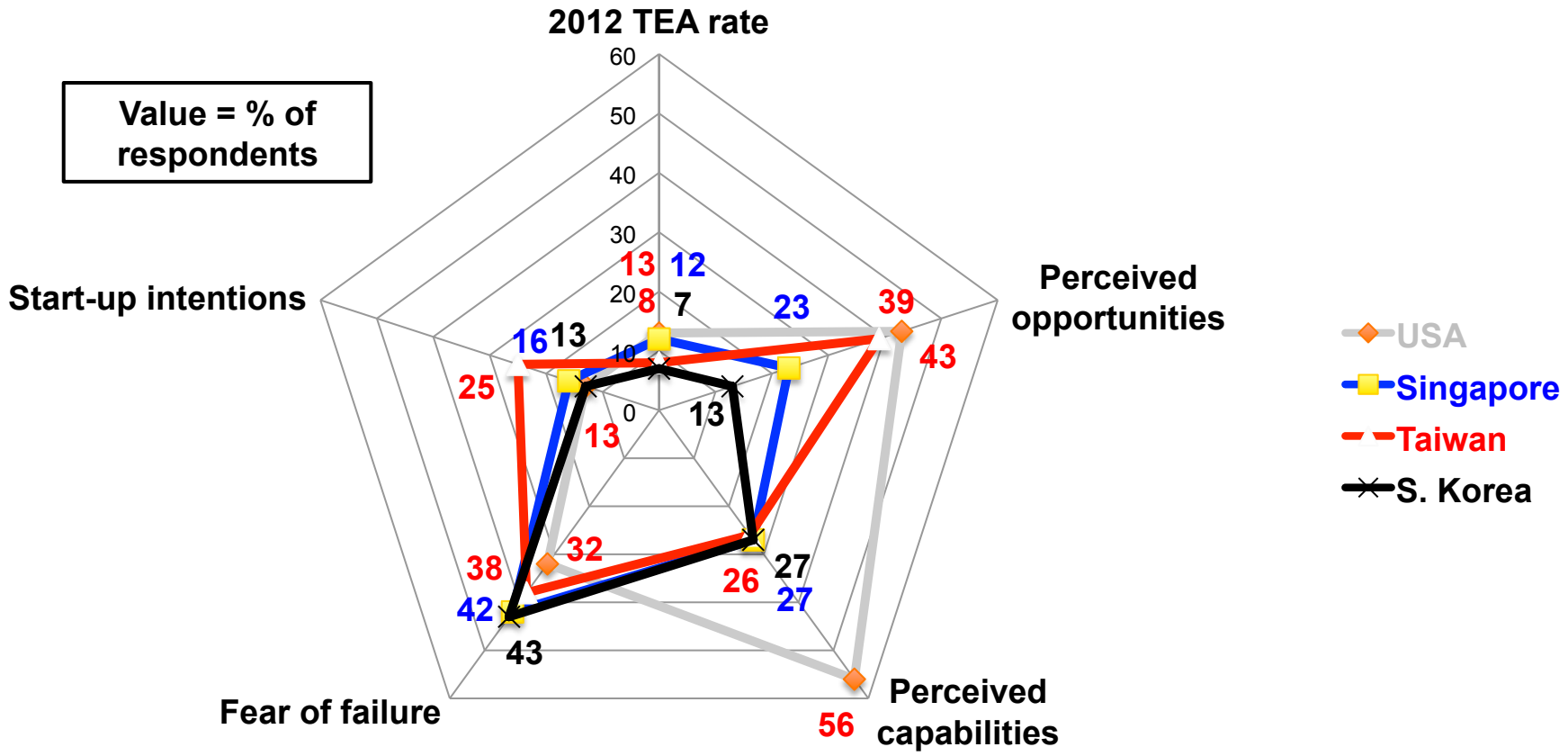
Data from GEM *2012 Global Report*

Attitudes toward entrepreneurship: China and Thailand 2012



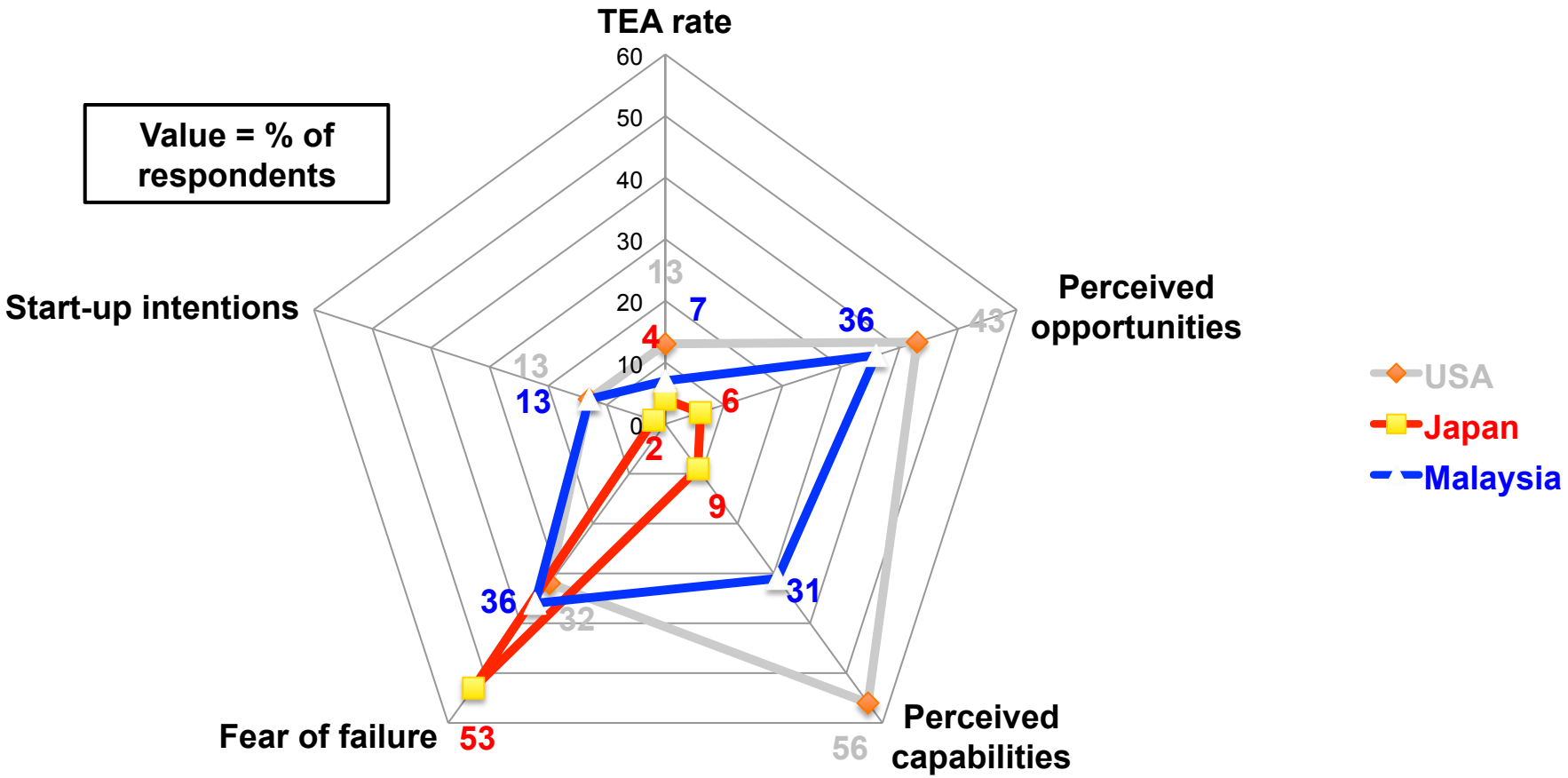
Data from GEM *2012 Global Report*

Attitudes toward entrepreneurship: Singapore, Taiwan, S. Korea 2012



Data from GEM *2012 Global Report*

Attitudes toward entrepreneurship: Japan and Malaysia 2012



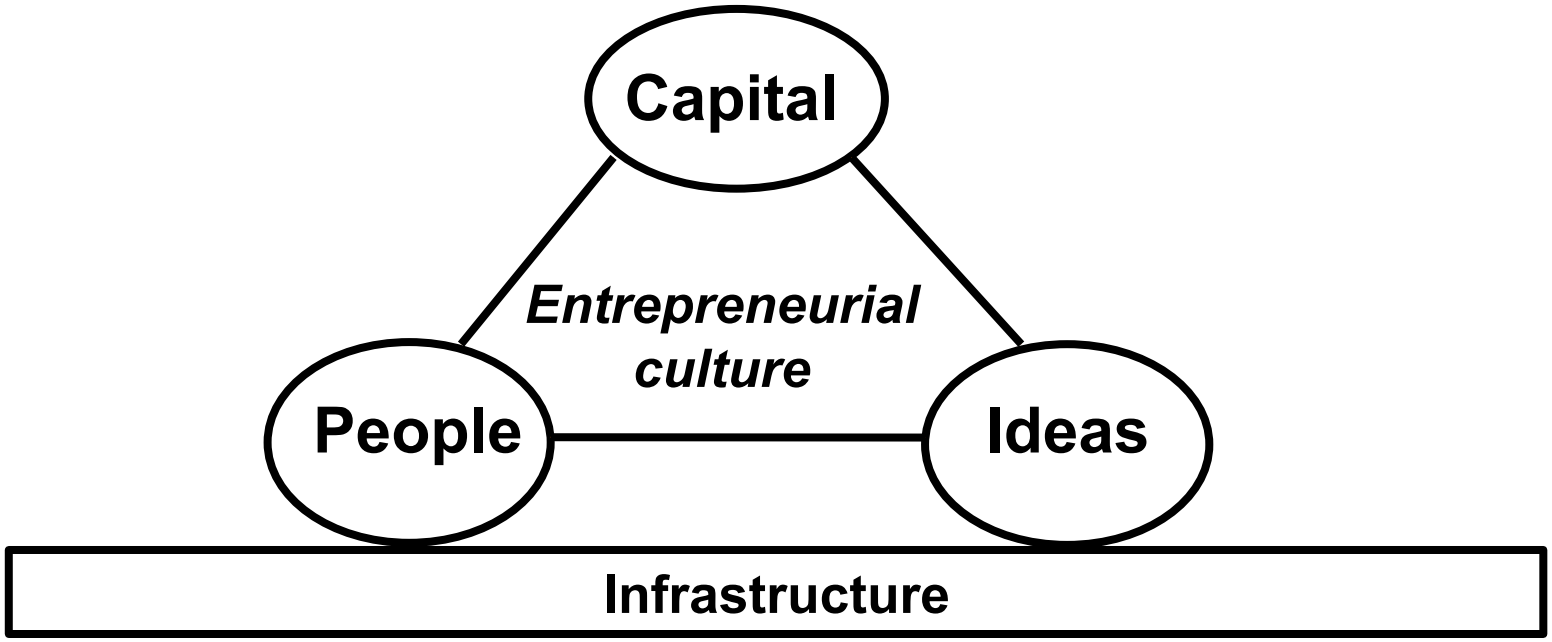
Data from GEM *2012 Global Report*

The current environment for entrepreneurship in select Asian economies

Entrepreneurial behavior (previous section) – related to the environment for entrepreneurship

- Attitudes and behavior affected by
  - Presence or absence of career alternatives
    - Related to entrepreneurship of necessity – *discussed already*
  - Economic structure & dynamics
    - E.g., availability of capital and conditions for accessing it
  - Labor market
    - Fluidity – If I quit my job & start a company, what will happen to me if it doesn't work out?
    - Availability of other necessary human resources (workers who will take risk of joining a start-up)
  - Political, legal, regulatory, physical infrastructure
  - Cultural or societal expectations
    - "I'd like to be an entrepreneur, but my mom is against the idea."
- First examine the structure and dynamics of a habitat for entrepreneurial innovation

Basic elements of an entrepreneurial ecosystem



Framework (elements) of an innovation-based, entrepreneurial economy

Capital
- R&D funding
- High risk investment capital
  -- "Friends and family"
  -- Individual "angels"
  -- Venture capital
- Revenue sources for start-up co's

People
- Knowledge workers
- Entrepreneurs
- Investors
- Bizdev & managers
- Experts (supporting infrastructure)
- Other workers willing to take risk

Ideas
- From R&D activities across multiple disciplines
- Creativity:
  -- New applications
  -- How to make money with new idea
  -- How to obtain resources

Infrastructure: Legal (e.g. IP protection), physical facilities, governments friendly to new business

Entrepreneurial culture: provides the dynamics of the ecosystem

Motive and opportunity for people, ideas, capital to come together in new combinations

- Common interest in the "next new thing" and "How can I play?"
  - Not everyone starts their own company, but entrepreneurs should have good social standing
  - Widespread community knowledge that distinguishes between good and bad entrepreneurs, ideas, capital (funding patterns)
  - Willingness to think big (change the world), or risk is not worth it
- Companies or markets to be customers of start-up companies

- **Repetition: pipeline to refresh supply of people, ideas, capital**
  - Interaction with sources: universities, existing (large) companies
  - "Exits" of start-up companies (successful and unsuccessful)
  - Movement of people in and out of region: immigration

Capital

- Different types
  - Sale of stock (equity) versus taking loan versus government grant
  - Individual investor (angel) versus investment company (e.g. venture capital firm)
- Different stages
  - Friends and family
  - Seed
  - Early stage
  - Later stage
  - Expansion
  - Exit (via IPO or M&A)
- Difficult to obtain clear data on angel investor activities, so will focus on VC

Baseline: Venture Capital in the U.S. in 2011 and 2012

	2011 Number of deals	2011 Amount $ millions	2012 Number of deals	2012 Amount $ millions
TOTAL invested	3,937	$29,463	3,698	$26,525
Seed	443	1,056	274	725
Early stage	1,555	8,761	1,638	7,832
Later stage	917	9,810	830	8,594
Expansion	1,022	9,936	956	9,374

Data from NVCA / PWC, *The MoneyTree*, 2012Q4 and Yearly Aggregate Data

Baseline: VC in the U.S. 2011 and 2012 - 2

Top 10 industries by amount	2011 Number of deals	2011 Amount $ millions	2012 Number of deals	2012 Amount $ millions
Software	1,176	$7,513	1,266	$8,270
Biotech	468	4,886	466	4,148
Indus / Energy	307	3,583	240	2,748
Med devices	368	2,814	313	2,493
IT services	361	2,270	314	2,001
Media / Entertain	437	2,240	314	1,955
Consumer prods / svcs	138	1,399	164	1,246
Semicond'trs	136	1,345	107	920
Telecom	123	630	92	579
Retailing / Distribution	67	453	56	497

Data from NVCA / PWC, *The MoneyTree*, 2012Q4 and Yearly Aggregate Data

VC investment in China 2011 - 2012

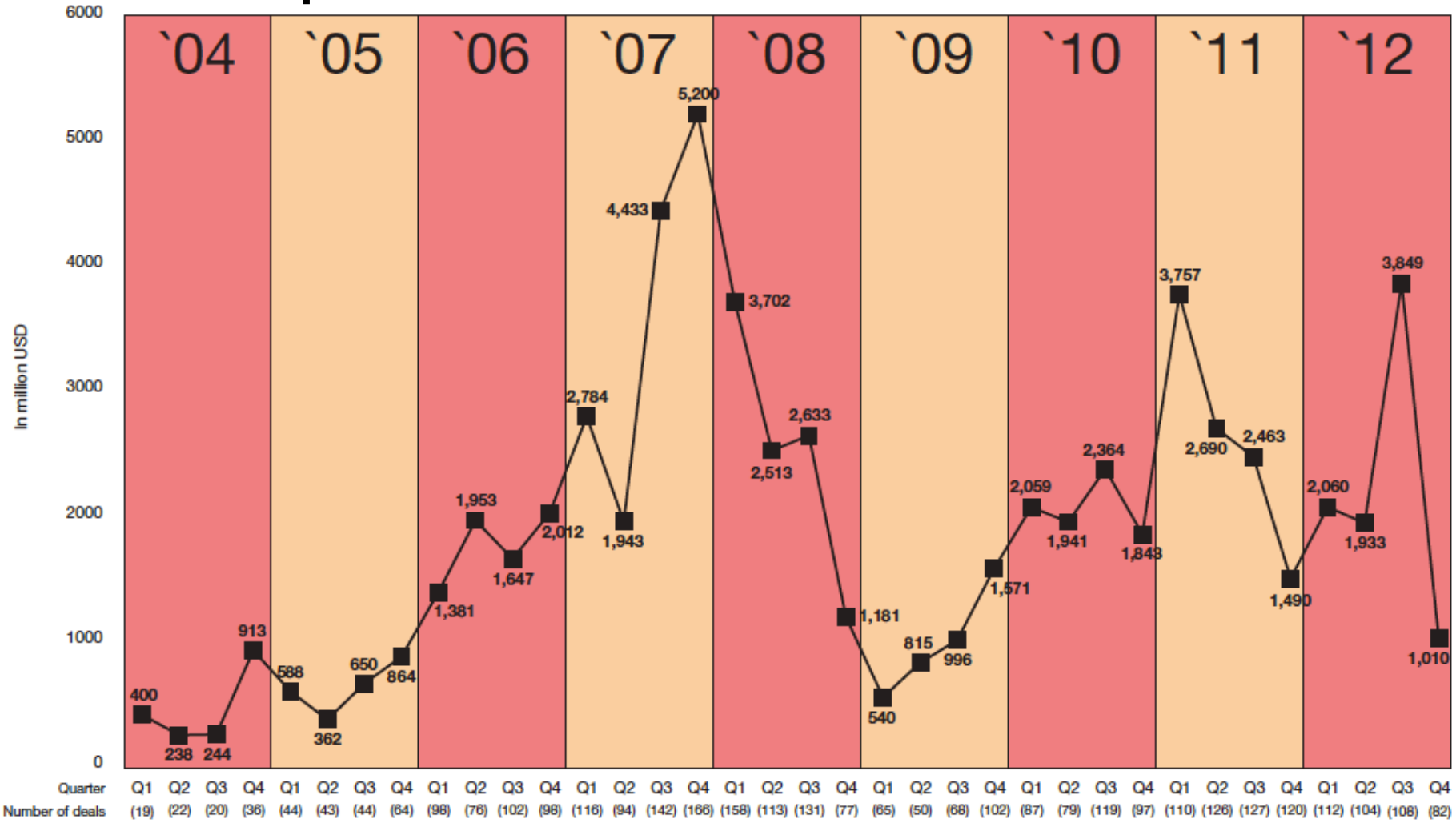
- **Amount invested in 2012 was down 40% from 2011, # of deals was down 44%**

	2011	2012
Total invested	$ 6.2 billion	$ 3.7 billion
# of deals	362	202

	2012 # deals	2012 amount ($ millions)
Consumer Services	96	$2,000
Info Technologies	43	536
Business / Financial Services	27	458
Healthcare	11	179
Energy / Utilities	4	58

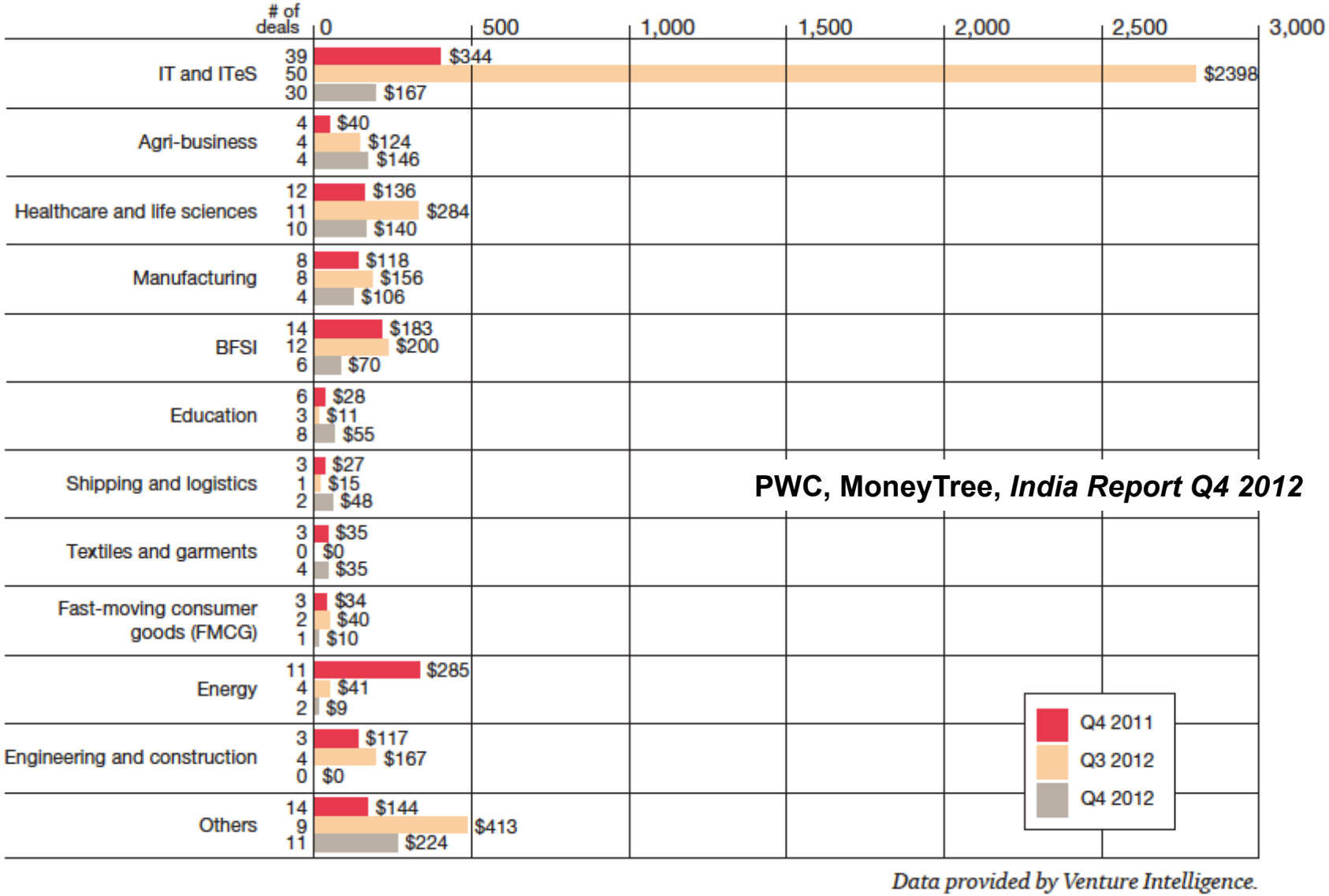
Dow Jones VentureSource, PR 2013.02.25

Venture capital in India



PWC, MoneyTree, *India Report Q4 2012* *Data provided by Venture Intelligence.*

VC in India by industry (2011Q4 – 2012Q2)



PWC, MoneyTree, *India Report Q4 2012*

Data provided by Venture Intelligence.

Other aspects of capital availability

- Revenue from customers
  - Hard for a start-up to get its first customer -- everywhere
  - But U.S. benefits from “open innovation” practices that encourage technology licensing and more
- “Exit”
  - M&A is most common path in U.S., IPOs are more common but smaller in Asia
  - Funds that go back to high-risk investors (and owner-managers) tend to be channeled to next round of high risk investments
  - Throughout Asia, entrepreneurs tend not to think about exit (expect to stay with company and leave it to children)

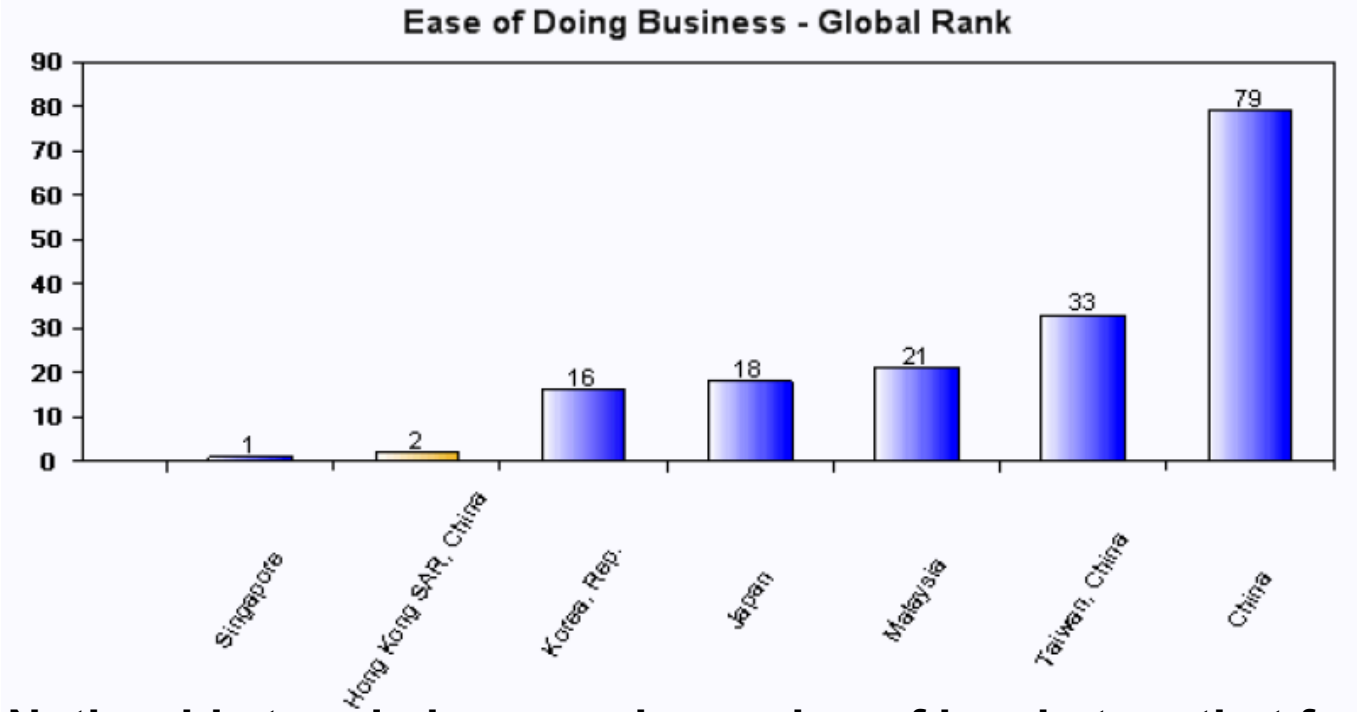
Flow of people: labor market fluidity
U.S. baseline

- Dept. of Labor survey (published 2012.07.25)
  - 30-year study of “baby boomers” born between 1957 – 1964
  - First interviewed in 1979, last interviewed in 2010
- Individuals held an held an average of 11.3 jobs between ages 18 to 46
  - Men with university degree or higher = 11.4 jobs
    women university graduates or higher = 12.2 jobs
  - Length of time in one job tends to increase with age, but…
  - Among 40 to 46 year olds who started a job,
    33 % of the jobs ended in less than one year,
    69 % ended in less than 5 years

Flow of people: Labor market attitudes in Asia

- Labor market fluid in China, India; not fluid in Japan, Korea
- Universal social stigma against entrepreneurial careers in Asia (including India)
- What will be impact of …?
  - Economic slowdown
  - Aging population – may make it less difficult to get a job in a prestige company
  - Increased international mobility
  - Instrinsically global nature of many start-up business ideas in new business area

Infrastructure



D&B ranking, cited by IFC "Doing Business in Hong Kong 2011"

- Lower score = easier

- Noticeable trend: increase in number of incubators that focus on providing more advising, mentoring – influence of Y Combinator, 500 Startups
  - Tokyo ("Venture Generation" by JSeed Jeffrey Char)
  - Kerala, India "Start-Up Village" -- first public-private partnership telecom incubator – aims to house 1,000 student start-ups
  - SeoulSpace, Kstartup in Korea

Summary: Cultural as well as systemic factors improves environment for entrepreneurism in Asia

Problem	Background	Old way results	Changes
Lack of fluidity in labor market	Lifetime employment, sense of loyalty	No turning back if one becomes an entrepreneur	Fading away of lifetime employment
"Bigger company = better status"	Post-depression desire for stable, salaried jobs	Best people went to work for biggest companies	Dissatisfaction, lack of trust toward big co's
Apprentice-based learning	Confucian: great for some types of jobs (even manufacturing)	Does not promote radical creativity or thinking outside the box	Disjunction between young & middle-aged people's culture
"Leadership comes with age"	Confucian: maintains systems	Entrepreneurs tend to be older than in other countries	Very slow to change, but active entrepreneur education in univs.
Financing: favors low risk over high reward	Still reflects capital shortages after WW2; asset-based thinking	Underfunded start-ups; investors don't mentor	Growth of venture capital (still need angels)
Lack of "exits" (M&A, IPOs)	Entrepreneurs hold onto their companies, leave them to children	Insufficient flow of knowledge, people, capital back into system so as to create better new ventures	M&A on the rise, big companies interested in open innovation