



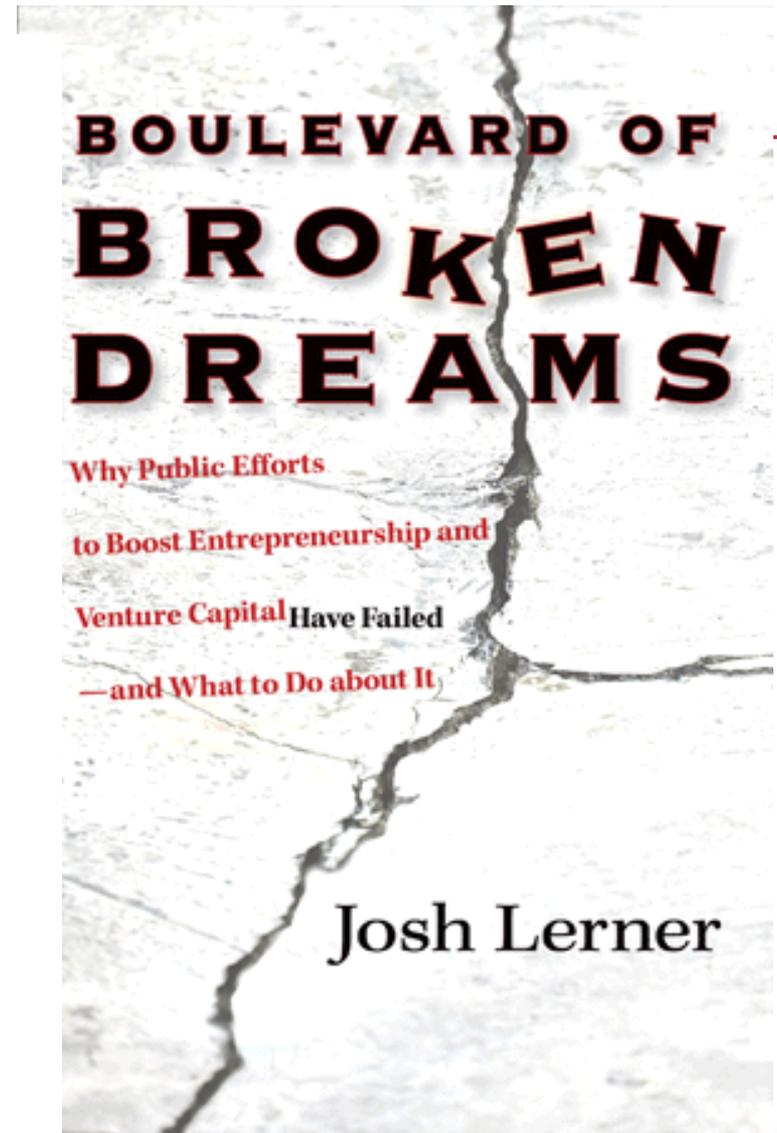
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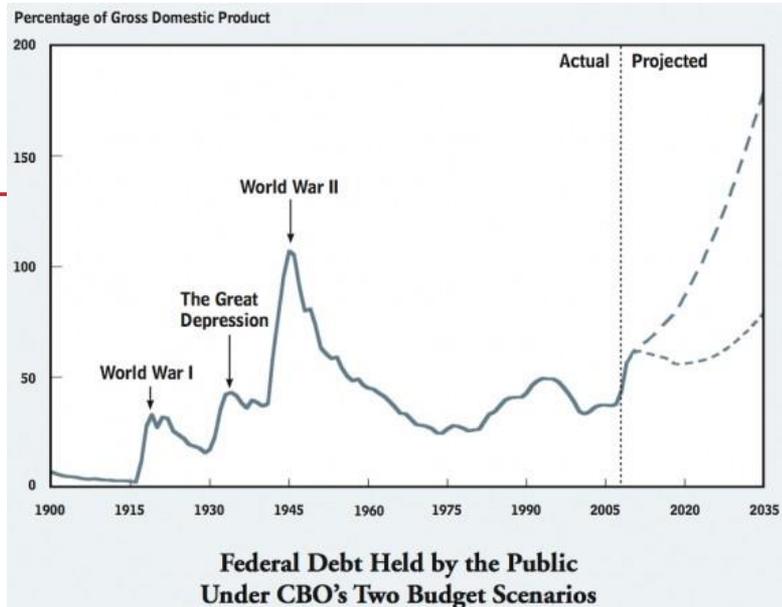


Why Bother with Venture Capital?
*Government and the Promotion of Entrepreneurship
and Venture Capital*

Josh Lerner
Harvard Business School & Bella Research Group

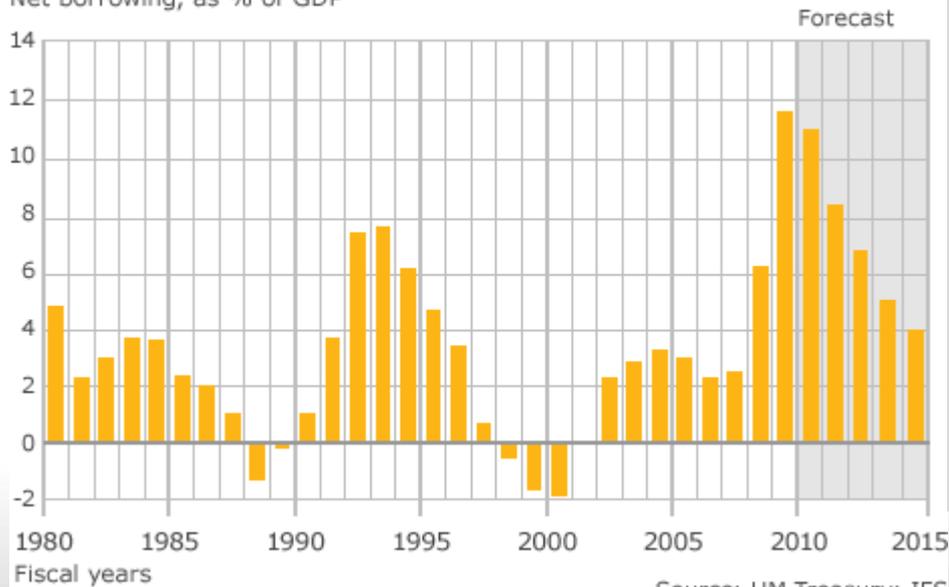
September 2014





UK budget deficits

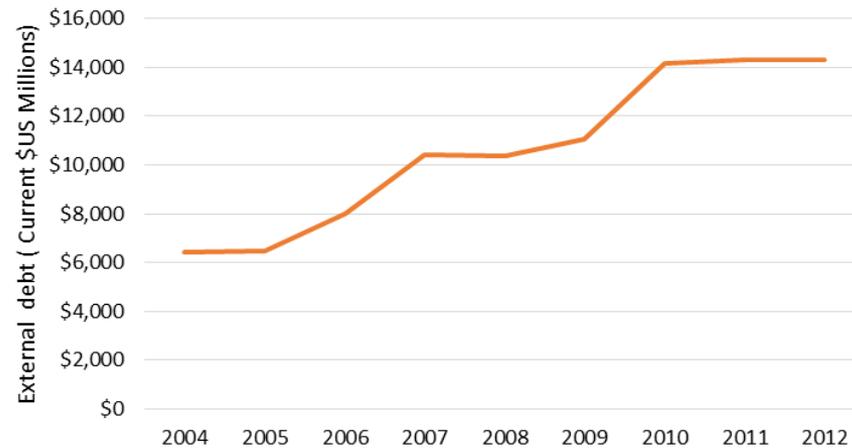
Net borrowing, as % of GDP



Source: HM Treasury; IFS
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Source: CBO

Jamaica External Debt



Source: World Bank Development Indicators

And elsewhere



The essential formula

$$Y = A f(K, L, E, \dots)$$

- **Suggests two avenues to growth:**
 - More inputs (K, L, etc.).
 - Getting more output from existing inputs (A).



Economists have long understood link between innovation and growth

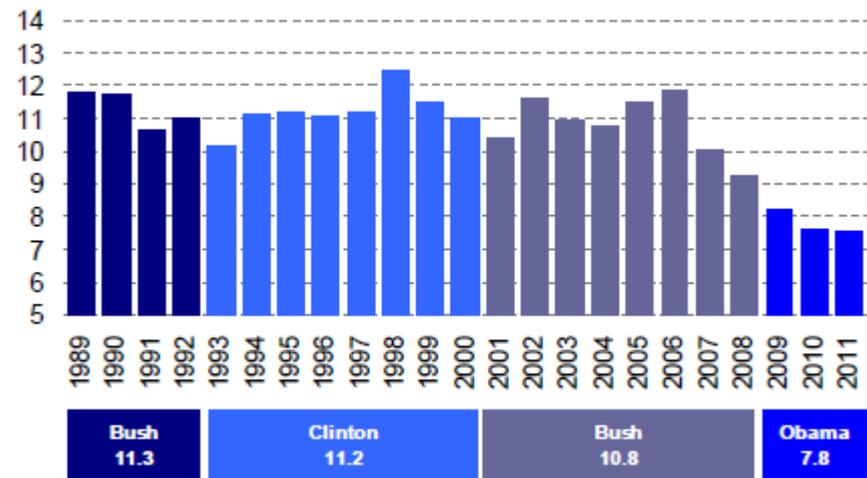
- Productivity growth is likely to be only long-term avenue to growth.
- Pioneering work of Abramowitz and Solow in 1950s:
 - At least 85% of growth can only be explained through innovation.

Entrepreneurship is an important part of the answer

- Haltiwanger and co-authors look at job creation in U.S.:
 - Once carefully control, small firms have little advantage in new job creation,
 - But huge advantage for young firms:
 - Essentially all growth from firms <3 years old.
 - Though declining in recent years...

Startup Jobs Rate

U.S. jobs in new U.S. companies per capita (1000)



Source: Tim Kane, based on Business Dynamics Statistics, U.S. Census Dept.

Source: Haltiwanger, et al. [2010]

Entrepreneurship is an important part of the answer(2)

- **Acs and Audretsch [1988] look at 100s of key innovations in second half of 20th century:**
 - Small firms contribute disproportion share of major innovations.
 - Contribution was greatest in immature industries which were relatively unconcentrated.
 - Consistent with models of technological competition (Reinganum [1989]).

Entrepreneurship is an important part of the answer (3)

- **Kortum and Lerner [2000] look at relationship between venture capital and innovation:**
 - Look at evidence across 20 industries, using patenting and other proxies for innovation:
 - Also control for corporate R&D, *etc.*
 - Venture capital appears ~3 to 4 times more powerful than corporate R&D.
 - Even after control for causality concerns.
 - From late 70s to mid-90s, VC was only 3% of corporate R&D, but responsible for ~10%-12% of privately funded innovations.

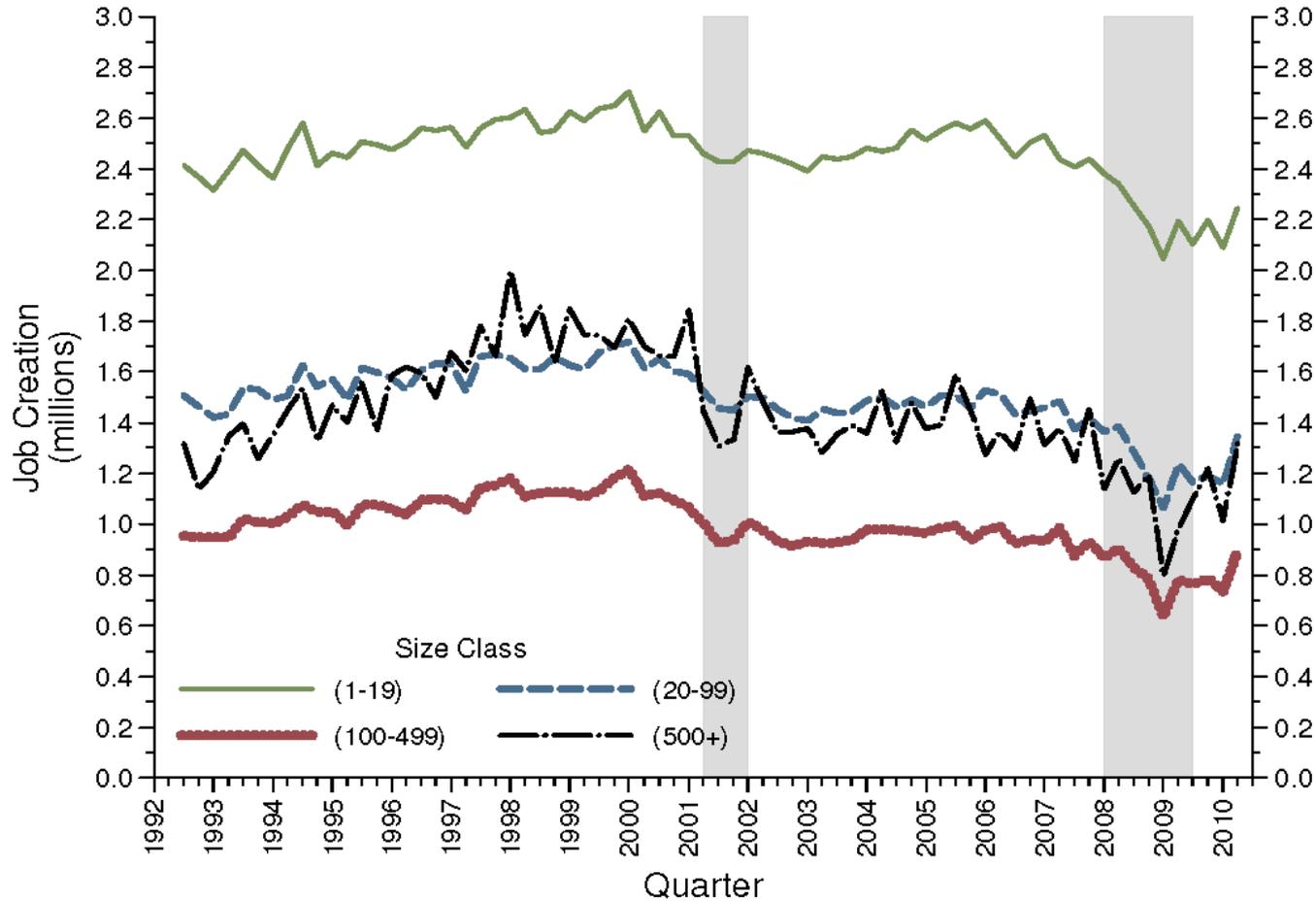
Hence, desperate need for “green shoots”



But entrepreneurship growth engines sputtering

- **Hard to see conclusively but...**
 - Declining job creation from small firms.
 - Poor venture returns since 2000 boom.
 - Even more pronounced drought elsewhere.
 - Linked to difficulties in exiting investments.
 - Downturn in venture activity world-wide since crisis.
- **Concerns of wide-spread disillusionment of investors.**

U.S. job creation and firm size



Source: Haltiwanger, et al. [2011]

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Yet substantial performance differentials: Average Capital Weighted IRRs

	Vintage Years: 1994-98	Vintage Years: 1999-2005
U.S.	51.92%	1.49%
Europe	6.14%	1.36%

Notes: Returns are net to LPs. European data is unavailable for 2003 and 2004.

Source: Data as of March 31, 2014. Cambridge Associates Benchmark Calculator, Via Thomson Reuters VentureXpert (accessed August 12, 2014)

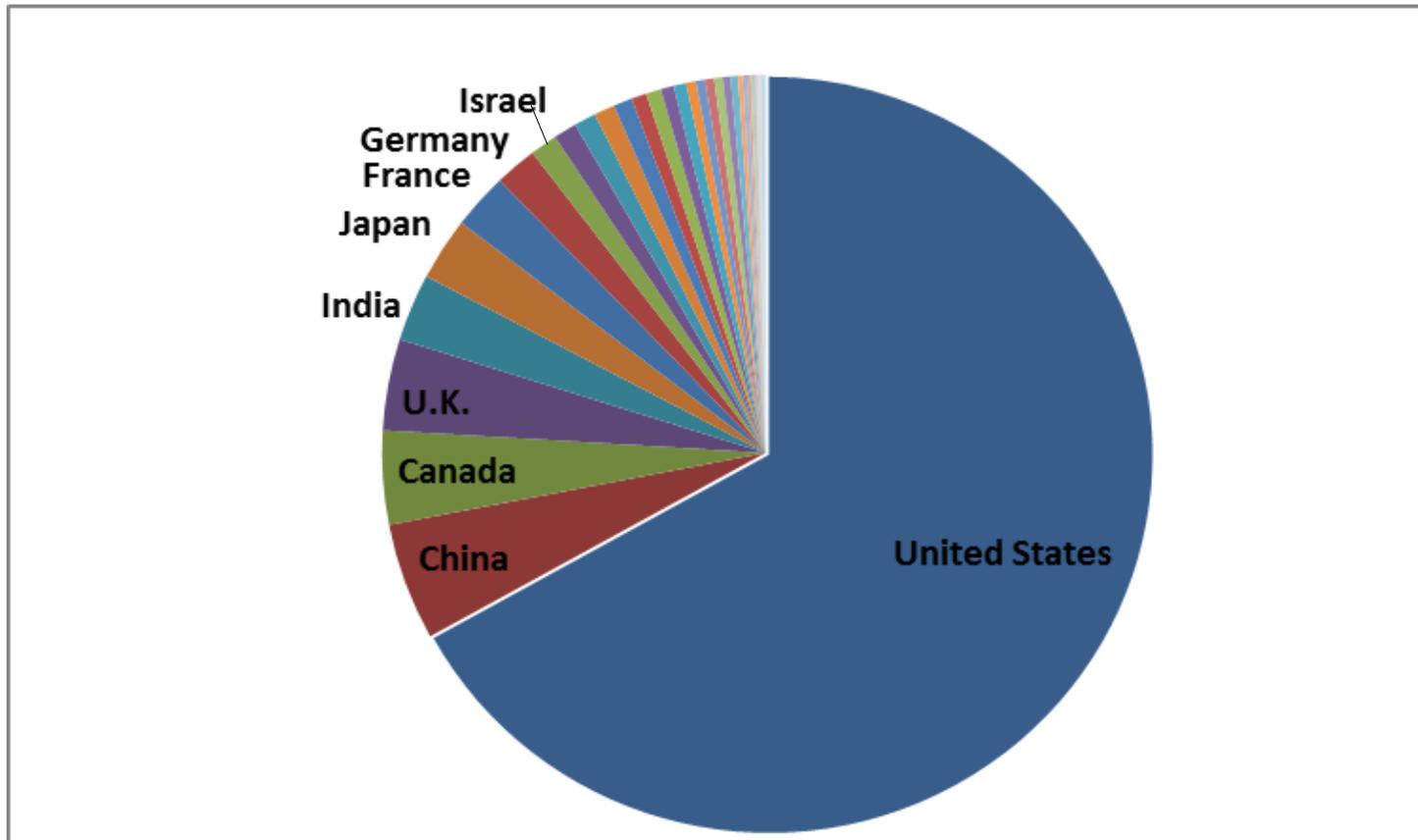
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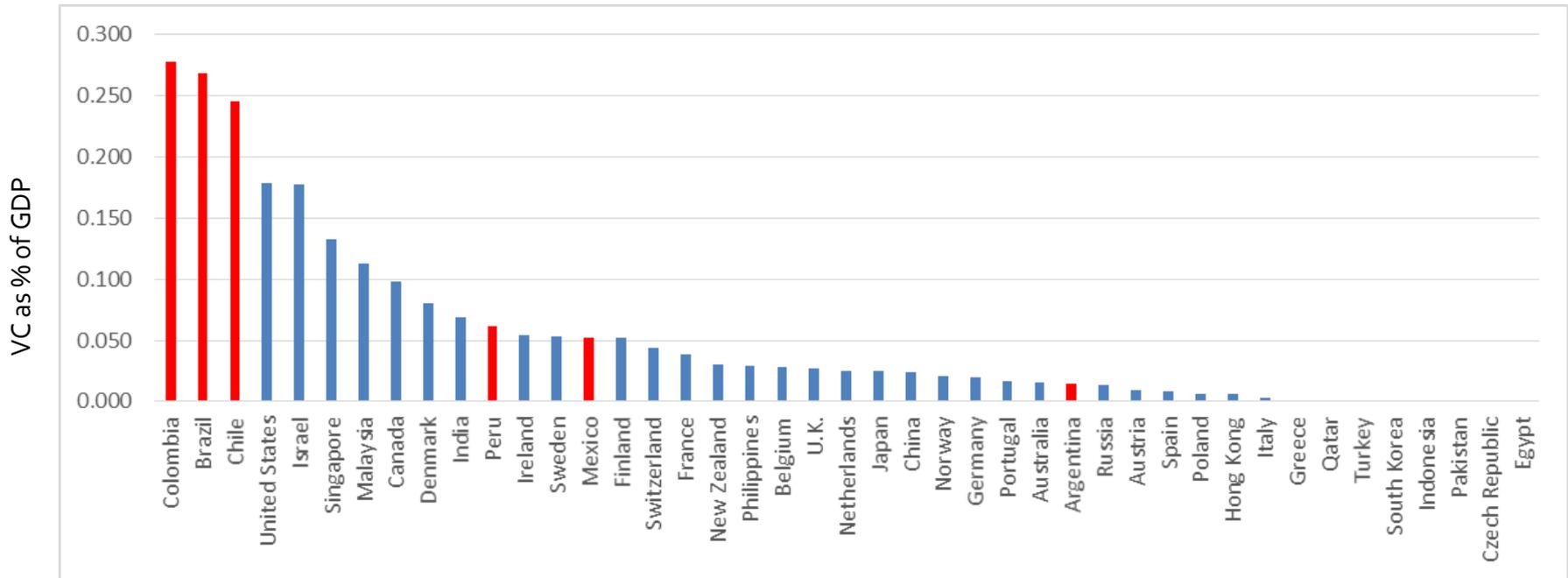
Source: Data as of March 31, 2014. Cambridge Associates Benchmark Calculator, Via Thomson Reuters VentureXpert (accessed August 12, 2014)

Venture investments, 2013



Source: ThomsonReuters VentureXpert. Data as of 12/31/13.

Venture investments as a share of GDP, 2013



Note: LATAM countries in red.

Source: ThomsonReuters VentureXpert, LAVCA, EVCA data for 2013. No information for Jamaica.

Role of Government

Why a government role?

- **Increasing returns to scale**
 - Much easier to do 100th deal than the first:
 - Knowledge and expectations of entrepreneurs.
 - Familiarity of intermediaries.
 - Sharing of information among peers.
 - Comfort level of institutional investors.
- **Economists term these “externalities.”**
- **In these cases, government can frequently play a catalytic role.**

Illustrations from history

- **In the U.S.:**
 - Critical role of SBIC program.
 - Established in 1958.
 - Many early VC firms started as SBIC awardees, then opted out.
 - Building critical “infrastructure”: Lawyers, data providers, *etc.*
- **Similar insights from Israel, Singapore, *etc.***
 - Suggests that some of funding should be directed to growing industries!

But two fundamental problems

- **Incompetence:**
 - Often, relatively little familiarity with worlds of entrepreneurship and venture capital.
 - Many well-intentioned efforts are poorly executed.
- **“Capture”:**
 - Public efforts can be directed to well-connected parties, who seek to benefit themselves.



The Iowa misadventure

- Sought to encourage venture activity in early 1990s by earmarking part of state pension fund.
- Issued RFP for local fund and waited for responses:
 - Ended up selecting lightly-regarded group with no experience in region.
- Despite hefty management fees, fund had hard time finding deals.
- State sought to terminate fund:
 - VCs ended up suing state for fees and profits would have made, could they find deals!

The labor fund fund initiative

- **Canadian government introduces tax credits in effort to boost industry.**
 - Differentiated in terms of capital sources, investment managers, and practices.
- **Consequences:**
 - Surge in fundraising by inexperienced funds:
 - 10X increase in funds.
 - Intensifies overheating of the market.
 - Among established funds, many exit to U.S. investing.

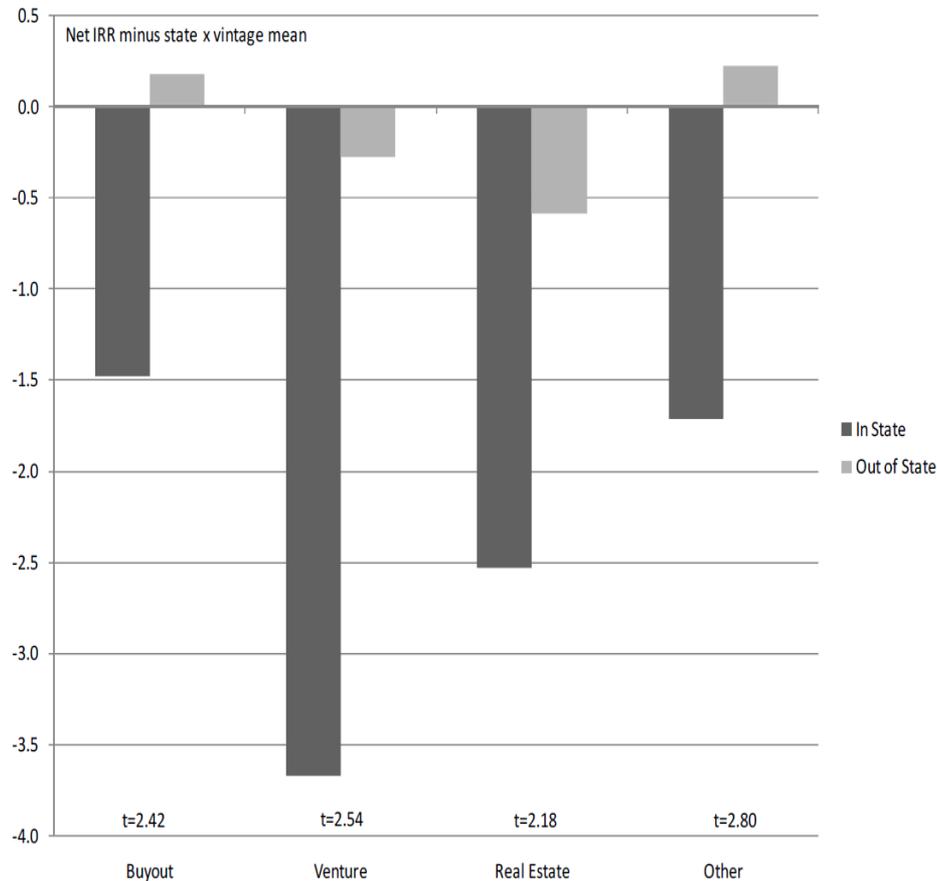
The stimulus cleantech initiative

- U.S. government sought to encourage cleantech firms as part of 2009 Recovery Act.
- Large grants by DOE to a few firms, totaling at least several billion:
 - Equal to or exceeding venture activity in segment.
- **Non-transparent process for awards:**
 - Many firms and VCs hired lobbyists to get access.
 - Many awardees or venture backers of firms proved to be donors.
- Many venture backers held off investing until it was clear who would get awards.

Underperformance of in-state funds

Figure 4: Underperformance of In-State Public Pension PE Investments by Category

The graph shows the relative performance of public pension PE investments in-state versus out-of-state by category, with a t-statistic for whether the performance is equal. Performance is measured as net IRR minus the mean of all other investments in the same vintage and GP state. T-statistics of statistical tests for the equality of in-state versus out of state performance are presented at the bottom of the figure.



What Government CAN Do

Three key principles

- Making sure “table is set.”
- Catalyzing outside funding.
- Long-run perspective.

1. “Table setting”

- Ensuring *high potential* entrepreneurship is attractive:
 - Tax regime:
 - Studies suggest critical role of capital gains vs. income effective tax rate differential.
 - Easing formal and informal sanctions on involvement in failed ventures.
 - Singapore’s Phoenix award.
 - Easing barriers to technology transfer.
 - Entrepreneurship education for students and professionals alike.

Legal and financial environment

- **Large literature demonstrates correlation between financial development and legal quality indices:**
 - Legal enforcement.
 - Minority shareholder protection.
 - *Intellectual property a particularly crucial area in U.S. context.*
- **Stock market development**
 - Availability of 2nd tier markets.
 - Listing and disclosure requirements
 - JOBS Act addresses many concerns.

Taxation

- **Capital gains taxation**

- Supply-side effect limited when LPs tax-exempt
- Demand-side effect can be substantial
 - US rate reduction in '80s & '90s increased VC (Gompers and Lerner 1998)
 - Differential between income and capital gain tax matters in European data (Da Rin et al. 2006)

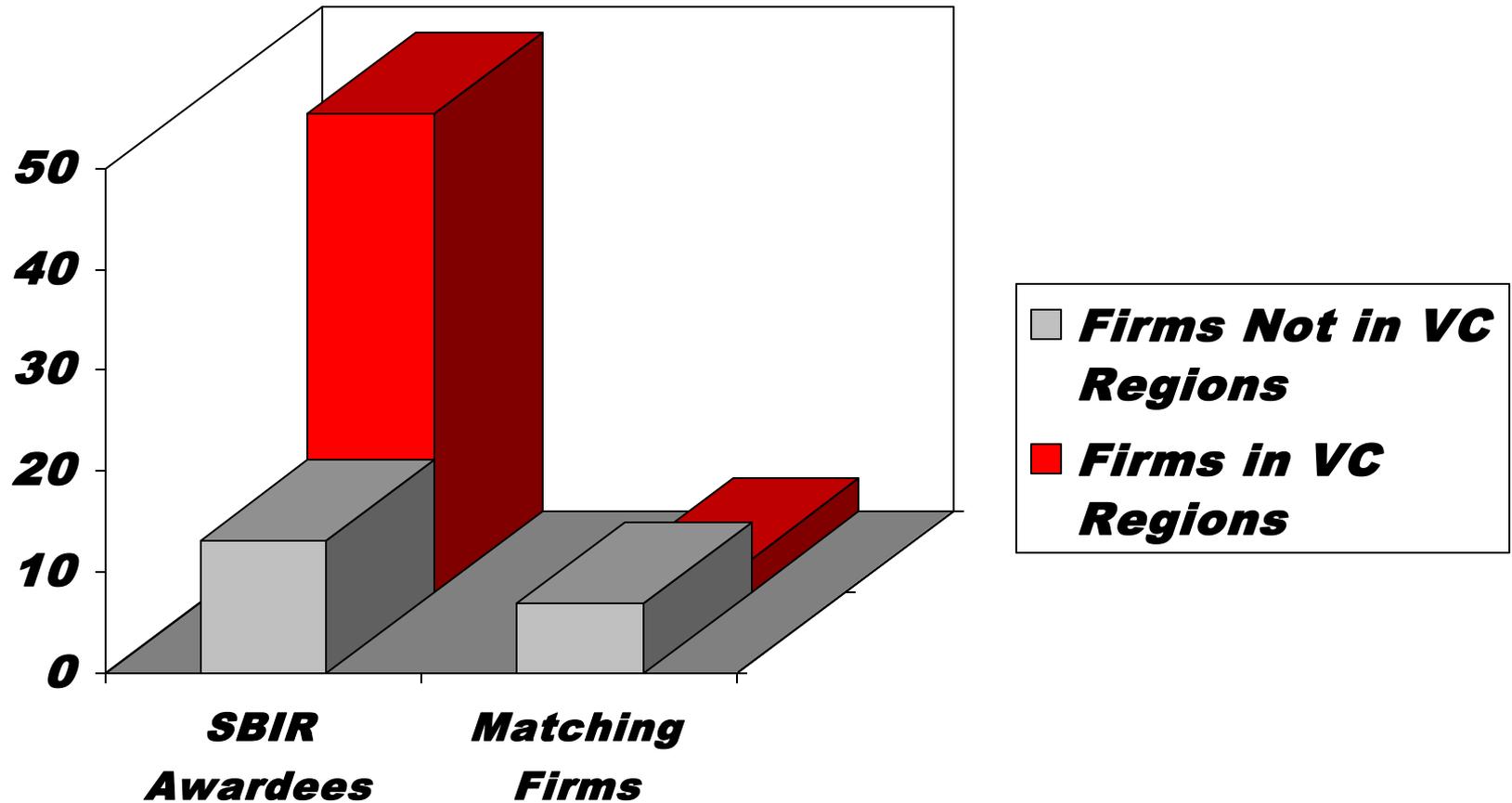
Labor mobility

- **Affects decision to start-up and ability to hire and fire employees:**
 - Countries with high employment protection have less VC
 - Countries that replace protection with insurance have more VC
 - Bozkaya & Kerr (2011)
- **Examples within US:**
 - States that have loose enforcement of non-competes
 - more start-ups
 - attract more star innovators
 - Marx, Singh & Fleming (2011), Stuart & Sorenson (2003)
 - Positive impact of immigrant entrepreneurs.

2. Catalyzing private funding

- **Government funds often fail to listen to market's dictates:**
 - Temptation to jump into popular areas.
 - Universal temptation to "share the wealth":
 - Spreading funds out.
- **Facilitating private funding most appropriate way to ensure.**

Ill-considered pressures for geographic "fairness"



Matching mechanisms key

- **Matching funds...**
 - Often with cap on government returns.
 - E.g., Israel Yozma, NZ Venture Investment Fund
- **Loans and quasi-loans:**
 - E.g., U.S. SBIC program.
- **Loss guarantees:**
 - E.g., Israel INBAL program.
- **Second and third approaches raise incentive concerns.**
- **Last may not attract best groups.**

The importance of pension funds

- Long-term source of capital: typically across decades.
- Some corporate (e.g., IBM, Shell) and public pensions (e.g., ATP, Oregon) alike have emerged as savvy investors.
- United States private equity history suggests critical importance.

The importance of cross-national investment

- **Venture capital is fundamentally a global industry.**
- **International investments transfer not just capital but knowledge.**
- **Success of Israeli, Singaporean, etc. markets seems driven by role of international groups:**
 - **Variety of steps can encourage.**

3. The need for a long-run perspective

- **Building an effective entrepreneurial cluster takes many years...**
 - Far longer than a typical election cycle.
- **Many efforts abandoned prematurely.**
- **Need to see as part of “legacy building.”**

Importance of Emerging Market Private Equity

Emerging Market Private Equity

- **Lots of skepticism today...**
 - U.S., Europe seen as safer bets.
- **Some grounding in reality...**
 - But gross simplification!



Emerging Market Returns have been Lower

- EM returns lag those of developed markets.
 - EM PE and VC typically lag developed market (US and Western Europe) PE returns.
 - EM returns also lag public market EM indexes over longer time horizons, although developed market PE returns have exceeded developed market public benchmarks.
- *Note all caveats with these comparisons above!*

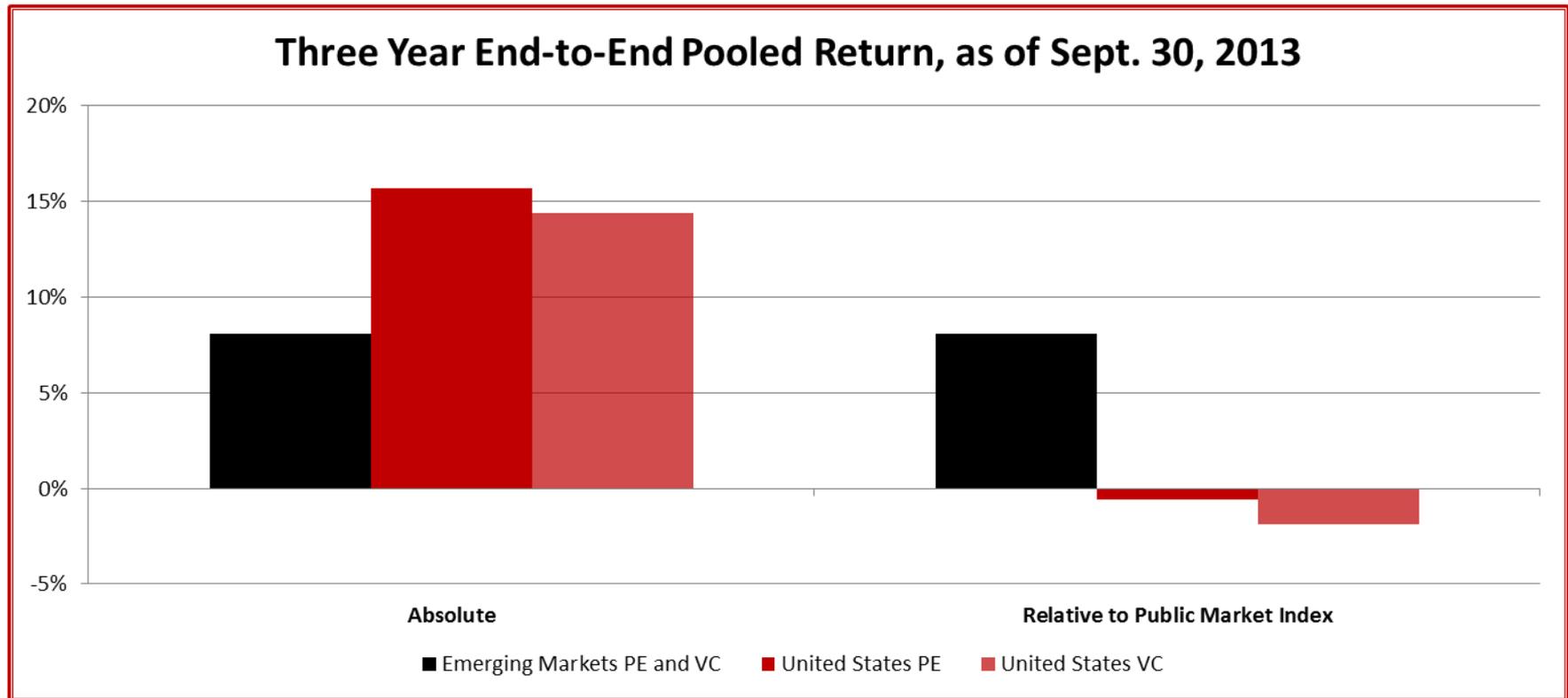
End-to-End Pooled Return, by Region, as of 9/30/2013				
Index	One Year	Three Year	Five Year	Ten Year
Emerging Markets PE & VC	9.51	8.07	9.47	11.84
<i>Emerging Asia PE & VC</i>	<i>10.51</i>	<i>8.45</i>	<i>11.08</i>	<i>12.05</i>
<i>CEE & Russia PE & VC</i>	<i>17.70</i>	<i>13.37</i>	<i>6.18</i>	<i>16.52</i>
<i>Latin America & Caribbean PE & VC</i>	<i>-1.15</i>	<i>1.89</i>	<i>6.84</i>	<i>12.46</i>
<i>Africa PE & VC</i>	<i>7.22</i>	<i>6.16</i>	<i>6.68</i>	<i>11.58</i>
MSCI Emerging Markets	1.33	0.00	7.56	13.16
US VC	15.09	14.38	7.51	8.58
US PE	17.19	15.66	10.95	14.21
Western Europe VC	17.11	13.17	4.94	5.59
Western Europe PE	16.09	12.31	6.38	16.77
S&P 500	19.34	16.27	10.02	7.57

Note: The index is an end-to-end calculation based on data compiled from 497 global EM PE gross level, and VC funds, including fully liquidated partnerships, formed between 1986 and 2013. The returns are net of fees, expenses, and carried interest. Returns for MSCI Emerging Markets index are gross level, standard (Large + Mid Cap) size.

Source: Cambridge Associates in EMPEA Industry Statistics Q4 2013.

Zooming in on Relative Performance Paints a Different Picture

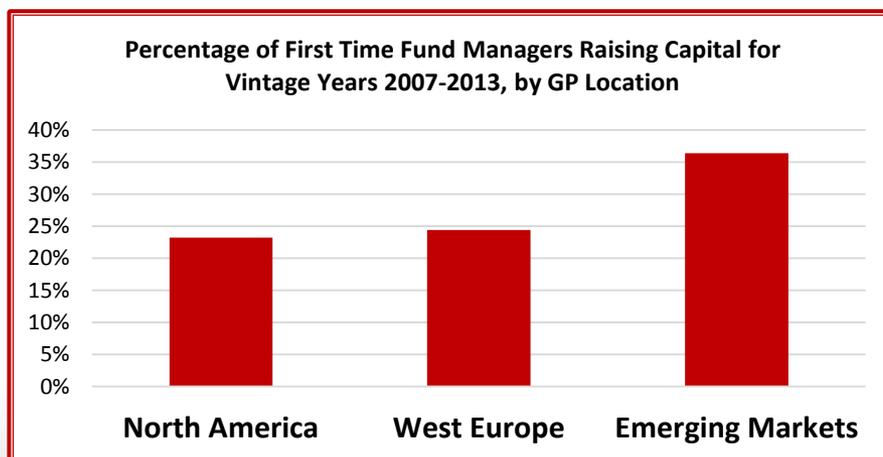
- EM returns are low in absolute, by relative to public markets, a simple comparison suggests strong performance.



Source: Cambridge Associates in EMPEA Industry Statistics Q4 2013.

Reasons for Low EM PE Returns

- Historically, currency fluctuations, political instability, inadequate legal systems, weak accounting standards, and, sometimes, competition from subsidized state-run enterprises contribute to volatile returns.
- But... the low returns may also be simply a function of the early years of the EM PE industry.
 - The most visible fund in the early years of PE in the United States was George Doriot's American Research and Development, which had a relatively modest IRR.
 - Presumably other funds of era did much worse!
 - Substantial literature finds that experience matters.
 - Sensoy, Wang, Weisbach (2013), Zarutskie (2010), Gompers et al. (2009) suggest that GP experience is positively correlated with performance:
 - EM PE funds are disproportionately younger and inexperienced (see chart below).
 - Lerner, Schoar, Wangsunwai (2007) show that LP sophistication increases with experience such that older LPs tend to realize better performance than do newer LPs.



Source: Preqin data.

Positive Long-Run Outlook for PE in Emerging Markets – High Growth Prospects

- Emerging market private equity displays characteristics similar to early PE environments in U.S.
- The PE asset class has matured in developed markets; opportunities are becoming more limited.
- PE is still very new in EMs and the asset class benefits from several advantages in EMs:
 - Economic growth rates that are twice as high as developed markets, and EMs now account for over half of global GDP.
 - A demographic boom promises to vault 3 billion people into the middle class, and add \$35 trillion to the global economy.
 - Economic growth trajectories of many EMs are similar to those of post-war Japan and U.S. For example, Vietnam and Nigeria are forecast to be among the 20 largest economies by 2050.

Source: Homi Kharas, "The Emerging Middle Class in Developing Countries," 2010, p.28; Lund et al, "Financial Globalization: Retreat or Rest: Global Capital Markets," 2013, p.34. Vietnam and Nigeria ranking is based on 2050 projected GDP at PPP. See PricewaterhouseCoopers, "The World in 2050: The BRICs and Beyond: Prospects, Challenges and Opportunities," 2013, p.2.

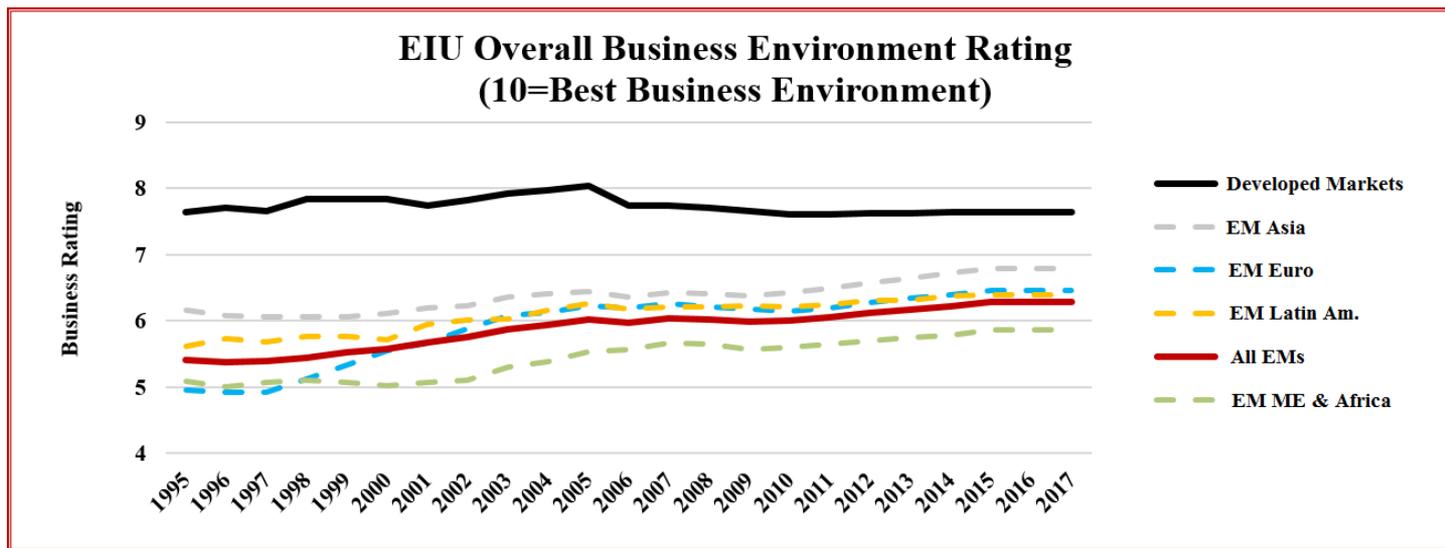


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Positive Long-Run Outlook for PE in Emerging Markets – Converging Business Environments with Developed Markets

- The business environments of EMs and developed markets, as rated by the EIU, have been steadily converging for 18 years. As EMs continue to open markets and adopt the business standards of developed markets, the gap will continue to narrow.



Note: The 91 EIU data points are grouped in ten categories: the political environment, the macroeconomic environment, market opportunities, policy towards free enterprise and competition, policy towards foreign investment, foreign trade and exchange controls, taxes, financing, the labor market, and infrastructure, for details, see: http://graphics.eiu.com/files/ad_pdfs/CF_PDF.pdf.

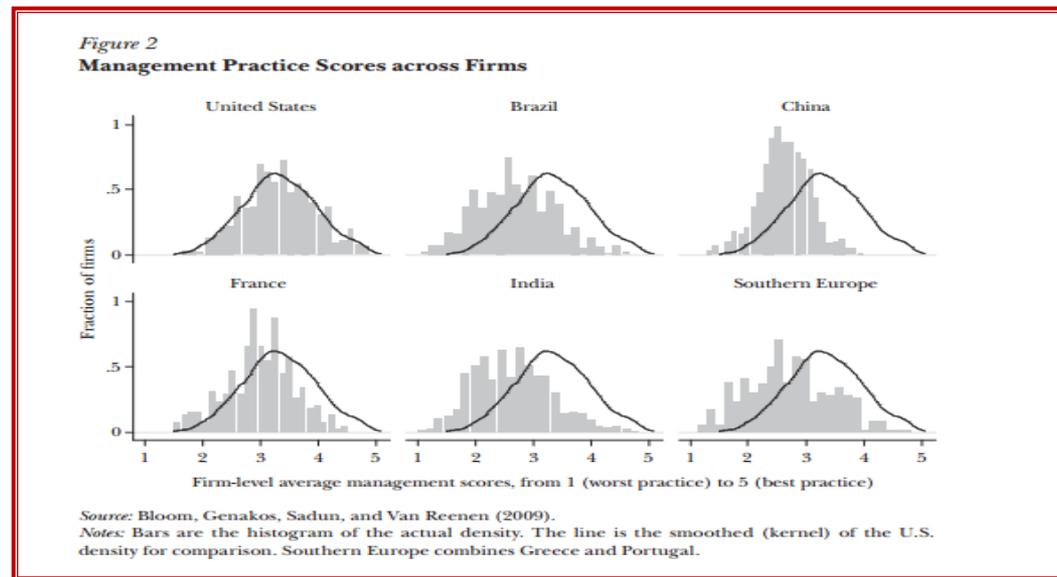
Source: Economist Intelligence Unit data.

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Positive Long-Run Outlook for PE in Emerging Markets

– Room for Managerial Improvement

- Improving business conditions can become amplified by higher value-add potential for operational improvements.
- In EM economies like Brazil and India, there is much more room for operational improvement than in the U.S.
 - The average management score for the U.S. is over 0.6 points higher (out of 5) than Brazil, India, and China.



Note: Graph is compiled from 4,930 observations from manufacturing firms.

Source: Bloom and van Reenen, "Why Do Management Practices Differ Across Firms and Countries," *Journal of Economic Perspectives*, 24 (1), 2010.

Jamaica's VC Efforts

Jamaica's Current VC Program

- **Develop two VC funds by 2016.**
 - Overall project funded with \$128M from DBJ; \$150M from IDB-MIF.
 - Funds likely to be between \$20M and \$50M.
- **Build the ecosystem: capacity building for 100 SMEs.**
- **Challenges over the middle term:**
 - Develop legal framework.
 - Develop exit mechanisms (M&A and IPO).
 - Enact bankruptcy legislation.
 - Curtail corruption.

History of Jamaica's VC efforts

- **2000: the Caribbean Investment Fund (CIF):**
- **Support and incentives from CARICOM states.**
 - Goal of raising \$50M - \$150M for investment across the region over 10 years.
 - Inter-American Investment Corp; European IB, MIF, AIC LTD, and Caribbean Dev. Bank.
 - Invested \$27.7M in Jamaica, Trinidad & Tobago, Bahamas, Antigua, Guyana, and St. Lucia.
 - Raised \$40M - \$50M.
 - Capital returned to investors in 2008.

Jamaica's Efforts (2)

- **Jamaica Venture Fund (JVF): founded in early 1990s.**
 - Raised J\$65M from 22 institutions.
 - Over 3 years, made commitments between J\$1-J\$5M to 14 Jamaican companies.
 - Mostly early stage or greenfield.
 - “Performance of the fund was mixed”
 - Some great successes (Jamaica Money Market Brokers).
 - Some breakeven.
 - Some folded/sold to promoter.
 - But decent returns to investors: ~ J\$300+M over 10 years (4.62x gross of fees).
- **Trafalgar Development Bank: 1980s failed because too entrepreneur-friendly.**

Recent Reports on Jamaica Recommend

- Not more loans, more equity! (Collister)
- Development banks change from “high risk low return” (traditional development approach) to “high risk, high return” (traditional VC approach).

Lots of Careful Work Thus Far

- **Market Report and Strategy Pieces.**
- **Critical role for government.**
 - Ability to set regulatory environment, remove impediments, and catalyze private funding.
 - Example of Israel's Yozma program: set it up, let it run, and bow out.
- **Banks can contribute as well.**
 - General financial knowledge.
 - Efforts to create business literacy/capability.
- **Jamaica has a natural sense of entrepreneurship.**

Final thoughts

- **The critical rationale...**
 - And the many pitfalls.
- **Three key points:**
 - More than money is needed: entrepreneurship is not in a vacuum.
 - The virtues of catalyzing private funding.
 - A long-run perspective important as well.
- **The work that Jamaica is doing now is very important and very hard and needs patience and support.**