

BUSINESS INTERRUPTION AFTER DISASTERS: WHAT DO WE KNOW?

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BUSINESS INTERRUPTION MODELING: WHAT DO WE KNOW?

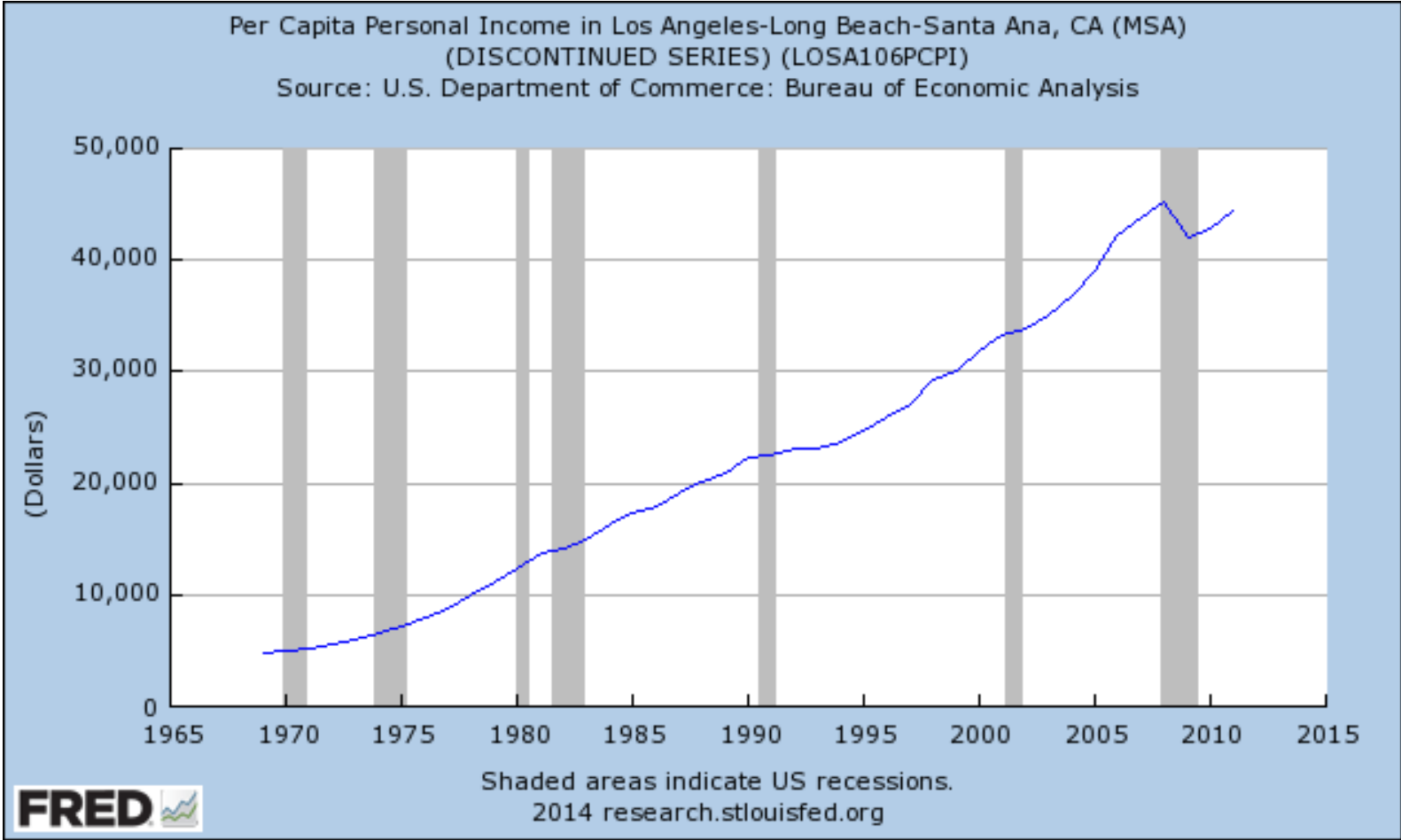
1. In a market economy, we expect “short- run” impacts mitigated in the “long-run” – as people are prompted to be inventive and opportunistic

Economists Gary Becker and Kevin Murphy in the *WSJ*
(Oct 29, 2001): “Prosperity Will Rise Out of the Ashes”

But business interruption can have *complex ripple effects* –
beyond the directly impacted

2. Long-run effects usually negligible; not easy to find 9/11 (or Northridge or other similar events) in the aggregate regional data series

Where is January 17, 1994?



3. Economic impact modeling approaches unsettled – findings vary greatly

So far, limited usefulness for (public and private) policy evaluation

4. “By nature, business interruption losses are harder to measure than losses due to property damage. The lack of BI loss data means that robust benchmarks to evaluate business interruption losses are not available” (Jain and Guin, 2009).

CHALLENGES

1. As various structures are lost, how much business (occupant) downtime can be expected?

Can we link loss of business to the loss of structures?

What about losses to the wider economy?

Can we model (predict) the actions of business owners?

Their suppliers?

Their workers?

Economy-wide effects?

2. As *infrastructure* losses occur, how are supply chains (including workers' access) impacted? For how long? Where are supply chains too lean?

But supply chains have a “private” and a “public” dimension: the private involves re-contracting and is subject to the firm's control; the public may be beyond the firm's control

3. What are travel time delays?
How many trips foregone?
Where are repairs stymied by politics (Sandy)?
Which infrastructure?
Which recovery agency? Who is in charge?
How much agency ineptness can we expect?

From *The Economist* (Nov 30, 2006):

“Lehman Brothers, for example, has tested new techniques in the homes of some of its American traders and installed hotlines so that dealers can talk to each other. There are plans to produce a Wall Street-wide directory to keep traders in touch from home. Regulators have sought to ensure that traders operating from home do not break the law.”

4. If BI models have limits, what to do?

Screen businesses in terms of plausible documented back-up/continuity plans? Credible supply-chain back-ups?

Can insurers offer businesses with credible back-up plans premium reductions? How to evaluate and screen plans? “Do you have a supply-chain back-up plan in place?”

Incentive effects useful. Could be win-win-win (insurer, insured, society). Less moral hazard if pre-commitment of the insured must be demonstrated.

SOME POST-EVENT STUDIES

Two in similar “ballpark”

- 1. 1994 Northridge Earthquake in Southern California,** USC group found: Total business interruption losses were estimated at more than \$6.5 billion, sizeable but smaller than total structural damage (over \$25 billion).
- 2. Katrina:** Jain and Guin (2009) report \$25 billion of *insured* losses, of which \$6 - 9 billion were from business interruption.

Others – no simple pattern

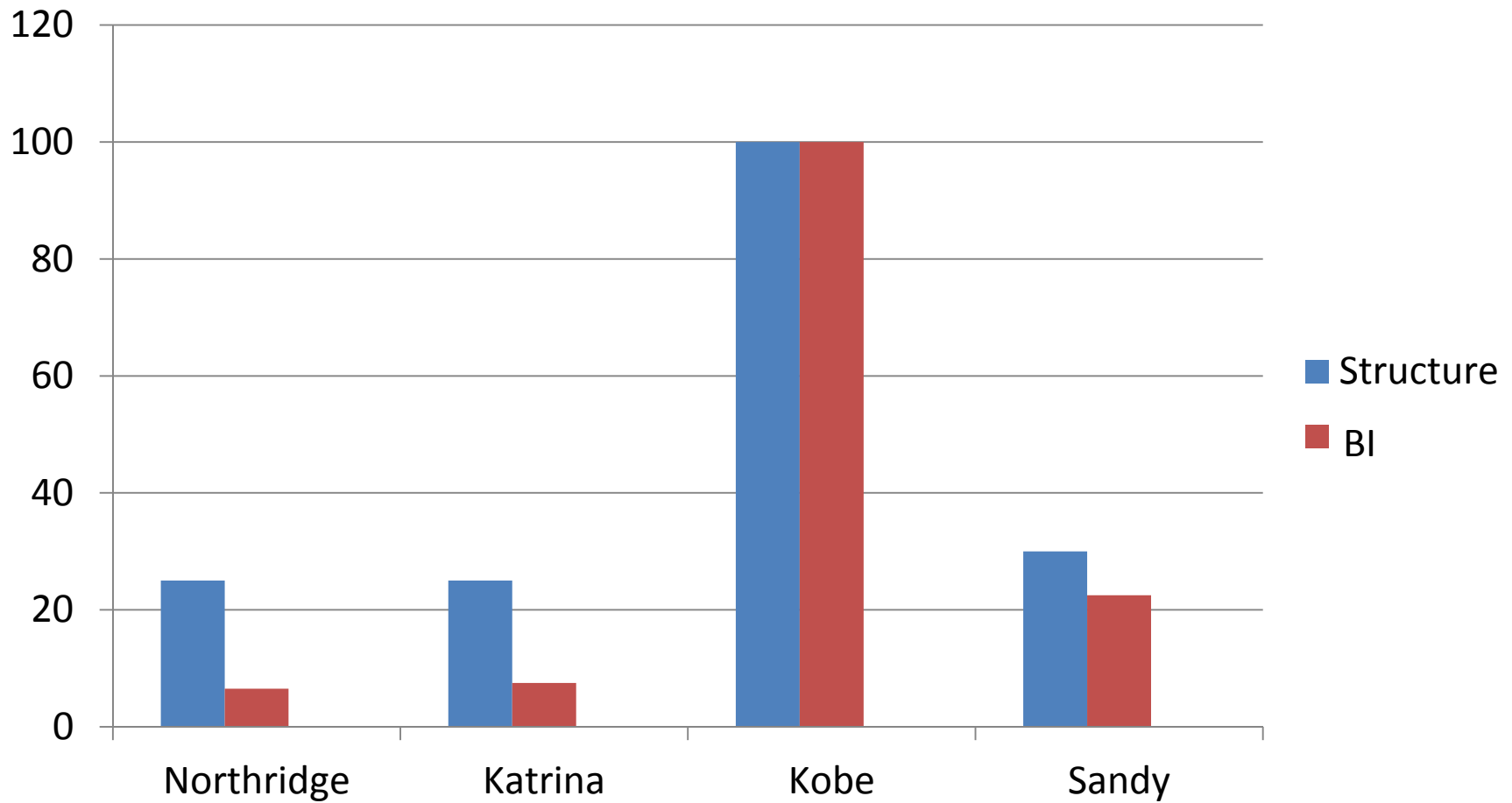
- 1. Kobe (1995)** estimates are that structure losses and business interruption losses were *each* \$100 billion.
- 2. Izmit (Turkey) 1999**, Durukal et al estimate 70% of losses from “direct” damage; 30% from business interruption; 35 days average.
- 3. 9/11 terrorist attack New York**, many estimates: \$56-\$275 billion. Area jobs shortfall of 65,000 lasting for about one year. Temporary office relocation feasible for most. Serious costs were post-event wars, not BI.

4. Hurricane Sandy, “direct” costs estimates near \$30 billion. Early business interruption loss estimates are in the \$20-\$25 billion range (“Shore Rebuilding, Renters Go South for Summer” *NYT*, March 26, 2013) – and counting. Delays in infrastructure service restoration.

Business people know mitigation measures can limit their risk of property losses -- and when there are fewer property losses, they have a better chance of getting back into business sooner.

But they have much less control when it comes to infrastructure services.

In the ballpark?



Billions of \$U.S.

RECENT SIMULATION STUDIES -- ALSO VARIED

1. **Hypothetical LA CBD dirty bomb:** \$6 billion loss; *all* business interruption and re-routing costs – which prompt more business interruption. Route redundancy paid off. It always does.
2. **Hypothetical theme parks attack** (very hard to estimate fear factor effects) \$23-\$25 billion; similar approaches to shopping mall attack could be followed.
3. **Hypothetical air system shut-down** (7-day shut-down and two-year recovery): \$250 - \$400 billion of national business interruption losses.
4. **Hypothetical seaport closures** suggest that minor structural damage could prompt major business interruption losses. For a major port such as Los Angeles/Long Beach, a one-month closure could cost the economy \$23 billion – spread over most of the U.S.

5. **Simulating Southern California “Big One”**: earthquake engineers estimated structure losses and infrastructure losses (mainly bridges), economists estimated business interruptions, traffic models simulated time lost on the network. For almost \$100 billion of total losses, structure losses and business interruption losses each accounted for almost 50%.

6. **Simulated effects of one major office building of 7.2 event on Sierra Madre fault** (Southern Calif.; Kircher et al, 2006); \$13.2 million of structure losses and \$3.1 million of business interruption.

REFLECTIONS

Study findings are better than over-the-air instant loss reports

But no simple direct damage-business interruption loss patterns

Available studies (post-event as well as simulations) few and uneven

CHALLENGES

Controversies over how to define coverage; adjusters and appraisers face challenges when assessing structure, property, business losses.

“Downtime” can go beyond structure repair, reconstruction re-location.

How to show business activity that would have occurred in the period claimed in the circumstances?

How to get wording right in the policies written?

What kind of incentives/bundling would work in various markets?

Over what time period?

Re Katrina, how long to “recovery”?

When is a new “normal” established?

Policy analysts, economists, business people must agree on best metrics for BI losses (jobs, GDP/capita, personal income).

Indirect and induced effects -- up and down the supply chain.

Which are covered? What about businesses that never return or re-open? When is the business and the local economy back up and running?

Who to blame? Lifeline service interruptions can spread and/or prolong the damage -- up and down the supply chain. Supply chains are ever more fluid and complex.

CONCLUSIONS

Until we learn how to do it better, alternative to defining/measuring BI, focus on *BI mitigation plans*

Quality of firms' *production back-up plans* may be easiest to evaluate when assessing (insuring) BI risk

Insisting on such plans *informs* all involved