How many U.S. jobs might be offshorable? And does it matter?

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Why try to estimate such a slippery concept?

- Because the offshoring of service jobs from the United States to poorer countries may be the most important issue in political economy of the next generation.
- If there is to be any (intelligent) policy preparation, we need a crude estimate of the potential size of this phenomenon.

I believe this will eventually be a very large phenomenon because…

- The two main drivers are:

1. advances in ICT
2. the emergence of China and, esp., India

- These drivers are not about to dissipate.

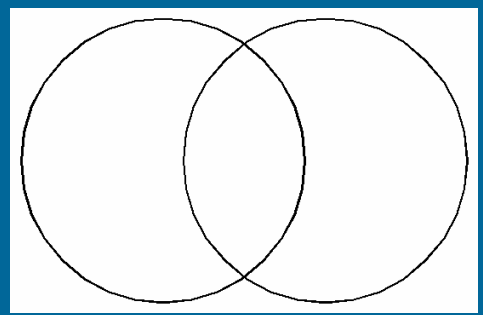
Two different types of data needs

1. Conventional current data on offshoring: to see what is happening
2. Information on job content: to assess the *potential* for offshoring in the *future* (my focus today)

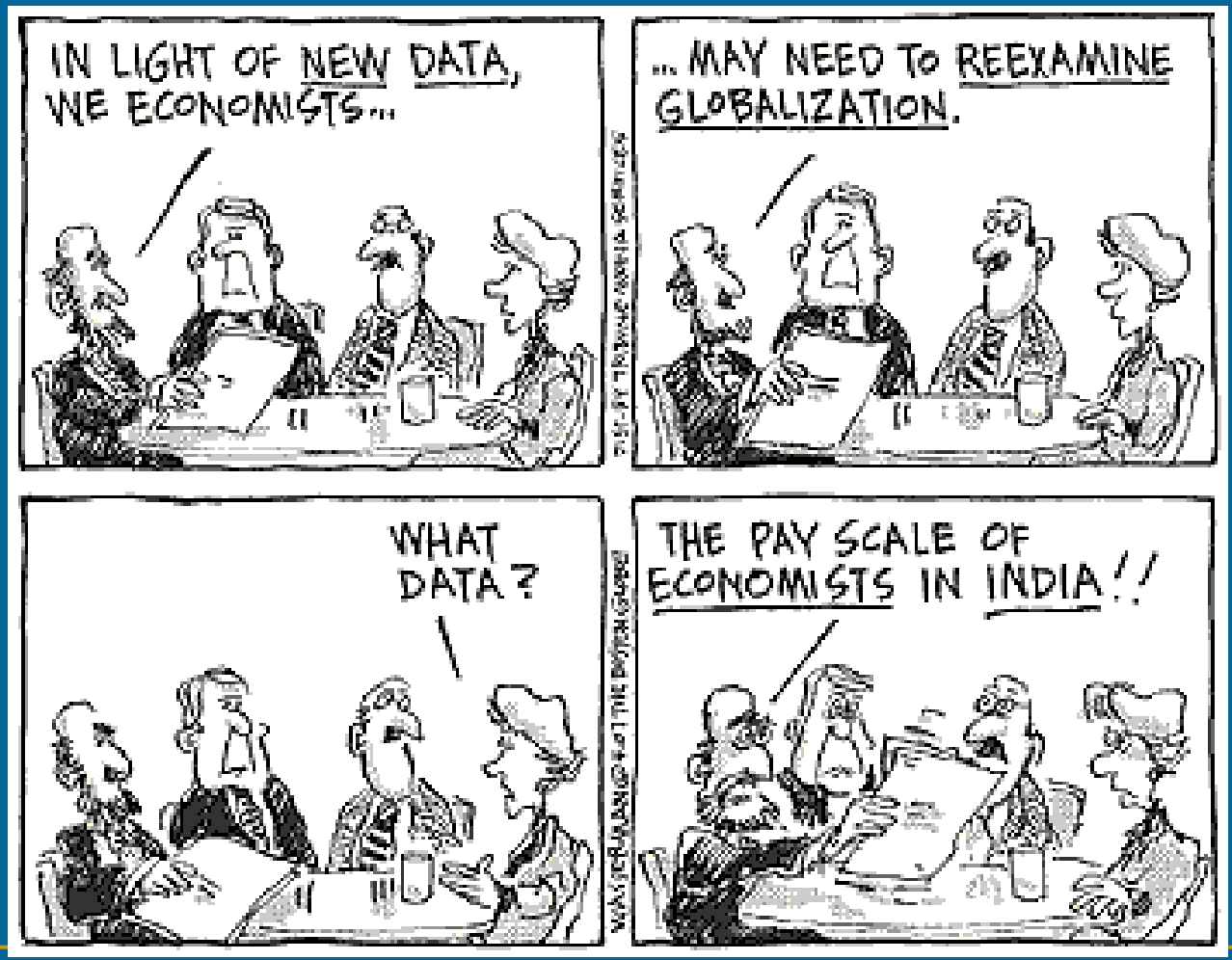
Note the purpose: I am trying to estimate the number of "contestable" jobs, *not* the number that actually will be offshored.

Potential "offshorability"

- The key characteristic is how easy/hard it is to deliver the service to the end-user *electronically* over long distances.
  - Example of a "100": keypunching data
  - Example of a "0": child care
  - Example of a "50": file clerks
- Relation to Autor, Levy, Murnane: routinizable v. offshorable



An example: economists



My ground rules

1. Estimate *potential* offshorability, not actual offshoring
2. Perhaps 10-20 years ahead
3. With normal technological progress (e.g., Moore's law, not "beam me up, Scotty")
   - example: college teaching
4. Based on 2004 occupational mix (not 2024)
5. Scale is ordinal, not cardinal
6. Subjective, not objective

Why do something crazy like this?

- I preferred an objective ranking.
- Kletzer's (2006) example (Jensen-Kletzer)
  - Ex: Lawyers & judges: 96% tradable
  - Ex: Telephone operators: 7% tradable
- In O*NET terminology:
  - "communicating with persons outside the organization" can be by phone or email.
  - "face-to-face discussions" can be with fellow workers
- I *tried* to create an objective index. (See below.)

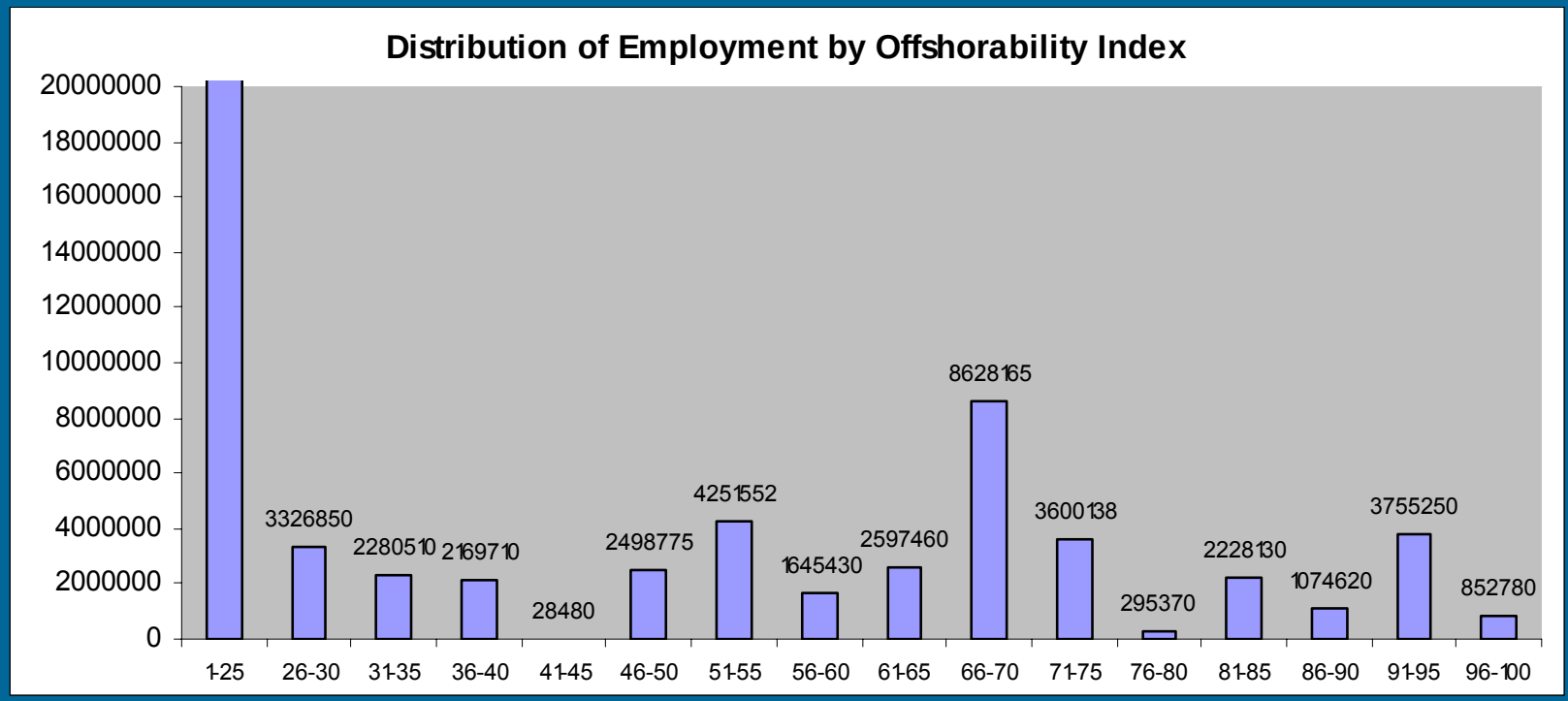
Creating an offshorability index

- Reminder: The key characteristic is how easy/hard it is to deliver the service to the end-user electronically over long distances.
- I use O*NET job descriptions to rank jobs *subjectively* by their offshorability. (See Table 1.)
- Some examples (leading to low ranks):
  - "assisting and caring for others"
  - "establishing and maintaining interpersonal relationships"
  - "coaching and developing others"
  - "communicating with persons outside the organization"
  - "performing for or working directly with the public"

Table 1: Major Occupations Ranked by Offshorability

	SOC code	Category	Index number	No. of Workers
Computer programmers	15-1021	I	100	389,090
Telemarketers	41-9041	I	95	400,860
Computer systems analysts	15-1051	I	93	492,120
Billing and posting clerks and Machine operators	43-3021	I	90	513,020
Bookkeeping, accounting, and auditing clerks	43-3031	I	84	1,815,340
Computer support specialists	15-1041	I and II	92/68	499,860
Computer software engineers, Applications	15-1031	II	74	455,980
Computer software engineers, systems software	15-1032	II	74	320,720
Accountants[b]	13-2011	II	72	591,311
Welders, cutters, solderers, and brazers	51-4121	II	70	358,050
Helpers—production workers	51-9198	II	70	528,610
First-line supervisors/managers of production and operating workers	51-1011	II	68	679,930
Packaging and filling machine operators and tenders	51-9111	II	68	396,270
Team assemblers	51-2092	II	65	1,242,370
Bill and account collectors	43-3011	II	65	431,280
Machinists	51-4041	II	61	368,380
Inspectors, testers, sorters, samplers, and weighers	51-9061	II	60	506,160
General and operations managers	11-1021	III	55	1,663,810
Stock clerks and order fillers	43-5081	III	34	1,625,430
Shipping, receiving, and traffic clerks	43-5071	III	29	759,910
Sales managers	11-2022	III	26	317,970
Business operations specialists, all other	13-1199	IV	25	916,290

Where to draw the line?



conservative: 100-51 ⇨ 22.2%

moderate: 100-37 ⇨ 25.6%

aggressive: 100-26 ⇨ 29.0%

The objective index

- Constructed index: $S_j = \sum^{5}_{i=1} (I_{ij}^{2/3} L_{ij}^{1/3})$
- List of five attributes:

1. establishing and maintaining personal relationships
2. assisting and caring for others
3. performing for or working directly with the public
4. selling or influencing others
5. social perceptiveness

- The rank correlation between my *subjective* and *objective* indexes was just +0.16.

Table 2
Largest Discrepancies between Subjective and Objective Rankings

Occupation	Subjective Ranking	Objective Ranking
Network Systems and Data Communications Analysts	24	225
Film and Video Editors	8	215
Travel guides	34	246
Telemarketers	8	208
Reservation and Transportation Ticket Agents and Travel Clerks	14	256
Proofreaders and Copy Markers	8	234
Furniture Finishers	207	7
Gas Plant Operators	242	41
Photographic Process Workers	229	11

An alternative subjective index

- Created independently by an experienced human resources professional
- Based on my criteria, but not on any details of implementation (and double blind)
- κ-coefficient for 2x2 contingency table = .79
- Rank correlation when both rated the occupation potentially offshorable (ρ=.34)

Offshorability, skills, and wages

- ρ(index, education) = +0.08 (rank corr.)
- ρ(index, median wage) = +0.01

- A simple regression:

$$\ln(w) = \alpha + \beta(ED) + \gamma \mathbf{OD} + \varepsilon$$

Coeff. of first offshorability dummy = -0.138 (t=2.1)

A digression on wage inequality

- Story of the last 30 years: skill-biased technical progress → spreading out of the wage distribution
- Story of the next 30 years: lagging wages among the most offshorable occupations, which have no correlation with wages!
- Example: Computer programmers or carpenters?

Policy: If we should worry about this, what should we worry about?

- We haven't got any reliable data.
- The open trading system will be under attack.
- We need to educate our children for the jobs that will still be here 20-30 years from now.
- We need to improve the safety net for displaced workers—esp. job retraining.
- We must maintain our creative/innovative edge, so we can export (without relying entirely on dollar depreciation).