Estimating the Impact of Reserve Activation on Earnings: Survey vs. Administrative Data

Jacob Alex Klerman, Senior Fellow, Abt Associates

Plan for the Talk

- Policy Background
- Measuring the Right Outcome
- Asking the Right Policy Question
- Policy Background, Revisited
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Policy Background I

- Following the events of 9/11, the United States began a three front war:
  - In the homeland, in Afghanistan, and in Iraq

- And ran out of troops

- In response, the military made unprecedented use of the reserves
  - Who had—and were forced to take leave from—civilian jobs
Policy Background II

- Congress got complaints about lost income
  - And, DoD’s Status of Forces Survey (SOFS-RC) confirmed those complaints

- Legislation was introduced to compensate reservists for their losses
  - DoD was skeptical, requested a study

![Bar chart showing SOFRC/2004 loss distribution]

- Loss of >10%: 49%
- Loss of <10%: 6%
Plan for the Talk

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# Earnings have Many Components

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## Only Some Components are Taxable

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Policy Relevant Concept Includes

- All components of income
- And value of “tax advantage” of some military earnings

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Survey Wording is Problematic

- In an ad hoc topic module, SOFS-RC asked:

  *How much was your average monthly <military/civilian> compensation <prior to/during> your most recent activation, before taxes and other deductions*
Survey Wording is Problematic

- In an ad hoc topic module, SOFS-RC asked:
  
  *How much was your average monthly <military/civilian> compensation <prior to/during> your most recent activation, before taxes and other deductions*

- Only a single question
  - Pre-activation earnings report is retrospective; with potential for recall bias
  - Unclear which pays and allowances should be included
  - Good reporting of multiple sources of income/earnings requires asking about each component (Bound, Brown, and Mathiowetz, 2001; Roemer, 2000; Nelson et al., 1998)
  - Likely to lead to under-reporting of pay while activated, and thus to over-reporting of losses
Survey Wording is Problematic

- In an ad hoc topic module, SOFS-RC asked:
  
  *How much was your average monthly *<military/civilian>* compensation *<prior to/during>* your most recent activation, *before taxes and other deductions*

- Explicitly instructs not to include tax advantage
  - Again, leading to under-reporting of pay while activated, and thus to over-reporting of losses
## Administrative Data is Detailed

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**SSA (annual) earnings data**

**Military pay files**
### Component of Earnings

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- **Have annual earnings**
  - Make reasonable assumptions (single, standard deduction)
  - This is a standard DoD computation
Earnings Components Matter

### Year (Days on Active Duty)

- **Before Activation 2000 (<30 days)**
  - **$42,235**

- **During Activation 2002/2003 (>30 days)**
  - **$55,774**

### Annual Earnings (from Administrative data)

- **$60,000**
- **$50,000**
- **$40,000**
- **$30,000**
- **$20,000**
- **$10,000**
- **$-**

- **Tax Advantage**
- **Other Military**
- **Basic Pay**
- **Drill Pay**
- **Civillian Earnings**
Earnings Components Matter

This is mean earnings; what about losses?
Earnings Loss Due to Activation

SOFS-RC 2004:
- Loss of >10%: 43%
- Loss of <10%: 6%

Admin 2003:
- Loss of >10%: 15%
- Loss of <10%: 10%
Measuring the Right Outcome

With Survey Data

- It’s often unclear what responses mean
  - Probably varies across respondents
  - Contributing, in part, to response errors

- Plus, conventional survey response bias (important here)
  - Including recall bias for pre-activation earnings
  - And, non-response bias (not important here)
Measuring the Right Outcome

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- It’s often unclear what responses mean
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With Admin Data
- You know what you know; arguably here, it’s what you want to know
  - In this case, that’s (mostly) what you want to know
- But probably some bias due to missing informal sector earnings before activation
  - Activation is “formal sector”
  - Irregular and informal earnings induce some reserve enlistment
  - Similar issues for job training programs (see Barnow and Greenberg, 2015)
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Think Like an Evaluator

- Previous analysis is pre/post
  - Presumably there were (at least some) losses among those not activated

- Administrative data includes those not activated
  - … allowing difference-in-differences
    - Survey questions only asked of those activated

- Administrative data includes detailed covariates (e.g., gender, component, rank)
  - … allowing stratifying on observables
    - Losses among those not activated might (and do) vary with observables
Losses are *common among those not activated*
- Mostly young males, recently separated from active duty
- Unstable income
- Perhaps why they joined the reserves

- **Difference-in-Difference Estimate**

![Chart showing differences in losses between activated and not activated groups.](chart.png)
- Losses are *common among those not activated*
  - Mostly young males, recently separated from active duty
  - Unstable income
  - Perhaps why they joined the reserves

- So losses are actually *less common among those activated*
Asking the Right Policy Question

- These administrative data measure outcomes
  - Treatment Group (i.e., those activated) and Comparison Group (i.e., those not activated)
  - Before and during treatment (i.e., activation)
  - With detailed covariates from military personnel records (opposite of usual case)
  - On very large samples

- Allowing
  - Not just pre/post, but also diff-in-diff
  - Careful adjustments for heterogeneity of trends and impact
  - Highly disaggregated estimates
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- *Policy Background, Revisited*
Policy Background, Revisited

- These results were very popular with DoD
  - Briefed all the way up to #3 in Pentagon (Under Secretary of Defense Personnel and Readiness)
  - Cleared for public release in record time

- Briefed to HASC/House Armed Forces Committee and SASC/Senate Armed Forces Committee staff
  - Apparently as a result, legislative proposals stalled
References: On this Application


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  - *Effect of Activation on Reservist Earnings*. RAND Research Brief, RB-9183-OSD.

References: On Job Training


- And a Special Issue of *Evaluation Review* which is “in process”
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Not Pre/Post, but Diff-in-Diff

Taxable-Equivalent Earnings

- Treatment effect ($12,701)
- 0–15 ADD: $23,157, $22,404
- >15 ADD: $35,858, $25,716
- Control effect ($3,312)

Net effect = Treatment group effect – Control group effect
($9,389) – ($12,701) = ($3,312)
Other Cases are Less Clear: Job Training and Earnings

- Earnings are very hard and very expensive to collect well in a survey
  - (to a first order) for impact analysis, that’s balanced T vs. C

- Admin data on earnings
  - Much cheaper, higher quality, and “you know what you know”
  - But (by definition) misses “unreported income”
    <some evidence of that here; not discussed>
  - Which appears to be important for the disadvantaged populations to which we provide job training

- And it may be worse than that
  - Plausibly, job training/activation moves people from the informal/unreported sector to the formal/reported sector
  - Suggesting admin-based impact estimates are biased up