Using linked employer-employee data to investigate the speed of adjustment in downsizing firms

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Canadian Economics Association 2006 Meetings

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- This research is a part of the U.S. Census Bureau's LEHD Program, which is partially supported by the NSF Grants SES-9978093 and SES-0427889, NIA Grant R01 AG018854, the Alfred P. Sloan Foundation.
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Outline

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Background

- Displacement events are large reductions in the work force of a given firm
- Such displacements can be seen as the *source* of subsequent events and outcomes (displaced worker literature)
- Or such events can be viewed as the *outcome* of firm-level events and timelines.

Background

In this paper, we will concentrate on the latter, and tie in with an existing literature on

- firm-level factors that are associated with a displacement/plant closure at the *firm* level such as size, age, firm structure, innovations, and efficiency (Dunne and Roberts, 1990; Bernard and Jensen, 2002; Carneiro and Portugal, 2003)
- the characteristics and effects of high excess job flows (churning) (Burgess, Lane, and Stevens, 2000a, 2000b)
- labor force adjustment, and in particular the *speed* of labor force adjustment if adjustment occurs.

Methods and Goals

In this paper, we

- combine worker-level wage records and measures of human capital with firm-level characteristics of the production function,
- use levels and changes in these variables to characterize the choice of adjustment method and speed.
- *In progress:* consider how workers fare after leaving downsizing firms, and analyze if observed differences in post-separation outcomes of workers provide clues to the choice of adjustment speed.

Human Capital

- Estimate a Mincerian wage equation

$$\ln w_{it} = \theta_i + \psi_j + X_{it}\beta + \epsilon_{ijt} \tag{1}$$

- Human capital is defined as the portable part of the wage rate:

$$\hat{h}_{it} = \hat{\theta}_i + X_{it}\hat{\beta} + \delta \tag{2}$$

- Can also use distributions of $\hat{\theta}$ only
- Estimated using the Abowd, Lengermann and McKinney method

Human Capital Distribution

- Distribution of h and its components are estimated firm-by-firm using kernel density estimator for g

$$G_{jt}(\hat{h}) = \int_{\underline{H}}^{\hat{h}} g_{jt}(x)dx$$

- Aggregate deciles (*skill proportions*) are estimated using all workers employed in 1992.

$$G(q_k^*) = \int_{\underline{H}}^{q_k^*} g(x)dx = k \cdot 0.25$$

- A firm's skill distribution is summarized by proportion of workers in each quartile.

$$\Gamma_{jt}(k) = G_{jt}(q_k^*) - G_{jt}(q_{k-1}^*)$$

Sample definition

In this paper, we select a particular sample of firms:

- Let net job flows between two time periods t_1 and t_2 be $JF_{t_1}^{t_2} = B_{t_2} - B_{t_1}$.
- Let $t_{max} : B_{t_{max}} = \max_t [B_t]$
- Select firms that have experienced a significant (30%) decline from their employment maximum between 1992 and 1997

$$-JF_{t_{max}}^{t^*} \geq 0.3 B_{t_{\text{max}}}, t^* > t_{max} \qquad (3)$$

  - in a single period: mass layoffs
  - over multiple periods: slow decliners
- All firms are still alive at the end of the sample period (no exiters)

Displacement Event

- Similar to previous studies: a mass layoff in period t occurs when at least 30% of workers, relative to firm j's maximum employment level, leave within a single period (t_{ML})
- Controlling for predecessor-successor links
- Classifying into no event / single / multiple displacements

$$D_{jt} = 1 \text{ } if \text{ } \frac{S_{jt}}{B^*_{jt}} > 0.3$$

... computed over 1992-1997

Side note: How restrictive is this sample?

One can wonder how restrictive our criteria are.

- (Abowd, McKinney, Vilhuber, 2005): strong positive correlation between experiencing a mass layoff event and firm death
- But: Mass layoffs are not synonymous with the death of an establishment or firm: (Abowd, McKinney, Vilhuber, 2005) 55 percent of firms that have one displacement event between 1993 and 1996 are still alive in 1997.

Data: Workers

We use the following data

- Unemployment Insurance Quarterly Earnings Reports
  - Time Period: 1990-2003
  - States: California, Illinois, and Maryland
- Human Capital Distributions
  - Estimated Using All Data
  - Decompose Earnings into 3 Components: Person, Firm, Experience
  - Estimate Firm Level Human Capital Distributions for 1992Q1

Data: Firms

- Firm Employment Dynamics
  - Time Period: 1992-1997
  - Survivors: Displacement or ONLY Slow Decline
  - Restricted Period Allows for Pre and Post Shock Analysis
- Census Business Register
  - Sales per Worker
  - Capital per Worker
  - 1992 and 1997 only

Table 1: Descriptive means

	Slow decline		Mass layoff		Multiple mass layoffs	
N	1756		1423		2262	
	Fraction	Std.	Fraction	Std.	Fraction	Std.
SIC C	0.025	0.156	0.049	0.216	0.122	0.327
SIC D	0.351	0.477	0.292	0.454	0.118	0.322
SIC E	0.045	0.208	0.065	0.247	0.038	0.191
SIC F	0.113	0.317	0.112	0.316	0.046	0.210
SIC G	0.075	0.263	0.104	0.305	0.264	0.441
SIC H	0.118	0.323	0.096	0.296	0.043	0.204
SIC I	0.270	0.444	0.279	0.449	0.366	0.482
	Mean	Std.	Mean	Std.	Mean	Std.
Capital stock/ worker	71.905	113.888	111.292	178.616	71.822	96.989
Sales / worker	395.126	2648.09	348.112	1516.95	131.024	408.895

Table 1: Descriptive means

	Slow decline		Mass layoff		Multiple mass layoffs	
	Mean	Std.	Mean	Std.	Mean	Std.
Employment 1993:2	339.339	1267.64	421.685	1265.74	251.631	508.147
White (firm mean)	0.645	0.223	0.661	0.216	0.637	0.230
Male (firm mean)	0.559	0.220	0.571	0.228	0.564	0.249
Age (firm mean)	37.232	3.758	37.273	4.020	34.942	5.158
Fulltime (firm mean)	0.954	0.051	0.944	0.061	0.877	0.101
Log real wage (firm mean)	10.334	0.484	10.248	0.532	9.669	0.708
ψ (firm mean)	0.167	0.239	0.133	0.259	-0.164	0.368
h (firm mean)	9.875	0.263	9.859	0.275	9.716	0.304
$\Gamma_h(1)$	0.238	0.154	0.244	0.161	0.335	0.181
$\Gamma_h(2)$	0.249	0.075	0.247	0.077	0.247	0.075
$\Gamma_h(4)$	0.267	0.151	0.259	0.153	0.205	0.158
$X\hat{\beta}$ (firm mean)	0.801	0.069	0.801	0.074	0.743	0.116
$\Gamma_{X\hat{\beta}}(1)$	0.242	0.113	0.245	0.118	0.333	0.178
$\Gamma_{X\hat{\beta}}(2)$	0.313	0.049	0.308	0.049	0.283	0.063
$\Gamma_{X\hat{\beta}}(4)$	0.293	0.092	0.296	0.096	0.258	0.109
θ (firm mean)	0.113	0.246	0.097	0.256	0.012	0.260
$\Gamma_\theta(1)$	0.249	0.156	0.253	0.162	0.304	0.163
$\Gamma_\theta(2)$	0.247	0.075	0.245	0.075	0.246	0.072
$\Gamma_\theta(4)$	0.264	0.152	0.255	0.150	0.218	0.145

Skip to before/after tables

Defining the "event"

For displacement (mass layoffs), the "event" is well defined. However, we need to define an event equivalently for slow decliners.

- Define t_{min} s.t. $B_{jt_{min}} = \min_t [B_{jt}]$
- t_{min} may or may not be the same as t^* or t_{ML}

Flows and churning

- job reallocation $JR_{j,t_1}^{t_2} = \left| JF_{j,t_1}^{t_2} \right|$.
- total worker flows over the time period: $WF_{j,t_1}^{t_2} = \sum_{t=t_1}^{t_2-1} \left(S_{jt} + A_{jt} \right)$,
- excess turnover, or churning: amount of worker flows that exceeds the minimal necessary worker flows to achieve net job flows: $CF_{j,t_1}^{t_2} = WF_{j,t_1}^{t_2} - JR_{j,t_1}^{t_2}$
- To compute rates *WFR* and *CFR*, respectively, we divide by the average employment over the period.

Table 2: Descriptive means, flows

Back to definitions Skip this

	Slow decline		Mass layoff		Multiple mass layoffs	
	Mean	Std.	Mean	Std.	Mean	Std.
Speed of decline $t_{min} - t_{max}$	12.656	4.480	10.007	5.254	9.517	4.994
Pct growth Overall period	-0.430	0.353	-0.681	0.624	-0.480	0.580
Pct growth $t_{min} - 8$	-0.323	0.286	-0.500	0.650	-0.348	0.568
Pct growth $t_{min} + 8$	-0.026	0.468	0.156	0.704	0.113	0.675
Churning $t_{min} - 8$	277.812	1581.90	449.197	1401.66	1317.33	4783.14
Churning $t_{min} + 8$	318.174	2202.84	363.096	917.929	876.237	1895.72
Worker flow rate $t_{min} - 8$	1.459	0.729	2.124	1.171	5.628	4.162
Worker flow rate $t_{min} + 8$	1.939	1.672	3.861	26.753	8.644	44.340
$\Delta\Gamma_h(1)$	-0.056	0.072	-0.053	0.110	-0.031	0.101
$\Delta\Gamma_h(2)$	-0.000	0.055	-0.008	0.080	0.002	0.065
$\Delta\Gamma_h(4)$	0.028	0.078	0.047	0.148	0.017	0.102
$\Delta\Gamma_{X\beta}(1)$	-0.093	0.076	-0.075	0.088	-0.064	0.092
$\Delta\Gamma_{X\beta}(2)$	-0.003	0.062	-0.001	0.071	0.006	0.062
$\Delta\Gamma_{X\beta}(4)$	0.060	0.060	0.050	0.083	0.038	0.066
$\Delta\Gamma_\theta(1)$	-0.016	0.071	-0.023	0.113	0.005	0.102
$\Delta\Gamma_\theta(2)$	0.009	0.045	0.002	0.077	0.008	0.060
$\Delta\Gamma_\theta(4)$	-0.003	0.075	0.020	0.146	-0.011	0.101

Models

Probit choice of one-period displacement vs. multi-period employment reduction

- Manufacturing only, includes capital stock variables
- All in-scope industries, using sales variables (no physical capital)
- All-in-scope firms, no sales or capital stock variables
- Repeat analysis for firms that only experienced a single displacement event

Manufacturing: demographics, No H, capital, laborProd

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Parameter     DF Estimate    Error       Limits      Square Pr > ChiSq
Intercept      1   1.5957   0.7515   0.1228   3.0687    4.51      0.0337
labor_prod2    1  -0.0020   0.0739  -0.1468   0.1428    0.00      0.9786
prop_acs       1   0.0942   0.0455   0.0050   0.1833    4.29      0.0384
exper_Mean     1  -1.8704   1.4824  -4.7758   1.0349    1.59      0.2070
male_Mean      1   0.0074   0.2703  -0.5224   0.5371    0.00      0.9782
white_Mean     1  -0.3933   0.2377  -0.8592   0.0725    2.74      0.0979
age_Mean       1   0.0035   0.0217  -0.0391   0.0460    0.03      0.8735
herf_2         1  -0.6185   0.7101  -2.0102   0.7732    0.76      0.3837
multi_unit     1   0.2853   0.1289   0.0326   0.5380    4.90      0.0269
lemp_start     1   0.0192   0.0558  -0.0902   0.1286    0.12      0.7305
Log Likelihood              -547.5142673
Number of Observations Used         819
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✢ Skip to discussion

Manufacturing: No demographics, H, capital, laborProd

Parameter	DF	Estimate	Error	Limits		Square	Pr > ChiSq
Intercept	1	-0.5140	0.7053	-1.8963	0.8683	0.53	0.4662
labor_prod2	1	0.0501	0.0766	-0.1000	0.2002	0.43	0.5131
prop_acs	1	0.1050	0.0449	0.0170	0.1930	5.47	0.0193
h_pct0to25	1	0.9616	0.5240	-0.0654	1.9886	3.37	0.0665
h_pct25to50	1	0.1326	0.9955	-1.8185	2.0836	0.02	0.8941
h_pct75to100	1	-0.1868	0.8225	-1.7988	1.4253	0.05	0.8204
herf_2	1	-0.6056	0.7089	-1.9950	0.7837	0.73	0.3929
multi_unit	1	0.2735	0.1284	0.0219	0.5251	4.54	0.0332
lemp_start	1	0.0070	0.0547	-0.1002	0.1142	0.02	0.8985

Log Likelihood -545.7982393
Number of Observations Used 819

✣ Skip to discussion

Manufacturing: demographics, H, capital, laborProd

Parameter	DF	Estimate	Error	Limits		Square	Pr > ChiSq
Intercept	1	-0.3816	1.3048	-2.9389	2.1758	0.09	0.7700
labor_prod2	1	0.0543	0.0773	-0.0972	0.2059	0.49	0.4824
prop_acs	1	0.1014	0.0459	0.0115	0.1914	4.89	0.0270
exper_Mean	1	-0.7211	1.5267	-3.7134	2.2713	0.22	0.6367
male_Mean	1	0.4986	0.3503	-0.1880	1.1853	2.03	0.1546
white_Mean	1	-0.0082	0.2847	-0.5662	0.5497	0.00	0.9769
age_Mean	1	-0.0036	0.0223	-0.0474	0.0401	0.03	0.8710
h_pct0to25	1	1.3463	0.7441	-0.1121	2.8046	3.27	0.0704
h_pct25to50	1	0.1295	1.0573	-1.9428	2.2018	0.01	0.9025
h_pct75to100	1	0.0558	0.8870	-1.6827	1.7944	0.00	0.9498
herf_2	1	-0.6413	0.7139	-2.0406	0.7580	0.81	0.3691
multi_unit	1	0.2806	0.1295	0.0269	0.5344	4.70	0.0302
lemp_start	1	0.0284	0.0560	-0.0813	0.1382	0.26	0.6116

Log Likelihood -544.0842143

Number of Observations Used 819

Skip to discussion

Manufacturing: demographics, H, no capital, laborProd

Parameter	DF	Estimate	Error	Limits		Square	Pr > ChiSq
Intercept	1	-0.6369	1.2964	-3.1778	1.9040	0.24	0.6232
labor_prod2	1	0.1138	0.0724	-0.0281	0.2558	2.47	0.1160
exper_Mean	1	-0.5941	1.5156	-3.5645	2.3764	0.15	0.6951
male_Mean	1	0.6177	0.3465	-0.0614	1.2968	3.18	0.0746
white_Mean	1	0.0555	0.2827	-0.4986	0.6097	0.04	0.8443
age_Mean	1	-0.0013	0.0222	-0.0449	0.0422	0.00	0.9517
h_pct0to25	1	1.2882	0.7436	-0.1691	2.7456	3.00	0.0832
h_pct25to50	1	0.0562	1.0560	-2.0137	2.1260	0.00	0.9576
h_pct75to100	1	0.0774	0.8861	-1.6593	1.8141	0.01	0.9304
herf_2	1	-0.8332	0.7112	-2.2272	0.5608	1.37	0.2414
multi_unit	1	0.2894	0.1293	0.0360	0.5428	5.01	0.0252
lemp_start	1	0.0451	0.0554	-0.0635	0.1536	0.66	0.4158
Log Likelihood			-546.5447687				
Number of Observations Used			819				

✣ Skip to discussion

Manufacturing: demographics, H, no capital, no laborProd

Parameter	DF	Estimate	Error	Limits		Square	Pr > ChiSq
Intercept	1	-0.0804	1.2506	-2.5315	2.3707	0.00	0.9487
exper_Mean	1	-0.4802	1.5212	-3.4617	2.5014	0.10	0.7523
male_Mean	1	0.5995	0.3460	-0.0787	1.2778	3.00	0.0832
white_Mean	1	0.0434	0.2822	-0.5098	0.5966	0.02	0.8778
age_Mean	1	-0.0033	0.0222	-0.0467	0.0401	0.02	0.8816
h_pct0to25	1	1.0339	0.7250	-0.3871	2.4548	2.03	0.1539
h_pct25to50	1	-0.0596	1.0537	-2.1248	2.0057	0.00	0.9549
h_pct75to100	1	0.0855	0.8860	-1.6510	1.8220	0.01	0.9231
herf_2	1	-0.8825	0.7098	-2.2737	0.5087	1.55	0.2137
multi_unit	1	0.3076	0.1288	0.0553	0.5600	5.71	0.0169
lemp_start	1	0.0584	0.0547	-0.0488	0.1656	1.14	0.2857
Log Likelihood			-547.7811916				
Number of Observations Used			819				

Skip to discussion

All industries: Tables 9 and 10

Parameter	DF	Estimate	Error	Limits		Square	Pr > ChiSq
Intercept	1	0.9214	0.5450	-0.1468	1.9896	2.86	0.0909
labor_prod2	1	-0.0998	0.0288	-0.1562	-0.0434	12.03	0.0005
exper_Mean	1	-1.4888	0.6630	-2.7883	-0.1894	5.04	0.0247
male_Mean	1	0.8442	0.1393	0.5712	1.1173	36.72	<.0001
white_Mean	1	0.3106	0.1309	0.0541	0.5671	5.63	0.0176
age_Mean	1	-0.0021	0.0112	-0.0241	0.0199	0.04	0.8514
h_pct0to25	1	1.3439	0.3427	0.6722	2.0155	15.38	<.0001
h_pct25to50	1	-1.0248	0.5918	-2.1848	0.1351	3.00	0.0833
h_pct75to100	1	-0.5295	0.4319	-1.3760	0.3170	1.50	0.2202
herf_2	1	-0.2358	0.4778	-1.1722	0.7006	0.24	0.6216
multi_unit	1	-0.0498	0.0564	-0.1604	0.0608	0.78	0.3776
lemp_start	1	0.1138	0.0270	0.0608	0.1668	17.72	<.0001
Log Likelihood			-2064.191914				

Parameter	DF	Estimate	Error	Limits		Square	Pr > ChiSq
Intercept	1	0.4745	0.5285	-0.5613	1.5103	0.81	0.3693
labor_prod2							
exper_Mean	1	-1.5841	0.6614	-2.8803	-0.2878	5.74	0.0166
male_Mean	1	0.9007	0.1380	0.6301	1.1712	42.57	<.0001
white_Mean	1	0.3157	0.1306	0.0597	0.5717	5.84	0.0156
age_Mean	1	-0.0010	0.0112	-0.0229	0.0210	0.01	0.9311
h_pct0to25	1	1.5533	0.3367	0.8933	2.2132	21.28	<.0001
h_pct25to50	1	-1.0334	0.5905	-2.1907	0.1239	3.06	0.0801
h_pct75to100	1	-0.6963	0.4283	-1.5357	0.1431	2.64	0.1040
herf_2	1	-0.3609	0.4762	-1.2942	0.5723	0.57	0.4484
multi_unit	1	-0.0572	0.0563	-0.1676	0.0532	1.03	0.3098
lemp_start	1	0.1066	0.0269	0.0539	0.1593	15.71	<.0001

No multiple displacements, Tables 12 and 13

Parameter	DF	Estimate	Error	Limits		Square	Pr > ChiSq
Intercept	1	-0.8910	0.7049	-2.2727	0.4907	1.60	0.2063
labor_prod2	1	0.0554	0.0356	-0.0144	0.1251	2.42	0.1198
exper_Mean	1	-0.3470	0.8712	-2.0544	1.3605	0.16	0.6904
male_Mean	1	0.3256	0.1807	-0.0285	0.6798	3.25	0.0715
white_Mean	1	0.3342	0.1639	0.0130	0.6554	4.16	0.0414
age_Mean	1	0.0008	0.0137	-0.0261	0.0276	0.00	0.9562
h_pct0to25	1	0.6956	0.4244	-0.1363	1.5274	2.69	0.1013
h_pct25to50	1	-0.3946	0.7126	-1.7913	1.0020	0.31	0.5797
h_pct75to100	1	-0.4468	0.5145	-1.4551	0.5616	0.75	0.3852
herf_2	1	0.3777	0.5164	-0.6344	1.3898	0.53	0.4645
multi_unit	1	0.0037	0.0674	-0.1284	0.1359	0.00	0.9558
lemp_start	1	0.1240	0.0315	0.0623	0.1858	15.52	<.0001
Log Likelihood			-1456.37893				

Parameter	DF	Estimate	Error	Limits		Square	Pr > ChiSq
Intercept	1	-0.6255	0.6835	-1.9652	0.7141	0.84	0.3601
labor_prod2							
exper_Mean	1	-0.2988	0.8706	-2.0052	1.4076	0.12	0.7315
male_Mean	1	0.2973	0.1798	-0.0550	0.6497	2.74	0.0981
white_Mean	1	0.3255	0.1637	0.0045	0.6464	3.95	0.0469
age_Mean	1	-0.0001	0.0137	-0.0269	0.0268	0.00	0.9966
h_pct0to25	1	0.5783	0.4174	-0.2399	1.3965	1.92	0.1659
h_pct25to50	1	-0.3925	0.7126	-1.7891	1.0040	0.30	0.5817
h_pct75to100	1	-0.3714	0.5120	-1.3749	0.6320	0.53	0.4682
herf_2	1	0.4284	0.5156	-0.5822	1.4389	0.69	0.4061
multi_unit	1	0.0049	0.0674	-0.1272	0.1370	0.01	0.9424
lemp_start	1	0.1280	0.0314	0.0665	0.1895	16.64	<.0001

Tables, Highlights

	Manufacturing		All industries		No multis	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
$\Gamma_h(1)$	1.3463	0.7441*	1.3439	0.3427 **	0.6956	0.4244*
$\Gamma_h(2)$	0.1295	1.0573	-1.0248	0.5918 *	-0.3946	0.7126
$\Gamma_h(4)$	0.0558	0.8870	-0.5295	0.4319	-0.4468	0.5145
Exper Mean	-0.7211	1.5267	-1.4888	0.6630 **	-0.3470	0.8712
Male Mean	0.4986	0.3503	0.8442	0.1393 **	0.3256	0.1807*
White Mean	-0.0082	0.2847	0.3106	0.1309 **	0.3342	0.1639**
Age Mean	-0.0036	0.0223	-0.0021	0.0112	0.0008	0.0137
Herf2	-0.6413	0.7139	-0.2358	0.4778	0.3777	0.5164
Capital intensity	0.1014	0.0459**				
Labor prod.	0.0543	0.0773	-0.0998	0.0288 **	0.0554	0.0356
Multi-unit	0.2806	0.1295**	-0.0498	0.0564	0.0037	0.0674
Employment (1992)	0.0284	0.0560	0.1138	0.0270 **	0.1240	0.0315**
Log Likelihood	-544.08		-2064.19		-1456.37	
Observations	819		3736		2184	

Back to discussion

Discussion: Highlights

- $\Gamma(1)$ (fraction of workers in the lowest quartile of the human capital distribution) is significantly and positively related to the likelihood of the firm choosing displacement
- $\Gamma(2)$ is negatively related for only a few specifications, likely related to distinct multi-displacers
- firms that are predominantly male and white are generally more likely to use displacement
- Industry structure (SIC2 concentration index) does not seem to matter, but industry dummies do (not reported)

Jump to table

Discussion: Differences

- Some distinct differences between manufacturing and other industries:
  - capital intensive (prop_acs) firms have a slight tendency to prefer faster layoffs.
  - When controlling for capital, labor productivity does not matter;
  - firms with multiple establishment (multi_unit) more easily resort to displacement in manufacturing, but not in the expanded sample
  - smaller firms are less likely to displace in the expanded sample, but it doesn't matter in manufacturing

Jump to table

Conclusion

- Identified firms that received a demand or productivity shock
  Survivors reduced labor demand by 30%
- Choice of Adjustment Speed, Slow Decline compared to Mass Layoff(s)
  Relatively low skill firms are more likely to have a displacement
- Outcomes by Choice of Adjustment Speed
  - Post shock, firms with a displacement grew faster (15% versus -3%)
  - Firms with a displacement increased skill levels twice as much as slow decliners (especially θ)

Next steps

- Expand analysis to measure the impact on workers that were part of either employment reduction method - different?
- Expand analysis to cover changes in variables, rather than just stocks (in firm-level variables)

A bit of an advertisement

We used the following datasets, available in the U.S. Census Bureau's Research Data Centers

- Currently available:
  - Census Business Register
  - LEHD Business Register Bridge
  - LEHD Employer Characteristics File
- Soon available (preliminary version):
  - LEHD Employment History Files
  - LEHD Successor-Predecessor Files
  - LEHD Human Capital File
- This research is in support of making these files more useful and accessible to researchers.
- For access, see http://www.ces.census.gov
- For more information on LEHD datasets, see http://lehd.dsd.census.gov and http://vrdc.ciser.cornell.edu

Thank you.

Variable definitions

Explanation of short variable names:

labor_prod2	Labor productivity
prop_acs	Capital intensity
exper_Mean	Firm avg. experience
male_Mean	Proportion of men
white_Mean	Proportion white
age_Mean	Firm avg. age
h_pct0to25	$\Gamma(1)$
h_pct25to50	$\Gamma(2)$
h_pct75to100	$\Gamma(4)$
herf_2	Herfindahl SIC2
multi_unit	Firm has multiple sites
lemp_start	Employment at start of period

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