



University of Massachusetts Amherst

How Did Employee Ownership Firms Weather The Last Two Recessions? Employee Ownership and Employment Stability in the US : 1999-2008

by

Fidan Ana Kurtulus

University of Massachusetts Amherst

Department of Economics

Doug Kruse

Rutgers University

School of Management and Labor Relations

Research Questions

- Do firms with employee ownership programs exhibit greater employment stability in the face of economic downturns?
- Are firms with EO programs less likely to lay off workers during negative shocks?
- The idea is to understand whether EO companies provide greater employment security to their workers.
- Our goal is to update earlier studies and examine how EO firms weathered the two recessions of the 2000s in terms of employment stability relative to non-EO firms.

Theoretical Framework

Why would we expect firms with employee ownership programs to exhibit greater employment security during economic downturns?

- EO firms may provide greater employment security as part of an overall effort to build a more cooperative workplace culture
- This cooperative culture can increase worker effort and general willingness on the part of workers to make adjustments during times of economic distress, which can increase firm productivity and lower the firm's need to lay off workers during financial distress.
- Employee ownership can also increase firm revenues as employees may be more willing to share technical information with management, which can increase production efficiency.
- This cooperative culture can also reduce bargaining costs and workplace conflict costs, thereby reducing the need to lay off workers during financial distress.
- Employee ownership may have an employment stabilizing effect by making average compensation more flexible from the firm's perspective.

Related Past Studies

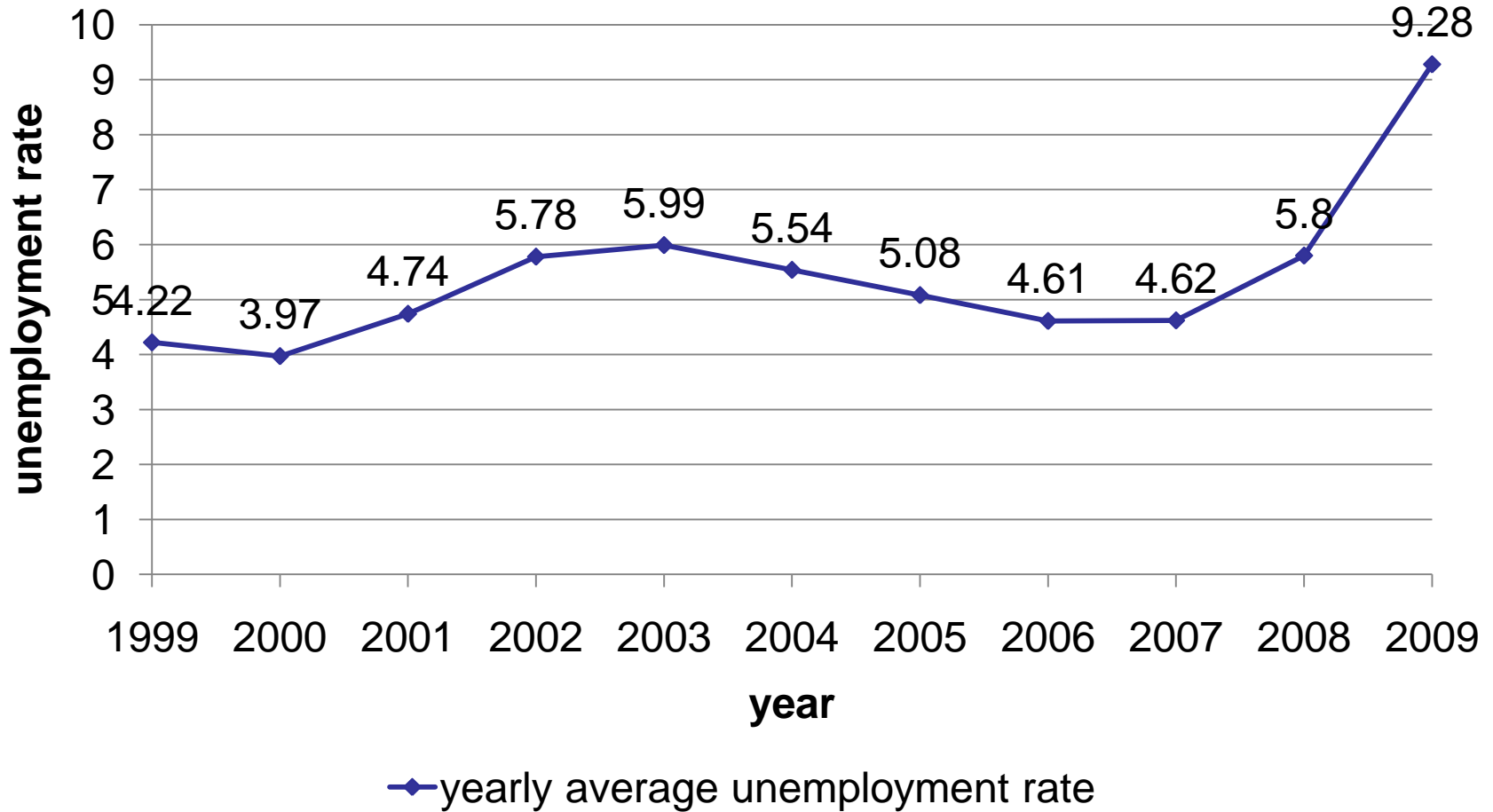
A number of past studies examined related issues, and our goal is to update some of these earlier findings and understand how EO firms weathered the recessions of the 2000s.

- Kruse (1991) found that in the manufacturing sector, profit-sharing firms had more stable employment (smaller employment decreases) than fixed-wage firms during economic downturns. Used F5500-CompuStat data on a panel of 3000 publicly traded companies during 1971-1985.
- Pencavel and Craig (1992) found similar results for plywood worker cooperatives in the U.S. Pacific Northwest: co-ops keep employment stable but rather adjust wages in response to a negative shock to product price
- Several other studies using panel data on co-ops from various countries in Europe and S. America.

What We Do

- We use F5500-CompuStat matched data on a panel of publicly-traded companies during 1999-2008 to test whether EO firms reduce their employment levels less than non-EO firms during economic downturns
- We consider a wide variety of measures of firm employee ownership
- We first use a fairly broad measure of economic downturn: yearly average unemployment rate
- We will also go on to examine response to alternative measures of economic distress, namely declines in the yearly average employment-to-population ratio, as well as response to firm-specific negative shocks: declines in firm sales, and declines in firm stock price

Average U.S. Unemployment Rate, 1999-2009



Data

- The firm data for the project were drawn from two sources:
 - Standard and Poor's Industrial CompuStat database on publicly-traded companies
 - Contains info on firm characteristics including total employment and financial information
 - Form 5500 pension plan data collected by the U.S. Department of Labor
 - Contains detailed info on employee ownership in defined contribution pension plans and Employee Stock Ownership Plans (ESOPs).
- We matched firm records from CompuStat and F5500 using each firm's unique IRS Employer Identification Number for the ten years spanning 1999-2008

Data, continued...

- Some of the advantages of our data:
 - Large and representative sample of publicly-traded companies, which is an improvement over datasets drawn from special surveys suffering from small sample sizes and bias from self-selection of respondents.
 - We follow firms over time, so we can conduct longitudinal analyses to help control for unobserved firm-specific effects.
 - The data span a decade when the U.S. experienced two recessions, in 2001 and 2008, allowing us to examine how employee ownership firms weathered these economic downturns relative to non-employee ownership companies.
 - We have a rich array of measures of employee ownership at companies, including the presence of employee ownership through pension programs and ESOPs and the extent of such employee ownership in terms of total participation and share of firm owned by workers....in particular the following measures of 8 employee ownership:

Employee Ownership Variables in our Analyses

ANYEO = 1 if firm i reported any employee ownership stock in any of its defined contribution pension plans, including employee ownership in 401(k) Plans, Employee Stock Ownership Plans (ESOPs), and deferred profit sharing plans, in year t ; 0 otherwise. [20% of firms =1 in the analysis sample]

ESOPI = 1 if firm i reported any Employee Stock Ownership Plans (ESOPs) in year t ; 0 otherwise. [8% of firms =1 in the analysis sample]

EOEEI = value of employee ownership stock per employee (all) at firm i in year t (in \$1000s). [mean:\$2,560 in the analysis sample]

EOPERCI = share of firm i owned by employees in year t . [mean:1% in the analysis sample]

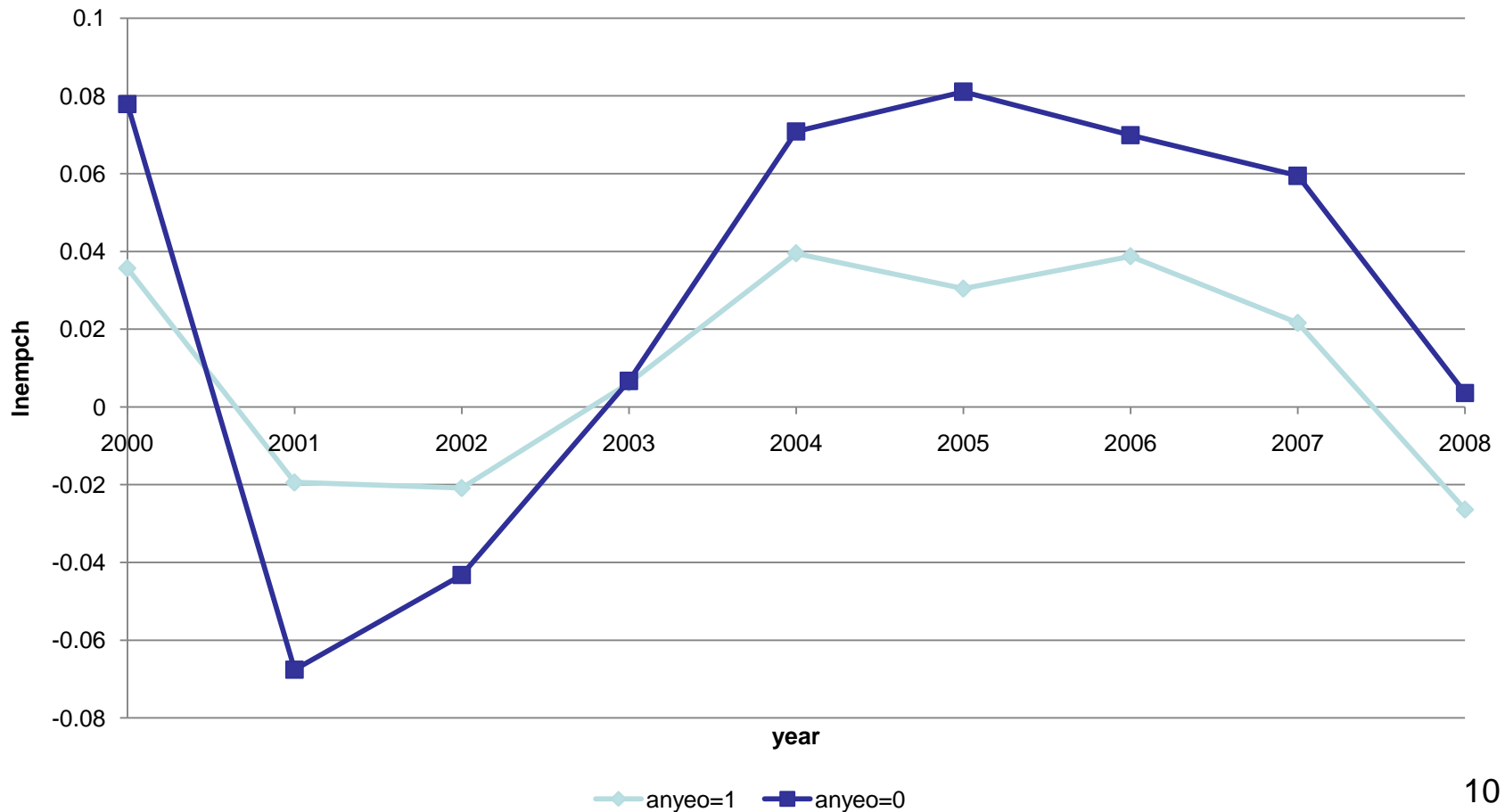
EOSHARE = share of workers at firm i participating in employee ownership in year t .
[mean:15% in the analysis sample]

ESOPSHARE = share of workers at firm i participating in ESOPs in year t .
[mean:5% in the analysis sample]

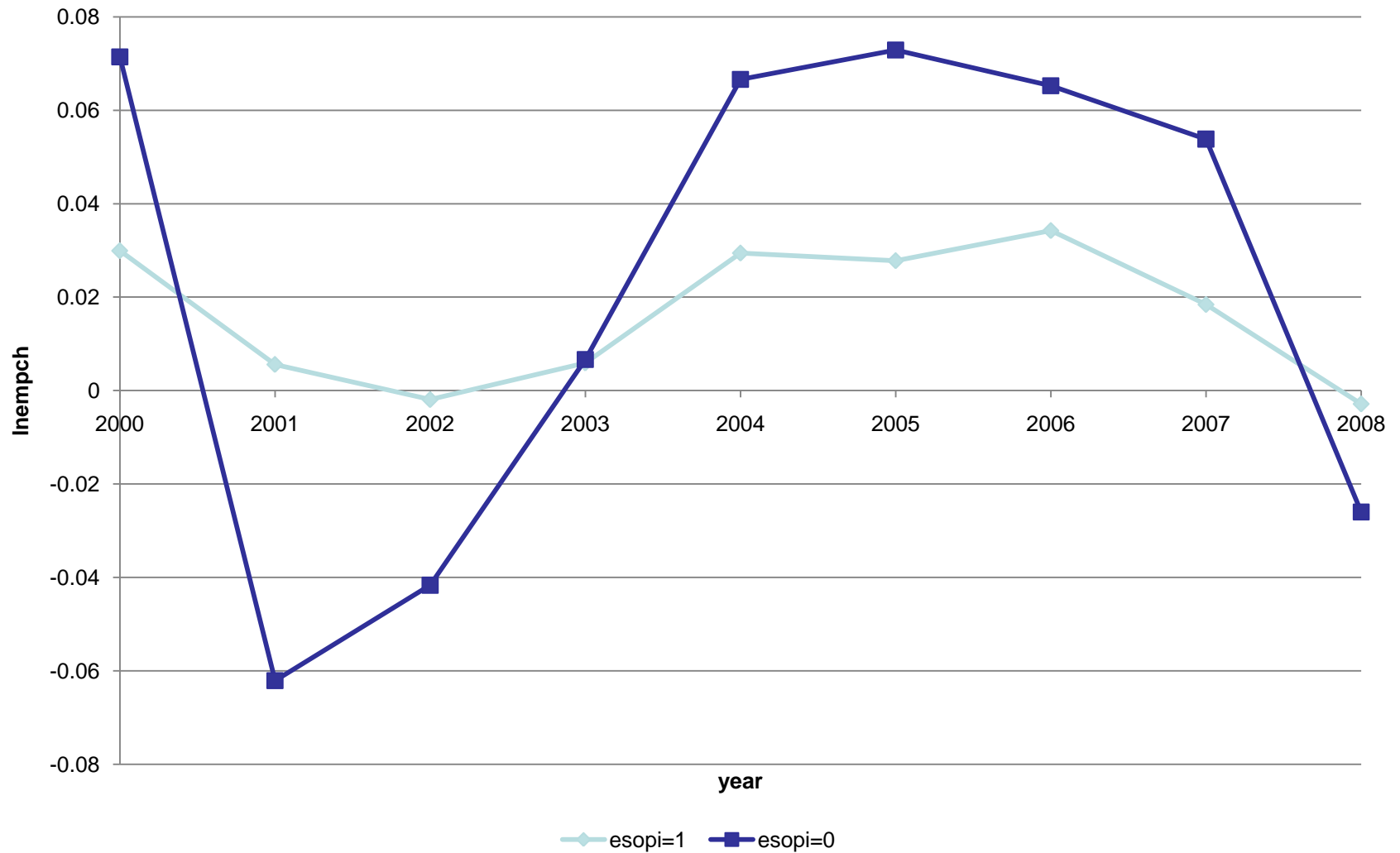
Simple trend graphs reveal that employment was indeed more stable at EO than at non-EO firms during 2000-2008:

- employment declines (% change) are smaller at EO firms during economic downturns
- employment increases are also smaller

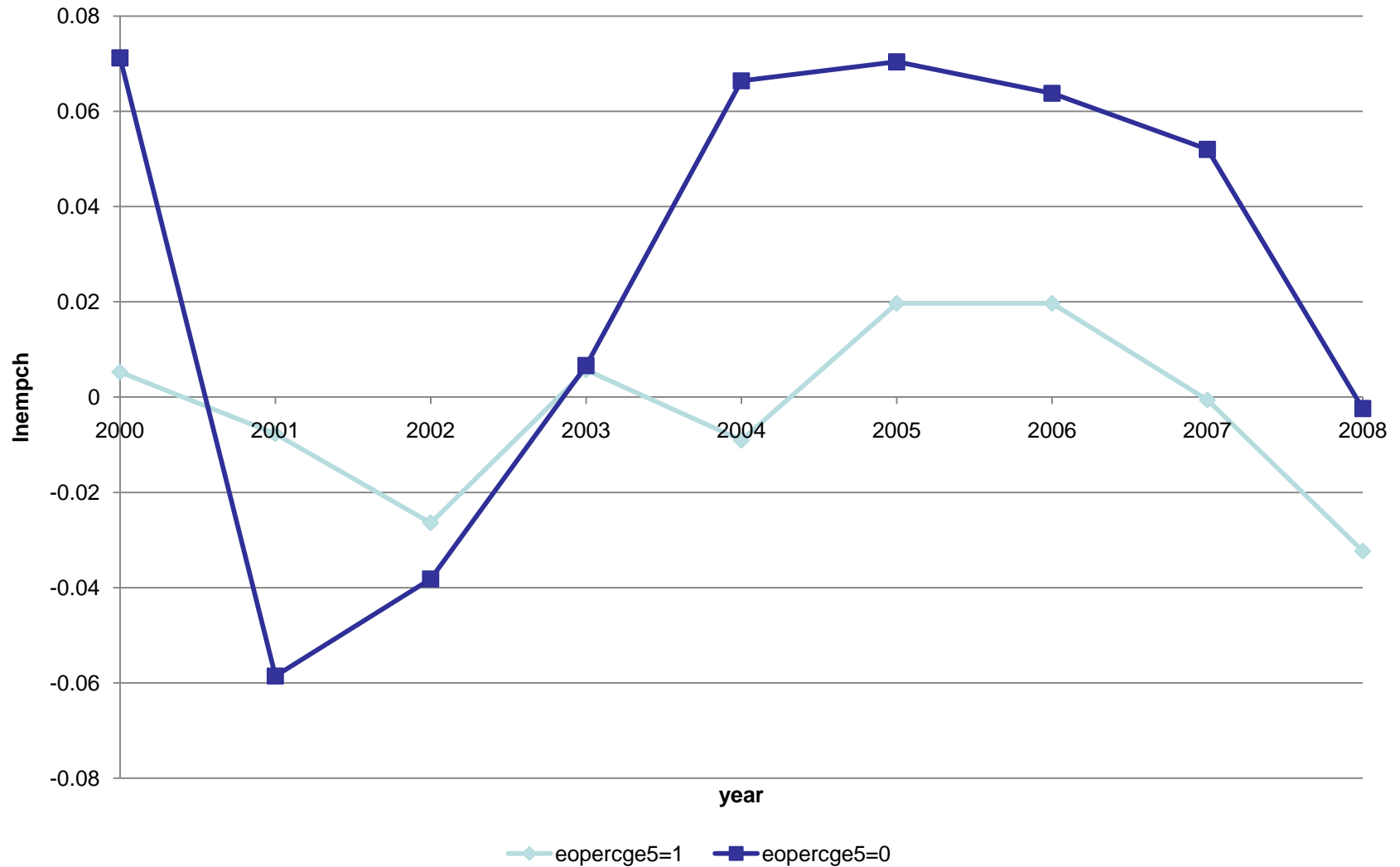
2000-2008: LNEMPCH by ANYEO=1 vs. ANYEO=0 (firm reported any eo stock)



2000-2008: LNEMPCH BY ESOP=1 VS. ESOP=0 (firm reported any ESOP plans)



2000-2008: LNEMPCH BY EOPERC $\geq 5\%$ vs. EOPERC $< 5\%$ (share of firm owned by employees)



Methodology

We estimate a series of least squares regressions to understand whether firms with EO programs exhibit greater employment stability in the face of economic downturns, where we first consider a fairly broad proxy of economic conditions, namely the unemployment rate.

TEST #1: Do EO firms have smaller declines in employment when the unemployment rate goes up?

TEST #2: How does employment in EO firms respond to the *magnitude* of increases and decreases in the unemployment rate?

Both of these tests:

- use alternative measures of EO
- examine results both with and without firm controls
- examine results both with and without firm fixed effects

Methodology (cont.)

Specification for TEST #1:

$$\text{LNEMPCH}_{it} = \beta_0 + \beta_1 \text{EO}_{it} + \beta_2 \text{UR_INCDUM}_{it} + \beta_3 \text{UR_INCDUM}_{it} * \text{EO}_{it} \\ + \mathbf{X}_{it} \beta_4 + \theta_i + \varepsilon_{it}$$

where:

LNEMPCH_{it} = ln (employment) at firm i in year t – ln(employment) at firm i in year t-1

EO_{it} = dummy equaling 1 if firm i has employee ownership program in year t

UR_INCDUM_{it} = dummy variable equaling 1 if the average unemployment rate increased since the previous year, i.e., $(\text{UR}_t - \text{UR}_{t-1}) > 0$, 0 otherwise

\mathbf{X}_{it} = vector of time varying firm controls for firm i in year t: lagged total employment, capital stock growth (to account for any large changes in employment due to mergers or divestitures), industry, industry-specific trends (linear and quadratic).

θ_i = firm fixed effects

Hypothesis 1: $\beta_2 < 0$ and $\beta_3 > 0$, i.e., employment will decline by a smaller percentage at EO firms than at non-EO firms when the unemployment rate increases.

Methodology (cont.)

Specification for TEST #2:

$$\text{LNEMPCH}_{it} = \beta_0 + \beta_1 \text{EO}_{it} + \beta_2 \text{UR_INC}_{it} + \beta_3 \text{UR_DEC}_{it} + \beta_4 \text{UR_INC}_{it} * \text{EO}_{it} \\ + \beta_5 \text{UR_DEC}_{it} * \text{EO}_{it} + \mathbf{X}_{it} \beta_1 + \theta_i + \varepsilon_{it}$$

where

$\text{UR_INC}_{it} = (\text{UR}_t - \text{UR}_{t-1})$ if $(\text{UR}_t - \text{UR}_{t-1}) > 0$, 0 otherwise

$\text{UR_DEC}_{it} = |(\text{UR}_t - \text{UR}_{t-1})|$ if $(\text{UR}_t - \text{UR}_{t-1}) < 0$, 0 otherwise

Hypothesis 2: $\beta_2 < 0$ and $\beta_4 > 0$, i.e., employment will decline by a smaller percentage at EO firms than at non-EO firms when the unemployment rate increases by one percentage point.

Methodology (cont.)

- We estimate these two equations first without firm controls; we then incrementally add firm controls and firm fixed effects to each equation. (Test#1: Columns 1-3 ; Test#2: Columns 4-6)
- We estimate these regressions for each of our employee ownership variables in turn:
 - ANYEO
 - ESOP1
 - EOEEI
 - EOPERICI
 - EOSHARE
 - ESOPSHARE
- We find support for Hypothesis 1 and Hypothesis 2 in terms of almost all our employee ownership variables, as the following tables illustrate....

REGRESSION RESULTS

Relationship Between Employment Stability and ANYEO (firm reported any eo stock)

	Dependent Variable: lnempch					
	(1)	Test 1: (2)	(3)	(4)	Test 2: (5)	(6)
anyeo	-0.052*** (0.008)	-0.036*** (0.006)	-0.049*** (0.013)	-0.020* (0.011)	-0.016 (0.010)	-0.032** (0.015)
ur_incdum	-0.107*** (0.009)	-0.086*** (0.008)	-0.088*** (0.008)			
ur_incdumXanyeo	0.053*** (0.010)	0.033*** (0.009)	0.036*** (0.009)			
ur_inc				-0.075*** (0.012)	-0.060*** (0.011)	-0.062*** (0.011)
ur_dec				0.127*** (0.028)	0.113*** (0.026)	0.113*** (0.026)
ur_incXanyeo				0.029** (0.015)	0.020 (0.013)	0.024* (0.013)
ur_decXanyeo				-0.073** (0.032)	-0.048* (0.028)	-0.034 (0.029)
Firm Controls	NO	YES	YES	NO	YES	YES
Firm Fixed Effects	NO	NO	YES	NO	NO	YES
Constant	0.087*** (0.006)	0.871 (0.700)	0.108*** (0.020)	0.032*** (0.009)	0.883 (0.701)	0.121*** (0.021)
Observations	50974	50974	50974	50974	50974	50974
Number of gvkey			9196			9196
Adjusted R-squared	0.004	0.228	0.199	0.004	0.228	0.199

- The reduction in employment in response to an increase in the unemployment rate is 3.6 percentage points smaller at EO firms than at non-EO firms (Hypothesis 1 is supported)
- EO firms reduce employment by 2.4 percentage points less than non-EO firms in response to a 1 percentage point increase in the unemployment rate, so employment is more stable at EO firms during economic downturns (Hypothesis 2 is supported)

Relationship Between Employment Stability and ESOPs (firm reported any ESOPs)

	Dependent Variable: lnempch					
	(1)	Test 1: (2)	(3)	(4)	Test 2: (5)	(6)
esopi	-0.057*** (0.008)	-0.035*** (0.007)	-0.043*** (0.015)	-0.032*** (0.010)	-0.019** (0.009)	-0.025 (0.016)
ur_inc dum	-0.105*** (0.008)	-0.082*** (0.007)	-0.083*** (0.007)			
ur_inc dum X esopi	0.070*** (0.011)	0.043*** (0.009)	0.048*** (0.009)			
ur_inc				-0.093*** (0.010)	-0.066*** (0.009)	-0.061*** (0.009)
ur_dec				0.104*** (0.024)	0.099*** (0.022)	0.109*** (0.023)
ur_inc X esopi				0.071*** (0.013)	0.044*** (0.011)	0.043*** (0.011)
ur_dec X esopi				-0.060** (0.030)	-0.037 (0.026)	-0.036 (0.027)
Firm Controls	NO	YES	YES	NO	YES	YES
Firm Fixed Effects	NO	NO	YES	NO	NO	YES
Constant	0.079*** (0.005)	0.837 (0.720)	0.102*** (0.020)	0.035*** (0.008)	0.846 (0.721)	0.112*** (0.021)
Observations	49413	49413	49413	49413	49413	49413
Adjusted R-squared	0.004	0.229	0.200	0.005	0.230	0.200
Number of gvkey			9019			9019

Relationship Between Employment Stability and EOEI (value of eo stock per worker)

	Dependent Variable: lnempch					
	Test 1:			Test 2:		
	(1)	(2)	(3)	(4)	(5)	(6)
eoeei	-0.001* (0.000)	-0.000 (0.000)	-0.001 (0.001)	-0.001 (0.001)	-0.000 (0.001)	-0.002** (0.001)
ur_inc dum	-0.096*** (0.007)	-0.079*** (0.006)	-0.081*** (0.007)			
ur_inc dum X eoeei	0.001 (0.000)	0.000 (0.000)	0.001** (0.000)			
ur_inc				-0.070*** (0.010)	-0.056*** (0.009)	-0.059*** (0.009)
ur_dec				0.110*** (0.023)	0.102*** (0.021)	0.103*** (0.022)
ur_inc X eoeei				0.001 (0.001)	0.000 (0.001)	0.001* (0.001)
ur_dec X eoeei				0.000 (0.001)	-0.000 (0.001)	0.001 (0.001)
Firm Controls	NO	YES	YES	NO	YES	YES
Firm Fixed Effects	NO	NO	YES	NO	NO	YES
Constant	0.077*** (0.005)	0.866 (0.700)	0.100*** (0.020)	0.029*** (0.008)	0.882 (0.700)	0.117*** (0.021)
Observations	50966	50966	50966	50966	50966	50966
Adjusted R-squared	0.004	0.228	0.199	0.004	0.228	0.199
Number of gvkey			9195			9195

Relationship Between Employment Stability and EOPERCI_(share of firm owned by employees)

	Dependent Variable: lnempch					
	(1)	Test 1:		(4)	Test 2:	
		(2)	(3)		(5)	(6)
eoperci	-0.584*** (0.079)	-0.379*** (0.065)	-0.361*** (0.122)	-0.533*** (0.147)	-0.350*** (0.111)	-0.349** (0.163)
ur_inc dum	-0.106*** (0.008)	-0.082*** (0.007)	-0.083*** (0.007)			
ur_inc dum X eoperci	0.491*** (0.098)	0.308*** (0.086)	0.344*** (0.094)			
ur_inc				-0.098*** (0.010)	-0.068*** (0.009)	-0.063*** (0.010)
ur_dec				0.096*** (0.025)	0.095*** (0.022)	0.106*** (0.023)
ur_inc X eoperci				0.637*** (0.164)	0.397*** (0.122)	0.422*** (0.133)
ur_dec X eoperci				-0.097 (0.392)	-0.072 (0.328)	-0.025 (0.330)
Firm Controls	NO	YES	YES	NO	YES	YES
Firm Fixed Effects	NO	NO	YES	NO	NO	YES
Constant	0.084*** (0.006)	0.758 (0.769)	0.103*** (0.021)	0.042*** (0.008)	0.768 (0.771)	0.115*** (0.021)
Observations	45062	45062	45062	45062	45062	45062
Number of gvkey			8299			8299
Adjusted R-squared	0.005	0.225	0.199	0.006	0.225	0.199

Relationship Between Employment Stability and EOSHARE (share of workers at firm participating in eo)

	Dependent Variable: lnempch					
	Test 1:			Test 2:		
	(1)	(2)	(3)	(4)	(5)	(6)
eoshare	-0.082*** (0.010)	-0.061*** (0.008)	-0.165*** (0.016)	-0.055*** (0.014)	-0.044*** (0.012)	-0.149*** (0.020)
ur_inc dum	-0.109*** (0.009)	-0.084*** (0.008)	-0.084*** (0.008)			
ur_inc dumXeoshare	0.068*** (0.013)	0.037*** (0.011)	0.043*** (0.011)			
ur_inc				-0.097*** (0.012)	-0.067*** (0.010)	-0.062*** (0.011)
ur_dec				0.108*** (0.027)	0.102*** (0.025)	0.109*** (0.025)
ur_incXeoshare				0.065*** (0.018)	0.034** (0.016)	0.038** (0.016)
ur_decXeoshare				-0.059 (0.039)	-0.038 (0.035)	-0.027 (0.036)
Firm Controls	NO	YES	YES	NO	YES	YES
Firm Fixed Effects	NO	NO	YES	NO	NO	YES
Constant	0.088*** (0.006)	0.839 (0.720)	0.122*** (0.020)	0.041*** (0.009)	0.851 (0.721)	0.130*** (0.021)
Observations	49411	49411	49411	49411	49411	49411
Number of gvkey			9018			9018
Adjusted R-squared	0.005	0.230	0.201	0.006	0.230	0.201

Relationship Between Employment Stability and ESOPSHARE (share of workers at firm participating in ESOPs)

	Dependent Variable: Inempch					
	Test 1:			Test 2:		
	(1)	(2)	(3)	(4)	(5)	(6)
esopshare	-0.092*** (0.013)	-0.062*** (0.011)	-0.109*** (0.017)	-0.048*** (0.015)	-0.031** (0.014)	-0.079*** (0.019)
ur_inc dum	-0.104*** (0.007)	-0.082*** (0.007)	-0.082*** (0.007)			
ur_inc dum X esopshare	0.103*** (0.015)	0.065*** (0.013)	0.071*** (0.012)			
ur_inc				-0.092*** (0.010)	-0.065*** (0.009)	-0.060*** (0.009)
ur_dec				0.104*** (0.024)	0.099*** (0.022)	0.108*** (0.022)
ur_inc X esopshare				0.091*** (0.018)	0.054*** (0.016)	0.058*** (0.015)
ur_dec X esopshare				-0.103*** (0.038)	-0.068** (0.034)	-0.055 (0.034)
Firm Controls	NO	YES	YES	NO	YES	YES
Firm Fixed Effects	NO	NO	YES	NO	NO	YES
Constant	0.079*** (0.005)	0.837 (0.720)	0.103*** (0.020)	0.034*** (0.008)	0.848 (0.721)	0.112*** (0.021)
Observations	49386	49386	49386	49386	49386	49386
Number of gvkey			9019			9019
Adjusted R-squared	0.004	0.229	0.200	0.005	0.230	0.200

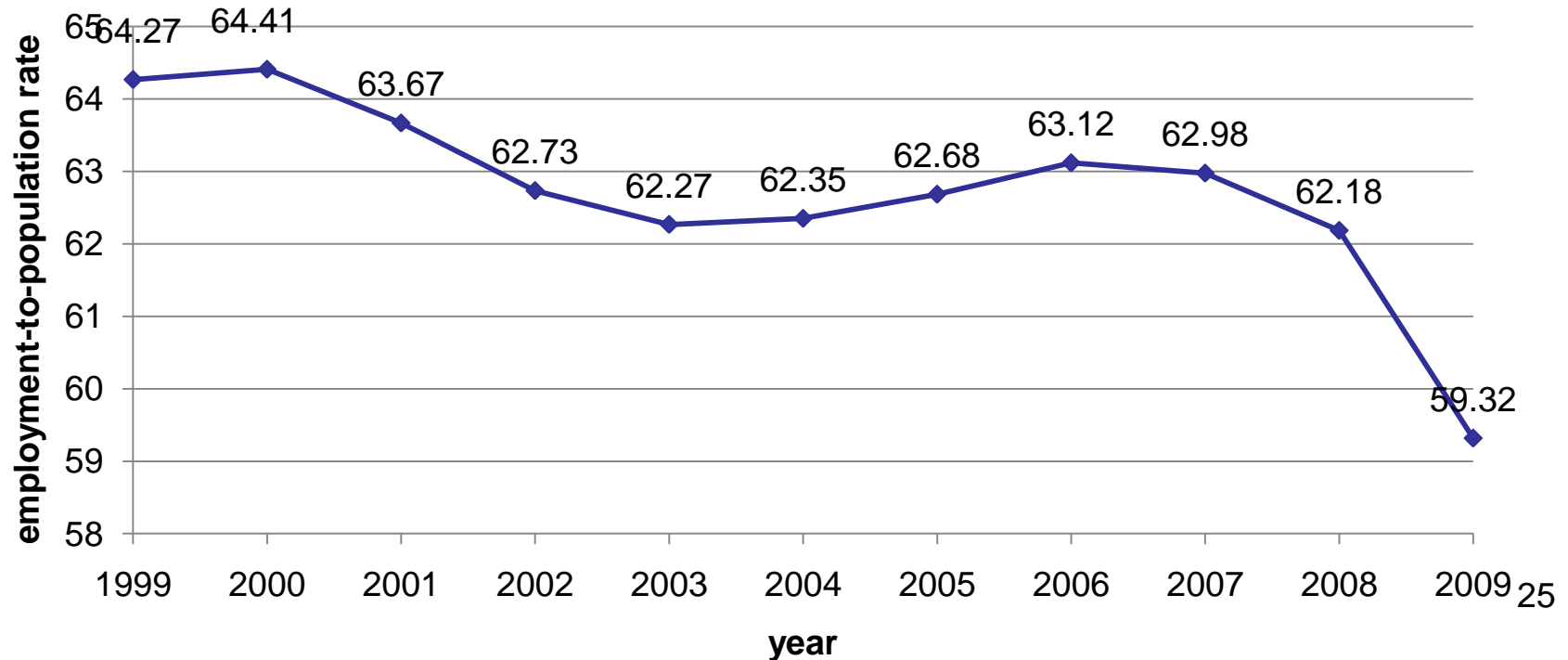
Alternative Measures of Economic Downturn

- So far we have considered a fairly broad proxy for a negative shock facing the firm, i.e., decline in the unemployment rate.
- Next we consider an alternative macroeconomic downturn measure :
 - Decline in the employment-to-population rate
- We also consider finer measures of *firm-level* financial distress:
 - Decline in firm sales
 - Decline in firm stock price

Employment-to-Population Rate

- It has been argued that decreases in the employment-to-population rate may serve as a better measure of economic downturn than the unemployment rate, which counts individuals who are not working but seeking employment which is often difficult to measure accurately.

Average U.S. Employment-to-Population Rate, 1999-2009



Employment-to-Population Rate

- We estimate all our regressions treating as our indicator of economic downturn decline in the annual employment-to-population rate.
- We find strong evidence that employment is more stable at EO firms vs. non-EO firms in the face of decreases in the employment-to-population rate (support for Hypotheses 1 and 2).
- For example, below are the regressions using the employee ownership variable ANYEO (firm reported any EO stock):

	Dependent Variable: lnempch					
	(1)	Test 1:		(4)	Test 2:	
		(2)	(3)		(5)	(6)
anyeo	-0.052*** (0.008)	-0.036*** (0.006)	-0.049*** (0.013)	-0.050*** (0.011)	-0.035*** (0.010)	-0.050*** (0.015)
er_dec dum	-0.107*** (0.009)	-0.086*** (0.008)	-0.088*** (0.008)			
er_dec dumXanyeo	0.053*** (0.010)	0.033*** (0.009)	0.036*** (0.009)			
er_dec				-0.159*** (0.016)	-0.118*** (0.014)	-0.119*** (0.014)
er_inc				0.011 (0.040)	0.012 (0.037)	0.017 (0.037)
er_decXanyeo				0.079*** (0.018)	0.050*** (0.016)	0.053*** (0.017)
er_incXanyeo				-0.006 (0.044)	-0.002 (0.040)	0.018 (0.041)
Constant	0.087*** (0.006)	0.871 (0.700)	0.108*** (0.020)	0.082*** (0.010)	0.885 (0.701)	0.121*** (0.021)
Observations	50974	50974	50974	50974	50974	50974
Number of gvkey			9196			9196
Adjusted R-squared	0.004	0.228	0.199	0.005	0.228	0.199

Firm-Specific Shocks

- To examine employment stability in the face of firm-level negative shocks, we use two measures:
 - Decline in firm sales since the previous year (in mil \$)
 - Decline in firm stock price since the previous year (in \$)
- As before, we consider Tests 1 and 2 to evaluate employment stability at EO vs. non-EO firms.
- The results, again, generally show that EO firms reduce employment by a smaller degree than non-EO firms in the face of firm-specific distress, though the stock price results are stronger than the sales results.
- To illustrate, below we report the regression results for ANYEO (firm reported any EO stock)...

Relationship Between Employment Stability and ANYEO in Face of Declines in Firm Sales

	Dependent Variable: lnempch					
	Test 1:			Test 2:		
	(1)	(2)	(3)	(4)	(5)	(6)
anyeo	-0.081*** (0.005)	-0.048*** (0.005)	-0.056*** (0.011)	0.002 (0.005)	-0.003 (0.005)	-0.016 (0.012)
sale_dec dum	-0.361*** (0.010)	-0.233*** (0.008)	-0.211*** (0.010)			
sale_dec dumXanyeo	0.158*** (0.012)	0.078*** (0.010)	0.083*** (0.012)			
sale_dec				-0.135*** (0.011)	-0.066*** (0.010)	-0.049*** (0.011)
sale_inc				0.175*** (0.011)	0.098*** (0.009)	0.104*** (0.011)
sale_decXanyeo				0.012 (0.022)	-0.011 (0.018)	-0.022 (0.020)
sale_incXanyeo				-0.060** (0.025)	-0.027 (0.025)	-0.043 (0.029)
Constant	0.147*** (0.005)	0.938 (0.698)	0.114*** (0.019)	-0.002 (0.004)	0.775 (0.696)	0.006 (0.020)
Observations	50785	50785	50785	50785	50785	50785
Number of gvkey			9148			9148
Adjusted R-squared	0.042	0.237	0.211	0.123	0.250	0.228

- Test 1: The reduction in employment in response to a decrease in firm sales is 8.3 percentage points smaller at EO firms than at non-EO firms
- Test 2: A \$1mil reduction in sales does not result in a statistically significant difference between EO and non-EO firms' declines in employment.

Relationship Between Employment Stability and ANYEO in Face of Declines in Firm Stock Price

	Dependent Variable: lnempch					
	(1)	Test 1: (2)	(3)	(4)	Test 2: (5)	(6)
anyeo	-0.077*** (0.008)	-0.062*** (0.007)	-0.068*** (0.013)	-0.022** (0.009)	-0.018** (0.007)	-0.014 (0.014)
stockprice_dec dum	-0.160*** (0.010)	-0.131*** (0.009)	-0.119*** (0.010)			
stockprice_dec dumXanyeo	0.100*** (0.011)	0.075*** (0.010)	0.080*** (0.011)			
stockprice_dec				-0.141*** (0.010)	-0.107*** (0.009)	-0.104*** (0.012)
stockprice_inc				0.128*** (0.020)	0.090*** (0.017)	0.089*** (0.019)
stockprice_decXanyeo				0.038*** (0.015)	0.014 (0.012)	0.029** (0.014)
stockprice_incXanyeo				-0.121*** (0.024)	-0.074*** (0.020)	-0.075*** (0.022)
Firm Controls	NO	YES	YES	NO	YES	YES
Firm Fixed Effects	NO	NO	YES	NO	NO	YES
Constant	0.112*** (0.007)	0.856 (0.766)	0.137*** (0.022)	0.052*** (0.007)	0.830 (0.763)	0.144*** (0.023)
Observations	46630	46630	46630	46630	46630	46630
Number of gvkey			8448			8448
Adjusted R-squared	0.008	0.229	0.200	0.027	0.237	0.208

- Test 1: The reduction in employment in response to a decrease in firm stock price is 8 percentage points smaller at EO firms than at non-EO firms
- Test 2: EO firms reduce employment by 2.9 percentage points less than non-EO firms in response to a one dollar decrease in firm stock price

Conclusion

Using a large national sample of publicly-traded U.S. companies during 1999-2008, we have shown that firms with employee ownership exhibit greater employment stability in face of economic downturn, both measured in terms of macroeconomic negative shocks (increases in the unemployment rate, decreases in the employment-to-population rate) as well as firm-level negative shocks (declines in firm sales, declines in firm stock price).

Next Steps?

- Does the relationship between employee ownership and employment stability vary with firm characteristics e.g., industry?
- Do EO firms keep employment stable but vary something else (e.g. wages) to cope with economic downturns? Understanding mechanisms...
 - There is some info available in CompuStat on firm wage costs...