

**Appendix of additional results (to be posted online)**

**Table A.1:** Robustness check: labor regulation and hysteresis in material inputs, alternative measure of labor regulation

The dependent variable is the log of material cost per week for each outlet. “Inflexibility” is the index of hiring/firing inflexibility, constructed using data from the 2002 Global Competitiveness Survey. Standard errors clustered at the country level. \* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

	(1)	(2)	(3)
Log (Lagged materials cost)	0.162*** [0.038]	0.112*** [0.036]	0.036* [0.020]
Log (Revenue)	0.857*** [0.027]	0.906*** [0.018]	0.946*** [0.010]
Inflexibility X Log (Lagged materials cost)	<b>-0.093</b> [0.26]	<b>-0.076</b> [0.26]	<b>0.037</b> [0.13]
Inflexibility X Log (Revenue)	<b>0.0004</b> [0.17]	<b>0.053</b> [0.12]	<b>0.018</b> [0.08]
Constant	-1.090*** [0.12]	-1.135*** [0.17]	-0.898*** [0.18]
Fixed Effects	Outlet	Outlet-year	Outlet-year-season
Observations	379,407	379,407	379,407
Adjusted R-squared	0.952	0.957	0.964
Number of clusters	48	48	48
<hr/>			
Effect of a one standard deviation (0.66) increase in Log (Materials cost)			
At Inflexibility = mean (0.00)	10.69%	7.39%	2.38%
At Inflexibility = mean + sd (= 0.13)	9.89%	6.74%	2.69%
Impact of increase in Inflexibility	-0.80%	-0.65%	0.32%
Effect of a one standard deviation (0.69) increase in Log (Revenue)			
At Inflexibility = mean (0.00)	59.13%	62.51%	65.27%
At Inflexibility = mean + sd (= 0.13)	59.13%	62.99%	65.44%
Impact of increase in Inflexibility	0.00%	0.48%	0.16%

## Web appendix of additional results

**Table A.2** Summary statistics on the countries in the top and bottom deciles of the change in inflexibility index (in reference to table 8 of the text)

Index 02 and Index 04 are indices of hiring/firing inflexibility based on the Global Competitiveness Surveys of 2002 and 2004 respectively.

	Index 02	Index 04	Change
Countries in the top decile of the change in the inflexibility index			
Sri Lanka	0.4903	0.9898	0.4995
Venezuela	0.6329	0.9849	0.3520
Countries in the bottom decile of the change in the inflexibility index			
Chile	0.6274	0.5989	-0.0285
Colombia	0.6794	0.6192	-0.0602
Dominican Republic	0.4928	0.4927	-0.0001
Malaysia	0.5420	0.4941	-0.0479

These changes are to be compared to an overall p25 change of 0.0254, median change of 0.0937, and p75 change of 0.1514.

**Table A.3** Robustness check: GMM (levels) results

The dependent variable is the log of labor cost per week for each outlet. “Regulation” is the Botero et al. (2004) index of labor regulation, a measure of the rigidity of the labor market. First differences of the instruments are used in the levels equations. Two-step, Windmeijer-corrected standard errors are reported in braces. \* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

	(1)
Log (Lagged labor cost)	0.769*** [0.044]
Log (Revenue)	0.200*** [0.037]
<b>Regulation X Log (Lagged labor cost)</b>	<b>0.605***</b> <b>[0.22]</b>
<b>Regulation X Log (Revenue)</b>	<b>-0.696***</b> <b>[0.18]</b>
Constant	-0.0849* [0.052]
Observations	297,849
Hansen J p-value	0.701
AR1 test	0.000
AR6 test	0.636
AR7 test	0.503
AR8 test	0.605

Instrumented: Levels of Log (Lagged labor cost), Regulation X Log (Lagged labor), Log (Revenue), Regulation X Log (Revenue)

Instruments: Differences of lags 5, 6 and 7 of Log (Lagged labor cost), Regulation X Log (Lagged labor), Log (Revenue), Regulation X Log (Revenue), Log (Materials cost), Regulation X Log (Materials cost) (18 instruments)

## Web appendix of additional results

**Table A.4:** Franchisee-owned versus non-franchisee owned outlets

The dependent variable is the log of labor cost per week for each outlet. “Regulation” is the Botero et al. (2004) index of labor regulation, a measure of the rigidity of the labor market. Non-franchisee owned means the outlet is owned by a regional master franchisee, or the company. All regressions include outlet-year-season fixed effects. \* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

	Franchisee- owned only	Non-franchisee- owned only
Log (Lagged labor cost)	0.175*** [0.025]	0.308*** [0.082]
Log (Revenue)	0.479*** [0.045]	0.313*** [0.039]
<b>Regulation X Log (Lagged labor cost)</b>	<b>0.398***</b> <b>[0.13]</b>	<b>0.733+</b> <b>[0.48]</b>
<b>Regulation X Log (Revenue)</b>	<b>-0.490*</b> <b>[0.26]</b>	<b>-0.617***</b> <b>[0.16]</b>
Constant	1.834*** [0.54]	2.373*** [0.39]
Observations	26,866	23,351
Adjusted R-squared	0.968	0.986
Number of clusters	15	27

Note: The sample is much smaller in these regressions because the information on organizational form is only available for a subset of our data. (Ownership data is reported in an audit dataset; this is available only for 2002 and 2003, and for a subset of stores that were audited.)

**Table A.5:** Positive versus negative changes in revenue

The dependent variable is the log of labor cost per week for each outlet. “Regulation” is the Botero et al. (2004) index of labor regulation, a measure of the rigidity of the labor market. All regressions include outlet-year-season fixed effects. \* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

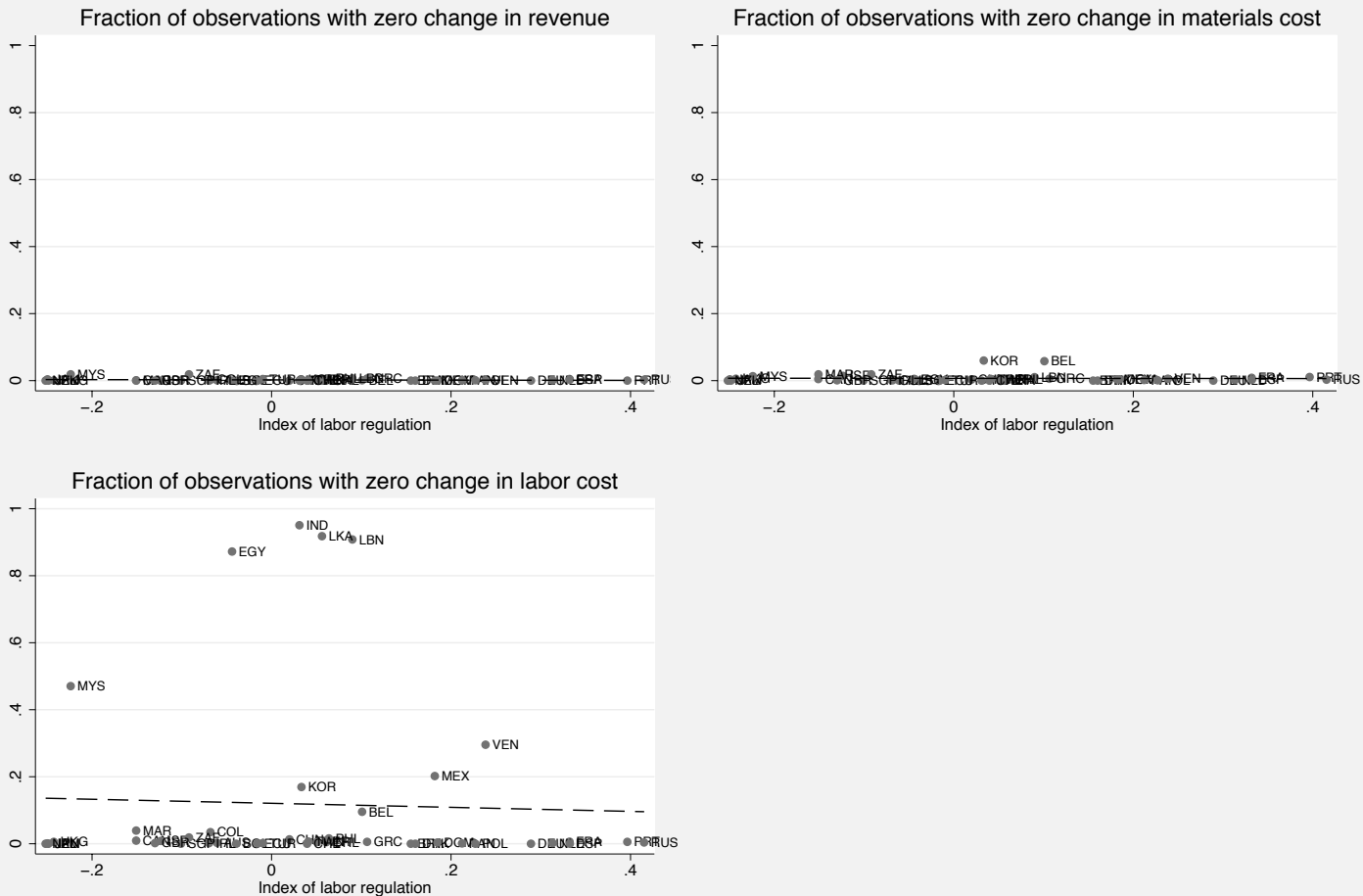
	Revenue increases only	Revenue decreases only
Log (Lagged labor cost)	0.286*** [0.032]	0.220*** [0.033]
Log (Revenue)	0.357*** [0.042]	0.363*** [0.038]
<b>Regulation X Log (Lagged labor cost)</b>	<b>0.536**</b> <b>[0.21]</b>	<b>0.709***</b> <b>[0.16]</b>
<b>Regulation X Log (Revenue)</b>	<b>-0.554***</b> <b>[0.12]</b>	<b>-0.327**</b> <b>[0.16]</b>
Constant	2.008*** [0.31]	2.427*** [0.34]
Observations	161,106	156,260
Adjusted R-squared	0.957	0.970
Number of clusters	43	43

**Table A.6:** Excluding observations in the top and bottom deciles of the regulation distribution

The dependent variable is the log of labor cost per week for each outlet. "Regulation" is the Botero et al. (2004) index of labor regulation, a measure of the rigidity of the labor market. All regressions include outlet-year-season fixed effects. \* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

	(1)
Log (Lagged labor cost)	0.211*** [0.037]
Log (Revenue)	0.387*** [0.067]
<b>Regulation X Log (Lagged labor cost)</b>	0.777*** [0.28]
<b>Regulation X Log (Revenue)</b>	-0.472+ [0.31]
Constant	2.495*** [0.40]
Observations	241,022
Adjusted R-squared	0.963
Number of clusters	30

Figure A.1: Fraction of Observations with zero changes



Average over all store-week observations in the country

**Web appendix of additional results**

**Table A.7:** Labor regulation and labor demand hysteresis – excluding top 5 outliers in figure A.1

The dependent variable is the log of labor cost per week for each outlet. “Regulation” is the Botero et al. (2004) index of labor regulation, a measure of the rigidity of the labor market. Standard errors are clustered at the country level. \* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

	(1)	(2)	(3)	(4)	(5)	(6)
Log (Lagged labor cost)	0.506*** [0.076]	0.343*** [0.074]	0.187*** [0.061]	0.463*** [0.042]	0.323*** [0.031]	0.184*** [0.030]
Log (Revenue)	0.366*** [0.051]	0.391*** [0.045]	0.430*** [0.040]	0.384*** [0.030]	0.399*** [0.026]	0.430*** [0.027]
<b>Regulation X Log (Lagged labor cost)</b>				<b>1.072*** [0.27]</b>	<b>0.975*** [0.20]</b>	<b>0.752*** [0.18]</b>
<b>Regulation X Log (Revenue)</b>				<b>-0.603*** [0.17]</b>	<b>-0.512*** [0.12]</b>	<b>-0.422*** [0.11]</b>
Constant	0.334 [0.24]	1.295*** [0.38]	2.084*** [0.43]	0.537** [0.22]	1.421*** [0.30]	2.148*** [0.33]
Fixed Effects	Outlet	Outlet-year	Outlet-year- season	Outlet	Outlet-year	Outlet-year- season
Observations	299,412	299,412	299,412	299,412	299,412	299,412
Adjusted R-squared	0.933	0.942	0.951	0.937	0.944	0.952
Number of clusters	38	38	38	38	38	38

## Web appendix of additional results

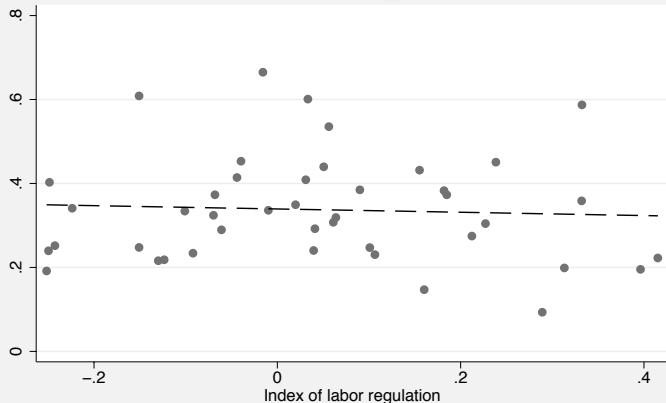
**Table A.8:** Robustness check -- excluding top 5 outliers in figure A.1

The OECD sample does not include any of the top outliers from figure A.1, so results are unchanged from those reported in Table 7 (and not reproduced here). GDP is log GDP per capita in current \$US. "Entry barriers" measured by the log of the number of days to start a business, obtained from the World Bank's "Doing Business in 2003" data. "Wage flexibility" is an index is obtained from the Global Competitiveness Survey 2004 data, based on the response to a query "Are wages in your country (set by a centralized bargaining process =1, set by each individual company =7)". "Labor relations" is an index obtained from the Global Competitiveness Survey 2004 data, based on the response to a query "Labor-employer relations in your country are (1=generally confrontational, 7=generally cooperative)". All regressions include outlet-year-season effects. \* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

	(1)	(2)	(3)	(4)
Log (Lagged labor cost)	1.498*** [0.45]	-0.016 [0.059]	0.017 [0.27]	0.125 [0.17]
Log (Revenue)	-0.426 [0.36]	0.569*** [0.037]	0.829*** [0.17]	0.756*** [0.084]
<b>Regulation X Log (Lagged labor cost)</b>	<b>0.424***</b> <b>[0.15]</b>	<b>0.488***</b> <b>[0.18]</b>	<b>0.866***</b> <b>[0.28]</b>	<b>0.771***</b> <b>[0.23]</b>
<b>Regulation X Log (Revenue)</b>	<b>-0.231*</b> <b>[0.12]</b>	<b>-0.302***</b> <b>[0.073]</b>	<b>-0.632***</b> <b>[0.12]</b>	<b>-0.584***</b> <b>[0.12]</b>
GDP X Log (Lagged labor cost)	-0.136*** [0.045]			
GDP X Log (Revenue)	0.089** [0.038]			
Entry barriers X Log (Lagged labor cost)		0.065*** [0.021]		
Entry barriers X Log (Revenue)		-0.045*** [0.011]		
Wage flexibility X Log (Lagged labor cost)			0.031 [0.053]	
Wage flexibility X Log (Revenue)			-0.075** [0.034]	
Labor relations X Log (Lagged labor cost)				0.012 [0.038]
Labor relations X Log (Revenue)				-0.068*** [0.019]
Constant	2.187*** [0.34]	2.196*** [0.30]	2.098*** [0.30]	2.124*** [0.25]
Observations	299,412	243,206	299,412	299,412
Adjusted R-squared	0.952	0.956	0.952	0.952
Number of clusters	38	36	38	38

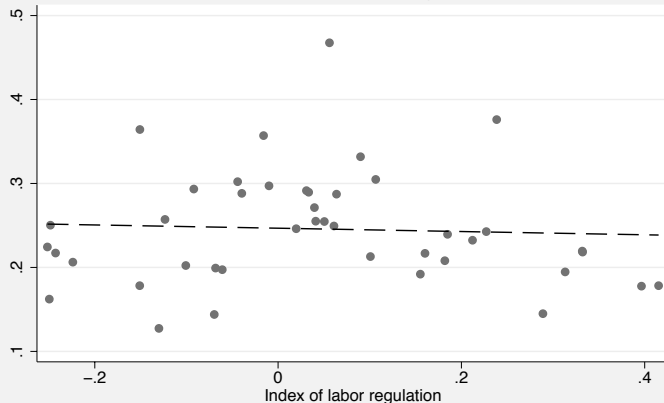
# Figure A.2: Standard deviation and persistence of revenue and changes in revenue

## Persistence of log revenue



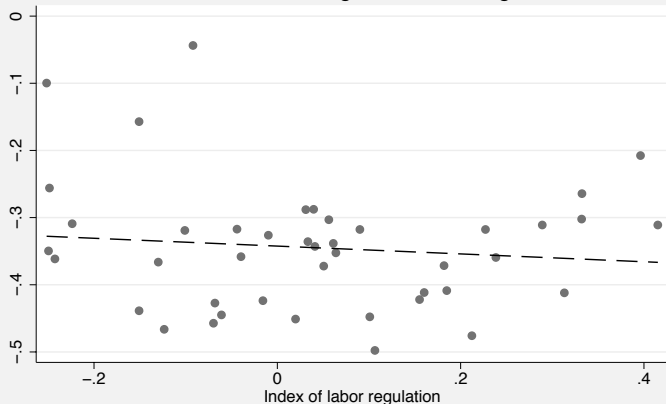
Coefficient on lagged log revenue (with outlet-year-season effects)

## Standard deviation of log revenue



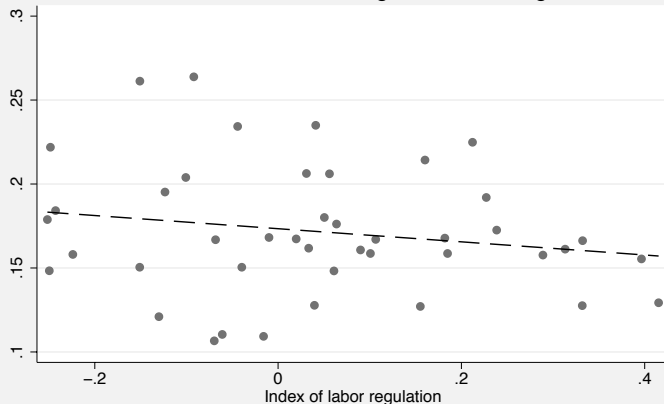
Average store-specific standard deviation in log revenue

## Persistence of log revenue changes



Coefficient on lagged changes in log revenue (with outlet-year-season effects)

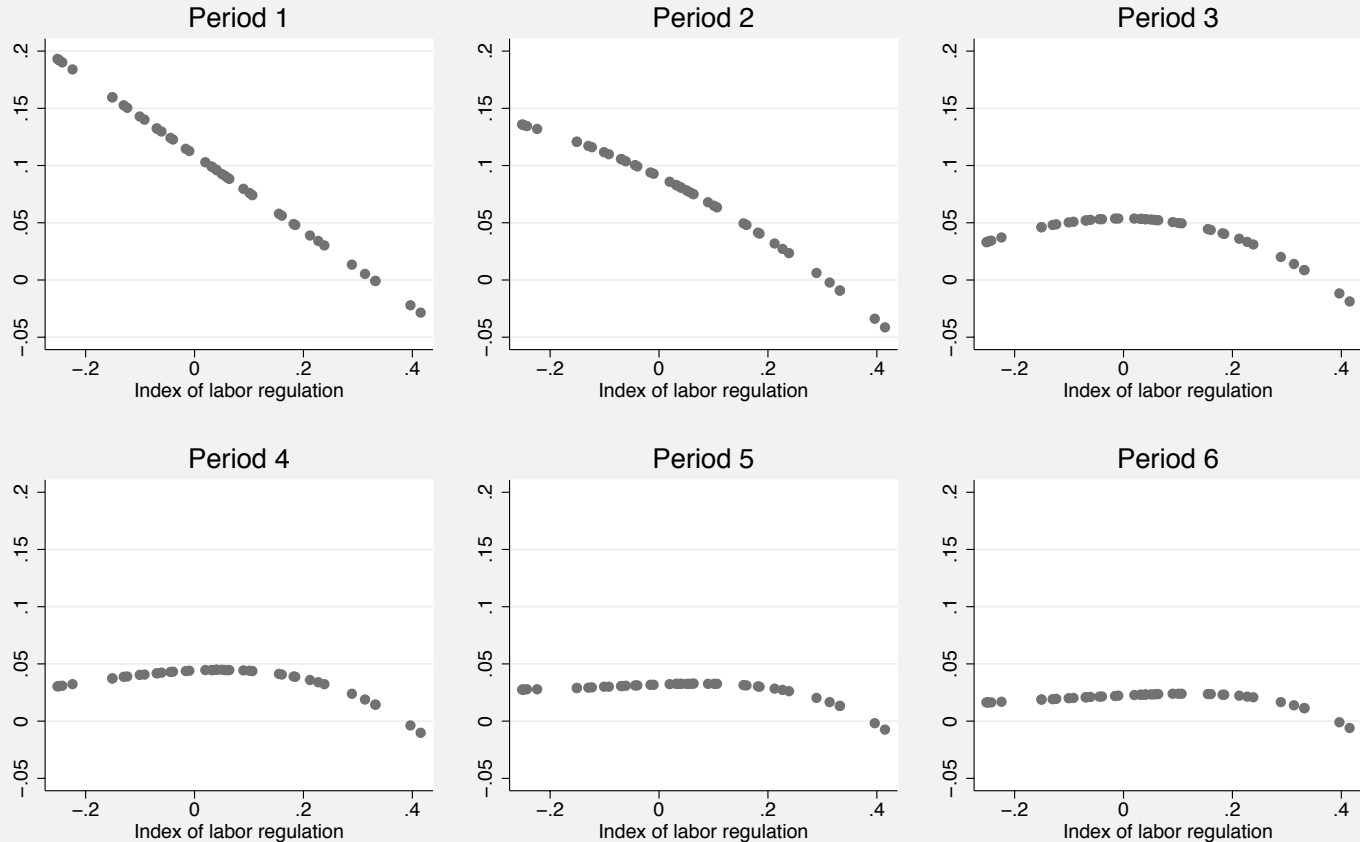
## Standard deviation of log revenue changes



Average store-specific standard deviation of changes in log revenue

# Figure A.3a: Impulse response versus labor regulation

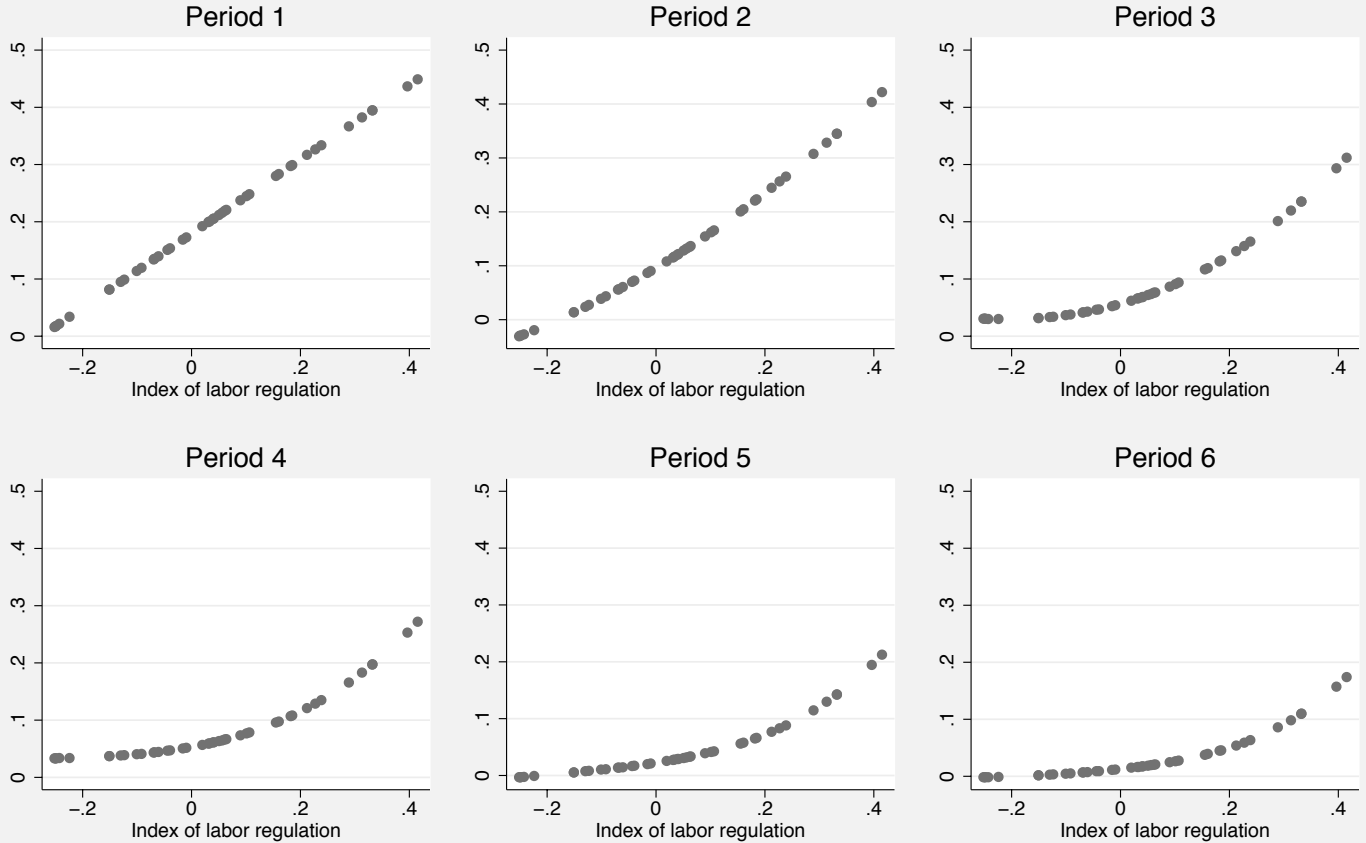
Effect of period 0 unit revenue impulse on labor cost



Model with 4 lags of labor cost and revenue

# Figure A.3b: Impulse response versus labor regulation

Effect of period 0 unit labor cost impulse on labor cost



Model with 4 lags of labor cost and revenue

**Table A.9:** Including interaction with a minimum wage index

The dependent variable is the log of labor cost per week for each outlet. “Regulation” is the Botero et al. (2004) index of labor regulation, a measure of the rigidity of the labor market. The “Minimum wage Index” is the ratio of minimum wage to average wage for 2000 taken from Table 1 of Neumark and Wascher (2004)<sup>1</sup> who in turn base it on the OECD minimum wage database and Delgado et al (1996)<sup>2</sup>. All regressions include outlet-year-season fixed effects. + significant at 15%, \* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

	(1)
Log (Lagged labor cost)	0.492*** [0.056]
Log (Revenue)	0.286*** [0.032]
<b>Regulation X Log (Lagged labor cost)</b>	<b>0.339***</b> <b>[0.071]</b>
<b>Regulation X Log (Revenue)</b>	<b>-0.213***</b> <b>[0.066]</b>
Minimum wage index X Log (Lagged labor cost)	-0.785*** [0.10]
Minimum wage index X Log (Revenue)	0.482*** [0.069]
Constant	2.166*** [0.11]
Observations	143,719
Adjusted R-squared	0.949
Number of clusters	14

<sup>1</sup> Neumark, David, and William Wascher, 2004, “Minimum Wages, Labor Market Institutions, and Youth Employment: A Cross-National Analysis,” *Industrial and Labor Relations Review*, January, pp. 223-48.

<sup>2</sup> Juan Dolado; Francis Kramarz; Stephen Machin; Alan Manning; David Margolis; Coen Teulings; Gilles Saint-Paul; Michael Keen, 1996, “The Economic Impact of Minimum Wages in Europe,” *Economic Policy*, Vol. 11, No. 23. (Oct., 1996), pp. 317-372.