Online Appendix: Flexible Prices and Leverage

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Not for Publication

A Theoretical Framework

In this section, we develop a simple model which is consistent with our empirical findings: sticky-price firms have unconditionally lower financial leverage compared to firms with flexible output prices but increase leverage more conditional on a shock to credit supply. As we discuss in Section II, this model develops only one of many potential channels and we do not aim to disentangle those.

We consider the optimal financing decision of a firm in a one-period partial equilibrium setup with costly state verification (Townsend (1979), Gale and Hellwig (1985)). This stylized model allows us to compare two financing environments. First, the firm borrows through the public bond market. Second, the firm borrows from a bank. The firm's optimal product price is not observable to uninformed lenders, because they cannot observe marginal costs and pricing frictions such as Calvo rates or menu costs. Owners of diffusely-owned public bonds might suffer a coordination problem when monitoring private information (Diamond (1991a), Diamond (1991b)). Banks have access to a costly monitoring technology, which distinguishes them from the public bond market.

The model generates two main predictions. First, inflexible-price firms have lower leverage than flexible-price firms. Second, inflexible-price firms increase leverage more than flexible-price firms in response to an increase in monitoring effectiveness.

In the model, firms differ in their ability to adjust output prices to shocks. Inflexible-price firms have greater uncertainty about profits. Their profits are identical to those of flexible-price firms when realized inflation coincides with expected inflation. However, inflexible-price firms have lower profits when realized inflation is either unexpectedly high or unexpectedly low.

Inflexible-price firms have an incentive to report low profits even when profits are high, which limits their debt capacity. Monitoring reduces the incentive to misreport profits, and allows inflexible-price firms credibly to pledge a greater share of real profits to lenders. Bank lending can therefore mitigate the credit constraints which inflexible-price firms face.

A.1 Production and Prices

We use capital letters to denote levels, and small letters to denote logs. The firm's actual price level may differ from the optimal price if the firm can update prices or information only infrequently (Calvo (1983), Mankiw and Reis (2002)). We denote the log difference between actual and optimal product prices by Δp.

For simplicity, the price gap can take three values with associated probabilities:

$$Prob\,(\Delta p = 0) = \pi_0, \tag{A.1}$$

$$Prob\,(\Delta p = h) = \frac{\pi_h}{2}, \tag{A.2}$$

$$Prob\,(\Delta p = -h) = \frac{\pi_h}{2}, \tag{A.3}$$

$$\pi_0 + \pi_h = 1. \tag{A.4}$$

The expected price gap is 0. The parameter h captures how far the firm allows prices to deviate from the optimum when shocks occur either to aggregate or firm-specific demand. The parameter h is a reduced form to model pricing frictions that might originate from costs of price adjustment, managerial costs, information-processing costs, or negotiation costs. Zbaracki et al. (2004) show that a U.S. manufacturing firm with annual revenues of more than \$1bn spends about 1.2% of annual revenues on price adjustments, which corresponds to about 20% of the net profit margin. Gorodnichenko and Weber (2016) calibrate their fully dynamic model to the micro-data underlying the PPI and find similar costs of price adjustments.

In New Keynesian models with monopolistic competition, price dispersion leads to production misallocations and real economic costs (Woodford (2003)). A second-order approximation of the profit function results in an inverted U-shaped profit function. When the price gap is negative, firm revenue per unit sold and total firm profits are below the optimum. When the price gap is positive, high prices reduce demand, and firm profits are also below the optimum.

We capture these features with a simple quadratic profit function. The profit function is maximized at $\Delta p = 0$, ensuring the existence of a flexible-price equilibrium in which all firms charge the same price. Firm profits scale with capital K:

$$
\begin{aligned}
Profit_{\Delta p} &= K \times R_{\Delta p}, && \text{(A.5)}\\
R_{\Delta p} &= exp\left(r_{\Delta p}\right), && \text{(A.6)}\\
r_{\Delta p} &= \bar{r} - a(\Delta p)^2. && \text{(A.7)}
\end{aligned}
$$

Here, $\bar{r} > 0$ and $a > 0$ are constants, reflecting log returns when the price gap is zero and the curvature of the profit function. $\bar{r} > 0$ ensures a positive net present value return on capital.[1]

A.2 The Financing Problem

The owner of the firm has personal wealth or equity, E, which determines the scale of the firm, and has all bargaining power. The lender breaks even in expectation. We normalize the interest rate to zero, and model owner and investors as risk neutral. The total capital of the firm is the sum of debt, D, and equity, E,

$$K = D + E. \tag{A.8}$$

We make two additional assumptions to make the financing problem interesting. First, we assume the project's net present value is positive; that is,

$$\pi_0 R_0 + \pi_h R_h > 1. \tag{A.9}$$

Here, $R_0 = exp(r_0)$ and $R_h = exp(r_h)$. Second, we assume the firm's returns are less than 1 in the low-profit state,

$$R_h < 1. \tag{A.10}$$

Lenders cannot observe firm profits. This assumption captures the idea that lenders cannot costlessly observe firms' optimal and actual pricing strategies. The manager's

[1] The model predictions do not rely on the specific functional form (A.5) through (A.7). We rely on a quadratic profit function to maximize clarity of exposition.

incentive to misreport realized profits constrains the set of feasible financing contracts. Contracts in our model are real to focus on the cross-sectional implications of the model. With nominal contracts, uncertainty about the aggregate price level can further lower the debt capacity of both inflexible- and flexible-price firms (Fisher (1933), Bhamra, Fisher, and Kuehn (2011), Kang and Pflueger (2015)).

A.3 Solution without Monitoring

First, we consider the optimal debt contract when no monitoring technology is available. We can think of this setup as a firm that can only borrow from public debt markets.

The optimal contract must satisfy the revelation principle: the borrower reveals her profits truthfully. Without monitoring technology, the optimal financing contract requires constant payments across states. Otherwise, the borrower has an incentive to lie about profits. The project has a positive net present value, and the manager optimally borrows the maximum amount the lender is willing to lend. Optimal leverage follows from the lender's break-even constraint,

$$\frac{D}{K} = R_h. \tag{A.11}$$

Firms with more inflexible prices, that is, larger h, have lower returns R_h and hence lower leverage.

A.4 Solution with Monitoring

Next, we consider the case in which the lender can access a costly monitoring technology. This setup resembles a firm that borrows from a bank, which has a costly technology to monitor the manager's activities.

Monitoring costs are proportional to firm size, and are given by γK. Monitoring larger firms requires more effort than monitoring smaller firms. When monitoring is unsuccessful, which occurs with probability $1 - \rho$, the lender acquires no information about firm profits. When monitoring is successful, the lender observes the true level of profits, and contract payoffs can be contingent on the monitoring result. The parameter ρ measures the lender's monitoring ability in the model. To ensure that monitoring is always optimal following a bad realization of firm profits, we assume monitoring costs are small relative to the expected gains from monitoring:

$$\rho\left(\pi_0 R_0 + \pi_h R_h - 1\right) \quad > \quad \pi_h \gamma. \tag{A.12}$$

The revelation principle implies we can focus on an optimal contract, such that the manager never has a reason to lie about the true state of profits. Let C_0 denote the manager's consumption in state 0. The optimal contract gives the manager zero consumption in state h and when he is caught misreporting profits, thereby minimizing the incentives to misreport firm profits in the high-profit state.

The optimal contract maximizes the manager's expected consumption,

$$V \quad = \quad \pi_0 C_0, \tag{A.13}$$

subject to the following incentive-compatibility constraints:

$$C_0 \quad \geq \quad (1-\rho)K(R_0 - R_h), \tag{A.14}$$

$$C_0 \quad \leq \quad K\left(R_0 - R_h\right). \tag{A.15}$$

Constraint (A.14) says the manager has no incentive to lie when the true state is 0. Constraint (A.15) says the manager has no incentive to lie when the true state is h. The bank's break-even constraint is

$$D \quad = \quad \pi_h K(R_h - \gamma) + \pi_0(KR_0 - C_0). \tag{A.16}$$

Condition (A.12) ensures a monitoring equilibrium is optimal, and the optimal contract satisfies (A.14) with equality. Solving for the optimal leverage ratio gives

$$D/K \quad = \quad R_h + \rho\pi_0(R_0 - R_h) - \pi_h\gamma. \tag{A.17}$$

When monitoring is completely ineffective ($\rho = 0$) and free ($\gamma = 0$), equation (A.17) reduces to the case without monitoring technology (see equation (A.11)).

A.5 Model Predictions

We interpret the staggered implementation of the IBBEA from 1994 to 2005 as a shock to ρ, the banks' probability of learning the true level of profits when monitoring. Expression (A.17) implies the following testable predictions.

Prediction 1 *Inflexible-price firms have lower leverage than flexible-price firms.*

The expression for leverage (A.17) increases with firm profits in the low-profit state, R_h. Because inflexible-price firms have lower R_h, leverage decreases with price inflexibility h.

Prediction 2 *Following an increase in the effectiveness of monitoring, inflexible-price firms increase leverage more than flexible-price firms.*

Higher price inflexibility h implies a larger gap between high and low profits, $R_0 - R_h$. Expression (A.17) then implies leverage increases more in monitoring effectiveness ρ for inflexible-price firms than for flexible-price firms.

Both predictions are consistent with the hypotheses we developed in Section II and the model could explain our empirical findings which are, however, also consistent with different mechanisms.

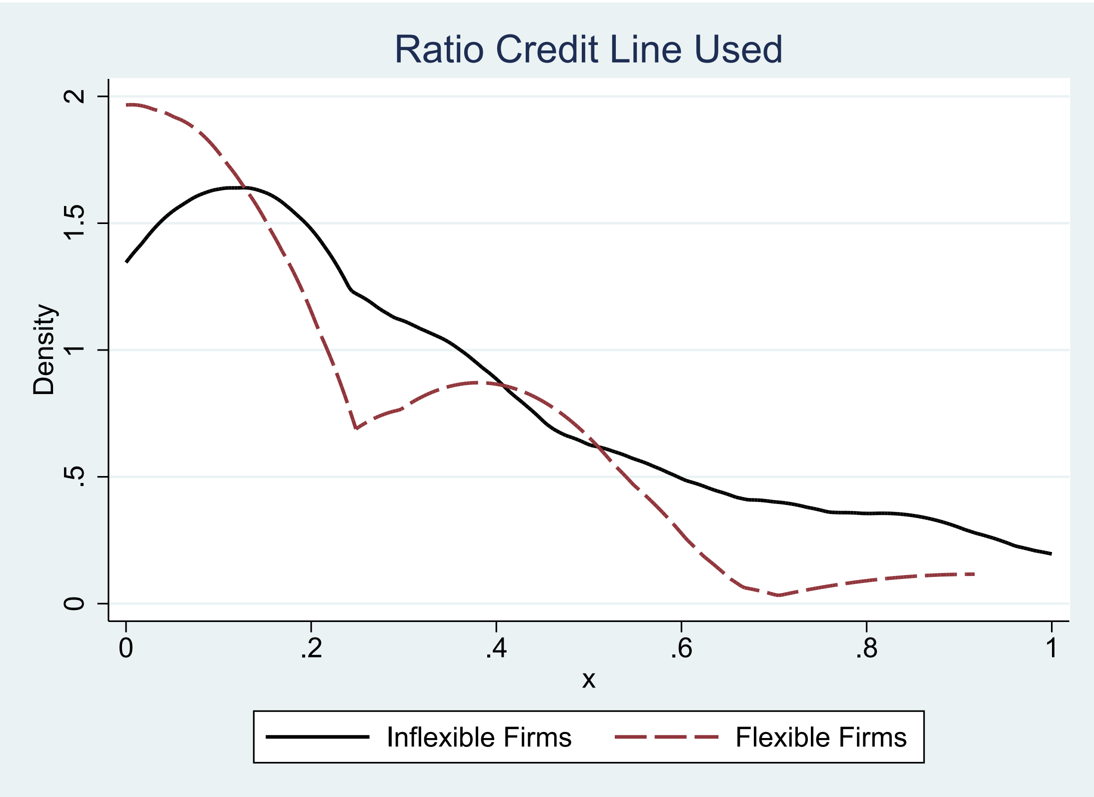
A.6 Empirical Support

When firms cannot adjust prices to changing market conditions, cash-flow volatility and profit volatility increase, and hence default risk for a given leverage ratio increases. To assess the relation between price stickiness and default rates empirically, we obtain default and credit-rating information from Moody's Default and Recovery Database (DRD) and match it to firms in our sample. We construct five default-indicator variables $Default_{t+s}$ for s running from 1 to 5. This dummy is equal to 1 if at least one default occurs within the next $t + s$ years, and 0 otherwise.

Table A.18 in the Online Appendix proposes the results for estimating logistic regressions of default probabilities on the frequency of price adjustment, controlling for firm leverage. Higher leverage is associated with higher default rates. Controlling for total leverage, we see that firms with more flexible output prices are less likely to default.

The relation between FPA and two- to five-year default rates is statistically significant. The evidence for defaults adds to previous evidence that sticky-price firms have more volatile profits after shocks and higher unconditional total and idiosyncratic stock return volatility (see Weber (2015) and Gorodnichenko and Weber (2016)).

Figure A.1: **Intensive Margin of Bank Credit Lines**



This figure plots the density of the share of existing credit lines used separately for flexible- and inflexible-price firms. The black-solid line is the density for inflexible-price firms. The red-dashed line is the density for flexible-price firms. Inflexible-price firms are firms in the bottom quartile of the frequency of price adjustment distribution. Flexible-price firms are firms in the top quartile of the frequency of price adjustment distribution. The credit line data are from Sufi (2009). The sample period is January 1982 to December 2014. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.

Table A.1: **Panel Regressions of Leverage on Price Flexibility (Total Debt and Net Debt)**

This table reports the results for estimating the following linear equation:

$$Leverage_{i,t} = \alpha + \beta \times FPA_i + X'_{i,t-1} \times \gamma + \eta_t + \eta_k + \epsilon_{i,t},$$

where Lt2A is long-term debt to total assets, FPA is the frequency of price adjustment, and $X'_{i,t-1}$ a vector of additional controls (see Table 1 for a detailed description). HP Firm-level HHI is the firm-level measure of product-space concentration based on the Hoberg & Phillips 300 industries. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. The sample period is January 1982 to December 2014 in columns (1) and (5). The sample is restricted to the period January 1996 to December 2014 in all other columns, due to the availability of the Hoberg-Phillips data. Standard errors are clustered at the firm level. In columns (1) to (4), Leverage is end-of-year total debt over assets, whereas in columns (5) to (8) it is end-of-year net debt over assets. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.

	Total Debt				Net Debt			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FPA	0.10***	0.12**	0.12***	0.06	0.19***	0.26***	0.17***	0.13**
	(2.68)	(2.42)	(2.94)	(1.30)	(3.19)	(3.09)	(2.66)	(2.06)
Total vol	−0.05**	−0.04*	0.04	0.05*	−0.16***	−0.11***	0.01	0.06
	(−2.35)	(−1.69)	(1.41)	(1.77)	(−4.76)	(−3.10)	(0.33)	(1.53)
Profitability	−0.29***	−0.10	−0.24***	−0.27***	−0.054	0.26*	−0.05	−0.15
	(−3.58)	(−1.02)	(−2.62)	(−2.92)	(−0.46)	(1.90)	(−0.43)	(−1.33)
Size	0.01***	0.00	0.01	0.01	0.02***	0.01	0.02**	0.02*
	(2.81)	(0.61)	(1.16)	(1.07)	(3.10)	(0.96)	(2.13)	(1.96)
B-M ratio	0.05***	0.02	−0.02	−0.01	0.10***	0.06***	0.00	0.01
	(4.33)	(1.56)	(−1.35)	(−0.89)	(6.60)	(3.47)	(0.01)	(0.73)
Intangibility	0.041	0.08**	0.12***	0.09**	0.14***	0.25***	0.36***	0.27***
	(1.21)	(2.00)	(2.84)	(2.16)	(2.92)	(3.90)	(5.73)	(4.88)
Price-Cost margin	0.02	−0.06	0.09*	0.08*	−0.14***	−0.28***	−0.01	0.04
	(0.56)	(−1.51)	(1.87)	(1.87)	(−2.65)	(−4.35)	(−0.20)	(0.72)
HHI	0.02	0.07	0.09	0.01	−0.01	0.06	0.09	−0.05
	(0.39)	(1.09)	(1.59)	(0.16)	(−0.12)	(0.85)	(1.23)	(−0.86)
HP Firm-level HHI		−0.06*	0.03	0.02		−0.10*	0.05	0.04
		(−1.74)	(0.84)	(0.46)		(−1.94)	(1.12)	(0.90)
Constant	0.15***	0.23***	0.13**	0.17***	−0.02	0.05	−0.10	−0.07
	(3.64)	(3.73)	(2.27)	(2.76)	(−0.21)	(0.45)	(−1.20)	(−0.77)
Year FE			X	X			X	X
Fama-French 48 FE			X				X	
Hoberg-Phillips 50 FE				X				X
Nobs	8,835	4,714	4,714	4,679	8,835	4,714	4,714	4,679
Adjusted R^2	0.11	0.06	0.31	0.26	0.17	0.15	0.47	0.46

t-stats in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

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Table A.2: **Panel Regressions of Leverage on Controls (no Price Flexibility)**

This table reports the results for estimating the following linear equation:

$$Lt2A_{i,t} = \alpha + X'_{i,t-1} \times \gamma + \eta_t + \eta_k + \epsilon_{i,t},$$

where Lt2A is long-term debt to total assets and $X'_{i,t-1}$ a vector of controls (see Table 1 for a detailed description). HP Firm-level HHI is the firm-level measure of product-space concentration based on the Hoberg & Phillips 300 industries. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. The sample period is January 1982 to December 2014 in column (1). The sample is restricted to the period January 1996 to December 2014 in all other columns, due to the availability of the Hoberg-Phillips data. Standard errors are clustered at the firm level. All columns use the continuous measure of the frequency of price adjustment. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.

	(1)	(2)	(3)	(4)
Total vol	-0.03	-0.04^{*}	0.05^{**}	0.06^{**}
	(-1.42)	(-1.84)	(2.04)	(2.43)
Profitability	-0.24^{***}	-0.12	-0.21^{***}	-0.22^{***}
	(-3.11)	(-1.31)	(-2.82)	(-2.80)
Size	0.01^{**}	-0.00	-0.00	-0.00
	(2.18)	(-0.20)	(-0.77)	(-0.46)
B-M ratio	0.07^{***}	0.05^{***}	-0.00	0.01
	(6.97)	(4.07)	(-0.06)	(0.78)
Intangibility	0.08^{***}	0.06^{*}	0.12^{***}	0.08^{***}
	(2.84)	(1.84)	(3.57)	(2.60)
Price-Cost margin	-0.01	-0.06^{*}	0.03	0.04
	(-0.27)	(-1.70)	(0.82)	(1.01)
HHi	-0.04	0.05	0.07^{*}	0.01
	(-0.86)	(0.94)	(1.69)	(0.17)
HP Firm-level HHI		-0.05^{*}	0.02	0.03
		(-1.65)	(0.80)	(0.92)
Constant	0.13^{***}	0.24^{***}	0.19^{***}	0.19^{***}
	(3.78)	(4.67)	(3.82)	(3.69)
Year FE			X	X
Fama-French 48 FE			X	
Hoberg-Phillips 50 FE				X
Nobs	8,821	4,706	4,706	4,671
Adjusted R^2	0.13	0.07	0.28	0.24

t-stats in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

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Table A.3: **Panel Regressions of Leverage on Characteristics (All & S&P500 Firms)**

This table reports the results for estimating the following linear equation:

$$Lt2A_{i,t} = \alpha + X'_{i,t-1} \times \gamma + \eta_t + \eta_k + \epsilon_{i,t},$$

where Lt2A is long-term debt to total assets and $X'_{i,t-1}$ a vector of controls (see Table 1 for a detailed description). HP Firm-level HHI is the firm-level measure of product-space concentration based on the Hoberg & Phillips 300 industries. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. Columns (1) - (3) study the sample of all firms with common stocks listed on NYSE, Nasdaq, and Amex. Columns (4) - (6) study the sample of firms which have been part of the S&P 500 between 1982 and 2014. The sample period is January 1982 to December 2014 in columns (1), (2), (4) and (5). The sample is restricted to the period January 1996 to December 2014 in columns (3) and (6), due to the availability of the Hoberg-Phillips data. Standard errors are clustered at the firm level. All columns use the continuous measure of the frequency of price adjustment. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.

	All Firms			S&P500 Firms		
	(1)	(2)	(3)	(4)	(5)	(6)
Total vol	-0.01^{***}	0.02^{***}	0.06^{*}	-0.04^{**}	-0.03	-0.03
	(-2.92)	(5.24)	(1.90)	(-2.49)	(-1.14)	(-0.86)
Profitability	-0.02^{***}	-0.05^{***}	-0.22^{***}	-0.17^{***}	-0.30^{***}	-0.24^{**}
	(-2.84)	(-9.25)	(-2.74)	(-3.58)	(-6.48)	(-2.55)
Size	0.01^{***}	0.02^{***}	-0.00	0.00^{*}	0.00	-0.00
	(21.83)	(23.50)	(-0.48)	(1.71)	(1.01)	(-0.77)
B-M ratio	0.01^{***}	0.00^{***}	0.00	0.03^{***}	0.02^{***}	0.01
	(9.34)	(2.70)	(0.43)	(4.16)	(2.86)	(0.90)
Intangibility	0.07^{***}	0.13^{***}	0.10^{***}	0.09^{***}	0.10^{***}	0.05
	(9.27)	(16.85)	(2.76)	(4.29)	(4.06)	(1.59)
Price-Cost margin	-0.00^{***}	-0.00^{***}	0.02	-0.08^{***}	0.00	0.01
	(-5.72)	(-8.12)	(1.51)	(-3.58)	(0.15)	(0.33)
HHI	0.08^{***}	0.05^{***}	0.03	0.04	0.06	0.03
	(5.02)	(3.02)	(0.55)	(1.11)	(1.26)	(0.60)
HP Firm-level HHI			0.03			0.02
			(1.13)			(0.68)
Constant	0.07^{***}	0.07^{***}	0.18^{***}	0.17^{***}	0.16^{***}	0.22^{***}
	(16.90)	(15.08)	(3.44)	(5.80)	(4.93)	(3.62)
Year FE			X			X
Fama-French 48 FE		X			X	
Hoberg-Phillips 50 FE			X			X
Nobs	100,833	100,833	4,029	10,556	10,556	3,266
Adjusted R^2	0.0539	0.1521	0.1852	0.0770	0.2158	0.1987

t-stats in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.4: **Triple Differences: Interstate Bank Branching Efficiency Act, Price Flexibility, and Leverage (with controls)**

This table reports the results for estimating the following linear specification:

$$Lt2A_{i,t} = \alpha + \beta \times FPA_i \times Deregulated_{i,t} + \delta_1 \times FPA_i + \delta_2 \times Deregulated_{i,t} + X'_{i,t-1} \times \gamma + \eta_t + \eta_k + \epsilon_{i,t},$$

where $Lt2A$ is the long-term debt to assets ratio, FPA is the frequency of price adjustment, $Deregulated_{i,t}$ is an indicator that equals 1 if firm i is in a state that had implemented the deregulation in or before year t, and 0 otherwise, and $X'_{i,t-1}$ a vector of additional controls (see Table 1 for a detailed description). η_t and η_k are a full set of year and industry fixed effects. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. Firm FE is a set of firm-level fixed effects, which absorbs the measures of price flexibility in column (4). The sample period is January 1982 to December 2014 except from column (3), in which the sample period is January 1996 to December 2014, due to the availability of the Hoberg-Phillips data. Standard errors are clustered at the firm level. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.

	(1)	(2)	(3)	(4)
FPA × Deregulated	−0.13***	−0.12***	−0.20***	−0.13***
	(0.00)	(0.00)	(0.00)	(0.00)
FPA	0.23***	0.14***	0.26***	
	(0.00)	(0.00)	(0.00)	
Deregulated	0.04***	0.02	0.04**	0.02*
	(0.00)	(0.12)	(0.03)	(0.08)
Total vol	−0.04**	0.06***	0.07***	0.05**
	(0.05)	(0.00)	(0.01)	(0.01)
Profitability	−0.21***	−0.30***	−0.21***	−0.30***
	(0.00)	(0.00)	(0.01)	(0.00)
Size	0.00	0.00	−0.00	−0.01**
	(0.57)	(0.42)	(0.55)	(0.03)
B-M ratio	0.06***	0.01	0.00	0.01
	(0.00)	(0.13)	(0.94)	(0.43)
Intangibility	0.09***	0.14***	0.09***	0.10***
	(0.01)	(0.00)	(0.00)	(0.00)
Price-Cost margin	−0.01	0.06*	0.04	0.11***
	(0.70)	(0.05)	(0.35)	(0.01)
HHI	−0.02	0.06	0.01	0.02
	(0.60)	(0.20)	(0.87)	(0.53)
Constant	0.14***	0.11***	0.16***	0.24***
	(0.00)	(0.00)	(0.00)	(0.00)
Year FE		X	X	X
Fama-French 48 FE		X		
Hoberg-Phillips 50 FE			X	
Firm FE				X
Nobs	8,821	8,821	4,679	8,821
Adjusted R^2	0.16	0.35	0.25	0.61

t-stats in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.5: **Triple Differences: Interstate Bank Branching Efficiency Act, Price Flexibility, and Leverage (with state fixed effects)**

This table reports the results for estimating the following linear specification:

$$Lt2A_{i,t} = \alpha + \beta \times FPA_i \times Deregulated_{i,t} \\ + \delta_1 \times FPA_i + \delta_2 \times Deregulated_{i,t} + \eta_t + \eta_k + \eta_j + \epsilon_{i,t},$$

where $Lt2A$ is the long-term debt to assets ratio, FPA is thefrequency of price adjustment, and $Deregulated_{i,t}$ is an indicator that equals 1 if firm i is in a state that had implemented the deregulation in or before year t, and 0 otherwise. η_t, η_k, η_j are a full set of year, industry, and state fixed effects. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. Firm FE is a set of firm-level fixed effects, which absorbs the measures of price flexibility in column (4). The sample period is January 1982 to December 2014 except from column (3), in which the sample period is January 1996 to December 2014, due to the availability of the Hoberg-Phillips data. Standard errors are clustered at the firm level. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.

	(1)	(2)	(3)	(4)
FPA × Deregulated	-0.15^{***}	-0.15^{***}	-0.23^{***}	-0.17^{***}
	(−4.06)	(−4.35)	(−4.30)	(−4.74)
FPA	0.33^{***}	0.20^{***}	0.28^{***}	
	(8.25)	(5.17)	(4.34)	
Deregulated	0.05^{***}	0.02	0.02	0.01
	(6.14)	(1.41)	(1.61)	(1.36)
Constant	0.07^{***}	0.02	0.07^{***}	0.21^{***}
	(7.99)	(0.66)	(5.39)	(28.44)
Year FE		X	X	X
Fama-French 48 FE		X		
Hoberg-Phillips 50 FE			X	
Firm FE				X
State FE	X	X	X	X
Nobs	9,119	9,119	4,843	9,119
Adjusted R^2	0.13	0.31	0.25	0.58

t-stats in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

-

Table A.6: **Panel Regressions of Leverage on Price Flexibility (All Firms Dummy)**

This table reports the results for estimating the following linear equation:

$$Lt2A_{i,t} = \alpha + X'_{i,t-1} \times \gamma + \eta_t + \eta_k + \epsilon_{i,t},$$

where Lt2A is long-term debt to total assets, FPA Dummy is a dummy which equals 1 if the firm is in the top quartile of the frequency of price adjustment distribution and zero otherwise, and $X'_{i,t-1}$ *a vector of additional controls (see Table 1 for a detailed description). HP Firm-level HHI is the firm-level measure of product-space concentration based on the Hoberg & Phillips 300 industries. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. The sample period is January 1982 to December 2014 in column (1). The sample is restricted to the period January 1996 to December 2014 in all other columns, due to the availability of the Hoberg-Phillips data. Standard errors are clustered at the firm level. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.*

	(1)	(2)	(3)	(4)
FPA Dummy	0.04***	0.04***	0.03**	0.02*
	(3.81)	(2.75)	(2.05)	(1.69)
Total vol	−0.03	−0.03	0.05**	0.06**
	(−1.39)	(−1.64)	(2.06)	(2.48)
Profitability	−0.23***	−0.11	−0.21***	−0.22***
	(−3.17)	(−1.31)	(−2.79)	(−2.81)
Size	0.00	−0.00	−0.00	−0.00
	(1.50)	(−0.67)	(−0.90)	(−0.65)
B-M ratio	0.06***	0.04***	−0.00	0.00
	(5.87)	(3.16)	(−0.29)	(0.43)
Intangibility	0.10***	0.08**	0.13***	0.09***
	(3.43)	(2.48)	(3.76)	(2.81)
Price-Cost margin	−0.00	−0.06*	0.04	0.04
	(−0.07)	(−1.71)	(0.96)	(1.07)
HHI	−0.03	0.06	0.07	0.01
	(−0.63)	(1.12)	(1.64)	(0.14)
HP Firm-level HHI		−0.04	0.03	0.03
		(−1.34)	(0.96)	(0.95)
Constant	0.14***	0.24***	0.19***	0.19***
	(3.94)	(4.82)	(3.75)	(3.76)
Year FE			X	X
Fama-French 48 FE			X	
Hoberg-Phillips 50 FE				X
Nobs	8,821	4,706	4,706	4,671
Adjusted R^2	0.14	0.09	0.28	0.24

t-stats in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.7: **Interstate Bank Branching Deregulation, Price Flexibility, and Leverage (Excluding Utilities and Financials)**

This table reports the results for estimating the following linear specification:

$$Lt2A_{i,t} = \alpha + \beta \times FPA_i \times Deregulated_{i,t} + \delta_1 \times FPA_i + \delta_2 \times Deregulated_{i,t} + \eta_t + \eta_k + \epsilon_{i,t},$$

where $Lt2A$ is the long-term debt to assets ratio, FPA is the firm-level frequency of price adjustment, and $Deregulated_{i,t}$ is an indicator that equals 1 if firm i is in a state that had implemented the deregulation in year t, and 0 otherwise. η_t and η_k are a full set of year and industry fixed effects. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. Firm FE is a set of firm-level fixed effects, which absorbs the measures of price flexibility in column (4). The sample period is January 1982 to December 2014 except from column (3), in which the sample period is January 1996 to December 2014, due to the availability of the Hoberg-Phillips. Standard errors are clustered at the firm level. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.

	(1)	(2)	(3)	(4)
FPA × Deregulated	-0.15^{***}	-0.15^{***}	-0.28^{***}	-0.16^{***}
	(−3.33)	(−3.62)	(−4.57)	(−3.64)
FPA	0.24^{***}	0.22^{***}	0.35^{***}	
	(5.89)	(5.26)	(5.02)	
Deregulated	0.05^{***}	0.02	0.04^{**}	0.01
	(5.92)	(1.57)	(2.13)	(0.55)
Constant	0.14^{***}	0.12^{***}	0.17^{***}	0.15^{***}
	(19.22)	(12.88)	(8.34)	(19.94)
Year FE		X	X	X
Fama-French 48 FE		X		
Hoberg-Phillips 50 FE			X	
Firm FE				X
Nobs	7,644	7,644	4,140	7,644
Adjusted R^2	0.06	0.18	0.17	0.52

t-stats in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.8: **Triple Differences: Interstate Bank Branching Efficiency Act, Price Flexibility, and Leverage (Total Vol)**

This table reports the results for estimating the following linear specification:

$$
\begin{aligned}
Lt2A_{i,t} = {} & \alpha + \beta_1 \times FPA_i \times Deregulated_{i,t} + \delta_1 \times FPA_i \\
& + \beta_2 \times Total\ vol_{i,t} \times Deregulated_{i,t} + \delta_2 \times Total\ vol_{i,t} + \delta_3 \times Deregulated_{i,t} + \eta_t + \eta_k + \epsilon_{i,t},
\end{aligned}
$$

where $Lt2A$ is the long-term debt to assets ratio, FPA is the frequency of price adjustment, $Total\ vol$ is the annual total stock return volatility, and $Deregulated_{i,t}$ is an indicator that equals 1 if firm i is in a state that had implemented the deregulation in or before year t, and 0 otherwise. η_t and η_k are a full set of year and industry fixed effects. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. Firm FE is a set of firm-level fixed effects, which absorbs the measures of price flexibility in column (4). The sample period is January 1982 to December 2014 except from column (3), in which the sample period is January 1996 to December 2014, due to the availability of the Hoberg-Phillips data. Standard errors are clustered at the firm level. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.

	(1)	(2)	(3)	(4)
FPA × Deregulated	-0.15^{***}	-0.17^{***}	-0.26^{***}	-0.17^{***}
	(-4.07)	(-4.78)	(-5.30)	(-4.63)
FPA	0.29^{***}	0.17^{***}	0.30^{***}	
	(8.01)	(5.11)	(5.00)	
Total vol × Deregulated	0.02	-0.08^{**}	-0.17^{***}	-0.06^{*}
	(0.39)	(-2.15)	(-3.08)	(-1.67)
Total vol	-0.06	0.13^{***}	0.24^{***}	0.10^{***}
	(-1.36)	(3.50)	(4.35)	(3.25)
Deregulated	0.05^{***}	0.06^{***}	0.11^{***}	0.04^{**}
	(3.16)	(3.32)	(3.96)	(2.13)
Constant	0.17^{***}	0.11^{***}	0.11^{***}	0.15^{***}
	(11.52)	(8.02)	(3.92)	(12.96)
Year FE		X	X	X
Fama-French 48 FE		X		
Hoberg-Phillips 50 FE			X	
Firm FE				X
Nobs	9116	9116	4841	9116
Adjusted R^2	0.08	0.28	0.22	0.58

t-stats in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.9: **Triple Differences: Interstate Bank Branching Efficiency Act, Price Flexibility, and Leverage (KZ Index)**

This table reports the results for estimating the following linear specification:

$$Lt2A_{i,t} = \alpha + \beta_1 \times FPA_i \times Deregulated_{i,t} + \delta_1 \times FPA_i + \beta_2 \times KZ_{i,t} \times Deregulated_{i,t} + \delta_2 \times KZ_{i,t} + \delta_3 \times Deregulated_{i,t} + \eta_t + \eta_k + \epsilon_{i,t},$$

where Lt2A is the long-term debt to assets ratio, FPA is the frequency of price adjustment, KZ is the Kaplan & Zingales index (with or without leverage), and $Deregulated_{i,t}$ is an indicator that equals 1 if firm i is in a state that had implemented the deregulation in or before year t, and 0 otherwise. η_t and η_k are a full set of year and industry fixed effects. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. Firm FE is a set of firm-level fixed effects, which absorbs the measures of price flexibility in column (4) and column (8). The sample period is January 1982 to December 2014 except from columns (3) and (7), in which the sample period is January 1996 to December 2014, due to the availability of the Hoberg-Phillips data. Standard errors are clustered at the firm level. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FPA × Deregulated	−0.17***	−0.18***	−0.19***	−0.17***	−0.16***	−0.16***	−0.22***	−0.17***
	(−4.99)	(−5.40)	(−4.99)	(−5.03)	(−4.07)	(−4.63)	(−3.95)	(−4.61)
FPA	0.30***	0.18***	0.24***		0.30***	0.17***	0.25***	
	(8.07)	(5.63)	(5.43)		(8.02)	(5.15)	(3.86)	
KZ Index × Deregulated	0.11***	0.10***	−0.01	0.07***				
	(22.77)	(19.59)	(−1.05)	(13.26)				
KZ Index	0.00	0.00	0.12***	0.00				
	(0.88)	(0.81)	(12.56)	(1.07)				
Deregulated	−0.13***	−0.13***	0.04**	−0.10***	0.05***	0.03**	0.02	0.02
	(−13.83)	(−9.55)	(2.20)	(−8.02)	(5.21)	(2.11)	(1.08)	(1.58)
KZ w/o Lev × Deregulated					−0.01	−0.00	0.05**	−0.01
					(−0.59)	(−0.30)	(2.56)	(−0.78)
KZ w/o Lev					−0.00***	−0.00***	−0.07***	0.00
					(−3.07)	(−3.69)	(−3.44)	(0.26)
Constant	0.15***	0.15***	0.01	0.18***	0.15***	0.15***	0.21***	0.18***
	(18.98)	(18.52)	(0.56)	(29.58)	(19.74)	(17.87)	(10.04)	(28.32)
Year FE		X	X	X		X	X	X
Fama-French 48 FE		X				X		
Hoberg-Phillips 50 FE			X				X	
Firm FE				X				X
Nobs	9,101	9,101	4,838	9,101	9,109	9,109	4,842	9,109
Adjusted R^2	0.31	0.43	0.59	0.65	0.08	0.27	0.21	0.58

t-stats in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.10: **Triple Differences: Interstate Bank Branching Efficiency Act, Price Flexibility, and Leverage (Total Vol, no FPA)**

This table reports the results for estimating the following linear specification:

$$Lt2A_{i,t} = \alpha + \beta \times Total\ vol_i \times Deregulated_{i,t} \\ + \delta_1 \times Total\ vol_i + \delta_2 \times Deregulated_{i,t} + \eta_t + \eta_k + \epsilon_{i,t},$$

where Lt2A is the long-term debt to assets ratio, Total vol is the annual total stock return volatility, and $Deregulated_{i,t}$ is an indicator that equals 1 if firm i is in a state that had implemented the deregulation in year t, and 0 otherwise. η_t and η_k are a full set of year and industry fixed effects. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. Firm FE is a set of firm-level fixed effects, which absorbs the measures of price flexibility in column (4) and column (8). The sample period is January 1982 to December 2014 except from column (3), in which the sample period is January 1996 to December 2014, due to the availability of the Hoberg-Phillips data. Standard errors are clustered at the firm level.

	(1)	(2)	(3)	(4)
Total vol × Deregulated	0.03	-0.07^{*}	-0.16^{***}	-0.04
	(0.64)	(-1.90)	(-2.70)	(-1.24)
Total vol	-0.07^{*}	0.12^{***}	0.23^{***}	0.09^{***}
	(-1.65)	(3.32)	(3.82)	(2.84)
Deregulated	0.02	0.03^{*}	0.06^{***}	0.01
	(1.47)	(1.77)	(2.62)	(0.36)
Constant	0.22^{***}	0.14^{***}	0.16^{***}	0.15^{***}
	(14.72)	(10.15)	(6.42)	(12.84)
Year FE		X	X	X
Fama-French 48 FE		X		
Hoberg-Phillips 50 FE			X	
Firm FE				X
Nobs	9,116	9,116	4,841	9,116
Adjusted R^2	0.01	0.26	0.21	0.57

t-stats in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.11: **Triple Differences: Interstate Bank Branching Efficiency Act, Price Flexibility, and Leverage (KZ Index)**

This table reports the results for estimating the following linear specification:

$$Lt2A_{i,t} = \alpha + \beta \times FPA_i \times Deregulated_{i,t} \\ + \delta_1 \times FPA_i + \delta_2 \times Deregulated_{i,t} + \eta_t + \eta_k + \epsilon_{i,t},$$

where $Lt2A$ is the long-term debt to assets ratio, KZ is the Kaplan & Zingales index (with or without leverage), and $Deregulated_{i,t}$ is an indicator that equals 1 if firm i is in a state that had implemented the deregulation in year t, and 0 otherwise. η_t and η_k are a full set of year and industry fixed effects. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. Firm FE is a set of firm-level fixed effects. The sample period is January 1982 to December 2014 except from coumns (3) and (7), in which the sample period is January 1996 to December 2014, due to the availability of the Hoberg-Phillips data. Standard errors are clustered at the firm level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KZ Index × Deregulated	0.11***	0.10***	−0.01	0.07***				
	(22.23)	(19.26)	(−1.47)	(12.97)				
KZ Index	0.00	0.00	0.12***	0.00				
	(0.75)	(0.75)	(12.60)	(0.97)				
Deregulated	−0.15***	−0.16***	0.02	−0.13***	0.03***	0.00	−0.02	−0.01
	(−17.36)	(−11.42)	(0.97)	(−9.73)	(4.15)	(0.22)	(−1.14)	(−0.88)
KZ Index w/o Lev × Deregulated					−0.02	−0.00	0.07***	−0.00
					(−1.17)	(−0.03)	(3.47)	(−0.08)
KZ Index w/o Lev					−0.00***	−0.00***	−0.09***	−0.00
					(−4.18)	(−4.11)	(−4.37)	(−1.11)
Constant	0.19***	0.18***	0.039**	0.18***	0.20***	0.18***	0.26***	0.18***
	(26.67)	(26.57)	(2.23)	(29.22)	(30.67)	(27.14)	(14.91)	(28.08)
Year FE		X	X	X		X	X	X
Fama-French 48 FE		X				X		
Hoberg-Phillips 50 FE			X				X	
Firm FE				X				X
Nobs	9,101	9,101	4,838	9,101	9,109	9,109	4,842	9,109
Adjusted R^2	0.25	0.41	0.58	0.64	0.01	0.26	0.21	0.57

t-stats in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.12: **Triple Differences: Interstate Bank Branching Efficiency Act, Price Flexibility, and Leverage (Interactions)**

This table reports the results for estimating the following linear specification:

$$Lt2A_{i,t} = \alpha + \beta_1 \times FPA_i \times Deregulated_{i,t} + \beta_2 \times FPA_i \times Deregulated_{i,t} \times X_{i,t} \\ + \delta_1 \times FPA_i + \delta_2 \times Deregulated_{i,t} + \delta_3 \times X_{i,t} + \eta_t + \eta_k + \epsilon_{i,t},$$

where Lt2A is the long-term debt to assets ratio, FPA is the frequency of price adjustment, $X_{i,t}$ is an additional covariate and $Deregulated_{i,t}$ is an indicator that equals 1 if firm i is in a state that had implemented the deregulation in year t, and 0 otherwise. η_t and η_k are a full set of year and firm fixed effects. Cash is the cash-to-asset ratio, Total vol is the annual total stock return volatility, Idio vol_{FF3} is idiosyncratic volatility with respect to the Fama & French 3 factor model, and KZ Index w/o Lev is the Kaplan & Zingales index without leverage. The sample period is January 1982 to December 2014. Standard errors are clustered at the firm level. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.

	(1)	(2)	(3)	(4)
FPA × Deregulated	−0.20***	−0.19***	−0.21***	−0.17***
	(−5.47)	(−4.35)	(−4.25)	(−4.33)
FPA × Deregulation × Cash	0.70***			
	(3.69)			
Deregulated	0.02	0.02	0.01	0.02
	(1.38)	(1.38)	(1.32)	(1.42)
Cash	−0.19***			
	(−5.43)			
FPA × Deregulation × Total vol		0.08		
		(0.87)		
Total vol		0.05**		
		(2.33)		
FPA × Deregulation × Idio vol (FF3)			0.17	
			(1.35)	
Idio vol (FF3)			0.07***	
			(3.01)	
FPA × Deregulation × KZ w/o lev				0.01
				(0.18)
KZ Index w/o Lev				−0.00
				(−0.02)
Constant	0.19***	0.16***	0.16***	0.18***
	(29.31)	(16.85)	(16.68)	(28.36)
Year FE	X	X	X	X
Firm FE	X	X	X	X
Nobs	9,115	9,116	9,116	9,109
Adjusted R^2	0.58	0.58	0.58	0.58

t-stats in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$

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Table A.13: **Panel Regressions of Leverage on Price Flexibility with CAPM Idiosyncratic Volatility**

This table reports the results for estimating the following linear equation:

$$Lt2A_{i,t} = \alpha + \beta \times FPA_i + X'_{i,t-1} \times \gamma + \eta_t + \eta_k + \epsilon_{i,t},$$

where Lt2A is long-term debt to total assets, FPA is the frequency of price adjustment, and $X'_{i,t-1}$ a vector of additional controls (see Table 1 for a detailed description). HP Firm-level HHI is the firm-level measure of product-space concentration based on the Hoberg & Phillips 300 industries. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. The sample period is January 1982 to December 2014 in column (1). The sample is restricted to the period January 1996 to December 2014 in all other columns, due to the availability of the Hoberg-Phillips data. All columns use the continuous measure of the frequency of price adjustment. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.

	(1)	(2)	(3)	(4)
FPA	0.18***	0.16***	0.12***	0.09**
	(4.94)	(3.58)	(3.12)	(2.13)
Idio vol$_{CAPM}$	−0.01	−0.01	0.08***	0.09***
	(−0.41)	(−0.24)	(3.21)	(3.37)
Profitability	−0.22***	−0.11	−0.20***	−0.22***
	(−3.07)	(−1.21)	(−2.66)	(−2.72)
Size	0.00	−0.00	−0.00	−0.001
	(1.22)	(−0.66)	(−0.80)	(−0.59)
B-M ratio	0.05***	0.03**	−0.01	−0.00
	(5.38)	(2.57)	(−0.68)	(−0.00)
Intangibility	0.11***	0.10***	0.14***	0.10***
	(3.82)	(3.04)	(4.00)	(3.02)
Price-Cost margin	−0.00	−0.06*	0.04	0.04
	(−0.12)	(−1.80)	(0.97)	(1.05)
HHi	−0.03	0.05	0.07	0.00
	(−0.70)	(0.95)	(1.63)	(0.00)
HP Firm-level HHI		−0.04	0.03	0.03
		(−1.34)	(1.06)	(0.97)
Constant	0.12***	0.22***	0.16***	0.17***
	(3.43)	(4.24)	(3.32)	(3.47)
Year FE			X	X
Fama-French 48 FE			X	
Hoberg-Phillips 50 FE				X
Nobs	8,821	4,706	4,706	4,671
Adjusted R^2	0.15	0.09	0.29	0.25

t-stats in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

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Table A.14: **Panel Regressions of Leverage on Price Flexibility with Fama & French Idiosyncratic Volatility**

This table reports the results for estimating the following linear equation:

$$Lt2A_{i,t} = \alpha + \beta \times FPA_i + X'_{i,t-1} \times \gamma + \eta_t + \eta_k + \epsilon_{i,t},$$

where Lt2A is long-term debt to total assets, FPA is the frequency of price adjustment, and $X'_{i,t-1}$ *a vector of additional controls (see Table 1 for a detailed description). HP Firm-level HHI is the firm-level measure of product-space concentration based on the Hoberg & Phillips 300 industries. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. The sample period is January 1982 to December 2014 in column (1). The sample is restricted to the period January 1996 to December 2014 in all other columns, due to the availability of the Hoberg-Phillips data. Standard errors are clustered at the firm level. All columns use the continuous measure of the frequency of price adjustment. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.*

	(1)	(2)	(3)	(4)
FPA	0.18***	0.16***	0.12***	0.09**
	(4.94)	(3.58)	(3.13)	(2.15)
Idio vol$_{FF3}$	−0.09	−0.01	0.08***	0.10***
	(−0.38)	(−0.21)	(3.32)	(3.45)
Profitability	−0.22***	−0.11	−0.19***	−0.22***
	(−3.07)	(−1.21)	(−2.64)	(−2.71)
Size	0.00	−0.00	−0.00	−0.00
	(1.22)	(−0.66)	(−0.78)	(−0.57)
B-M ratio	0.05***	0.03**	−0.01	−0.00
	(5.39)	(2.57)	(−0.68)	(−0.00)
Intangibility	0.11***	0.10***	0.14***	0.10***
	(3.82)	(3.05)	(4.00)	(3.02)
Price-Cost margin	−0.00	−0.06*	0.04	0.04
	(−0.13)	(−1.80)	(0.98)	(1.07)
HHi	−0.03	0.05	0.07	−0.00
	(−0.70)	(0.95)	(1.64)	(−0.01)
HP Firm-level HHI		−0.04	0.03	0.03
		(−1.34)	(1.05)	(0.97)
Constant	0.12***	0.22***	0.16***	0.17***
	(3.42)	(4.23)	(3.27)	(3.42)
Year FE			X	X
Fama-French 48 FE			X	
Hoberg-Phillips 50 FE				X
Nobs	8,821	4,706	4,706	4,671
Adjusted R^2	0.15	0.09	0.29	0.25

t-stats in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

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Table A.15: **Panel Regressions of Leverage on Price Flexibility (Excluding financials and utilities)**

This table reports the results for estimating the following linear equation:

$$Lt2A_{i,t} = \alpha + X'_{i,t-1} \times \gamma + \eta_t + \eta_k + \epsilon_{i,t},$$

where Lt2A is long-term debt to total assets, FPA is the frequency of price adjustment, and $X'_{i,t-1}$ a vector of additional controls (see Table 1 for a detailed description). HP Firm-level HHI is the firm-level measure of product-space concentration based on the Hoberg & Phillips 300 industries. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. The sample period is January 1982 to December 2014 in column (1). The sample is restricted to the period January 1996 to December 2014 in all other columns, due to the availability of the Hoberg-Phillips data. Standard errors are clustered at the firm level. All columns use the continuous measure of the frequency of price adjustment. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.

	(1)	(2)	(3)	(4)
FPA	0.17***	0.17***	0.17***	0.14***
	(4.58)	(3.81)	(3.61)	(3.16)
Total vol	0.03	0.00	0.05**	0.09***
	(1.51)	(0.12)	(2.02)	(3.26)
Profitability	−0.18***	−0.08	−0.19**	−0.20**
	(−2.80)	(−0.94)	(−2.48)	(−2.43)
Size	0.00	−0.01	−0.01	−0.00
	(0.68)	(−1.23)	(−1.09)	(−0.78)
B-M ratio	0.02*	0.01	−0.01	−0.01
	(1.82)	(0.37)	(−0.70)	(−0.45)
Intangibility	0.17***	0.16***	0.16***	0.12***
	(6.28)	(4.43)	(4.22)	(3.51)
Price-Cost margin	−0.05	−0.07**	0.02	0.02
	(−1.61)	(−2.21)	(0.51)	(0.42)
HHI	0.04	0.09*	0.07	0.02
	(0.82)	(1.71)	(1.61)	(0.38)
HP Firm-level HHI		0.00	0.04	0.03
		(0.02)	(1.37)	(1.01)
Constant	0.12***	0.21***	0.16***	0.16***
	(3.47)	(4.14)	(2.96)	(2.84)
Year FE			X	X
Fama-French 48 FE			X	
Hoberg-Phillips 50 FE				X
Nobs	7,405	4,024	4,024	4,004
Adjusted R^2	0.13	0.08	0.22	0.20

t-stats in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

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Table A.16: **Panel Regressions of Leverage on Price Flexibility (cross-sectional regression)**

This table reports the results for estimating the following linear equation:

$$Lt2A_i = \alpha + \beta \times FPA_i + X_i' \times \gamma + \eta_k + \epsilon_i,$$

where Lt2A is long-term debt to total assets, FPA is the frequency of price adjustment, and X_i' *a vector of additional controls (see Table 1 for a detailed description). HP Firm-level HHI is the firm-level measure of product-space concentration based on the Hoberg & Phillips 300 industries. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. The sample period is January 1982 to December 2014 in column (1). The sample is restricted to the period January 1996 to December 2014 in all other columns, due to the availability of the Hoberg-Phillips data. We collapse the data to a single cross section. All columns use the continuous measure of the frequency of price adjustment. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.*

	(1)	(2)	(3)	(4)
FPA	0.16***	0.14***	0.11**	0.13***
	(4.14)	(3.53)	(2.03)	(2.63)
Total Vol	−0.10*	−0.13**	0.12	0.21**
	(−1.85)	(−2.31)	(1.11)	(2.40)
Profitability	−0.03	−0.11	−0.17	−0.05
	(−0.28)	(−0.90)	(−0.91)	(−0.34)
Size	0.00	0.00	0.00	0.00
	(0.23)	(0.29)	(0.55)	(0.20)
B-M ratio	0.10***	0.10***	−0.05	0.04
	(4.58)	(4.14)	(−1.54)	(1.20)
Intangibility	0.13***	0.10**	0.25***	0.17***
	(3.06)	(2.39)	(4.09)	(2.79)
Price-Cost margin	−0.02	−0.01	0.00	−0.05
	(−0.46)	(−0.35)	(0.05)	(−0.85)
HHI	−0.01	0.02	−0.65***	−0.04
	(−0.14)	(0.24)	(−2.68)	(−0.44)
HP Firm-level HHI		−0.01	−0.02	0.03
		(−0.32)	(−0.46)	(0.65)
Constant	0.13**	0.16**	0.19*	0.07
	(2.10)	(2.54)	(1.80)	(0.86)
Fama-French 48 FE			X	
Hoberg-Phillips 50 FE				X
Nobs	360	343	343	343
Adjusted R^2	0.22	0.22	0.37	0.44

t-stats in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

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Table A.17: **Panel Regressions of Leverage on Price Flexibility (cross-sectional regression)**

This table reports the results for estimating the following linear equation:

$$Lt2A_i = \alpha + \beta \times FPA_i + X_i' \times \gamma + \eta_k + \epsilon_i,$$

where Lt2A is long-term debt to total assets, FPA is the frequency of price adjustment, and X_i' a vector of additional controls (see Table 1 for a detailed description). HP Firm-level HHI is the firm-level measure of product-space concentration based on the Hoberg & Phillips 300 industries. Fama-French 48 FE is a set of forty-eight dummies that capture the Fama & French 48 industries. Hoberg-Phillips 50 FE is a set of fifty dummies that capture the Hoberg & Phillips 50 industries. The sample period is January 1982 to December 2014. We collapse the data to a single cross section. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FPA	0.23^{***}							
	(6.32)							
Total Vol		-0.18^{***}						
		(-3.43)						
Profitability			-0.43^{***}					
			(-4.82)					
Size				0.01^{***}				
				(2.64)				
B-M ratio					0.13^{***}			
					(8.41)			
Intangibility						0.04		
						(0.95)		
Price-Cost margin							-0.13^{***}	
							(-4.13)	
HHI								-0.10
								(-1.54)
Constant	0.18^{***}	0.27^{***}	0.28^{***}	0.11^{***}	0.13^{***}	0.20^{***}	0.26^{***}	0.22^{***}
	(25.62)	(14.94)	(19.04)	(3.00)	(11.84)	(17.16)	(20.00)	(25.72)
Observations	360	360	360	360	360	360	360	360
Adjusted R^2	0.10	0.03	0.06	0.02	0.16	-0.00	0.04	0.00

t-stats in parentheses
$*p < 0.10, **p < 0.05, ***p < 0.01$

Table A.18: **Price Flexibility and Likelihood of Default**

This table reports the results of logit regressions regressing future defaults on the frequency of price adjustment and total debt. Default is a dummy which equals 1 if a firm defaults within the next s years with s running from 1 to 5, FPA is the frequency of price adjustment, and Total Debt is the ratio of total debt to sum of total debt and market capitalization. Default data are from the Moody's default database. The sample period is January 1982 to December 2013. Equally-weighted probabilities of price adjustments are calculated at the firm level using the micro-data underlying the Producer Price Index constructed by the Bureau of Labor Statistics.

	Def_{t+1}	Def_{t+2}	Def_{t+3}	Def_{t+4}	Def_{t+5}
FPA	-2.02	-2.13*	-1.84*	-1.80**	-1.68**
	(-1.24)	(-1.81)	(-1.91)	(-2.14)	(-2.26)
Total Debt	6.89***	6.16***	5.68***	5.36***	4.93***
	(7.25)	(9.71)	(10.75)	(11.37)	(11.65)
Constant	-7.68***	-6.68***	-6.11***	-5.69***	-5.32***
	(-18.99)	(-25.17)	(-28.02)	(-30.09)	(-32.17)
Observations	13,092	13,092	13,092	13,092	13,092
Pseudo R^2	0.097	0.084	0.075	0.069	0.060

t-stats in parentheses

$*p < 0.10, **p < 0.05, ***p < 0.01$