Inflation Hedging and Industry Stock Returns

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WEB APPENDIX

Table 1
Augmented Dickey-Fuller Unit Root Tests for the VAR Model

The null hypothesis (H_0) is that the time-series has a unit root and thus is nonstationary while the alternative hypothesis (H_a) is that it is stationary. The sample period is 1959Q1 to 2014Q4.

Panel A: Tests for the undifferenced time series

Variables	Tau(τ)	p-value
Growth rate of GDP – seasonally adjusted	-5.79921	0.00007
Growth rate of M2 – seasonally adjusted	-4.75978	0.00015
Growth rate of employ in mfg - seasonally adj.	-5.53162	0.00007
CPI inflation rate	-2.65419	0.08422
Growth rate of wages	-1.88169	0.34027
Growth rate of import prices	-5.35635	0.00007

Panel B: Tests for the first differences of CPI inflation rate and growth rate of wages

Variables	Tau(τ)	p-value
First difference of CPI inflation rate	-10.8059	0.00007
First difference of growth rate of wages	-12.3185	0.00007

Table 2
Parameter Estimates for the $\Delta\pi_t$ Equation in the VAR Model

The table reports the parameter estimates for the $\Delta\pi_t$ equation in the VAR model, where y is the growth rate of GDP, m is the growth rate of M2, u is the growth rate of employment, $\Delta\pi_{t-1}$ is the first difference of the inflation rate, Δw_{t-1} is the first difference of the growth rate of wages, and pm is the growth rate of import prices. The sample period is 1959Q2 to 2014Q4. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Panel A	Parameter Estimate	Standard Deviation
Intercept	-0.00135	0.0010
y_{t-1}	-0.02099	0.0623
y_{t-2}	0.01342	0.0617
y_{t-3}	0.09327	0.0608
y_{t-4}	0.07268	0.0550
m_{t-1}	-0.04799	0.0501
m_{t-2}	0.04147	0.0532
m_{t-3}	-0.01725	0.0533
m_{t-4}	-0.00475	0.0494*
u_{t-1}	0.25585	0.1542*
u_{t-2}	-0.17754	0.1823
u_{t-3}	-0.10303	0.1843
u_{t-4}	0.15302	0.1275
$\Delta\pi_{t-1}$	-0.74328	0.0970***
$\Delta\pi_{t-2}$	-0.93805	0.1009***
$\Delta\pi_{t-3}$	-0.47276	0.1032***
$\Delta\pi_{t-4}$	-0.22834	0.0768***
Δw_{t-1}	0.06336	0.0687
Δw_{t-2}	0.20967	0.0806***
Δw_{t-3}	0.20024	0.0826**
Δw_{t-4}	0.11690	0.0674*
pm_{t-1}	0.08610	0.0200***
pm_{t-2}	-0.02083	0.0212
pm_{t-3}	0.00517	0.0216
pm_{t-4}	-0.06082	0.0188***

Panel B	Mean	Median	Std Dev	Min	Max
1961Q2 - 2014Q4					
π_t	0.0097	0.0084	0.0081	-0.0286	0.0380
$E(\pi_t)$	0.0074	0.0058	0.0072	-0.0095	0.0354
1961Q2 - 1982Q4					
π_t	0.0138	0.0118	0.0091	0.0000	0.0380
$E(\pi_t)$	0.0109	0.0097	0.0093	-0.0041	0.0354
1983Q1 - 2001Q4					
π_t	0.0078	0.0078	0.0038	-0.0028	0.0172
$E(\pi_t)$	0.0057	0.0051	0.0033	-0.0022	0.0166
2002Q1 - 2014Q4					
π_t	0.0055	0.0054	0.0077	-0.0286	0.0217
$E(\pi_t)$	0.0042	0.0040	0.0048	-0.0095	0.0167

Table 3
SIC Codes

NoDur   Consumer NonDurables -- Food, Tobacco, Textiles, Apparel, Leather, Toys
                0100-0999, 2000-2399, 2700-2749, 2770-2799, 3100-3199, 3940-3989

Durbl   Consumer Durables -- Cars, TV's, Furniture, Household Appliances
                2500-2519, 2590-2599, 3630-3659, 3710-3711, 3714-3714, 3716-3716, 3750-3751,
                3792-3792, 3900-3939, 3990-3999

Manuf   Manufacturing -- Machinery, Trucks, Planes, Off Furn, Paper, Com Printing
                2520-2589, 2600-2699, 2750-2769, 3000-3099, 3200-3569, 3580-3629, 3700-3709,
                3712-3713, 3715-3715, 3717-3749, 3752-3791, 3793-3799, 3830-3839, 3860-3899

Enrgy   Oil, Gas, and Coal Extraction and Products
                1200-1399, 2900-2999

Chems   Chemicals and Allied Products
                2800-2829, 2840-2899

BusEq   Business Equipment -- Computers, Software, and Electronic Equipment
                3570-3579, 3660-3692, 3694-3699, 3810-3829, 7370-7379

Telcm   Telephone and Television Transmission
                4800-4899

Utils   Utilities
                4900-4949

Shops   Wholesale, Retail, Services, Hotels, and Entertainment
                5000-5999, 7000-7369, 7380-7699, 7800-7999, 8100-8999

Hlth   Healthcare, Medical Equipment, and Drugs
                2830-2839, 3693-3693, 3840-3859, 8000-8099

Money   Finance
                6000-6999

Mines   Non-Metallic and Industrial Metal Mining
                1000-1119, 1400-1499

Cnstr   Construction and Some Construction Materials
                1500-1511, 1520-1549, 1600-1799, 2400-2439, 2450-2459, 2490-2499

Trans   Transportation
                4000-4789

Table 4
Summary Statistics

Panel A: Industry quarterly return, market to book ratio, return on assets, and leverage ratio, 1961Q2 - 2014Q4

		Quarterly Return			
Industry	**Mean**	**Median**	**Std Dev**	**Min**	**Max**
NoDur	0.037	0.035	0.118	-0.320	0.503
Utils	0.031	0.033	0.071	-0.207	0.253
Hlth	0.046	0.041	0.146	-0.346	0.565
Durbl	0.039	0.032	0.148	-0.408	0.671
Manuf	0.037	0.040	0.127	-0.348	0.428
Chems	0.038	0.041	0.112	-0.341	0.375
Shops	0.038	0.035	0.136	-0.328	0.601
Mines	0.037	0.031	0.158	-0.376	0.772
Cnstr	0.038	0.026	0.165	-0.377	0.884

		Market to Book Ratio			
Industry	**Mean**	**Median**	**Std Dev**	**Min**	**Max**
NoDur	1.596	1.717	0.410	0.544	2.241
Utils	1.236	1.298	0.282	0.634	1.723
Hlth	2.505	2.587	0.477	1.187	4.588
Durbl	1.581	1.685	0.407	0.409	2.280
Manuf	1.521	1.575	0.368	0.605	2.211
Chems	1.845	1.942	0.435	0.708	2.539
Shops	1.720	1.848	0.433	0.589	2.320
Mines	1.759	1.739	0.456	0.793	2.923
Cnstr	1.404	1.380	0.373	0.598	3.356

		Return on Assets			
Industry	**Mean**	**Median**	**Std Dev**	**Min**	**Max**
NoDur	0.008	0.008	0.005	-0.014	0.019
Utils	0.009	0.008	0.004	0.002	0.025
Hlth	-0.012	-0.019	0.019	-0.040	0.030
Durbl	0.005	0.004	0.008	-0.029	0.021
Manuf	0.006	0.006	0.007	-0.034	0.022
Chems	0.008	0.007	0.007	-0.013	0.023
Shops	0.003	0.002	0.007	-0.016	0.017
Mines	-0.001	-0.004	0.013	-0.033	0.031
Cnstr	0.004	0.004	0.007	-0.032	0.024

		Leverage Ratio			
Industry	**Mean**	**Median**	**Std Dev**	**Min**	**Max**
NoDur	0.477	0.474	0.022	0.404	0.595
Utils	0.646	0.643	0.024	0.606	0.719
Hlth	0.358	0.353	0.048	0.275	0.496
Durbl	0.497	0.493	0.033	0.407	0.636
Manuf	0.490	0.485	0.031	0.420	0.737
Chems	0.491	0.488	0.045	0.370	0.586
Shops	0.512	0.515	0.025	0.466	0.591
Mines	0.323	0.314	0.059	0.185	0.775
Cnstr	0.562	0.553	0.043	0.468	0.856

Panel B: Quarterly return, market to book ratio, return on assets, and leverage ratio of cyclical and non-cyclical industry portfolios

	Mean	Median	Std Dev	Min	Max
Quarterly Return					
1961Q2 - 2014Q4					
Non-cyclical	0.038	0.035	0.116	-0.346	0.565
Cyclical	0.038	0.034	0.142	-0.408	0.884
1961Q2 - 1982Q4					
Non-cyclical	0.035	0.035	0.116	-0.287	0.503
Cyclical	0.042	0.039	0.147	-0.327	0.884
1983Q1 - 2001Q4					
Non-cyclical	0.042	0.034	0.116	-0.346	0.565
Cyclical	0.030	0.027	0.129	-0.377	0.772
2002Q1 - 2014Q4					
Non-cyclical	0.038	0.040	0.116	-0.291	0.550
Cyclical	0.042	0.039	0.151	-0.408	0.671

	Mean	Median	Std Dev	Min	Max
Market to Book Ratio					
1961Q2 - 2014Q4					
Non-cyclical	1.785	1.679	0.667	0.544	4.588
Cyclical	1.638	1.672	0.439	0.409	3.356
1961Q2 - 1982Q4					
Non-cyclical	1.349	1.073	0.680	0.544	4.588
Cyclical	1.184	1.119	0.361	0.409	3.356
1983Q1 - 2001Q4					
Non-cyclical	1.913	1.823	0.619	0.804	3.128
Cyclical	1.746	1.745	0.324	0.909	2.769
2002Q1 - 2014Q4					
Non-cyclical	1.982	1.794	0.543	1.116	3.085
Cyclical	1.883	1.870	0.341	1.033	2.923

	Mean	Median	Std Dev	Min	Max
Return on Assets					
1961Q2 - 2014Q4					
Non-cyclical	0.001	0.006	0.015	-0.040	0.030
Cyclical	0.004	0.004	0.009	-0.034	0.031
1961Q2 - 1982Q4					
Non-cyclical	0.013	0.014	0.006	-0.009	0.030
Cyclical	0.012	0.014	0.008	-0.034	0.031
1983Q1 - 2001Q4					
Non-cyclical	-0.002	0.004	0.013	-0.031	0.020
Cyclical	0.001	0.002	0.007	-0.028	0.014
2002Q1 - 2014Q4					
Non-cyclical	-0.005	0.005	0.017	-0.040	0.013
Cyclical	0.001	0.003	0.007	-0.033	0.019

		Leverage Ratio			
	Mean	**Median**	**Std Dev**	**Min**	**Max**
1961Q2 - 2014Q4					
Non-cyclical	0.492	0.474	0.122	0.275	0.719
Cyclical	0.480	0.494	0.084	0.185	0.856
1961Q2 - 1982Q4					
Non-cyclical	0.504	0.483	0.100	0.309	0.719
Cyclical	0.481	0.486	0.096	0.185	0.856
1983Q1 - 2001Q4					
Non-cyclical	0.486	0.476	0.129	0.275	0.691
Cyclical	0.485	0.500	0.075	0.260	0.638
2002Q1 - 2014Q4					
Non-cyclical	0.489	0.465	0.130	0.288	0.703
Cyclical	0.471	0.497	0.083	0.252	0.586

Table 5
Fisher Effect

$$R_{i,t} = \beta_0 + \beta_1 E_{t-1}\pi_t + \varepsilon_{i,t} \tag{1}$$

where $R_{i,t}$ is the average quarterly return, π_t is the expected quarterly inflation rate, and $\varepsilon_{i,t}$ is a residual and distributed as a normal distribution. Variance is estimated with the Huber/White/sandwich robust variances estimator (White, 1980). The residual of the cyclical- and non-cyclical industry portfolio is estimated based on the fixed-effects model in panel regression.

Industry	1961Q2 – 2014Q4			1961Q2 – 1982Q4			1983Q1 – 2001Q4			2002Q1 – 2014Q4		
	β_1	β_0	R^2	β_1	β_0	R^2	β_1	β_0	R^2	β_1	β_0	R^2
NoDur	1.506	0.026	0.009	1.397	0.025	0.010	4.745	0.007	0.022	1.217	0.033	0.003
	(1.238)	(0.010)***		(1.424)	(0.017)		(4.523)	(0.027)		(4.437)	(0.019)*	
Utils	0.280	0.029	0.001	1.068	0.010	0.016	0.172	0.039	0.000	-0.251	0.035	0.000
	(0.922)	(0.007)***		(1.134)	(0.012)		(1.791)	(0.013)***		(2.799)	(0.013)***	
Hlth	1.351	0.036	0.005	1.369	0.028	0.010	8.915	0.001	0.034	-1.272	0.047	0.002
	(1.407)	(0.013)***		(1.566)	(0.019)		(6.922)	(0.043)		(5.758)	(0.021)**	
Durbl	1.017	0.032	0.003	0.513	0.036	0.001	5.749	0.004	0.020	1.312	0.033	0.001
	(1.393)	(0.012)***		(1.516)	(0.020)*		(5.598)	(0.033)		(7.092)	(0.027)	
Manuf	0.771	0.032	0.002	0.890	0.027	0.004	3.366	0.014	0.010	0.079	0.045	0.000
	(1.262)	(0.012)***		(1.407)	(0.018)		(4.420)	(0.029)		(5.422)	(0.025)*	
Chems	0.659	0.033	0.002	0.745	0.027	0.004	4.490	0.012	0.022	-0.180	0.044	0.000
	(1.125)	(0.011)***		(1.251)	(0.017)		(3.797)	(0.027)		(4.837)	(0.025)*	
Shops	1.232	0.029	0.004	1.131	0.031	0.005	4.177	0.005	0.013	-0.273	0.042	0.000
	(1.407)	(0.012)***		(1.612)	(0.020)		(4.802)	(0.031)		(5.418)	(0.021)**	
Mines	-0.882	0.044	0.002	-0.596	0.056	0.002	-3.840	0.037	0.007	-5.896	0.075	0.023
	(1.749)	(0.017)***		(1.891)	(0.021)***		(6.265)	(0.046)		(6.612)	(0.035)**	
Cnstr	2.069	0.023	0.008	1.874	0.028	0.008	7.178	-0.012	0.027	-1.192	0.040	0.002
	(1.831)	(0.014)		(2.177)	(0.025)		(6.708)	(0.038)		(4.225)	(0.023)*	
Non-cyclical	1.048	0.030	0.004	1.280	0.021	0.010	4.611	0.015	0.017	-0.102	0.038	0.000
	(0.633)*	(0.007)***		(0.780)*	(0.011)*		(2.322)**	(0.015)		(1.969)	(0.013)***	
Cyclical	0.812	0.032	0.002	0.761	0.034	0.002	3.520	0.010	0.008	-1.025	0.046	0.001
	(0.548)	(0.006)***		(0.702)	(0.010)***		(1.826)*	(0.012)		(1.804)	(0.011)***	

*: Significant at 10%
**: Significant at 5%
***: Significant at 1%

Table 6
Inflation, M/B, ROA, and Leverage, 1961Q2 – 2014Q4

$$M/B_{i,t} = \beta_0 + \beta_1 U_t\pi_t + \beta_2 E_{t-1}\pi_t + \varepsilon_{i,t} \quad\quad (2)$$
$$ROA_{i,t} = \beta_0 + \beta_1 U_t\pi_t + \beta_2 E_{t-1}\pi_t + \varepsilon_{i,t} \quad\quad (3)$$
$$LEV_{i,t} = \beta_0 + \beta_1 U_t\pi_t + \beta_2 E_{t-1}\pi_t + \varepsilon_{i,t} \quad\quad (4)$$

where $U_t\pi_t$ is the unexpected quarterly inflation rate, π_t is the expected quarterly inflation rate, $M/B_{i,t}$ is the average quarterly market to book ratio, $ROA_{i,t}$ is the average quarterly return on assets, $LEV_{i,t}$ is the average quarterly leverage ratio, and $\varepsilon_{i,t}$ is a residual. Variance is estimated with the Huber/White/sandwich robust variances estimator (White, 1980).

Panel A	M/B				ROA				LEV			
Industry	β_1	β_2	β_0	R^2	β_1	β_2	β_0	R^2	β_1	β_2	β_0	R^2
NoDur	-11.296	-38.146	1.930	0.47	0.282	0.273	0.005	0.21	0.186	0.854	0.470	0.08
	(6.264)*	(3.179)***	(0.039)***		(0.086)***	(0.043)***	(0.001)***		(0.324)	(0.223)***	(0.002)***	
Utils	-3.565	-24.341	1.442	0.42	0.112	0.219	0.007	0.17	-0.493	-0.423	0.650	0.03
	(3.700)	(1.853)***	(0.024)***		(0.048)**	(0.041)***	(0.000)***		(0.329)	(0.277)	(0.003)***	
Hlth	-17.391	-35.274	2.828	0.31	0.670	1.805	-0.028	0.50	1.027	3.752	0.325	0.33
	(9.931)*	(3.995)***	(0.054)***		(0.191)***	(0.106)***	(0.001)***		(0.843)	(0.395)***	(0.006)***	
Durbl	-6.698	-38.202	1.907	0.48	0.556	0.316	0.001	0.22	-0.178	0.815	0.491	0.04
	(7.211)	(3.607)***	(0.045)***		(0.120)***	(0.089)***	(0.001)		(0.401)	(0.268)***	(0.003)***	
Manuf	-6.178	-32.232	1.798	0.41	0.532	0.449	0.002	0.33	-0.173	0.231	0.489	0.00
	(5.661)	(3.237)***	(0.039)***		(0.064)***	(0.048)***	(0.001)***		(0.284)	(0.193)	(0.003)***	
Chems	-5.089	-38.319	2.169	0.42	0.564	0.548	0.003	0.45	-2.364	-2.583	0.517	0.23
	(5.684)	(3.166)***	(0.040)***		(0.059)***	(0.051)***	(0.001)***		(0.473)***	(0.308)***	(0.004)***	
Shops	-11.808	-39.226	2.064	0.45	0.420	0.471	-0.002	0.35	0.393	1.796	0.496	0.28
	(7.193)*	(3.547)***	(0.044)***		(0.068)***	(0.043)***	(0.001)***		(0.458)	(0.233)***	(0.003)***	
Mines	3.754	-11.406	1.844	0.04	0.851	1.134	-0.012	0.51	-1.029	0.573	0.320	0.02
	(6.216)	(4.324)***	(0.054)***		(0.148)***	(0.086)***	(0.001)***		(0.899)	(0.762)	(0.007)***	
Cnstr	-5.940	-24.889	1.619	0.24	0.435	0.200	0.001	0.13	0.901	2.300	0.541	0.16
	(4.660)	(2.894)***	(0.038)***		(0.089)***	(0.087)**	(0.001)		(0.501)*	(0.293)***	(0.004)***	

*: Significant at 10%
**: Significant at 5%
***: Significant at 1%

Table 6
Inflation, M/B, ROA, and Leverage (Continues)

$$M/B_{i,t} = \beta_0 + \beta_1 U_t\pi_t + \beta_2 E_{t-1}\pi_t + \varepsilon_{i,t} \tag{2}$$
$$ROA_{i,t} = \beta_0 + \beta_1 U_t\pi_t + \beta_2 E_{t-1}\pi_t + \varepsilon_{i,t} \tag{3}$$
$$LEV_{i,t} = \beta_0 + \beta_1 U_t\pi_t + \beta_2 E_{t-1}\pi_t + \varepsilon_{i,t} \tag{4}$$

where $U_t\pi_t$ is the unexpected quarterly inflation rate, π_t is the expected quarterly inflation rate, $M/B_{i,t}$ is the average quarterly market to book ratio, $ROA_{i,t}$ is the average quarterly return on assets, $LEV_{i,t}$ is the average quarterly leverage ratio, and $\varepsilon_{i,t}$ is a residual. The residual of the cyclical- and non-cyclical industry portfolio is estimated based on the fixed-effects model in panel regression.

Panel B	M/B				ROA				LEV			
Industry	β_1	β_2	β_0	R^2	β_1	β_2	β_0	R^2	β_1	β_2	β_0	R^2
61Q2-14Q4												
Non-cyclical	-10.829	-32.597	2.074	0.13	0.354	0.767	-0.006	0.14	0.241	1.399	0.480	0.01
	(2.532)***	(1.883)***	(0.022)***		(0.081)***	(0.060)***	(0.001)***		(0.255)	(0.190)***	(0.002)***	
Cyclical	-5.403	-30.856	1.900	0.27	0.557	0.515	-0.001	0.27	-0.406	0.522	0.476	0.00
	(1.947)***	(1.452)***	(0.017)***		(0.039)***	(0.029)***	(0.000)***		(0.228)*	(0.170)***	(0.002)***	
61Q2-82Q4												
Non-cyclical	-20.177	-23.455	1.794	0.10	0.105	0.052	0.012	0.01	1.162	1.527	0.476	0.03
	(5.180)***	(4.325)***	(0.085)***		(0.078)	(0.066)	(0.001)***		(0.432)***	(0.361)***	(0.007)***	
Cyclical	-13.049	-14.727	1.462	0.11	0.512	0.131	0.009	0.16	0.861	1.404	0.455	0.01
	(3.075)***	(2.528)***	(0.049)***		(0.068)***	(0.056)**	(0.001)***		(0.470)*	(0.386)***	(0.008)***	
83Q1-01Q4												
Non-cyclical	-8.935	-12.174	2.001	0.00	0.217	0.407	-0.005	0.01	0.439	1.225	0.479	0.00
	(3.863)**	(4.317)***	(0.032)***		(0.107)**	(0.119)***	(0.001)***		(0.487)	(0.545)**	(0.004)***	
Cyclical	1.656	-14.949	1.827	0.03	0.308	-0.013	0.000	0.03	-0.331	2.334	0.473	0.01
	(3.536)	(3.951)***	(0.029)***		(0.073)***	(0.082)	(0.001)		(0.435)	(0.487)***	(0.004)***	
02Q1-14Q4												
Non-cyclical	8.644	1.083	1.966	0.01	0.182	0.038	-0.005	0.00	-0.765	-0.017	0.490	0.00
	(2.614)***	(3.592)	(0.023)***		(0.049)***	(0.067)	(0.000)***		(0.312)**	(0.429)	(0.003)***	
Cyclical	13.584	2.635	1.854	0.07	0.423	0.186	0.000	0.14	-1.072	-0.164	0.473	0.01
	(2.541)***	(3.491)	(0.023)***		(0.048)***	(0.065)***	(0.000)		(0.196)***	(0.270)	(0.002)***	

*: Significant at 10%
**: Significant at 5%
***: Significant at 1%

Table 7
Fisher Effect with M/B, ROA, and Leverage, 1961Q2 – 2014Q4

$$R_{i,t} = \beta_0 + \beta_1 U_t \pi_t + \beta_2 E_{t-1} \pi_t + \beta_3 M/B_{i,t} + \beta_4 ROA_{i,t} + \beta_5 LEV_{i,t} + \varepsilon_{i,t} \tag{5}$$

where $R_{i,t}$ is the average quarterly return, $U_t \pi_t$ is the unexpected quarterly inflation rate, π_t is the expected quarterly inflation rate, $M/B_{i,t}$ is the average quarterly market to book ratio, $ROA_{i,t}$ is the average quarterly return on assets, $LEV_{i,t}$ is the average quarterly leverage ratio, and $\varepsilon_{i,t}$ is a residual. Variance is estimated with the Huber/White/sandwich robust variances estimator (White, 1980).

Panel A

Industry	β_1	β_2	β_3	β_4	β_5	β_0	R^2
NoDur	-3.735	3.241	0.078	4.047	-0.173	-0.054	0.089
	(2.578)	(1.711)	(0.039)**	(2.623)	(0.485)	(0.271)	
Utils	-1.078	0.507	0.033	-0.484	-0.715	0.459	0.052
	(1.669)	(1.267)	(0.031)	(1.530)	(0.315)**	(0.183)***	
Hlth	-2.623	3.269	0.168	0.137	0.919	-0.722	0.148
	(3.159)	(2.334)	(0.040)***	(0.939)	(0.356)***	(0.208)***	
Durbl	-3.687	4.793	0.107	0.363	0.101	-0.215	0.070
	(3.500)	(2.366)**	(0.053)**	(3.203)	(0.553)	(0.349)	
Manuf	-0.627	4.527	0.102	-0.942	-0.342	0.020	0.066
	(3.288)	(2.338)**	(0.036)***	(2.350)	(0.374)	(0.190)	
Chems	-2.219	1.752	0.060	0.725	-0.266	0.043	0.042
	(3.180)	(1.965)	(0.026)**	(2.112)	(0.275)	(0.150)	
Shops	-4.353	2.492	0.079	3.634	0.002	-0.123	0.071
	(3.334)	(2.067)	(0.041)*	(1.892)*	(0.468)	(0.266)	
Mines	-3.114	-5.715	0.171	6.710	0.946	-0.511	0.251
	(2.700)	(2.176)***	(0.028)***	(1.146)***	(0.157)***	(0.080)***	
Cnstr	-3.900	4.674	0.092	0.959	-0.329	0.060	0.080
	(3.976)	(2.114)**	(0.047)**	(1.788)	(0.241)	(0.171)	

*: Significant at 10%
**: Significant at 5%
***: Significant at 1%

Table 7
Fisher Effect with M/B, ROA, and Leverage (Continues)

$$R_{i,t} = \beta_0 + \beta_1 U_t\pi_t + \beta_2 E_{t-1}\pi_t + \beta_3 M/B_{i,t} + \beta_4 ROA_{i,t} + \beta_5 LEV_{i,t} + \varepsilon_{i,t} \tag{5}$$

where $R_{i,t}$ is the average quarterly return, $U_t\pi_t$ is the unexpected quarterly inflation rate, π_t is the expected quarterly inflation rate, $M/B_{i,t}$ is the average quarterly market to book ratio, $ROA_{i,t}$ is the average quarterly return on assets, $LEV_{i,t}$ is the average quarterly leverage ratio, and $\varepsilon_{i,t}$ is a residual. The residual of the cyclical- and non-cyclical industry portfolio is estimated based on the fixed-effects model in panel regression.

Panel B

	β_1	β_2	β_3	β_4	β_5	β_0	R^2
1961Q2 - 2014Q4							
Non-cyclical	-2.441	2.720	0.079	0.921	-0.084	-0.079	0.038
	(0.948)***	(0.908)***	(0.017)***	(0.534)*	(0.177)	(0.102)	
Cyclical	-2.871	2.575	0.091	2.144	0.123	-0.196	0.057
	(0.867)***	(0.784)***	(0.013)***	(0.668)***	(0.117)	(0.065)***	
1961Q2 - 1982Q4							
Non-cyclical	-7.626	0.118	0.013	-0.280	0.071	0.008	0.174
	(1.716)***	(1.510)	(0.029)	(1.813)	(0.357)	(0.202)	
Cyclical	-9.334	-0.678	0.013	3.198	0.427	-0.182	0.101
	(1.772)***	(1.363)	(0.030)	(1.486)**	(0.213)**	(0.111)*	
1983Q1 - 2001Q4							
Non-cyclical	-4.462	4.043	0.217	1.932	-0.244	-0.265	0.039
	(2.114)**	(2.416)*	(0.036)***	(1.338)	(0.297)	(0.172)	
Cyclical	-6.698	3.137	0.198	1.136	0.271	-0.452	0.134
	(1.669)***	(1.889)*	(0.025)***	(1.216)	(0.224)	(0.133)***	
2002Q1 - 2014Q4							
Non-cyclical	1.059	-0.078	0.130	5.354	0.522	-0.449	0.011
	(1.485)	(1.899)	(0.047)***	(2.340)**	(0.393)	(0.242)*	
Cyclical	2.631	-1.000	0.115	1.818	0.772	-0.540	0.019
	(1.451)*	(1.772)	(0.036)***	(1.691)	(0.433)*	(0.243)**	

*: Significant at 10%
**: Significant at 5%
***: Significant at 1%

Table 8
Fisher Effect with Three Factor Model, 1961Q2 – 2014Q4

$$R_{i,t} - R_{f,t} = \beta_0 + \beta_1 U_t\pi_t + \beta_2 E_{t-1}\pi_t + \beta_3 MRP_t + \beta_4 SMB_t + \beta_5 HML_t + \varepsilon_{i,t} \tag{6}$$

where $R_{i,t}$ is the average quarterly return, R_{ft} is the quarterly rate on one-month Treasury bill, $U_t\pi_t$ is the unexpected quarterly inflation rate, π_t is the expected quarterly inflation rate, MRP_t is the quarterly market risk premium, SMB_t is the quarterly size premium, HML_t is the quarterly value premium, and $\varepsilon_{i,t}$ is a residual. Variance is estimated with the Huber/White/sandwich robust variances estimator (White, 1980).

Panel A

Industry	β_1	β_2	β_3	β_4	β_5	β_0	R^2
NoDur	-1.679	0.350	1.049	0.747	0.577	-0.001	0.874
	(0.546)***	(0.394)	(0.060)***	(0.104)***	(0.083)***	(0.005)	
Utils	-0.726	-0.131	0.686	-0.009	0.360	0.006	0.627
	(0.473)	(0.534)	(0.045)***	(0.070)	(0.068)***	(0.005)	
Hlth	-1.512	0.931	1.291	0.392	0.057	0.008	0.705
	(0.821)*	(0.602)	(0.134)***	(0.286)	(0.163)	(0.007)	
Durbl	-1.698	-0.294	1.234	0.981	0.662	0.001	0.820
	(1.016)*	(0.636)	(0.095)***	(0.154)***	(0.127)***	(0.007)	
Manuf	0.360	-0.121	1.148	0.825	0.563	-0.004	0.882
	(0.496)	(0.458)	(0.063)***	(0.127)***	(0.087)***	(0.004)	
Chems	0.268	0.078	1.076	0.523	0.404	0.000	0.840
	(0.593)	(0.362)	(0.046)***	(0.062)***	(0.071)***	(0.005)	
Shops	-0.969	0.010	1.137	0.993	0.427	0.001	0.883
	(0.545)*	(0.481)	(0.077)***	(0.141)***	(0.106)***	(0.006)	
Mines	4.044	-1.481	0.704	0.828	0.336	0.008	0.313
	(1.803)**	(1.339)	(0.134)***	(0.150)***	(0.169)**	(0.015)	
Cnstr	-1.268	0.676	1.346	1.141	0.817	-0.013	0.817
	(0.895)	(0.736)	(0.102)***	(0.174)***	(0.140)***	(0.008)	

*: Significant at 10%
**: Significant at 5%
***: Significant at 1%

Table 8
Fisher Effect with Three Factor Model (Continues)

$$R_{i,t} - R_{f,t} = \beta_0 + \beta_1 U_t\pi_t + \beta_2 E_{t-1}\pi_t + \beta_3 MRP_t + \beta_4 SMB_t + \beta_5 HML_t + \varepsilon_{i,t} \tag{6}$$

where $R_{i,t}$ is the average quarterly return, R_{ft} is the quarterly rate on one-month Treasury bill, $U_t\pi_t$ is the unexpected quarterly inflation rate, π_t is the expected quarterly inflation rate, MRP_t is the quarterly market risk premium, SMB_t is the quarterly size premium, HML_t is the quarterly value premium, and $\varepsilon_{i,t}$ is a residual. The residual of the cyclical- and non-cyclical industry portfolio is estimated based on the fixed-effects model in panel regression.

Panel B

Industry	β_1	β_2	β_3	β_4	β_5	β_0	R^2
1961Q2 - 2014Q4							
Non-cyclical	-1.306	0.384	1.009	0.377	0.331	0.004	0.659
	(0.532)***	(0.385)	(0.036)***	(0.050)***	(0.048)***	(0.004)	
Cyclical	0.121	-0.191	1.108	0.882	0.535	-0.001	0.704
	(0.429)	(0.311)	(0.029)***	(0.040)***	(0.038)***	(0.004)	
1961Q2 - 1982Q4							
Non-cyclical	-1.320	0.203	0.964	0.454	0.204	0.005	0.774
	(0.724)*	(0.401)	(0.052)***	(0.065)***	(0.071)***	(0.007)	
Cyclical	0.197	-0.372	1.084	1.003	0.378	0.004	0.821
	(0.580)	(0.321)	(0.042)***	(0.052)***	(0.057)***	(0.005)	
1983Q1 - 2001Q4							
Non-cyclical	-2.161	3.614	1.061	0.292	0.472	-0.018	0.524
	(1.654)	(1.794)**	(0.079)***	(0.095)***	(0.094)***	(0.014)	
Cyclical	0.112	2.031	1.098	0.769	0.635	-0.025	0.588
	(1.205)	(1.306)	(0.058)***	(0.069)***	(0.068)***	(0.010)***	
2002Q1 - 2014Q4							
Non-cyclical	-0.166	1.728	1.023	0.687	-0.038	0.003	0.725
	(0.787)	(1.165)	(0.067)***	(0.147)***	(0.118)	(0.007)	
Cyclical	0.468	-0.252	1.169	0.933	0.324	0.008	0.674
	(0.778)	(1.152)	(0.066)***	(0.145)***	(0.117)***	(0.007)	

*: Significant at 10%
**: Significant at 5%
***: Significant at 1%

Appendix A
Fisher Effect with Real Return

$$r_{i,t} = \beta_0 + \beta_1 E_{t-1} \pi_t + \varepsilon_{i,t} \tag{A1}$$

where $r_{i,t}$ is the average quarterly real return, π_t is the expected quarterly inflation rate, and $\varepsilon_{i,t}$ is a residual and distributed as a normal distribution. Variance is estimated with the Huber/White/sandwich robust variances estimator (White, 1980). The residual of the cyclical- and non-cyclical industry portfolio is estimated based on the fixed-effects model in panel regression.

Industry	1961Q2 – 2014Q4			1961Q2 – 1982Q4			1983Q1 – 2001Q4			2002Q1 – 2014Q4		
	β_1	β_0	R^2	β_1	β_0	R^2	β_1	β_0	R^2	β_1	β_0	R^2
NoDur	0.643	0.023	0.002	0.580	0.020	0.002	4.192	0.002	0.017	0.347	0.032	0.000
	(1.257)	(0.010)**		(1.450)	(0.018)		(4.579)	(0.028)		(4.488)	(0.019)*	
Utils	-0.580	0.026	0.004	0.267	0.005	0.001	-0.381	0.034	0.001	-1.121	0.033	0.006
	(0.933)	(0.007)***		(1.148)	(0.012)		(1.810)	(0.013)***		(2.818)	(0.013)**	
Hlth	0.489	0.033	0.001	0.559	0.023	0.002	8.363	-0.004	0.029	-2.142	0.045	0.005
	(1.424)	(0.013)***		(1.589)	(0.019)		(6.981)	(0.043)		(5.808)	(0.021)**	
Durbl	0.154	0.028	0.000	-0.304	0.032	0.000	5.196	-0.001	0.016	0.442	0.031	0.000
	(1.414)	(0.012)**		(1.546)	(0.020)		(5.659)	(0.033)		(7.138)	(0.027)	
Manuf	-0.093	0.028	0.000	0.073	0.022	0.000	2.813	0.009	0.007	-0.790	0.043	0.001
	(1.277)	(0.012)**		(1.431)	(0.019)		(4.468)	(0.029)		(5.449)	(0.025)*	
Chems	-0.205	0.030	0.000	-0.072	0.022	0.000	3.937	0.007	0.017	-1.049	0.042	0.002
	(1.137)	(0.011)***		(1.271)	(0.017)		(3.836)	(0.027)		(4.860)	(0.024)*	
Shops	0.368	0.026	0.000	0.314	0.026	0.000	3.624	0.001	0.010	-1.143	0.040	0.002
	(1.425)	(0.012)**		(1.636)	(0.020)		(4.857)	(0.031)		(5.466)	(0.021)*	
Mines	-1.741	0.041	0.006	-1.397	0.051	0.009	-4.393	0.033	0.009	-6.765	0.073	0.030
	(1.745)	(0.017)**		(1.893)	(0.021)**		(6.266)	(0.046)		(6.598)	(0.034)**	
Cnstr	1.210	0.020	0.003	1.073	0.023	0.003	6.625	-0.016	0.023	-2.062	0.038	0.005
	(1.847)	(0.014)		(2.198)	(0.026)		(6.768)	(0.038)		(4.269)	(0.023)*	
Non-cyclical	0.186	0.027	0.000	0.471	0.016	0.001	4.058	0.011	0.013	-0.972	0.037	0.002
	(0.638)	(0.007)***		(0.794)	(0.011)		(2.336)*	(0.015)		(1.955)	(0.012)***	
Cyclical	-0.051	0.029	0.000	-0.051	0.029	0.000	2.967	0.005	0.006	-1.895	0.045	0.004
	(0.550)	(0.006)***		(0.710)	(0.010)***		(1.835)	(0.012)		(1.791)	(0.011)***	

*: Significant at 10%
**: Significant at 5%
***: Significant at 1%

Appendix B
Lagged Inflation, M/B, ROA, and Leverage, 1961Q2 – 2014Q4

$$M/B_{i,t} = \beta_0 + \beta_1 U_{t-1}\pi_{t-1} + \beta_2 E_{t-2}\pi_{t-1} + \varepsilon_{i,t} \tag{B2}$$
$$ROA_{i,t} = \beta_0 + \beta_1 U_{t-1}\pi_{t-1} + \beta_2 E_{t-2}\pi_{t-1} + \varepsilon_{i,t} \tag{B3}$$
$$LEV_{i,t} = \beta_0 + \beta_1 U_{t-1}\pi_{t-1} + \beta_2 E_{t-2}\pi_{t-1} + \varepsilon_{i,t} \tag{B4}$$

where $U_{t-1}\pi_{t-1}$ is the unexpected quarterly inflation rate at t-1, π_{t-1} is the expected quarterly inflation rate at t-1, $M/B_{i,t}$ is the average quarterly market to book ratio, $ROA_{i,t}$ is the average quarterly return on assets, $LEV_{i,t}$ is the average quarterly leverage ratio, and $\varepsilon_{i,t}$ is a residual. Variance is estimated with the Huber/White/sandwich robust variances estimator (White, 1980).

Panel A	M/B				ROA				LEV			
Industry	β_1	β_2	β_0	R^2	β_1	β_2	β_0	R^2	β_1	β_2	β_0	R^2
NoDur	-13.667	-38.019	1.938	0.47	0.189	0.268	0.005	0.16	0.521	0.692	0.470	0.06
	(7.319)*	(3.255)***	(0.042)***		(0.062)***	(0.042)***	(0.000)***		(0.393)	(0.189)***	(0.002)***	
Utils	-5.823	-25.389	1.458	0.45	0.099	0.186	0.007	0.12	-0.497	-0.379	0.650	0.02
	(4.332)	(1.862)***	(0.026)***		(0.051)*	(0.042)***	(0.000)***		(0.318)	(0.248)	(0.003)***	
Hlth	-19.550	-34.492	2.829	0.30	0.631	1.822	-0.029	0.49	1.485	3.631	0.325	0.31
	(9.691)**	(3.803)***	(0.053)***		(0.192)***	(0.106)***	(0.001)***		(0.985)	(0.391)***	(0.006)***	
Durbl	-12.163	-38.317	1.922	0.48	0.375	0.309	0.001	0.13	0.454	0.590	0.491	0.02
	(8.591)	(3.647)***	(0.048)***		(0.138)***	(0.073)***	(0.001)*		(0.507)	(0.209)***	(0.003)***	
Manuf	-7.849	-33.477	1.815	0.44	0.540	0.357	0.002	0.26	0.030	0.212	0.489	0.00
	(6.581)	(3.436)***	(0.041)***		(0.076)***	(0.051)***	(0.001)***		(0.322)	(0.196)	(0.003)***	
Chems	-10.118	-39.179	2.189	0.44	0.438	0.445	0.004	0.28	-1.899	-2.578	0.516	0.20
	(6.737)	(3.078)***	(0.043)***		(0.094)***	(0.057)***	(0.001)***		(0.464)***	(0.292)***	(0.004)***	
Shops	-15.538	-38.798	2.072	0.44	0.293	0.431	-0.002	0.26	1.082	1.775	0.495	0.29
	(8.436)*	(3.715)***	(0.048)***		(0.089)***	(0.049)***	(0.001)***		(0.531)**	(0.212)***	(0.003)***	
Mines	-2.082	-12.526	1.866	0.04	0.657	0.992	-0.011	0.36	-0.094	0.418	0.319	0.00
	(5.960)	(4.380)***	(0.057)***		(0.185)***	(0.093)***	(0.001)***		(1.097)	(0.477)	(0.006)***	
Cnstr	-8.174	-25.494	1.631	0.25	0.271	0.137	0.002	0.05	1.287	2.292	0.540	0.16
	(5.784)	(3.182)***	(0.041)***		(0.103)***	(0.072)***	(0.001)***		(0.542)**	(0.284)***	(0.004)***	

*: Significant at 10%
**: Significant at 5%
***: Significant at 1%

Appendix B
Lagged Inflation, M/B, ROA, and Leverage (Continues)

$$M/B_{i,t} = \beta_0 + \beta_1 U_{t-1}\pi_{t-1} + \beta_2 E_{t-2}\pi_{t-1} + \varepsilon_{i,t} \tag{B2}$$
$$ROA_{i,t} = \beta_0 + \beta_1 U_{t-1}\pi_{t-1} + \beta_2 E_{t-2}\pi_{t-1} + \varepsilon_{i,t} \tag{B3}$$
$$LEV_{i,t} = \beta_0 + \beta_1 U_{t-1}\pi_{t-1} + \beta_2 E_{t-2}\pi_{t-1} + \varepsilon_{i,t} \tag{B4}$$

where $U_{t-1}\pi_{t-1}$ is the unexpected quarterly inflation rate at t-1, π_{t-1} is the expected quarterly inflation rate at t-1, $M/B_{i,t}$ is the average quarterly market to book ratio, $ROA_{i,t}$ is the average quarterly return on assets, $LEV_{i,t}$ is the average quarterly leverage ratio, and $\varepsilon_{i,t}$ is a residual. The residual of the cyclical- and non-cyclical industry portfolio is estimated based on the fixed-effects model in panel regression.

Panel B	M/B				ROA				LEV			
Industry	β_1	β_2	β_0	R^2	β_1	β_2	β_0	R^2	β_1	β_2	β_0	R^2
61Q2-14Q4												
Non-cyclical	-13.087	-32.644	2.082	0.13	0.307	0.760	-0.006	0.14	0.511	1.318	0.480	0.01
	(2.548)***	(1.898)***	(0.022)***		(0.082)***	(0.061)***	(0.001)***		(0.258)**	(0.192)***	(0.002)***	
Cyclical	-9.369	-31.414	1.916	0.28	0.427	0.442	-0.001	0.18	0.146	0.452	0.476	0.00
	(1.941)***	(1.452)***	(0.017)***		(0.042)***	(0.032)***	(0.000)		(0.229)	(0.172)***	(0.002)***	
61Q2-82Q4												
Non-cyclical	-22.575	-20.563	1.755	0.08	0.043	0.035	0.013	0.00	1.182	1.033	0.484	0.02
	(5.511)***	(4.502)***	(0.089)***		(0.082)	(0.067)	(0.001)***		(0.465)***	(0.380)***	(0.008)***	
Cyclical	-13.657	-11.197	1.407	0.07	0.358	0.029	0.011	0.07	1.447	1.070	0.459	0.01
	(3.249)***	(2.624)***	(0.052)***		(0.074)***	(0.060)	(0.001)***		(0.487)***	(0.394)***	(0.008)***	
83Q1-01Q4												
Non-cyclical	-10.900	-13.476	2.014	0.01	0.047	0.336	-0.004	0.01	1.208	1.338	0.476	0.00
	(3.859)***	(4.385)***	(0.033)***		(0.108)	(0.123)***	(0.001)***		(0.486)***	(0.552)**	(0.004)***	
Cyclical	-9.065	-20.431	1.883	0.04	0.025	-0.219	0.002	0.01	1.050	2.548	0.468	0.01
	(3.522)***	(4.002)***	(0.030)***		(0.074)	(0.084)***	(0.001)***		(0.440)**	(0.499)***	(0.004)***	
02Q1-14Q4												
Non-cyclical	8.100	-4.936	1.993	0.01	0.102	-0.029	-0.005	0.00	-0.659	0.606	0.487	0.00
	(2.602)***	(3.654)	(0.024)***		(0.050)**	(0.070)	(0.000)***		(0.311)**	(0.437)	(0.003)***	
Cyclical	10.811	-5.973	1.895	0.05	0.283	-0.168	0.002	0.08	-0.820	0.399	0.471	0.01
	(2.567)***	(3.604)***	(0.023)***		(0.050)***	(0.071)**	(0.000)***		(0.199)***	(0.280)	(0.002)***	

*: Significant at 10%
**: Significant at 5%
***: Significant at 1%