

# DRIVERS OF SHORT-TERM OVERPRODUCTION: EXCESS CAPITAL INVESTMENT AND PRODUCTION DECISIONS BASED ON PAST INFORMATION

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## WEB APPENDIX

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**Table 1 Descriptive Statistics**

**Panel A Variables Used in Testing H1**

	Mean	Std	Q1	Median	Q3	N
CPAI	-0.00715	0.2146	-0.0434	0	0.0389	9,480
$\Delta FA_t$	0.000246	0.0680	-0.0201	-0.00407	0.0169	9,480
$\Delta FA_{t-1}$	0.000483	0.7866	-0.0243	-0.00712	0.0158	9,480
$\Delta \Delta FA_{t-1}$	0.000562	0.7876	-0.0271	-0.00944	0.0154	9,480
Log(AT)	5.5715	2.5107	3.9180	5.6370	7.3277	9,480
Tobin's Q	3.2245	37.2464	0.8894	1.3613	2.3288	9,480
Industry Growth	0.0404	0.1127	0.0121	0.0440	0.0879	9,480

## Panel B Variables Used in Testing Research Question 2

	Mean	Std	Q1	Median	Q3	N
CPAI	-0.0051	0.1891	-0.0410	0.0000	0.0372	10,266
$Prod_t/TA_{t-1}$	0.7484	1.7768	0.3432	0.5911	0.9222	10,266
$Sales_{t-1}/TA_{t-1}$	0.9590	0.5840	0.5801	0.8818	1.2610	10,266
$Sales_t/TA_{t-1}$	1.0068	0.6136	0.6077	0.9323	1.3143	10,266
$Sales_{t+1}/TA_{t-1}$	1.0589	0.6911	0.6156	0.9542	1.3771	10,266

CPAI is calculated as  $\Delta INV_t / (COGS_t + \Delta INV_t) - \Delta INV_{t-1} / (COGS_{t-1} + \Delta INV_{t-1})$ . In the expression,  $\Delta INV_t$  and  $\Delta INV_{t-1}$  represent a firm's annual inventory change in years  $t$  and  $t-1$ , respectively, calculated based on total (absorption-costing based) inventory value (COMPUSTAT DATA#3).  $COGS$  represents a firm's cost of goods sold (COMPUSTAT DATA#41), adjusted upward for depreciation expense (DATA#14).

$\Delta FA_t$  is excess production capacity in year  $t$ , which is computed as change in gross fixed assets scaled by total assets minus corresponding industry mean based on two digit SIC code.

Similarly, we calculated  $\Delta FA_{t-1}$  and  $\Delta FA_{t-2}$  in years  $t-1$  and  $t-2$ , respectively.

$\log(AT)$  is natural logarithm of total assets to proxy for business size ( $\log(AT)$ ).

Tobin's  $Q$  is calculated as (market value of equity + total liability)/total assets.

Industry Growth is the mean of industry sales changes to proxy for the industry business growth.

$Prod_t/TA_{t-1}$  is the sum of the cost of goods sold and the change in inventory during the year scaled by total assets at the beginning of the year.

$Sales_{t-1}/TA_{t-1}$  is prior year sales scaled by total assets at the beginning of the year.

$Sales_t/TA_{t-1}$  is current year sales scaled by total assets at the beginning of the year.

$Sales_{t+1}/TA_{t-1}$  is future year sales scaled by total assets at the beginning of the year.

**Table 2 Regression Results of Equation (1) to Test H1**

$$CPAI_t = \alpha_0 + \alpha_1 \Delta FA_t + \alpha_2 \Delta FA_{t-1} + \alpha_3 \Delta FA_{t-2} + \text{ControlVariables} + \varepsilon_t \quad (1)$$

	Estimated Coefficient
Intercept	-0.0074*** (14.30)
$\Delta FA_t$	0.1007*** (76.53)
$\Delta FA_{t-1}$	-0.0009 (0.89)
$\Delta FA_{t-2}$	0.0006 (0.36)
Log(AT)	-0.0000 (0.01)
Tobin's Q	-0.0000 (0.06)
Industry Growth	0.1432*** (425.89)
Adj. R <sup>2</sup>	0.0184
N	9,480

\*\*\*, \*\*, \* statistically significant at the 1 percent, 5 percent, 10 percent levels for a two-tailed test.

CPAI is calculated as  $\Delta INV_t / (COGS_t + \Delta INV_t) - \Delta INV_{t-1} / (COGS_{t-1} + \Delta INV_{t-1})$ . In the expression,  $\Delta INV_t$  and  $\Delta INV_{t-1}$  represent a firm's annual inventory change in years t and t-1, respectively,

calculated based on total (absorption-costing based) inventory value (COMPUSTAT DATA#3). COGS represents a firm's cost of goods sold (COMPUSTAT DATA#41), adjusted upward for depreciation expense (DATA#14).

$\Delta FA_t$  is excess production capacity in year  $t$ , which is computed as change in gross fixed assets scaled by total assets minus corresponding industry mean based on two digit SIC code.

Similarly, we calculated  $\Delta FA_{t-1}$  and  $\Delta FA_{t-2}$  in years  $t-1$  and  $t-2$ , respectively.

$\text{Log}(AT)$  is natural logarithm of total assets to proxy for business size ( $\text{Log}(AT)$ ).

Tobin's  $Q$  is calculated as  $(\text{market value of equity} + \text{total liability})/\text{total assets}$ .

Industry Growth is the mean of industry sales changes to proxy for the industry business growth.

**Table 3 Regression Results of Equation (2) to Test Research Question 2**

$$\text{Prod}_t/\text{TA}_{t-1} = \alpha_0 + \alpha_1(1/\text{TA}_t) + \alpha_2(\text{Sales}_{t-1}/\text{TA}_{t-1}) + \alpha_3(\text{Sales}_t/\text{TA}_{t-1}) + \alpha_4(\text{Sales}_{t+1}/\text{TA}_{t-1}) + \varepsilon \quad (2)$$

**Panel A Sample Partitioned by CPAI Quartile**

	Q1	Q2	Q3	Q4
Intercept	-0.0478***	0.0186**	0.0293***	-0.1064***
$1/\text{TA}_{t-1}$	0.1761***	0.0258***	0.9124***	0.0991***
$\text{Sales}_{t-1}/\text{TA}_{t-1}$	-0.0216	0.0047	0.0036	0.0602***
$\text{Sales}_t/\text{TA}_{t-1}$	0.7660***	0.6777***	0.6193***	0.5865***
$\text{Sales}_{t+1}/\text{TA}_{t-1}$	-0.1122***	-0.0388*	0.0588***	0.0862***
Adj. $R^2$	0.4605	0.3784	0.4507	0.5898
N	2,650	2,578	2,475	2,563



### Panel B Sample Partitioned by CPAI Signs

	CPAI≤0	CPAI>0
Intercept	0.0096	-0.1188***
1/TA <sub>t-1</sub>	0.7142***	0.1121***
Sales <sub>t-1</sub> /TA <sub>t-1</sub>	0.0215	0.0427***
Sales <sub>t</sub> /TA <sub>t-1</sub>	0.6875***	0.6760***
Sales <sub>t+1</sub> /TA <sub>t-1</sub>	-0.0743***	0.0575***
Adj. R <sup>2</sup>	0.3464	0.5976
N	5,588	4,678

\*\*\*, \*\*, \* statistically significant at the 1 percent, 5 percent, 10 percent levels for a two-tailed test.

CPAI is calculated as  $\Delta INV_t / (COGS_t + \Delta INV_t) - \Delta INV_{t-1} / (COGS_{t-1} + \Delta INV_{t-1})$ . In the expression,  $\Delta INV_t$  and  $\Delta INV_{t-1}$  represent a firm's annual inventory change in years  $t$  and  $t-1$ , respectively, calculated based on total (absorption-costing based) inventory value (COMPUSTAT DATA#3). COGS represents a firm's cost of goods sold (COMPUSTAT DATA#41), adjusted upward for depreciation expense (DATA#14).

$Prod_t/TA_{t-1}$  is the sum of the cost of goods sold and the change in inventory during the year scaled by total assets at the beginning of the year.

$Sales_{t-1}/TA_{t-1}$  is prior year sales scaled by total assets at the beginning of the year.

$\text{Sales}_t/\text{TA}_{t-1}$  is current year sales scaled by total assets at the beginning of the year.

$\text{Sales}_{t+1}/\text{TA}_{t-1}$  is future year sales scaled by total assets at the beginning of the year.