Web Appendix for Growth Opportunities and Technology Shocks

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January 19, 2012

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Table 1: Portfolio Transition Probabilities: 5 Portfolios sorted on β^{imc}

A. Data		IMC-beta sort(t-1)				
		Lo	2	3	4	Hi
	Lo	30.4%	23.1%	18.8%	15.0%	12.5%
	2	24.2%	25.2%	23.1%	18.7%	11.7%
IMC-beta Sort(t)	3	18.7%	23.3%	22.6%	22.3%	14.7%
	4	15.1%	17.9%	21.9%	24.3%	21.7%
	Hi	11.7%	10.5%	13.6%	19.7%	39.5%
B. Model		IMC-beta sort(t-1)				
		Lo	2	3	4	Hi
	Lo	49.1%	28.3%	14.4%	6.2%	1.9%
	2	27.6%	32.6%	24.4%	12.0%	3.4%
Sort(t)	3	14.0%	23.8%	30.7%	23.7%	8.0%
	4	6.4%	11.4%	22.8%	36.6%	22.9%
	Hi	2.7%	3.7%	7.7%	21.4%	63.6%

Table 1 compares the transition probabilities across IMC-beta portfolio quintiles in the data (top) versus the model (bottom). Stocks are sorted into 5 portfolios based on β^{imc}_{t-1}. β^{imc}_{t} refers to the firm's beta with the investment minus consumption portfolio (IMC) in year t, estimated using non-overlapping weekly returns within year t. The sample period is 1965-2007 and excludes firms producing investment goods, financial firms (SIC6000-6799) and utilities (SIC4900-4949).

Table 2: Risk and Comovement

	10 portfolios sorted on BE/ME (consumption firms)											
BE/ME	Lo	2	3	4	5	6	7	8	9	Hi	Hi - Lo	9 -2
Δx_t	1.02	0.35	1.56	2.18	1.75	3.09	3.39	3.23	3.17	3.64	2.61	2.82
	(0.46)	(0.19)	(0.85)	(1.26)	(0.99)	(1.73)	(1.76)	(1.98)	(1.33)	(1.55)	(1.42)	(2.50)
Δz_t^I	-2.36	-2.14	-2.41	-2.60	-2.47	-3.38	-3.05	-3.30	-3.62	-3.35	-0.99	-1.48
	(-1.79)	(-1.79)	(-1.75)	(-2.41)	(-2.40)	(-2.21)	(-2.45)	(-2.53)	(-3.01)	(-2.42)	(-1.18)	(-2.08)
R_{imc}	0.41	0.23	0.23	0.19	0.10	0.03	0.02	0.01	0.07	0.19	-0.22	-0.16
	(2.72)	(2.00)	(1.92)	(2.03)	(0.68)	(0.30)	(0.13)	(0.04)	(0.44)	(1.23)	(-2.44)	(-1.83)
R_{hml}	0.72	0.38	0.21	0.07	-0.13	-0.24	-0.44	-0.39	-0.53	-0.61	-1.34	-0.91
	(3.07)	(1.71)	(0.91)	(0.35)	(-0.56)	(-1.10)	(-1.86)	(-1.73)	(-1.94)	(-2.21)	(-8.27)	(-6.95)
	10 portfolios sorted on IMC beta (consumption firms)											
β^{imc}	Lo	2	3	4	5	6	7	8	9	Hi	Hi - Lo	9 -2
Δx_t	2.63	1.59	1.84	1.18	1.82	2.44	1.71	2.11	2.82	3.09	0.46	1.23
	(1.51)	(0.77)	(1.14)	(0.73)	(0.94)	(1.12)	(0.81)	(0.91)	(1.10)	(0.92)	(0.19)	(0.94)
Δz_t^I	-3.33	-3.06	-2.91	-2.58	-2.84	-3.38	-1.87	-2.68	-1.61	-1.02	2.31	1.44
	(25.48)	(-9.88)	(-7.08)	(-3.15)	(5.30)	(-43.39)	(3.12)	(-6.71)	(2.51)	(0.85)	(2.64)	(1.82)
R_{imc}	-0.06	-0.01	-0.01	-0.00	0.22	0.27	0.55	0.60	1.11	1.51	1.57	1.11
	(-0.34)	(-0.04)	(-0.11)	(-0.03)	(1.64)	(1.98)	(4.78)	(2.10)	(8.85)	(11.56)	(15.50)	(8.93)
R_{hml}	-0.31	-0.01	-0.06	-0.02	0.14	0.07	0.45	0.45	0.84	1.17	1.48	0.84
	(-1.23)	(-0.03)	(-0.48)	(-0.11)	(0.61)	(0.38)	(1.91)	(1.36)	(3.06)	(4.06)	(5.52)	(3.40)

Table 10 reports univariate betas of portfolios sorted on BE/ME (top) and IMC-beta (bottom) with the TFP process in the consumption sector Δx, our IST shock constructed using the price of equipment Δz^I, the IMC and HML portfolios respectively. Standard errors are computed using Newey-West with allowing for a maximum of 3 lags.

Table 3: Comovement in investment rates - market portfolio

Dependent variable i_t	(1)	(2)	(3)	(4)	(5)	(6)
$\tilde{R}^{mkt}_{t-1}$	0.076	0.057	0.042	0.023	0.023	0.047
		(3.57)	(3.86)	(0.80)	(1.27)	(3.51)
$D(\beta_{mkt})_2 \times (\tilde{R}^{mkt}_{t-1})$		-0.013	-0.009	-0.008	-0.008	-0.005
		(-1.34)	(-1.30)	(-0.94)	(-1.28)	(-0.62)
$D(\beta_{mkt})_3 \times (\tilde{R}^{mkt}_{t-1})$		-0.008	-0.002	-0.003	-0.002	-0.003
		(-0.88)	(-0.38)	(-0.30)	(-0.22)	(-0.30)
$D(\beta_{mkt})_4 \times (\tilde{R}^{mkt}_{t-1})$		-0.005	0.004	-0.001	0.004	0.009
		(-0.34)	(0.32)	(-0.04)	(0.31)	(0.71)
$D(\beta_{mkt})_H \times (\tilde{R}^{mkt}_{t-1})$		0.025	0.027	0.031	0.020	0.027
		(1.47)	(2.09)	(1.61)	(1.70)	(1.49)
Observations	87749	87749	87749	87749	87749	87749
R^2	0.013	0.039	0.333	0.241	0.411	0.537
Industry/Firm FE	N	N	N	I	I	F
Controls (i_{t-1})	N	N	Y	N	Y	N
Controls ($Q_{t-1}, CF_{t-1}, K_{t-1}, E_{t-1}/A_{t-1}$)	N	N	N	Y	Y	Y

Columns (1)-(3) shows estimates of regressing firm investment rates on lagged accumulated log market portfolio returns $\tilde{R}^{mkt}_t = R^{mkt}_t + R^{mkt}_{t-1}$, across market-beta quintiles. All variables have been standardized to zero mean and unit standard deviation. We report t-statistics in parenthesis using standard errors clustered by firm and year. Depending on the specification, we include a vector of controls that includes firm-fixed effects and lagged values of log Tobin's Q, cashflows over lagged capital, log book equity over book assets, and log capital. The sample period is 1965-2007 and excludes financial firms (SIC6000-6799) and utilities (SIC4900-4949). Columns (7)-(9) show estimates from the same regressions performed in simulated data.

Table 4: Response of I/K to R^{imc}: firms sorted by β^{imc}, firms with credit ratings only

Dependent variable i_t	(1)	(2)	(3)	(4)	(5)	(6)
$\tilde{R}^{imc}_{t-1}$	0.1125	0.0206	0.0302	0.0406	0.0425	0.0547
	(3.00)	(0.97)	(1.86)	(1.71)	(2.28)	(2.78)
$D(\beta^{imc})_2 \times \tilde{R}^{imc}_{t-1}$		0.0414	0.0187	0.0419	0.0222	0.0220
		(2.04)	(0.88)	(2.50)	(1.50)	(1.32)
$D(\beta^{imc})_3 \times \tilde{R}^{imc}_{t-1}$		0.0843	0.0433	0.0391	0.0200	0.0146
		(2.63)	(1.96)	(1.15)	(0.83)	(0.71)
$D(\beta^{imc})_4 \times \tilde{R}^{imc}_{t-1}$		0.1329	0.0731	0.0749	0.0451	0.0461
		(3.38)	(2.52)	(2.55)	(1.97)	(1.91)
$D(\beta^{imc})_5 \times \tilde{R}^{imc}_{t-1}$		0.2014	0.1346	0.1398	0.1074	0.1132
		(4.47)	(4.95)	(4.12)	(4.86)	(3.82)
Observations	13456	13456	13456	13456	13456	13456
R^2	0.013	0.039	0.333	0.241	0.411	0.537
Industry/Firm FE	N	N	N	I	I	F
Controls (i_{t-1})	N	N	Y	N	Y	N
Controls $(Q_{t-1}, CF_{t-1}, K_{t-1}, E_{t-1}/A_{t-1})$	N	N	N	Y	Y	Y

Table 4 shows estimates of

$$i_{ft} = a_1 + \sum_{d=2}^{5} a_d \, D(\beta^{imc}_{f,t-1})_d + b_1 \, \tilde{R}^{imc}_{t-1} + \sum_{d=2}^{5} b_d \, D(\beta^{imc}_{f,t-1})_d \times \tilde{R}^{imc}_{t-1} + cX_{f,t-1} + \gamma_f + u_{ft}, \tag{1}$$

where $i_t \equiv I_t/K_{t-1}$ is firm investment over the lagged capital stock, on cumulative log returns on the IMC portfolio, $\tilde{R}^{imc}_{t-1} \equiv \sum_{l=1}^{2} R^{imc}_{t-1}$, and a vector of controls X_t which includes lagged values of log Tobin's Q, cashflows over lagged capital, log book equity over book assets, and log capital. $D(\beta^{imc}_{i,t-1})_d$ is a dummy variable which takes the value of 1 if the firm falls in the d-th quintile in term of β^{imc}_{t-1}. β^{imc}_t refers to the firm's beta with respect to the investment minus consumption portfolio (IMC) in year t, estimated using non-overlapping weekly returns within year t. Industries are defined at the 2-digit SIC code level. All variables have been standardized to zero mean and unit standard deviation. We report t statistics in parenthesis using standard errors clustered by firm and year. Sample period is 1965-2007 and excludes firms producing investment goods, financial firms (SIC6000-6799), utilities (SIC4900-4949) and firms without an Standard and Poor's credit rating.

Table 5: Response of I/K to R^{imc}: firms sorted by β^{imc}, adjusted for book leverage

Dependent variable i_t	(1)	(2)	(3)	(4)	(5)	(6)
$\tilde{R}^{imc}_{t-1}$	0.0959	0.0571	0.0525	0.0659	0.0613	0.0559
	(4.90)	(5.60)	(5.11)	(4.21)	(4.01)	(4.20)
$D(\beta_{imc})_2 \times \tilde{R}^{imc}_{t-1}$		0.0061	0.0072	-0.0003	0.0010	0.0042
		(0.36)	(0.46)	(-0.03)	(0.08)	(0.38)
$D(\beta_{imc})_3 \times \tilde{R}^{imc}_{t-1}$		0.0261	0.0237	0.0105	0.0104	0.0184
		(1.01)	(1.00)	(0.64)	(0.69)	(1.30)
$D(\beta_{imc})_4 \times \tilde{R}^{imc}_{t-1}$		0.0655	0.0629	0.0462	0.0463	0.0479
		(2.65)	(2.69)	(2.67)	(2.75)	(2.70)
$D(\beta_{imc})_5 \times \tilde{R}^{imc}_{t-1}$		0.0966	0.0943	0.0728	0.0740	0.0797
		(3.54)	(4.07)	(3.76)	(4.54)	(5.74)
Observations	62495	62495	62495	62495	62495	62495
R^2	0.009	0.032	0.085	0.161	0.191	0.438
Industry/Firm FE	N	N	N	I	I	F
Controls (i_{t-1})	N	N	Y	N	Y	N
Controls ($Q_{t-1}, CF_{t-1}, K_{t-1}, E_{t-1}/A_{t-1}$)	N	N	N	Y	Y	Y

Table 5 shows estimates of

$$i_{ft} = a_1 + \sum_{d=2}^{5} a_d \, D(\beta^{imc}_{f,t-1})_d + b_1 \, \tilde{R}^{imc}_{t-1} + \sum_{d=2}^{5} b_d \, D(\beta^{imc}_{f,t-1})_d \times \tilde{R}^{imc}_{t-1} + cX_{f,t-1} + \gamma_f + u_{ft}, \tag{2}$$

where $i_t \equiv I_t/K_{t-1}$ is firm investment over the lagged capital stock, on cumulative log returns on the IMC portfolio, $\tilde{R}^{imc}_{t-1} \equiv \sum_{l=1}^{2} R^{imc}_{t-1}$, and a vector of controls X_t which includes lagged values of log Tobin's Q, cashflows over lagged capital, log book equity over book assets, and log capital. $D(\beta^{imc}_{i,t-1})_d$ is a dummy variable which takes the value of 1 if the firm falls in the d-th quintile in term of β^{imc}_{t-1}. β^{imc}_t refers to the firm's beta with respect to the investment minus consumption portfolio (IMC) in year t, estimated using non-overlapping weekly returns within year t and adjusted using book leverage. The leverage adjusted β^{imc} is computed as $\beta^{imc} = \hat{\beta}^{imc} \times B_E/B_A$ where B_E refers to Stockholder's equity (Compustat item seq) and B_A refers to Assets (Compustat item at). Industries are defined at the 2-digit SIC code level. All variables have been standardized to zero mean and unit standard deviation. We report t statistics in parenthesis using standard errors clustered by firm and year. Sample period is 1965-2007 and excludes firms producing investment goods, financial firms (SIC6000-6799) and utilities (SIC4900-4949).

Table 6: Response of I/K to R^{imc}: firms sorted by β^{imc}, adjusted for market leverage

Dependent variable i_t	(1)	(2)	(3)	(4)	(5)	(6)
$\tilde{R}^{imc}_{t-1}$	0.0959	0.0541	0.0502	0.0633	0.0592	0.0573
	(4.90)	(5.44)	(4.88)	(4.42)	(4.20)	(4.41)
$D(\beta_{imc})_2 \times \tilde{R}^{imc}_{t-1}$		0.0007	0.0009	-0.0030	-0.0022	0.0005
		(0.05)	(0.07)	(-0.25)	(-0.19)	(0.05)
$D(\beta_{imc})_3 \times \tilde{R}^{imc}_{t-1}$		0.0264	0.0252	0.0116	0.0123	0.0148
		(1.22)	(1.26)	(0.68)	(0.77)	(0.92)
$D(\beta_{imc})_4 \times \tilde{R}^{imc}_{t-1}$		0.0632	0.0594	0.0427	0.0420	0.0378
		(2.55)	(2.62)	(2.18)	(2.29)	(2.32)
$D(\beta_{imc})_5 \times \tilde{R}^{imc}_{t-1}$		0.1185	0.1137	0.0887	0.0882	0.0910
		(4.30)	(4.93)	(4.33)	(5.03)	(6.08)
Observations	62495	62495	62495	62495	62495	62495
R^2	0.009	0.026	0.080	0.163	0.192	0.438
Industry/Firm FE	N	N	N	I	I	F
Controls (i_{t-1})	N	N	Y	N	Y	N
Controls ($Q_{t-1}, CF_{t-1}, K_{t-1}, E_{t-1}/A_{t-1}$)	N	N	N	Y	Y	Y

Table 6 shows estimates of

$$i_{ft} = a_1 + \sum_{d=2}^{5} a_d \, D(\beta^{imc}_{f,t-1})_d + b_1 \, \tilde{R}^{imc}_{t-1} + \sum_{d=2}^{5} b_d \, D(\beta^{imc}_{f,t-1})_d \times \tilde{R}^{imc}_{t-1} + cX_{f,t-1} + \gamma_f + u_{ft}, \tag{3}$$

where $i_t \equiv I_t/K_{t-1}$ is firm investment over the lagged capital stock, on cumulative log returns on the IMC portfolio, $\tilde{R}^{imc}_{t-1} \equiv \sum_{l=1}^{2} R^{imc}_{t-1}$, and a vector of controls X_t which includes lagged values of log Tobin's Q, cashflows over lagged capital, log book equity over book assets, and log capital. $D(\beta^{imc}_{i,t-1})_d$ is a dummy variable which takes the value of 1 if the firm falls in the d-th quintile in term of β^{imc}_{t-1}. β^{imc}_t refers to the firm's beta with respect to the investment minus consumption portfolio (IMC) in year t, estimated using non-overlapping weekly returns within year t and adjusted using book leverage. The leverage adjusted β^{imc} is computed as $\beta^{imc} = \hat{\beta}^{imc} \times M_E/M_A$ where M_E refers to CRSP December market capitalization and M_A refers to the sum of CRSP December market capitalization, preferred stock (Compustat item pstkrv) and long term debt (Compustat item dltt). Industries are defined at the 2-digit SIC code level. All variables have been standardized to zero mean and unit standard deviation. We report t statistics in parenthesis using standard errors clustered by firm and year. Sample period is 1965-2007 and excludes firms producing investment goods, financial firms (SIC6000-6799) and utilities (SIC4900-4949).

Table 7: Response of I/K to R^{imc}: firms sorted by β^{imc}, within industry

Dependent variable i_t	(1)	(2)	(3)	(4)	(5)	(6)
$\tilde{R}^{imc}_{t-1}$	0.0959	0.0541	0.0499	0.0640	0.0597	0.0573
	(4.90)	(4.07)	(3.62)	(3.94)	(3.73)	(3.98)
$D(\beta_{imc})_2 \times \tilde{R}^{imc}_{t-1}$		0.0006	0.0015	-0.0009	0.0002	0.0026
		(0.05)	(0.14)	(-0.08)	(0.02)	(0.27)
$D(\beta_{imc})_3 \times \tilde{R}^{imc}_{t-1}$		0.0251	0.0242	0.0126	0.0132	0.0144
		(1.49)	(1.64)	(0.78)	(0.91)	(1.13)
$D(\beta_{imc})_4 \times \tilde{R}^{imc}_{t-1}$		0.0630	0.0599	0.0406	0.0407	0.0392
		(2.71)	(2.75)	(2.08)	(2.21)	(2.49)
$D(\beta_{imc})_5 \times \tilde{R}^{imc}_{t-1}$		0.1316	0.1151	0.0954	0.0948	0.0983
		(4.12)	(4.51)	(4.15)	(4.79)	(6.08)
Observations	62495	62495	62495	62495	62495	62495
R^2	0.009	0.017	0.074	0.161	0.191	0.438
Industry/Firm FE	N	N	N	I	I	F
Controls (i_{t-1})	N	N	Y	N	Y	N
Controls ($Q_{t-1}, CF_{t-1}, K_{t-1}, E_{t-1}/A_{t-1}$)	N	N	N	Y	Y	Y

Table 7 shows estimates of

$$i_{ft} = a_1 + \sum_{d=2}^{5} a_d \, D(\beta^{imc}_{f,t-1})_d + b_1 \, \tilde{R}^{imc}_{t-1} + \sum_{d=2}^{5} b_d \, D(\beta^{imc}_{f,t-1})_d \times \tilde{R}^{imc}_{t-1} + cX_{f,t-1} + \gamma_f + u_{ft}, \tag{4}$$

where $i_t \equiv I_t/K_{t-1}$ is firm investment over the lagged capital stock, on cumulative log returns on the IMC portfolio, $\tilde{R}^{imc}_{t-1} \equiv \sum_{l=1}^{2} R^{imc}_{t-1}$, and a vector of controls X_t which includes lagged values of log Tobin's Q, cashflows over lagged capital, log book equity over book assets, and log capital. $D(\beta^{imc}_{i,t-1})_d$ is a dummy variable which takes the value of 1 if the firm falls in the d-th quintile in term of β^{imc}_{t-1}. Quintiles are computed within the 30 industries classified by **?**. β^{imc}_t refers to the firm's beta with respect to the investment minus consumption portfolio (IMC) in year t, estimated using non-overlapping weekly returns within year t. Industries are defined at the 2-digit SIC code level. All variables have been standardized to zero mean and unit standard deviation. We report t statistics in parenthesis using standard errors clustered by firm and year. Sample period is 1965-2007 and excludes firms producing investment goods, financial firms (SIC6000-6799) and utilities (SIC4900-4949).

Table 8: Data: Response of aggregate I/K to z-Shock

Dependent variable $\bar{i}_t$	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.2015	0.0850	0.1968	0.0604	0.2017	0.0816
	(45.24)	(3.79)	(31.18)	(2.79)	(36.42)	(3.60)
$\tilde{R}^{imc}_{t-1}$	0.0132	0.0099			0.0133	0.0091
	(3.20)	(3.33)			(2.91)	(2.52)
$\tilde{R}^{mkt}_{t-1}$			0.0233	0.0248	-0.0011	0.0079
			(1.24)	(2.95)	(-0.08)	(0.80)
$\bar{i}_{t-1}$		0.5775		0.6752		0.5864
		(5.11)		(5.96)		(5.22)
Observations	44	44	44	44	44	44
R^2	0.289	0.607	0.046	0.506	0.289	0.611

Table 8 shows estimates of

$$\bar{i}_t = a_0 + a_1 \tilde{R}^{imc}_{t-1} + a_2 \tilde{R}^{mkt}_{t-1} + a_3 \bar{i}_{t-1} + u_t, \tag{5}$$

The left hand side variable is the aggregate investment rate, defined as the total investment by firms in our sample normalized by their total capital stock, $\bar{i}_t = \sum_{f \in F_t} I_{ft} / \sum_{f \in F_t} K_{ft-1}$. The right hand side variables are cumulative log returns on the IMC portfolio, $\tilde{R}^{imc}_{t-1} \equiv \sum_{l=1}^{2} R^{imc}_{t-1}$, cumulative log returns on the market portfolio, $\tilde{R}^{mkt}_{t-1} \equiv \sum_{l=1}^{2} R^{mkt}_{t-1}$ and the lagged aggregate investment rate. We report t statistics in parenthesis using Newey-West standard errors with a maximum lag length of 3. Sample period is 1965-2007 and excludes firms producing investment goods, financial firms (SIC6000-6799) and utilities (SIC4900-4949).

Table 9: AP tests: 10 portfolios sorted on IMC beta (consumption firms)

	Data										
β^{imc}	Lo	2	3	4	5	6	7	8	9	Hi	Hi - Lo
$E(R)-r_f$ (%)	5.62	5.51	6.36	6.72	5.43	5.15	4.84	4.83	4.15	2.42	-3.20
	(2.31)	(2.51)	(2.89)	(2.96)	(2.26)	(1.98)	(1.76)	(1.52)	(1.10)	(0.53)	(-0.80)
σ (%)	15.78	14.23	14.27	14.74	15.61	16.86	17.80	20.56	24.36	29.70	25.88
β^{mkt}	0.75	0.77	0.79	0.85	0.92	1.02	1.06	1.20	1.40	1.61	0.86
	(17.74)	(27.77)	(29.86)	(36.37)	(41.10)	(59.01)	(54.44)	(50.65)	(34.57)	(27.40)	(9.81)
α(%)	2.22	2.01	2.78	2.88	1.26	0.55	0.04	-0.61	-2.19	-4.88	-7.10
	(1.40)	(1.74)	(2.56)	(2.96)	(1.48)	(0.68)	(0.04)	(-0.53)	(-1.37)	(-2.10)	(-2.13)
R^2(%)	56.75	73.75	77.31	83.30	87.62	91.44	89.05	85.77	82.99	74.00	27.87
β^{mkt}	0.86	0.86	0.88	0.92	0.99	1.04	1.06	1.14	1.27	1.39	0.53
	(21.17)	(34.96)	(42.91)	(54.68)	(56.58)	(58.23)	(56.46)	(62.21)	(44.73)	(36.52)	(8.28)
β^{imc}	-0.48	-0.39	-0.41	-0.33	-0.29	-0.08	-0.01	0.28	0.59	1.00	1.48
	(-9.71)	(-10.67)	(-14.66)	(-7.16)	(-11.05)	(-2.66)	(-0.17)	(4.42)	(10.86)	(10.99)	(17.40)
α(%)	0.88	0.92	1.63	1.97	0.45	0.31	0.02	0.16	-0.55	-2.11	-2.99
	(0.61)	(0.97)	(2.03)	(2.56)	(0.64)	(0.40)	(0.02)	(0.13)	(-0.45)	(-1.26)	(-1.25)
R^2(%)	67.56	82.62	87.02	89.03	91.65	91.73	89.05	87.87	89.82	87.06	65.73
β^{mkt}	0.84	0.82	0.84	0.88	0.96	1.04	1.07	1.18	1.34	1.53	0.69
	(21.27)	(38.61)	(31.74)	(39.52)	(50.16)	(62.38)	(52.81)	(49.10)	(37.96)	(28.57)	(8.97)
β^{chml}	0.56	0.34	0.31	0.22	0.22	0.13	0.04	-0.15	-0.41	-0.55	-1.11
	(7.38)	(5.87)	(5.03)	(3.77)	(4.67)	(3.74)	(0.74)	(-3.28)	(-5.20)	(-6.03)	(-7.87)
α(%)	-0.05	0.64	1.53	2.01	0.38	0.02	-0.10	0.01	-0.50	-2.63	-2.58
	(-0.04)	(0.59)	(1.50)	(2.20)	(0.47)	(0.02)	(-0.12)	(0.01)	(-0.33)	(-1.25)	(-0.90)
R^2(%)	66.91	78.30	81.03	85.03	89.19	91.92	89.08	86.22	85.33	76.80	42.80
	Model										
β^{imc}	Lo	2	3	4	5	6	7	8	9	Hi	Hi - Lo
$E(R)-r_f$(%)	7.52	7.30	7.04	6.78	6.50	6.20	5.83	5.40	4.84	3.97	-3.55
	(3.72)	(3.51)	(3.30)	(3.10)	(2.89)	(2.67)	(2.42)	(2.14)	(1.81)	(1.34)	(-2.50)
σ(%)	14.36	14.81	15.16	15.55	15.99	16.47	17.04	17.75	18.72	20.39	10.53
β^{mkt}	0.83	0.87	0.89	0.92	0.95	0.98	1.02	1.06	1.11	1.19	0.36
	(23.51)	(30.68)	(38.90)	(49.83)	(68.62)	(94.21)	(105.80)	(77.51)	(49.93)	(31.73)	(5.15)
α(%)	2.71	2.25	1.82	1.38	0.93	0.44	-0.13	-0.79	-1.65	-2.99	-5.70
	(4.82)	(5.00)	(4.93)	(4.65)	(4.07)	(2.49)	(-0.85)	(-3.46)	(-4.57)	(-4.89)	(-5.05)
R^2(%)	91.27	94.69	96.56	97.81	98.70	99.21	99.30	98.91	97.63	94.49	34.59
β^{mkt}	0.96	0.98	0.99	0.99	1.00	1.01	1.01	1.02	1.02	1.03	0.07
	(53.74)	(70.54)	(82.43)	(89.78)	(96.72)	(95.19)	(91.74)	(90.18)	(86.67)	(86.23)	(2.54)
β^{imc}	-0.33	-0.27	-0.22	-0.17	-0.11	-0.05	0.02	0.10	0.21	0.38	0.71
	(-11.69)	(-12.75)	(-12.44)	(-11.09)	(-8.27)	(-3.97)	(1.03)	(6.15)	(12.03)	(21.72)	(18.42)
α(%)	0.29	0.28	0.21	0.14	0.09	0.03	-0.04	-0.08	-0.11	-0.08	-0.37
	(0.97)	(1.12)	(0.98)	(0.67)	(0.43)	(0.09)	(-0.22)	(-0.39)	(-0.48)	(-0.26)	(-0.84)
R^2(%)	97.79	98.77	99.13	99.30	99.36	99.38	99.35	99.31	99.21	99.18	91.73
β^{mkt}	0.98	0.99	0.99	0.99	1.00	1.00	1.01	1.01	1.02	1.03	0.05
	(74.21)	(85.55)	(88.05)	(87.92)	(90.66)	(90.29)	(91.70)	(95.04)	(89.51)	(65.15)	(2.11)
β^{chml}	0.75	0.59	0.47	0.36	0.23	0.10	-0.05	-0.23	-0.46	-0.81	-1.56
	(21.22)	(19.60)	(15.74)	(11.74)	(7.75)	(3.33)	(-1.73)	(-7.88)	(-14.41)	(-16.14)	(-25.47)
α(%)	-0.18	-0.05	-0.02	-0.01	0.02	0.04	0.05	0.08	0.12	0.18	0.36
	(-0.77)	(-0.35)	(-0.20)	(-0.15)	(0.02)	(0.13)	(0.25)	(0.44)	(0.63)	(0.71)	(0.97)
R^2(%)	98.74	99.11	99.24	99.29	99.32	99.35	99.37	99.39	99.29	98.92	93.43

The top panel of Table 9 reports asset-pricing tests on 10 portfolios sorted on β^{imc}_{t-1}. β^{imc}_t refers to the firm's beta with the investment minus consumption portfolio (IMC) in year t, estimated using non-overlapping weekly returns within year t. The construction of the IMC portfolio is detailed in **?**. We construct the value factor in the consumption sector (CHML) as $1/2(LV-LG)+1/2(SV-SG)$ where LV, LG, SV, LG refer to the corner portfolios of a 2-by-3 sort on ME and BE/ME using consumption firms only and NYSE breakpoints. The sample period is 1965-2008 and excludes firms producing investment goods, financial firms (SIC6000-6799) and utilities (SIC4900-4949). Standard errors are computed using Newey-West with 1 lag to adjust for autocorrelation in returns. t-statistics are reported in parenthesis. Estimation is done using monthly data. We report annualized estimates of mean returns and alphas by multiplying the monthly estimates by 12. The bottom panel reports the corresponding estimates for simulated data. Each simulation sample contains 2,500 firms and has a length of 50 years. We simulate 1,000 samples and report medians across simulations of coefficients and t statistics (in parenthesis). The market portfolio includes the investment and the consumption sector.

Table 10: AP tests: 10 portfolios sorted on BE/ME (consumption firms)

	Data										
BE/ME	Lo	2	3	4	5	6	7	8	9	Hi	Hi - Lo
$E(R)-r_f$ (%)	3.41	5.61	4.44	5.51	5.63	6.07	5.37	7.96	7.88	9.53	6.12
	(1.27)	(2.24)	(1.76)	(2.36)	(2.35)	(2.57)	(2.20)	(3.04)	(2.88)	(3.10)	(2.62)
σ (%)	17.36	16.26	16.35	15.12	15.53	15.31	15.84	16.95	17.71	19.91	15.12
β^{mkt}	1.01	0.97	0.97	0.87	0.88	0.85	0.86	0.91	0.95	1.05	0.04
	(42.71)	(47.36)	(49.48)	(33.94)	(33.33)	(26.10)	(23.34)	(24.28)	(23.45)	(22.54)	(0.67)
α(%)	-1.16	1.21	0.06	1.56	1.64	2.23	1.45	3.83	3.57	4.77	5.93
	(-1.06)	(1.46)	(0.08)	(1.53)	(1.59)	(1.94)	(1.11)	(2.63)	(2.35)	(2.67)	(2.41)
R^2(%)	84.92	90.01	87.94	83.34	81.05	76.97	74.84	72.66	72.52	69.90	0.18
β^{mkt}	1.04	1.01	1.02	0.93	0.95	0.92	0.92	0.99	1.01	1.07	0.03
	(42.30)	(55.17)	(56.68)	(38.83)	(35.58)	(29.38)	(27.02)	(28.67)	(24.68)	(23.92)	(0.50)
β^{imc}	-0.14	-0.17	-0.23	-0.26	-0.31	-0.30	-0.26	-0.35	-0.27	-0.09	0.04
	(-4.79)	(-7.69)	(-5.94)	(-7.60)	(-7.32)	(-7.39)	(-5.08)	(-6.51)	(-4.72)	(-1.62)	(0.59)
α(%)	-1.55	0.73	-0.57	0.85	0.79	1.39	0.74	2.86	2.82	4.51	6.06
	(-1.44)	(0.94)	(-0.76)	(0.93)	(0.86)	(1.39)	(0.61)	(2.21)	(1.99)	(2.54)	(2.44)
R^2(%)	85.66	91.30	90.22	86.68	85.56	81.53	77.89	77.52	75.23	70.16	0.29
β^{mkt}	0.95	0.96	0.99	0.91	0.94	0.92	0.97	1.03	1.07	1.18	0.23
	(46.09)	(47.59)	(52.01)	(36.98)	(38.18)	(36.72)	(45.86)	(46.07)	(40.79)	(32.56)	(5.30)
β^{chml}	-0.42	-0.10	0.17	0.27	0.38	0.50	0.66	0.74	0.76	0.82	1.24
	(-6.00)	(-2.33)	(2.87)	(5.24)	(6.64)	(11.24)	(15.61)	(19.63)	(17.64)	(9.52)	(8.73)
α(%)	0.54	1.63	-0.61	0.48	0.09	0.21	-1.21	0.81	0.48	1.44	0.90
	(0.55)	(1.99)	(-0.71)	(0.49)	(0.10)	(0.24)	(-1.45)	(0.86)	(0.47)	(1.10)	(0.51)
R^2(%)	89.59	90.34	88.77	85.84	85.89	85.51	88.72	88.14	87.42	83.65	54.43
	Model										
BE/ME	Lo	2	3	4	5	6	7	8	9	Hi	Hi - Lo
$E(R)-r_f$(%)	3.62	4.65	5.26	5.72	6.12	6.46	6.78	7.06	7.40	7.90	4.28
	(1.21)	(1.76)	(2.12)	(2.40)	(2.66)	(2.89)	(3.11)	(3.31)	(3.53)	(3.83)	(2.98)
σ(%)	20.49	18.49	17.48	16.83	16.30	15.87	15.50	15.18	14.91	14.67	10.65
β^{mkt}	1.19	1.09	1.04	1.00	0.97	0.94	0.92	0.90	0.87	0.84	-0.34
	(29.75)	(48.67)	(75.39)	(98.94)	(87.67)	(64.14)	(48.75)	(38.70)	(31.12)	(24.01)	(-4.71)
α(%)	-3.35	-1.76	-0.85	-0.17	0.42	0.92	1.40	1.83	2.31	2.98	6.34
	(-5.16)	(-4.88)	(-3.70)	(-1.01)	(2.22)	(3.85)	(4.60)	(4.94)	(5.18)	(5.33)	(5.41)
R^2(%)	93.81	97.65	98.93	99.29	99.14	98.59	97.71	96.56	94.90	91.60	31.02
β^{mkt}	1.02	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.98	0.98	-0.04
	(78.45)	(76.73)	(81.33)	(88.22)	(92.69)	(93.95)	(90.01)	(81.18)	(69.01)	(54.13)	(-1.30)
β^{imc}	0.41	0.20	0.09	0.00	-0.06	-0.12	-0.17	-0.22	-0.26	-0.33	-0.74
	(20.54)	(9.92)	(4.84)	(0.11)	(-4.58)	(-8.78)	(-11.19)	(-11.97)	(-12.06)	(-11.42)	(-17.24)
α(%)	-0.23	-0.30	-0.23	-0.17	-0.07	0.01	0.13	0.23	0.38	0.57	0.80
	(-0.92)	(-1.22)	(-1.09)	(-0.89)	(-0.43)	(0.01)	(0.63)	(1.06)	(1.47)	(1.83)	(1.69)
R^2(%)	99.22	99.13	99.27	99.34	99.39	99.37	99.27	99.12	98.77	97.88	91.17
β^{mkt}	1.01	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	1.00	-0.01
	(70.85)	(92.98)	(89.78)	(88.13)	(85.68)	(86.75)	(87.95)	(90.54)	(95.92)	(85.91)	(-0.72)
β^{chml}	-0.89	-0.46	-0.22	-0.04	0.11	0.25	0.37	0.48	0.60	0.76	1.66
	(-19.83)	(-15.76)	(-7.33)	(-1.35)	(3.42)	(7.89)	(12.03)	(16.27)	(21.73)	(23.92)	(32.79)
α(%)	0.13	0.03	-0.01	-0.02	-0.02	-0.05	-0.02	-0.02	-0.00	0.02	-0.10
	(0.51)	(0.13)	(-0.08)	(-0.14)	(-0.17)	(-0.32)	(-0.21)	(-0.18)	(-0.10)	(0.22)	(-0.29)
R^2(%)	99.19	99.43	99.42	99.37	99.33	99.31	99.28	99.28	99.30	99.09	95.87

The top panel of Table 10 reports asset-pricing tests on 10 portfolios sorted on Book to Market Equity. The data come from Kenneth French's website. The construction of the IMC portfolio is detailed in **?**. We construct the value factor in the consumption sector (CHML) as $1/2(LV-LG)+1/2(SV-SG)$ where LV, LG, SV, LG refer to the corner portfolios of a 2-by-3 sort on ME and BE/ME using consumption firms only and NYSE breakpoints. The sample period is 1965-2008 and excludes firms producing investment goods, financial firms (SIC6000-6799) and utilities (SIC4900-4949). Standard errors are computed using Newey-West with 1 lag to adjust for autocorrelation in returns. t-statistics are reported in parenthesis. Estimation is done using monthly data. We report annualized estimates of mean returns and alphas. The bottom panel reports the corresponding estimates for simulated data. Market Equity equals the value of the firm, V_{ft}, and book to market equals Book Value divided by Market Equity. Book Value is computed as the replacement cost of capital, $B_{ft} = z_t\, x_t \sum_{j\in\mathcal{J}_{ft}} K_{jt}$, where K_j refers to capital employed by project j, and $\mathcal{J}_{ft}$ denotes the set of projects owned by firm f at the end of year t. Each simulation sample contains 2,500 firms and has a length of 50 years. We simulate 1,000 samples and report medians across simulations of coefficients and t-statistics (in parenthesis). The market portfolio includes the investment and the consumption sector.

Table 11: AP tests: 25 portfolios sorted on ME and BE/ME (consumption firms)

	Data											
	SMALL (20 pctile)						LARGE (80 pctile)					
BE/ME	Lo	2	3	4	Hi	Hi-Lo	Lo	2	3	4	Hi	Hi - Lo
$E(R)-r_f$ (%)	4.05	9.85	10.74	11.32	12.41	8.36	3.38	5.03	4.48	4.92	5.63	2.25
	(1.03)	(3.15)	(3.57)	(3.57)	(3.65)	(3.97)	(1.31)	(1.98)	(1.91)	(2.16)	(2.22)	(1.10)
σ (%)	25.38	20.24	19.52	20.54	22.06	13.63	16.66	16.48	15.20	14.80	16.44	13.22
β^{mkt}	1.31	1.03	0.98	1.04	1.05	-0.26	0.93	0.97	0.87	0.79	0.88	-0.05
	(27.29)	(22.26)	(19.49)	(20.45)	(18.56)	(-5.63)	(32.28)	(37.99)	(37.16)	(30.95)	(25.41)	(-1.02)
α(%)	-1.89	5.17	6.31	6.63	7.64	9.53	-0.83	0.66	0.53	1.34	1.67	2.50
	(-0.81)	(2.70)	(3.33)	(3.27)	(3.19)	(4.31)	(-0.67)	(0.67)	(0.55)	(1.13)	(1.18)	(1.18)
R^2(%)	67.20	65.54	63.34	64.07	57.26	9.09	78.19	86.29	82.92	72.14	71.22	0.43
β^{mkt}	1.21	1.01	0.97	1.02	1.05	-0.16	0.97	1.02	0.93	0.87	0.97	-0.00
	(20.96)	(19.81)	(18.58)	(19.82)	(18.88)	(-3.43)	(31.36)	(42.91)	(41.87)	(32.05)	(28.49)	(-0.04)
β^{imc}	0.47	0.12	0.05	0.08	0.03	-0.44	-0.18	-0.24	-0.27	-0.33	-0.41	-0.23
	(3.52)	(1.20)	(0.63)	(1.18)	(0.35)	(-3.53)	(-4.63)	(-7.17)	(-9.95)	(-7.52)	(-8.06)	(-3.50)
α(%)	-0.59	5.51	6.44	6.85	7.72	8.31	-1.34	-0.00	-0.23	0.40	0.52	1.86
	(-0.25)	(2.83)	(3.35)	(3.34)	(3.19)	(3.84)	(-1.11)	(-0.00)	(-0.26)	(0.37)	(0.42)	(0.90)
R^2(%)	71.14	65.96	63.41	64.24	57.28	21.13	79.59	88.72	86.66	78.09	78.58	3.96
β^{mkt}	1.27	1.06	1.05	1.12	1.17	-0.10	0.87	0.96	0.90	0.87	1.00	0.13
	(21.85)	(21.14)	(22.07)	(25.52)	(24.44)	(-3.06)	(34.51)	(36.79)	(33.50)	(37.21)	(60.53)	(4.49)
β^{chml}	-0.27	0.19	0.46	0.57	0.75	1.02	-0.41	-0.02	0.18	0.48	0.79	1.20
	(-1.41)	(1.30)	(3.87)	(5.05)	(5.96)	(10.77)	(-4.78)	(-0.33)	(3.05)	(9.09)	(21.06)	(16.82)
α(%)	-0.79	4.40	4.44	4.33	4.59	5.37	0.84	0.74	-0.21	-0.62	-1.55	-2.39
	(-0.32)	(2.22)	(2.47)	(2.43)	(2.27)	(3.38)	(0.71)	(0.73)	(-0.21)	(-0.63)	(-1.91)	(-1.92)
R^2(%)	68.13	66.25	67.81	70.19	66.64	54.65	83.07	86.30	84.08	80.70	90.04	67.32
	Model											
	SMALL (20 pctile)						LARGE (80 pctile)					
BE/ME	Lo	2	3	4	Hi	Hi-Lo	Lo	2	3	4	Hi	Hi - Lo
$E(R)-r_f$(%)	3.09	4.18	4.96	5.75	6.80	3.71	5.61	6.53	6.99	7.35	7.86	2.25
	(0.96)	(1.47)	(1.88)	(2.32)	(2.92)	(3.02)	(2.35)	(2.95)	(3.27)	(3.52)	(3.84)	(2.88)
σ(%)	21.81	19.72	18.48	17.48	16.52	8.90	16.92	15.74	15.19	14.84	14.58	6.02
β^{mkt}	1.25	1.15	1.09	1.04	0.98	-0.27	1.01	0.93	0.89	0.87	0.83	-0.17
	(24.34)	(33.78)	(44.85)	(52.84)	(42.39)	(-4.34)	(70.14)	(52.97)	(37.59)	(29.25)	(22.51)	(-3.97)
α(%)	-4.21	-2.57	-1.43	-0.32	1.09	5.30	-0.29	1.06	1.76	2.30	3.00	3.29
	(-4.91)	(-4.48)	(-3.36)	(-0.83)	(2.93)	(5.23)	(-1.43)	(3.63)	(4.58)	(4.89)	(5.06)	(4.77)
R^2(%)	90.70	94.87	96.89	97.80	97.07	27.53	98.74	97.89	96.25	94.15	90.34	26.24
β^{mkt}	1.02	1.01	1.01	1.01	1.01	-0.01	1.00	0.99	0.99	0.98	0.98	-0.03
	(64.94)	(53.61)	(49.98)	(46.57)	(41.31)	(-0.41)	(67.93)	(78.12)	(71.55)	(61.44)	(48.67)	(-0.92)
β^{imc}	0.54	0.33	0.19	0.07	-0.08	-0.62	0.00	-0.15	-0.22	-0.27	-0.34	-0.35
	(25.59)	(13.11)	(7.23)	(2.42)	(-2.28)	(-16.01)	(0.11)	(-8.79)	(-11.31)	(-11.58)	(-11.09)	(-7.40)
α(%)	-0.00	-0.00	0.08	0.26	0.60	0.60	-0.34	-0.05	0.14	0.29	0.48	0.83
	(-0.05)	(-0.03)	(0.20)	(0.68)	(1.43)	(1.25)	(-1.33)	(-0.28)	(0.56)	(1.04)	(1.43)	(1.62)
R^2(%)	99.38	98.91	98.58	98.23	97.47	88.06	98.89	99.07	98.88	98.39	97.26	65.74
β^{mkt}	1.03	1.02	1.02	1.02	1.02	-0.01	0.99	0.99	0.99	0.99	0.99	0.01
	(41.84)	(46.96)	(46.13)	(45.14)	(43.27)	(-0.20)	(68.98)	(69.00)	(69.71)	(73.45)	(68.59)	(0.09)
β^{chml}	-1.12	-0.70	-0.40	-0.13	0.20	1.32	-0.06	0.30	0.47	0.61	0.79	0.86
	(-13.75)	(-10.63)	(-6.17)	(-1.83)	(3.33)	(14.78)	(-2.00)	(7.16)	(12.27)	(17.24)	(20.08)	(14.35)
α(%)	0.17	0.16	0.13	0.18	0.32	0.15	-0.05	-0.09	-0.05	-0.07	-0.07	-0.02
	(0.46)	(0.43)	(0.32)	(0.44)	(0.76)	(0.25)	(-0.25)	(-0.41)	(-0.27)	(-0.36)	(-0.17)	(0.06)
R^2(%)	98.15	98.50	98.34	98.11	97.64	85.53	98.89	98.91	98.87	98.83	98.57	81.64

The top panel of Table 11 reports asset-pricing tests on 10 portfolios of firms in the consumption sector, sorted first on Market Equity (ME) and then on Book to Market (BE/ME), using NYSE breakpoints. Market Equity is December market capitalization from CRSP and Book Equity is item ceq from COMPUSTAT. We rebalance firms in June every year. We report results for the top and bottom quintile of Market Equity, (SMALL and LARGE). The construction of the IMC portfolio is detailed in **?**. We construct the value factor in the consumption sector (CHML) as $1/2(LV-LG)+1/2(SV-SG)$ where LV, LG, SV, LG refer to the corner portfolios of a 2-by-3 sort on ME and BE/ME using consumption firms only and NYSE breakpoints. The sample period is 1965-2008 and excludes firms producing investment goods, financial firms (SIC6000-6799) and utilities (SIC4900-4949). Standard errors are computed using Newey-West with 1 lag to adjust for autocorrelation in returns. t-statistics are reported in parenthesis. Estimation is done using monthly data. We report annualized estimates of mean returns and alphas. The bottom panel reports the corresponding estimates for simulated data. Market Equity equals the value of the firm, $V_{i,t}$, and book to market equals Book Value divided by Market Equity. Book Value is computed as the replacement cost of capital, $B_{it}=z_t\,x_t\,\sum_{j\in\mathcal{J}_{it}}K_{jt}$, where K_j refers to capital employed by project j, and $\mathcal{J}_{it}$ denotes the set of projects owned by firm i at the end of year t. Each simulation sample contains 2,500 firms and has a length of 50 years. We simulate 1,000 samples and report medians across simulations of coefficients and t-statistics (in parenthesis). The market portfolio includes the investment and the consumption sector.

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