

Online Appendix to “Hard Times”

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Appendix Table I - Maximum Eigenvalue 0.98

<i>VAR estimate</i>	Rm	PE	TY	VS	DEF	R squared		
Rm	0.075 (0.084)	-0.038 (0.017)	0.005 (0.007)	0.000 (0.025)	-0.029 (0.025)	-0.003		
PE	0.161 (0.087)	0.988 (0.015)	0.002 (0.006)	0.003 (0.024)	-0.011 (0.025)	0.930		
TY	-0.080 (0.300)	0.055 (0.096)	0.805 (0.048)	0.022 (0.111)	0.166 (0.087)	0.713		
VS	0.018 (0.066)	0.020 (0.017)	-0.007 (0.005)	0.943 (0.017)	0.033 (0.014)	0.943		
DEF	-0.527 (0.355)	-0.030 (0.038)	-0.012 (0.017)	0.058 (0.065)	0.926 (0.089)	0.810		
Error to Ncf	0.942	-1.345	0.028	-0.204	-0.178			
Error to -Ndr	0.058	1.345	-0.028	0.204	0.178			
Structural Error to Ncf	0.006	-0.037	0.015	-0.033	-0.039			
Structural Error to -Ndr	0.103	0.037	-0.015	0.033	0.039			
<i>News terms corr/std</i>	Ncf	-Ndr		Gamma	15.000			
Ncf	0.065	-0.451						
-Ndr	-0.451	0.121		J-stat p-value	0.004			
<i>Betas</i>		Small			Large			
	Growth	Neutral	Value	Growth	Neutral	Value		
Cash Flow	0.241	0.281	0.352	0.122	0.213	0.337		
Discount Rate	1.056	1.022	1.147	0.779	0.856	1.027		
			E[Ri-Rm]				E[Rm-Rf]	
Predicted	0.006	0.017	0.028	-0.008	0.008	0.025	0.017	
Realized	0.006	0.015	0.022	-0.002	0.002	0.011	0.018	
Error	0.000	-0.002	-0.007	0.007	-0.006	-0.014	0.000	
<i>Betas (early sample)</i>		Small			Large			
	Growth	Neutral	Value	Growth	Neutral	Value		
Cash Flow	-0.276	-0.149	-0.101	-0.238	-0.131	-0.107		
Discount Rate	1.708	1.259	1.168	1.243	0.969	0.975		
			E[Ri-Rm]				E[Rm-Rf]	
Predicted	0.023	0.033	0.054	-0.013	0.012	0.048	0.060	
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025	
Error	-0.010	-0.017	-0.028	0.011	-0.009	-0.031	-0.035	
<i>Betas (late sample)</i>		Small			Large			
	Growth	Neutral	Value	Growth	Neutral	Value		
Cash Flow	-0.291	-0.159	-0.112	-0.247	-0.134	-0.114		
Discount Rate	1.720	1.258	1.166	1.251	0.973	0.972		
			E[Ri-Rm]				E[Rm-Rf]	
Predicted	-0.006	0.005	0.010	-0.005	0.005	0.008	-0.013	
Realized	0.002	0.014	0.019	-0.001	0.001	0.006	0.013	
Error	0.007	0.008	0.009	0.004	-0.004	-0.002	0.026	

Note: the table reproduces the estimation in Table IV, but imposing the restriction that the largest eigenvalue of the transition matrix is at most 0.98 instead of 0.99.

Appendix Table II - Upper bound on gamma (50)

<i>VAR estimate</i>	Rm	PE	TY	VS	DEF	R squared	
Rm	-0.045 (0.073)	-0.051 (0.018)	0.004 (0.007)	-0.027 (0.024)	0.000 (0.026)	0.038	
PE	0.047 (0.080)	0.971 (0.015)	0.003 (0.007)	-0.019 (0.022)	0.004 (0.026)	0.933	
TY	0.154 (0.291)	0.069 (0.098)	0.783 (0.048)	0.046 (0.111)	0.192 (0.085)	0.714	
VS	0.072 (0.060)	0.010 (0.018)	-0.004 (0.005)	0.953 (0.019)	0.021 (0.014)	0.943	
DEF	-0.182 (0.327)	-0.013 (0.041)	0.004 (0.018)	0.129 (0.067)	0.849 (0.091)	0.817	
Error to Ncf	0.907	-1.105	0.004	-0.135	-0.041		
Error to -Ndr	0.093	1.105	-0.004	0.135	0.041		
Structural Error to Ncf	0.002	-0.040	0.003	-0.015	-0.009		
Structural Error to -Ndr	0.104	0.040	-0.003	0.015	0.009		
<i>News terms corr/std</i>	Ncf	-Ndr		Gamma	50.000		
Ncf	0.044	-0.335					
-Ndr	-0.335	0.113		J-stat p-value	0.175		
<i>Betas</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.013	0.036	0.051	-0.005	0.021	0.048	
Discount Rate	1.330	1.197	1.289	0.960	0.980	1.143	
			E[Ri-Rm]			E[Rm-Rf]	
Predicted	0.004	0.015	0.024	-0.011	0.004	0.021	0.019
Realized	0.006	0.015	0.022	-0.002	0.002	0.011	0.018
Error	0.003	0.000	-0.003	0.009	-0.002	-0.011	-0.001
<i>Betas (early sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.065	0.082	0.099	0.036	0.051	0.106	
Discount Rate	1.263	1.258	1.436	0.910	1.073	1.311	
			E[Ri-Rm]			E[Rm-Rf]	
Predicted	0.012	0.026	0.043	-0.017	-0.003	0.046	0.062
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025
Error	0.001	-0.010	-0.017	0.015	0.007	-0.029	-0.037
<i>Betas (late sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	-0.067	-0.033	-0.021	-0.066	-0.022	-0.038	
Discount Rate	1.434	1.101	1.059	1.035	0.836	0.884	
			E[Ri-Rm]			E[Rm-Rf]	
Predicted	-0.003	0.008	0.012	-0.006	0.010	0.004	-0.012
Realized	0.002	0.014	0.019	-0.001	0.001	0.006	0.013
Error	0.005	0.006	0.007	0.005	-0.009	0.002	0.025

Note: the table reproduces the estimation in Table IV, but imposes that the risk aversion parameter Gamma is not greater than 50 (as opposed to 15 in Table IV).

Appendix Table III - Upper bound on gamma (200)

<i>VAR estimate</i>	Rm	PE	TY	VS	DEF	R squared	
Rm	-0.032 (0.074)	-0.056 (0.017)	0.006 (0.007)	-0.027 (0.024)	-0.004 (0.026)	0.039	
PE	0.052 (0.080)	0.967 (0.016)	0.005 (0.006)	-0.021 (0.022)	0.000 (0.025)	0.933	
TY	0.115 (0.288)	0.080 (0.097)	0.785 (0.048)	0.052 (0.109)	0.204 (0.085)	0.714	
VS	0.064 (0.060)	0.008 (0.018)	-0.004 (0.005)	0.949 (0.019)	0.024 (0.014)	0.943	
DEF	-0.236 (0.328)	-0.014 (0.041)	0.008 (0.018)	0.121 (0.068)	0.856 (0.089)	0.817	
Error to Ncf	0.917	-1.126	-0.003	-0.083	-0.041		
Error to -Ndr	0.083	1.126	0.003	0.083	0.041		
Structural Error to Ncf	0.001	-0.041	-0.002	-0.011	-0.009		
Structural Error to -Ndr	0.105	0.041	0.002	0.011	0.009		
<i>News terms corr/std</i>	Ncf	-Ndr		Gamma	200.000		
Ncf	0.044	-0.352					
-Ndr	-0.352	0.114		J-stat p-value	0.357		
<i>Betas</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.005	0.016	0.020	-0.007	0.006	0.022	
Discount Rate	1.341	1.220	1.322	0.963	0.995	1.172	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.003	0.027	0.037	-0.028	0.002	0.039	0.023
Realized	0.006	0.015	0.022	-0.002	0.002	0.011	0.018
Error	0.004	-0.012	-0.015	0.027	0.000	-0.028	-0.005
<i>Betas (early sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.037	0.050	0.058	0.021	0.025	0.069	
Discount Rate	1.296	1.295	1.484	0.926	1.100	1.353	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.008	0.050	0.078	-0.052	-0.036	0.112	0.136
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025
Error	0.005	-0.034	-0.052	0.049	0.039	-0.094	-0.112
<i>Betas (late sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	-0.045	-0.034	-0.035	-0.049	-0.022	-0.050	
Discount Rate	1.411	1.102	1.071	1.018	0.833	0.893	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	-0.003	0.012	0.010	-0.012	0.029	-0.013	-0.056
Realized	0.002	0.014	0.019	-0.001	0.001	0.006	0.013
Error	0.005	0.002	0.008	0.011	-0.029	0.019	0.069

Note: the table reproduces the estimation in Table IV, but imposes that the risk aversion parameter Gamma is not greater than 200 (as opposed to 15 in Table IV).

Appendix Table IV - Alternative equity premium constraint

<i>VAR estimate</i>	Rm	PE	TY	VS	DEF	R squared	
Rm	0.094 (0.084)	-0.036 (0.017)	0.005 (0.007)	0.004 (0.025)	-0.036 (0.025)	-0.023	
PE	0.184 (0.087)	0.990 (0.015)	0.002 (0.006)	0.007 (0.024)	-0.019 (0.025)	0.928	
TY	-0.055 (0.300)	0.051 (0.096)	0.803 (0.048)	0.021 (0.111)	0.172 (0.087)	0.713	
VS	0.002 (0.066)	0.021 (0.017)	-0.007 (0.005)	0.942 (0.017)	0.037 (0.014)	0.943	
DEF	-0.639 (0.361)	-0.027 (0.038)	-0.012 (0.017)	0.042 (0.065)	0.958 (0.087)	0.803	
Error to Ncf	0.959	-1.392	0.028	-0.199	-0.197		
Error to -Ndr	0.041	1.392	-0.028	0.199	0.197		
Structural Error to Ncf	0.007	-0.036	0.015	-0.034	-0.043		
Structural Error to -Ndr	0.103	0.036	-0.015	0.034	0.043		
<i>News terms corr/std</i>	Ncf	-Ndr		Gamma	15.000		
Ncf	0.068	-0.463					
-Ndr	-0.463	0.123		J-stat p-value	0.004		
<i>Betas</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.052	0.125	0.190	-0.012	0.089	0.179	
Discount Rate	1.280	1.091	1.132	0.938	0.879	0.983	
			E[Ri-Rm]			E[Rm-Rf]	
Predicted	0.007	0.018	0.030	-0.009	0.009	0.026	0.018
Realized	0.006	0.015	0.022	-0.002	0.002	0.011	0.018
Error	-0.001	-0.003	-0.008	0.007	-0.007	-0.016	0.000
<i>Betas (early sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.255	0.297	0.372	0.130	0.226	0.354	
Discount Rate	1.021	0.984	1.103	0.753	0.821	0.984	
			E[Ri-Rm]			E[Rm-Rf]	
Predicted	0.025	0.036	0.058	-0.014	0.013	0.052	0.063
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025
Error	-0.012	-0.020	-0.032	0.012	-0.010	-0.034	-0.038
<i>Betas (late sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.255	0.297	0.372	0.130	0.226	0.354	
Discount Rate	1.021	0.984	1.103	0.753	0.821	0.984	
			E[Ri-Rm]			E[Rm-Rf]	
Predicted	-0.006	0.005	0.010	-0.005	0.005	0.008	-0.014
Realized	0.002	0.014	0.019	-0.001	0.001	0.006	0.013
Error	0.008	0.009	0.009	0.004	-0.005	-0.002	0.027

Note: the table reproduces the estimation in Table IV, but imposing the restriction on the equity premium deriving the predicted value in terms of discount rate and cash flow betas as opposed to the representation in terms of expectations.

Appendix Table V - Equity premium as moment condition

<i>VAR estimate</i>	Rm	PE	TY	VS	DEF	R squared	
Rm	0.125 (0.080)	-0.057 (0.017)	0.012 (0.006)	-0.004 (0.022)	-0.051 (0.020)	-0.048	
PE	0.215 (0.085)	0.963 (0.016)	0.010 (0.006)	0.001 (0.021)	-0.035 (0.019)	0.927	
TY	-0.062 (0.286)	0.036 (0.097)	0.783 (0.047)	0.009 (0.110)	0.184 (0.082)	0.713	
VS	-0.041 (0.067)	0.017 (0.018)	-0.004 (0.005)	0.939 (0.017)	0.042 (0.011)	0.941	
DEF	-0.837 (0.359)	-0.010 (0.032)	-0.015 (0.016)	0.040 (0.044)	0.983 (0.062)	0.793	
Error to Ncf	1.603	-1.803	0.075	-0.592	-0.931		
Error to -Ndr	-0.603	1.803	-0.075	0.592	0.931		
Structural Error to Ncf	0.173	0.023	0.039	-0.135	-0.205		
Structural Error to -Ndr	-0.062	-0.023	-0.039	0.135	0.205		
<i>News terms corr/std</i>	Ncf	-Ndr		Gamma	4.994		
Ncf	0.304	-0.935					
-Ndr	-0.935	0.257		J-stat p-value	0.044		
<i>Betas</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	1.806	1.991	2.448	1.074	1.603	2.216	
Discount Rate	-0.512	-0.808	-1.164	-0.180	-0.667	-1.086	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.028	0.036	0.060	-0.013	0.014	0.047	0.077
Realized	0.006	0.015	0.022	-0.002	0.002	0.011	0.018
Error	-0.022	-0.021	-0.038	0.011	-0.012	-0.036	-0.059
<i>Betas (early sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	2.705	2.879	3.498	1.676	2.368	3.190	
Discount Rate	-1.466	-1.633	-2.065	-0.827	-1.357	-1.891	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.062	0.075	0.125	-0.022	0.033	0.100	0.164
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025
Error	-0.049	-0.059	-0.099	0.020	-0.029	-0.082	-0.139
<i>Betas (late sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.242	0.456	0.632	0.031	0.277	0.526	
Discount Rate	1.147	0.617	0.392	0.942	0.529	0.310	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.004	0.008	0.014	-0.006	0.001	0.009	0.014
Realized	0.002	0.014	0.019	-0.001	0.001	0.006	0.013
Error	-0.002	0.005	0.005	0.005	0.000	-0.003	-0.001

Note: the table reproduces the estimation in Table IV, but uses the market excess return as a moment condition as opposed to a constraint in the GMM estimation.

Appendix Table VI - Separate moment conditions for early and late samples

<i>VAR estimate</i>	Rm	PE	TY	VS	DEF	R squared	
Rm	-0.016 (0.073)	-0.028 (0.016)	0.010 (0.006)	-0.006 (0.025)	-0.023 (0.026)	0.014	
PE	0.066 (0.074)	0.990 (0.015)	0.006 (0.006)	-0.005 (0.024)	-0.008 (0.026)	0.931	
TY	-0.051 (0.290)	0.026 (0.039)	0.992 (0.011)	-0.071 (0.059)	0.063 (0.049)	0.676	
VS	0.070 (0.059)	0.016 (0.018)	-0.013 (0.005)	0.947 (0.019)	0.037 (0.015)	0.943	
DEF	-0.189 (0.302)	-0.040 (0.039)	-0.016 (0.015)	0.090 (0.070)	0.908 (0.096)	0.813	
Error to Ncf	0.861	-0.881	0.542	-0.595	-0.004		
Error to -Ndr	0.139	0.881	-0.542	0.595	0.004		
Structural Error to Ncf	0.013	-0.028	0.327	-0.052	-0.001		
Structural Error to -Ndr	0.094	0.028	-0.327	0.052	0.001		
<i>News terms corr/std</i>	Ncf	-Ndr		Gamma	7.845		
Ncf	0.332	-0.950					
-Ndr	-0.950	0.345		J-stat p-value	0.026		
<i>Betas</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.248	0.450	0.561	-0.075	0.138	0.432	
Discount Rate	1.115	0.794	0.790	1.028	0.860	0.764	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.020	0.034	0.044	-0.011	0.007	0.032	0.016
Realized	0.006	0.015	0.022	-0.002	0.002	0.011	0.018
Error	-0.013	-0.020	-0.023	0.009	-0.005	-0.022	0.002
<i>Betas (early sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.421	0.499	0.535	0.072	0.274	0.490	
Discount Rate	0.899	0.827	0.986	0.850	0.821	0.901	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.035	0.045	0.052	-0.013	0.014	0.045	0.037
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025
Error	-0.022	-0.028	-0.026	0.011	-0.010	-0.027	-0.013
<i>Betas (late sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	-0.036	0.374	0.610	-0.314	-0.081	0.341	
Discount Rate	1.469	0.739	0.467	1.320	0.925	0.539	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.008	0.027	0.039	-0.009	0.002	0.024	0.001
Realized	0.002	0.014	0.019	-0.001	0.001	0.006	0.013
Error	-0.007	-0.014	-0.020	0.008	-0.001	-0.018	0.012

Note: the table reproduces the estimation in Table IV, but imposes separately the ICAPM moment conditions constraints for the early and late samples.

Appendix Table VII - Separate moment conditions for early and late samples, incl. equity premium

<i>VAR estimate</i>	Rm	PE	TY	VS	DEF	R squared	
Rm	0.175 (0.091)	-0.043 (0.017)	0.018 (0.007)	0.031 (0.030)	-0.099 (0.035)	-0.294	
PE	-0.578 (0.193)	1.064 (0.041)	-0.039 (0.016)	-0.212 (0.060)	0.399 (0.085)	0.564	
TY	-0.677 (0.349)	0.078 (0.041)	0.969 (0.013)	-0.166 (0.061)	0.269 (0.080)	0.672	
VS	0.253 (0.075)	-0.012 (0.021)	-0.001 (0.005)	1.007 (0.022)	-0.068 (0.020)	0.919	
DEF	-0.114 (0.280)	-0.052 (0.040)	0.011 (0.015)	0.065 (0.061)	0.844 (0.084)	0.814	
Error to Ncf	0.656	-0.248	0.565	-0.777	0.246		
Error to -Ndr	0.344	0.248	-0.565	0.777	-0.246		
Structural Error to Ncf	0.010	-0.008	0.341	-0.047	0.057		
Structural Error to -Ndr	0.112	0.008	-0.341	0.047	-0.057		
<i>News terms corr/std</i>	Ncf	-Ndr		Gamma	10.869		
Ncf	0.349	-0.942					
-Ndr	-0.942	0.367		J-stat p-value	0.000		
<i>Betas</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.152	0.295	0.360	-0.056	0.064	0.255	
Discount Rate	0.965	0.720	0.741	0.809	0.722	0.704	
			E[Ri-Rm]			E[Rm-Rf]	
Predicted	0.024	0.043	0.054	-0.013	0.005	0.037	0.016
Realized	0.006	0.015	0.022	-0.002	0.002	0.011	0.018
Error	-0.017	-0.029	-0.033	0.011	-0.003	-0.026	0.002
<i>Betas (early sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.146	0.185	0.169	-0.030	0.054	0.151	
Discount Rate	0.896	0.857	1.031	0.722	0.769	0.920	
			E[Ri-Rm]			E[Rm-Rf]	
Predicted	0.037	0.046	0.046	-0.013	0.010	0.039	0.022
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025
Error	-0.024	-0.030	-0.020	0.011	-0.006	-0.021	0.003
<i>Betas (late sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.162	0.509	0.729	-0.104	0.084	0.455	
Discount Rate	1.099	0.458	0.184	0.975	0.633	0.290	
			E[Ri-Rm]			E[Rm-Rf]	
Predicted	0.014	0.042	0.061	-0.013	0.002	0.035	0.012
Realized	0.002	0.014	0.019	-0.001	0.001	0.006	0.013
Error	-0.012	-0.028	-0.042	0.012	-0.001	-0.029	0.001

Note: the table reproduces the estimation in Table IV, but imposes separately the ICAPM moment conditions constraints for the early and late samples. In addition, it imposes that the equity premium is matched exactly in both subperiods.

Appendix Table VIII - Dropping the Value Spread from the VAR

<i>VAR estimate</i>	Rm	PE	TY	DEF	R squared		
Rm	0.085 (0.084)	-0.038 (0.016)	0.003 (0.006)	-0.026 (0.019)	-0.003		
PE	0.144 (0.086)	0.991 (0.014)	-0.001 (0.006)	0.005 (0.019)	0.931		
TY	-0.136 (0.289)	-0.023 (0.089)	0.844 (0.049)	0.138 (0.069)	0.709		
DEF	-0.540 (0.367)	0.018 (0.032)	-0.032 (0.018)	1.010 (0.079)	0.798		
Error to Ncf	1.354	-4.099	0.362	-1.638			
Error to -Ndr	-0.354	4.099	-0.362	1.638			
Structural Error to Ncf	0.034	-0.044	0.208	-0.408			
Structural Error to -Ndr	0.075	0.044	-0.208	0.408			
<i>News terms corr/std</i>	Ncf	-Ndr		Gamma	4.156		
Ncf	0.461	-0.973					
-Ndr	-0.973	0.466		J-stat p-value	0.001		
<i>Betas</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.352	0.792	1.175	-0.195	0.499	1.114	
Discount Rate	0.995	0.439	0.163	1.135	0.484	0.065	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.013	0.028	0.044	-0.012	0.014	0.040	0.016
Realized	0.006	0.015	0.022	-0.002	0.002	0.011	0.018
Error	-0.007	-0.013	-0.022	0.010	-0.012	-0.029	0.002
<i>Betas (early sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	1.770	2.022	2.475	0.785	1.581	2.317	
Discount Rate	-0.473	-0.719	-0.976	0.118	-0.510	-0.952	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.043	0.058	0.086	-0.019	0.029	0.075	0.079
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025
Error	-0.030	-0.041	-0.061	0.016	-0.025	-0.058	-0.054
<i>Betas (late sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	-2.027	-1.264	-0.998	-1.835	-1.311	-0.901	
Discount Rate	3.458	2.373	2.064	2.839	2.148	1.767	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	-0.009	0.007	0.013	-0.007	0.004	0.014	-0.029
Realized	0.002	0.014	0.019	-0.001	0.001	0.006	0.013
Error	0.010	0.006	0.005	0.006	-0.003	-0.008	0.042

Note: the table reproduces the estimation in Table IV, but excluding the Value Spread from the set of variables in the VAR.

Appendix Table IX - Dropping the Default Spread from the VAR

<i>VAR estimate</i>	Rm	PE	TY	VS	R squared		
Rm	-0.082 (0.076)	-0.048 (0.023)	0.007 (0.006)	-0.032 (0.019)	0.035		
PE	0.006 (0.085)	0.966 (0.022)	0.006 (0.006)	-0.016 (0.018)	0.932		
TY	0.019 (0.290)	-0.035 (0.118)	0.810 (0.045)	0.190 (0.087)	0.707		
VS	0.076 (0.061)	0.008 (0.014)	-0.003 (0.005)	0.978 (0.014)	0.942		
Error to Ncf	0.896	-0.995	0.007	-0.341			
Error to -Ndr	0.104	0.995	-0.007	0.341			
Structural Error to Ncf	0.006	-0.038	0.004	-0.030			
Structural Error to -Ndr	0.101	0.038	-0.004	0.030			
<i>News terms corr/std</i>	Ncf	-Ndr		Gamma	15.000		
Ncf	0.049	-0.324					
-Ndr	-0.324	0.112		J-stat p-value	0.012		
<i>Betas</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.029	0.082	0.129	0.012	0.065	0.114	
Discount Rate	1.307	1.144	1.203	0.938	0.932	1.072	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.002	0.009	0.018	-0.005	0.004	0.014	0.018
Realized	0.006	0.015	0.022	-0.002	0.002	0.011	0.018
Error	0.005	0.006	0.004	0.004	-0.002	-0.003	0.000
<i>Betas (early sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.119	0.144	0.191	0.075	0.104	0.183	
Discount Rate	1.204	1.190	1.336	0.867	1.016	1.229	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.009	0.015	0.029	-0.008	0.002	0.025	0.040
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025
Error	0.004	0.002	-0.003	0.005	0.002	-0.007	-0.016
<i>Betas (late sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	-0.108	-0.010	0.037	-0.082	0.008	0.011	
Discount Rate	1.463	1.071	0.997	1.044	0.801	0.832	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	-0.003	0.005	0.010	-0.003	0.005	0.006	0.002
Realized	0.002	0.014	0.019	-0.001	0.001	0.006	0.013
Error	0.005	0.009	0.009	0.003	-0.004	0.000	0.011

Note: the table reproduces the estimation in Table IV, but excluding the Default Spread from the set of variables in the VAR.

Appendix Table X - Using PD instead of PE

<i>VAR estimate</i>	Rm	PD	TY	VS	DEF	R squared	
Rm	-0.002 (0.078)	-0.017 (0.012)	0.016 (0.007)	-0.014 (0.026)	-0.021 (0.028)	-0.003	
PD	0.133 (0.073)	0.989 (0.012)	0.009 (0.007)	-0.037 (0.026)	0.021 (0.025)	0.948	
TY	-0.227 (0.318)	0.062 (0.043)	0.975 (0.021)	-0.122 (0.073)	0.153 (0.086)	0.681	
VS	0.061 (0.062)	0.005 (0.014)	-0.010 (0.005)	0.946 (0.019)	0.035 (0.014)	0.943	
DEF	-0.273 (0.339)	-0.023 (0.031)	0.002 (0.016)	0.072 (0.069)	0.916 (0.092)	0.814	
Error to Ncf	0.696	0.343	0.613	-0.801	0.606		
Error to -Ndr	0.304	-0.343	-0.613	0.801	-0.606		
Structural Error to Ncf	0.017	-0.008	0.369	-0.013	0.141		
Structural Error to -Ndr	0.092	0.008	-0.369	0.013	-0.141		
<i>News terms corr/std</i>	Ncf	-Ndr		Gamma	8.820		
Ncf	0.395	-0.964					
-Ndr	-0.964	0.406		J-stat p-value	0.001		
<i>Betas</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.250	0.346	0.343	0.012	0.023	0.190	
Discount Rate	1.099	0.887	0.995	0.929	0.966	0.997	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.021	0.029	0.030	-0.005	-0.004	0.014	0.018
Realized	0.006	0.015	0.022	-0.002	0.002	0.011	0.018
Error	-0.015	-0.014	-0.008	0.004	0.006	-0.003	0.000
<i>Betas (early sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	-0.066	-0.065	-0.199	-0.162	-0.210	-0.199	
Discount Rate	1.371	1.378	1.704	1.071	1.292	1.573	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.018	0.018	0.003	-0.002	-0.006	0.001	-0.004
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025
Error	-0.005	-0.002	0.023	0.000	0.010	0.016	0.029
<i>Betas (late sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.776	1.037	1.255	0.304	0.414	0.842	
Discount Rate	0.648	0.068	-0.188	0.693	0.423	0.036	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.018	0.018	0.003	-0.002	-0.006	0.001	-0.004
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025
Error	-0.005	-0.002	0.023	0.000	0.010	0.016	0.029

Note: the table reproduces the estimation in Table IV, but uses the price-dividend ratio PD in the VAR in place of the price-earnings ratio PE.

Appendix Table XI - Using CPI-deflated P and E

<i>VAR estimate</i>	Rm	PE	TY	VS	DEF	R squared	
Rm	0.059 (0.075)	-0.037 (0.014)	0.008 (0.007)	0.022 (0.025)	-0.039 (0.026)	-0.020	
PE	0.098 (0.077)	0.988 (0.013)	0.006 (0.006)	0.006 (0.023)	-0.011 (0.024)	0.937	
TY	-0.185 (0.298)	-0.006 (0.092)	0.834 (0.048)	-0.004 (0.099)	0.194 (0.085)	0.709	
VS	0.023 (0.058)	0.024 (0.015)	-0.011 (0.006)	0.928 (0.020)	0.062 (0.015)	0.940	
DEF	-0.432 (0.332)	0.049 (0.030)	-0.040 (0.019)	-0.051 (0.074)	1.080 (0.099)	0.787	
Error to Ncf	1.850	-8.030	0.522	2.071	-3.678		
Error to -Ndr	-0.850	8.030	-0.522	-2.071	3.678		
Structural Error to Ncf	0.069	-0.102	0.287	-0.204	-0.867		
Structural Error to -Ndr	0.040	0.102	-0.287	0.204	0.867		
<i>News terms corr/std</i>	Ncf	-Ndr		Gamma	4.179		
Ncf	0.944	-0.993					
-Ndr	-0.993	0.942		J-stat p-value	0.001		
<i>Betas</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.602	1.154	1.649	-0.454	0.709	1.675	
Discount Rate	0.734	0.063	-0.329	1.382	0.260	-0.511	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.026	0.045	0.065	-0.020	0.025	0.064	0.013
Realized	0.006	0.015	0.022	-0.002	0.002	0.011	0.018
Error	-0.019	-0.030	-0.044	0.018	-0.023	-0.054	0.004
<i>Betas (early sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	3.135	3.544	4.231	1.335	2.843	4.040	
Discount Rate	-1.850	-2.255	-2.750	-0.446	-1.789	-2.693	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.078	0.101	0.144	-0.033	0.057	0.131	0.125
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025
Error	-0.065	-0.085	-0.118	0.030	-0.053	-0.113	-0.100
<i>Betas (late sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	-3.651	-2.840	-2.663	-3.449	-2.862	-2.285	
Discount Rate	5.070	3.935	3.714	4.442	3.688	3.141	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	-0.012	0.005	0.009	-0.011	0.003	0.017	-0.067
Realized	0.002	0.014	0.019	-0.001	0.001	0.006	0.013
Error	0.014	0.008	0.009	0.010	-0.002	-0.011	0.080

Note: the table reproduces the estimation in Table IV, but uses the CPI to deflate the series of P and E before constructing the PE ratio.

Appendix Table XII - Using CPI-deflated P and E and inflation

<i>VAR estimate</i>	Rm	PE	TY	VS	DEF	CPI	R squared
Rm	-0.001 (0.070)	-0.024 (0.016)	0.009 (0.006)	-0.040 (0.043)	0.004 (0.026)	-0.013 (0.023)	0.028
PE	0.100 (0.072)	0.983 (0.014)	0.009 (0.006)	-0.016 (0.037)	-0.004 (0.023)	0.013 (0.019)	0.938
TY	0.108 (0.289)	0.058 (0.093)	0.793 (0.051)	0.303 (0.203)	0.102 (0.081)	0.201 (0.160)	0.714
VS	-0.012 (0.060)	0.039 (0.015)	-0.004 (0.005)	0.905 (0.029)	0.037 (0.013)	-0.036 (0.018)	0.944
Def	-0.444 (0.287)	0.039 (0.035)	-0.021 (0.017)	-0.141 (0.095)	1.059 (0.062)	-0.121 (0.060)	0.789
CPI	0.017 (0.019)	-0.016 (0.004)	-0.006 (0.001)	0.013 (0.007)	-0.002 (0.005)	0.997 (0.004)	0.998
Error to Ncf	0.824	-0.436	0.036	-0.654	0.282	-1.209	
Error to -Ndr	0.176	0.436	-0.036	0.654	-0.282	1.209	
Structural Error to Ncf	0.006	-0.036	0.018	-0.030	0.073	-0.027	
Structural Error to -Ndr	0.101	0.036	-0.018	0.030	-0.073	0.027	
<i>News terms corr/std</i>	Ncf	-Ndr			Gamma	15.000	
Ncf	0.093	-0.626					
-Ndr	-0.626	0.137			J-stat p-value	0.001	
<i>Betas</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.005	0.058	0.090	0.045	0.035	0.050	
Discount Rate	1.349	1.184	1.259	0.914	0.972	1.151	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	-0.003	0.004	0.010	-0.001	-0.002	0.002	0.019
Realized	0.006	0.015	0.022	-0.002	0.002	0.011	0.018
Error	0.010	0.011	0.011	0.000	0.004	0.008	-0.002
<i>Betas (early sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	-0.078	-0.073	-0.069	-0.021	-0.091	-0.074	
Discount Rate	1.395	1.403	1.593	0.955	1.201	1.475	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	-0.007	-0.006	-0.002	0.000	-0.014	-0.005	0.011
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025
Error	0.020	0.022	0.027	-0.002	0.017	0.022	0.014
<i>Betas (late sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.140	0.267	0.344	0.149	0.236	0.249	
Discount Rate	1.274	0.836	0.726	0.852	0.604	0.629	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.000	0.011	0.019	-0.002	0.006	0.007	0.025
Realized	0.002	0.014	0.019	-0.001	0.001	0.006	0.013
Error	0.002	0.003	0.000	0.001	-0.005	-0.001	-0.013

Note: the table reproduces the estimation in Table IV, but uses the CPI to deflate the series of P and E before constructing the PE ratio. It also includes a measure of smoothed inflation to the VAR.

Appendix Table XIII - Using Tbill-deflated P and E

<i>VAR estimate</i>	Rm	PE	TY	VS	DEF	R squared	
Rm	0.100 (0.081)	-0.045 (0.018)	0.004 (0.007)	0.010 (0.025)	-0.037 (0.028)	-0.025	
PE	0.166 (0.084)	0.977 (0.016)	0.005 (0.007)	0.013 (0.024)	-0.018 (0.026)	0.930	
TY	-0.225 (0.301)	0.072 (0.116)	0.799 (0.048)	0.018 (0.097)	0.236 (0.086)	0.711	
VS	0.009 (0.061)	0.035 (0.017)	-0.006 (0.005)	0.928 (0.018)	0.060 (0.015)	0.941	
DEF	-0.583 (0.347)	0.026 (0.042)	-0.008 (0.017)	0.030 (0.065)	0.984 (0.089)	0.802	
Error to Ncf	1.267	-3.133	0.016	-0.752	-1.157		
Error to -Ndr	-0.267	3.133	-0.016	0.752	1.157		
Structural Error to Ncf	0.044	-0.024	-0.002	-0.176	-0.254		
Structural Error to -Ndr	0.066	0.024	0.002	0.176	0.254		
<i>News terms corr/std</i>	Ncf	-Ndr		Gamma	3.270		
Ncf	0.313	-0.940					
-Ndr	-0.940	0.317		J-stat p-value	0.001		
<i>Betas</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.263	0.654	1.058	-0.025	0.556	1.019	
Discount Rate	1.066	0.558	0.259	0.948	0.408	0.139	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.006	0.015	0.027	-0.007	0.009	0.024	0.018
Realized	0.006	0.015	0.022	-0.002	0.002	0.011	0.018
Error	0.001	0.000	-0.005	0.006	-0.007	-0.013	0.000
<i>Betas (early sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	1.505	1.712	2.202	0.808	1.411	2.035	
Discount Rate	-0.223	-0.426	-0.720	0.079	-0.359	-0.689	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.024	0.033	0.057	-0.011	0.016	0.047	0.061
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025
Error	-0.011	-0.017	-0.031	0.009	-0.013	-0.030	-0.036
<i>Betas (late sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	-1.827	-1.115	-0.852	-1.422	-0.875	-0.683	
Discount Rate	3.238	2.204	1.895	2.406	1.692	1.527	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	-0.008	0.002	0.006	-0.004	0.004	0.008	-0.013
Realized	0.002	0.014	0.019	-0.001	0.001	0.006	0.013
Error	0.010	0.012	0.012	0.003	-0.003	-0.002	0.026

Note: the table reproduces the estimation in Table IV, but uses the three month T-bill index to deflate the series of P and E before constructing the PE ratio.

Appendix Table XIV - Using real returns instead of excess returns in the VAR

<i>VAR estimate</i>	Rm	PE	TY	VS	DEF	R squared	
Rm	-0.060 (0.069)	-0.033 (0.017)	0.008 (0.007)	-0.045 (0.025)	0.001 (0.028)	0.034	
PE	0.040 (0.077)	0.974 (0.016)	0.006 (0.007)	-0.020 (0.024)	-0.008 (0.028)	0.932	
TY	0.192 (0.291)	0.049 (0.098)	0.783 (0.047)	0.020 (0.111)	0.185 (0.082)	0.713	
VS	0.061 (0.060)	0.016 (0.015)	-0.005 (0.005)	0.972 (0.018)	0.017 (0.014)	0.943	
DEF	-0.194 (0.317)	-0.009 (0.043)	-0.009 (0.018)	0.087 (0.072)	0.932 (0.102)	0.812	
Error to Ncf	0.881	-0.916	0.012	-0.416	0.044		
Error to -Ndr	0.119	0.916	-0.012	0.416	-0.044		
Structural Error to Ncf	0.005	-0.041	0.008	-0.032	0.010		
Structural Error to -Ndr	0.101	0.041	-0.008	0.032	-0.010		
<i>News terms corr/std</i>	Ncf	-Ndr		Gamma	15.000		
Ncf	0.054	-0.377					
-Ndr	-0.377	0.114		J-stat p-value	0.039		
<i>Betas</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.003	0.064	0.109	0.003	0.045	0.090	
Discount Rate	1.341	1.169	1.227	0.953	0.948	1.095	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.000	0.008	0.017	-0.004	0.003	0.012	0.016
Realized	0.006	0.015	0.022	-0.002	0.002	0.011	0.018
Error	0.006	0.006	0.005	0.003	-0.001	-0.001	0.002
<i>Betas (early sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	0.073	0.096	0.134	0.045	0.053	0.123	
Discount Rate	1.259	1.245	1.397	0.896	1.056	1.281	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	0.007	0.012	0.024	-0.006	-0.002	0.019	0.032
Realized	0.013	0.016	0.026	-0.002	0.004	0.017	0.025
Error	0.006	0.004	0.002	0.004	0.005	-0.002	-0.007
<i>Betas (late sample)</i>		Small			Large		
	Growth	Neutral	Value	Growth	Neutral	Value	
Cash Flow	-0.102	0.017	0.072	-0.060	0.034	0.042	
Discount Rate	1.468	1.057	0.972	1.041	0.787	0.814	
			E[Ri-Rm]				E[Rm-Rf]
Predicted	-0.005	0.006	0.012	-0.003	0.006	0.007	0.004
Realized	0.002	0.014	0.019	-0.001	0.001	0.006	0.013
Error	0.006	0.008	0.007	0.002	-0.005	-0.001	0.009

Note: the table reproduces the estimation in Table IV, but replaces the excess market return with the real market return.