

**Online Appendix: Supplementary Material for
“Productivity or Unexpected Demand Shocks: What Determines Firms’
Investment and Exit Decisions?”
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In this online appendix, we report the detailed estimation results using two alternative methods to check the robustness of our results, as discussed in Section 5 in the main paper.

1 Results Using Heckman-Style Correction

Tables [A1](#) to [A7](#) contain descriptive statistics for the Heckman-style correction where we use the conditional mean for observations with zero inventories to calculate the demand shock. In general, the results are very similar to our main results. The production parameters, as reported in Table [A1](#), are reasonable and quantitatively close to our main results. The distribution of productivity and demand shocks, and their correlation with respect to firm characteristics (e.g. capital, labor, material, sales) are also similar to our main results. In Table [A6](#) and [A7](#), we also find similar role of productivity and unexpected demand shocks in determining firm turnover and investment: the unexpected demand shocks, in general, is the more important factor that drives firm exit, while productivity is more salient in explaining firm growth via investment.

2 Results Using Intercept Method

Tables [A8](#) to [A14](#) contain similar descriptive statistics for the intercept method where we use the fixed effect for λ_j to estimate the demand shock based on Equation (7) in the main paper. The estimation results are similar to our primary method results. In particular, the estimation results support that the short-term demand shock is a more important driving force in firm exit decisions than the persistent productivity. Although some of these effects are not significant statistically because of the smaller sample size, but the signs on the parameters are the same as earlier. Also, both productivity and demand shocks have a positive and significant effect on firm investment, however the magnitude of the productivity’s effect is larger.

Table A1: Production Function Parameters: Heckman-Style correction

Industry	Capital Share	Labor Share	Material Share	Scale	Persistence
Clothing	0.125*** (0.002)	0.328*** (0.004)	0.390*** (0.003)	0.843	0.778*** (0.007)
Plastics	0.103*** (0.002)	0.293*** (0.006)	0.564*** (0.005)	0.959	0.774*** (0.014)
Knitting	0.091*** (0.002)	0.259*** (0.008)	0.59*** (0.006)	0.940	0.740*** (0.018)

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A2: Demand shock and Productivity: Heckman style correction

Industry	Productivity				Demand Shock			
	Mean	SD	P75/P25	P90/P10	Mean	SD	P75/P25	P90/P10
Clothing	3.528	0.233	0.266	0.541	0.000	0.159	0.145	0.366
Plastics	1.761	0.113	0.129	0.258	0.000	0.127	0.086	0.229
Knitting	1.985	0.134	0.153	0.309	0.000	0.132	0.106	0.297

Table A3: Demand shock and productivity across groups: Heckman-style correction

Industry	Productivity			Demand Shock		
	Entrants	Incumbents	Exiters	Entrants	Incumbents	Exiters
Clothing	3.505 (0.235)	3.537 (0.230)	3.518 (0.244)	-0.010 (0.171)	0.008 (0.149)	-0.024 (0.179)
Plastics	1.756 (0.115)	1.763 (0.108)	1.758 (0.128)	-0.009 (0.146)	0.005 (0.112)	-0.005 (0.144)
Knitting	1.962 (0.143)	1.995 (0.128)	1.975 (0.145)	-0.002 (0.147)	0.007 (0.118)	-0.029 (0.159)

Std. deviation is reported in parenthesis.

Table A4: Correlation patterns: Heckman-style correction

Industry	Productivity				Demand Shock				Prod.
	Capital	Labor	Material	Sales	Capital	Labor	Material	Sales	
Clothing	0.213	0.606	0.633	0.726	-0.035	0.043	-0.052	0.085	0.034
Plastics	0.178	0.543	0.557	0.579	-0.022	-0.001	0.076	0.092	-0.041
Knitting	0.299	0.656	0.646	0.698	-0.023	0.003	0.052	0.093	0.094

Table A5: Descriptive statistics of the inventory share: Heckman-style correction

Industry	Mean	Std. Dev	Median	P25	P75
Clothing	0.108	0.033	0.116	0.076	0.130
Plastics	0.078	0.028	0.074	0.058	0.093
Knitting	0.106	0.051	0.100	0.068	0.122

Table A6: Probit Regression for Exit: Heckman Style Correction

	(1)	(2)	(3)	(4)	(5)	AME
	Clothing					
ω	-0.472*** (0.0846)		-0.517*** (0.0858)	-0.398*** (0.0880)	-0.302*** (0.0937)	-0.052*** (0.016)
z		-0.539*** (0.106)	-0.558*** (0.107)	-0.616*** (0.108)	-0.857*** (0.136)	-0.148*** (0.023)
capital				-0.0971*** (0.0135)	-0.0906*** (0.0137)	-0.016*** (0.002)
inventory					-0.0156*** (0.00545)	-0.003*** (0.001)
Pseudo R^2	0.299	0.301	0.305	0.312	0.313	
Observations	8,706	8,802	8,706	8,706	8,706	
	Plastics					
ω	-0.606** (0.304)		-1.058*** (0.327)	-0.921*** (0.330)	-0.752** (0.351)	-0.123** (0.058)
z		-0.288 (0.229)	-0.318 (0.228)	-0.362 (0.229)	-0.563** (0.268)	-0.092** (0.044)
capital				-0.118*** (0.0193)	-0.109*** (0.0204)	-0.018*** (0.003)
inventory					-0.0144 (0.0102)	-0.002 (0.002)
Pseudo R^2	0.330	0.327	0.336	0.350	0.351	
Observations	2,863	2,869	2,863	2,863	2,863	
	Knitting					
ω	-0.564** (0.286)		-0.594* (0.314)	-0.231 (0.321)	-0.145 (0.332)	-0.027 (0.062)
z		-1.002*** (0.251)	-0.922*** (0.255)	-0.985*** (0.255)	-1.155*** (0.307)	-0.216*** (0.057)
capital				-0.123*** (0.0239)	-0.117*** (0.0249)	-0.022*** (0.005)
inventory					-0.0122 (0.0122)	0.002 (0.002)
Pseudo R^2	0.250	0.259	0.259	0.273	0.274	
Observations	1,944	1,950	1,944	1,944	1,944	

Standard errors in parentheses (***) $p < 0.01$, ** $p < 0.05$, * $p < 0.1$)

Year fixed effects are included in each specification.

Table A7: Tobit Regression for investment: Heckman Style correction method

	(1)	(2)	(3)	(4)	(5)
	Clothing				
ω	9.598*** (0.372)		10.69*** (0.383)	5.557*** (0.346)	5.355*** (0.374)
z		1.039*	0.697 (0.00982)	1.935*** (0.00862)	2.509*** (0.00863)
capital				2.853*** (0.0565)	2.841*** (0.0572)
inventory					0.0314 (0.0221)
Pseudo R^2	0.014	0.002	0.016	0.060	0.060
Observations	10,842	11,029	10,842	10,842	10,842
	Plastics				
ω	15.80*** (1.008)		15.45*** (1.082)	9.423*** (0.884)	10.10*** (0.940)
z		1.153 (0.884)	1.970** (0.853)	1.972*** (0.681)	1.043 (0.812)
capital				2.113*** (0.0510)	2.150*** (0.0539)
inventory					-0.0575** (0.0275)
Pseudo R^2	0.012	0.001	0.012	0.080	0.080
Observations	3,680	3,693	3,680	3,680	3,680
	Knitting				
ω	17.53*** (1.165)		20.96*** (1.299)	10.40*** (1.110)	10.36*** (1.146)
z		3.064** (1.246)	0.730 (1.193)	2.315** (0.978)	2.408** (1.192)
capital				2.534*** (0.0822)	2.531*** (0.0856)
inventory					0.00554 (0.0408)
Pseudo R^2	0.018	0.002	0.020	0.083	0.083
Observations	2,452	2,476	2,452	2,452	2,452

Standard errors in parentheses (***) $p < 0.01$, (**) $p < 0.05$, (*) $p < 0.1$)

Year fixed effects are included in every model.

Table A8: Production Function Estimation: Intercept Method

Industry	Capital Share	Labor Share	Material Share	Scale	Persistence
Clothing	0.06*** (0.002)	0.475*** (0.006)	0.432*** (0.004)	0.967	0.698*** (0.01)
Plastic Products	0.072*** (0.002)	0.288*** (0.008)	0.628*** (0.006)	0.988	0.703*** (0.016)
Knitting Mills	0.069*** (0.003)	0.286*** (0.01)	0.633*** (0.008)	0.987	0.561*** (0.025)

Table A9: Demand shock and Productivity: Intercept method

Industry	Productivity				Demand Shock			
	Mean	SD	P75/P25	P90/P10	Mean	SD	P75/P25	P90/P10
Clothing	1.658	0.094	0.112	0.224	-0.016	0.109	0.096	0.223
Plastics	1.246	0.064	0.076	0.143	-0.008	0.088	0.056	0.139
Knitting	1.225	0.077	0.073	0.155	-0.008	0.089	0.081	0.178

Table A10: Demand shock and productivity across groups: Intercept method

Industry	Productivity			Demand Shock		
	Entrants	Incumbents	Exiters	Entrants	Incumbents	Exiters
Clothing	1.607 (0.088)	1.655 (0.091)	1.705 (0.104)	-0.0003 (0.114)	-0.015 (0.106)	-0.036 (0.127)
Plastics	1.224 (0.08)	1.245 (0.063)	1.26 (0.063)	-0.035 (0.145)	-0.005 (0.079)	-0.014 (0.106)
Knitting	1.195 (0.092)	1.223 (0.074)	1.252 (0.088)	0.006 (0.101)	-0.002 (0.082)	-0.056 (0.118)

Std. deviation is reported in parenthesis.

Table A11: Correlation patterns: Intercept method

Industry	Productivity				Demand Shock				Prod.
	Capital	Labor	Material	Sales	Capital	Labor	Material	Sales	
Clothing	0.048	0.185	0.017	0.150	0.057	0.070	0.153	0.188	-0.292
Plastic Products	-0.007	0.165	0.143	0.173	0.060	0.079	0.105	0.136	-0.119
Knitting Mills	0.036	0.262	0.216	0.262	0.105	0.072	0.090	0.126	-0.140

Table A12: Descriptive statistics of the inventory share: Intercept method

Industry	Mean	Std. Dev	Median	P25	P75
Clothing	0.100	0.123	0.081	0.026	0.152
Plastics	0.073	0.093	0.049	0.022	0.106
Knitting	0.096	0.095	0.076	0.040	0.138

Table A13: Probit Regression for Exit: Intercept method

	(1)	(2)	(3)	(4)	(5)	AME
	Clothing					
ω	0.487 (0.357)		-0.271 (0.398)	-0.504 (0.396)	-1.078** (0.484)	-0.126** (0.057)
z		-0.735*** (0.257)	-0.689** (0.300)	-0.780*** (0.300)	-1.001*** (0.313)	-0.117*** (0.037)
capital				-0.156*** (0.0222)	-0.143*** (0.0233)	-0.017*** (0.003)
inventory					-0.0282** (0.0139)	-0.003** (0.002)
Pseudo R^2	0.015	0.02	0.032	0.061	0.063	
Observations	3,806	3,842	3,806	3,806	3,806	
	Plastics					
ω	0.823 (0.976)		0.244 (1.120)	-1.174 (1.063)	-1.327 (1.043)	-0.161 (0.127)
z		-1.215** (0.539)	-1.255** (0.549)	-0.832 (0.537)	-1.027* (0.549)	-0.124* (0.067)
capital				-0.194*** (0.0358)	-0.176*** (0.0376)	-0.021*** (0.005)
inventory					-0.0354 (0.0218)	-0.004 (0.003)
Pseudo R^2	0.012	0.019	0.024	0.078	0.082	
Observations	1,186	1,188	1,186	1,186	1,186	
	Knitting					
ω	1.393 (0.865)		1.212 (0.953)	0.666 (0.999)	0.538 (1.017)	0.063 (0.118)
z		-2.742*** (0.688)	-2.499*** (0.771)	-2.151*** (0.774)	-2.242*** (0.791)	-0.261*** (0.094)
capital				-0.114*** (0.0408)	-0.107** (0.0432)	-0.012** (0.005)
inventory					-0.0150 (0.0274)	-0.002 (0.003)
Pseudo R^2	0.026	0.058	0.063	0.085	0.085	
Observations	774	777	774	774	774	

Standard errors in parentheses (***) $p < 0.01$, ** $p < 0.05$, * $p < 0.1$)

Year fixed effects are included in every model.

Table A14: Tobit Regression for investment: Intercept method

	(1)	(2)	(3)	(4)	(5)
	Clothing				
ω	8.695*** (1.313)		14.64*** (1.442)	9.079*** (1.229)	13.12*** (1.369)
z		5.467*** (1.040)	8.803*** (1.179)	4.946*** (0.975)	6.433*** (1.003)
capital				2.962*** (0.0678)	2.778*** (0.0723)
inventory					0.202*** (0.0304)
Pseudo R^2	0.005	0.005	0.008	0.063	0.064
Observations	6,124	6,191	6,124	6,124	6,124
	Plastics				
ω	16.95*** (2.560)		17.81*** (2.925)	27.52*** (2.219)	27.52*** (2.219)
z		0.896 (1.532)	1.667 (1.554)	0.182 (1.169)	0.200 (1.178)
capital				2.224*** (0.0613)	2.221*** (0.0652)
inventory					0.00397 (0.0324)
Pseudo R^2	0.005	0.002	0.005	0.093	0.093
Observations	1,987	1,992	1,987	1,987	1,987
	Knitting				
ω	12.05*** (2.624)		16.08*** (2.835)	14.76*** (2.145)	15.56*** (2.208)
z		8.090*** (2.290)	9.843*** (2.343)	4.380** (1.758)	4.866*** (1.786)
capital				2.555*** (0.0904)	2.495*** (0.0985)
inventory					0.0760 (0.0510)
Pseudo R^2	0.007	0.006	0.009	0.097	0.097
Observations	1,313	1,316	1,313	1,313	1,313

Standard errors in parentheses (***) p<0.01, ** p<0.05, * p<0.1)

Year fixed effects are included in every model.