Industrial Espionage and Productivity

Albrecht Glitz Erik Meyersson

- Online Appendix -

Tables

Table A1: Keyword Allocation

Rank	Original Keyword	English Translation	Freq.	Sector																
				1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	Other Sector	Unclassified
1.	Objekt	Object	19,786																	✓
2.	Militaertechnik	Military Technology	12,471																✓	
3.	Elektronik	Electronics	11,807													✓				
4.	Elektrotechnik	Electrical Engineering	11,307													✓				
5.	S	-	10,968																	✓
6.	Austausch_Ausgeschlossen	Exchange Precluded	10,419																	✓
7.	Mikroelektronik	Microelectronics	9,666													✓				
8.	Software	Software	9,645													✓				
9.	Rechentechnik	Computer Science	9,046													✓				
10.	Nachrichtentechnik	Communications Engineering	7,868					✓								✓				
11.	Chemie	Chemistry	7,519								✓									
12.	R	-	5,734																	✓
13.	Anwendung	Application	5,331																	✓
14.	NA	-	5,312																	✓
15.	Hardware	Hardware	4,326													✓				
16.	Technologie	Technology	3,734																	✓
17.	MT	-	3,582																	✓
18.	EDV	Electronic Data Processing	3,416													✓				
19.	Kleinrechner	Microcomputer	3,343													✓				
20.	Programm	Program	3,335													✓				
21.	Beschreibung	Description	3,166																	✓
22.	Umweltschutz	Environment Protection	3,085																	✓
23.	Datentechnik	Data Processing Technology	3,060													✓				
24.	Muster	Pattern	3,034		✓				✓							✓				
25.	EDVA	Electronic Data Processing Facility	3,018													✓				
26.	Metallurgie	Metallurgy	2,992											✓						
27.	Optik	Optics	2,922													✓				
28.	Personalcomputer	Personal Computer	2,722													✓				
29.	IBM	IBM	2,635													✓				
30.	Kernkraftwerk	Nuclear Power Plant	2,584																✓	
⋮	⋮	⋮	⋮																	
1991.	Schwermetall	Heavy Metal	57											✓						
1992.	Schwingquarz	Oscillating Crystal	57													✓				
1993.	Soman	Soman	57								✓								✓	
1994.	Temperaturverteilung	Temperature Distribution	57																✓	
1995.	Turbinenschaufel	Turbine Blade	57												✓					
1996.	Umkehrosmose	Reverse Osmosis	57	✓															✓	✓
1997.	Verformung	Deformation	57																	✓
1998.	Verkehr	Traffic	57																✓	
1999.	Waermedaemmung	Heat Insulation	57																✓	
2000.	Wolfram	Wolfram	57								✓									

Note: This tables shows the 2,000 most common keywords in TDB11 and their sectoral allocation. List of sectors: 1. Food and Tobacco, 2. Textiles and Clothing, 3. Leather Products, 4. Woodworking, 5. Paper, Printing, and Publishing, 6. Furniture, Jewelry, and Music Instruments, 7. Coking and Petroleum, 8. Chemicals, 9. Rubber and Plastics, 10. Glass, Ceramics, and other non-Metalic Minerals, 11. Metalworking, 12. Machine Building, 13. Office Appliances, Computers, and Electronics, 14. Automobiles, 15. Mining, 16. Utilities–Energy and Water Supply.

Table A2: Allocation Procedure - Examples

ID	Keywords (Original)	Keywords (English)	Assigned Sector(s)
Example 1:			
2388127	ELEKTROCHEMIE	Electrochemistry	Chemicals, Electronics
2388127	OPTOELEKTRONIK	Optoelectronics	Electronics
2388127	MIKROELEKTRONIK	Microelectronics	Electronics
2388127	PLASMAPHYSIK	Plasma Physics	Electronics
2388127	OBJEKT	Object	
2388127	CHEMIE	Chemistry	Chemicals
2388127	KRISTALLZUECHTUNG	Crystal Growing	Chemicals
⟶ **Baseline (unweighted):**	**Chemicals 1, Electronics 1**		
⟶ Adjusted (weighted):	Chemicals 3/7, Electronics 4/7		
Example 2:			
1674509	ELEKTROKERAMIK	Electrical Ceramic	
1674509	KERAMIK	Ceramics	Glass, Ceramics, and Non-Metallic Minerals
1674509	TITAN	Titan	Chemicals
1674509	PIEZOKERAMIK	Piezoceramics	Glass, Ceramics, and Non-Metallic Minerals
⟶ **Baseline (unweighted):**	**Glass, Ceramics, and Non-Metallic Minerals 1, Chemicals 1**		
⟶ Adjusted (weighted):	Glass, Ceramics, and Non-Metallic Minerals 2/3, Chemicals 1/3		
Example 3:			
2388709	OBJEKT	Object	
2388709	CHEMIE	Chemistry	Chemicals
2388709	AUSTAUSCH_AUSGESCHLOSSEN	Non-returnable	
2388709	VERNETZUNG	Networking	
2388709	EPOXIDHARZ	Epoxy Resin	Chemicals, Rubber and Plastics, Electronics
⟶ **Baseline (unweighted):**	**Chemicals 1, Rubber and Plastics 1, Electronics 1**		
⟶ Adjusted (weighted):	Chemicals 1/2, Rubber and Plastics 1/4, Electronics 1/4		
Example 4:			
2383885	MASCHINENBAU	Machine Building	Machine Building
2383885	OBERFLAECHENBESCHICHTUNG	Surface Coating	
2383885	HYDRAULIKANLAGE	Hydraulic System	
2383885	FARBSPRITZROBOTER	Painting Robot	
2383885	AUTOMOBILBAU	Automobile Manufacturing	Motor Vehicles
2383885	LACKIERANLAGE	Paint-spray Line	
2383885	MANIPULATOR	Manipulator	Machine Building
⟶ **Baseline (unweighted):**	**Machine Building 1, Motor Vehicles 1**		
⟶ Adjusted (weighted):	Machine Building 2/3, Motor Vehicles 1/3		
Example 5:			
1339125	WEHRHYGIENE	Military Hygiene	
1339125	WEHRMEDIZIN	Military Medicine	
1339125	KOMBINATIONSSCHADEN	Combined Handicaps	
1339125	THERAPIE	Therapy	
1339125	INFEKTIONSPROPHYLAXE	Infection Prophylaxis	
1339125	STRAHLENSCHUTZ	Radiation Protection	
1339125	OBJEKT	Object	
⟶ **Baseline (unweighted):**	**-**		
⟶ Adjusted (weighted):	-		
Example 6:			
1743402	BAGGER	Excavator	
1743402	NA	NA	
1743402	TAGEBAUAUSRUESTUNG	Open Pit Mining Equipment	
1743402	KONSTRUKTION	Construction	
1743402	SCHAUFELRADBAGGER	Bucket-wheel Excavator	
⟶ **Baseline (unweighted):**	**-**		
⟶ Adjusted (weighted):	-		

Note: This table provides six examples of how pieces of information are matched to sectors. Missing entries in the final column indicate that the corresponding keyword was either not classifiable (such as "Object" in example 1 or "Non-returnable" in example 3), not pertaining to any of the 16 sectors included in our analysis (such "Military Hygiene" in example 5), or not among the 2,000 most frequently occuring keywords in the database (such as "Electrical Ceramic" in example 2, "Painting Robot" in example 4, or "Excavator" in example 6). Examples 1 and 2 have good coverage as almost all keywords could be assigned to one or more sectors, examples 3 and 4 have moderate coverage, and examples 5 and 6 belong to the 18.6% of pieces of information that are not described by any sector-specific keyword and thus not accounted for in the empirical analysis.

Table A3: Top 20 Informants, 1968 - 1989

Registration No.	Code Name	Pieces of Information	Reliability	First Active Year	Last Active Year
(1)	(2)	(3)	(4)	(5)	(6)
XV/6603/80	FROEBEL	5,344	A	1982	1989
XV/2768/76	SEEMANN	4,902	A	1970	1988
XV/1967/64	KOREN	4,257	A	1973	1987
XV/78/71	ZENTRUM	3,373	A	1969	1989
XV/436/70	IRMGARD KRUEGER	3,288	A	1970	1989
	DR. GROSZ	2,630	A	1969	1974
XV/1754/68	RING	2,485	A	1968	1978
XV/2550/74	HERZOG	2,239	A	1974	1989
XV/2234/74	JUERGEN	1,631	A	1969	1987
XV/2110/67	OPTIK	1,472	A	1969	1989
XV/4070/70	LORENZ	1,374	B	1971	1979
XV/3074/78	SCHNEIDER	1,347	B	1969	1989
XV/6412/82	PICHLER	1,157	A	1982	1989
XV/238/68	RITTER	1,123	B	1969	1986
XV/47/68	ERICH	1,068	A	1971	1988
XV/450/86	ZELTER	1,065	B	1984	1989
XV/3/75	HARTMANN	1,043	A	1969	1981
XV/2001/73	JACK	944	A	1973	1987
XIV/14/69	ALFRED	890	A	1970	1989
XV/1508/75	WEBER	867	A	1969	1980

Note: Reliability is measured by the mode of the recorded assessments. An "A" denotes "reliable" (*zuverlässig*), a "B" denotes "trustworthy" (*vertrauenswürdig*), a "C" denotes "not checked" (*nicht überprüft*), a "D" denotes "questionable" (*fragwürdig*), and an "E" denotes "double agent" (*Doppelagent*). Only values A, B and C appear in the data.

Table A4: Summary Statistics - by Sector

	West Germany		East Germany		Difference	
	Mean	SD	Mean	SD	Mean	SD
	(1)	(2)	(3)	(4)	(5)	(6)
Food and Tobacco						
Inflow/Y			0.180	(0.020)		
Capital Share	0.331	(0.025)	0.436	(0.032)		
Δ Log TFP	0.036	(0.052)	0.013	(0.058)	0.023	(0.087)
Δ Log Output per Worker	0.052	(0.050)	0.044	(0.043)	0.008	(0.074)
Patents/Y	0.078	(0.013)	0.016	(0.009)	0.063	(0.021)
Log TFP	1.986	(0.085)	1.588	(0.029)	0.398	(0.091)
Log Output per Worker	3.428	(0.106)	2.966	(0.051)	0.463	(0.062)
Imports/Y	1.448	(0.158)	0.147	(0.017)	1.301	(0.147)
Textiles and Clothing						
Inflow/Y			1.359	(0.306)		
Capital Share	0.191	(0.041)	0.208	(0.038)		
Δ Log TFP	0.075	(0.033)	0.116	(0.057)	-0.041	(0.061)
Δ Log Output per Worker	0.090	(0.034)	0.153	(0.057)	-0.063	(0.065)
Patents/Y	0.399	(0.046)	0.169	(0.060)	0.230	(0.098)
Log TFP	2.350	(0.113)	0.272	(0.169)	2.078	(0.065)
Log Output per Worker	3.099	(0.136)	0.849	(0.221)	2.250	(0.091)
Imports/Y	3.447	(0.736)	1.097	(0.296)	2.349	(0.749)
Leather Products						
Inflow/Y			2.000	(0.184)		
Capital Share	0.084	(0.032)	0.208	(0.038)		
Δ Log TFP	0.045	(0.034)	-0.005	(0.075)	0.050	(0.077)
Δ Log Output per Worker	0.053	(0.038)	0.032	(0.059)	0.021	(0.059)
Patents/Y	0.207	(0.041)	0.232	(0.116)	-0.025	(0.082)
Log TFP	2.819	(0.062)	0.800	(0.062)	2.019	(0.106)
Log Output per Worker	3.123	(0.073)	1.298	(0.048)	1.825	(0.058)
Imports/Y	4.936	(1.509)	0.700	(0.138)	4.236	(1.445)
Woodworking						
Inflow/Y			2.213	(0.416)		
Capital Share	0.242	(0.030)	0.348	(0.047)		
Δ Log TFP	-0.006	(0.044)	0.058	(0.060)	-0.063	(0.049)
Δ Log Output per Worker	0.004	(0.043)	0.104	(0.093)	-0.100	(0.082)
Patents/Y	0.153	(0.031)	0.065	(0.076)	0.087	(0.058)
Log TFP	2.545	(0.034)	0.380	(0.079)	2.165	(0.095)
Log Output per Worker	3.523	(0.029)	1.343	(0.158)	2.181	(0.157)
Imports/Y	1.167	(0.262)	0.272	(0.113)	0.896	(0.283)
Paper, Printing, and Publishing						
Inflow/Y			0.810	(0.144)		
Capital Share	0.242	(0.030)	0.405	(0.030)		
Δ Log TFP	0.018	(0.044)	0.036	(0.028)	-0.018	(0.050)

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Table A4 – continued from previous page

	West Germany		East Germany		Difference	
	Mean	SD	Mean	SD	Mean	SD
	(1)	(2)	(3)	(4)	(5)	(6)
Δ Log Output per Worker	0.043	(0.047)	0.092	(0.024)	-0.049	(0.050)
Patents/Y	0.286	(0.034)	0.024	(0.013)	0.262	(0.044)
Log TFP	2.680	(0.041)	1.763	(0.052)	0.917	(0.031)
Log Output per Worker	3.672	(0.077)	3.056	(0.125)	0.616	(0.055)
Imports/Y	0.764	(0.129)	0.122	(0.046)	0.643	(0.125)
Furniture, Jewelry, and Music Instruments						
Inflow/Y			2.936	(0.525)		
Capital Share	0.115	(0.034)	0.315	(0.042)		
Δ Log TFP	0.002	(0.047)	0.064	(0.067)	-0.062	(0.092)
Δ Log Output per Worker	0.009	(0.044)	0.106	(0.061)	-0.097	(0.077)
Patents/Y	0.153	(0.014)	0.265	(0.165)	-0.112	(0.159)
Log TFP	3.264	(0.032)	0.516	(0.114)	2.748	(0.132)
Log Output per Worker	3.720	(0.030)	1.452	(0.167)	2.268	(0.170)
Imports/Y	0.932	(0.278)	0.068	(0.015)	0.864	(0.288)
Coking and Petroleum						
Inflow/Y			0.230	(0.037)		
Capital Share	0.618	(0.158)	0.729	(0.068)		
Δ Log TFP	-0.014	(0.119)	0.065	(0.058)	-0.079	(0.134)
Δ Log Output per Worker	0.055	(0.188)	0.144	(0.059)	-0.090	(0.170)
Patents/Y	0.246	(0.041)	0.039	(0.008)	0.207	(0.045)
Log TFP	1.136	(0.061)	0.927	(0.112)	0.209	(0.112)
Log Output per Worker	4.775	(0.156)	4.592	(0.227)	0.182	(0.152)
Imports/Y	18.242	(6.799)	0.045	(0.019)	18.197	(6.801)
Chemicals						
Inflow/Y			2.205	(0.538)		
Capital Share	0.321	(0.046)	0.535	(0.028)		
Δ Log TFP	0.083	(0.081)	0.063	(0.033)	0.020	(0.094)
Δ Log Output per Worker	0.100	(0.086)	0.128	(0.034)	-0.028	(0.086)
Patents/Y	1.034	(0.248)	0.926	(0.205)	0.108	(0.428)
Log TFP	2.160	(0.148)	0.106	(0.096)	2.054	(0.071)
Log Output per Worker	3.663	(0.175)	2.473	(0.192)	1.189	(0.051)
Imports/Y	2.202	(0.328)	0.594	(0.152)	1.608	(0.249)
Rubber and Plastics						
Inflow/Y			2.969	(0.977)		
Capital Share	0.315	(0.036)	0.438	(0.046)		
Δ Log TFP	0.045	(0.053)	-0.022	(0.068)	0.067	(0.071)
Δ Log Output per Worker	0.061	(0.051)	0.058	(0.057)	0.003	(0.063)
Patents/Y	0.353	(0.125)	0.226	(0.083)	0.127	(0.172)
Log TFP	2.310	(0.083)	0.514	(0.068)	1.796	(0.130)
Log Output per Worker	3.576	(0.107)	2.093	(0.087)	1.483	(0.046)
Imports/Y	0.504	(0.097)	0.115	(0.030)	0.389	(0.089)

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Table A4 – continued from previous page

	West Germany		East Germany		Difference	
	Mean	SD	Mean	SD	Mean	SD
	(1)	(2)	(3)	(4)	(5)	(6)
Glass, Ceramics, and other Non-Metallic Minerals						
Inflow/Y			0.833	(0.215)		
Capital Share	0.266	(0.038)	0.434	(0.070)		
Δ Log TFP	0.044	(0.056)	0.030	(0.117)	0.015	(0.110)
Δ Log Output per Worker	0.072	(0.052)	0.077	(0.126)	-0.005	(0.113)
Patents/Y	0.282	(0.038)	0.123	(0.059)	0.159	(0.088)
Log TFP	2.499	(0.068)	0.692	(0.083)	1.807	(0.095)
Log Output per Worker	3.670	(0.110)	2.373	(0.123)	1.297	(0.084)
Imports/Y	0.647	(0.110)	0.055	(0.016)	0.592	(0.097)
Metalworking						
Inflow/Y			1.174	(0.318)		
Capital Share	0.165	(0.040)	0.339	(0.056)		
Δ Log TFP	0.043	(0.050)	0.033	(0.057)	0.011	(0.084)
Δ Log Output per Worker	0.050	(0.052)	0.087	(0.054)	-0.037	(0.084)
Patents/Y	0.416	(0.032)	0.236	(0.083)	0.180	(0.112)
Log TFP	2.810	(0.072)	0.279	(0.051)	2.530	(0.064)
Log Output per Worker	3.522	(0.083)	1.623	(0.141)	1.899	(0.088)
Imports/Y	1.478	(0.192)	0.816	(0.149)	0.662	(0.146)
Machine Building						
Inflow/Y			0.498	(0.144)		
Capital Share	0.181	(0.030)	0.278	(0.038)		
Δ Log TFP	0.024	(0.052)	0.063	(0.042)	-0.039	(0.073)
Δ Log Output per Worker	0.036	(0.053)	0.094	(0.052)	-0.058	(0.082)
Patents/Y	0.584	(0.063)	0.472	(0.086)	0.113	(0.139)
Log TFP	3.047	(0.053)	1.687	(0.081)	1.360	(0.045)
Log Output per Worker	3.735	(0.072)	2.577	(0.120)	1.158	(0.060)
Imports/Y	0.811	(0.160)	0.219	(0.023)	0.592	(0.146)
Office Appliances, Computers, and Electronics						
Inflow/Y			5.339	(0.611)		
Capital Share	0.264	(0.022)	0.385	(0.051)		
Δ Log TFP	0.081	(0.034)	0.046	(0.056)	0.035	(0.066)
Δ Log Output per Worker	0.113	(0.043)	0.110	(0.061)	0.003	(0.081)
Patents/Y	1.453	(0.309)	1.684	(0.272)	-0.231	(0.530)
Log TFP	2.412	(0.137)	0.295	(0.061)	2.117	(0.088)
Log Output per Worker	3.438	(0.191)	1.466	(0.146)	1.972	(0.057)
Imports/Y	1.000	(0.175)	0.214	(0.072)	0.786	(0.153)
Motor Vehicles						
Inflow/Y			1.208	(0.383)		
Capital Share	0.297	(0.038)	0.433	(0.090)		
Δ Log TFP	0.020	(0.055)	0.028	(0.053)	-0.009	(0.078)
Δ Log Output per Worker	0.047	(0.054)	0.108	(0.053)	-0.061	(0.086)
Patents/Y	0.396	(0.060)	0.408	(0.090)	-0.012	(0.120)

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Table A4 – continued from previous page

	West Germany		East Germany		Difference	
	Mean	SD	Mean	SD	Mean	SD
	(1)	(2)	(3)	(4)	(5)	(6)
Log TFP	2.545	(0.054)	0.661	(0.041)	1.884	(0.041)
Log Output per Worker	3.819	(0.094)	2.041	(0.149)	1.778	(0.069)
Imports/Y	1.147	(0.216)	0.355	(0.046)	0.792	(0.231)
Mining						
Inflow/Y			0.177	(0.052)		
Capital Share	0.277	(0.088)	0.281	(0.102)		
Δ Log TFP	-0.047	(0.060)	0.014	(0.054)	-0.061	(0.089)
Δ Log Output per Worker	-0.028	(0.060)	0.043	(0.049)	-0.071	(0.087)
Patents/Y	0.146	(0.035)	0.080	(0.024)	0.066	(0.032)
Log TFP	2.326	(0.069)	2.073	(0.055)	0.253	(0.118)
Log Output per Worker	3.704	(0.048)	3.374	(0.093)	0.330	(0.132)
Imports/Y	1.188	(0.277)	0.041	(0.018)	1.147	(0.266)
Utilities - Energy and Water Supply						
Inflow/Y			0.260	(0.061)		
Capital Share	0.602	(0.030)	0.612	(0.045)		
Δ Log TFP	-0.000	(0.114)	0.008	(0.070)	-0.008	(0.152)
Δ Log Output per Worker	0.045	(0.113)	0.066	(0.067)	-0.021	(0.149)
Patents/Y	0.083	(0.015)	0.042	(0.012)	0.041	(0.026)
Log TFP	0.696	(0.075)	1.191	(0.056)	-0.495	(0.112)
Log Output per Worker	4.393	(0.069)	4.587	(0.125)	-0.194	(0.128)
Imports/Y	0.083	(0.011)	0.000	(0.000)	0.083	(0.011)

Note: Summary statistics computed for 3-year overlapping observations for the period 1970 to 1989 apart from the capital shares for East Germany which are based on the period 1995 to 2006 and refer to the aggregate capital shares in the ten new EU member states who joined in May 2004. Imports are cumulated over the last 3 years and measured in million dollars at constant 1995 prices. Output is measured in million euros at constant 1995 prices. Workers are measured in 1,000 so that output per worker is measured in 1,000 euros at constant 1995 prices. The number of observations is 15 for each industry (20 for the West German capital share, 12 for the East German capital share).

Table A5: Non-overlapping Observations

	Log TFP			Log Output per Worker		
	Baseline spec	Patents gap	Lagged gap	Baseline spec	Patents gap	Lagged gap
	(1)	(2)	(3)	(4)	(5)	(6)
Espionage	-0.029	-0.041	-0.053	-0.026	-0.041	-0.042
	(0.023)	(0.023)	(0.016)	(0.020)	(0.022)	(0.022)
Patents Gap		0.105	-0.006		0.137	0.045
		(0.030)	(0.035)		(0.032)	(0.042)
Log TFP Gap			-0.544			
			(0.128)			
Log Output/Worker Gap						-0.478
						(0.139)
P-value WB	0.405	0.264	0.050	0.363	0.194	0.269
R-squared	0.36	0.41	0.59	0.32	0.40	0.54
Observations	80	80	80	80	80	80

Note: Sample based on 3-year intervals and non-overlapping observations for the years 1973, 1976, 1979, 1982, and 1985. All regressions include time- and sector-specific fixed effects. Observations are weighted by the average number of workers in a sector. The dependent variable is the change in the log TFP gap between West and East Germany over the period t to t+3 in columns (1) to (3) and the change in the log output per worker gap over the period t to t+3 in columns (4) to (6). Standard errors are clustered at the sectoral level and shown in parentheses. P-value WB denotes p-values, relating to the espionage estimate, from Cameron et al. (2008)'s wild cluster bootstrap-t procedure using 999 replications.

Table A6: Decompositions - Log Output per Worker

	Baseline Decomposition			Flexible Decomposition		
	FRG/GDR	FRG	GDR	FRG/GDR	FRG	GDR
	(1)	(2)	(3)	(4)	(5)	(6)
OLS						
Espionage	-0.039	-0.008	0.031	-0.020	-0.014	0.031
	(0.017)	(0.006)	(0.013)	(0.015)	(0.005)	(0.013)
Patents Gap	0.012	0.024	0.012			
	(0.028)	(0.018)	(0.026)			
Log Output/Worker Gap	-0.514	-0.186	0.328	-0.563		0.313
	(0.100)	(0.066)	(0.074)	(0.116)		(0.058)
GDR Patents/Y				-0.145		0.013
				(0.067)		(0.039)
FRG Patents/Y				-0.111	0.086	
				(0.095)	(0.025)	
P-value WB	0.125	0.242	0.110	0.165	0.022	0.084
R-squared	0.51	0.64	0.41	0.53	0.60	0.41
Observations	240	240	240	240	240	240
IV - Old Informants						
Espionage	-0.059	-0.033	0.025	-0.003	-0.044	0.035
	(0.028)	(0.019)	(0.017)	(0.039)	(0.019)	(0.019)
Patents Gap	0.018	0.031	0.013			
	(0.025)	(0.022)	(0.021)			
Log Output/Worker Gap	-0.514	-0.185	0.328	-0.573		0.314
	(0.096)	(0.064)	(0.065)	(0.096)		(0.056)
GDR Patents/Y				-0.167		0.012
				(0.083)		(0.038)
FRG Patents/Y				-0.138	0.111	
				(0.100)	(0.040)	
P-value WB	0.354	0.308	0.426	0.952	0.116	0.319
F-stat	60.8	60.8	60.8	13.8	14.1	77.4
Observations	240	240	240	240	240	240
IV - Exit of Informants						
Espionage	-0.119	-0.034	0.085	-0.094	-0.026	0.085
	(0.040)	(0.020)	(0.028)	(0.040)	(0.018)	(0.033)
Patents Gap	0.001	0.023	0.022			
	(0.049)	(0.028)	(0.033)			
Log Output/Worker Gap	-0.613	-0.265	0.348	-0.645		0.334
	(0.133)	(0.095)	(0.092)	(0.140)		(0.081)
GDR Patents/Y				-0.079		-0.017
				(0.085)		(0.061)
FRG Patents/Y				-0.086	0.122	
				(0.119)	(0.045)	
P-value WB	0.188	0.179	0.237	0.113	0.202	0.312
F-stat	72.6	72.6	72.6	47.8	70.8	48.8
Observations	192	192	192	192	192	192

Sample based on 3-year intervals and overlapping observations for the period 1970 to 1989. All regressions include time- and sector-specific fixed effects. Observations are weighted by the average number of workers in a sector. The dependent variable is the change in the log output per worker gap between West and East Germany over the period t and t+3 in columns (1) and (4) and the change in log output per worker between t and t+3 in West and East Germany in columns (2) and (5) and (3) and (6), respectively. The instrumental variables are described in Section V A. Standard errors are clustered at the sectoral level and shown in parentheses. P-value WB denotes p-values, relating to the espionage estimate, from Cameron et al. (2008)'s wild cluster bootstrap-t procedure using 999 replications.

Table A7: Robustness - Log Output per Worker

	Main spec	Weighted by output	No weights	No IT	Sector trends	Trade gap	Keyword weighted	Machine learning
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OLS								
Espionage	-0.039	-0.070	-0.036	-0.025	-0.049	-0.037	-0.073	-0.044
	(0.017)	(0.035)	(0.015)	(0.022)	(0.012)	(0.017)	(0.026)	(0.022)
P-value WB	0.125	0.112	0.064	0.244	0.011	0.135	0.148	0.732
R-squared	0.51	0.53	0.48	0.48	0.71	0.51	0.51	0.51
Observations	240	240	240	225	240	234	240	240
IV - Old Informants								
Espionage	-0.059	-0.111	-0.064	0.002	-0.004	-0.059	-0.092	-0.067
	(0.028)	(0.052)	(0.033)	(0.047)	(0.032)	(0.030)	(0.041)	(0.030)
P-value WB	0.353	0.264	0.173	0.978	0.927	0.372	0.339	0.327
F-stat	60.5	58.8	19.0	28.1	16.4	56.2	25.4	19.6
Observations	240	240	240	225	240	234	240	240
IV - Exit Informants								
Espionage	-0.119	-0.170	-0.115	-0.181	-0.270	-0.116	-0.272	-0.120
	(0.040)	(0.073)	(0.042)	(0.109)	(0.084)	(0.039)	(0.095)	(0.038)
P-value WB	0.188	0.214	0.073	0.095	0.006	0.172	0.188	0.123
F-stat	72.6	60.6	30.1	4.9	13.6	69.0	36.5	29.8
Observations	192	192	192	180	192	189	192	192

Note: Sample based on overlapping observations for the period 1970 to 1989. All regressions include time- and sector-specific fixed effects, the patents gap and the initial log output per worker gap as additional regressors. Observations are weighted by the average number of workers in a sector (apart from columns (2) and (3)). The dependent variable is the change in the log output per worker gap between West and East Germany over the period t to $t+x$, where $x \in \{1, 3, 5\}$. Column (1) restates our main results from column (6) of Table 2. In column (2), observations are weighted by the average sector-specific gross value added. In column (3), observations are unweighted. In column (4), we exclude the IT sector from the estimation sample. In column (5), we include sector-specific linear time trends in the specification. In column (6), we include the gap in the sector-specific import/output ratio between West and East Germany as an additional control variable. In column (7), we weight each piece of information according to the number of categorized keywords assigned to each sector. In column (8), we use machine learning methods to assign pieces of information to industry sectors. Standard errors are clustered at the sectoral level and shown in parentheses. P-value WB denotes p-values, relating to the espionage estimate, from Cameron et al. (2008)'s wild cluster bootstrap-t procedure using 999 replications.

Table A8: Robustness - 1-Year Intervals

	Main spec	Weighted by output	No weights	No IT	Sector trends	Trade gap	Keyword weighted	Machine learning
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Log TFP							
OLS								
Espionage	-0.032	-0.051	-0.029	-0.026	-0.033	-0.031	-0.052	-0.051
	(0.009)	(0.018)	(0.012)	(0.020)	(0.009)	(0.009)	(0.009)	(0.009)
P-value WB	0.110	0.154	0.127	0.199	0.122	0.162	0.069	0.121
R-squared	0.24	0.28	0.19	0.23	0.36	0.24	0.24	0.25
Observations	304	304	304	285	304	298	304	304
IV - Old Informants								
Espionage	-0.063	-0.109	-0.075	-0.072	-0.022	-0.055	-0.104	-0.064
	(0.022)	(0.048)	(0.038)	(0.064)	(0.010)	(0.019)	(0.043)	(0.026)
P-value WB	0.113	0.190	0.192	0.326	0.542	0.124	0.194	0.204
F-stat	116.8	159.1	87.0	64.6	196.3	106.9	18.9	18.8
Observations	304	304	304	285	304	298	304	304
IV - Exit of Informants								
Espionage	0.102	0.079	0.108	-0.136	0.153	0.104	0.162	0.102
	(0.066)	(0.087)	(0.205)	(0.150)	(0.065)	(0.066)	(0.091)	(0.055)
P-value WB	0.328	0.531	0.439	0.207	0.312	0.296	0.251	0.241
F-stat	5.6	3.3	0.4	1.8	5.9	5.7	11.2	12.6
Observations	288	288	288	270	288	283	288	288
	Log Output per Worker							
OLS								
Espionage	-0.031	-0.046	-0.024	-0.013	-0.045	-0.030	-0.058	-0.055
	(0.012)	(0.019)	(0.013)	(0.015)	(0.009)	(0.012)	(0.009)	(0.008)
P-value WB	0.397	0.220	0.162	0.374	0.077	0.436	0.089	0.143
R-squared	0.24	0.32	0.20	0.23	0.34	0.24	0.25	0.26
Observations	304	304	304	285	304	298	304	304
IV - Old Informants								
Espionage	-0.049	-0.065	-0.045	0.005	-0.034	-0.040	-0.080	-0.049
	(0.019)	(0.032)	(0.036)	(0.051)	(0.011)	(0.018)	(0.030)	(0.018)
P-value WB	0.326	0.284	0.470	0.944	0.641	0.391	0.264	0.291
F-stat	103.3	148.2	81.7	75.6	192.7	94.2	18.9	19.2
Observations	304	304	304	285	304	298	304	304
IV - Exit of Informants								
Espionage	0.116	0.106	0.105	-0.050	0.154	0.120	0.188	0.119
	(0.054)	(0.083)	(0.179)	(0.144)	(0.066)	(0.054)	(0.076)	(0.046)
P-value WB	0.205	0.480	0.428	0.633	0.322	0.178	0.180	0.147
F-stat	6.2	3.5	0.5	1.8	5.8	6.2	12.4	13.5
Observations	288	288	288	270	288	283	288	288

Note: Sample based on annual intervals for the period 1970 to 1989. All regressions include time- and sector-specific fixed effects, the patents gap and the initial log TFP gap (upper panel) or log output per worker gap (lower panel) as additional regressors. Observations are weighted by the average number of workers in a sector (apart from columns (2) and (3)). The dependent variable is the change in the log TFP gap (upper panel) or log output per worker gap (lower panel) between West and East Germany over the period t to t+1. The instrumental variables are described in Section V A. Column (1) restates our main results from column (3) of Table 2. In column (2), observations are weighted by the average sector-specific gross value added. In column (3), observations are unweighted. In column (4), we exclude the IT sector from the estimation sample. In column (5), we include sector-specific linear time trends in the specification. In column (6), we include the gap in the sector-specific import/output ratio between West and East Germany as an additional control variable. In column (7), we weight each piece of information according to the number of categorized keywords assigned to each sector. In column (8), we use machine learning methods to assign pieces of information to industry sectors. Standard errors are clustered at the sectoral level and shown in parentheses. P-value WB denotes p-values, relating to the espionage estimate, from Cameron et al. (2008)'s wild cluster bootstrap-t procedure using 999 replications.

Table A9: Robustness - 5-Year Intervals

	Main spec	Weighted by output	No weights	No IT	Sector trends	Trade gap	Keyword weighted	Machine learning
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Log TFP							
OLS								
Espionage	-0.034	-0.071	-0.029	-0.008	-0.012	-0.032	-0.084	-0.049
	(0.022)	(0.034)	(0.014)	(0.022)	(0.028)	(0.021)	(0.029)	(0.022)
P-value WB	0.301	0.116	0.139	0.688	0.721	0.337	0.270	0.547
R-squared	0.73	0.68	0.74	0.72	0.75	0.73	0.74	0.73
Observations	176	176	176	165	176	170	176	176
IV - Old Informants								
Espionage	-0.075	-0.128	-0.069	-0.026	-0.158	-0.067	-0.110	-0.077
	(0.025)	(0.051)	(0.030)	(0.031)	(0.055)	(0.023)	(0.031)	(0.023)
P-value WB	0.242	0.232	0.101	0.452	0.024	0.333	0.119	0.156
F-stat	49.0	33.9	12.7	19.8	5.7	45.7	28.3	41.1
Observations	176	176	176	165	176	170	176	176
IV - Exit of Informants								
Espionage	-9.628	1.254	0.654	-0.258	0.134	-0.466	0.515	-0.200
	(609.036)	(3.125)	(2.943)	(0.516)	(0.166)	(2.167)	(1.138)	(0.277)
P-value WB	0.984	0.556	0.683	0.429	0.412	0.696	0.454	0.382
F-stat	0.0	0.1	0.0	0.3	1.7	0.0	0.3	1.6
Observations	96	96	96	90	96	95	96	96
	Log Output per Worker							
OLS								
Espionage	-0.018	-0.045	-0.010	0.016	-0.005	-0.016	-0.066	-0.040
	(0.025)	(0.039)	(0.016)	(0.025)	(0.026)	(0.024)	(0.032)	(0.027)
P-value WB	0.688	0.394	0.539	0.534	0.824	0.729	0.517	0.736
R-squared	0.69	0.68	0.69	0.68	0.75	0.69	0.70	0.70
Observations	176	176	176	165	176	170	176	176
IV - Old Informants								
Espionage	-0.063	-0.111	-0.060	0.006	-0.150	-0.055	-0.093	-0.065
	(0.028)	(0.054)	(0.033)	(0.038)	(0.058)	(0.026)	(0.035)	(0.026)
P-value WB	0.460	0.314	0.220	0.906	0.023	0.578	0.303	0.377
F-stat	46.5	35.4	10.7	15.5	5.6	43.8	29.7	44.0
Observations	176	176	176	165	176	170	176	176
IV - Exit of Informants								
Espionage	4.897	1.429	0.214	-0.109	0.125	-0.647	0.492	-0.189
	(164.032)	(3.616)	(0.776)	(0.427)	(0.223)	(3.903)	(1.157)	(0.274)
P-value WB	0.963	0.522	0.609	0.681	0.619	0.774	0.524	0.412
F-stat	0.0	0.1	0.1	0.2	1.5	0.0	0.4	1.7
Observations	96	96	96	90	96	95	96	96

Note: Sample based on 5-year intervals and overlapping observations for the period 1970 to 1989. All regressions include time- and sector-specific fixed effects, the patents gap and the initial log TFP gap (upper panel) or log output per worker gap (lower panel) as additional regressors. Observations are weighted by the average number of workers in a sector (apart from columns (2) and (3)). The dependent variable is the change in the log TFP gap (upper panel) or log output per worker gap (lower panel) between West and East Germany over the period t to t+5. The instrumental variables are described in Section V A. Column (1) restates our main results from column (3) of Table 2. In column (2), observations are weighted by the average sector-specific gross value added. In column (3), observations are unweighted. In column (4), we exclude the IT sector from the estimation sample. In column (5), we include sector-specific linear time trends in the specification. In column (6), we include the gap in the sector-specific import/output ratio between West and East Germany as an additional control variable. In column (7), we weight each piece of information according to the number of categorized keywords assigned to each sector. In column (8), we use machine learning methods to assign pieces of information to industry sectors. Standard errors are clustered at the sectoral level and shown in parentheses. P-value WB denotes p-values, relating to the espionage estimate, from Cameron et al. (2008)'s wild cluster bootstrap-t procedure using 999 replications.

Table A10: Functional Form Inflow Measure - Log TFP

	Lagged (S_t/Y_{t-3})			Base Period (S_t/Y_{1970})			Average ($S_t/\overline{Y}_t$)			Employment (S_t/L_t)			Inflow (S_t)			Log Inflow ($\ln S_t$)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
OLS																		
Espionage	-0.016	-0.019	-0.041	-0.016	-0.010	-0.024	-0.026	-0.017	-0.042	-0.016	0.006	-0.017	-0.011	-0.003	-0.006	-0.050	-0.031	-0.026
	(0.014)	(0.013)	(0.010)	(0.008)	(0.015)	(0.012)	(0.014)	(0.028)	(0.019)	(0.029)	(0.029)	(0.025)	(0.004)	(0.010)	(0.006)	(0.044)	(0.053)	(0.045)
Patents Gap		yes	yes		yes	yes		yes	yes		yes	yes		yes	yes		yes	yes
Log TFP Gap			yes			yes			yes			yes			yes			yes
P-value WB	0.242	0.172	0.012	0.338	0.506	0.037	0.330	0.572	0.031	0.643	0.829	0.478	0.193	0.788	0.382	0.273	0.650	0.553
R-squared	0.33	0.34	0.57	0.34	0.33	0.54	0.34	0.33	0.54	0.33	0.34	0.53	0.34	0.34	0.53	0.33	0.34	0.53
Observations	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
IV - Old Informants																		
Espionage	0.010	-0.007	-0.042	-0.013	-0.048	-0.315	-0.035	-0.034	-0.420	-0.101	-0.117	-0.142	-0.004	-0.063	-0.108			
	(0.014)	(0.009)	(0.015)	(0.021)	(0.058)	(0.296)	(0.047)	(0.088)	(0.363)	(0.123)	(0.057)	(0.083)	(0.011)	(0.055)	(0.082)			
Patents Gap		yes	yes		yes	yes		yes	yes		yes	yes		yes	yes			
Log TFP Gap			yes			yes			yes			yes			yes			
P-value WB	0.555	0.474	0.196	0.566	0.351	0.286	0.448	0.717	0.239	0.243	0.036	0.079	0.694	0.190	0.218			
F-stat	53.1	202.0	192.5	7.7	1.9	1.3	3.6	2.3	1.6	0.8	13.7	16.5	12.5	1.5	1.4			
Observations	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240			
IV - Exit of Informants																		
Espionage	-0.062	-0.057	-0.112	-0.067	-0.066	-0.151	-0.102	-0.107	-0.278	0.257	0.201	0.040	-0.005	-0.008	-0.064	-0.174	1.580	2.943
	(0.038)	(0.037)	(0.035)	(0.048)	(0.052)	(0.077)	(0.082)	(0.097)	(0.142)	(0.193)	(0.167)	(0.147)	(0.065)	(0.047)	(0.041)	(0.654)	(19.678)	(9.845)
Patents Gap		yes	yes		yes	yes		yes	yes		yes	yes		yes	yes		yes	yes
Log TFP Gap			yes			yes			yes			yes			yes			yes
P-value WB	0.550	0.502	0.184	0.486	0.451	0.408	0.554	0.514	0.377	0.497	0.576	0.822	0.940	0.881	0.739	0.726	0.924	0.646
F-stat	48.8	34.0	29.7	19.8	4.6	4.6	18.8	5.1	5.0	13.7	11.9	13.9	15.7	13.2	13.2	0.9	0.0	0.1
Observations	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	103	103	103

Note: Sample based on 3-year intervals and overlapping observations for the period 1970 to 1989. The functional form of the inflow variable, which is also applied to the patents gap measure, is reported in the column heading. S_t/L_t is measured in pieces of information per 100 workers, S_t in 1,000 pieces of information and $\ln(S_t)$ in log pieces of information. All regressions include time- and sector-specific fixed effects. Observations are weighted by the average number of workers in a sector. The dependent variable is the change in the log TFP gap between West and East Germany over the period t to t+3. In the second panel, the instrument is constructed as $\sum_{i\in 1970}\theta_{i,70}\lambda_{ij,70}\sum_{s=t-2}^{t} I_s$, where $\theta_{i,70}$ is the share of the total information received in 1970 that was sent by informant i, $\lambda_{ij,70}$ is the fraction of that information pertaining to sector j, and I_s is the total inflow in period s received from sources already active in 1970. In the bottom panel, the instrument is constructed as $\sum_{s=t-5}^{t-3}\sum_{i^*(s)|\bar{I}_{i^*j}\geq 20}\bar{I}_{i^*j}$, where $\bar{I}_{i^*j}$ is the average annual inflow of information generated by informant i^* pertaining to sector j over the entire sample period, and $i^*(s)$ denotes all informants who are last observed in period s. In both panels, the normalization/functional form of the instrument then follows the normalization/functional form of the espionage regressor. Note that the log of the predicted inflow from old informants (second panel, columns (16) to (18)) is not a feasible instrument since all its variation is absorbed by the sector and time fixed effects. Standard errors are clustered at the sectoral level and shown in parentheses. P-value WB denotes p-values, relating to the espionage estimate, from Cameron et al. (2008)'s wild cluster bootstrap-t procedure using 999 replications.

Table A11: Functional Form Inflow Measure - Log Output per Worker

	Lagged (S_t/Y_{t-3})			Base Period (S_t/Y_{1970})			Average ($S_t/\overline{Y}_t$)			Employment (S_t/L_t)			Inflow (S_t)			Log Inflow ($\ln S_t$)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
OLS																		
Espionage	-0.011	-0.016	-0.030	-0.024	-0.010	-0.014	-0.038	-0.015	-0.024	-0.037	-0.006	-0.011	-0.018	-0.006	-0.004	-0.056	-0.026	-0.001
	(0.010)	(0.010)	(0.012)	(0.010)	(0.014)	(0.012)	(0.017)	(0.025)	(0.020)	(0.036)	(0.027)	(0.026)	(0.004)	(0.008)	(0.007)	(0.047)	(0.046)	(0.048)
Patents Gap		yes	yes		yes	yes		yes	yes		yes	yes		yes	yes		yes	yes
Log Output/Worker Gap			yes			yes			yes			yes			yes			yes
P-value WB	0.234	0.083	0.118	0.519	0.521	0.195	0.514	0.632	0.217	0.490	0.817	0.647	0.255	0.531	0.713	0.279	0.628	0.980
R-squared	0.30	0.33	0.52	0.32	0.33	0.50	0.32	0.33	0.50	0.31	0.33	0.50	0.33	0.34	0.50	0.31	0.34	0.50
Observations	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
IV - Old Informants																		
Espionage	0.027	-0.003	-0.032	-0.039	-0.026	-0.200	-0.077	-0.017	-0.261	0.114	-0.039	-0.068	-0.027	-0.023	-0.091			
	(0.014)	(0.010)	(0.019)	(0.018)	(0.055)	(0.174)	(0.042)	(0.082)	(0.229)	(0.192)	(0.050)	(0.083)	(0.013)	(0.038)	(0.071)			
Patents Gap		yes	yes		yes	yes		yes	yes		yes	yes		yes	yes			
Log Output/Worker Gap			yes			yes			yes			yes			yes			
P-value WB	0.564	0.737	0.420	0.222	0.527	0.326	0.208	0.761	0.337	0.413	0.413	0.485	0.299	0.479	0.242			
F-stat	53.1	202.0	236.2	7.7	1.9	2.1	3.6	2.3	2.4	0.8	13.7	14.0	12.5	1.5	1.7			
Observations	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240			
IV - Exit of Informants																		
Espionage	-0.062	-0.054	-0.113	-0.059	-0.058	-0.143	-0.093	-0.096	-0.261	0.258	0.193	0.050	0.000	-0.007	-0.062	-0.178	3.997	9.164
	(0.039)	(0.037)	(0.039)	(0.047)	(0.049)	(0.073)	(0.079)	(0.089)	(0.131)	(0.196)	(0.169)	(0.148)	(0.064)	(0.045)	(0.040)	(0.692)	(47.166)	(79.316)
Patents Gap		yes	yes		yes	yes		yes	yes		yes	yes		yes	yes		yes	yes
Log Output/Worker Gap			yes			yes			yes			yes			yes			yes
P-value WB	0.508	0.456	0.199	0.480	0.431	0.340	0.516	0.460	0.292	0.534	0.628	0.824	1.000	0.899	0.705	0.732	0.920	0.860
F-stat	48.8	34.0	33.2	19.8	4.6	5.1	18.8	5.1	5.8	13.7	11.9	15.7	15.7	13.2	13.9	0.9	0.0	0.0
Observations	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	103	103	103

Note: Sample based on 3-year intervals and overlapping observations for the period 1970 to 1989. The functional form of the inflow variable, which is also applied to the patents gap measure, is reported in the column heading. S_t/L_t is measured in pieces of information per 100 workers, S_t in 1,000 pieces of information and $\ln(S_t)$ in log pieces of information. All regressions include time- and sector-specific fixed effects. Observations are weighted by the average number of workers in a sector. The dependent variable is the change in the log output per worker gap between West and East Germany over the period t to t+3. In the second panel, the instrument is constructed as $\sum_{i\in 1970}\theta_{i,70}\lambda_{ij,70}\sum_{s=t-2}^{t} I_s$, where $\theta_{i,70}$ is the share of the total information received in 1970 that was sent by informant i, $\lambda_{ij,70}$ is the fraction of that information pertaining to sector j, and I_s is the total inflow in period s received from sources already active in 1970. In the bottom panel, the instrument is constructed as $\sum_{s=t-5}^{t-3}\sum_{i^*(s)|\bar{I}_{i^*j}\geq 20}\bar{I}_{i^*j}$, where $\bar{I}_{i^*j}$ is the average annual inflow of information generated by informant i^* pertaining to sector j over the entire sample period, and $i^*(s)$ denotes all informants who are last observed in period s. In both panels, the normalization/functional form of the instrument then follows the normalization/functional form of the espionage regressor. Note that the log of the predicted inflow from old informants (second panel, columns (16) to (18)) is not a feasible instrument since all its variation is absorbed by the sector and time fixed effects. Standard errors are clustered at the sectoral level and shown in parentheses. P-value WB denotes p-values, relating to the espionage estimate, from Cameron et al. (2008)'s wild cluster bootstrap-t procedure using 999 replications.

Table A12: Robustness - Construction of TFP Measures

	α flexible		α constant		
	Country/Industry	Industry	$\alpha = 0.2$	$\alpha = 0.33$	$\alpha = 0.4$
	(1)	(2)	(3)	(4)	(5)
Depreciation Rate 0.06					
Espionage	-0.052	-0.044	-0.045	-0.049	-0.051
	(0.012)	(0.013)	(0.014)	(0.013)	(0.012)
Patents Gap	-0.038	-0.020	-0.011	-0.024	-0.030
	(0.024)	(0.026)	(0.025)	(0.022)	(0.021)
Log TFP Gap	-0.564	-0.577	-0.564	-0.589	-0.599
	(0.090)	(0.109)	(0.101)	(0.097)	(0.094)
P-value WB	0.011	0.050	0.055	0.027	0.028
R-squared	0.56	0.54	0.53	0.55	0.56
Observations	240	240	240	240	240
Depreciation Rate 0.02					
Espionage	-0.049	-0.042	-0.042	-0.044	-0.046
	(0.012)	(0.013)	(0.014)	(0.013)	(0.012)
Patents Gap	-0.029	-0.014	-0.007	-0.019	-0.026
	(0.023)	(0.025)	(0.025)	(0.024)	(0.023)
Log TFP Gap	-0.525	-0.546	-0.546	-0.567	-0.578
	(0.085)	(0.104)	(0.101)	(0.101)	(0.101)
P-value WB	0.011	0.072	0.071	0.037	0.032
R-squared	0.55	0.52	0.52	0.53	0.53
Observations	240	240	240	240	240
Depreciation Rate 0.1					
Espionage	-0.054	-0.046	-0.046	-0.052	-0.054
	(0.012)	(0.014)	(0.015)	(0.013)	(0.012)
Patents Gap	-0.048	-0.028	-0.015	-0.030	-0.036
	(0.025)	(0.026)	(0.025)	(0.022)	(0.020)
Log TFP Gap	-0.599	-0.607	-0.579	-0.607	-0.616
	(0.096)	(0.113)	(0.100)	(0.093)	(0.087)
P-value WB	0.009	0.040	0.050	0.024	0.013
R-squared	0.57	0.54	0.54	0.57	0.58
Observations	240	240	240	240	240
Depreciation Rate Flexible					
Espionage	-0.051	-0.043	-0.044	-0.047	-0.049
	(0.012)	(0.013)	(0.014)	(0.013)	(0.012)
Patents Gap	-0.037	-0.017	-0.009	-0.022	-0.028
	(0.023)	(0.025)	(0.025)	(0.023)	(0.022)
Log TFP Gap	-0.556	-0.564	-0.557	-0.580	-0.591
	(0.088)	(0.107)	(0.101)	(0.099)	(0.098)
P-value WB	0.016	0.056	0.049	0.031	0.036
R-squared	0.56	0.53	0.53	0.54	0.55
Observations	240	240	240	240	240

Note: Estimated specification as in column (3) of Table 2. In column (1), the technology parameters α_{ij} are sector- and country-specific. For West Germany, we use the average sector-specific capital shares over the period 1970 to 1989 reported in the EU KLEMS Growth and Productivity Accounts. For East Germany, we use the aggregate sector-specific capital shares of the ten Central and Eastern European countries that joined the EU in May 2004. In column (2), we use West German sector-specific capital shares to proxy for the the technology parameters α_{ij} in East Germany. In columns (3) to (5), we assume constant values for α_{ij} in both countries and across all sectors. In the first three panels, depreciation rates are assumed to be constant in both countries and across all sectors. In the bottom panel, we allow the depreciation rate to differ between West and East Germany. For West Germany, we use the average annual depreciation rate of the capital stock reported in the Penn World Table 9.0 for the period 1970 to 1989 (4.2%). For East Germany, we use the unweighted average of all depreciation rates that pertain to Central and Eastern European countries, averaged over the period 1970 to 1989 (5.1%). Standard errors are clustered at the sectoral level and shown in parentheses. P-value WB denotes p-values, relating to the espionage estimate, from Cameron et al. (2008)'s wild cluster bootstrap-t procedure using 999 replications.

Table A13: Robustness - Construction of TFP Measures - IV Old

	α flexible		α constant		
	Country/Industry	Industry	$\alpha = 0.2$	$\alpha = 0.33$	$\alpha = 0.4$
	(1)	(2)	(3)	(4)	(5)
Depreciation Rate 0.06					
Espionage	-0.072	-0.060	-0.063	-0.066	-0.067
	(0.024)	(0.025)	(0.026)	(0.025)	(0.024)
Patents Gap	-0.034	-0.017	-0.006	-0.020	-0.026
	(0.024)	(0.023)	(0.023)	(0.022)	(0.021)
Log TFP Gap	-0.571	-0.580	-0.565	-0.591	-0.601
	(0.094)	(0.106)	(0.098)	(0.095)	(0.092)
P-value WB	0.150	0.285	0.269	0.231	0.225
F-stat	61.4	61.1	61.3	61.3	61.1
Observations	240	240	240	240	240
Depreciation Rate 0.02					
Espionage	-0.065	-0.055	-0.059	-0.060	-0.060
	(0.024)	(0.025)	(0.026)	(0.025)	(0.025)
Patents Gap	-0.026	-0.010	-0.002	-0.015	-0.022
	(0.022)	(0.022)	(0.023)	(0.022)	(0.021)
Log TFP Gap	-0.530	-0.547	-0.546	-0.567	-0.578
	(0.088)	(0.099)	(0.097)	(0.097)	(0.096)
P-value WB	0.188	0.318	0.305	0.274	0.273
F-stat	61.8	61.7	61.5	62.0	62.2
Observations	240	240	240	240	240
Depreciation Rate 0.1					
Espionage	-0.080	-0.066	-0.067	-0.072	-0.074
	(0.024)	(0.025)	(0.026)	(0.025)	(0.024)
Patents Gap	-0.044	-0.023	-0.010	-0.025	-0.032
	(0.027)	(0.025)	(0.024)	(0.022)	(0.021)
Log TFP Gap	-0.609	-0.611	-0.581	-0.610	-0.619
	(0.101)	(0.112)	(0.100)	(0.093)	(0.087)
P-value WB	0.127	0.265	0.277	0.211	0.163
F-stat	60.9	60.4	60.9	60.4	60.0
Observations	240	240	240	240	240
Depreciation Rate Flexible					
Espionage	-0.071	-0.058	-0.061	-0.063	-0.064
	(0.024)	(0.025)	(0.026)	(0.025)	(0.025)
Patents Gap	-0.033	-0.014	-0.004	-0.018	-0.024
	(0.023)	(0.023)	(0.023)	(0.022)	(0.021)
Log TFP Gap	-0.563	-0.565	-0.557	-0.581	-0.592
	(0.092)	(0.103)	(0.098)	(0.096)	(0.094)
P-value WB	0.169	0.306	0.286	0.224	0.239
F-stat	61.9	61.4	61.4	61.7	61.7
Observations	240	240	240	240	240

Note: Estimated specification as in column (2) of Table 3. The instrumental variable is described in Section V A. In column (1), the technology parameters α_{ij} are sector- and country-specific. For West Germany, we use the average sector-specific capital shares over the period 1970 to 1989 reported in the EU KLEMS Growth and Productivity Accounts. For East Germany, we use the aggregate sector-specific capital shares of the ten Central and Eastern European countries that joined the EU in May 2004. In column (2), we use West German sector-specific capital shares to proxy for the the technology parameters α_{ij} in East Germany. In columns (3) to (5), we assume constant values for α_{ij} in both countries and across all sectors. In the first three panels, depreciation rates are assumed to be constant in both countries and across all sectors. In the bottom panel, we allow the depreciation rate to differ between West and East Germany. For West Germany, we use the average annual depreciation rate of the capital stock reported in the Penn World Table 9.0 for the period 1970 to 1989 (4.2%). For East Germany, we use the unweighted average of all depreciation rates that pertain to Central and Eastern European countries, averaged over the period 1970 to 1989 (5.1%). Standard errors are clustered at the sectoral level and shown in parentheses. P-value WB denotes p-values, relating to the espionage estimate, from Cameron et al. (2008)'s wild cluster bootstrap-t procedure using 999 replications.

Table A14: Robustness - Construction of TFP Measures - IV Exit

	α flexible		α constant		
	Country/Industry	Industry	$\alpha = 0.2$	$\alpha = 0.33$	$\alpha = 0.4$
	(1)	(2)	(3)	(4)	(5)
Depreciation Rate 0.06					
Espionage	-0.120	-0.120	-0.121	-0.121	-0.121
	(0.036)	(0.038)	(0.037)	(0.035)	(0.033)
Patents Gap	-0.059	-0.037	-0.026	-0.043	-0.052
	(0.048)	(0.048)	(0.049)	(0.048)	(0.047)
Log TFP Gap	-0.679	-0.680	-0.667	-0.701	-0.717
	(0.140)	(0.150)	(0.143)	(0.147)	(0.146)
P-value WB	0.149	0.174	0.162	0.135	0.104
F-stat	50.4	60.8	59.7	52.7	49.8
Observations	192	192	192	192	192
Depreciation Rate 0.02					
Espionage	-0.116	-0.115	-0.118	-0.118	-0.117
	(0.036)	(0.037)	(0.037)	(0.035)	(0.034)
Patents Gap	-0.048	-0.030	-0.022	-0.036	-0.044
	(0.045)	(0.046)	(0.047)	(0.046)	(0.046)
Log TFP Gap	-0.630	-0.640	-0.641	-0.661	-0.672
	(0.127)	(0.139)	(0.137)	(0.140)	(0.141)
P-value WB	0.151	0.175	0.155	0.144	0.130
F-stat	55.6	65.9	65.4	60.8	58.5
Observations	192	192	192	192	192
Depreciation Rate 0.1					
Espionage	-0.125	-0.125	-0.124	-0.125	-0.125
	(0.037)	(0.039)	(0.037)	(0.035)	(0.033)
Patents Gap	-0.071	-0.045	-0.031	-0.051	-0.061
	(0.052)	(0.051)	(0.050)	(0.050)	(0.049)
Log TFP Gap	-0.727	-0.718	-0.689	-0.737	-0.758
	(0.152)	(0.159)	(0.148)	(0.151)	(0.149)
P-value WB	0.148	0.170	0.158	0.107	0.091
F-stat	47.1	57.2	55.6	47.8	45.4
Observations	192	192	192	192	192
Depreciation Rate Flexible					
Espionage	-0.119	-0.118	-0.120	-0.119	-0.119
	(0.036)	(0.037)	(0.037)	(0.035)	(0.033)
Patents Gap	-0.058	-0.034	-0.024	-0.040	-0.049
	(0.047)	(0.047)	(0.048)	(0.047)	(0.046)
Log TFP Gap	-0.668	-0.662	-0.656	-0.684	-0.698
	(0.136)	(0.146)	(0.141)	(0.144)	(0.145)
P-value WB	0.134	0.154	0.162	0.128	0.140
F-stat	51.5	62.8	62.0	55.8	53.1
Observations	192	192	192	192	192

Note: Estimated specification as in column (4) of Table 3. The instrumental variable is described in Section V A. In column (1), the technology parameters α_{ij} are sector- and country-specific. For West Germany, we use the average sector-specific capital shares over the period 1970 to 1989 reported in the EU KLEMS Growth and Productivity Accounts. For East Germany, we use the aggregate sector-specific capital shares of the ten Central and Eastern European countries that joined the EU in May 2004. In column (2), we use West German sector-specific capital shares to proxy for the the technology parameters α_{ij} in East Germany. In columns (3) to (5), we assume constant values for α_{ij} in both countries and across all sectors. In the first three panels, depreciation rates are assumed to be constant in both countries and across all sectors. In the bottom panel, we allow the depreciation rate to differ between West and East Germany. For West Germany, we use the average annual depreciation rate of the capital stock reported in the Penn World Table 9.0 for the period 1970 to 1989 (4.2%). For East Germany, we use the unweighted average of all depreciation rates that pertain to Central and Eastern European countries, averaged over the period 1970 to 1989 (5.1%). Standard errors are clustered at the sectoral level and shown in parentheses. P-value WB denotes p-values, relating to the espionage estimate, from Cameron et al. (2008)'s wild cluster bootstrap-t procedure using 999 replications.

Table A15: One-step Estimation

	OLS						IV - Old Informants						IV - Exit of Informants					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Espionage	-0.033	-0.038	-0.054	-0.035	-0.040	-0.055	0.027	-0.015	-0.059	0.028	-0.016	-0.061	-0.059	-0.055	-0.122	-0.058	-0.052	-0.125
	(0.019)	(0.020)	(0.011)	(0.019)	(0.019)	(0.011)	(0.026)	(0.015)	(0.024)	(0.025)	(0.014)	(0.024)	(0.037)	(0.037)	(0.036)	(0.036)	(0.036)	(0.035)
Patents Gap		0.063	-0.042		0.066	-0.050		0.057	-0.042		0.061	-0.049		0.033	-0.077		0.041	-0.085
		(0.024)	(0.026)		(0.021)	(0.029)		(0.023)	(0.023)		(0.020)	(0.025)		(0.028)	(0.047)		(0.025)	(0.048)
Log TFP Gap			-0.531			-0.547			-0.534			-0.550			-0.642			-0.654
			(0.086)			(0.086)			(0.085)			(0.085)			(0.136)			(0.140)
$\Delta \ln K$ Gap	0.213	0.171	0.299				0.144	0.148	0.305				0.166	0.153	0.293			
	(0.161)	(0.149)	(0.106)				(0.173)	(0.150)	(0.093)				(0.155)	(0.149)	(0.086)			
$\Delta \ln L$ Gap	0.356	0.434	0.475				0.356	0.427	0.477				0.275	0.326	0.416			
	(0.127)	(0.129)	(0.119)				(0.129)	(0.112)	(0.105)				(0.116)	(0.110)	(0.095)			
$\Delta \ln K$ GDR				-0.248	-0.198	-0.325				-0.165	-0.171	-0.332				-0.177	-0.160	-0.298
				(0.161)	(0.143)	(0.129)				(0.178)	(0.149)	(0.116)				(0.158)	(0.150)	(0.100)
$\Delta \ln L$ GDR				-0.178	-0.201	-0.637				-0.171	-0.197	-0.640				-0.133	-0.133	-0.560
				(0.201)	(0.211)	(0.228)				(0.228)	(0.204)	(0.198)				(0.221)	(0.234)	(0.243)
$\Delta \ln K$ FRG				0.030	0.027	0.158				0.035	0.029	0.158				0.158	0.185	0.190
				(0.269)	(0.287)	(0.214)				(0.261)	(0.260)	(0.190)				(0.378)	(0.398)	(0.343)
$\Delta \ln L$ FRG				0.461	0.551	0.455				0.444	0.538	0.458				0.329	0.403	0.382
				(0.120)	(0.158)	(0.148)				(0.126)	(0.137)	(0.133)				(0.128)	(0.153)	(0.111)
P-value WB	0.113	0.044	0.007	0.072	0.042	0.005	0.549	0.365	0.180	0.602	0.276	0.183	0.446	0.434	0.154	0.461	0.393	0.134
R-squared	0.41	0.43	0.59	0.41	0.43	0.59												
F-stat							19.5	47.4	55.2	21.1	47.6	57.6	71.9	58.4	54.0	81.9	60.0	57.3
Observations	240	240	240	240	240	240	240	240	240	240	240	240	192	192	192	192	192	192

Note: Sample based on 3-year intervals and overlapping observations for the period 1970 to 1989. All regressions include time- and sector-specific fixed effects. Observations are weighted by the average number of workers in a sector. The dependent variable is the change in the log gross value added gap between West and East Germany over the period t to t+3. The instrumental variables are described in Section V A. Standard errors are clustered at the sectoral level and shown in parentheses. P-value WB denotes p-values, relating to the espionage estimate, from Cameron et al. (2008)'s wild cluster bootstrap-t procedure using 999 replications.

Table A16: Further Alternative Outcomes

	GDR Exports	Patenting
	(1)	(2)
OLS		
Espionage	0.064	-0.144
	(0.029)	(0.056)
GDR Patents/Y	yes	yes
Log TFP Gap	yes	yes
P-value WB	0.176	0.047
R-squared	0.04	0.98
Observations	772	240
IV - Old Informants		
Espionage	0.212	-0.236
	(0.161)	(0.027)
GDR Patents/Y	yes	yes
Log TFP Gap	yes	yes
P-value WB	0.480	0.002
F-stat	8.1	73.5
Observations	772	240
IV - Exit of Informants		
Espionage	-0.002	-0.620
	(0.108)	(0.160)
GDR Patents/Y	yes	yes
Log TFP Gap	yes	yes
P-value WB	0.980	0.182
F-stat	10.5	32.4
Observations	650	192

Sample based on 3-year intervals and overlapping observations for the period 1970 to 1989. All regressions control for changes in the sector-specific log capital stock and employment as in equation (6), and include time- and sector-specific fixed effects. All dependent variables are measured as changes between period t and t+3. The instrumental variables are described in Section V.A. In column (1), the dependent variable is the change in the log value of East German exports of 86 distinct products compiled from East German Statistical Yearbooks (measured in nominal Valuta Mark). In column (2), the dependent variable is the future patent intensity in East Germany. Observations are weighted by the average number of workers in a sector. Standard errors are clustered at the sectoral level and shown in parentheses. P-value WB denotes p-values, relating to the espionage estimate, from Cameron et al. (2008)'s wild cluster bootstrap-t procedure using 999 replications.

Figures

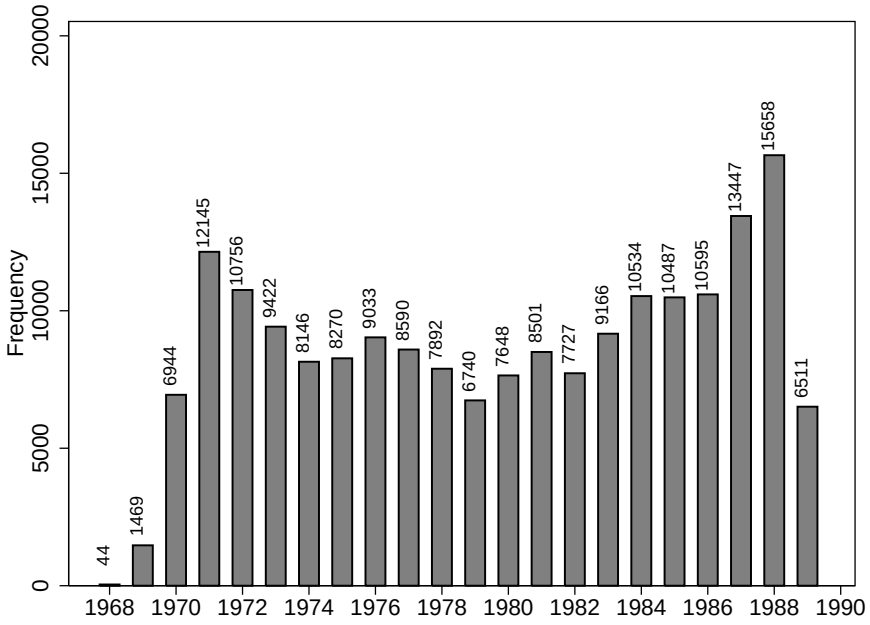

FIGURE A1: INFORMATION INFLOW, 1968-1989

Note: Figure shows the annual inflow of information received by the HVA between 1968 and 1989. Data for 1968/69 and 1989 incomplete.

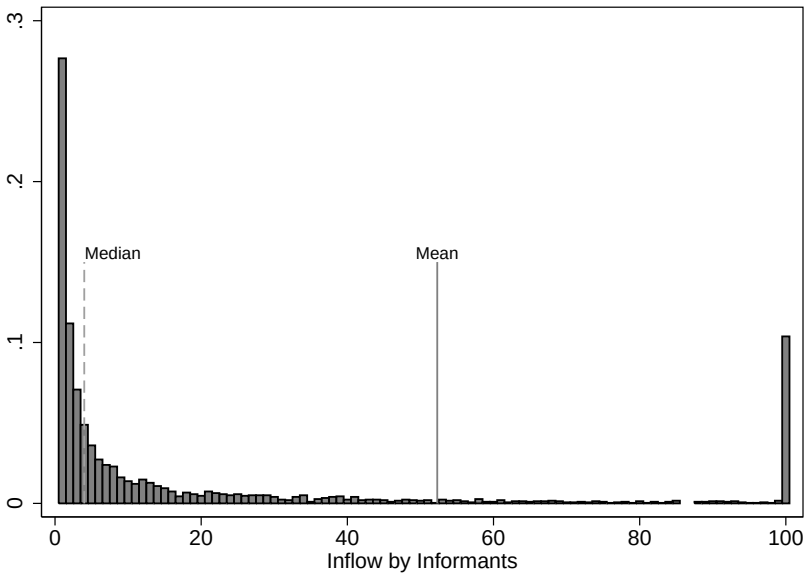

FIGURE A2: INFLOW DISTRIBUTION ACROSS INFORMANTS

Note: The figure shows the distribution of the total number of pieces of information received from individual informants. For better readability, observations are censored at a value of 100.

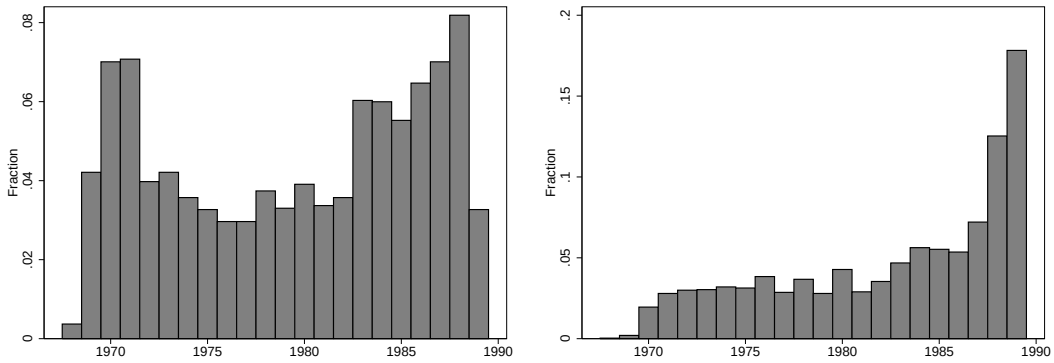

FIGURE A3: FIRST AND LAST ACTIVE YEAR

Note: The figure shows the distributions of the first (left panel) and last year (right panel) in which individual informants are observed in the data.

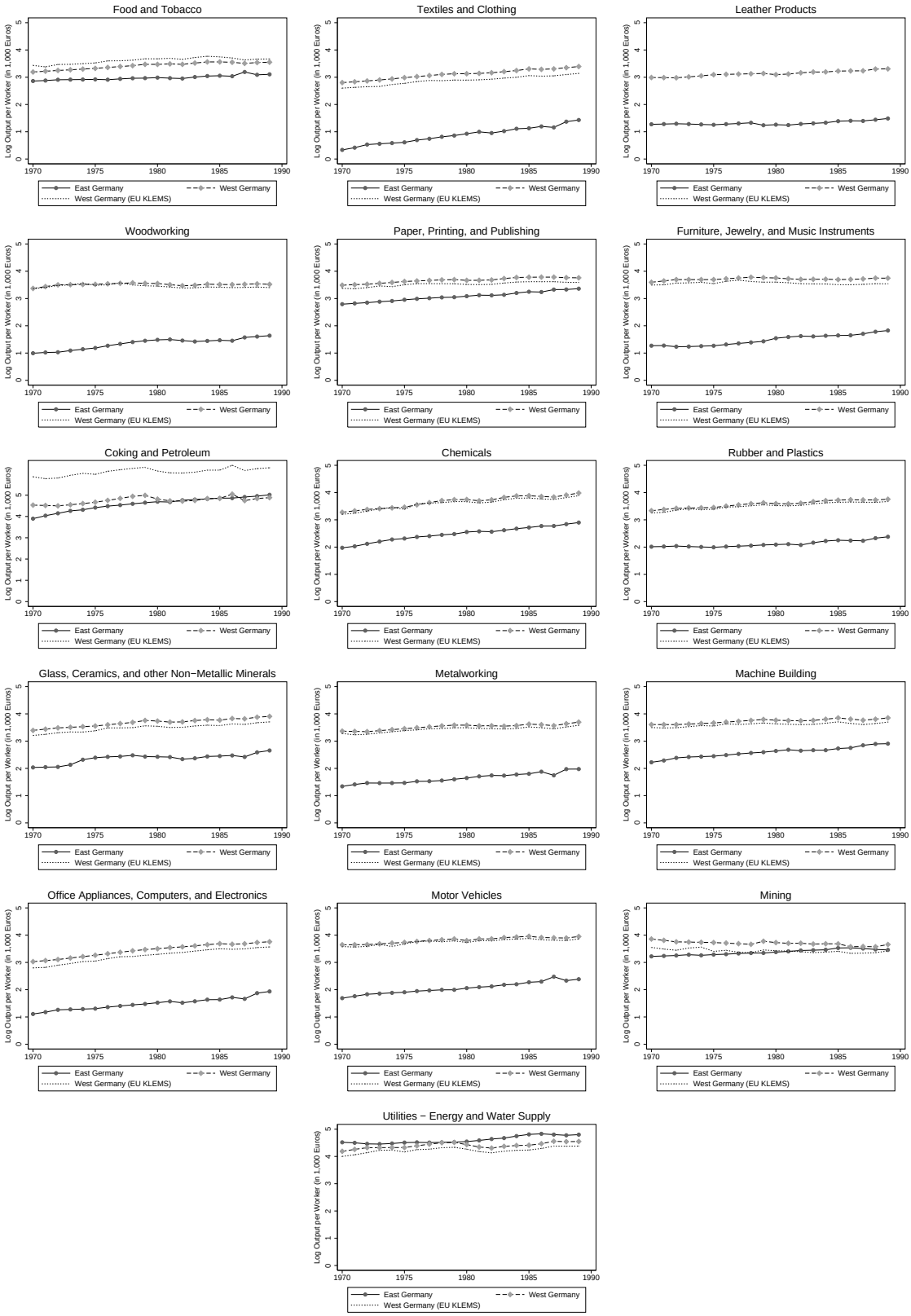

FIGURE A4: LOG OUTPUT PER WORKER BY SECTOR

Note: The individual panels depict the log of gross value added per worker by sector for West and East Germany over the period 1970 to 1989.

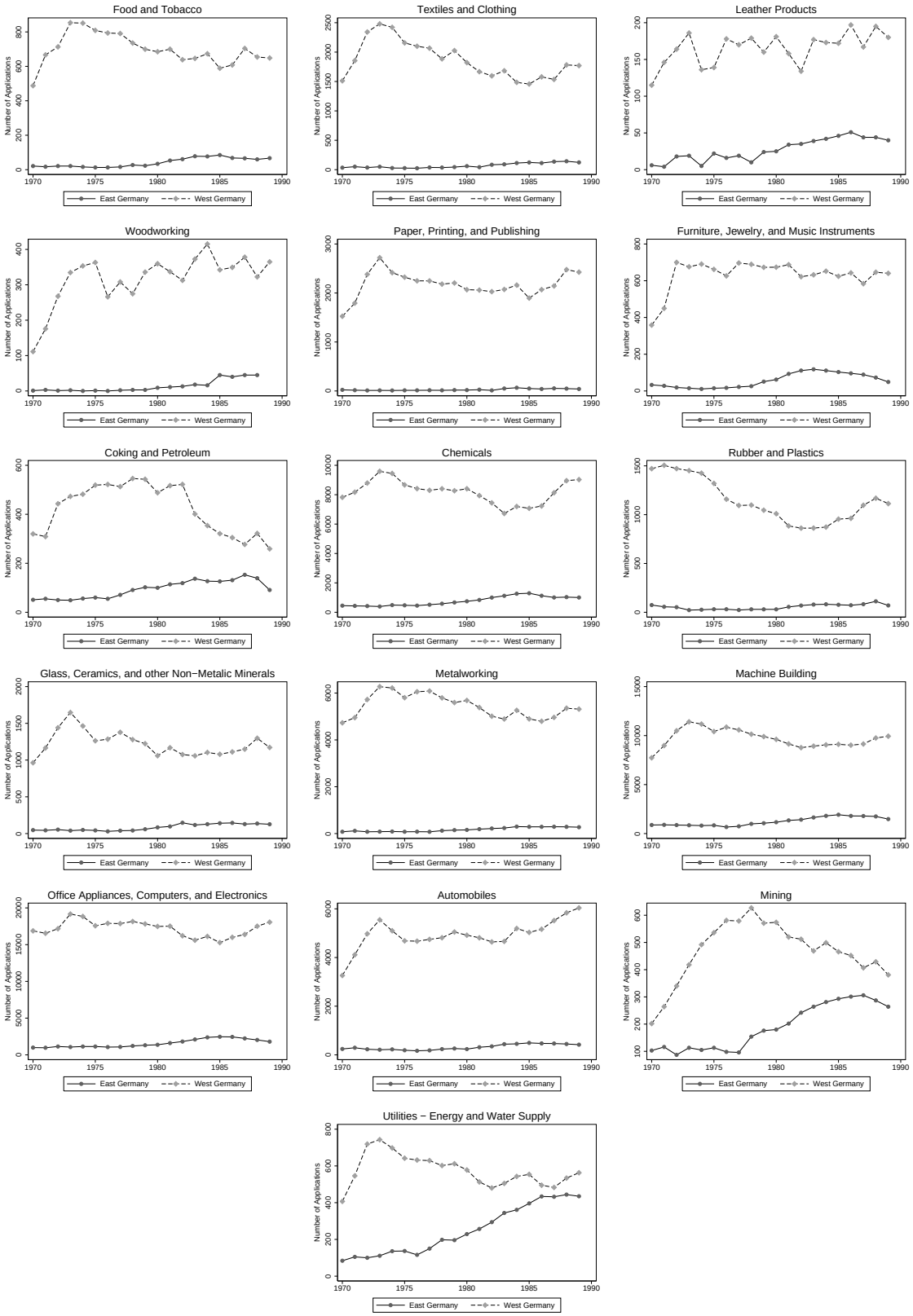

FIGURE A5: PATENT APPLICATIONS BY SECTOR

Note: The individual panels depict the number of patent applications in West and East Germany for the corresponding sectors over the period 1970 to 1989.

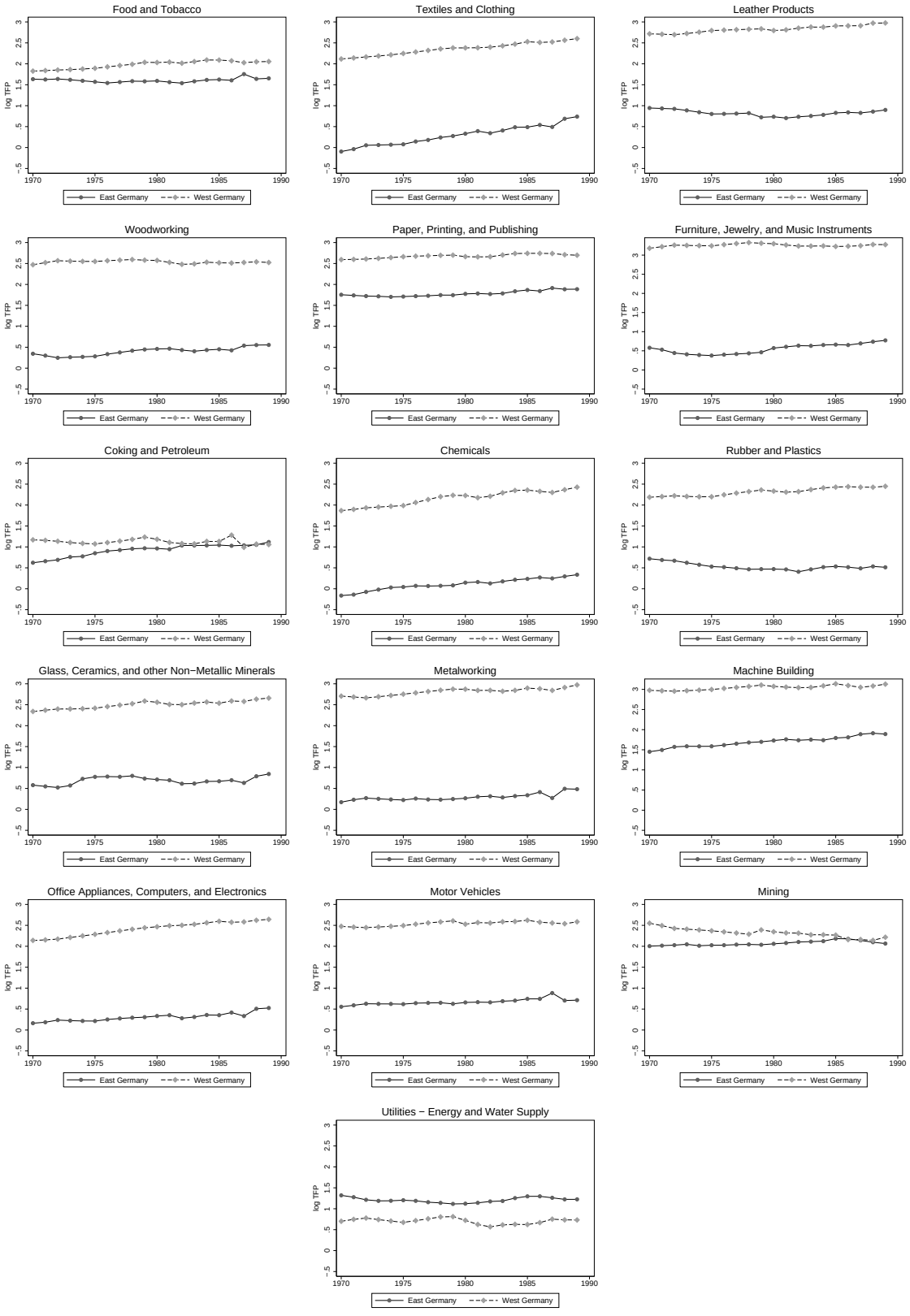

FIGURE A6: LOG TOTAL FACTOR PRODUCTIVITY BY SECTOR

Note: The individual panels depict the estimated log TFP by sector for West and East Germany over the period 1970 to 1989. TFP measures are constructed using the perpetual inventory as described in the text, assuming an annual depreciation rate of the capital stock of 6% and sector-specific capital shares taken from the EU KLEMS Growth and Productivity Accounts (November 2009 Release, updated March 2011).

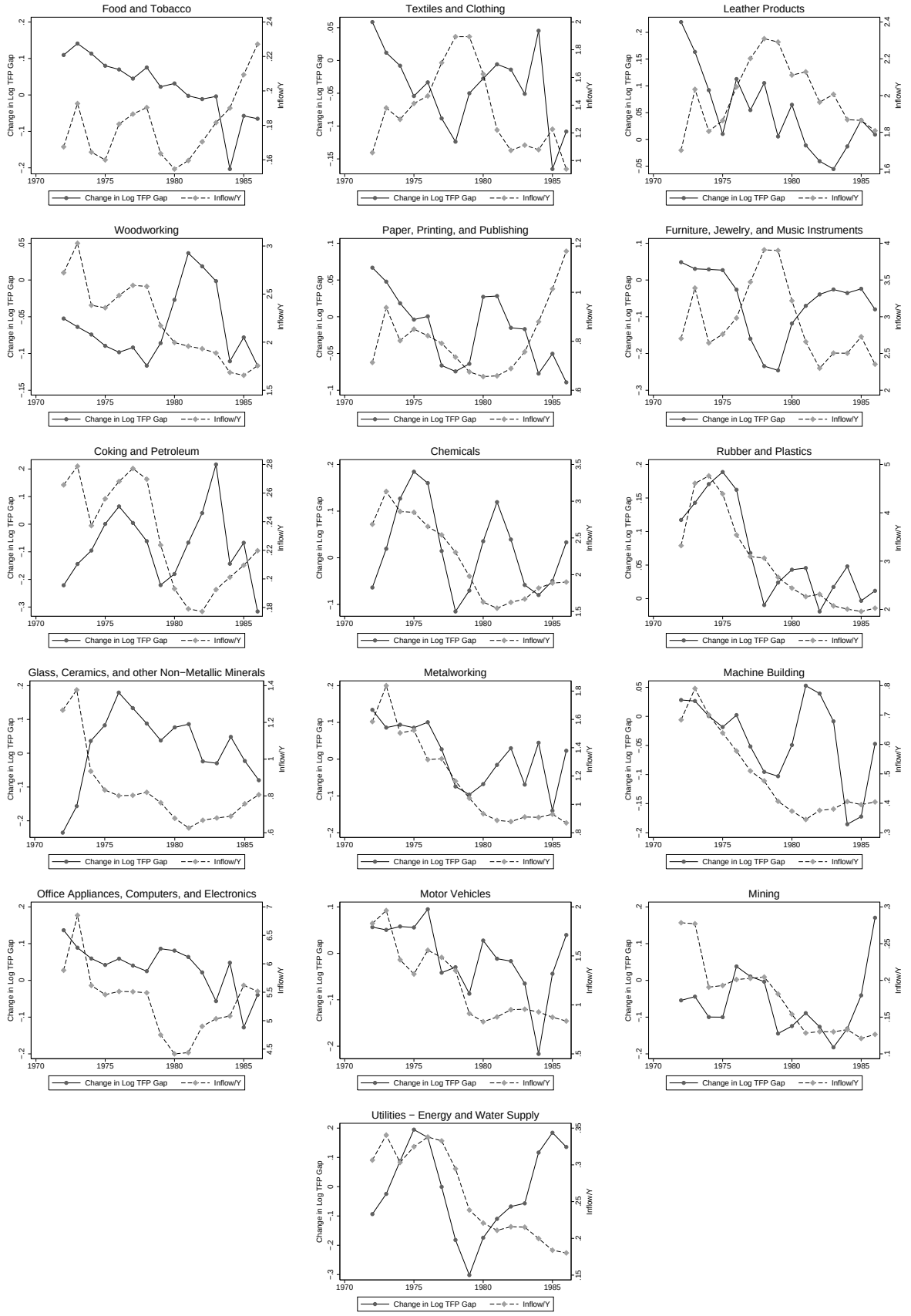

FIGURE A7: CHANGE IN LOG TFP GAP AND INFORMATION INFLOW

Note: The individual panels depict for each sector the change in the log TFP gap between West and East Germany between t and t+3 and the accumulated inflow of information scaled by output between t-3 and t.

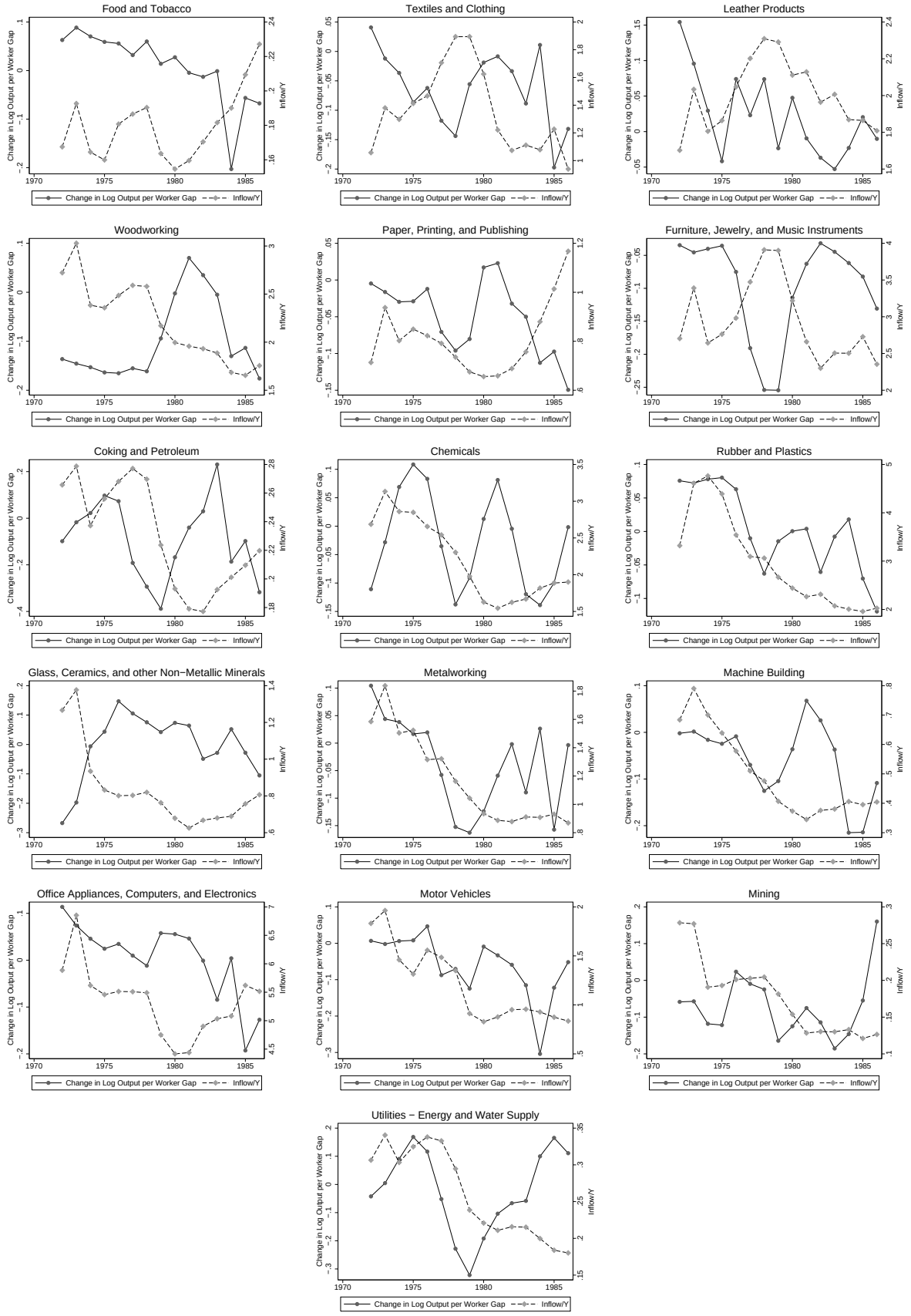

FIGURE A8: CHANGE IN LOG OUTPUT PER WORKER GAP AND INFORMATION INFLOW

Note: The individual panels depict for each sector the change in the log output per worker gap between West and East Germany between t and t+3 and the accumulated inflow of information scaled by output between t-3 and t.

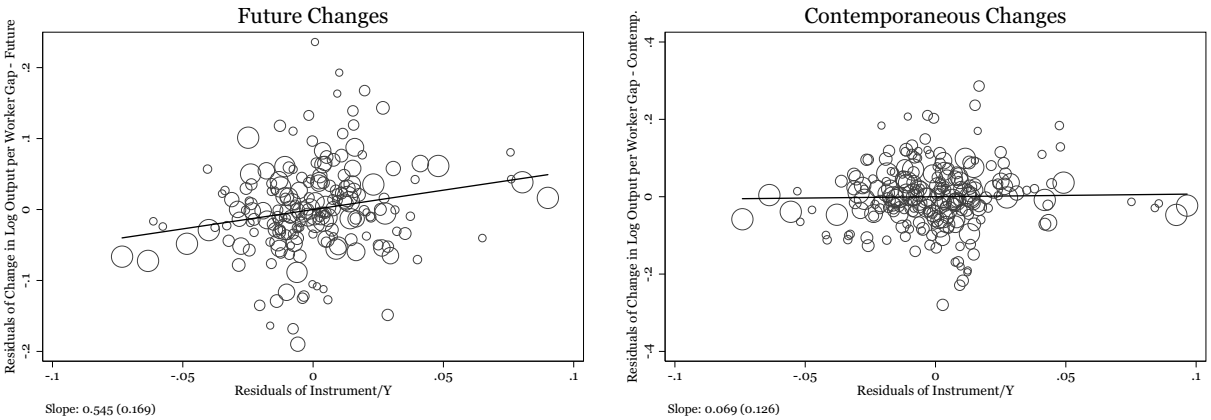

FIGURE A9: EXITS OF INFORMANTS AND CHANGES IN THE LOG OUTPUT PER WORKER GAP

Note: The figure plots residualized changes in the log output per worker gap between West and East Germany against residualized exits of highly prolific informants scaled by output. Exits are measured between the end of period t-6 and t-3. Changes in the log output per worker gap are measured between the end of period t and t+3 in the left panel and the end of t-6 and t-3 in the right panel. Circles are proportional to the square root of the average number of workers in an industry. The solid black lines represent the OLS regression lines.

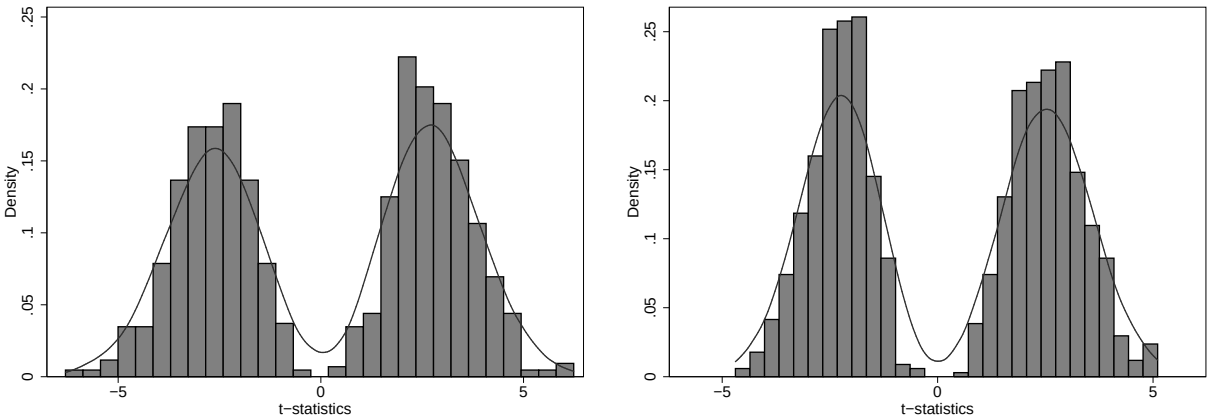

FIGURE A10: DISTRIBUTION T-STATISTICS AFTER WILD CLUSTER BOOTSTRAP

Note: The left panel depicts the distribution of the bootstrap t-statistics underlying the WB p-values reported in column (8) of the top panel in Table 5. The right panel depicts the distribution of the bootstrap t-statistics underlying the WB p-values reported in column (3) of the bottom panel in Table A10. The plotted densities are based on an Epanechnikov kernel function with default bandwidth 0.667 and 0.584 respectively.

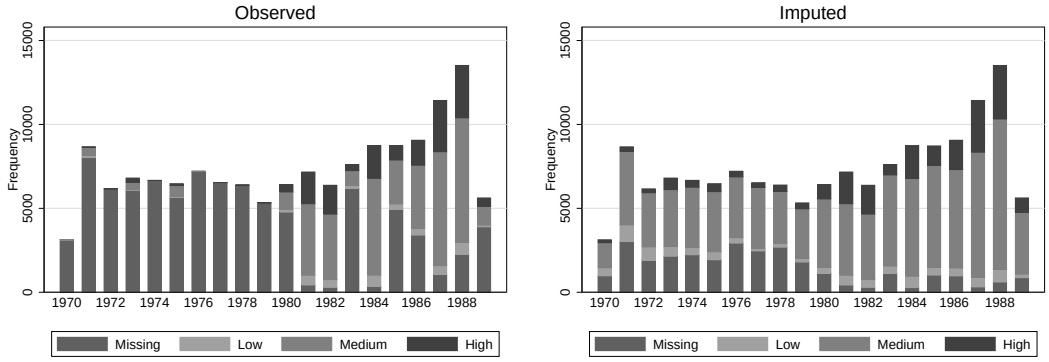

FIGURE A11: DISTRIBUTION OF QUALITY ASSESSMENTS

Note: The figure shows the distribution of quality assessments by year, both as observed in the data (left panel) and after imputing missing observations using the experienced-adjusted expected quality assessments of the informant generating the information (right panel). "Low" comprises assessments of 4 and 5, "Medium" assessments of 3, and "High" comprises assessments of 1 and 2.

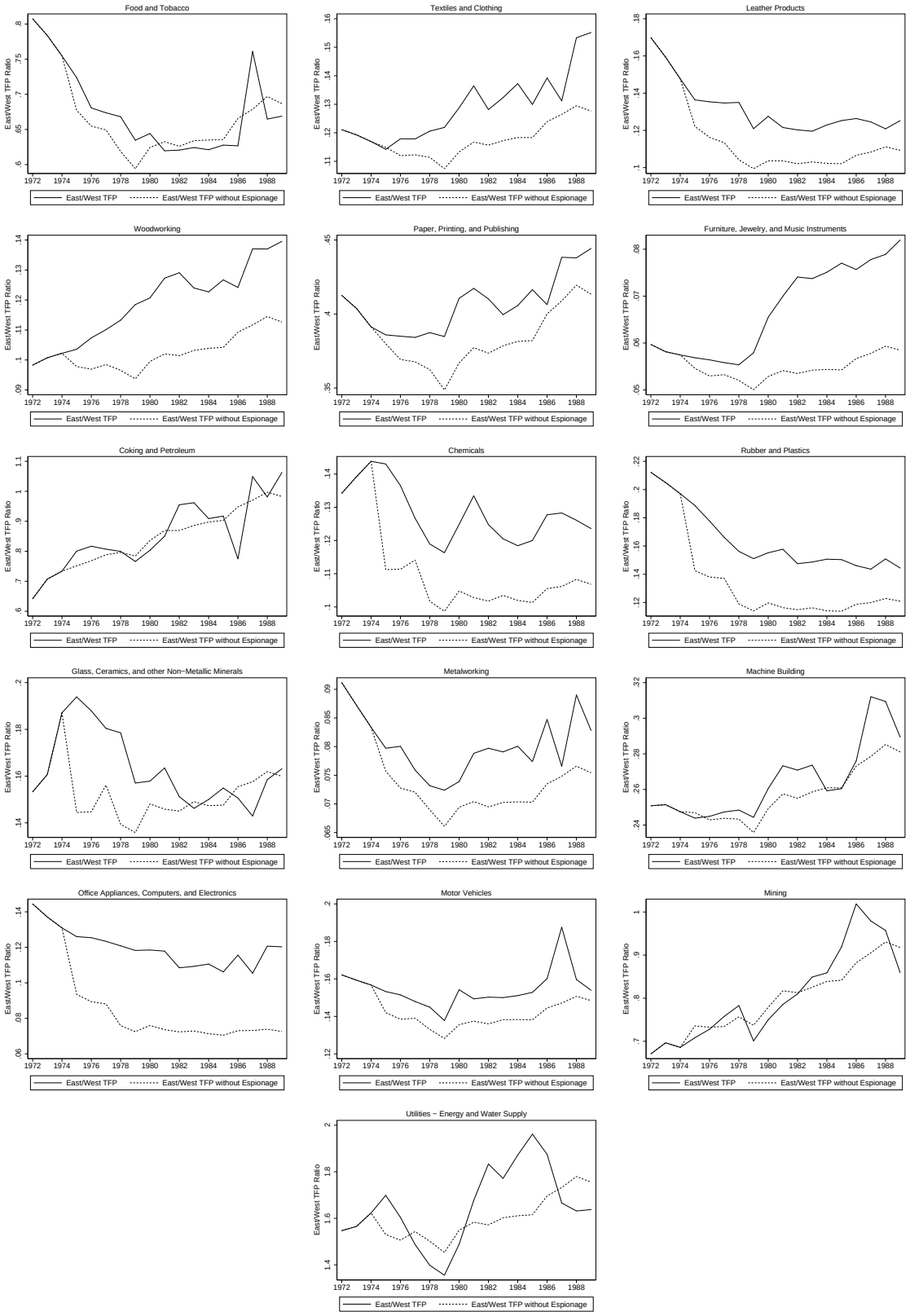

FIGURE A12: COUNTERFACTUAL SIMULATIONS BY SECTOR

Note: The individual panels depict the actual and counterfactual East/West TFP ratios in the corresponding sectors. The counterfactual simulations are based on the empirical results reported in column (3) of Table 2.

References

Cameron, A. Colin, Jonah B. Gelbach, and Douglas L. Miller, "Bootstrap-based Improvements for Inference with Clustered Standard Errors," *The Review of Economics and Statistics*, 2008, *90* (3), 414–427.