

Web Appendix: The Micro Origins of International Business Cycle Comovement*

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Abstract

This paper investigates the role of individual firms in international business cycle comovement using data covering the universe of French firm-level value added and international linkages over 1993-2007. At the micro level, trade and multinational linkages with a particular foreign country are associated with a significantly higher correlation between a firm and that foreign country. The impact of direct linkages on comovement at the micro level has significant macro implications. Without those linkages the correlation between France and foreign countries would fall by about 0.098, or one-third of the observed average correlation of 0.291 in our sample of partner countries.

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Appendix A Intensive and Extensive Margins

This appendix decomposes the growth rate of aggregate value added into the intensive and extensive components, and shows that the bulk of the aggregate business cycle comovement between France and its main trading partners is accounted for by the intensive margin. The intensive component at date t is defined as the growth rate of value added of firms that had positive value added in both year t and year $t - 1$. The extensive margin is defined as the contribution to total value added of the appearance and disappearance of firms. The log-difference growth rate of total value added can be manipulated to obtain an (exact) decomposition into intensive and extensive components:

$$\begin{aligned}
 \tilde{\gamma}_{At} &\equiv \ln \sum_{f \in I_t} x_{ft} - \ln \sum_{f \in I_{t-1}} x_{ft-1} \\
 &= \ln \frac{\sum_{f \in I_{t/t-1}} x_{ft}}{\sum_{f \in I_{t/t-1}} x_{ft-1}} - \left(\ln \frac{\sum_{f \in I_{t/t-1}} x_{ft}}{\sum_{f \in I_t} x_{ft}} - \ln \frac{\sum_{f \in I_{t/t-1}} x_{ft-1}}{\sum_{f \in I_{t-1}} x_{ft-1}} \right) \\
 &= \underbrace{\gamma_{At}}_{\text{Intensive margin}} - \underbrace{\ln \frac{\pi_{t,t}}{\pi_{t,t-1}}}_{\text{Extensive margin}},
 \end{aligned} \tag{A.1}$$

where $I_{t/t-1}$ is the set of firms active in both t and $t - 1$ and $\pi_{t,t}$ ($\pi_{t,t-1}$) is the share of value added produced by this intensive sub-sample of firms in period t ($t - 1$). Entrants have a positive impact on growth while exiters push the growth rate down, and the net impact is proportional to the share of entrants'/exiters' value added in aggregate value added.¹

Using equation (A.1), aggregate correlation between France and \mathcal{C} can be written as

$$\rho(\tilde{\gamma}_{At}, \gamma_{\mathcal{C}t}) = \frac{\sigma_A}{\tilde{\sigma}_A} \rho(\gamma_{At}, \gamma_{\mathcal{C}t}) + \frac{\sigma_\pi}{\tilde{\sigma}_A} \rho\left(\ln \frac{\pi_{t,t}}{\pi_{t,t-1}}, \gamma_{\mathcal{C}t}\right), \tag{A.2}$$

where σ_π is the standard deviation of the extensive margin component of equation (A.1), σ_A is the standard deviation of the intensive margin growth rate γ_{At} , and $\tilde{\sigma}_A$ is the standard deviation of the overall growth rate $\tilde{\gamma}_{At}$.

Thus, aggregate comovement is simply additive in the correlations of the intensive and the extensive margins. Table A9 presents the decomposition. On average, the intensive margin accounts for about 90% the overall correlation. Figure A1 plots the aggregate correlations against the intensive and the extensive margin components, together with the 45-degree line in each case. It is clear that the variation in the business cycle correlation between France and its trading partners is much better accounted for by the intensive margin component. The cross-sectional correlation between the overall and intensive margins (Figure A1a) is 0.96. By contrast, the variation in the extensive margin correlation across countries is smaller, and does not explain nearly as well the cross-section of comovement between France and other countries (Figure A1b).

¹This decomposition follows the same logic as the decomposition of price indices proposed by Feenstra (1994).

References

Feenstra, Robert, “New Product Varieties and the Measurement of International Prices,”
American Economic Review, March 1994, *84* (1), 157–177.

Table A1. Connectedness by Sector

	Share of VA by Connected Firms		Share in Aggregate French VA		Share of Connected Firms		Share of VA by Connected Firms		Share in Aggregate French VA	
	Share of Connected Firms	Share of VA by Connected Firms	Share in Aggregate French VA	Share in Aggregate French VA	Share of Connected Firms	Share of VA by Connected Firms	Share of Connected Firms	Share of VA by Connected Firms	Share in Aggregate French VA	Share in Aggregate French VA
01-05	Agriculture, forestry and fishing	0.301	0.693	0.007	35	Other transport equipment	0.714	0.993	0.014	0.014
10-14	Mining and quarrying	0.525	0.766	0.005	36-37	Manufacturing n.e.c.	0.593	0.937	0.010	0.010
15-16	Food and tobacco	0.307	0.914	0.040	40-41	Electricity, gas, water supply	0.252	0.977	0.041	0.041
17-19	Textile, wearing apparel and leather	0.716	0.958	0.014	45	Construction	0.137	0.521	0.061	0.061
20	Wood products	0.574	0.896	0.005	50-52	Wholesale and retail trade	0.378	0.801	0.179	0.179
21-22	Paper products, publishing	0.459	0.920	0.026	55	Hotels and restaurants	0.069	0.485	0.023	0.023
23	Coke, refined petroleum, nuclear fuel	0.819	0.998	0.008	60-63	Transport	0.298	0.864	0.074	0.074
24	Chemical industry	0.846	0.997	0.041	64	Post and telecommunications	0.314	0.995	0.053	0.053
25	Rubber and plastics	0.782	0.985	0.017	70	Real estate activities	0.092	0.239	0.038	0.038
26	Mineral products	0.550	0.952	0.014	71	Rental without operator	0.291	0.866	0.014	0.014
27	Basic metals	0.819	0.996	0.011	72	Computer services	0.289	0.776	0.027	0.027
28	Metal product	0.517	0.871	0.028	73	Research and development	0.494	0.918	0.003	0.003
29	Machinery and equipment	0.638	0.963	0.026	74	Other business services	0.183	0.612	0.114	0.114
30	Office machinery	0.715	0.996	0.005	75	Public administration	0.154	0.831	0.001	0.001
31	Electrical equipment	0.629	0.976	0.013	80	Education	0.098	0.353	0.003	0.003
32	Radio, TV and communica	0.655	0.978	0.012	85	Health and social work	0.077	0.309	0.015	0.015
33	Medical and optical instruments	0.549	0.936	0.011	90-93	Personal services	0.148	0.735	0.029	0.029
34	Motor vehicles	0.692	0.987	0.019						

Notes: This table presents the summary statistics for direct connectedness by sector. “Share of Connected Firms” is the number of firms in the sector that are connected to any foreign country through any means of direct connectedness (imports, exports, multinational links), divided by the total number of firms in the sector. “Share of VA by Connected Firms” is the total value added by firms in the sector that are connected to any foreign country through any means of direct connectedness (imports, exports, multinational links), divided by the total value added in the sector. “Share in Aggregate French VA” is the share of the sector’s total value added in aggregate French value added. The manufacturing sector covers NAF sectors 15 to 37.

Table A2. Directly Connected and Not Directly Connected Firms

Panel A: Manufacturing Sector						
Country	Directly Connected			Not Directly Connected		
	No. firms	Combined share	Mean $\rho(\gamma_{ft}, \gamma_{ct})$	No. firms	Combined share	Mean $\rho(\gamma_{ft}, \gamma_{ct})$
Belgium	43,270	0.887	0.068	96,786	0.113	0.031
Brazil	9,854	0.601	0.000	130,202	0.399	-0.016
China	17,447	0.689	-0.051	122,609	0.311	-0.049
Germany	42,425	0.889	0.060	97,631	0.111	0.024
Italy	40,417	0.874	0.082	99,639	0.126	0.060
Japan	16,782	0.697	-0.036	123,274	0.303	-0.043
Netherlands	31,849	0.847	0.083	108,207	0.153	0.051
Spain	36,663	0.857	0.035	103,393	0.143	0.016
United Kingdom	33,373	0.854	0.057	106,683	0.146	0.033
United States	29,697	0.810	0.065	110,359	0.190	0.047
Average	30,178	0.800	0.036	109,878	0.200	0.015

Panel B: Non-manufacturing Sector						
Country	Directly Connected			Not Directly Connected		
	No. firms	Combined share	Mean $\rho(\gamma_{ft}, \gamma_{ct})$	No. firms	Combined share	Mean $\rho(\gamma_{ft}, \gamma_{ct})$
Belgium	73,570	0.501	0.035	770,722	0.499	0.004
Brazil	10,448	0.282	-0.025	833,845	0.718	-0.038
China	30,440	0.392	-0.074	813,852	0.608	-0.069
Germany	69,511	0.501	0.028	774,781	0.499	-0.009
Italy	68,300	0.480	0.054	775,992	0.520	0.023
Japan	23,737	0.373	-0.048	820,555	0.627	-0.062
Netherlands	52,700	0.466	0.053	791,592	0.534	0.007
Spain	59,192	0.456	0.027	785,100	0.544	0.000
United Kingdom	53,360	0.484	0.038	790,932	0.516	0.019
United States	53,075	0.504	0.060	791,217	0.496	0.043
Average	49,433	0.444	0.015	794,859	0.556	-0.008

Notes: This table reports the features of directly connected and not directly connected firms for each partner country. The columns report the number of firms, their combined share in aggregate value added (averaged across years), and the mean correlation between firm value added growth and the foreign country's GDP growth.

Table A3. Directly Connected Firms: by Connection Type

Country	Exporters		Importers		Affiliates of multinationals		Firms with foreign affiliates	
	No. firms	Combined share $\rho(\gamma_{ft}, \gamma_{ct})$	No. firms	Combined share $\rho(\gamma_{ft}, \gamma_{ct})$	No. firms	Combined share $\rho(\gamma_{ft}, \gamma_{ct})$	No. firms	Combined share $\rho(\gamma_{ft}, \gamma_{ct})$
Belgium	33,261	0.823	32,928	0.851	1,065	0.020	79	0.036
Brazil	7,644	0.541	4,080	0.429	0	0.000	40	0.032
China	9,424	0.578	13,240	0.613	16	0.001	59	0.013
Germany	29,128	0.809	35,920	0.869	1,375	0.057	115	0.039
Italy	25,989	0.787	34,400	0.849	608	0.031	91	0.037
Japan	12,545	0.608	9,229	0.603	168	0.009	36	0.011
Netherlands	21,774	0.750	23,930	0.804	1,084	0.066	34	0.030
Spain	26,706	0.788	27,676	0.805	270	0.009	122	0.044
United Kingdom	24,222	0.776	25,535	0.817	1,101	0.050	96	0.038
United States	21,299	0.721	20,117	0.753	1,655	0.121	145	0.043
Average	21,199	0.718	22,706	0.739	816	0.036	82	0.032

Panel A: Manufacturing Sector

Country	Exporters		Importers		Affiliates of multinationals		Firms with foreign affiliates	
	No. firms	Combined share $\rho(\gamma_{ft}, \gamma_{ct})$	No. firms	Combined share $\rho(\gamma_{ft}, \gamma_{ct})$	No. firms	Combined share $\rho(\gamma_{ft}, \gamma_{ct})$	No. firms	Combined share $\rho(\gamma_{ft}, \gamma_{ct})$
Belgium	37,398	0.366	57,287	0.466	2,501	0.013	326	0.123
Brazil	5,346	0.209	5,934	0.204	4	0.000	83	0.009
China	7,391	0.274	26,698	0.362	74	0.000	149	0.141
Germany	29,893	0.341	57,856	0.475	3,211	0.024	328	0.165
Italy	27,524	0.320	55,940	0.455	1,279	0.006	287	0.166
Japan	13,169	0.301	14,226	0.322	483	0.004	70	0.090
Netherlands	21,669	0.307	41,065	0.430	3,164	0.026	110	0.107
Spain	27,099	0.327	46,677	0.416	701	0.005	413	0.169
United Kingdom	24,005	0.324	40,273	0.447	4,090	0.035	320	0.166
United States	26,721	0.388	38,054	0.472	3,953	0.045	294	0.162
Average	22,022	0.316	38,661	0.405	1,946	0.016	238	0.138

Panel B: Non-manufacturing Sector

Notes: This table reports the features of different types of directly connected firms. The columns report the number of firms, their combined share in aggregate value added (averaged across years), and the mean correlation between firm value added growth and the foreign country's GDP growth.

Table A4. Main Estimation Results, Manufacturing Sector

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Baseline	Baseline	Baseline	Baseline	Sales
Dep. Var: $\rho(\gamma_{ft}, \gamma_{ct})$						
Importer	0.021*** (0.002)	0.029*** (0.001)	0.011*** (0.001)	0.010*** (0.001)	0.008*** (0.001)	0.019*** (0.002)
Exporter	0.026*** (0.002)	0.022*** (0.002)	0.005*** (0.002)	0.005*** (0.002)	0.006*** (0.002)	0.011*** (0.002)
French Multinational	0.008 (0.018)	0.009 (0.014)	0.002 (0.013)	0.003 (0.013)	0.006 (0.013)	0.017 (0.014)
Affiliate of a Foreign MNE	0.014*** (0.005)	0.024*** (0.004)	0.011*** (0.004)	0.012*** (0.004)	0.010** (0.004)	0.008** (0.004)
Observations	1,234,760	1,234,760	1,234,760	1,234,720	1,234,760	1,283,260
Adjusted R ²	0.001	0.280	0.285	0.285	0.288	0.285
Firm FE	No	Yes	Yes	Yes	Yes	Yes
Country FE	No	No	Yes	No	No	Yes
Country×Region FE	No	No	No	Yes	No	No
Country×Sector FE	No	No	No	No	Yes	No
# of Xing links	202,454	202,454	202,454	202,427	202,454	206,978
# of Ming links	216,471	216,471	216,471	216,447	216,471	220,979
# of Affiliates	7,115	7,115	7,115	7,115	7,115	7,409
# of HQs links	815	815	815	815	815	838
# of Firm FEs		123,476	123,476	123,472	123,476	128,326
# of Country FEs			10			10
# of Country×Region FEs				960		
# of Country×Sector FEs					600	

Notes: Standard errors clustered at the firm level. ***: significant at the 1% level; **: significant at the 5% level; *: significant at the 10% level. This table reports the results of estimating (4) for the manufacturing sector. The independent variables are binary indicators for whether the firm imports from a country, exports to it, is an affiliate of a multinational firm from that country, or is a French multinational with affiliates in that country.

Table A5. Main Estimation Results, Non-manufacturing Sector

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Baseline	Baseline	Baseline	Baseline	Sales
Dep. Var: $\rho(\gamma_{ft}, \gamma_{ct})$						
Importer	0.027*** (0.001)	0.022*** (0.001)	0.012*** (0.001)	0.012*** (0.001)	0.012*** (0.001)	0.015*** (0.001)
Exporter	0.031*** (0.001)	0.019*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.006*** (0.001)	0.008*** (0.001)
French Multinational	0.034*** (0.012)	0.026*** (0.010)	0.013 (0.010)	0.012 (0.010)	0.010 (0.010)	0.016* (0.009)
Affiliate of a Foreign MNE	0.034*** (0.003)	0.029*** (0.003)	0.011*** (0.003)	0.010*** (0.003)	0.008*** (0.003)	0.017*** (0.003)
Observations	7,230,220	7,230,220	7,230,220	7,229,950	7,230,200	7,758,760
Adjusted R ²	0.000	0.280	0.286	0.287	0.288	0.284
Firm FE	No	Yes	Yes	Yes	Yes	Yes
Country FE	No	No	Yes	No	No	Yes
Country×Region FE	No	No	No	Yes	No	No
Country×Sector FE	No	No	No	No	Yes	No
# of Xing links	208,043	208,043	208,043	207,987	208,034	220,598
# of Ming links	366,022	366,022	366,022	365,927	366,016	382,838
# of Affiliates	18,484	18,484	18,484	18,481	18,484	20,682
# of HQ links	2,271	2,271	2,271	2,268	2,271	2,877
# of Firm FEs		723,022	723,022	722,995	723,020	775,876
# of Country FEs			10			10
# of Country×Region FEs				960		
# of Country×Sector FEs					490	

Notes: Standard errors clustered at the firm level. ***: significant at the 1% level; **: significant at the 5% level; *: significant at the 10% level. This table reports the results of estimating(4) for the non-manufacturing sector. The independent variables are binary indicators for whether the firm imports from a country, exports to it, is an affiliate of a multinational firm from that country, or is a French multinational with affiliates in that country.

Table A6. Estimation Results, Taking Indirect Linkages into Account

	(1)	(2)	(3)	(4)
	Panel A: Manufacturing Sector		Panel B: Non-manufacturing Sector	
Dep. Var: $\rho(\gamma_{ft}, \gamma_{ct})$				
Importer	0.007*** (0.002)	0.007*** (0.001)	0.012*** (0.001)	0.012*** (0.001)
Exporter	0.004** (0.002)	0.005*** (0.002)	0.004*** (0.001)	0.006*** (0.001)
French Multinational	0.002 (0.013)	0.006 (0.013)	0.014 (0.011)	0.010 (0.010)
Affiliate of a Foreign MNE	0.011*** (0.004)	0.011*** (0.004)	0.013*** (0.003)	0.010*** (0.003)
$DS_{f,j,c}$	0.226*** (0.028)	0.100*** (0.032)	0.146*** (0.026)	-0.066*** (0.031)
$US_{f,j,c}$	0.319*** (0.032)	0.150** (0.076)	-0.053*** (0.007)	0.036** (0.016)
Observations	1,224,130	1,224,130	6,738,360	6,738,340
Adjusted R ²	0.286	0.288	0.286	0.288
Firm FE	Yes	Yes	Yes	Yes
Country FE	Yes	No	Yes	No
Country×Sector FE	No	Yes	No	Yes
# of Xing links	202,313	202,313	206,580	206,571
# of Ming links	216,346	216,346	363,864	363,858
# of Affiliates	7,086	7,086	17,216	17,216
# of HQ links	815	815	2,240	2,240
# of Firm FEs	122,413	122,413	673,836	673,834
# of Country FEs	10		10	
# of Country×Sector FEs		600		490

Notes: Standard errors clustered at the firm level. ***: significant at the 1% level; **: significant at the 5% level; *: significant at the 10% level. This table reports the results of estimating (7) for the manufacturing sector in Panel A and the non-manufacturing sector in Panel B. The independent variables are binary indicators for whether the firm imports from a country, exports to it, is an affiliate of a multinational firm from that country, or is a French multinational with affiliates in that country. The downstream indirect linkage indicator $DS_{f,j,c}$ is defined in (5). The upstream indirect linkage indicator $US_{f,j,c}$ is defined in (6).

Table A7. Aggregate Correlations: Contributions of Direct and Indirect Terms

Country	Panel A: Manufacturing Sector		
	ρ_A (observed)	Directly Connected	Not Directly Connected
Belgium	0.935	0.795	0.140
Brazil	0.177	0.165	0.013
China	-0.190	-0.142	-0.048
Germany	0.695	0.550	0.144
Italy	0.718	0.574	0.144
Japan	0.166	0.154	0.012
Netherlands	0.718	0.575	0.142
Spain	0.673	0.550	0.123
United Kingdom	0.435	0.416	0.019
United States	0.509	0.442	0.067
Average	0.484	0.408	0.076
Country	Panel B: Non-manufacturing Sector		
	ρ_A (observed)	Directly Connected	Not Directly Connected
Belgium	0.490	0.235	0.255
Brazil	-0.499	-0.371	-0.128
China	-0.663	-0.418	-0.245
Germany	0.482	0.237	0.245
Italy	0.446	0.214	0.232
Japan	-0.382	-0.294	-0.088
Netherlands	0.452	0.281	0.171
Spain	0.823	0.442	0.380
United Kingdom	-0.257	-0.119	-0.138
United States	0.221	0.187	0.034
Average	0.111	0.039	0.072

Notes: This table reports the results of decomposition in (8) separately for the manufacturing (Panel A) and non-manufacturing (Panel B) sectors. The first column reports the actual correlation in the data.

Table A8. Changes in Aggregate Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	ρ_A	$\Delta\rho_A$	$s.e.(\Delta\rho_A)$	$\Delta\rho_A Trade$	$s.e.(\Delta\rho_A Trade)$	$\Delta\rho_A MNE$	$s.e.(\Delta\rho_A MNE)$	$\Delta\rho_A Eq,W$	$s.e.(\Delta\rho_A Eq,W)$
	Panel A: Manufacturing Sector								
Belgium	0.935	-0.116	0.019	-0.114	0.019	-0.003	0.005	-0.058	0.008
Brazil	0.177	-0.063	0.012	-0.062	0.011	-0.001	0.004	-0.010	0.002
China	-0.190	-0.081	0.013	-0.080	0.013	0.000	0.002	-0.022	0.003
Germany	0.695	-0.121	0.019	-0.115	0.019	-0.006	0.006	-0.059	0.008
Italy	0.718	-0.116	0.018	-0.112	0.018	-0.004	0.005	-0.055	0.007
Japan	0.166	-0.083	0.013	-0.082	0.014	-0.001	0.002	-0.019	0.003
Netherlands	0.718	-0.114	0.017	-0.106	0.017	-0.008	0.005	-0.042	0.006
Spain	0.673	-0.109	0.018	-0.107	0.018	-0.002	0.006	-0.048	0.007
United Kingdom	0.435	-0.114	0.018	-0.108	0.018	-0.006	0.006	-0.045	0.006
United States	0.509	-0.114	0.018	-0.101	0.017	-0.013	0.008	-0.039	0.005
Average	0.484	-0.103		-0.099		-0.004		-0.040	
	ρ_A	$\Delta\rho_A$	$s.e.(\Delta\rho_A)$	$\Delta\rho_A Trade$	$s.e.(\Delta\rho_A Trade)$	$\Delta\rho_A MNE$	$s.e.(\Delta\rho_A MNE)$	$\Delta\rho_A Eq,W$	$s.e.(\Delta\rho_A Eq,W)$
	Panel B: Non-manufacturing Sector								
Belgium	0.490	-0.071	0.022	-0.061	0.009	-0.010	0.020	-0.023	0.002
Brazil	-0.499	-0.029	0.015	-0.023	0.005	-0.006	0.014	-0.003	0.000
China	-0.663	-0.053	0.023	-0.043	0.007	-0.009	0.022	-0.009	0.001
Germany	0.482	-0.076	0.028	-0.062	0.009	-0.014	0.026	-0.022	0.002
Italy	0.446	-0.070	0.028	-0.058	0.009	-0.013	0.026	-0.022	0.002
Japan	-0.382	-0.047	0.016	-0.041	0.007	-0.006	0.014	-0.007	0.001
Netherlands	0.452	-0.064	0.019	-0.053	0.008	-0.011	0.017	-0.016	0.001
Spain	0.823	-0.065	0.028	-0.053	0.008	-0.012	0.027	-0.018	0.002
United Kingdom	-0.257	-0.073	0.028	-0.057	0.009	-0.016	0.026	-0.017	0.001
United States	0.221	-0.081	0.028	-0.064	0.010	-0.017	0.026	-0.017	0.001
Average	0.111	-0.063		-0.051		-0.011		-0.015	

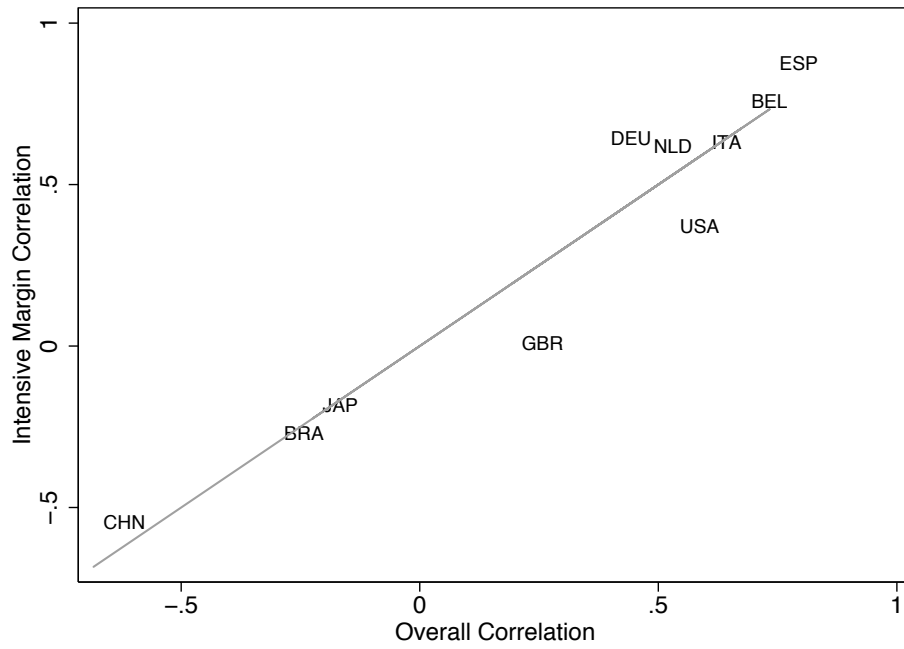
Notes: This table reports the results of the aggregation exercise in (10) separately for the manufacturing (Panel A) and non-manufacturing (Panel B) sectors. The column labeled $s.e.(\Delta\rho_A)$ reports the standard error associated with the estimated change in aggregate correlation. Columns 4-7 present the change in the correlation due to severing of trade linkages and multinational linkages separately, along with corresponding standard errors. Columns 8-9 present the change in the correlation due to severing of direct linkages assuming that all firms have equal size, along with corresponding standard errors.

Table A9. Contribution of Intensive and Extensive Margins to Overall Aggregate Correlation

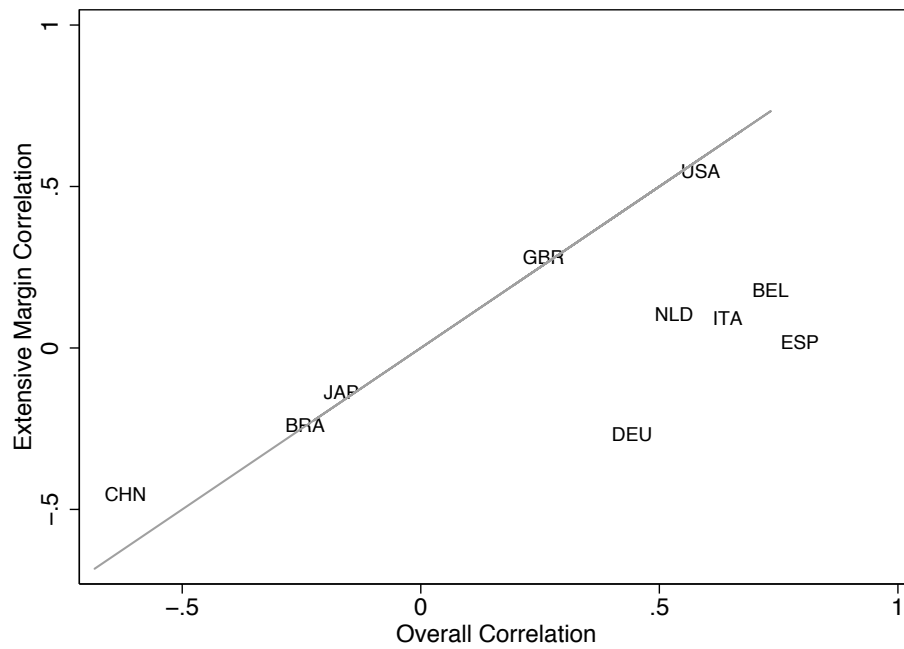
Country	$\rho(\tilde{\gamma}_{At}, \gamma_{Ct})$ (observed)	Intensive (share)	Extensive (share)
Belgium	0.674	1.030	-0.030
Brazil	-0.305	0.808	0.192
China	-0.684	0.731	0.269
Germany	0.379	1.552	-0.552
Italy	0.591	0.977	0.023
Japan	-0.224	0.748	0.252
Netherlands	0.469	1.207	-0.207
Spain	0.733	1.094	-0.094
United Kingdom	0.193	0.045	0.955
United States	0.524	0.651	0.349
Average	0.235	0.884	0.116

Notes: This table presents the correlation of combined aggregate value added (intensive plus extensive margins), and the share of aggregate correlation due to the intensive and the extensive margins.

Figure A1. Overall Correlations and the Intensive and Extensive Margins



(a) Intensive



(b) Extensive

Notes: The top panel presents the scatterplot of the overall (intensive plus extensive) correlation against the intensive margin correlation. The bottom panel presents the scatterplot of overall and the extensive margins. The 45-degree line is added to both plots.