#	Topic	Paper	Industry Characteristic	Country Characteristic	Main Finding
Finance and Industry Growth					
1	Finance and growth	Rajan and Zingales (1998)	Industry dependence on external finance [ratio of capital expenditures minus cash flow over capital expenditures]	Country financial development [market capitalization, private credit, measure of accounting standards]	Sectors that depend for inherent technological reasons more on external sources of finance (debt and equity), as compared to internal sources (retained earnings), grow faster in financially developed countries
2	Finance and growth	Claessens and Laeven (2003)	Industry intangible intensity [ratio of intangible assets to net fixed assets]	Country-level property rights protection [index of intellectual property rights, patent rights, risk of expropriation]	Sectors with an asset mix tilted towards intangibles grow faster in countries with better property rights
3	Finance and growth	Fisman and Love (2003)	Industry dependence on trade credit [accounts payable to total assets]	Country financial development [market capitalization, private credit, measure of accounting standards]	Industries with higher reliance on trade credit grow faster in countries with weaker financial institutions
4	Finance and growth	Fisman and Love (2007)	Industry growth opportunities [sales growth]	Country financial development [sum of domestic credit to private sector and market capitalization as a share of GDP]	Industries with better growth opportunities grow faster in more financially developed countries
5	Finance and growth	Beck, Demirguc-Kunt, Laeven, and Levine (2008)	Industry share of small firms [percentage of firms in each sector with less than 5, 10, 20, and 100 employees]	Country financial development [private credit to GDP]	Industries with a larger share of small firms grow faster in more financially developed countries
6	Firm size and growth	Pagano and Schivardi (2003)	Sector R&D intensity [share of R&D personnel in total employment, ratio of R&D to total investment and value added]	Average firm size of firm in sector in country [measured by employment]	Sectors with larger average firm size grow faster; particularly in R&D intense sectors
7	Financial dependence and business cycles	Braun and Larrain (2005)	Industry dependence on external finance	Recession in country c at time t	Industries that are more dependent on external finance are hit harder during recessions
8	Credit constraints, entry	Aghion, Fally and Scarpetta (2007)	Industry dependence on external finance	Country financial development [sum of private credit and stock market capitalization as a share of GDP, state ownership of banks]	More small firms enter in more externally dependent sectors in more financially developed countries
9	Finance and R&D investment	Brown, Martinsson, and Petersen (2013)	Industry dependence on external finance	Country financial development [value of IPOs as a share of GDP, accounting standards, anti-self-dealing index of shareholder protection]	Firms in more externally financially dependent industries invest more in R&D in more financially developed countries and in countries with stronger shareholder protection

#	Topic	Paper	Industry Characteristic	Country Characteristic	Main Finding
10	Finance and innovation	Hsu, Tian, and Xu (2014)	Industry dependence on external finance and industry high-tech intensity	Country financial development [stock market capitalization, bank credit]	High-tech sectors that depend more on external sources of finance innovate more in financially developed countries
11	Finance and innovation	Acharya and Zu (2017)	Industry dependence on external finance	Public/Private Firm Indicator in the United States	Listed firms spend more on R&D in external-finance-dependent sectors
12	Firms' cash holdings, financial development, and firm growth	Lei, Qiu, and Wan (2018)	Industry asset tangibility	Private credit to GDP, contract enforcement, accounting standards, and log GDP p.c.	Sectors with a smaller proportion of tangible assets grow faster in countries with more developed financial markets
13	Access to long-term finance and volatility	Demirguk-Kunt, Horvath, and Huizinga (2017)	Sectoral measure of loan maturity	Various proxies of financial development and institutional quality	Financial development reduces firm growth volatility especially in external-finance-dependent sectors
14	Role of insider trading enforcement legislation on investment	Edmans, Jayaraman, and Schneemeir (2017)	Industry dependence on external finance	Insider trading enforcement legislation	The investment-Tobin's Q sensitivity increases after the enforcement of insider trading legislation in finance-dependent sectors and especially in emerging markets
15	Collateral laws and lending (loan-to-value)	Calomiris, Larrain, Liberti, and Sturgess (2017)	Sectoral index of real estate intensity	Laws shaping collateral and contract enforcement	Weak movable collateral laws create distortions in the allocation of resources that favor immovable-based production and investment
16	Real effects of banking crises	Dell'Ariccia, Detragiache, and Rajan (2008)	Industry dependence on external finance	Banking crisis in country c at time t	Sectors relatively more dependent on external finance perform worse during banking crises
17	Banking crises and exports	Iacovone and Zavacka (2009)	Industry dependence on external finance	Banking crisis in country c at time t	During a crisis, exports of sectors more dependent on external finance grow relatively less than those of other sectors
18	Investment effect of the subprime mortgage crisis	Duchin, Ozbas, and Sensoy (2010)	Industry dependence on external finance	Before/after sub-prime crisis	Decline in corporate investment is sharpest in industries with high external financial dependence
19	Transmission of financial crises	Claessens, Tong, and Wei (2012)	Industry dependence on external finance and trade sensitivity [global GDP elasticity of global exports at 3-digit sector level]	Country trade openness and fiscal and monetary policy	Crisis hit firms more sensitive to trade and business cycles hardest, especially in countries more open to trade

#	Topic	Paper	Industry Characteristic	Country Characteristic	Main Finding
20	Firm growth and bank recapitalization	Laeven and Valencia (2013)	Industry dependence on external finance	Country bank recapitalization policies [committed amounts of public recapitalization funds]	Growth of finance dependent firms is disproportionately positively affected by bank recapitalization
21	Capital account liberalization, capital allocation, and productivity	Larrain and Stumpner (2018)	Industry dependence on external finance	Financial (capital account) liberalization	Within-sector misallocation (dispersion in marginal product of capital) falls when countries open their capital markets, especially in external finance dependent sectors
22	Monetary policy and growth	Aghion, Farhi, and Kharroubi (2015)	Industry credit or liquidity constraints [asset tangibility measured by value of net property, plant and equipment to total assets for credit constraints; labor-cost to sales for liquidity constraints]	Degree of counter-cyclicality of short-term interest rates [coefficient on output gap in regression with ST-rates on LHS]	Credit or liquidity constrained industries grow more quickly in countries with more counter-cyclical short-term interest rates
23	Fiscal policy and industry growth	Aghion, Hemous, and Kharroubi (2014)	Industry dependence on external finance	Countercyclicality of country fiscal policies [coefficient on output gap in regression with fiscal balance to GDP on LHS]	More externally dependent industries grow faster in countries that implement more countercyclical fiscal policies
24	Financial expansion (credit growth) and crowding out of output growth	Cecchetti and Kharoubi (2018)	Industry asset tangibility and industry R&D intensity	Credit growth	Credit growth disproportionately harms output per worker growth in industries that have either less tangible assets or are more R&D intensive
25	Dollar exchange rate and investment in emerging markets	Addjiev, Bruno, Koch and Shin (2018)	Industry dependence on external finance	Nominal and real exchange rates in emerging markets	A US dollar appreciation reduces investment in external finance dependent sectors in emerging markets implying a global dollar supply effect
26	Determinants of vertical integration	Alfaro, Conconi, Fadinger, and Newman (2016)	Industry external finance dependence	Financial development (and legal quality)	Financial development is associated with a higher level of vertical integration in external finance dependent sectors

#	Topic	Paper	Industry Characteristic	Country Characteristic	Main Finding
International Trade and Industrial Specialization					
27	Factor proportions and trade	Romalis (2004)	Industry factor intensities in skilled labour, unskilled labour, and physical capital	Country factor endowments [human capital, physical capital, labour]	Countries specialize in industries that intensively use factors that (a) they are already abundant in; (b) they are accumulating rapidly
28	Human capital and growth	Ciccone and Papaioannou (2009)	Industry skill intensity [average years of employee schooling, share of high-school and college graduates]	Country initial human capital [average years of schooling]	Countries with higher initial education levels grew faster in schooling-intensive industries
29	Institutions and trade	Levchenko (2007)	Industry institutional dependence [concentration-Herfindahl index of intermediate input use]	Country institutional quality [rule of law]	Countries with better institutions have a greater share of US imports in more institutionally dependent sectors
30	Institutions and trade	Nunn (2007)	Industry contract intensity-complexity [reflecting relationship-specific investments]	Quality of contract enforcement and the judiciary [perception based rule of law index]	Countries with good contract enforcement specialize in goods for which relationship-specific investments are most important
31	Institutions, trade and organizational choice	Ferguson and Formai (2013)	Industry vertical integration-propensity and industry contract intensity	Country judicial quality [rule of law]	Benefits of judicial quality [high quality contractual institutions] for exports of contract-intensive goods are smaller in industries where firms are more likely to be integrated with their input suppliers
32	Institutions and comparative advantage	Nunn and Trefler (2014)	Industry cost sensitivity to quality of contracting institutions	Country quality of contracting institutions	Institutional sources of comparative advantage [as reflected by the interaction of country-level rule of law with industry-level contract intensity] are quantitatively as important as the impact of human capital and physical capital
33	Trade policy in services and productivity of downstream manufacturing	Beverelli, Fiorini, and Hoekman (2017)	Industry reliance on services as intermediate inputs	Index reflecting restrictiveness on trade in services; control of corruption	lower services trade restrictiveness is associated with higher downstream manufacturing labor and total-factor productivity, with the estimated effect increasing with country-level institutional capacity
34	Financial liberalization and trade	Manova (2008)	Industry dependence on external finance and industry asset tangibility [share of net property, plant and equipment in total book-value assets]	Time-varying country equity-market openess and liberalization	Liberalization increases exports disproportionately in sectors more dependent on outside finance or using fewer collateralized assets
35	Credit constraints and trade	Manova (2013)	Industry dependence on external finance and industry asset tangibility	Country financial development [private credit to GDP]	More financially developed countries export more in sectors more dependent on outside finance or using fewer collateralized assets

#	Topic	Paper	Industry Characteristic	Country Characteristic	Main Finding
36	Finance and choice of export destinations	Chan and Manova (2015)	Industry dependence on external finance and industry asset tangibility	Country financial development [private credit to GDP]	More financially developed countries have more trading partners and particularly so in financially dependent sectors
37	Credit constraints and trade	Manova, Wei, and Zhang (2015)	Sector financial vulnerability [external financial dependence, asset tangilibity, inventory/sales ratio, reliance on trade credit]	Firm indicators for JV, MNC affiliates, firms with foreign ownership	Foreign affiliates and JVs in China have better export performance than private domestic firms in financially more vulnerable sectors
38	Financial frictions and product quality in international trade	Crino and Oglirari (2017)	Industry measures of financial vulnerability (asset tangibility, external-finance-dependence, capital intensity)	Financial development (private credit)	Financial development shapes comparative advantage in quality goods. The positive effect of financial development on the quality of exports is especially strong in finance-dependent sectors, in sectors with intangible assets, and capital intensive sectors
39	Role of foreign banks on trade	Claessens, Hassib, and van Horen (2017)	Industry dependence on external finance	Foreign banks from importing countries	For emerging markets, greater local foreign bank presence, especially from the importing country, is associated with higher exports in sectors more dependent on external finance
40	Employment protection and investment	Cingano, Leonardi, Messina and Pica (2010)	Sector worker reallocation intensity [average of normalized firm changes in employment in a country-industry cell]	Country employment protection legislation [OECD produced weighted average of 18 basic items]	EPL reduces investment in high reallocation- relative to low reallocation-sectors
41	Volatility, labour market flexibility and specialization	Cunat and Melitz (2012)	Volatility of firm output growth [standard deviation of annual growth rate of firm sales]	Country labour market flexibility [hiring-costs, firing costs, and restrictions on changing working hours as captured by World Bank index]	Exports of countries with more flexible labor markets are biased towards high-volatility sectors
42	Labor relations and family firms	Mueller and Philippon (2011)	Industry labor intensity	Labor market regulation (cooperative labor relations)	Sclerotic labor market regulation and institutions increase the share of family firms in labor intensive sectors
43	Labour markets, education and trade	Tang (2012)	Industry firm-specific skill intensity [estimated from Mincer wage regression with interaction of worker job tenure with industry dummy]	Country labour market protection	Countries with more protective labour laws export more in firm-specific skill intensive sectors at both intensive and extensive margins
44	Labour market institutions and innovation	Griffiwth and Macartney (2014)	Industry propensity to adjust to external labour market [layoff rate for 3-digit industry above or below the median layoff rate]	Country employment protection legislation [weighted sum of sub-indicators for regular and temporary contracts and collective dismissals]	Fewer radical innovations are done by high-layoff industries in countries with high EPL

#	Topic	Paper	Industry Characteristic	Country Characteristic	Main Finding
45	Pollution and comparative advantage	Broner, Bustos, and Carvalho (2016)	Industry pollution intensity [EPA-computed total air pollution per unit of output]	Country laxity of air pollution regulation [proxied by outcome measure: grams of lead content per liter of gasoline]	Countries with laxer environmental regulation have a comparative advantage in polluting industries
46	Natural resources and comparative advantage	Debaere (2015)	Sector water intensity [sector water withdrawals both direct and indirect (inputs) from US Geological Survey]	Country water resources [volume of renewable fresh water per capita]	Relatively water abundant countries export more water-intensive products
Other Applications					
47	Vertical vs horizontal, intra vs inter industry FDI	Alfaro and Charlton (2009)	Industry skill intensity [ratio of non-production to total workers]	Country skill abundance [average years of schooling]	Vertical FDI appears driven by comparative advantage at 2-digit level but not at 4-digit level
48	Boundaries of the firm	Costinot, Oldenski and Rauch (2011)	Sector task-routineness [importance of “making decisions and solving problems” for occupations within sectors]		Less-routine sectors have a higher share of intra-firm trade
49	Sourcing of goods of different complexity	Carluccio and Fally (2012)	Product complexity [measured with different indicators of R& D expenditures]	Country financial development [private credit to GDP]	Complex goods are more likely sourced from more financially developed countries
50	Offshoring	Basco (2014)	Industry R&D intensity [average industry R&D expenditure]	Country financial development [share of domestic credit to private sector over GDP]	More R&D intense industries use more intermediate inputs (offshore more) in more financially developed countries
51	Infrastructure and FDI	Blyde and Molina (2015)	Industry dependence logistic services [firm-in-industry willingness to pay for air shipping to avoid an additional day of ocean transport]	Country logistic infrastructure [number of ports and airports above a certain size normalized by country population]	Countries with better logistic infrastructure attract more vertical FDI in more time-sensitive industries
52	Corruption and innovation	Paunov (2016)	Industry usage intensity of quality certificates and patents [share of firms holding quality certificates; fractional patent count to value added]	Country corruption [share of firms reporting gift required to obtain operating license]	Firms in industries with greater reliance on quality certificates own less such certificates in more corrupt countries

#	Topic	Paper	Industry Characteristic	Country Characteristic	Main Finding
53	Technology on outsourcing and production fragmentation	Fort (2017)	Industry use of advanced design and manufacturing software	Electronic networks at the firm level	firm's adoption of communication technology is associated with an increase in its probability of fragmentation. The effect of firm technology is higher, relative to the mean, in industries with production specifications that are easier to codify in an electronic format
54	Regulation and entry	Klapper, Laeven, and Rajan (2006)	Industry natural propensity to high entry [fraction of firms in industry that is one or two years old]	Country entry regulation [cost of business registration; in per capita GNP, time, or procedures]	Costly regulations reduce firm creation, especially in industries with naturally high entry
55	Determinants of vertical integration	Acemoglu, Johnson, and Mitton (2009)	Industry capital intensity as a proxy for vulnerability to holdup problems [fixed assets to sales]	Country-level contracting costs [procedural complexity, contract enforcement procedures, legal formalism]	Firms in more capital-intense industries are more vertically integrated in countries with higher contracting costs
56	Competition and Ownership Structure	Bena and Xu (2017)	Industry external finance sensitivity	Change in import penetration at the country-industry level	The effect of competition on ownership dispersion is higher is larger in sensitive to external finance sectors
57	Regulatory reforms and short-term employment costs	Bassanini and Cingano (2019)	Industry worker dismissal rate (in the US)	Employment protection legislation and product market regulation and business cycle conditions	Employment in dismissal-intensive sectors falls considerably more in years of labor and product market reform
58	Uncertainty and Total Factor Productivity	Choi, Fuceri, Huang, and Loungani (2018)	Sectoral dependence of external finance and industry asset tangibility	Uncertainty (based on stock market volatility)	Uncertainty reduces productivity in external-finance-dependence sectors and sectors with intangible assets
59	Aid and manufacturing growth	Rajan and Subramanian (2011)	Industry sensitivity to exchange rate appreciation [industry ratio of exports to value above or below the median]	Country receipts of foreign aid	Industries more sensitive to exchange rate appreciations grew relatively more slowly in countries receiving larger aid inflows
60	Aid and firm growth	Chauvet and Ehrhart (2018)	Industry reliance on exports, contract intensity, extremal-finance-dependence, transport-intensity, and reliance on electricity	Foreign aid	Aid spur firm growth in external finance dependent sectors and industries that use intensively electricity and rely on transportation infrastructure
61	The legacy of Africa's slave trades on finance	Pierce and Snyder (2017)	Industry dependence on sales credit	Slave trades as a share of country land area	Lower firm credit in sectors that depend on intensively on sales credit

#	Topic	Paper	Industry Characteristic	Country Characteristic	Main Finding
62	The legacy of Africa's slave trades on firm's financial constraints and investment	Levine, Lin, and Xie (2018)	Industry dependence on external finance and sectoral capital intensity	Slave trades as a share of countries' land area and population	Firms in countries affected the most from African slave trades get lower levels of bank credit (for investment and working capital); this effect is especially strong for firms in capital intensive and external finance dependent sectors
63	International financial flows and growth	Aizenman and Sushko (2011)	Industry dependence on external finance	Portfolio equity, debt, and FDI inflows in country c at time t	Equity inflows have negative aggregate growth impact but positive impact in more financially constrained industries; FDI inflows have positive impact, both at the aggregate level and more external finance dependent industries
64	Human capital and trade	Bombardini, Gallipoli, and Putato (2012)	Industry skill substitutability [residual wage dispersion; rankings on teamwork, impact on co-woker output and communication / contact]	Country skill dispersion [within-country standard deviation of log scores on standardised tests]	Countries with more dispersed skill distributions export more in sectors with high substitutability of workers' skills
65	Business risk and growth	Michelacci and Schivardi (2013)	Sector idiosyncratic risk [sectoral component of volatility of firm stock returns]	Country lack of diversification opportunities [importance of family firms in the economy; share of widely held firms in the economy]	OECD countries with low levels of risk diversification opportunities perform relatively worse in sectors with high idiosyncratic risk
66	Capital account opening and inequality	Larrain (2014)	Industry dependence on external finance and capital-skill complementarity [external financial dependence as Rajan and Zingales (1998); capital intensity elasticity of skilled wage share]	Timing of country capital account opening	Capital account opening increases sectoral wage inequality, particularly in industries with both high external finance dependence and strong capital-skill complementarity
67	Intellectual property rights and innovation	Aghion, Howitt, and Prantl (2015)	Industry reliance on patents [R&D expenditure to nominal value added; patent count]	EU wide product market reform interacting with country-level strength of patent rights [data on patent law reforms]	1992 EU product market reform led to more innovation in countries with stronger patent protection and in particular in industries relying more on patents

#	Topic	Paper	Industry Characteristic	Country Characteristic	Main Finding
68	Entry and access to finance	Cetorelli and Strahan (2006)	Industry external financial dependence	Degree of concentration in local banking markets [two policy variables on within-state branching and inter-state-banking restrictions; deposit Herfindahl concentration index]	Sectors with greater external financial dependence have larger and fewer firms in more concentrated local banking markets
69	Real effects of banking deregulation	Bertrand, Schoar, and Thesmar (2007)	Industry reliance on bank financing [all debt excluding trade credit and bonds over total outside financing (debt and book value of equity)]	Before/after 1985 French bank reform	Industries more reliant on bank financing before 1985 deconcentrated and experienced faster employment growth post bank-reform
70	Corporate tax reform and growth	Hsieh and Parker (2007)	Industry dependence on external finance	Before / after 1984 Chilean corporate tax reform	Post-reform investment boom occurred primarily in industries more dependent on external finance
71	Credit constraints and cylicality of R&D investment	Aghion, Askenazy, Berman, Cette, and Eymard (2012)	Industry dependence on external finance or asset tangility	Business cycle in France	For industries more reliant on external finance or with low asset tangibility, R&D investment is countercyclical without credit constraitns, and becomes pro-cyclical with tighter credit constraints
72	Institutions and trade in China	Feenstra, Hong, Ma, and Spencer (2013)	Industry reliance on contracts [from Nunn (2007), differentiation of intermediate inputs]	Cross-provincial variation in institutional quality in China [court efficiency as measured by overall quality, delays of verdicts and court costs]	Institutions matter more for processing trade and foreign firms, both of which rely more on contracts
73	Firm growth and access to finance in Morocco	Fafchamps and Schündeln (2013)	Sectoral growth opportunities [value added growth 1998-2003]	Local bank availability [dummy = 1 if local commune has a bank]	Firms in sectors with better growth opportunities grow faster in localities with bank availability
74	Unemployment, recessions and financing constraints	Duygan-Bump, Levkov, and Montriol-Garriga (2015)	Industry dependence on external finance	US recessions 90-91, 2001, 2007-2009	Workers in small firms are more likely to become unemployed if they work for firms in industries with high dependence on external finance during recessions in which loan supply contracts
75	Trade credit chains and corporate failure	Jacobson and von Schedvin (2015)	Industry dependence on external finance and liquidity [latter measured by inventory/ sales ratio]	Failure of trade credit debtors in Sweden	Propagation of corporate failure from trade-debtor to creditor is particularly severe in finanically constrained industries

#	Topic	Paper	Industry Characteristic	Country Characteristic	Main Finding
76	Trust, firm organization, and comparative advantage	Cingano and Pinotti (2016)	Industry need on delegation in the production process	Trust	European countries with higher mean levels of trust export more and specialize more in delegation-intensive sectors. Also Italian regions with high levels of trust specialize in delegation-requiring sectors