Credit Composition, Output Composition, and External Balances

Roumeen Islam

WORLD BANK GROUP

Europe and Central Asia Region

June 2017

Abstract

This paper builds on recent research examining the impact of finance on economic outcomes. Specifically, it asks whether credit extended to households and firms has an impact on the share of exports in gross domestic product and on the trade balance. The analysis finds that although household credit is not positively related to export shares or trade balances, firm credit is significantly related to both. The relationship with export shares is particularly strong and robust. Higher shares of credit going to firms means a higher export share in gross domestic product and stronger trade balances (any effect of credit on imports

is subsumed by the larger effect on exports). Household credit has a negative or insignificant relationship with the trade balance and the share of exports in gross domestic product. Credit may also affect the choice between types of goods produced domestically, not just whether they are produced for export or domestic consumption. The paper finds that household credit has a negative relationship with the share of manufacturing in gross domestic product. Firm credit is positively associated with the share of manufacturing in gross domestic product, while the share of services does not seem to be affected by either.

This paper is a product of Europe and Central Asia Region. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The author June be contacted at rislam@worldbank.org.

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

Credit Composition, Output Composition, and External Balances

Roumeen Islam¹

JEL classification: F65, F40, G01, O16, O47

¹ rislam@worldbank.org. Zhoudan Xie provided excellent research assistance.

A substantial amount of research has been done on the impact of the financial system on economic outcomes since the 2008 financial crisis. Attention has mostly been focused on the financial system's contribution to productivity, innovation and growth on the one hand, and to the nature of recessions accompanying financial busts on the other. Related to the latter strand of study is the impact of financial sector activities on economic volatility, another area that has been of interest. The benefits of deep financial systems in supporting growth has long been recognized in both theoretical and empirical economics. Policy makers have supported enhanced access to credit for households as well as firms, with a view to support consumption smoothing and investment decisions by households. More recently, research has focused on whether finance in all forms supports growth and whether fast growing financial sectors support growth in all contexts or only under certain conditions. Researchers have asked whether certain financial sector activities should be constrained or regulated differently or whether growth of overall credit should be slowed because (a) the resource allocation that occurs in certain contexts is not productivity or growth enhancing, or (b) because the economywide cost risks associated with financial activities outweigh the benefits of individual risk-taking.

This paper examines whether credit to different types of borrowers, namely, households and firms, has differential effects on external balances. The reason for the differential effects would spring from the presumption that households and firms tend to borrow for distinct purposes. Households primarily borrow for consumption² while firms would borrow for production, part of which might be exported. In the first instance, therefore, trade balances would tend to be more negatively affected by consumer credit, while export shares to GDP would not be affected, or would be affected negatively if credit is diverted to imports for consumption. Part of firm credit may support export related activities, though overall, the effect is ambiguous. Rising credit may affect domestic demand to such an extent that the export facilitating effect is subsumed by the import effect.

This paper builds on recent research that examines the link between financial systems and economic outcomes by extending the types of outcomes affected by finance and also by distinguishing by borrower type. The paper uses panel data covering 42 countries over the period

² Though they may "borrow" to purchase other financial assets.

1964-2013, using 2SLS estimations. The paper finds that the composition of borrowers – whether they are households or firms – matters in terms of how credit affects economic outcomes.

Related Literature

This paper builds on studies that analyze the impact of financial activity on growth and volatility. Studies on finance and growth are plenty. Levine (2005) and Demirguc-Kunt and Levine (2008) discuss the many channels through which finance supports economic activity, including through higher investment, supporting innovation, and enabling consumption smoothing and risk sharing. They discuss both theoretical and empirical papers that demonstrate how finance supports growth. King and Levine (1993), Levine et al (2000), Rousseau and Wachtel (2000), and Beck et al (2000) also discuss the impact of finance on growth. Rajan and Zingales (1998) and Demirguc-Kunt and Maksimovic (1998) use industry and firm level data to explore the positive impact of finance on growth. More recently, Levine and Warusawitharana (2014) find that external finance supports productivity growth in their sample of European countries.

However, a number of recent papers revisit the finance-growth relationship and find more nuanced effects. Gazdar and Cherif (2015), looking at countries in the Middle East and in North Africa, find that finance is more likely to support growth in good institutional contexts. Demetriades and Law (2006) find that financial development has larger effects on GDP per capita when the financial system is imbedded within a sound institutional framework. Barajas et al (2013) find that the beneficial effect of financial deepening on growth varies across countries; lower income countries benefit less because their regulatory and supervisory systems are less developed. Aizenman, Yinjark and Park (2015) find a nonlinear effect of finance and growth and an uneven effect across sectors. They compare East Asia and Latin America, concluding that both the quantity and quality of finance matter in determining the impact of finance on economic activity. When the financial system channels resources to the most productive sectors of the real economy, then growth in finance and real output is expected to be positively correlated. Arcand et al (2012) find that there is a threshold size for the financial sector beyond which finance does not have a positive impact on growth. Shen and Lee (2005) show that stock market development has a positive effect on growth but banking development does not; they find that the conditioning variables of financial liberalization, high income level and good shareholder protection mitigate the negative effects of banking development on growth. Cecchetti and Kharroubi (2012, 2015) find that the impact of

finance on growth is nonlinear (very large financial sectors can have a negative relationship with growth) and that a fast growing financial sector has a negative impact on aggregate productivity growth. In their theoretical model, this is because (a) low productivity (and high collateral) projects are more likely to be financed by banks seeking collateral, and (b) the financial sector may take away human resources from more productive sectors. Their empirical work covers advanced economies.

Few papers have differentiated between the impact of credit going to households versus firms. Yet in recent times, there has been increasing attention given to the fast increases in household credit (that have occurred in US and some European credit markets). Much of credit to households is mortgage credit, a type of credit that increases relative to enterprise credit during asset price booms, but other credit has also increased. There is an ongoing move to support further financial inclusion, that is, not just providing consumers with a savings source, but also facilitating the extension of household credit, as a means of improving welfare.

Theory is ambiguous with respect to the effect of higher household credit on growth. Results vary according to whether it is assumed (or demonstrated) that higher household credit raises consumption and lowers savings (and therefore investment), or whether it raises investment, for example in human capital. The former scenario is analyzed by Jappelli and Pagano (1994), while the latter is made by Galor and Zeira (1993) and De Gregorio (1996). For the period 1994-2005, Beck et al (2012) analyze the relationship between household credit and growth empirically. Examining the contribution of household credit to economic growth, they find that household credit has no positive relationship with growth, but that firm credit does. Moreover, enterprise credit growth is associated with faster reductions in income inequality, while household credit is not. BIS (2006) discusses the implications of rising household credit for financial and macroeconomic stability in mature markets. IMF (2006) highlights the additional risks associated with rapid household credit growth in emerging markets, where weaknesses in financial institutions and regulatory capacity can heighten risks. The IMF report concludes that access to credit should be accompanied by measures to enhance resilience and safety of the financial system. BIS (2006) examines the rise of housing finance pre-2008, raising concerns about the rise of subprime mortgages. It highlights the important role that governments play, particularly through tax and subsidy systems for housing and land, in affecting housing market developments, and

documents the rise of borrowing/lending for houses. Both the IMF and BIS papers focus on risks – for example debt-financed household borrowing leading to larger current account deficits on the one hand, and excessive borrowing in situations where there is little regulation to protect households or banks from taking on risks that they are unable to manage.

The link between financial development and trade and/or exports has been studied in previous papers. For example, Beck (2002, 2003) investigates whether financial development translates into comparative advantage for industries that use external finance. Using industry-level data, he finds that countries with better developed financial systems have higher export shares and trade balances. His paper follows the notions developed in Kletzer and Bardhan (1987) and Baldwin (1989) in which financial markets are a source of comparative advantage, particularly in industries with higher external financing needs. Some papers examine the role of financial constraints in explaining trade patterns in the wake of the recent financial crisis and come to varying results. Amiti and Weinstein (2011), Ahn et al (2011), and Chor and Manova (2012) conclude that credit frictions contributed substantially to the collapse in trade. Levchenko et al (2010) and Eaton et al (2011) do not find significant impacts of the credit channel. Coban (2015) finds finance to be important in supporting exports in Turkey. Contessi and Nicola (2013) review the literature on the role of finance in international trade and, after accounting for the heterogeneity in methodologies, measures of access to and dependence on finance, and find an important impact of finance on trade, particularly at the extensive margin.

Building on this theoretical and empirical research, this paper researches the relationship between borrower composition, external balances and GDP composition. It expands earlier research on the topic.

Data and Methodology

The data for household and firm credit are taken from the Bank for International Settlements (BIS). Most regressions cover the period 1964-2013, for 42 countries. All other data sources and time periods are described in the annex, Table A1. The relationships are estimated using OLS and 2SLS, though only the 2SLS versions are shown.

Table 1A below shows indicators of financial sector development from 1994-2013, using credit ratios to GDP as the measure of financial sector development. The period before the most

recent financial boom (1994-2005) and the period covering the boom, crisis and recovery periods (2006-2013) are separated. The average for the entire period is shown in Annex Table A2. As the table shows, total credit to GDP increased in all countries in the sample, save five (Argentina, Germany, Japan, Mexico, and Thailand), and in some cases, substantially, for example, Denmark, Ireland, Luxembourg and Spain, to name a few. In about a quarter of the sample (11 countries), the share of household credit in total credit has remained the same or fallen, when comparing the two periods. Interestingly, the countries in which the share of total credit has fallen are not the same countries where the share of household credit in total credit has fallen (save Germany). Examining the scatterplot of the household credit share against GDP per capita over the two periods (Figure 1A) shows a mostly unchanged association between the pre- and post-boom periods. In contrast, the association between nonfinancial corporation credit share and GDP per capita is stronger in the post-boom period than before.

Table 1B shows how real credit evolved in the years immediately preceding and following the financial crisis of 2008 (average of annual growth rates of real credit). The household credit booms of China (56% growth), the Russian Federation (53% growth) and Turkey (40% growth) during 2004-2008 are remarkable. Other countries with credit growth equal to or above 15% are Argentina, Brazil, the Czech Republic, Greece, Hungary and Poland.³ Interestingly, during the same period, growth rates for firm credit were much lower in comparison. For example, real credit growth to firms was only 9% in China, 19% in Russia and 18% in Turkey. Firm credit growth was lower than 10%, in some cases, much lower, in the other countries that saw large increases in household credit growth. Correspondingly, household credit growth rates were generally lower in the years including, and since, 2009, so that the mean decline in growth rates over all countries (average of the 2009-2013 column below) is 7% for household credit and 5% for firm credit. The changing composition of credit, reflecting different spending patterns, might be expected to have substantial impacts on the economy. These impacts may show in the composition of GDP as well as in external balances, aspects that are analyzed in this paper.

³ If looking over a longer timeframe (1994-2005), Chile, Indonesia, and Saudi Arabia join this group.

Table 1A: Financial sector development and credit composition across countries (%), 1994-2013

Country Name	Country Code	1994-2005					2006-2013				
		Total Credit/ GDP	HH Credit/ GDP	NFC Credit/ GDP	HH/ Total Credit	NFC/ Total Credit	Total Credit/ GDP	HH Credit/ GDP	NFC Credit/ GDP	HH/ Total Credit	NFC/ Total Credit
Argentina	ARG	37	5	32	14	86	20	5	15	25	75
Australia	AUS	135	72	63	53	47	184	109	75	59	41
Austria	AUT	122	45	77	37	63	145	53	92	37	63
Belgium	BEL	133	39	94	29	71	189	51	138	27	73
Brazil	BRA	36	9	27	25	75	54	17	37	31	69
Canada	CAN	152	62	90	41	59	178	87	91	49	51
Chile	CHL	108	24	84	22	78	112	32	80	29	71
China	CHN	-	-	-	-	-	140	24	116	17	83
Czech Republic	CZE	71	10	61	14	86	80	27	53	34	66
Denmark	DNK	165	88	77	53	47	249	131	118	53	47
Finland	FIN	121	35	86	29	71	162	58	104	36	64
France	FRA	131	35	96	27	73	163	51	112	31	69
Germany	DEU	123	67	56	54	46	114	59	55	52	48
Greece	GRC	54	17	37	31	69	120	58	62	48	52
Hong Kong SAR, China	HKG	163	53	110	33	67	211	57	154	27	73
Hungary	HUN	59	10	49	17	83	118	33	85	28	72
India	IND	-	-	-	-	-	57	9	48	16	84
Indonesia	IDN	26	9	17	35	65	30	14	16	47	53
Ireland	IRL	153	66	87	43	57	286	103	183	36	64
Israel	ISR	109	37	72	34	66	122	38	84	31	69
Italy	ITA	80	23	57	29	71	120	41	79	34	66
Japan	JPN	200	72	128	36	64	171	66	105	39	61
Korea, Rep.	KOR	145	54	91	37	63	174	77	97	44	56
Luxembourg	LUX	260	41	219	16	84	389	52	337	13	87
Malaysia	MYS	-	-	-	-	-	119	58	61	49	51
Mexico	MEX	33	10	23	30	70	31	14	17	45	55
Netherlands	NLD	201	78	123	39	61	239	115	124	48	52
New Zealand	NZL	140	61	79	44	56	181	90	91	50	50
Norway	NOR	162	59	103	36	64	214	79	135	37	63
Poland	POL	38	9	29	24	76	69	30	39	43	57
Portugal	PRT	137	53	84	39	61	212	89	123	42	58
Russian Federation	RUS	29	2	27	7	93	53	12	41	23	77
Saudi Arabia	SAU	37	10	27	27	73	44	10	34	23	77
Singapore	SGP	107	39	68	36	64	112	48	64	43	57
South Africa	ZAF	-	-	-	-	-	72	40	32	56	44
Spain	ESP	118	45	73	38	62	207	81	126	39	61
Sweden	SWE	147	49	98	33	67	216	74	142	34	66
Switzerland	CHE	180	107	73	59	41	193	112	81	58	42
Thailand	THA	124	45	79	36	64	100	53	47	53	47
Turkey	TUR	23	3	20	13	87	49	16	33	33	67
United Kingdom	GBR	134	68	66	51	49	179	92	87	51	49
United States	USA	133	73	60	55	45	158	90	68	57	43

Data are not available for some countries during 1994-2005 (indicated with "-").

Source: BIS Statistics. Household (HH) credit and nonfinancial corporation (NFC) credit to GDP are respectively total credit to households and nonfinancial corporations from all sectors as a ratio to GDP.

Table 1B: Average growth rate in real credit (%), 2004-2013

Country Name	Country Code	Average Annual Growth Rate (%) in Real HH Credit			Average Annual Growth Rate (%) in Real NFC Credit		
		2004-2008	2009-2013	Difference*	2004-2008	2009-2013	Difference*
Argentina	ARG	27.5	17.0	-10.5	-4.7	9.1	13.8
Australia	AUS	2.2	7.7	5.5	4.8	3.4	-1.4
Austria	AUT	1.8	1.6	-0.2	1.2	3.1	1.9
Belgium	BEL	3.6	5.1	1.4	3.3	3.4	0.1
Brazil	BRA	15.6	19.9	4.2	-0.2	12.8	13.0
Canada	CAN	4.4	6.9	2.5	-0.3	6.8	7.2
Chile	CHL	8.2	12.2	4.0	0.5	11.2	10.7
China	CHN	56.0	25.4	-30.5	8.8	19.4	10.6
Czech Republic	CZE	17.6	5.6	-11.9	2.1	4.9	2.9
Denmark	DNK	5.4	1.2	-4.2	7.8	-0.1	-7.9
Finland	FIN	7.1	5.2	-1.9	3.8	2.9	-0.9
France	FRA	4.8	4.7	-0.1	1.0	3.7	2.7
Germany	DEU	-5.0	1.2	6.2	-3.1	1.9	5.0
Greece	GRC	16.3	-2.4	-18.8	7.2	-4.8	-12.0
Hong Kong SAR, China	HKG	1.4	5.3	4.0	10.8	9.3	-1.5
Hungary	HUN	15.1	-3.3	-18.4	6.1	2.2	-3.9
India	IND	-11.1	6.2	17.4	-0.5	11.8	12.4
Indonesia	IDN	12.4	15.3	2.9	6.5	14.2	7.7
Ireland	IRL	12.1	-1.4	-13.5	14.8	4.5	-10.3
Israel	ISR	2.4	7.3	4.8	3.8	3.3	-0.5
Italy	ITA	5.5	2.0	-3.5	3.0	0.6	-2.3
Japan	JPN	-0.3	-4.0	-3.7	0.7	-5.0	-5.7
Korea, Rep.	KOR	3.5	8.9	5.4	4.6	7.6	3.0
Luxembourg	LUX	6.1	7.1	1.0	22.9	5.2	-17.7
Malaysia	MYS	1.0	10.1	9.1	3.1	4.5	1.5
Mexico	MEX	9.9	7.9	-2.0	3.2	9.8	6.6
Netherlands	NLD	3.1	1.3	-1.8	-1.3	1.3	2.6
New Zealand	NZL	2.7	6.6	3.8	3.0	3.4	0.4
Norway	NOR	5.1	10.6	5.4	9.0	4.8	-4.2
Poland	POL	20.7	12.4	-8.3	5.0	10.7	5.7
Portugal	PRT	3.2	-0.9	-4.1	2.0	2.2	0.2
Russian Federation	RUS	53.0	14.4	-38.6	18.5	6.1	-12.4
Saudi Arabia	SAU	11.6	6.9	-4.7	27.3	1.0	-26.3
Singapore	SGP	3.6	11.5	7.8	6.5	6.8	0.3
South Africa	ZAF	-	2.6	-	-	1.7	-
Spain	ESP	8.7	-2.5	-11.1	9.3	-2.5	-11.8
Sweden	SWE	3.1	10.1	6.9	5.0	5.9	0.9
Switzerland	CHE	1.1	5.1	4.0	3.4	5.5	2.1
Thailand	THA	4.2	11.7	7.5	-0.5	4.5	5.0
Turkey	TUR	40.5	16.6	-23.9	17.8	14.3	-3.5
United Kingdom	GBR	0.3	4.1	3.9	1.1	2.8	1.7
United States	USA	4.5	-2.2	-6.7	5.1	-0.5	-5.6

*: Difference is the percentage point change between the average annual growth rates of 2004-2008 and 2009-2013.
Source: Household (HH) and Nonfinancial Corporation (NFC) credit measured in billion US\$ at current prices is from BIS Statistics. It is converted to constant LCU using exchange rates from IMF International Financial Statistics and the consumer price index from BIS Statistics.

Tables 2 and Figures 1A and 1B show the changing correlation between household and firm credit and GDP per capita during different time periods. While there is variation across countries, there is substantial correlation between income level, trade openness, financial openness and credit growth relative to GDP, especially for firms. This correlation changes over time. For example, the correlation coefficient between NFC credit and GDP per capita during the period before the credit boom was 0.51 and had jumped to 0.69 during the period 2004-2013. At the same time, the correlation with trade and financial openness increased substantially for NFC credit, but not for credit to households. Clearly, other factors besides openness became more important in later years in terms of determining household access to credit;^{4, 5} for example, a housing market boom or other factors increasing credit, such as a period of “excess” global liquidity.

Table 2: Pearson’s Correlation Coefficients by Time Period, 1964-2013

1964-2013			
	Total Credit	HH Credit	NFC Credit
HH Credit	0.797*		
NFC Credit	0.916*	0.496*	
GDP per Capita	0.740*	0.673*	0.629*
Trade Openness	0.352*	0.138*	0.416*
Financial Openness	0.461*	0.081*	0.628*
1964-2003			
	Total Credit	HH Credit	NFC Credit
HH Credit	0.807*		
NFC Credit	0.907*	0.519*	
GDP per Capita	0.673*	0.711*	0.506*
Trade Openness	0.211*	0.076*	0.260*
Financial Openness	0.249*	0.064	0.341*
2004-2013			
	Total Credit	HH Credit	NFC Credit
HH Credit	0.759*		
NFC Credit	0.920*	0.445*	
GDP per Capita	0.777*	0.631*	0.690*
Trade Openness	0.365*	0.063	0.465*
Financial Openness	0.537*	0.025	0.731*

Total credit, HH credit and NFC credit are ratios to GDP. GDP per capita are in constant 2010 US\$. * indicates significance at 5% level.

⁴ The data on household credit shares were compared with that in a recent paper by Beck et al (2012) for the period 1994-2005. For the countries that overlap, the Beck et al figures are usually larger. However, the averages for the period 1994-2013 (used in this paper) are generally substantially larger for several countries than their averages, reflecting the fact that these ratios rose over time.

⁵ Note that only four countries (Italy, Japan, Republic of Korea, and United States) have data beginning in 1964. The correlations and regressions (not shown) are also done for the period 1994-2013.

Figure 1A: Household credit share with GDP per capita, 1994-2013*

*: Estimated slopes of the regression lines are 0.00093 for the period of 1994-2005, and 0.00091 for the period of 2006-2013. The difference between the two slopes is not statistically significant.

Figure 1B: Nonfinancial corporation credit share with GDP per capita, 1994-2013**

** : Estimated slopes of the regression lines are 0.00133 for the period of 1994-2005, and 0.00172 for the period of 2006-2013. The difference between the two slopes is statistically significant at the 10% level.

Model and Results

The relationship between borrower type and output type and external balances is examined using the following equation:

$$(1) \text{ Export share to GDP} = a + b \ln(\text{initial GDP p.c}) + c \ln(\text{household credit/GDP}) + d \ln(\text{firm credit/GDP}) + e \text{ DVFC} + f(\text{financial openness}) + g(\text{DVCX}) + h(\text{foreign direct investment}) + iZ$$

where Z encompasses additional control variables, including the terms of trade, the exchange rate, an interaction term with initial GDP per capita and the log of private credit, institutions, and

inflation, among others. DVFC is a dummy variable representing the proportion of years in a banking crisis. DVCX is a dummy variable that takes the value 1 if the country is a commodity exporter. The relationship between the trade balance and credit is investigated using the following relationship:

$$(2) \text{ Trade balance to GDP} = a + b \ln(\text{initial GDP p.c}) + c \ln(\text{household credit/GDP}) + d \ln(\text{firm credit/GDP}) + e \text{ DVFC} + f(\text{financial openness}) + g(\text{DVCX}) + h(\text{foreign direct investment}) + i(\text{terms of trade}) + jZ$$

A number of controls are also used (as above). Table 3A below shows the estimated relationship between total private credit as a share of GDP and the export share of GDP. In almost all specifications, the relationship is significant. In specifications that control for the share of years that a country has been in a financial crisis, the estimates show a much larger effect of private credit on export shares. The financial crisis dummy variable is large and significant, as expected. As expected, foreign direct investment is positively related to the export share in GDP.

Table 3B examines how the relationship between credit and the export share may depend on borrower type. The results clearly vary depending on whether credit is provided to households or firms. Household credit is not robustly related to export shares; in several specifications, the relationship is not significant. In cases where there is a significant relationship, it tends to be negative. Providing credit to households does not support export growth, as might be expected. However, the situation is very different with credit to firms, which has a robustly significant (and substantial) impact on export shares. FDI continues to be a strong explanatory variable as does the FCDV.⁶ The effects are not small. In regression (1) of Table 3A, a 1 percent increase in total private credit as a share of GDP is associated with an estimated 0.1785 percentage-point increase in export share in GDP, holding all else constant (the average is 0.2). In regression (1) of Table 3B, a 1 percent increase in firm credit as a share of GDP is associated with an estimated 0.3873 percentage-point increase in export share in GDP, holding all else constant. The size of the coefficient is much larger than for total private credit, averaging 0.42.⁷

⁶ Note that a 1 percent increase in total private credit as a share of GDP is associated with an estimated $\beta/100$ percentage-point increase in export share in GDP, holding all else constant.

⁷ The coefficients remain substantial and significant when the shorter period, 1994-2013 is used as a robustness check. However, the coefficient size for firm credit is on average 0.32.

Table 3A: Export share and total private credit as a share of GDP

Dep. Var.: export	2SLS (1)	2SLS (2)	2SLS (3)	2SLS-FE (4)
ln_totalcredit	17.8468*** (0.004)	22.3807*** (0.000)	21.0350*** (0.000)	18.8406*** (0.002)
fdi	2.3396*** (0.005)	2.2713*** (0.004)	2.2427*** (0.004)	2.2316*** (0.004)
ln_initialgdppc	-6.8612** (0.050)	-7.7754** (0.029)	-6.8356* (0.062)	-5.0834 (0.174)
financialopenness	0.0019 (0.392)	0.0020 (0.312)	0.0020 (0.308)	0.0021 (0.296)
tot	-0.2225* (0.073)	-0.3597** (0.014)	-0.2688 (0.111)	-0.3277* (0.071)
financialcrisis		-18.4777** (0.020)	-19.1788** (0.015)	-25.1928*** (0.008)
commodityexporter			-9.0356* (0.100)	-8.6162 (0.125)
Constant	-5.1132 (0.809)	-6.2392 (0.789)	-9.3134 (0.695)	7.7618 (0.786)
Observations	141	138	138	138
R-squared	0.433	0.457	0.467	0.491
Prob > F	0.000	0.000	0.000	0.000

Regressions (1) – (3) are 2SLS regressions with legal origin and religious composition as instruments. Regression (4) is a 2SLS regression with the same instruments adding with year fixed effects. Credit variables and initial GDP per capita are in logs. All the other variables are in levels. Five-year average data are used. Robust p-values are reported in parentheses. *, **, *** respectively indicate significance at the 10%, 5% and 1% level.

Table 3B: Export share and household and nonfinancial corporation credit as a share of GDP

Dep. Var.: export	2SLS (1)	2SLS (2)	2SLS (3)	2SLS-FE (4)
ln_hhcredit	-7.7272 (0.152)	-10.1627* (0.100)	-8.7530 (0.199)	-6.4144 (0.259)
ln_nfccredit	38.7256*** (0.004)	47.9198*** (0.002)	44.8425*** (0.009)	37.3259** (0.011)
fdi	2.1595*** (0.007)	2.0675*** (0.005)	2.0680*** (0.005)	2.0645*** (0.005)
ln_initialgdppc	-6.2351 (0.117)	-6.2308 (0.133)	-6.0781 (0.152)	-4.7752 (0.265)
financialopenness	0.0005 (0.803)	0.0003 (0.879)	0.0005 (0.816)	0.0009 (0.650)
tot	-0.1562 (0.216)	-0.2651* (0.078)	-0.2306 (0.180)	-0.2975* (0.100)
financialcrisis		-20.8335** (0.012)	-20.9521** (0.011)	-27.7355*** (0.007)
commodityexporter			-4.1162 (0.540)	-4.7524 (0.434)
Constant	-63.6293* (0.099)	-78.3277* (0.082)	-73.3892 (0.105)	-39.3398 (0.345)
Observations	141	138	138	138
R-squared	0.388	0.388	0.402	0.451
Prob > F	0.000	0.000	0.000	0.000

Regressions (1) – (3) are 2SLS regressions with legal origin and religious composition as instruments. Regression (4) is a 2SLS regression with the same instruments adding with year fixed effects. Credit variables and initial GDP per capita are in logs. All the other variables are in levels. Five-year average data are used. Robust p-values are reported in parentheses. *, **, *** respectively indicate significance at the 10%, 5% and 1% level.

Table 4A explores the relationship between the trade balance and credit. In this case, private credit has a significant relationship with the trade balance, only once the years in financial crisis are accounted for with a dummy variable. However, examining the relationship between credit and the trade balance more closely by separating credit by type of borrower shows that the household credit share is consistently, significantly and negatively associated with the trade balance while the firm credit share is positively related (Table 4B).

In regression (1), a 1 percent increase in household credit as a share of GDP is associated with an estimated 0.0320 percentage-point decrease in trade balance as a share of GDP, holding all else constant; while a 1 percent increase in firm credit as a share of GDP is associated with an estimated 0.0611 percentage-point increase in the trade balance as a share of GDP, holding all else constant. Commodity exporter status has a large positive, significant association with the trade balance.⁸ While the estimates vary, the impact of firm credit on the trade balance is larger and positive, while the share of household credit is negatively related to the trade balance. Net exports and FDI are positively related, as are financial openness and net exports, though the latter are not consistently so.

External balances reflect the pattern of domestic consumption and production as well as international market forces. Thus, this paper also analyzes whether private credit provision affects the composition of GDP, apart from the impact on export shares. For this estimation, the variables normally used in growth regressions are used (as in the export share regression) with numerous control variables:

$$(3) \text{ Share in manufacturing} = a + b \ln(\text{initial GDP p.c}) + c \ln(\text{household credit/GDP}) + \\ d \ln(\text{firm credit/GDP}) + e \text{ DVFC} + f(\text{trade openness}) + g(\text{enrolment}) + \\ h(\text{foreign direct investment}) + i(\text{terms of trade}) + jZ$$

⁸ In the regressions using the shorter data set (1994-2013), the negative relationship between the trade balance and the household credit share is not robust, and the positive relationship with the firm credit share is significant only after controlling for the financial crisis dummy.

Table 4A: Trade balance as a share of GDP and total private credit as a share of GDP

Dep. Var.:	2SLS	2SLS	2SLS	2SLS	2SLS-FE
netexport	(1)	(2)	(3)	(4)	(5)
ln_totalcredit	-0.3622 (0.842)	-0.6467 (0.710)	2.0387* (0.060)	2.4446** (0.035)	2.1881** (0.042)
fdi	0.2323*** (0.005)	0.2480*** (0.004)	0.2173*** (0.007)	0.2025*** (0.007)	0.2115*** (0.007)
ln_initialgdppc	1.0143 (0.262)	1.0448 (0.227)	-0.1017 (0.877)	-0.1615 (0.824)	-0.2932 (0.660)
financialopenness	0.0009*** (0.000)	0.0009*** (0.000)	0.0009*** (0.000)	0.0009*** (0.000)	0.0009*** (0.000)
tot	0.0669** (0.050)	0.0383 (0.312)	-0.0015 (0.960)	0.0282 (0.320)	0.0012 (0.969)
commodityexporter		2.6816* (0.057)	2.6776** (0.048)		2.7274** (0.041)
financialcrisis			-1.4052 (0.311)	-1.6476 (0.230)	-1.2599 (0.443)
Constant	-6.7484 (0.361)	-3.4059 (0.620)	-8.3375 (0.134)	-12.2487** (0.037)	-8.8258 (0.134)
Observations	141	141	138	138	138
R-squared	0.346	0.366	0.390	0.363	0.397
Prob > F	0.000	0.000	0.000	0.000	0.000

Regressions (1) – (4) are 2SLS regressions with legal origin and religious composition as instruments. Regression (5) is a 2SLS regression with the same instruments adding with year fixed effects. Credit variables and initial GDP per capita are in logs. All the other variables are in levels. Five-year average data are used. Robust p-values are reported in parentheses. *, **, *** respectively indicate significance at the 10%, 5% and 1% level.

Table 4B: Trade balance as a share of GDP and household and nonfinancial corporation credit as a share of GDP

Dep. Var.:	2SLS	2SLS	2SLS	2SLS	2SLS-FE
netexport	(1)	(2)	(3)	(4)	(5)
ln_hhcredit	-3.1984*** (0.006)	-4.6973*** (0.001)	-4.2055*** (0.008)	-2.7021** (0.020)	-2.5965** (0.042)
ln_nfccredit	6.1132** (0.013)	9.7092*** (0.002)	11.8835*** (0.001)	8.4584*** (0.001)	8.4563*** (0.002)
fdi	0.1940** (0.013)	0.1926** (0.018)	0.1601** (0.033)	0.1620** (0.023)	0.1658** (0.024)
ln_initialgdppc	1.1283 (0.263)	0.8744 (0.405)	-0.1018 (0.910)	0.1052 (0.901)	-0.3430 (0.659)
financialopenness	0.0006** (0.015)	0.0004 (0.136)	0.0004 (0.159)	0.0005** (0.017)	0.0006** (0.011)
tot	0.0828** (0.014)	0.0474 (0.210)	0.0113 (0.720)	0.0475* (0.082)	0.0102 (0.736)
commodityexporter		4.4719*** (0.009)	4.3796*** (0.010)		3.8140*** (0.007)
financialcrisis			-2.0288 (0.205)	-2.1450 (0.157)	-1.9610 (0.299)
Constant	-24.2524*** (0.009)	-30.7479*** (0.002)	-34.7481*** (0.000)	-28.9522*** (0.001)	-24.8960*** (0.002)
Observations	141	141	138	138	138
R-squared	0.273	0.212	0.166	0.253	0.312
Prob > F	0.000	0.000	0.000	0.000	0.000

Regressions (1) – (4) are 2SLS regressions with legal origin and religious composition as instruments. Regression (5) is a 2SLS regression with the same instruments adding with year fixed effects. Credit variables and initial GDP per capita are in logs. All the other variables are in levels. Five-year average data are used. Robust p-values are reported in parentheses. *, **, *** respectively indicate significance at the 10%, 5% and 1% level.

First, a regression uses the share of total private credit as an explanatory variable (Table 5A). The relationship between total private credit to GDP and the share of manufacturing in GDP is positive, but the relationship is not robust, being significant in only specifications (1) and (6) below. Table 5B shows the relationship between household and firm credit shares and the manufacturing output share in GDP. Credit to firms is significantly and consistently related to the manufacturing share in GDP. However, household credit is negatively related and significant in only one specification. The coefficient sizes are relatively stable across specifications except in regression (4) where both the sample size and coefficients are smaller. To get an idea of the size of the impact, regression (1) is used. In regression (1), a 1 percent increase in firm credit as a share of GDP is associated with an estimated 0.0750 percentage-point increase in manufacturing value added as a share of GDP, and 0.0623 percentage-point change in equation (5), holding all else constant. These effects are not negligible.⁹ In terms of other variables, the share of manufacturing is inversely related to the initial level of GDP per capita. FDI shows a consistently negative relation with the share of manufacturing in value added; this association may reflect the fact that much of FDI may have been in infrastructure, including telecommunications and energy, and in construction, instead of manufacturing. However, the coefficient on the FCDV is never significant. The same exercise was conducted for the share of services in GDP. No credit variable was significantly and robustly related to the share of services in GDP.

This paper revisits the relationship between the financial sector, specifically credit, and both exports and the trade balance. It also examines whether borrower composition, proxied by the ratio of household and firm credit shares in GDP, matters for these variables. Finding that both variables are positively related to the share of firm credit in GDP, it further explores to what extent the relationship might be affected by the composition of production. It finds that while there is a positive association between manufacturing shares to GDP and firm credit, there is no evidence showing a significant relationship between the share of services and credit variables.

⁹ Similar regressions covering a subset of countries over a shorter timeframe show a less robust relationship – when the financial crisis dummy variable is added, the significance disappears.

Table 5A: Manufacturing value added as a share of GDP and total private credit as a share of GDP

Dep. Var.: manuf._share	2SLS (1)	2SLS (2)	2SLS (3)	2SLS (4)	2SLS (5)	2SLS (6)	2SLS-FE (7)
ln_totalcredit	2.4197* (0.067)	1.5264 (0.239)	2.0091 (0.110)	1.4576 (0.247)	0.9954 (0.445)	6.2060** (0.027)	0.7597 (0.554)
fdi	-0.1068** (0.010)	-0.1046** (0.016)	-0.0966** (0.020)	-0.0793** (0.046)	-0.0913** (0.026)	-0.1451*** (0.003)	-0.0985** (0.026)
enrolment	-0.0362 (0.134)	-0.0327 (0.173)	-0.0411* (0.085)	-0.0153 (0.589)	-0.0001 (0.998)	-0.0492 (0.170)	0.0220 (0.522)
ln_initialgdppc	-3.0062*** (0.000)	-2.6310*** (0.001)	-3.1220*** (0.000)	-4.0587*** (0.000)	-3.4333*** (0.000)	-5.4944*** (0.000)	-3.3768*** (0.000)
tradeopenness	-0.0158 (0.161)	-0.0130 (0.271)	-0.0206 (0.118)	-0.0282* (0.081)	-0.0148 (0.265)	0.0054 (0.693)	-0.0110 (0.425)
financialcrisis		-0.8744 (0.478)	-0.7774 (0.526)	-0.7662 (0.561)			
ln_population			-0.5342 (0.178)	-0.9563* (0.062)			
tot				-0.0970*** (0.000)	-0.0881*** (0.000)		-0.0891*** (0.000)
exchangerate						0.0408 (0.333)	
Constant	21.3094*** (0.000)	24.0256*** (0.000)	30.0359*** (0.000)	47.3383*** (0.000)	34.1718*** (0.000)	7.1932 (0.308)	31.7566*** (0.000)
Observations	169	167	167	124	126	137	126
R-squared	0.291	0.292	0.303	0.406	0.394	0.158	0.415
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Regressions (1) – (6) are 2SLS regressions with legal origin and religious composition as instruments. Regression (7) is a 2SLS regression with the same instruments adding with year fixed effects. Credit variables, initial GDP per capita and population are in logs. All the other variables are in levels. Five-year average data are used. Robust p-values are reported in parentheses. *, **, *** respectively indicate significance at the 10%, 5% and 1% level.

Table 5B: Manufacturing value added as a share of GDP and household and nonfinancial corporation credit as a share of GDP

Dep. Var.: manuf._share	2SLS (1)	2SLS (2)	2SLS (3)	2SLS (4)	2SLS (5)	2SLS-FE (6)	2SLS-FE (7)
ln_hhcredit	-1.7051 (0.131)	-1.8920* (0.093)	-1.5068 (0.191)	-1.0565 (0.308)	1.3588 (0.329)	2.1457* (0.079)	-0.2249 (0.834)
ln_nfccredit	7.4963*** (0.001)	6.8041*** (0.004)	6.2357** (0.011)	4.0814* (0.067)	6.2325** (0.019)	5.4867** (0.019)	1.8937 (0.427)
fdi	-0.1562*** (0.004)	-0.1490*** (0.006)	-0.1386** (0.011)	-0.1222** (0.012)	-0.1530*** (0.005)	-0.1359** (0.019)	-0.1086** (0.022)
enrolment	-0.0349 (0.131)	-0.0314 (0.161)	-0.0366 (0.112)	-0.0056 (0.838)	-0.0576 (0.105)	-0.0512 (0.107)	0.0141 (0.673)
ln_initialgdppc	-3.4189*** (0.000)	-3.0163*** (0.001)	-3.2188*** (0.000)	-3.5582*** (0.000)	-5.7100*** (0.000)	-6.2978*** (0.000)	-3.4586*** (0.000)
tradeopenness	-0.0251** (0.036)	-0.0224* (0.076)	-0.0253* (0.073)	-0.0206 (0.138)	-0.0003 (0.983)	0.0138 (0.336)	-0.0142 (0.341)
financialcrisis		-1.5486 (0.242)	-1.4077 (0.282)				
ln_population			-0.2769 (0.464)				
tot				-0.0790*** (0.000)			-0.0841*** (0.000)
exchangerate					0.0317 (0.470)	0.0357 (0.277)	
Constant	9.0677 (0.151)	11.2095* (0.080)	16.3257* (0.059)	26.0424*** (0.000)	7.9310 (0.284)	4.7304 (0.485)	29.0034*** (0.000)
Observations	169	167	167	126	137	137	126
R-squared	0.211	0.228	0.250	0.361	0.137	0.302	0.408
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Regressions (1) – (5) are 2SLS regressions with legal origin and religious composition as instruments. Regressions (6) and (7) are 2SLS regressions with the same instruments adding with year fixed effects. Credit variables, initial GDP per capita and population are in logs. All the other variables are in levels. Five-year average data are used. Robust p-values are reported in parentheses. *, **, *** respectively indicate significance at the 10%, 5% and 1% level.

Conclusion

This paper has examined the relationship between financial system development and macroeconomic outcomes, specifically external balances, adding to recent research on the various effects of credit on aggregate outcomes. There is a substantial theoretical and empirical literature examining the role of the financial sector in raising GDP growth and in managing risk in the economy. This literature got a substantial boost after the 2008 global financial crisis. In addition, policies to enhance the positive effects of financial system development (growth, consumption smoothing) and diminish the potentially negative consequences of financial system growth (unmanageable risks, and misallocation of resources from their most productive use, etc.) were developed and debated. These included various types of macroprudential regulation, and regulations on capital market transactions (financial system development being closely linked to cross border capital flows in recent times), and banking regulations, among others.

The paper extends existing research and finds that private credit is positively associated with the export share in GDP, the trade balance and even the share of manufacturing in output. Separating credit into household and firm credit shows that credit provided to households does not affect the export share, though credit provided to firms is strongly related to export shares. Looking at overall external balances, the relationship between private credit and the trade balance is not generally significant; however, the ratio of household credit has a significant and robust relationship with the trade balance. Household credit shares are negatively, and often significantly related to the trade balance. This is presumably because household credit provision encourages consumption of imports. Finally, part of the differential impact of household and firm credit may be through the varying effect on manufacturing shares in output. This tends to increase with the share of firm credit and is not affected by the household credit share in GDP. While these results are preliminary, they are instructive in that they suggest that the impact of credit on the economy depends on who borrows as well as other factors found in the literature by previous authors. The analysis in this paper can be refined as data over longer time periods and for more countries become available.

Annexes

Annex Table A1: Variables Definitions and Data Sources

Variable	Explanation	Time Frame	Source
Dependent Variables			
export	Exports of goods and services as a share of GDP (%)	1964-2013	WDI
netexport	Trade balance – the difference between exports and imports as a share of GDP (%)	1964-2013	WDI
manufacturing_share	Manufacturing value added as a share of GDP (%)	1964-2013	WDI
Financial Variables			
totalcredit	Total credit to the private nonfinancial sector as a share of GDP (%) (= hhcredit + nfccredit)	1964-2013	BIS
hhcredit	Total credit to households from all sectors as a share of GDP (%)	1964-2013	BIS
nfccredit	Total credit to nonfinancial corporations from all sectors as a share of GDP (%)	1964-2013	BIS
Instrumental Variables			
Legal origin: legor_uk, legor_fr, legor_ge, legor_sc	Legal origin of the company law or commercial code of the country. There are five categories: (1) English Common Law, (2) French Commercial Code, (3) German Commercial Code, (4) Scandinavian Commercial Code, (5) Socialist/ Communist Laws.	dummy	La Porta et al (1999)
Religion: religion_protestant, religion_catholic, religion_muslim	Percentage of the population of country that belonged to the three most widely spread religions in the world in 1980. There are four categories: (1) Roman Catholic, (2) Protestant, (3) Muslim, (4) Other.	dummy	La Porta et al (1999)
Control Variables			
ln_initialgdppc	Log of GDP per capita in a previous period (thousand US\$ at constant 2010 prices)	1964-2013	WDI
financialopenness	Total foreign assets plus total foreign liabilities of the country as a share of GDP (%)	1970-2011	Lane and Milesi-Ferretti (2007)
tradeopenness	Total exports plus total imports of goods and services as a share of GDP (%)	1964-2013	WDI
enrolment	Gross secondary school enrolment rate (%)	1964-2013	WDI
fdi	Foreign direct investment, net inflows as a share of GDP (%)	1964-2013	WDI
ln_population	Log of total population (thousands)	1964-2013	WDI
tot	Net barter terms of trade index (2000=100)		
exchangerate	Real effective exchange rate index (2010=100)	1964-2013	WDI
financialcrisis	The ratio of the years with banking crises to total number of years in the period	1970-2011	Laeven and Valencia (2012)
commodityexporter	=1 if the country is classified as commodity exporter by WEO October 2011, =0 if otherwise.	dummy	WEO

Annex Table A2: Average total credit and credit composition across countries (%), 1964-2013

Country Name	Country Code	Total Credit/ GDP	HH Credit/ GDP	NFC Credit/ GDP	HH Credit/ Total Credit	NFC Credit/ Total Credit
Argentina	ARG	30	5	25	16	84
Australia	AUS	129	66	63	51	49
Austria	AUT	132	48	83	37	63
Belgium	BEL	128	39	89	31	69
Brazil	BRA	44	12	31	28	72
Canada	CAN	138	57	81	41	59
Chile	CHL	111	30	81	27	73
China	CHN	140	24	116	17	83
Czech Republic	CZE	75	17	58	23	77
Denmark	DNK	198	105	93	53	47
Finland	FIN	118	36	82	31	69
France	FRA	129	35	94	27	73
Germany	DEU	107	55	52	51	49
Greece	GRC	80	33	47	41	59
Hong Kong SAR, China	HKG	177	52	125	29	71
Hungary	HUN	77	18	59	23	77
India	IND	58	9	48	16	84
Indonesia	IDN	28	12	16	42	58
Ireland	IRL	241	91	151	38	62
Israel	ISR	112	37	75	33	67
Italy	ITA	86	22	64	26	74
Japan	JPN	170	55	115	32	68
Korea, Rep.	KOR	108	37	71	34	66
Luxembourg	LUX	346	48	298	14	86
Malaysia	MYS	119	58	61	49	51
Mexico	MEX	32	11	20	36	64
Netherlands	NLD	206	85	121	41	59
New Zealand	NZL	151	66	85	44	56
Norway	NOR	166	61	105	37	63
Poland	POL	51	18	33	35	65
Portugal	PRT	140	44	96	32	68
Russian Federation	RUS	41	7	34	17	83
Saudi Arabia	SAU	40	10	30	25	75
Singapore	SGP	107	40	67	37	63
South Africa	ZAF	72	40	32	56	44
Spain	ESP	130	46	84	35	65
Sweden	SWE	153	56	97	37	63
Switzerland	CHE	187	110	77	59	41
Thailand	THA	113	46	67	41	59
Turkey	TUR	29	6	23	20	80
United Kingdom	GBR	113	55	58	49	51
United States	USA	119	62	57	52	48

Source: Bank for International Settlements Statistics.

Annex Table A3: Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Dependent Variables					
export	397	38.25889	35.97456	3.163298	223.506
netexport	397	1.515204	7.3522	-28.06513	42.13064
manufacturing_share	284	19.6104	6.592455	1.62631	39.05308
Financial Variables					
ln_totalcredit	230	4.622114	0.5946558	2.805782	6.012443
ln_hhcredit	233	3.462456	0.9557726	-1.098612	4.904089
ln_nfccredit	230	4.176697	0.5478724	2.617396	5.867714
Control Variables					
ln_initialgdppc	384	2.530398	1.24283	-1.886032	4.640225
financialopenness	352	468.8437	2106.484	18.0548	23711.4
tradeopenness	397	75.03002	68.4963	5.816363	431.9997
enrolment	344	85.93078	25.25798	18.64579	157.1274
fdi	330	3.130461	6.592679	-1.313013	84.83953
ln_population	420	10.01954	1.573442	5.807536	14.11133
tot	186	105.8028	25.65149	54.24646	266.145
exchangerate	274	101.1122	22.66005	45.94808	242.0277
commodityexporter	420	0.2857143	0.4522927	0	1
financialcrisis	369	0.1084011	0.2552916	0	1

Annex Table A4: Exogenous determinants of household credit and nonfinancial corporation credit

Dep. Var.	(1) ln_totalcredit	(2) ln_hhcredit	(3) ln_nfccredit	(4) ln_totalcredit	(5) ln_hhcredit	(6) ln_nfccredit
legor_uk	0.3484** (0.020)	0.9140*** (0.000)	0.1512 (0.312)	0.4330*** (0.001)	1.2452*** (0.000)	0.1827 (0.167)
legor_fr	0.0528 (0.717)	0.3394 (0.164)	-0.0550 (0.719)	0.2714** (0.029)	0.7066*** (0.004)	0.1703 (0.179)
legor_ge	0.3456** (0.024)	0.7814*** (0.002)	0.2050 (0.196)	0.5431*** (0.000)	1.2496*** (0.000)	0.3504*** (0.009)
legor_sc	0.4005* (0.086)	0.2757 (0.421)	0.7588*** (0.002)	0.4383** (0.012)	0.5925* (0.054)	0.6596*** (0.001)
religion_protestant	-0.0026 (0.197)	0.0028 (0.313)	-0.0082*** (0.000)	-0.0025* (0.061)	0.0026 (0.216)	-0.0068*** (0.000)
religion_catholic	-0.0032** (0.024)	-0.0035* (0.077)	-0.0028* (0.055)	-0.0027* (0.053)	-0.0027 (0.178)	-0.0023 (0.105)
religion_muslim	-0.0114*** (0.000)	-0.0192*** (0.000)	-0.0099*** (0.000)	-0.0105*** (0.000)	-0.0170*** (0.000)	-0.0096*** (0.000)
fdi	0.0080** (0.028)	0.0070 (0.133)	0.0102** (0.012)	0.0047* (0.086)	-0.0032 (0.597)	0.0068** (0.011)
ln_initialgdppc	0.3344*** (0.000)	0.4733*** (0.000)	0.2829*** (0.000)	0.2982*** (0.000)	0.3011*** (0.000)	0.2715*** (0.000)
financialopenness	0.0000*** (0.006)	-0.0000** (0.047)	0.0000*** (0.001)			
tot	-0.0028 (0.127)	-0.0024 (0.311)	-0.0026 (0.146)			
enrolment				0.0037** (0.037)	0.0112*** (0.000)	0.0020 (0.295)
tradeopenness				0.0024*** (0.000)	0.0028*** (0.009)	0.0026*** (0.000)
Constant	3.9451*** (0.000)	2.0677*** (0.000)	3.7556*** (0.000)	3.0696*** (0.000)	0.5884* (0.092)	3.0253*** (0.000)
Observations	141	141	141	203	205	203
R-squared	0.712	0.696	0.648	0.693	0.697	0.595
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000
F-stat legal origin	3.01	11.34	4.11	5.11	15.93	7.30
F-stat religion	19.37	11.12	21.38	17.97	8.96	22.26

Regressions (1) – (3) are the first stage regressions for the 2SLS regressions in column (1) of Table 3A, 3B, 4A and 4B. Regressions (4) – (6) are the first stage regressions for the 2SLS regressions in column (1) of Table 5A and 5B. Credit variables and initial GDP per capita are in logs. All the other variables are in levels. Five-year average data are used. Robust p-values are reported in parentheses. *, **, *** respectively indicate significance at the 10%, 5% and 1% level.

Annex Table A5-1: Person's correlations between export share and determinants

Variables	1	2	3	4	5	6	7	8
1. export	1							
2. ln_hhcredit	0.1827*	1						
3. ln_nfccredit	0.3417*	0.6932*	1					
4. fdi	0.6338*	0.1583*	0.3575*	1				
5. ln_initialgdp	0.2552*	0.6438*	0.5748*	0.2056*	1			
6. financialopenness	0.4917*	0.1016	0.3682*	0.6319*	0.2308*	1		
7. tot	-0.1777*	-0.2159*	-0.3196*	-0.1713*	-0.1380	-0.1314	1	
8. financialcrisis	0.0141	0.1042	0.1928*	0.1746*	0.1535*	0.1309*	0.0038	1
9. commodityexporter	-0.1669*	-0.0416	-0.2165*	-0.1099*	-0.0383	-0.1039	0.2697*	-0.0128

Person's correlation coefficients are examined using five-year average data. * indicates significance at 5% level.

Annex Table A5-2: Person's correlations between trade balance and determinants

Variables	1	2	3	4	5	6	7	8
1. netexport	1							
2. ln_hhcredit	0.1262	1						
3. ln_nfccredit	0.2399*	0.6932*	1					
4. fdi	0.3820*	0.1583*	0.3575*	1				
5. ln_initialgdp	0.2212*	0.6438*	0.5748*	0.2056*	1			
6. financialopenness	0.4373*	0.1016	0.3682*	0.6319*	0.2308*	1		
7. tot	0.0073	-0.2159*	-0.3196*	-0.1713*	-0.1380	-0.1314	1	
8. financialcrisis	0.0908	0.1042	0.1928*	0.1746*	0.1535*	0.1309*	0.0038	1
9. commodityexporter	0.1811*	-0.0416	-0.2165*	-0.1099*	-0.0383	-0.1039	0.2697*	-0.0128

Person's correlation coefficients are examined using five-year average data. * indicates significance at 5% level.

Annex Table A5-3: Person's correlations between manufacturing share and determinants

Variables	1	2	3	4	5	6	7	8	9	10
1. manuf._share	1									
2. ln_hhcredit	-0.1755*	1								
3. ln_nfccredit	-0.1717*	0.6932*	1							
4. fdi	-0.2204*	0.1583*	0.3575*	1						
5. enrolment	-0.2897*	0.5140*	0.4168*	0.1911*	1					
6. ln_initialgdp	-0.3214*	0.6438*	0.5748*	0.2056*	0.7740*	1				
7. tradeopenness	-0.1253*	0.1819*	0.3397*	0.6238*	0.1371*	0.2458*	1			
8. financialcrisis	-0.1616*	0.1042	0.1928*	0.1746*	0.1619*	0.1535*	0.0060	1		
9. ln_population	0.2458*	-0.2539*	-0.4283*	-0.2860*	-0.3174*	-0.5547*	-0.5384*	0.0243	1	
10. tot	-0.1276	-0.2159*	-0.3196*	-0.1713*	-0.0891	-0.1380	-0.1871*	0.0038	0.0288	1
11. exchangerate	0.0219	0.3859*	0.1168	-0.0592	-0.3239*	-0.2070*	-0.0238	-0.0083	0.0618	0.0922

Person's correlation coefficients are examined using five-year average data. * indicates significance at 5% level.

References

- Ahn, J., M. Amiti, and D. E. Weinstein. 2011. "Trade Finance and the Great Trade Collapse." *American Economic Review* 101(3), 298-302.
- Aizenman, J., Y. Jinjark, and D. Park. 2015. "Financial Development and Output Growth in Developing Asia and Latin America: A Comparative Sectoral Analysis." National Bureau of Economic Research (NBER) Working Paper 20917, Cambridge, Massachusetts.
- Amiti, M., and D. E. Weinstein. 2011. "Exports and Financial Shocks." *The Quarterly Journal of Economics* 126, 1841-1877.
- Arcand, J. L., .E. Berkes, and U. Panizza. 2012. "Too Much Finance?" IMF Working Paper, WP/12/161.
- Bank for International Settlements (BIS). 2006. "Housing Finance in the Global Financial Market." Committee on the Global Financial System (CGFS) Papers 26.
- Baldwin, R. 1989. "On the Growth Effects of 1992." National Bureau of Economic Research (NBER) Working Paper 3119, Cambridge, Massachusetts.
- Barajas, A., R. Chami, and S. R. Yousefi. 2013. "The Finance and Growth Nexus Re-Examined: Do All Countries Benefit Equally?" IMF Working Paper, WP/13/130.
- Beck, T. 2002. "Financial Development and International Trade. Is there a link?" *Journal of International Economics* 57, 107-131.
- Beck, T. 2003. "Financial Dependence and International Trade." *Review of International Economics* 11(2), 296-316.
- Beck, B., B. Büyükkarabacak, F. Rioja, and N. Valev. 2012. "Who Gets the Credit? And Does It Matter? Household vs. Firm Lending across Countries." *The B.E. Journal of Macroeconomics* 12(1), Article 2.
- Beck, T., R. Levine, and N. Loayza. 2000. "Finance and the Sources of Growth." *Journal of Financial Economics* 58, 261-300.
- Cecchetti, S. G., and E. Kharroubi. 2012. "Reassessing the Impact of Finance on Growth." Bank for International Settlements Working Papers 381.
- Cecchetti, S. G., and E. Kharroubi. 2015. "Why Does Financial Sector Growth Crowd Out Real Economic Growth?" Bank for International Settlements Working Papers 490.
- Chor, D., and K. Manova. 2012. "Off the cliff and back? Credit Conditions and International Trade during the Global Financial Crisis." *Journal of International Economics* 87(1), 117-133.
- Coban, S. 2015. "Does the Financial Development Spur Export Performance? Evidence from Turkish Firm-Level Data." *International Journal of Economics and Financial Issues* 5(2), 434-440.
- Contessi, S., and F. Nicola. 2013. "What Do We Know about the Relationship between Access to Finance and International Trade?" Research Division of Federal Reserve Bank of St. Louis Working Paper Series, St. Louis, Missouri.

- De Gregorio, J. 1996. "Borrowing Constraints, Human Capital Accumulation, and Growth." *Journal of Monetary Economics* 37, 49-71.
- Demetriades, P., and S. H. Law. 2006. "Finance, institutions and economic development." *International Journal of Finance and Economics* 11(3), 245-260.
- Demirgüç-Kunt, A., and R. Levine. 2008. "Finance, Financial Sector Policies, and Long-Run Growth." The World Bank Policy Research Working Paper, WPS 4469.
- Demirgüç-Kunt, A., and V. Maksimovic. 1998. "Law, Finance, and Firm Growth." *The Journal of Finance* 53(6), 2107-2137.
- Eaton, J., S. Kortum, B. Neiman, and J. Romalis. 2011. "Trade and the Global Recession." National Bureau of Economic Research (NBER) Working Paper 16666, Cambridge, Massachusetts.
- Galor, O., and J. Zeira. 1993. "Income Distribution and Macroeconomics" *The Review of Economic Studies* 60(1), 35-52.
- Gazdar, K., and M. Cherif. 2015. "Institutions and the Finance-Growth Nexus: Empirical Evidence from MENA Countries." *Borsa İstanbul Review* 15 (3), 137-160.
- International Monetary Fund (IMF). 2006. "Global Financial Stability Report: Market Developments and Issues." Accessed February 8, 2017.
<https://www.imf.org/External/Pubs/FT/GFSR/2006/02/index.htm>.
- Jappelli, T., and M. Pagano. 1994. "Saving, Growth, and Liquidity Constraints." *Quarterly Journal of Economics* 109(1), 83-109.
- King, R. G., and R. Levine. 1993. "Finance, Entrepreneurship, and Growth: Theory and Evidence." *Journal of Monetary Economics* 32, 513-42.
- Kletzer, K., and P. Bardhan. 1987. "Credit Markets and Patterns of International Trade." *Journal of Development Economics* 27, 57-70.
- La Porta, R., F. Lopez-de-Silanes, and A. Shleifer. 1999. "The Quality of Government." National Bureau of Economic Research (NBER) Working Paper 6727, Cambridge, Massachusetts.
- Laeven, L., and F. Valencia. 2012. "Systemic Banking Crises Database: An Update." IMF Working Paper, WP/12/163.
- Lane, P. R., and G. M. Milesi-Ferretti. 2007. "The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970–2004." *Journal of International Economics* 73, 223-250.
- Levchenko, A., L. T. Lewis, and L. L. Tesar. 2010. "The Role of Financial Factors in the Trade Collapse: A Skeptic's View." Research Seminar in International Economics Working Papers 616, University of Michigan.
- Levine, O., and M. Warusawitharana. 2014. "Finance and Productivity Growth: Firm-level Evidence." Finance and Economics Discussion Series Divisions of Research & Statistics and Monetary Affairs Federal Reserve Board 2014-17.

- Levine, R. 2005. "Finance and Growth: Theory and Evidence." In *Handbook of Economic Growth*, edited by P. Aghion and S. Durlauf. The Netherlands: Elsevier Science.
- Levine, R., N. Loayza, and T. Beck. 2000. "Financial Intermediation and Growth: Causality and Causes." *Journal of Monetary Economics* 4, 31-77.
- Rajan, R., and L. Zingales. 1998. "Financial Dependence and Growth." *American Economic Review* 88, 559-587.
- Rousseau, P. L., and P. Wachtel. 2000. "Inflation, Financial Development and Growth." In *Economic Theory, Dynamics and Markets: Essays in Honor of Ryuzo Sato*, edited by T. Negishi, R. Ramachandran and K. Mino. New York: Springer.
- Shen, C., and Lee, C. 2006. "Same Financial Development yet Different Economic Growth – Why?" *Journal of Money, Credit and Banking* 38(7), 1907-1944.