Brexit, the City of London, and the prospects for portfolio investment

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Abstract

This paper examines the international financial consequences of Brexit. It first provides a survey of the still limited literature on EU membership and international capital flows. It then provides new estimates of the impact of Brexit on cross-border investment utilizing data from the IMF's Consolidated Portfolio Investment Survey. It lastly provides a comparative analysis of these same issues using data on cross-border capital flows from the BIS. The conclusion is that the impact on cross-border capital flows to and from the UK is likely to be substantial.

Keywords Brexit · International capital flows · City of London · Portfolio investment

1 Introduction

The Brexit referendum has spawned a large literature seeking to analyze the implications of the United Kingdom exiting the European Union for the EU, for the global economy, and for the UK itself. By their nature, such studies are speculative. Either they must project the future on the basis of stylized analytical models, or else they must extrapolate the future from past trends and differences between EU and non-EU member states. A substantial share of such studies has focused on the impact on British foreign trade, which will be directly affected if existing trade arrangements

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do not remain in place indefinitely (see e.g. Ciuriak et al. 2015). A smaller fraction has considered the impact on foreign direct investment (Dhingra et al. 2016; Bruno et al. 2016; Simionescu 2016), since Brexit will also have consequences for the attractions of the UK as an assembly and export platform. A few such studies then move, ambitiously, from the likely consequences for these international variables to the impact on GDP and economic growth (Ebell and Warren 2016; Born et al. 2017 for example).[1]

Less attention has been devoted to the international financial implications of Brexit, even though these too may be far reaching. The City, as London's financial sector is known, employs some 2.2 million workers directly and indirectly, and accounts for more than 10% of UK GDP. The majority of transactions in euro-denominated derivatives contracts, on the order of $900 billion a day, are processed in the City by entities such as the London Clearing House. 37% of Europe's financial assets are managed by banks, insurance companies and other financial entities operating in the UK (Davies et al. 2017). By one estimate, 23% of UK financial-service revenues derive from EU-related business (European Parliament 2016).

We seek to add to the literature by examining some of the international financial consequences of Brexit. Our analysis comes in three parts. First, we provide a survey of the relatively sparse previous literature on EU membership and international capital flows. Second, building on Eichengreen (2019), we report estimates of the impact of Brexit on cross-border portfolio investment, utilizing data from the IMF's Consolidated Portfolio Investment Survey (CPIS). This allows us to contrast the impact on equity investment, long-term debt securities, and short-term debt securities, since the impact on different financial instruments need not be the same.

These data do not separate cross-border portfolio investments by type of institutional investor. But data from the Bank for International Settlements allows us to do this for separately for banks. Analyzing the BIS data using a framework comparable to that we utilize for the CPIS is the third contribution of our paper. This is important because, absent an agreement on passporting or mutual recognition of supervisory and regulatory standards, the impact of Brexit on UK-EU bank-intermediated transactions is likely to be extensive.

Following the literature survey in Sect. 2, Sect. 3 introduces the data and specification, Sect. 4 the basic results. Sections 5, 6 and 7 then consider robustness, different asset classes and bank-intermediated flows, after which Sect. 8 concludes.

2 Previous literature

Several authors have used historical data to estimate the impact of Brexit on FDI flows. Comparing the UK with a synthetic cohort of similar countries, Campos and Corcelli (2015) estimate that the UK has received 25 to 30% more net inward FDI

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[1] IMF (2016) provides a survey of studies of these macroeconomic and growth effects. The majority of these conclude that Brexit would have a negative impact on the British economy, although the IMF mentions three (Mansfield 2014; Booth et al. 2015; Minford 2016) that argue for positive effects.

since the 1970s as a result of its EU membership. Bruno et al. (2016), using modified gravity equations, conclude that fellow EU members receive FDI inflows 28% larger than other OECD countries. If this history runs in reverse, it follows that Brexit will reduce inward FDI from other OECD countries by to 22% (28/(100 + 28)).[2]

Other studies obtain similar findings. In an earlier study of the determinants of FDI stocks rather than flows, using data from the OECD and covering the somewhat earlier period 1981–2005, Straathof et al. (2008) find that EU membership raises inward FDI from fellow EU countries by 28% and inward FDI from other countries by 15%.[3] Coeurdacier et al. (2009) focus on mergers and acquisitions, as distinct from greenfield investment, and similarly find a large and significant effect of EU membership.

The one analogous study of which we are aware of portfolio capital flows is Kalemi-Ozcan et al. (2010), who limit their analysis to bank-intermediated flows.[4] Although they are centrally concerned with the impact of the adoption of the euro on the volume of flows, they also include EU membership as a control variable in order to avoid conflating the impact of the two. One specification in their on-line appendix includes an indicator variable for when both countries involved in a bilateral flow are in the euro area (and therefore necessarily in the EU), and another for when both countries are in the EU but not in the euro area. They find that bilateral bank flows are roughly twice as large as otherwise when two countries are in the EU (but not also in the euro area). The counterfactual is that inflows and outflows between the EU and the City will fall by half, other things equal, following Brexit.

Some of the authors' other findings speak to the argument that the effects of Brexit will depend on how the process and its aftermath are managed. They find that legislative and regulatory harmonization spurs cross-border bank flows, suggesting that bank-intermediated flows will fall less if the UK adopts EU financial regulations post-Brexit. They find that two measures of exchange risk – the similarity of exchange rate regimes and the stability of exchange rates—matter even more for the volume of cross-border bank flows. That the Bank of England and the ECB have similar inflation-targeting regimes is encouraging when seen in this light. But experience suggests that the stability of the sterling-euro exchange rate will depend also on other things—including presumably what happens to the volume and

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[2] All this assumes that the past is a good guide to the future, that hysteresis in financial flows is limited (that just as inward FDI rose with British accession it will now fall with Brexit), and that financial and nonfinancial FDI respond similarly (inward FDI in financial services accounting for a large share of all inward FDI for the UK than for the typical EU country). The limited evidence on this last question suggests that financial and nonfinancial FDI do in fact respond similarly (see e.g. Davies and Kileen 2015). These estimates also assume that UK financial institutions do not receive special passporting rights that are financially equivalent to membership in the Single Market and that the UK does not reach a customs union agreement with the UK, outcomes that would presumably reduce the negative impact of Brexit on capital mobility. Note that Bruno et al. find that membership in the European Free Trade Association and the European Economic Area do not substitute for access to the Single Market in terms of their implications for FDI.

[3] This study encompasses years both before and after the advent of the Single Market, enabling the authors to pursue a quasi-difference-in-differences approach.

[4] They impose this limitation for reasons of data availability.

composition of UK-EU trade—and that any consequent instability would have negative implications for portfolio capital flows.[5]

3 Data and specification

Our approach follows Straathof et al. (2008) in taking investment stocks rather than flows as the dependent variable. Data on stocks is available courtesy of the IMF's Consolidated Portfolio Investment Survey (CPIS). Portfolio investment is defined there as cross-border transactions and positions involving debt and equity securities, excluding direct investment and foreign exchange reserves. Figures in millions of U.S. dollars are available for the end of December of each year starting in 2001 and for the end of June and end of December starting in 2013. Here we use end-year (December) surveys from 2001 through 2015. We take the log of the portfolio asset stock as the dependent variable, since the CPIS guide suggests that the figures for foreign assets are more reliable than those for foreign liabilities.

An advantage of these surveys is that a substantial number of countries respond. Most previous studies have focused on a limited set of countries, OECD members for example, for data availability reasons. In contrast, we are able to consider a larger set of countries.

CPIS data also have limitations (for an early review see Lane 2006). Some countries may systematically under-report holdings because of gaps in national coverage and the complexities of tax-driven asset management structures. National authorities may not know the residency of the holder of a domestically-issued security because the securities in question are held by foreign custodians, for example. Offshore financial centers may have inflated foreign asset and liability positions insofar as they are acting as conduits for portfolio investment between other countries. Only limited information is available on the currency denomination of foreign bonds.

We report estimates of a gravity-model specification, whose arguments include the (log) GDPs of the origin and destination countries, their (log) populations, straight-line distance between their respective population centers, and whether the two countries have a common language, a common dominant religion, a common currency, and a past colonial link.[6] The common currency variable equals one when two countries that are not EU members share a currency. We include also a pair of indicator variables for when an origin or destination country is an EU member and another pair for when that EU member has not adopted the euro. The sum of the coefficients on EU membership and on a member not having adopted the euro is our estimate of the effects of Brexit.[7]

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[5] The authors also find an impact of bilateral trade for the volume of bilateral bank flows, but this effect is relatively small.

[6] Following previous literature, the common language dummy equals one when a language is spoken by at least 9 per cent of the population in both countries.

[7] One can imagine also other channels that might amplify or attenuate the effects of Brexit, such as the induced response of exchange rates and interest rates, for example. (Recall how the Bank of England took down the interest rate and allowed the sterling exchange rate to depreciate following the 2016 referendum.) Modeling these channels would, however, require ancillary assumptions about the impact on

Equations are estimated, following Hale and Obstfeld (2014), both including and dropping observations in which Luxembourg is an origin or destination country. Luxembourg is a disproportionately important third-country conduit for portfolio capital flows. Since we are considering only the asset and not also the liability side of the international financial balance sheet, including this offshore financial center, which may simply be passing through portfolio investments for third countries, could bias the results.[8]

4 Basic results

Table 1 is reproduced from Eichengreen (2019). Here we include a more extensive discussion of the coefficient estimates, followed by robustness checks and analysis of alternative data sets.

All equations include year fixed effects. Those in columns 3 and 4 include year, origin country and destination country fixed effects, and those in columns 5 and 6 include both year and country-pair fixed effects.

Most of the coefficient estimates are intuitive. Foreign assets increase with proximity, with the aggregate GDPs of the origin and destination countries, and with their per capita incomes (in addition to the coefficient on aggregate GDP being positive, the coefficient on population is negative). The stock of inward portfolio investment is larger when the two members of the country pair had a colonial relationship and when they share a common language, currency or religion.[9]

The key variables are whether or not the origin and destination countries are EU members and whether they are EU members that have not adopted the euro (it being important, as in the Kalemi-Ozcan et al. study discussed above, to distinguish EU and euro area effects). Columns 1 and 2 suggest that a destination that is an EU country and is also in the euro area will receive 53 to 71% more inward portfolio investment than an otherwise comparable country; these effects can simply be read off from the coefficients in the 13th row of the table. When that destination is in the EU but has not adopted the euro the resulting estimates range from 40 to 42% (the sum of the coefficients in the 11th and 13th rows). Adding origin and destination country fixed effects attenuates these estimates considerably, as one might expect: in columns 3 and 4 the point estimates are 12 and 13%; in columns 5 and 6, with both year and country-pair fixed effects, they are 12 and 16%.

The results in columns 5 and 6 are our most conservative estimates. They should be the most reliable, in that the inclusion of country-pair fixed effects should limit cross-section dependence of the residuals. An elasticity of 13% implies that Brexit

Footnote 7 (continued)

the exchange rate and interest rates, assumptions that would inevitably be arbitrary, historical experience providing no guidance here.

[8] In robustness checks we also estimate equations where we drop the entire set of offshore centers identified by the International Monetary Fund.

[9] The one anomaly is the sign of destination-country population.

Table 1 EU Membership, Euro Area Membership and Cross-Border Portfolio Investment Stocks

	(1)	(2)	(3)	(4)	(5)	(6)
Ln distance	−0.615***	−0.646***	−1.197***	−1.238***	−0.624***	−0.609***
	(0.013)	(0.013)	(0.013)	(0.0137)	(0.0387)	(0.0386)
lngdp_origin	2.072***	2.029***	0.456***	0.456***	1.094***	1.070***
	(0.013)	(0.013)	(0.062)	(0.0628)	(0.0337)	(0.0343)
lngdp_destination	1.292***	1.280***	0.758***	0.735***	0.990***	0.965***
	(0.010)	(0.010)	(0.050)	(0.0513)	(0.0236)	(0.0241)
lnpop_origin	−1.563***	−1.476***	−0.613**	−1.046***	−0.788***	−0.729***
	(0.013)	(0.013)	(0.296)	(0.311)	(0.0319)	(0.0329)
lnpop_destination	−0.586***	−0.542***	0.625***	0.531***	−0.401***	−0.364***
	(0.011)	(0.011)	(0.153)	(0.157)	(0.0277)	(0.0282)
Former colony	0.367***	0.362***	0.237***	0.278***	0.625***	0.611***
	(0.054)	(0.055)	(0.047)	(0.0467)	(0.182)	(0.182)
Com language	1.524***	1.616***	0.682***	0.632***	1.340***	1.472***
	(0.033)	(0.033)	(0.0319)	(0.0322)	(0.0947)	(0.0948)
Com currency	2.118***	2.318***	−0.0590	−0.121	1.987***	2.408***
	(0.147)	(0.133)	(0.134)	(0.134)	(0.547)	(0.464)
Com religion	0.404***	0.228***	1.234***	1.232***	0.520***	0.311**
	(0.043)	(0.045)	(0.0481)	(0.0504)	(0.131)	(0.133)
eu_not_euro_origin	−0.501***	−0.362***	0.0146	−0.0312	−0.0260	0.0230
	(0.034)	(0.034)	(0.158)	(0.161)	(0.122)	(0.122)
eu_not_euro_destination	−0.307***	−0.109***	−0.123	−0.0995	−0.198**	−0.128
	(0.040)	(0.041)	(0.103)	(0.107)	(0.0950)	(0.0973)
eu_origin	0.366***	0.260***	0.524***	0.524***	0.483***	0.434***
	(0.027)	(0.027)	(0.112)	(0.114)	(0.0788)	(0.0796)
eu_destination	0.709***	0.531***	0.241**	0.232**	0.314***	0.288***
	(0.031)	(0.031)	(0.0951)	(0.0989)	(0.0788)	(0.0802)
Constant	−72.82***	−71.51***	−23.63***	−21.84***	−43.25***	−42.44***
	(0.438)	(0.441)	(1.791)	(1.825)	(0.972)	(0.994)
Observations	59,246	56,375	59,246	56,375	59,246	56,375
R-squared	0.515	0.519	0.714	0.707	0.530	0.717

Cols. 1–2 include year fixed effects, 3–4 country of origin and destination fixed effects, 5–6 both year and country fixed effects. Cols. 2, 4 and 6 exclude Luxembourg

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

will reduce the inward stock of portfolio investment by 12% (13/(100 + 13)). This estimate of the impact on portfolio investment stocks is a bit lower than estimates by others of the impact on FDI stocks but in the same ballpark.

These "destination" coefficients plausibly matter most for the City's status as a financial center, since they capture the willingness of other countries to maintain portfolio investments in the UK. The coefficients on countries of origin are also of interest insofar as they permit inferences about the UK's own portfolio investments abroad, at least some of which will be intermediated by the City. Column 6 of

Table 1 suggests that an originating country is likely to have portfolio investments abroad 46% (0.434 + 0.023) greater than an originating country that is not an EU member. This implies that Brexit could reduce the outward stock of portfolio investment by as much as 30% (43/(100 + 43)).

5 Robustness

We conducted sensitivity tests to establish the robustness of these results. For example, we considered more parsimonious specifications, dropping the colonial history and common language, currency and religion variables in various combinations. The results remained unchanged.

We also interacted EU and EU-but-not-Euro-Area membership with a number of these variables to guard against the possibility that the EU and EU-but-not-Euro-Area dummies were picking up differential effects of these other country characteristics. Once more this modification of the specification did not change the results.

Given the possibility that portfolio capital flows to high- and low-income countries respond differently to circumstances and conditions, we dropped the lowest-income quintile of countries. The core findings are robust to this change.

Concerned that the presence of not just Luxembourg but also other offshore financial centers that serve mainly as conduits for portfolio flows between third countries might be biasing the results, we dropped the observations for the entire list of offshore centers identified by the IMF (2014). Results again remained essentially unchanged.

A substantial fraction of CPIS cells for flows between country pairs have values of zero. The absence of positive values is familiar from the trade literature that also adopts a gravity model framework. One customary treatment is to adopt the Heckman framework and treat the positive and zero values as differing from one another in selective ways. Appendix Table A displays the same specifications shown in Table 1, where distance, GDP and population are included in the first-stage selection equation and identification is provided by the assumption of joint normality. Heckman's lambda suggests that the correction for selectivity is appropriate. That said, the estimates are in the same ballpark as before, although levels of statistical significance vary. For example, in Table 1, columns 1–2, where year effects were included, EU-non-euro destination countries received 40–42% more inward portfolio investment; with the Heckman correction these figures rise to 58–62%. In column 6, where we provide our most conservative estimates, the analogous figure rises from 16 to 36%.

6 Results for different foreign asset classes

We next estimated selectivity-corrected models separately for equities, all debt securities, long-term debt securities and short-term debt securities. Comparing Tables B and C in the appendix suggests that EU and Euro Area membership have a larger impact on portfolio debt stocks than portfolio equity and investment fund stocks.

Columns 1 and 2 of the respective tables imply a 2–11% fall in the stock of equities but a 15–33% fall in the stock of debt securities. The largest share of financial transactions settled by the London Clearing House are in debt securities and debt-security-based derivative securities. Insofar as these estimates imply that a smaller stock of such debt securities will be held in London post Brexit, this could have a significant impact on the value of associated transactions settled there.

In contrast, there is no obvious difference in the impact of EU-non-Euro-Area membership on short-term versus long-term debt security stocks by destination. Stocks of both held in London would be negatively affected by Brexit, or so it would appear.

7 Cross-border bank flows

We also undertake the analogous exercise for cross-border bank-intermediated assets and liabilities, using the Bank for International Settlements' Locational Banking Statistics, which distinguish positions by residence of the counterparty. These figures are available for banking offices located in 47 countries, capturing some 93% of the estimated value of all cross-border interbank business. We averaged quarterly figures to construct data for the years 2001–2015, matching coverage of the CPIS data used above.

We estimated the same model used in the preceding analysis of portfolio assets and liabilities. One complication relative to the earlier analysis is that there are no changes over time in the set of EU "sending" countries (countries reporting outflows or, equivalently, foreign assets), since countries joining the EU midway through the sample period (Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia in 2004, Bulgaria and Romania in 2007) do not report foreign bank assets, disaggregated by country, to the BIS. This means that it is not possible to both include country of origin fixed effects and to estimate coefficients on dummy variables for whether the originating (outflow) country is an EU member. Despite the pooled data set, a subset of the former fixed effects will be perfectly collinear with the latter dummy variable. It still is possible, however, to estimate the impact on banking inflows (or cross-border bank liability positions), as we describe below.

Table 2 summarizes the results excluding country fixed effects. (Year fixed effects are still included.) The point estimates in column 1, for the full sample, suggest that EU membership raises inward cross-border bank flows by 22 (0.322–0.099)%, other things equal, implying that Brexit will lower such flows by 18 (22/100 + 22))%. Estimated effects are slightly smaller (15%) when dropping the observations for Luxembourg or (20%) when dropping offshore financial centers. This group of estimates for bank-related positions is somewhat smaller than the comparable estimates for portfolio investments using the CPIS data, when excluding country fixed effects, as above. Broadly speaking, however, the impact of Brexit is of similar magnitude on bank-related positions and other debt and portfolio flows.

Table 2 EU membership, Euro area membership, and cross-border banking flows

	(1)	(2)	(3)
Ln distance	−0.844***	−0.896***	−0.965***
	(0.018)	(0.018)	(0.018)
lngdp_origin	1.842***	1.763***	1.749***
	(0.037)	(0.038)	(0.038)
lngdp_destination	1.259***	1.224***	1.198***
	(0.012)	(0.012)	(0.012)
lnpop_origin	−1.028***	−0.800***	−0.760***
	(0.033)	(0.036)	(0.037)
lnpop_destination	−0.543***	−0.485***	−0.360***
	(0.013)	(0.013)	(0.013)
Former colony	1.441***	1.344***	1.311***
	(0.047)	(0.048)	(0.049)
Com language	0.414***	0.482***	0.516***
	(0.040)	(0.040)	(0.041)
Com currency	1.393***	1.637***	2.179***
	(0.224)	(0.17)	(0.220)
Com religion	0.476***	0.449***	0.471***
	(0.056)	(0.06)	(0.060)
eu_not_euro_origin	−0.537***	−0.368***	−0.360***
	(0.036)	(0.036)	(0.036)
eu_not_euro_destination	−0.0989**	−0.0199***	0.0203
	(0.055)	(0.056)	(0.055)
eu_origin	0.572***	0.513***	0.540***
	(0.035)	(0.035)	(0.035)
eu_destination	0.322***	0.195**	0.223***
	(0.044)	(0.044)	(0.045)
Constant	−64.38***	−61.98***	−60.90***
	(1.048)	(1.05)	(1.07)
Observations	19,654	17,908	16,878
R-squared	0.663	0.669	0.692

Robust standard errors in parentheses. Col. 1 includes year effects, col. 2 country effects, col. 3 both

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

The analogous effects for bank assets (in this case, for UK bank asset positions abroad), the sum of the coefficients on "eu_d" and "eu_not_euro_d," are identical to those for bank inflows (for foreign bank positions in the UK).

In contrast, adding country of origin and country of destination fixed effects (while necessarily dropping the "eu_origin" and "eu_not_euro_origin" variables for the reasons described above) produces larger estimates of the impact of Brexit, on the order of 40%. But these estimates are less reliable owing to omission of the two eu-origin related variables.

For robustness, we considered BIS data for bank-intermediated flows (adjusted for exchange rate changes and statistical breaks). In this case, data for each year are the sum of the four quarters rather than their average. The estimates were again very similar to those reported in Table 2: the full sample results suggest a Brexit-related drop in inward bank intermediated flows of 22%. Again this finding is very little affected when dropping Luxembourg or the full set of offshore financial centers. In this case, adding country of origin and destination fixed effects (while necessarily dropping the "eu_origin" and "eu_not_euro_origin" variables, for the reasons described above) also produces virtually identical estimates (EU status increases inflows by 20% when Luxembourg only or the entire set of financial centers are excluded and by slightly less when they are included).

8 Conclusion

We have analyzed cross-border portfolio investment, comparing flows between EU member and nonmember states in order to gain insight into the impact of Brexit on UK portfolio investment and the international role of the City of London. Different data sets have allowed us to analyze and contrast different categories of portfolio investment. For aggregate portfolio investment, our most conservative estimates imply that Brexit will be associated with a 12% fall in the stock of inward investment, while the stock of overseas portfolio investments by UK residents may fall by as much as 30%. The impact is similar when we focus only on bank-intermediated flows. But this impact is larger for debt-based inflows than for inflows into equity markets. Notably, the findings are consistent across two different data sets.

Overall, these results provide evidence that the impact of Brexit on Britain's external economic relations will not be limited to trade and direct foreign investment. They will extend also to portfolio capital flows, and to portfolio debt flows in particular, with potentially significant implications for London-based financial institutions intermediating those flows.

Appendix

See Tables 3, 4, 5, 6 and 7.

Table 3 EU membership, Euro area membership and cross-border portfolio investment stocks, selectivity corrected estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Ln distance	−0.559***	−0.596***	−1.095***	−1.122***	−1.094***	−1.122***
	(0.017)	(0.017)	(0.019)	(0.019)	(0.019)	(0.019)
lngdp_origin	2.096***	2.071***	0.929***	0.913***	0.898***	0.880***
	(0.018)	(0.018)	(0.091)	(0.093)	(0.118)	(0.120)
lngdp_destination	1.529***	1.528***	0.623***	0.628***	0.657***	0.659***
	(0.014)	(0.014)	(0.077)	(0.079)	(0.096)	(0.099)
lnpop_origin	−1.593***	−1.517***	0.788	0.949	0.753	0.868
	(0.018)	(0.018)	(0.700)	(0.709)	(0.722)	(0.734)
lnpop_destination	−.710***	−0.674***	1.786***	1.595***	1.891***	1.707***
	(0.015)	(0.015)	(0.361)	(0.370)	(0.359)	(0.368)
Former colony	0.376***	0.412***	0.206***	0.257***	0.207***	0.258***
	(0.075)	(0.076)	(0.065)	(0.064)	(0.065)	(0.064)
Com language	1.320***	1.403***	0.706***	0.653***	0.706***	0.652***
	(0.046)	(0.046)	(0.045)	(0.046)	(0.045)	(0.046)
Com currency	2.013***	2.073***	0.706***	0.853***	0.733***	0.881***
	(0.057)	(0.057)	(0.054)	(0.057)	(0.054)	(0.056)
Com religion	0.243***	0.0861	1.103***	1.095***	1.102***	1.094***
	(0.059)	(0.061)	(0.068)	(0.071)	(0.067)	(0.070)
eu_not_euro_origin	−0.481**	−0.456**	−0.335	−0.416	−0.272	0.352
	(0.034)	(0.034)	(0.158)	(0.161)	(0.122)	(0.122)
eu_not_euro_destination	0.298	0.399*	0.250	0.320	0.213	0.281
	(0.219)	(0.221)	(0.247)	(0.254)	(0.245)	(0.251)
eu_origin	0.149***	0.0289	0.814***	0.829***	0.753***	0.768***
	(0.039)	(0.039)	(0.123)	(0.125)	(0.123)	(0.125)
eu_destination	0.322***	0.180***	0.143	0.131	0.0928	0.0829
	(0.041)	(0.041)	(0.089)	(0.093)	(0.090)	(0.093)
Constant	−80.20***	−79.53***	−41.56***	−40.82***	−41.95***	−40.93***
	(0.589)	(0.590)	(1.883)	(1.953)	(4.441)	(4.577)
athrho	0.294***	0.300***	0.125***	0.132***	0.126***	0.132***
	(0.00784)	(0.00785)	(0.00567)	(0.00587)	(0.00562)	(0.00582)
ln σ	0.949***	0.938***	0.667***	0.670***	0.663***	0.666***
	(0.00558)	(0.00582)	(0.00658)	(0.00675)	(0.0066)	(0.00677)
lambda	0.739	0.243	0.743	0.255	0.746	0.238
	(0.019)	(0.011)	(0.019)	(0.011)	(0.020)	(0.0128)
Observations	145,159	142,742	145,159	142,742	145,159	142,742

Cols. 1–2 include year fixed effects, 3–4 country of origin and destination fixed effects, 5–6 both year and country fixed effects. Cols. 2, 4 and 6 exclude Luxembourg

Robust standard errors in parentheses. athrho is the Heckman transformation of rho: $(1/2)\ln((1+\text{rho})/(1-\text{rho})$

***$p<0.01$; **$p<0.05$; *$p<0.1$

Table 4 EU membership, Euro area membership, and investment in equity and investment fund shares, selectivity-corrected estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Ln distance	−0.598***	−1.235***	−0.621***	−1.269***	−0.641***	−1.248***
	(0.018)	(0.018)	(0.017)	(0.018)	(0.018)	(0.0195)
lngdp_Origin	2.574***	0.508***	2.521***	0.511***	2.562***	0.520***
	(0.018)	(0.087)	(0.018)	(0.088)	(0.019)	(0.0936)
lngdp_destination	1.524***	0.677***	1.497***	0.671***	1.460***	0.743***
	(0.013)	(0.383)	(0.014)	(0.378)	(0.014)	(0.0744
lnpop_Origin	−1.941***	−0.383	−1.826***	−0.378	−1.865***	0.105
	(0.018)	(0.324)	(0.018)	(0.335)	(0.020)	(0.351)
lnpop_destination	−0.688***	0.616**	−0.604***	0.399	−0.416***	0.521*
	(0.015)	(0.263)	(0.015)	(0.283)	(0.016)	(0.293)
Former colony	0.454***	0.509***	0.453***	0.558***	0.410***	0.517***
	(0.069)	(0.058)	(0.069)	(0.059)	(0.0723)	(0.0596)
Com language	1.726***	0.672***	1.843***	0.606***	1.991***	0.652***
	(0.045)	(0.042)	(0.045)	(0.042)	(0.048)	(0.0446)
Com currency	2.188***	−0.254	2.305***	−0.325**	2.669***	1.617***
	(0.165)	(0.164)	(0.160)	(0.164)	(0.315)	(0.291)
Comreligion	0.268***	1.599***	0.0899	1.623***	0.175***	1.645***
	(0.061)	(0.062)	(0.062)	(0.065)	(0.065)	(0.0671)
eu_not_euro_origin	−0.181***	0.902***	0.0103	0.923***	0.0115	0.286
	(0.043)	(0.228)	(0.043)	(0.233)	(0.044)	(0.245)
eu_not_euro_destination	−0.325***	−0.334	−0.0178	−0.328	−0.0361	−0.0235
	(0.049)	(0.214)	(0.049)	(0.225)	(0.051)	(0.247)
eu_origin	0.0687*	0.970***	−0.0840**	0.958***	0.0283	1.640***
	(0.036)	(0.179)	(0.036)	(0.183)	(0.038)	(0.198)
eu_destination	0.342***	0.465**	0.0842**	0.473**	0.406***	0.163
	(0.04)	(0.184)	(0.04)	(0.194)	(0.042)	(0.219)
Constant	−92.81***	−31.15***	−91.14***	−30.18***	−91.96***	−33.16***
	(0.585)	(2.372)	(0.585)	(2.411)	(0.632)	(2.552)
athrho	0.323	0.091	0.326	0.100	0.335	0.988
	(0.006)	(0.004)	(0.006)	(0.005)	(0.007)	(0.005)
ln σ	1.120	0.774	1.097	0.772	1.083	0.747
	(0.045)	(0.005)	(0.006)	(0.006)	(0.005)	(0.006)
lambda	0.955	0.197	0.944	0.215	0.953	0.747
	(0.019)	(0.010)	(0.018)	(0.010)	(0.019)	(0.010)
Observations	208,409	208,409	204,535	204,535	175,357	175,357

Cols. 1–2 include year fixed effects, 3–4 country of origin and destination fixed effects, 5–6 both year and country fixed effects. Cols. 2, 4 and 6 exclude Luxembourg

Robust standard errors in parentheses. rho is the Heckman transformation of rho: $(1/2)\ln((1+\text{rho})/(1-\text{rho})$

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table 5 EU membership, euro area membership, and Investment in all debt securities, selectivity-corrected estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Ln Distance	−0.732***	−1.194***	−0.773***	−1.234***	−0.778***	−1.210***
	(0.014)	(0.014)	(0.014)	(0.025)	(0.015)	(0.016)
Ln gdp_origin	2.186***	0.689***	2.133***	0.669***	2.162***	0.450***
	(0.015)	(0.071)	(0.015)	(0.073)	(0.016)	(0.079)
Ln gdp_destination	1.431***	0.941***	1.435***	0.915***	1.440***	0.883***
	(0.013)	(0.056)	(0.013)	(0.057)	(0.014)	(0.061)
Ln pop_origin	−1.679***	−1.224***	−1.570***	−1.528***	−1.493***	−0.658**
	(0.015)	(0.274)	(0.016)	(0.286)	(0.019)	(0.303)
Ln pop_destination	−0.656***	0.597***	−0.627***	0.528***	−0.549***	0.717***
	(0.012)	(0.160)	(0.013)	(0.164)	(0.014)	(0.170)
Former Colony	0.339***	−0.0266	0.324***	0.0241	0.228***	0.00401
	(0.058)	(0.048)	(0.058)	(0.049)	(0.061)	(0.050)
Com language	1.034***	0.430***	1.100***	0.373***	1.216***	0.429***
	(0.035)	(0.034)	(0.035)	(0.034)	(0.038)	(0.038)
Com currency	1.897***	−0.320**	2.113***	−0.356***	2.430***	2.184***
	(0.158)	(0.131)	(0.138)	(0.132)	(0.400)	(0.275)
Com religion	0.432***	0.902***	0.311***	0.910***	0.387***	0.968***
	(0.045)	(0.049)	(0.047)	(0.052)	(0.049)	(0.054)
eu_not_euro_origin	−0.500***	−0.318*	−0.374***	−0.394**	−0.357***	−0.839***
	(0.038)	(0.163)	(0.039)	(0.164)	(0.040)	(0.180)
eu_not_euro_destination	−0.276***	−0.0211	−0.161***	0.00278	−0.144***	−0.115
	(0.042)	(0.146)	(0.043)	(0.153)	(0.045)	(0.176)
eu_origin	0.388***	0.443***	0.294***	0.466***	0.454***	0.995***
	(0.028)	(0.108)	(0.028)	(0.109)	(0.030)	(0.132)
eu_destination	0.777***	0.206*	0.667***	0.213	0.838***	0.384**
	(0.034)	(0.124)	(0.034)	(0.131)	(0.037)	(0.156)
Constant	−79.02***	−31.78***	−77.79***	−29.44***	−79.39***	−25.41***
	(0.540)	(2.063)	(0.556)	(2.087)	(0.594)	(2.268)
athrho	0.367	0.148	0.379	0.164	0.371	0.142
	(0.014)	(0.008)	(0.015)	(0.009)	(0.016)	(0.009)
ln σ	0.911	0.627	0.909	0.634	0.901	0.619
	(0.005)	(0.009)	(0.005)	(0.009)	(0.006)	(0.010)
lambda	0.874	0.274	0.897	0.307	0.873	0.262
	(0.029)	(0.014)	(0.031)	(0.151)	(0.032)	(0.015)
Observations	208,409	208,409	204,535	204,535	175,357	175,357

Cols. 1–2 include year fixed effects, 3–4 country of origin and destination fixed effects, 5–6 both year and country fixed effects. Cols. 2, 4 and 6 exclude Luxembourg

Robust standard errors in parentheses. athrho is the Heckman transformation of rho: $(1/2)\ln((1+\text{rho})/(1-\text{rho})$

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table 6 EU membership, Euro area membership, and long-term portfolio investment, selectivity-corrected estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Ln distance	−0.732***	−1.192***	−0.774***	−1.234***	−0.782***	−1.221***
	(0.014)	(0.014)	(0.015)	(0.015)	(0.016)	(0.017)
lngdp_origin	2.251***	0.714***	2.193***	0.695***	2.224***	0.500***
	(0.016)	(0.073)	(0.016)	(0.074)	(0.018)	(0.082)
lngdp_destination	1.404***	0.915***	1.406***	0.887***	1.409***	0.857***
	(0.0131)	(0.056)	(0.014)	(0.058)	(0.014)	(0.062)
lnpop_origin	−1.736***	−1.371***	−1.622***	−1.729***	−1.551***	−0.894***
	(0.016)	(0.281)	(0.017)	(0.295)	(0.020)	(0.314)
lnpop_destination	−0.635***	0.583***	−0.605***	0.503***	−0.531***	0.715***
	(0.012)	(0.164)	(0.013)	(0.167)	(0.014)	(0.174)
Former Colony	0.250***	−0.0916*	0.235***	−0.0434	0.131**	−0.0760
	(0.060)	(0.050)	(0.061)	(0.051)	(0.063)	(0.053)
Com language	1.072***	0.452***	1.135***	0.396***	1.247***	0.456***
	(0.036)	(0.035)	(0.036)	(0.035)	(0.040)	(0.039)
Com currency	1.815***	−0.295**	2.035***	−0.324**	2.422***	2.210***
	(0.165)	(0.135)	(0.145)	(0.135)	(0.416)	(0.276)
Com religion	0.422***	0.855***	0.303***	0.868***	0.385***	0.900***
	(0.045)	(0.050)	(0.048)	(0.053)	(0.050)	(0.055)
eu_not_euro_origin	−0.510***	−0.501***	−0.387***	−0.572***	−0.359***	−0.956***
	(0.039)	(0.161)	(0.039)	(0.162)	(0.040)	(0.178)
eu_not_euro_destination	−0.280***	−0.00613	−0.168***	0.00502	−0.155***	−0.0995
	(0.042)	(0.145)	(0.043)	(0.152)	(0.045)	(0.173)
eu_origin	0.402***	0.562***	0.312***	0.578***	0.460***	1.050***
	(0.028)	(0.103)	(0.029)	(0.104)	(0.031)	(0.130)
eu_destination	0.785***	0.184	0.679***	0.201	0.841***	0.364**
	(0.034)	(0.121)	(0.035)	(0.128)	(0.038)	(0.151)
Constant	−80.00***	−31.45***	−78.62***	−28.79***	−80.15***	−25.28***
	(0.560)	(2.172)	(0.580)	(2.194)	(0.622)	(2.386)
athrho	0.360	0.148	0.372	0.166	0.362	0.145
	(0.015)	(0.009)	(0.016)	(0.010)	(0.016)	(0.010)
ln σ	0.899	0.613	0.898	0.621	0.982	0.608
	(0.006)	(0.009)	(0.006)	(0.009)	(0.007)	(0.0101)
Lambda	0.848	0.271	0.874	0.307	0.848	0.265
	(0.030)	(0.015)	(0.032)	(0.016)	(0.0329)	(0.016)
Observations	208,409	208,409	204,535	204,535	175,357	175,357

Cols. 1–2 include year fixed effects, 3–4 country of origin and destination fixed effects, 5–6 both year and country fixed effects. Cols. 2, 4 and 6 exclude Luxembourg

Robust standard errors in parentheses. rho is the Heckman transformation of rho: $(1/2)\ln((1+\mathrm{rho})/(1-\mathrm{rho}))$

***$p<0.01$; **$p<0.05$; *$p<0.1$

Table 7 EU membership, Euro area membership, and short-term portfolio investment, selectivity-corrected estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Ln distance	−0.639***	−1.026***	−0.662***	−1.003***	−0.675***	−0.938***
	(0.0254)	(0.026)	(0.027)	(0.029)	(0.029)	(0.031)
Ln gdp_origin	1.648***	0.959***	1.560***	0.932***	1.552***	0.886***
	(0.026)	(0.134)	(0.027)	(0.137)	(0.028)	(0.149)
Ln gdp_destination	1.404***	1.058***	1.364***	1.035***	1.410***	1.077***
	(0.024)	(0.126)	(0.025)	(0.133)	(0.027)	(0.139)
L npop_origin	−1.264***	−0.968*	−1.116***	−1.073**	−1.000***	−0.398
	(0.026)	(0.516)	(0.027)	(0.544)	(0.031)	(0.576)
Ln pop_destination	−0.697***	0.000343	−0.632***	−0.0762	−0.566***	−0.0195
	(0.023)	(0.359)	(0.025)	(0.381)	(0.028)	(0.384)
Former colony	0.469***	0.0147	0.422***	0.0172	0.409***	0.00303
	(0.089)	(0.078)	(0.090)	(0.081)	(0.094)	(0.084)
Com language	0.986***	0.360***	1.057***	0.365***	1.173***	0.419***
	(0.060)	(0.063)	(0.061)	(0.064)	(0.065)	(0.069)
Com currency	1.257***	−0.823***	1.301***	−0.782***	1.637***	2.418***
	(0.171)	(0.197)	(0.175)	(0.203)	(0.397)	(0.837)
Com religion	−0.132	1.053***	−0.297***	1.102***	−0.312***	1.241***
	(0.088)	(0.099)	(0.099)	(0.111)	(0.104)	(0.114)
eu_not_euro_origin	−0.292***	0.434	−0.137*	0.308	−0.162**	−0.151
	(0.072)	(0.413)	(0.075)	(0.422)	(0.077)	(0.439)
eu_not_euro_destination	−0.358***	0.166	−0.285***	0.371	−0.240***	0.672
	(0.079)	(0.434)	(0.081)	(0.492)	(0.084)	(0.598)
eu_origin	0.0104	−0.735***	−0.104	−0.656**	0.0742	−0.311
	(0.061)	(0.278)	(0.065)	(0.284)	(0.069)	(0.301)
eu_destination	0.608***	0.207	0.563***	0.155	0.687***	−0.0952
	(0.059)	(0.308)	(0.061)	(0.342)	(0.065)	(0.474)
Constant	−68.37***	−40.66***	−65.45***	−39.96***	−67.17***	−43.01***
	(0.956)	(3.847)	(0.973)	(4.265)	(1.013)	(4.570)
athrho	0.388	0.168	0.382	0.175	0.363	0.158
	(0.016)	(0.010)	(0.017)	(0.012)	(0.017)	(0.112)
ln σ	1.045	0.798	1.042	0.798	1.029	0.773
	(0.007)	(0.008)	(0.007)	(0.008)	(0.008)	(0.009)
Lambda	1.052	0.370	1.033	0.385	0.973	0.340
	(0.041)	(0.022)	(0.043)	(0.025)	(0.043)	(0.025)
Observations	208,409	208,409	204,535	204,535	175,357	175,357

Cols. 1–2 include year fixed effects, 3–4 country of origin and destination fixed effects, 5–6 both year and country fixed effects. Cols. 2, 4 and 6 exclude Luxembourg

Robust standard errors in parentheses. rho is the Heckman transformation of rho: $(1/2)\ln((1+\text{rho})/(1-\text{rho})$

***$p < 0.01$; ** $p < 0.05$; *$p < 0.1$

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