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## Who Has The Most To Lose From Brexit? Introducing The Brexit Sensitivity Index

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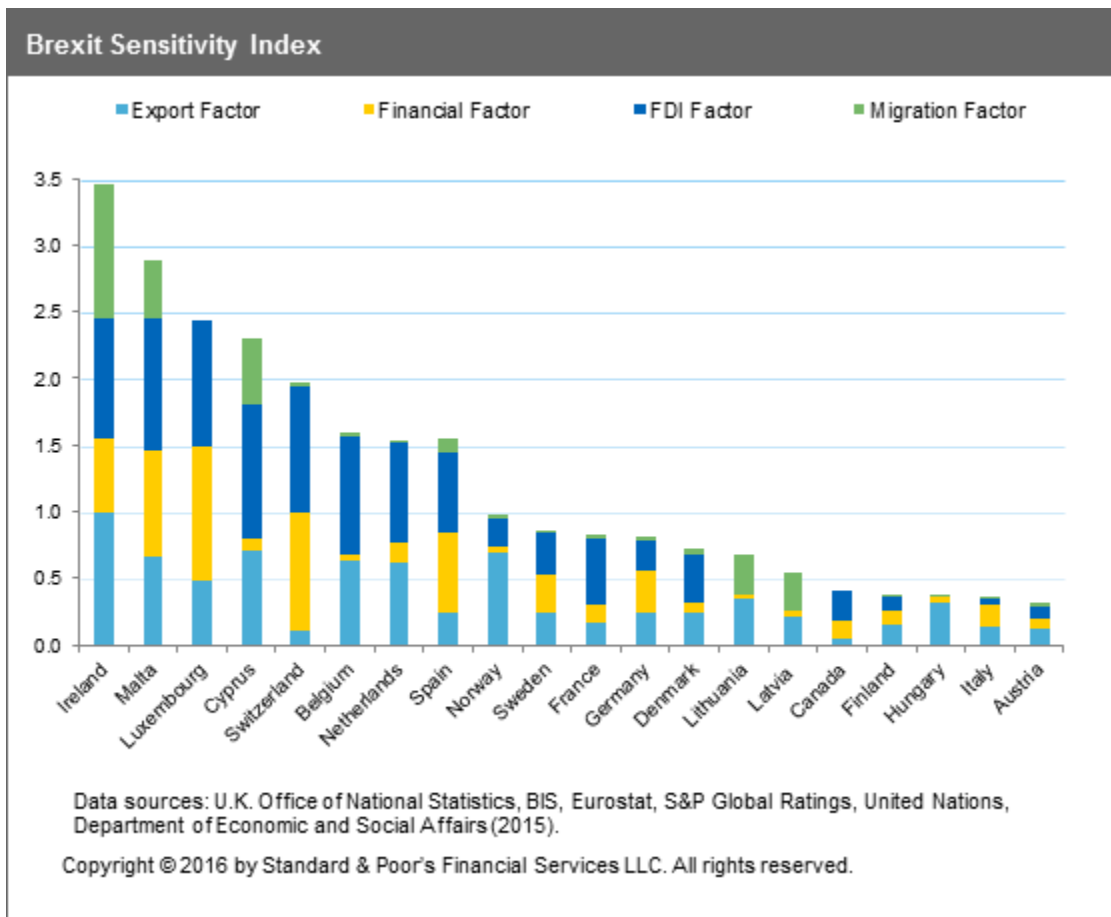
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Appendix

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In a survey of 20 countries most exposed to a potential U.K. exit from the EU compiled by S&P Global Ratings, Ireland, Malta, Luxembourg, and Cyprus are in the frontline of economies susceptible to any trade and migratory aftershocks from a decision by the U.K. to leave. S&P's Brexit Sensitivity Index (BSI) measures goods and services exports to the U.K. compared to these economies' domestic GDP, bidirectional migrant flows, financial sector claims on U.K. counterparties (including off balance sheet claims), and foreign direct investment in the U.K. (see Appendix). According to this methodology, Ireland and other small open financial centers lead the list of sovereigns vulnerable to a U.K. decision to exit the EU. Of the 20 sovereigns most exposed, only two (Canada and Switzerland) are not EU members, and just one (Canada) is not European.

**Chart 1**



Ireland's shared history and common border with the U.K. enable vigorous trade in merchandise and services, as well as substantial migratory flows between the two countries. The sum of Irish residents in the U.K. and vice versa totals 17.2% of Ireland's population (according to data by the U.K. Office of National Statistics and the United Nations Department of Economic and Social Affairs). That figure is over twice the next highest bidirectional migratory figure of

8.5% for Cyprus, and well above migratory flows from southern European countries such as Spain (just under 1% of Spain's population), which have been cited as vulnerable on this measure.

The results for Ireland (3.5 on the Sensitivity Index of over four times the 0.8 median) imply significant reverberations to the Irish economy should the U.K. leave the EU, depending on the new economic relationship it can forge with its most important trading partner. At the least, were the U.K. to vote to leave the EU on June 23, the uncertainty regarding its new trade and migratory agreements with Europe would take its toll on flows of merchandise, services, and human capital, along the Republic of Ireland's 499 kilometer border with the U.K. Ireland's financial sector exposure to the U.K. is also important, reflecting the size of Irish banking subsidiaries operating in the U.K. Nevertheless, we would expect that Ireland's highly flexible economy would manage to reorient trade toward even larger trading partners (such as the remaining EU and the U.S.) in the unlikely event that an exited U.K. would not reach new terms on trade access to the EU after its departure. We also think that Ireland would be well placed to attract some of the FDI displaced out of a Brexited U.K. into its own substantial financial services hub, should U.K.-based financial subsidiaries and branches lose coveted EU passporting rights, which currently enable them to on-sell financial services into the EU market.

The second rank of highly exposed sovereigns (with an average of 2.4 on the Brexit Sensitivity Index) to Brexit include small financial services centers, such as Malta and Cyprus, which have historical connections with the U.K. Their attractive climates have drawn a large population of U.K. pensioners, on top of tourism receipts from the U.K. Cyprus also has a very large expat population working in the U.K., which pays an estimated 0.6% of GDP in remittances to Cyprus per year, the highest in Europe outside of the Baltics. Of course, Cyprus is no stranger to external shocks having managed to retain much of its business services sector despite the collapse of its banking system, and a default on substantial amounts of resident and nonresident deposits (most of the latter coming from Russia and other CIS states). Even so, Brexit could create headwinds for the recovering Cypriot economy given the importance of migratory, export, and financial links between the two countries.

Malta's financial claims on the U.K. are considerably more important than Cyprus'. Very sizeable claims on U.K. financial institutions (including derivatives and guarantees) and high exports (many of which are reboked via Luxembourg for tax purposes) explain Luxembourg's high index score of 2.4.

Switzerland's (2.0 on the Brexit Sensitivity Index) exposure to the U.K. is primarily due to its large FDI holdings in the U.K., and its large financial services subsidiaries, which book substantial trading and derivatives positions in the U.K. via their subsidiaries and branches. While global Swiss banks are already cutting back their derivatives and trading book exposures to the U.K., at 65% of Swiss GDP in 2015 (according to BIS data) the banks' financial sector claims on an ultimate risk basis (including off balance sheet exposures such as derivatives and guarantees) remain the highest among all 20 sovereigns in this survey with the exception of Luxembourg.

While we decided not to include a currency risk channel in our metric, we would flag the Swiss Franc, alongside all of the Nordic currencies, as particularly vulnerable to flight-to-quality appreciation pressures in the event of a vote to leave the EU. Further appreciation of Switzerland's real effective exchange rate would come on top of the 5.8% in real appreciation of the Swiss Franc since the SNB abandoned its peg in January of last year.

The two remaining Benelux states, Belgium and the Netherlands, make up the third group of economies sensitive to Brexit, with an average index reading of 1.6 versus the 0.8 median. In the case of the larger Benelux states the high score reflects very sizeable export and FDI exposures. For the Netherlands, export exposures (based on U.K. Office of National Statistics data) may be overstated due to high re-exports and royalty payments, however, these also indicate that the highly open Dutch economy, with its large transport and maritime sectors, is far more exposed to a possible Brexit, than larger less open European economies such as France and Germany. The same is true of Belgium, where inward FDI into the U.K. is the second highest as a percentage of its GDP of all continental European sovereigns with the exception of Switzerland. Much of this FDI is in finance and other services sectors. In the case of the Netherlands, the official FDI figure reported by the ONS has been adjusted to strip out special purpose entities, which we consider exaggerate its net creditor position, since the ultimate beneficiary of the assets is not resident in the Netherlands.

The next most vulnerable economy according to our index is Spain. With a population 2.8x that of the Netherlands, Spain has large financial and FDI exposures to the U.K., in particular through its large retail banking subsidiaries and telecom operations. Despite its strong market share in the U.K. in services, particularly tourism, Spain's goods and services exports to the U.K. only amount to 2.7% of GDP, which is substantial for such a large economy (though below Germany's 2.8%/GDP), but only barely above the median of the 20 economies included in our survey. Migratory flows between Spain and the U.K. are large in absolute terms, but are less important than the percentage figures for Ireland, Cyprus, Malta, and the Baltics (at just under 1%).

Lastly, Norway also has a relatively high score of 1.0 in our index versus the 0.7 median. However, this largely reflects its gas exports to Britain, which we expect would not be affected by the U.K.'s departure from the EU. Norway itself is not a member of the EU, but rather a member of the European Free Trade Association.

The other economies we assessed are either at or below the median. While we think the Nordic currencies are vulnerable to further appreciation pressures were the result of the referendum to be a U.K. exit, their trade, migratory, financial, and FDI exposures are average (Norway excepted). For the Baltics, we anticipate that Latvia and Lithuania (Estonia less so) would be affected by Brexit via their large resident population working in and sending remittances from the U.K. (estimated by the World Bank to average 1.2% of GDP and 0.8% of GDP, respectively, per year). Other Baltic exposures are negligible. None is a net creditor, and this reduces their vulnerability to a currency or balance of payments shock connected to Brexit.

The U.S. doesn't make the top 20 as the vastness of its economy makes its U.K. exposures, though large in absolute terms, quite small in relative ones. Canada barely deserves a mention; only its financial claims of an estimated 10.5% of GDP versus the 8.1% of GDP for the median put it on the list.

Of course our index does not reflect the potential political and market aftershocks of Brexit. However, it does distill the current real and financial economic links to the U.K. economy, the world's fifth largest, while also indicating which sovereigns might be more exposed to an unwinding of the U.K.'s standout macro feature: its current account deficit of 5.2% of GDP, which is the world's second largest in absolute terms at an estimated \$148 billion (£96 billion). A rapid unwinding of an external imbalance of this scale, alongside currency volatility, would not take place without affecting the U.K.'s most important trading partners, and its most important creditors.

**Table 1**

Brexit Sensitivity Index									
	Exports to U.K. as a % of GDP	Export Factor	Financial Sector Claims on an ultimate risk basis including derivatives and guarantees (BIS data, % of GDP)	Financial Factor	Inward FDI/GDP (%)	FDI Factor	Bidirectional migration as a % of population	Migration Factor	BSI index (sum of all factors)
Ireland	10.6	1.0	40.3	0.5	5.8	0.9	17.2	1.0	3.5
Malta	7.1	0.7	58.0	0.8	6.3	1.0	7.5	0.4	2.9
Lux	5.3	0.5	73.3	1.0	6.0	0.9	0.0	0.0	2.4
Cyprus	7.5	0.7	8.1	0.1	6.3	1.0	8.5	0.5	2.3
Switz	1.3	0.1	65.1	0.9	6.0	0.9	0.4	0.0	2.0
Belgium	6.8	0.6	3.8	0.0	5.6	0.9	0.5	0.0	1.6
Netherlands	6.7	0.6	11.4	0.1	4.7	0.7	0.4	0.0	1.5
Spain	2.7	0.2	44.9	0.6	3.8	0.6	0.9	0.1	1.5
Norway	7.4	0.7	3.9	0.0	1.4	0.2	0.4	0.0	1.0
Sweden	2.7	0.2	21.9	0.3	1.9	0.3	0.2	0.0	0.9
France	2.0	0.2	10.6	0.1	3.1	0.5	0.5	0.0	0.8
Germany	2.8	0.2	22.7	0.3	1.5	0.2	0.5	0.0	0.8
Denmark	2.7	0.2	6.2	0.1	2.3	0.4	0.8	0.0	0.7
Lithuania	3.9	0.4	2.8	0.0	0.0	0.0	5.1	0.3	0.7
Latvia	2.5	0.2	3.9	0.0	0.0	0.0	4.9	0.3	0.5
Canada	0.8	0.0	10.5	0.1	1.4	0.2	0.0	0.0	0.4
Finland	1.8	0.2	8.5	0.1	0.7	0.1	0.3	0.0	0.4
Hungary	3.5	0.3	4.0	0.0	0.0	0.0	0.2	0.0	0.4
Italy	1.6	0.1	13.2	0.2	0.2	0.0	0.4	0.0	0.4
Austria	1.5	0.1	5.9	0.1	0.6	0.1	0.4	0.0	0.3
MEDIAN	2.8	0.2	10.6	0.1	0.0	0.3	0.5	0.0	0.8

## Appendix

The Brexit Sensitivity Index is the sum of four data points all normalized and converted into a scale from 0 to 1.

BSI = Exports of Goods and Services to the U.K./GDP + Consolidated Financial Sector Claims on the U.K. on an ultimate risk basis including derivatives and guarantees (Bank of International Settlements data, % of GDP) + Inward Foreign Direct Investment in the U.K./GDP (Office of National Statistics Data) + Bidirectional migrants as a % of population [A country's Nationals Resident in the U.K. + U.K. Nationals Resident in that country divided by country's population (United Nations, Department of Economic and Social Affairs (2015). Trends in International Migrant Stock: Migrants by Destination and Origin (United Nations database, POP/DB/MIG/Stock/Rev.2015; population data from Eurostat)]. Special Purpose Entities have been netted out of inward FDI data to eliminate third party debt masquerading as equity.

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