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## THE LOOMING THREAT OF TARIFF HIKES: ENTRY INTO EXPORTING UNDER TRADE AGREEMENT RENEGOTIATION

Meredith Crowley

(University of Cambridge)

Oliver Exton

(University of Cambridge)

Lu Han

(University of Liverpool)

Since the end of World War II, trade policy around the world has been characterized by a tendency toward greater liberalization. Among developed countries, almost all reductions in import tariffs and relaxation of quantitative restrictions have been negotiated under multilateral, preferential, or bilateral trade agreements. Countries engaged in these negotiations have sought to reduce trade barriers relative to the existing level of protection – the threat point in the event of a breakdown in negotiations has generally been a continuation of the status quo.

# The looming threat of tariff hikes: entry into exporting under trade agreement renegotiation

By MEREDITH A. CROWLEY, OLIVER EXTON AND LU HAN\*

Since the end of World War II, trade policy around the world has been characterized by a tendency toward greater liberalization. Among developed countries, almost all reductions in import tariffs and relaxation of quantitative restrictions have been negotiated under multilateral, preferential, or bilateral trade agreements. Countries engaged in these negotiations have sought to reduce trade barriers relative to the existing level of protection – the threat point in the event of a breakdown in negotiations has generally been a continuation of the status quo.

The last several years have seen a reversal of that trend. Beginning in 2016 with the British referendum to exit the the European Union, a number of countries around the world have engaged in renegotiating their existing trade relationships. Concrete examples include the UK-EU negotiations over a post-Brexit trade relationship, the US-Mexico-Canada renegotiation of a free trade agreement (FTA) in North America, the renegotiation of the Korea-US FTA, and in the midst of a multi-year trade war between the US and China, efforts throughout 2019 to negotiate a hiatus in the scheduled escalation of the trade

war. What makes these negotiations different from previous endeavours is that tariff increases rather than the status quo have loomed as the fallback position if trade talks fail.

In this paper, we examine how the looming threat of tariff hikes under a trade agreement renegotiation impacts firm entry into a trading partner’s market. We use the June 2016 Brexit vote as a natural experiment to study how the threat of tariff hikes impacts British firms. Following the referendum vote, the UK announced its intention to renegotiate its trade deal with the European Union.<sup>1</sup> Because both the UK and EU are members of the WTO, the extent of tariff increases that British firms would face if negotiations were to break down is defined by the EU’s trade policy schedule at the WTO. The EU’s import tariff rates under the WTO exhibit considerable variation across products. For a number of products, the EU imposes no import duties; thus UK firms would face no import tariffs in the EU even if the UK left the EU with no trade deal. However, a substantial share of the UK’s trade with the EU would face non-zero import tariffs if Britain were to depart the EU without a trade deal. We examine how the sensitivity of British exporters to threatened tariff rates evolves over time using monthly data on entry into the EU market by British firms at the product level between February 2012 and December 2016. We find that the sensitivity of British firm entry at the product level

\* Crowley: University of Cambridge, Faculty of Economics, Sidgwick Avenue, Cambridge, UK CB3 9DD (meredith.crowley@econ.cam.ac.uk); Exton: University of Cambridge, (oe219@cam.ac.uk); Han: University of Liverpool, (lu.han2@liverpool.ac.uk). Disclaimer: This work contains statistical data from HMRC which is Crown Copyright. The research datasets used may not exactly reproduce HMRC aggregates. The use of HMRC statistical data in this work does not imply the endorsement of HMRC in relation to the interpretation or analysis of the information. Acknowledgements: We thank the staff of the HMRC datalab, especially Yee-Wan Yau, for supporting us in our analysis of UK administrative data. We thank the Economic and Social Research Council of the United Kingdom for financial support under Brexit Priority Grant R001553/1 and UK in a Changing Europe Senior Fellowship ES/T000732/1.

to ‘no-deal’ tariff rates increased steadily in the six months after the British vote to leave the EU. The looming threat of tariff hikes deterred entry modestly in the first month after the referendum, but the deterrent effect grew over time; presumably this increased sensitivity reflected firms’ beliefs about the likelihood that UK-EU trade talks would break down without a deal to ensure the continuity of duty-free market access.

The importance of multilateral and preferential trade agreements in facilitating greater trade is documented in a large literature.<sup>2</sup> More recently, the theoretical and empirical literature has emphasized that trade agreements increase trade between signatories not only by lowering tariffs but also by *reducing uncertainty over future tariff schedules* (Limão and Maggi (2015), Handley and Limão (2015), Pierce and Schott (2016), Handley and Limão (2017), and Crowley, Meng and Song (2018)). Crowley, Exton and Han (2018) provide the first empirical evidence documenting the firm response to *increased uncertainty from renegotiation* of an agreement between freely trading partners while Handley and Limão (2018) examine how fluctuations in the likelihood of Brexit impacted UK-EU trade prior to the referendum in June 2016. In this paper, we explore the monthly evolution of the responsiveness of firm-product entry to the threat of tariff increases arising from the June 2016 Brexit vote.

## I. Data

The empirical analysis is conducted on a confidential microdataset of the universe of EU transactions from Her Majesty’s Revenue and Customs (HMRC) Overseas Trade Statistics (2017) which incorporates tariff data at the HS08 digit level from the WTO’s Tariff Analysis Online (2018).

<sup>2</sup>Limão (2016) summarizes the literature for PTAs. Important contributions include Baier and Bergstrand (2007); Subramanian and Wei (2007); and Egger et al. (2011).

### A. UK customs data

Our analysis uses the HMRC Overseas Trade Statistics EU Dispatches dataset. The EU dispatches data includes monthly records of export value and quantity for UK firms by CN08 product and destination for those firms whose exports to the EU exceed £250,000 in a given year.<sup>3</sup> We ensure a consistent concordance across the CN08 products over time following Van Beveren, Bernard and Vandebussche (2012).

The focus of our analysis is entry of British firms into the EU over the two and a half years before and six months after the Brexit referendum. For each month and CN08 product category between February 2012 and December 2016, we calculate the number of UK firms entering the EU. An entry into the EU occurs if a firm  $f$  with a product  $h$  has a positive value of exports in month  $m$  to any country in the EU and the firm did not export the same product  $h$  to the EU in the previous twelve months,  $m - 1$  to  $m - 12$ . Next, for each month from January 2013 to December 2016, we cumulate the number of entrants in that month with those of the previous eleven months. This gives us an annual number of entrants into the EU for a rolling twelve month window over four years. With this measure, we can examine how annual entry evolves month by month in response to changes in firms’ expectations about the likelihood that Britain would leave the EU without a trade deal ensuring continued duty-free access. For concreteness, the cumulated number of British firm-product entrants into the EU over the twelve month window between July 2015 and June 2016 was 109,317. Our analysis explores how this number evolved over time in response to the threat of ‘no-deal’ tariff hikes.

<sup>3</sup>The requirement to report exports at the detailed product level applies to firms whose total value of exports exceeds the Intrastat reporting threshold. Since 2009 the nominal value of the threshold for dispatches has remained fixed at £250,000 and therefore is constant over the time period of the analysis in this paper.

### B. Threatened tariff hikes

The threat point tariffs facing British firms in each CN08 product category come from the EU’s WTO tariff schedule. In addition to an analysis of entry in response to the product’s tariff rate, we create a set of discrete measures of threatened trade policy restrictiveness based upon the level of the WTO tariffs. Products facing a zero ad valorem tariff are the default category; products facing tariff rates greater than zero, but less than or equal to 5 percent are categorized as ‘low’ restrictiveness; products facing tariffs greater than 5 but less than or equal to 10 percent face ‘medium’ restrictiveness; products facing tariff greater than 10 but less than or equal to 15 percent face ‘high’ restrictiveness; and products facing tariffs greater than 15 percent fall into the ‘extreme’ category.

## II. Empirical analysis

We estimate the responsiveness of the growth of British firm entry at the CN08 product level from January 2014 through December 2016 using a flexible linear regression with a full set of monthly time dummies and an interaction between these time dummies and product-level tariff threats.

$$(1) \quad \Delta Y_{hm,t} = \alpha_{m,t} + \beta_{m,t} * \tau_h + \eta_{hm,t}$$

The dependent variable,  $\Delta Y_{hm,t}$  is the growth rate of new British entrants into the EU over a one year period ending in month  $m$  of year  $t$  for each of the 8040 CN08 product categories subject to an ad valorem import tariff.<sup>4</sup> We follow Davis and Haltiwanger (1992) in calculating growth:  $\Delta Y_{hm,t} = 2(Y_{hm,t} - Y_{hm,t-1}) / (Y_{hm,t} + Y_{hm,t-1})$ .

The threat point tariff taken from the EU’s WTO tariff schedule is given by  $\tau_h$ . The elasticity of the growth of entry with

respect to the tariff,  $\beta_{m,t}$ , is estimated in each month of the sample. Evolution of this elasticity captures how much entry of goods under the threat of tariff hikes changes relative to goods that would face zero tariffs under a breakdown in trade agreement negotiations. We also estimate the responsiveness of entry growth for different categories of threatened trade policy restrictiveness relative to that for products facing zero ad valorem tariffs under all renegotiation outcomes.

## III. Evolution of entry responsiveness

Figure 1 graphs the evolution of the responsiveness of entry growth to tariff threats, i.e., the coefficients  $\beta_{m,t}$  from equation (1). The dashed grey lines bound the 95 percent confidence interval for each estimated coefficient. In the two and a half years leading up to the Brexit vote, i.e., the pre-treatment period before the renegotiation of the UK-EU trade deal began (January 2014 through May 2016), the responsiveness of entry to the EU’s WTO tariffs fluctuated around zero. In some months, entry growth for products that would never face an import duty in the EU was higher than for other products and in other months it was lower than that for other products. However, from June 2016, we see that elasticity of entry for products subject to the threat of a tariff increase fell below zero and that the magnitude of the tariff coefficient continued to increase while remaining negative. As the months rolled forward, British firms became increasingly sensitive to the risk of a no deal Brexit suggesting that their beliefs that negotiations could break without an agreement to ensure duty-free market access were increasing over this period.

To better understand if the estimated entry responsiveness is driven by products facing higher versus lower tariffs under a breakdown in negotiations, in figure 2 we graph the evolution of entry responsiveness to dummy variables that represent discrete categories of trade policy restrictiveness (i.e., the evolution of the estimated  $\beta_{m,t}$  for each categorical variable of trade restrictiveness). With products that face

<sup>4</sup>We omit product categories subject to quotas, tariff rate quotas, and specific duties and refer the reader to Crowley, Exton and Han (2018) for analyses that includes these products.

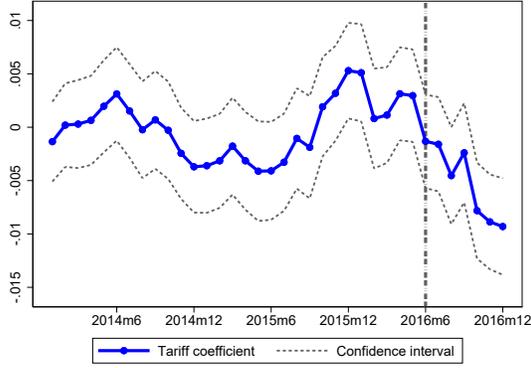


FIGURE 1. RESPONSIVENESS OF FIRM ENTRY TO TARIFF RATES: 2014M1 TO 2016M12

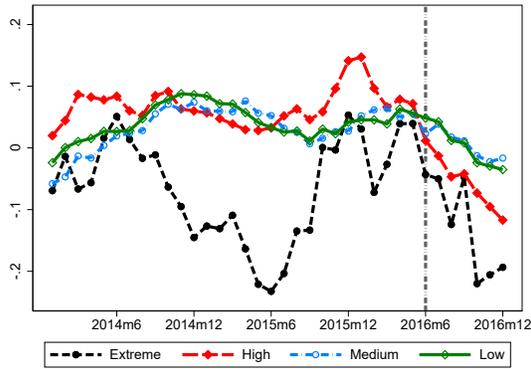


FIGURE 2. RESPONSIVENESS OF FIRM ENTRY TO DISCRETE TARIFF CATEGORIES: 2014M1 TO 2016M12

Note: Figure 1 graphs the estimated values and 95 percent confidence intervals of  $\beta_{m,t}$  from equation (1). Figure 2 graphs the estimated values of  $\beta_{m,t}$  for each of four discrete tariff categories.

Source: HMRC administrative data.

zero tariffs under a breakdown in negotiations as the omitted category, each line depicts the responsiveness of the growth of entry relative to products which face no uncertainty about future tariff rates. The general pattern observed in figure 1 is consistent with the responsiveness for products at risk of high, medium, and low tariffs in the future. Over 2014 and 2015, the responsiveness hovers around zero. However, in the months after the Brexit vote of June 2016, there is a clear pattern in which the growth of product entry by firms turns negative and becomes more sensitive to possible future tariffs over time. Products facing extremely high tariffs under a failure of the renegotiation show entry growth which is volatile prior to the Brexit vote, but nega-

tive and increasingly sensitive to tariffs in the second half of 2016.

#### IV. Counterfactual estimates of entry

We use the estimates of entry responsiveness to tariffs displayed in figure 1 to counterfactually estimate the extent of ‘missing entry’ due to the looming threat of tariffs from July 2016 through December 2016. For this exercise, we apply the estimated tariff coefficients for each month, and the threatened tariffs for each of the 8062 products in our dataset to a base value for the actual number of new products introduced into the EU by British firms. This yields the change in the number of entrants in each product category relative to the base period. Aggregating these changes over all products in each period gives us the total number of missing entrants at the firm-product level in that period. We base our counterfactual estimates on the number of entrants between July 2015 and June 2016: 109,317. As we start with an annualized number of entrants for June 2016, figure 3 presents the annualized change in the number of entrants due to increased sensitivity to the threat of tariff hikes for each month, July 2016 through December 2016. Interestingly, although the number of missing

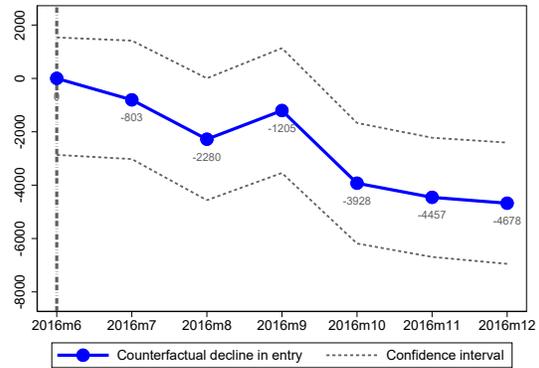


FIGURE 3. COUNTERFACTUAL DECLINE IN ACCUMULATED FIRM-PRODUCT ENTRY

Note: Negative values on the y-axis indicate the annualized number of ‘missing’ firm-product entrants relative to a counterfactual of no risk of tariff increases under a failure of trade negotiations.

Source: Authors’ calculations using estimates from equation (1) and HMRC administrative data.

entrants associated with the risk of future tariff increases was relatively modest (803) in the immediate aftermath of the Brexit vote, the number of missing entrants increased substantially over time. By December of 2016, 4678 firm-products were missing. Possible explanations for this include increased saliency of the question of the future trade relationship with the EU to British firms as well as revised beliefs about the likelihood that Britain would leave the EU without a deal to guarantee continued duty-free market access.

## V. Conclusion

When the renegotiation of a trade agreement takes place under the threat that tariffs will increase if negotiations fail, firm entry into a trading partner's market declines. Empirically, we find that uncertainty over future market access following the Brexit referendum of June 2016 deterred British firms from introducing products into the EU. More generally, our findings suggest that trade agreements have dynamic trade-promoting effects – by establishing stable tariff rates for the future, trade agreements reduce one source of risk for firms that would like to expand internationally.

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