

## Understanding Non-Tariff Measures in Services Trade Using Firm-Level Data

Tamar Khachaturian, [tamar.khachaturian@usitc.gov](mailto:tamar.khachaturian@usitc.gov), 202-205-3299; Sarah Oliver, [sarah.oliver@usitc.gov](mailto:sarah.oliver@usitc.gov), 202-205-3288; and Art Chambers, [arthur.chambers@usitc.gov](mailto:arthur.chambers@usitc.gov), (202) 205-2766

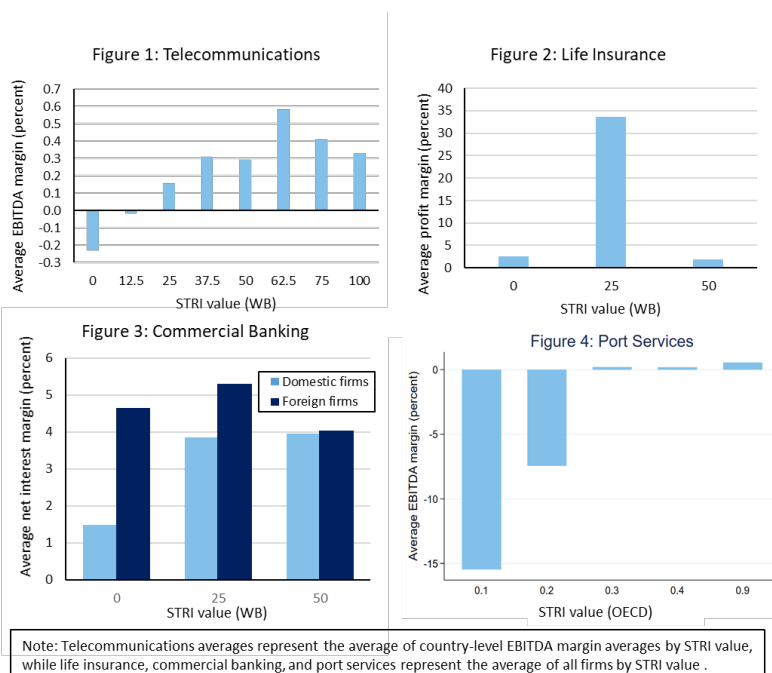
Analyzing the effects of non-tariff measures (NTMs) on services at the firm level is important given the predominance of services trade via commercial presence, and practical given foreign affiliate sales data limitations. This EBOT summarizes a series of USITC Services Division working papers that use firm-level data from Orbis to estimate the impact of non-tariff measures (NTMs) on service firm profitability in [telecommunications](#), [life insurance](#), [commercial banking](#), and [maritime port services](#).<sup>1</sup> Methodologies for assessing the impact of NTMs on services trade are evolving and yielding more detailed insights, distinguishing, for example, between domestic and foreign-owned firms or vertically integrated and independent firms. Future research could shed light on whether firms in other industry sectors are affected by NTMs in a similar pattern.

### Motivation

In markets with high levels of NTMs, estimated increases in profit margins may indicate lower levels of competition, such that firms in the market are able to extract higher profits than they would be able to absent restrictions. These markets could have higher potential gains from liberalizing their service sectors, in the form of increased competition and welfare to consumers. To measure the NTMs in each service sector, these papers use either the World Bank Services Trade Restrictions Database or the OECD Services Trade Restrictiveness Index (STRI).<sup>2</sup>

Figures 1-4 show the average profitability of firms within countries across different levels of restrictiveness. In life

insurance and telecommunications, average profitability appears to have an inverted-U shaped relationship to the STRI level. This could suggest that firm profits are declining after a certain level of restrictiveness, perhaps because the benefits of reduced competition may be dampened by increased inefficiency.<sup>3</sup> Interestingly, the same pattern only holds for foreign firms in commercial banking, where observations are separated by ownership. In contrast, in port services, the relationship between the STRI and profitability increases throughout the sample, though at lower relative rates at higher levels of restrictiveness.



### Estimation method

Literature beginning in the early 2000s analyzed the relationship between barriers to

<sup>1</sup> Data available at <https://www.bvdinfo.com/en-us/our-products/data/international/orbis> (fee required). The availability of data varies according to country-specific reporting requirements. In life insurance, the analysis used Bureau van Dijk’s Orbis Insurance Focus database, which provides more detailed information than the main Orbis database. For more information, see Khachaturian and Oliver (2016).  
<sup>2</sup> See, [Borchert, Gootiiz and Mattoo \(2012\)](#), and [Grosso et al \(2015\)](#) for a description of the World Bank and OECD STRI, respectively.  
<sup>3</sup> For example, Khachaturian and Oliver (2016) find that in the life insurance industry, efficiency (measured as operating expenses as a share of net premiums written) declines with increased restrictiveness.

The views expressed solely represent the opinions and professional research of the individual authors. The content of the EBOT is not meant to represent the views of the U.S. International Trade Commission, any of its individual Commissioners, or the United States government.

trade and firm profitability and typically used a two-stage regression model.<sup>4</sup> In this approach, the first regression controls for firm specific characteristics and creates an adjusted profit margin, which is then used in the second regression to estimate the impact of NTMs and other economy wide variables on firm profitability. An updated econometric methodology combines firm and country-level variables (which allows for interactions between firm level characteristics and the STRI) and appears to produce the most consistent results.<sup>5</sup> Finally, an alternative approach estimates the impact of NTMs on an economy-wide average profit margin. While the latter approach was used for the life insurance sector, all three approaches were used for the telecommunications sector, and the one-stage approach combining firm and economy-wide variables was used in the banking and cargo handling sectors.

The exact definition of the variables or the data used was adapted for each sector. For example, definitions of profitability (i.e. the dependent variable) vary across sectors: in telecommunications and maritime port services, profitability is measured using EBITDA margins, in life insurance profit margins are calculated in terms of profit before taxes over net premiums written, while in commercial banking, profitability is measured using net interest margins.<sup>6</sup> Additionally, firm data must be adapted to fit the scope of the industry. For example, in life insurance, there was extensive data on business line available, which USITC analysts used to isolate the share of each firm's business derived from sales of life insurance. Finally, in some cases, industry level controls are appropriate, as are the isolation of firm characteristics such as foreign ownership or size.

## Results

While each paper's methodology is slightly different, results across sectors (with the exception of life insurance) typically show that NTMs significantly increase profitability of companies operating across markets. Focusing on the telecommunications sector, [Khachaturian \(2015\)](#) finds that barriers to entry inflate the profits of incumbent companies, a fairly robust result across estimation methods. Additionally, there is some evidence that the effect of trade policies on firm profits is related to firm characteristics, in particular capital intensity.

[Khachaturian and Oliver \(2016\)](#) estimate the impact of the STRI level on the average profitability of firms across life insurance markets. The results do not support a statistically significant linear relationship between restrictions and average firm profitability, which may be due to the unique risk-based business models of life insurance firms and reflecting the inverted-U shaped relationship shown in above figure.

[Oliver \(2017\)](#) estimates the impact of the STRI on profitability of the commercial banking sector separately for domestic and foreign-owned firms. Overall, the impact of the STRI on the marginal profitability of firms is positive only at a moderate (STRI 25) level of restriction, supporting the data trends in figure 3. In countries with no restrictions, foreign firms tend to be significantly more profitable than domestic firms. However, when restrictions are at high levels, they effectively eliminate this difference between foreign and domestic firm profitability.

[Chambers and Peterson \(2019\)](#) estimate the impact of the STRI on profitability of cargo handling firms and find that increased restrictions are associated with significantly higher firm profits. They find the positive relationship holds while accounting for whether firms are engaged in secondary activities outside the cargo-handling sector. Additionally, the effect of increased profits is stronger for subsidiaries (versus independently-owned firms) and for domestic (versus foreign-owned) firms, with the latter showing decreased profits in the presence of trade restrictions.

---

<sup>4</sup> See for example USITC (2009) for an analysis of the property and casualty insurance sector using this method.

<sup>5</sup> For more details on the benefits of this approach, see [Khachaturian and Oliver \(2016\)](#).

<sup>6</sup> EBITDA margins are earnings before interest, taxes, depreciation, and amortization as a share of net sales, net interest margins are net revenue from interest-accruing assets (the difference between interest received from commercial bank assets, and interest paid on bank liabilities) divided by total earning assets.