

Non-Tariff Measures and the Transmission of Tariff Shocks: Evidence from European Regions

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The resurgence of trade protectionism and geopolitical tensions is deeply reshaping the global trading system. The tariff increases introduced by the United States between 2017 and 2019, and renewed in 2025, have revived concerns about the vulnerability of export-oriented economies to external shocks (Caldara et al., 2020; Fajgelbaum et al., 2020; Amiti et al., 2019; Giesecke and Waschik, 2025). These developments are increasingly interpreted as part of a broader process of geoeconomic fragmentation and reorganisation of global value chains (Gopinath et al., 2023; Aiyar et al., 2023). While the macroeconomic consequences of tariff shocks are well documented, significantly less attention has been devoted to the role played by non-tariff measures (NTMs) in shaping the regional transmission of such shocks within highly integrated economic systems such as the European Union.

This paper investigates how NTMs imposed by the destination market condition the dynamic response of European regional exports to exogenous tariff shocks. Rather than modelling NTMs as temporary trade barriers, we interpret them as a persistent regulatory stock that defines structural market access conditions. Unlike tariffs, which are more politically visible, NTMs – including technical barriers to trade, sanitary and phytosanitary standards, certification requirements and administrative procedures – accumulate over time and generate compliance costs that affect firm behaviour more structurally (Borchert et al., 2014; Portugal-Perez and Wilson, 2012; Cernat and Kutlina-Dimitrova, 2020; De Melo and Shepherd, 2018). In this sense, NTMs represent a background regulatory environment within which tariff shocks operate.

The contribution of this study is twofold. First, it provides new regional evidence on the dynamic effects of US tariff shocks on European industrial exports. Second, and more importantly, it examines how these effects vary systematically depending on the level of NTMs characterising the US market. By focusing on destination-market NTMs, we place the analytical perspective on external regulatory exposure. Although NTMs are formally common to all European regions, their impact differs across territories because regional export structures vary in sectoral composition and exposure to US-regulated industries. This heterogeneity allows us to identify how uniform external regulations generate differentiated regional effects.

The analysis is based on an original regional dataset covering 26 EU countries and 226 NUTS-2 regions. Regional export flows are reconstructed starting from the interregional input–output tables developed by Thissen et al. (2019), allowing us to derive outward trade flows disaggregated by sector and destination. Data on US non-tariff measures are obtained from WTO notification databases compiled by the Vienna Institute for International Economic Studies, covering more than 5,000 products and multiple regulatory categories.

To identify exogenous tariff shocks, we follow a strategy inspired by the macroeconomic shock identification literature (Bettarelli et al., 2024; Ramey and Zubairy, 2018). Specifically, we define the tariff shock as the differential between the tariffs effectively applied in 2017–2020 and those expected for 2025, isolating the unexpected component through residualization with respect to lagged

macroeconomic variables. This procedure minimises concerns related to policy anticipation and reverse causality (Baker et al., 2016; Caldara et al., 2020).

The empirical strategy unfolds in two stages using the Local Projections methodology (Jordà, 2005), which allows for flexible estimation of impulse responses across multiple horizons without imposing the structural constraints of VAR models (Teulings and Zubanov, 2014; Ramey and Zubairy, 2018). In the first stage, we estimate the dynamic effects of tariff shocks: the results show that US tariff shocks produce significant and persistent negative effects on European regional exports, with heterogeneous magnitudes across territories. In the second stage, we introduce an interaction term between tariff shocks and the regional exposure to US-NTMs to identify state-dependent effects. This second analysis reveals that, in the presence of an already stringent system of non-tariff measures (NTMs), the marginal effect of tariff shocks on trade flows is attenuated. NTMs constitute a persistent regulatory environment that structurally shapes market access conditions. By raising compliance requirements and regulatory standards, they impose substantial fixed and sunk adjustment costs on firms seeking to enter and operate in highly regulated markets. As a consequence, firms that successfully export to destinations characterised by a high incidence of NTMs are positively selected: they have already incurred significant adaptation costs and adjusted their production processes to meet demanding regulatory standards. For these firms, the introduction of additional tariffs represents a relatively smaller incremental burden compared to the initial costs required to overcome non-tariff barriers. Therefore, when regulatory non-tariff barriers are already high, the trade-dampening effect of new tariff shocks appears comparatively weaker. In such contexts, tariffs operate on a subset of firms that are structurally more resilient and better equipped to absorb additional trade costs, thereby mitigating aggregate impact on export flows.

These findings contribute to the recent literature showing that trade policy shocks generate asymmetric regional effects depending on structural exposure and production linkages (Redding et al., 2019; Caselli et al., 2023; Kim and Vogel, 2021). They also contribute to the growing literature on geoeconomic fragmentation by highlighting how layered forms of protection – tariffs and NTMs combined – interact to shape regional vulnerability (Gopinath et al., 2025).

From a methodological perspective, the use of dynamic Local Projections in a unified regional framework represents a novel contribution. While previous studies have analysed tariff shocks at the national or firm level (Fajgelbaum et al., 2020; Caldara et al., 2020), and others have examined the effects of NTMs on trade flows (Borchert et al., 2014; Portugal-Perez and Wilson, 2012), to date, no study has jointly assessed how destination-market NTMs condition the regional transmission of tariff shocks in post-2020 Europe.

Overall, this paper advances the debate on trade resilience by demonstrating that the transmission of tariff shocks cannot be fully understood without accounting for the regulatory environment in which tariffs are introduced. Non-tariff measures are not merely additional trade costs; they constitute a structural condition that shapes the magnitude, persistence and spatial distribution of trade shocks. By providing new regional evidence on the interaction between tariffs and NTMs, this study contributes to a more comprehensive understanding of trade fragmentation and regional vulnerability in contemporary Europe.

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