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The effectiveness of embargoes on small arms

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Since 2022, we have witnessed an unprecedented series of sanctions on Russia as an international response to the full-scale invasion of Ukraine. Embargoes are the most common economic sanctions and are frequently imposed to limit arms transfers to countries involved in armed conflicts or to autocratic regimes which do not respect human rights.

Within the literature there is a stream focusing on trade in general, and another on arms. In the latter, traditionally embargoes on conventional arms are analyzed, but the spread of Small Arms and Light Weapons (hereafter SALW) has drawn increased attention from scientists and experts. First, SALW has become a key component in the wave of civil conflicts the world experienced since the end of the Cold War. Furthermore, the spread of small arms appears to be associated with the intensity of violent crime and the increase in suicide by firearms.

The definition of SALW derives from a UN panel of experts, "small arms are those weapons designed for personal use, and light weapons are those designed for use by several persons serving as a crew. Small arms include pistols, rifles, carbines and light machine guns; light weapons include heavy machine guns, grenade launchers, portable anti-aircraft and anti-tank systems, and mortars of less than 100 mm caliber. This category of weaponry also includes ammunition and explosives: cartridges, shells and missiles, anti-personnel and anti-tank grenades, landmines and other explosives".[1]

In the paper *"Trade in Small Arms and Light Weapons: Are Embargoes Effective?"*,[2] we examine the effectiveness of arms embargoes on the trade in Small Arms and Light Weapons (SALW) over the period from 1990 to 2017. It is well recognized that embargoes and other sanctions often fall short of their objectives due to sanctions-busting — that is, the circumvention of trade restrictions. This phenomenon is frequently cited as a key reason why sanctions fail to achieve their intended political outcomes.

[1] United Nations (1997) Report of the panel of governmental experts on small arms. Report A/52/298: 11–12.
[2] Baronchelli, A., Caruso, R., and Ricciuti, R. (2022) 'Trade in small arms and light weapons: Are embargoes effective?' The World Economy, 45(5): 1336–1361. Available at https://doi.org/10.1111/twec.13217

In the case of arms embargoes, there is concern that non-compliant exporters may simply replace compliant ones, continuing to supply weapons to sanctioned countries, also known as target countries. Trade diversion and other evasive practices are therefore commonly identified as causes of embargo ineffectiveness.

Assessing whether arms embargoes actually work is particularly important in the context of SALW, which are often considered highly susceptible to diversion. Sanctioned countries may acquire small arms and ammunition through porous borders or via neighboring states, a risk that appears especially pronounced for ammunition.

To address this, our study first evaluates whether multilateral arms embargoes are effective in curbing SALW transfers to sanctioned countries. We then explore potential mechanisms of sanctions-busting. Specifically, we investigate whether countries neighboring embargoed states increase their SALW imports—an indicator of possible diversion. Additionally, we analyze export classifications, focusing on whether embargoes are being circumvented by mislabeling SALW as "sporting arms," which, despite their intended recreational use, can be repurposed for conflict.

Our empirical approach employs a gravity model of trade, which incorporates both conventional economic variables and relevant political and military factors. We use an unbalanced panel of 79,245 observations covering SALW transfers between 9,275 country and territory pairs, based on UN Comtrade data from the NISAT project.

We find that arms embargoes are generally effective, reducing SALW imports to target countries by approximately 33%. Notably, EU-imposed sanctions are associated with a 37% reduction in trade, while UN embargoes appear to have no significant effect. This result is particularly interesting, since the EU trade policy is centralized and it is likely that – compared with the UN – member countries are much more homogenous and abide by their collective decisions, more than the New York-based international institution. Importantly, we find no evidence of sanctions-busting. Countries neighboring embargoed states do not increase their SALW imports, suggesting there is no diversion effect.

Furthermore, embargoes do not significantly affect trade in sporting arms, reinforcing the conclusion that such mislabeling is not a widespread evasion tactic. Furthermore, our analysis suggests that, far from being used only for civil purposes, sporting arms are linked to key aspects of the military. Moreover, civil conflict in the importer country leads to an increase of 35% in its imports of sporting arms. Notably, the coefficient of civil conflict is significantly lower when considering the trade in military weapons. The increase in inflows of SALW associated with the presence of civil conflict is about 22%.

Overall, this research suggests that international cooperation in limiting the SALW trade may be effective, but cohesion among states and the proper categorization of different types of arms are crucial.

Unveiling the heterogeneous effects of natural disasters: What two earthquakes teach us

Tania Masi

Natural hazards represent a major global challenge, as their frequency has been increasing over time. For instance, in the first five months of 2025 alone, Italy experienced 110 extreme climate events. In addition, a large area in the south of the country (Campi Flegrei) is currently undergoing a seismic sequence that may indicate heightened volcanic activity or culminate in a devastating earthquake.

In addition to immediate devastation and health risks for the population, natural hazards trigger long-lasting socio-economic consequences, including increased income disparities. However, they may also present an opportunity for affected areas. Although much attention typically centres on emergency humanitarian responses and immediate physical reconstruction efforts, it is essential to understand how these events influence economic activities across diverse sectors to craft comprehensive and effective recovery strategies.

In a recent paper with Maria Gabriella Ladu[3], we analyse two significant earthquakes in Italy, the 2009 earthquake in L'Aquila and the 2012 earthquake in Emilia-Romagna, to uncover the complex, heterogeneous economic impacts these disasters have had, along with their implications for policies that should encourage sustainable, long-term economic growth beyond the end of reconstruction aid.

Theoretical frameworks around the impacts of catastrophic events suggest varied outcomes. Neoclassical economic theories typically predict short-term negative impacts due to the immediate loss of human life and physical capital, whereas endogenous growth theories anticipate persistent detrimental effects on economic growth. Alternatively, the Schumpeterian concept of "creative destruction" suggests disasters might stimulate economic revitalization through the forced replacement and modernization of damaged physical capital.

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[3] Ladu, M. G. and Masi, T. (2025) 'Decoding Sectoral Dynamics: Unveiling the Heterogeneous Effects of Earthquakes', forthcoming in *Italian Economic Journal*.

Empirically, research has shown diverse impacts of natural hazards. In high-income countries, recovery is often faster due to stronger institutions and more efficient public spending mechanisms, whereas in developing economies, disasters can set back growth trajectories by decades. These works highlight how the consequences of disasters may depend heavily on the pre-existing economic structure, policy environment, and institutional quality. The Italian case thus offers an insightful example that showcases the importance of local governance and structural heterogeneity within the same national framework.

Our empirical analysis used the Synthetic Difference-in-Differences (SDID) methodology, a novel estimator that combines elements of traditional Difference-in-Differences and Synthetic Control methods. SDID allows for a robust comparison of the provinces hit by the two earthquakes with unaffected provinces, effectively isolating the economic impacts attributable directly to the earthquakes. This approach is particularly useful in assessing the causal effects of localized events such as earthquakes, where randomized experiments are impossible and confounding variables abound.

Our research reveals that both the 2009 L'Aquila and the 2012 Emilia-Romagna earthquakes had a positive overall impact on the total Gross Value Added (GVA) in their respective provinces, supporting the "creative destruction" hypothesis. However, a closer sector-specific analysis reveals substantial differences in how these benefits were distributed across various economic sectors.

In L'Aquila, the earthquake's devastating impact was concentrated in the historic city centre, severely damaging residential buildings, commercial establishments, and essential infrastructure. Consequently, economic recovery efforts significantly benefited the construction sector, fuelled by substantial public investments totalling approximately 17.5 billion euros dedicated primarily to physical reconstruction. The construction sector experienced a notable 30% rise in GVA. However, other economic sectors, including industry and services, did not reap comparable benefits. This disparity resulted from the city's economic profile, heavily reliant on small-scale local retail businesses that faced prolonged disruptions and were slower to recover. The prolonged reconstruction activities exacerbated logistical challenges, bureaucratic complexities, and further delayed recovery in non-construction sectors.

Conversely, Emilia-Romagna presented a markedly different recovery narrative due to its diversified economic base and stronger pre-existing institutional frameworks. This region, known for its robust agri-food, manufacturing, and globally integrated high-value industries, effectively leveraged approximately 8.4 billion euros in public reconstruction funds. These funds were strategically managed primarily at the regional level, significantly enhancing the region's industrial sectors beyond construction. Indeed, the industry sectors, excluding construction, experienced around a 7% increase in GVA.

Therefore, the 2012 event had both direct and indirect effects: the direct effect was the positive impact on the construction sector, while the indirect effect manifested as a positive impact on the industrial sector. In contrast, the 2009 event exhibited only the direct effect.

Considering that the two events did not exhibit significant differences in the financial support received in their aftermath, the quality of institutional frameworks may emerge as a crucial determinant in shaping recovery outcomes and enhancing economic resilience. Emilia-Romagna's higher institutional quality, assessed via the Institutional Quality Index, may have enabled rapid, targeted, and effective mobilization of reconstruction resources. This facilitated a faster economic recovery and broader revitalization. By contrast, L'Aquila experienced mixed governance approaches that encompassed both central and local authorities, leading to fragmented decision-making processes and significant delays in resource deployment and project execution. Moreover, emergency management was implemented through non-shared choices and, thanks to the state of emergency, in derogation of the current regulatory system. In the absence of sharing processes, the transformations were implemented despite the opposition of a large part of the population, which required a process not exclusively aimed at the construction aspect.

However, institutions are only one of the factors that may explain the divergence between the two events. Detailed analysis further illustrates how socioeconomic differences critically influenced such outcomes. L'Aquila's economic dependency on small, localized businesses with limited operational flexibility significantly hindered swift recovery. In contrast, Emilia-Romagna's extensive global supply chain connections and dynamic business environment allowed rapid business adaptations, minimizing economic disruptions. Additionally, as mentioned, the established and efficient administrative processes in Emilia-Romagna significantly streamlined the businesses' ability to access necessary financial support swiftly.

These findings have profound implications for policy interventions in case of natural hazards. First, disaster preparedness should include robust local governance systems that can coordinate effectively with national agencies. Decentralization, when paired with accountability and technical capacity, can vastly improve recovery outcomes.

Second, recovery strategies must be sensitive to the economic structure of the affected area. A one-size-fits-all approach will not work if the local economy lacks absorptive capacity, or if the institutional quality is too low to manage complex recovery programs.

Third, the timing and sequencing of interventions matter. In L'Aquila, delays in project execution meant that even well-funded programs had a diminished impact. Policymakers should prioritize early investments in coordination infrastructure, such as digital platforms for fund distribution and transparent procurement processes. Emilia-Romagna's success shows that aligning recovery with long-term development goals, like fostering innovation in industry, can create virtuous cycles of growth.

Fourth, intergovernmental coordination is vital. The 2009 disaster saw overlapping responsibilities between national and local governments, whereas the 2012 disaster benefited from clearer governance structures and the empowerment of regional authorities. Clear lines of authority, responsibilities, and funding sources are essential for fast and effective disaster response.

In conclusion, the case studies of L'Aquila and Emilia-Romagna provide valuable lessons for economic policy regarding disaster preparedness and recovery. They highlight the heterogeneous impacts disasters can have across sectors and areas, emphasize the role of robust institutional frameworks in managing recovery effectively, and illustrate the importance of targeted, context-sensitive economic policies.

To further develop future policies, it is essential to continue research into sector-specific responses and institutional strategies in disaster recovery, fostering sustainable economic development in the face of inevitable future disasters. Integrating such knowledge into climate adaptation strategies and national disaster response frameworks can ensure that post-disaster reconstruction becomes not just a return to normalcy, but a catalyst for inclusive, long-term growth.

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