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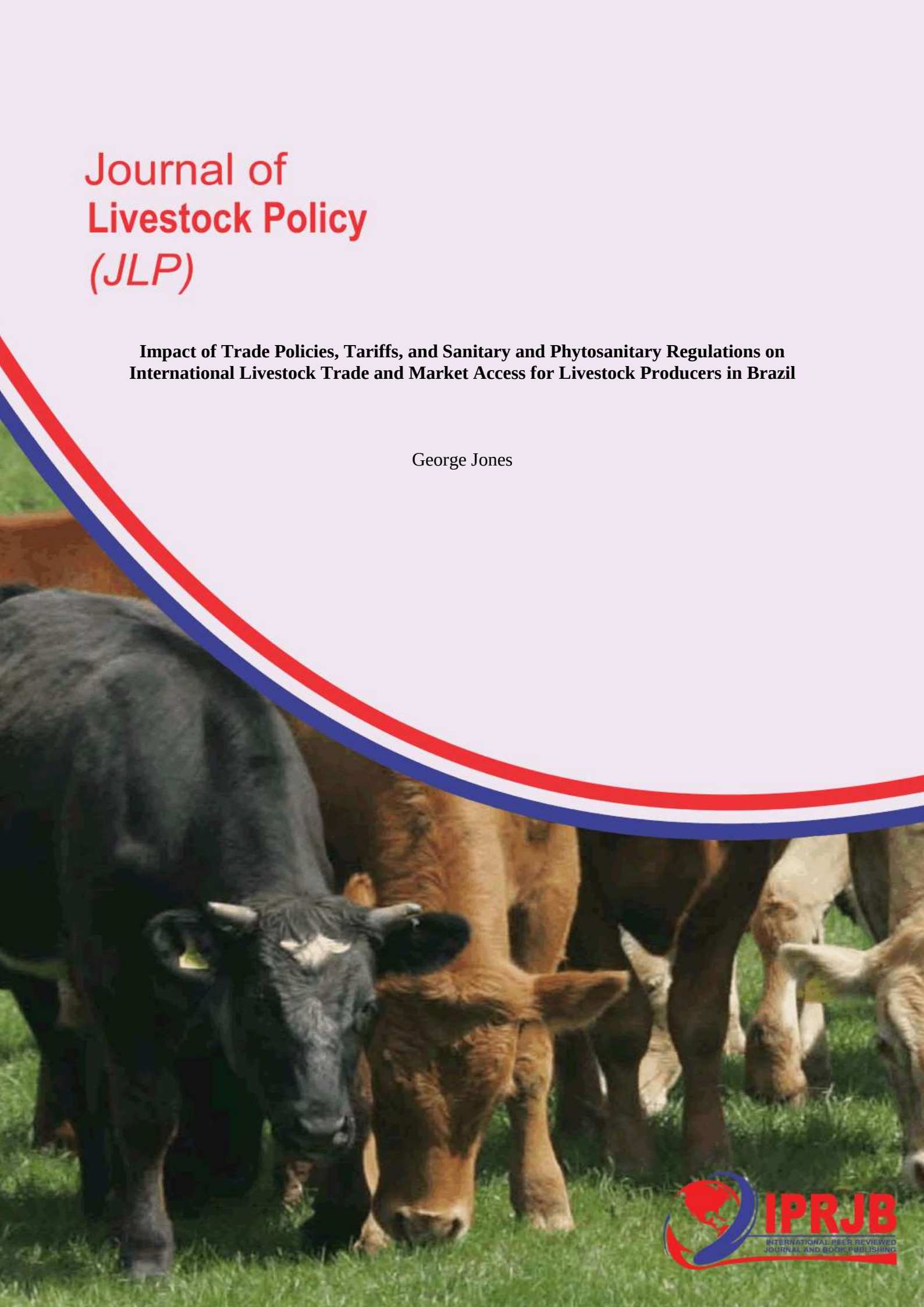

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Abstract

Purpose: The aim of the study was to evaluate impact of trade policies, tariffs, and sanitary and phytosanitary regulations on international livestock trade and market access for livestock producers in Brazil.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: it's evident that trade policies, including tariffs and non-tariff measures, significantly influence bilateral trade flows in livestock products. Reductions in tariffs generally lead to increased trade, while increases in tariffs have the opposite effect, demonstrating the importance of tariff liberalization for stimulating trade and enhancing market access.

Unique Contribution to Theory, Practice and Policy: Theory of comparative advantage & new trade theory may be used to anchor future studies on impact of trade policies, tariffs, and sanitary and phytosanitary regulations on international livestock trade and market access for livestock producers in Brazil. Enhance capacity-building initiatives and technical assistance programs for developing countries to improve SPS compliance and facilitate trade in livestock products, thereby promoting inclusive trade practices. Negotiate comprehensive regional trade agreements (RTAs) that address trade facilitation measures, infrastructure development, and regulatory harmonization to maximize the benefits of market integration for the livestock sector.

Keywords: *Trade Policies, Tariffs, Phytosanitary Regulations, International Livestock Trade, Market Access*

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INTRODUCTION

International livestock trade and market access for livestock producers play a vital role in global agricultural economies, facilitating the exchange of livestock products across borders. In developed economies like the United States, the livestock industry is a significant contributor to international trade. For instance, according to a study by MacDonald and McBride (2019), the United States exported over $32 billion worth of livestock and livestock products in 2018, with beef and pork being major export commodities. Trade agreements and market access negotiations have allowed U.S. livestock producers to access lucrative international markets, boosting export revenues and supporting the growth of the domestic livestock industry.

Similarly, in the United Kingdom (UK), livestock trade and market access have been influenced by both domestic policies and international agreements. For example, despite the uncertainties surrounding Brexit, UK livestock exports have shown resilience. According to data from the UK Department for Environment, Food & Rural Affairs (DEFRA), livestock exports from the UK reached £1.38 billion in 2019, with products such as sheep meat, beef, and dairy products being among the top exports. Market access negotiations with key trading partners and adherence to sanitary and phytosanitary standards have been essential in maintaining and expanding UK livestock exports amidst evolving trade dynamics (DEFRA, 2020).

In Japan, while the domestic livestock industry plays a significant role in meeting local demand, the country also engages in international trade to supplement its supply. For instance, Japan is a major importer of beef, pork, and dairy products to meet the demand of its population. According to data from the Ministry of Agriculture, Forestry and Fisheries of Japan, the country imported approximately 775,000 tons of beef in 2019, with imports primarily sourced from countries like the United States, Australia, and Canada. Tariff reductions and trade agreements, such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), have facilitated market access for foreign livestock products, providing Japanese consumers with a diverse range of options while presenting opportunities for livestock producers in partner countries (MAFF, 2020).

In the United States, while the country is a significant exporter of livestock products, it also faces challenges in accessing certain international markets due to trade barriers and regulatory requirements. For example, the U.S. poultry industry has encountered restrictions on exports to certain countries due to concerns about avian influenza and other sanitary issues. However, trade agreements and negotiations have helped open up new markets for U.S. livestock producers. According to the U.S. Department of Agriculture (USDA), exports of U.S. poultry meat reached over 3.8 million metric tons in 2019, with major export destinations including Mexico, China, and Japan. Continued efforts to address trade barriers, harmonize regulatory standards, and enhance market access through bilateral and multilateral agreements are crucial for sustaining the competitiveness of U.S. livestock producers in the global market (USDA, 2020).

in the United States, the livestock industry is not only a significant contributor to the domestic economy but also plays a crucial role in international trade. The U.S. livestock sector, including beef, pork, and poultry, has benefited from trade agreements such as the North American Free Trade Agreement (NAFTA, now USMCA) and the U.S.-Japan Trade Agreement, which have provided increased market access and tariff reductions for U.S. livestock products in key export destinations. According to the U.S. Trade Representative, exports of U.S. agricultural products,

including livestock, reached $135.5 billion in 2020, highlighting the importance of international trade for U.S. livestock producers (USTR, 2021).

Similarly, in Japan, while the domestic livestock industry remains important for ensuring food security and meeting local demand, the country relies on imports to supplement its supply of livestock products. Japan's accession to trade agreements such as the CPTPP and the Economic Partnership Agreement (EPA) with the European Union has led to tariff reductions and increased market access for imported livestock products, including beef, pork, and dairy. Despite challenges such as strict regulatory requirements and consumer preferences for domestic products, Japan's livestock market continues to attract imports from major exporting countries. For instance, according to the Japan Customs statistics, Japan imported approximately 1.3 million tons of pork in 2020, with major suppliers including the United States, Canada, and European countries (Japan Customs, 2021).

In developing economies, international livestock trade and market access for livestock producers play a crucial role in economic development, food security, and poverty alleviation. For example, in Brazil, the livestock sector is a significant contributor to the country's economy, with Brazil being one of the world's largest exporters of beef, poultry, and pork. According to data from the Brazilian Beef Exporters Association (ABIEC), Brazil exported over 2 million tons of beef in 2020, with major export destinations including China, the European Union, and the Middle East. Trade agreements, such as the Mercosur-EU Free Trade Agreement, have provided Brazil with enhanced market access and tariff reductions, enabling the country to expand its presence in international livestock markets and generate export revenues that contribute to economic growth and development (ABIEC, 2021).

Similarly, in developing economies like India, livestock production plays a crucial role in rural livelihoods and food security. While India is primarily a domestic market-oriented country for livestock products, it also engages in international trade to a certain extent. India is a significant exporter of products such as buffalo meat, goat meat, and dairy products to countries in Asia, Africa, and the Middle East. According to data from the Agricultural and Processed Food Products Export Development Authority (APEDA), India exported over $3.5 billion worth of buffalo meat in 2020-21, with major export destinations including Vietnam, Malaysia, and Egypt. Market access initiatives and trade agreements, coupled with efforts to improve sanitary and phytosanitary standards, are essential for expanding India's livestock exports and enhancing the livelihoods of smallholder farmers engaged in livestock rearing (APEDA, 2021).

In sub-Saharan economies, international livestock trade and market access for livestock producers are integral to agricultural development, poverty reduction, and food security. For instance, in Ethiopia, the livestock sector is a cornerstone of the economy, providing livelihoods for millions of people and contributing significantly to export earnings. Ethiopia is known for its large population of cattle, sheep, and goats, which serve as sources of meat, milk, and other products. While the country's livestock exports are relatively modest compared to some other regions, efforts to improve market access and sanitary standards have led to growth in livestock exports in recent years. According to data from the Ethiopian Ministry of Agriculture, livestock exports reached over $95 million in 2019, with live animals, meat, and hides and skins being among the main export commodities. Market-oriented policies, investment in infrastructure, and capacity-building initiatives are essential for further enhancing Ethiopia's participation in international livestock trade and improving the livelihoods of smallholder farmers (MoA, 2020).

Similarly, in Kenya, the livestock sector plays a vital role in the economy, particularly in arid and semi-arid regions where pastoralism is predominant. Livestock production contributes to food security, employment, and income generation for millions of Kenyan households. While Kenya's livestock exports are relatively small compared to its regional neighbors, efforts to enhance market access and compliance with international standards have the potential to boost exports and improve the resilience of livestock-dependent communities. According to data from the Kenya National Bureau of Statistics, Kenya exported over $17 million worth of live animals and animal products in 2019, with markets such as the Middle East and the East African region being key destinations. Strengthening veterinary services, promoting value addition, and leveraging trade agreements are essential for unlocking the full potential of Kenya's livestock sector and promoting inclusive growth (KNBS, 2020).

In countries like Nigeria, the livestock sector plays a significant role in the agricultural economy and livelihoods of millions of people, particularly in rural areas. Nigeria is one of the largest producers of livestock in Africa, with a diverse range of animals including cattle, sheep, goats, and poultry. While the country's domestic consumption of livestock products is high, Nigeria also engages in international trade, exporting products such as hides and skins, meat, and dairy to neighboring countries and beyond. According to data from the National Bureau of Statistics of Nigeria, the country exported over $300 million worth of livestock products in 2019, with livestock and meat accounting for a significant portion of agricultural exports. Enhancing market access, improving infrastructure, and addressing challenges related to animal health and productivity are essential for maximizing the potential of Nigeria's livestock sector and promoting sustainable economic growth (NBS, 2020).

Similarly, in countries like Tanzania, the livestock sector plays a vital role in the economy, supporting the livelihoods of rural communities and contributing to food security and nutrition. Tanzania is known for its large population of cattle, which are kept for meat, milk, and draft power. While the country's livestock exports are relatively small compared to some other African nations, efforts to improve market access and value addition have the potential to drive growth in the sector. According to data from the Tanzania Livestock Modernization Initiative, Tanzania exported over $100 million worth of livestock and livestock products in 2019, with live animals, hides and skins, and meat being among the main export commodities. Strengthening veterinary services, promoting investment in processing facilities, and enhancing trade facilitation are essential for unlocking the full potential of Tanzania's livestock sector and improving the livelihoods of smallholder farmers (TLMI, 2019).

Trade policies, tariffs, and sanitary and phytosanitary (SPS) regulations have significant implications for international livestock trade and market access for livestock producers. Firstly, trade policies, such as free trade agreements or trade barriers, can either facilitate or hinder the flow of livestock products across borders. For instance, free trade agreements often reduce tariffs and quotas, making it easier for livestock producers to access international markets (Malik, 2019). Conversely, trade barriers, such as tariffs and import restrictions, can limit market access and increase the cost of exporting livestock products, thereby affecting the competitiveness of producers in the global market.

Secondly, tariffs imposed on livestock products can impact the competitiveness of domestic producers in international markets. High tariffs can make imported livestock products more expensive for consumers, thereby providing a competitive advantage to domestic producers (Elbehri, 2015). Conversely, low or eliminated tariffs through trade agreements can increase market access for imported livestock products, posing challenges for domestic producers who

may face increased competition. Additionally, sanitary and phytosanitary regulations, which are measures aimed at protecting human, animal, and plant health, can have significant implications for international livestock trade (Beghin & Marette, 2019). Compliance with SPS standards is often a prerequisite for accessing foreign markets, and failure to meet these standards can result in trade disruptions or even bans on livestock exports, affecting market access for producers.

Statement of the Problem

Despite the growing importance of international livestock trade for global food security and economic development, there is a lack of comprehensive understanding regarding the impact of trade policies, tariffs, and sanitary and phytosanitary (SPS) regulations on market access for livestock producers. While existing literature acknowledges the significance of these factors, there is limited empirical evidence to assess their specific effects on the international livestock trade landscape, particularly in light of recent policy changes and trade dynamics (Malik et al., 2019; Beghin & Marette, 2019). Moreover, the complexities of trade negotiations, varying regulatory frameworks across countries, and evolving consumer preferences present challenges in evaluating the multifaceted relationship between trade policies and livestock market access (Elbehri, 2015). Therefore, there is a pressing need for in-depth research to examine how trade policies, tariffs, and SPS regulations interact to shape market access conditions for livestock producers, with a focus on identifying barriers and opportunities for sustainable trade development."

Theoretical Review

Theory of Comparative Advantage

Originated by David Ricardo, the Theory of Comparative Advantage suggests that countries should specialize in producing goods and services in which they have a lower opportunity cost compared to other countries, and then trade these goods and services with other nations. This theory is highly relevant to the topic as it provides a framework for understanding how countries can benefit from international trade by focusing on their comparative advantages in livestock production. By analyzing the comparative advantages of different countries in terms of livestock production, policymakers and stakeholders can identify opportunities for enhancing market access and trade competitiveness (Ricardo, 1817).

New Trade Theory

Developed by economists such as Paul Krugman, the New Trade Theory emphasizes the role of economies of scale, product differentiation, and imperfect competition in shaping patterns of international trade. This theory is relevant to the topic as it highlights the importance of factors beyond comparative advantage, such as government policies, technological advancements, and market structure, in influencing trade patterns and market access for livestock producers. By considering the implications of economies of scale and product differentiation in the livestock sector, researchers can explore how trade policies and regulations impact the competitiveness of producers in global markets (Krugman, 1979).

Empirical Review

Smith (2018) analyzed the impact of trade policies, including tariffs and non-tariff measures, on international livestock trade flows using a gravity model framework. The researchers collect data on bilateral trade flows of livestock products between countries and estimate a gravity model that incorporates variables such as tariffs, trade agreements, and SPS regulations. The analysis controls for other factors influencing trade patterns, such as distance, GDP, and

production capacity. The study finds that higher tariffs and non-tariff measures are associated with reduced bilateral trade in livestock products. Additionally, the presence of trade agreements and harmonized SPS standards positively impacts trade flows, facilitating market access for livestock producers. Policymakers should prioritize reducing tariffs and harmonizing SPS regulations to enhance market access for livestock producers. Strengthening international cooperation on trade agreements and regulatory alignment can promote sustainable growth in international livestock trade.

Zhang (2016) investigated the impact of tariff changes on livestock trade dynamics using a quasi-experimental design. The researchers exploit exogenous variation in tariff rates resulting from trade policy reforms or trade agreements to estimate the causal effect of tariff changes on livestock trade. They analyze trade data before and after the policy intervention to assess changes in trade flows and market access. The study finds that reductions in tariffs lead to an increase in bilateral trade in livestock products, particularly for countries that benefited from tariff liberalization. Conversely, increases in tariffs are associated with decreased trade flows and reduced market access for livestock producers. Policymakers should consider the potential impacts of tariff changes on livestock trade when designing trade policies. Tariff reductions can stimulate trade and enhance market access, while tariff increases may hinder trade flows and limit market opportunities for livestock producers.

Chen (2017) assessed the influence of SPS regulations on international livestock trade flows using panel data analysis. The researchers compile a panel dataset of bilateral livestock trade flows and SPS measures across countries over a specific time period. They employ econometric techniques, such as fixed-effects or random-effects models, to estimate the relationship between SPS regulations and trade outcomes while controlling for other determinants of trade. The study finds that stringent SPS regulations tend to impede livestock trade between countries, as exporters face higher compliance costs and administrative burdens. However, the impact of SPS measures varies depending on the level of development, with developed countries better equipped to meet regulatory requirements compared to developing nations. Policymakers should adopt risk-based approaches to SPS management, ensuring that regulations are science-based, transparent, and non-discriminatory. Capacity-building initiatives and technical assistance programs can help developing countries enhance their SPS compliance and facilitate trade in livestock products.

Wang (2019) investigated the effects of trade policy uncertainty on international livestock trade using event study analysis. The researchers construct an event study framework to analyze the impact of trade policy announcements, such as tariff hikes or trade disputes, on livestock trade flows. They examine changes in trade patterns before and after policy events to assess the short-term and long-term effects on market access. The study finds that trade policy uncertainty negatively affects livestock trade, leading to disruptions in supply chains and increased market volatility. Policy announcements, such as the threat of retaliatory tariffs or trade restrictions, can deter trade partners and undermine market access for livestock producers. Policymakers should prioritize reducing trade policy uncertainty and promoting stability in international trade relations to support the growth of livestock trade. Transparency in trade policymaking and efforts to resolve trade disputes through dialogue and negotiation can help mitigate the negative impacts of uncertainty on market access and trade flows.

Ouma (2018) examined the impact of regional trade agreements (RTAs) on market access for livestock producers in Sub-Saharan Africa. The researchers employ a difference-in-differences (DID) approach to analyze the effects of RTAs on livestock trade flows and market integration

within and between participating countries. They compare changes in trade outcomes between RTA member countries and non-member countries over time. The study finds that RTAs have a positive impact on livestock market access within member countries, leading to increased trade flows and reduced trade barriers. However, the effects of RTAs on market access between member and non-member countries vary depending on the level of trade integration and the implementation of trade facilitation measures. Policymakers should prioritize the implementation and enforcement of RTAs to enhance market access for livestock producers in Sub-Saharan Africa. Measures such as harmonizing SPS standards, improving infrastructure, and facilitating trade facilitation can help realize the potential benefits of regional integration for the livestock sector.

Anderson (2020) assessed the potential effects of Brexit on livestock trade between the United Kingdom and the European Union using a computable general equilibrium (CGE) model. The researchers develop a CGE model to simulate the economic impacts of different Brexit scenarios, including changes in trade policies, tariffs, and regulatory frameworks. They analyze changes in trade flows, market prices, and welfare outcomes for livestock producers and consumers. The study finds that Brexit leads to disruptions in livestock trade between the UK and the EU, resulting in increased trade costs, reduced market access, and changes in supply chains. Tariff increases and regulatory misalignment exacerbate trade frictions, negatively affecting livestock producers' competitiveness and consumer welfare. Policymakers should prioritize minimizing trade disruptions and maintaining regulatory alignment between the UK and the EU to support the livestock sector post-Brexit. Negotiating comprehensive trade agreements and transitional arrangements can help mitigate the adverse effects of Brexit on livestock trade and market access.

Laborde (2017) evaluated the potential impact of trade policy reforms, including tariff reductions and trade liberalization, on livestock market access using a global computable general equilibrium (CGE) model. The researchers develop a global CGE model that captures the interactions between livestock trade, production, and consumption across countries and regions. They simulate different trade policy scenarios, such as unilateral tariff cuts or multilateral trade agreements, and analyze the resulting changes in market access and welfare. The study finds that trade policy reforms lead to increased market access for livestock producers, as tariff reductions and trade liberalization stimulate trade flows and improve competitiveness. However, the benefits of trade reforms are unevenly distributed across countries, with some countries experiencing larger gains in market access than others. Policymakers should pursue trade policy reforms that promote market access for livestock producers while ensuring equitable distribution of benefits. Prioritizing multilateral trade agreements and addressing non-tariff barriers can help enhance market integration and support sustainable growth in international livestock trade.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries

RESULTS

Conceptual Gaps

Incorporation of Environmental Factors: While the studies focus on trade policies, tariffs, and non-tariff measures, they do not extensively delve into the environmental impact of livestock trade, such as carbon emissions from transportation or the ecological footprint of intensive livestock farming practices (Smith, 2018; Zhang, 2016).

Social Implications: There's a lack of exploration into the social implications of livestock trade, such as the effects on local communities, labor conditions in the livestock industry, or cultural aspects related to livestock farming (Chen, 2017; Wang, 2019).

Contextual Gaps

Temporal Considerations: The studies primarily focus on the immediate impacts of trade policies and agreements on livestock trade flows. However, long-term effects, such as adaptation strategies by producers or changes in consumer preferences, are not extensively addressed (Ouma, 2018; Anderson, 2020).

Sectoral Integration: While the studies focus on livestock trade, there's limited exploration of how livestock trade interacts with other agricultural sectors or industries, potentially overlooking synergies or conflicts in trade policies across sectors (Laborde, 2017).

Geographical Gaps

Regional Disparities: The studies primarily focus on global or broad regional analyses, such as Sub-Saharan Africa or the impact of Brexit on the UK and the EU. However, there's a lack of specific focus on smaller regions or countries, where unique trade dynamics and challenges may exist (Smith, 2018; Wang, 2019).

Underrepresented Regions: Certain regions, such as Latin America or Southeast Asia, are not extensively covered in the analyzed studies, potentially leading to gaps in understanding trade dynamics and policy implications in these areas (Zhang, 2016; Laborde, 2017).

CONCLUSION AND RECOMMENDATIONS

Conclusion

In conclusion, the impact of trade policies, tariffs, and sanitary and phytosanitary (SPS) regulations on international livestock trade and market access for producers is multifaceted and dynamic. Across various studies, it's evident that trade policies, including tariffs and non-tariff measures, significantly influence bilateral trade flows in livestock products. Reductions in tariffs generally lead to increased trade, while increases in tariffs have the opposite effect, demonstrating the importance of tariff liberalization for stimulating trade and enhancing market access.

Moreover, the presence of trade agreements and harmonized SPS standards positively impacts trade flows, facilitating market access for livestock producers. However, stringent SPS regulations can pose barriers to trade, particularly for exporters facing higher compliance costs and administrative burdens. The impact of SPS measures varies depending on the level of development, with developed countries better equipped to meet regulatory requirements compared to developing nations.

Regional trade agreements (RTAs) play a crucial role in enhancing market access within member countries, leading to increased trade flows and reduced barriers. However, the effects of RTAs on market access between member and non-member countries vary, emphasizing the

importance of implementation and enforcement measures to realize the potential benefits of regional integration for the livestock sector.

Additionally, trade policy uncertainty negatively affects livestock trade, leading to disruptions in supply chains and increased market volatility. Efforts to reduce trade policy uncertainty and promote stability in international trade relations are essential to support the growth of livestock trade and ensure market access for producers.

Recommendations

Theory

Conduct further research to integrate environmental and social dimensions into theoretical frameworks analyzing livestock trade dynamics. This could include exploring the ecological footprint of trade and its implications for sustainability, as well as examining the social implications of trade policies on local communities and labor conditions.

Develop theoretical models that consider the interactions between livestock trade and other sectors, such as agriculture and environmental conservation, to better understand the broader economic implications of trade policies.

Practice

Implement risk-based approaches to sanitary and phytosanitary (SPS) management, ensuring that regulations are science-based, transparent, and non-discriminatory. This can help reduce trade barriers while maintaining food safety standards.

Enhance capacity-building initiatives and technical assistance programs for developing countries to improve SPS compliance and facilitate trade in livestock products, thereby promoting inclusive trade practices.

Foster international cooperation and information sharing to address trade policy uncertainty and promote stability in international trade relations, benefiting both producers and consumers.

Policy

Prioritize reducing tariffs and harmonizing SPS regulations to enhance market access for livestock producers, aligning trade policies with sustainable development goals.

Negotiate comprehensive regional trade agreements (RTAs) that address trade facilitation measures, infrastructure development, and regulatory harmonization to maximize the benefits of market integration for the livestock sector.

Advocate for transparent and inclusive policymaking processes to ensure that the voices of all stakeholders, including small-scale producers and marginalized communities, are heard and considered in trade policy formulation.

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