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LETTER FROM THE EDITOR IN CHIEF

Editor in Chief

The first article aims to estimate the effect of the announcement of the "special military operation in Ukraine" made by the President of Russia on the performance of emerging stock markets. Eduardo Sandoval Álamos (Metropolitan Technological University, Chile) contrasts the Fama and French 5-factor model using four different econometric methods. The results indicate that global investors who timely sought refuge in the stock markets of China, Colombia, Mexico, and Malaysia had superior stock performance in economies that collectively showed positive economic growth rates in 2022 and 2023.

Luciana da Silva Moraes Sardeiro (University of Brasília, Brazil); Paulo Vitor Souza de Souza (Federal University of Pará, Brazil); Yara Consuelo Cintra (Federal University of Rio de Janeiro, Brazil); and Raimunda Maria da Luz Silva (Federal Rural University of the Amazon, Brazil) study the use of counter-accounting as a means of resistance in socio-environmental issues during the Carne Fraca and Carne Fria operations in the Brazilian meat industry. Based on pragmatic critical emancipatory accounting, the authors reveal that NGO counter-narratives challenged the state and corporations by monitoring agreements, participating in technical work, and proposing solutions to institutional gaps. They conclude, through descending hierarchical analysis, how discourses influence social arenas and how language sustains power or generates resistance.

The United States is the world's largest importer of tomatoes, importing large quantities from Mexico. Daniel Hernández-Soto and Mónica Elizabeth Alcalde-Jiménez (National Technological Institute of Mexico in Celaya) analyze whether an annual increase of 20% in the quantity of Mexican tomatoes imported into the U.S. market would be economically viable. In this simulated scenario, the Benefit/Cost Ratio for producers in Sinaloa, Jalisco, Sonora, and Baja California would be 2.3434, 1.2886, 2.8524, and 3.5025 respectively. The authors conclude that, given a 20% increase in the export quantity, producing tomatoes for the U.S. market in these states remains profitable.

For Tiago Rabaço, Fábio Albuquerque, and Paula Gomes dos Santos (Polytechnic Institute of Lisbon, Portugal), there may be an attempt by entities affected by the consequences of the Russia-Ukraine war to obscure or emphasize positive news using impression management strategies. The authors evaluate the use of these strategies for 212 listed European entities using consolidated annual reports from 2021. They conclude that two-thirds of the entities reporting this event, mainly in voluntary sources, exhibited reduced readability levels. Additionally, although neutrality prevailed, the entities expressed some uncertainty related to their claims of being immune to the war's effects. Occasionally, differences by country and industry were identified.

The image people have of robots/AI often does not match reality. This can affect the effective implementation of these technologies in a country, negatively impacting its competitiveness. Jose Luis Arroyo-Barrigüete (Pontifical Comillas University), José Ignacio López-Sánchez, and Antonio J. Guillén (Complutense University of Madrid, Spain) analyze whether the perception of a robot influences the perception of the impact of robotization on employment. The results confirm that: (i) the more distorted an individual's image of a robot (erroneous image), the greater their

perception of robots/AI as a threat to jobs; and (ii) in countries where robot density is higher (operational robots per 10,000 workers), this perceived threat level is lower.

Corporate social responsibility (CSR) seeks to meet the needs of stakeholders. Pedro Severino-González; Yeison Morales-Mejias; Raimundo Pérez-Dolarea (Catholic University of Maule, Chile); and Giusseppe Sarmiento-Peralta (National University of San Marcos, Peru) describe the perception of university students on CSR from the perspective of consumers of air passenger transport services in the Maule region (Chile). The authors find significant differences based on gender, age, and location. They conclude that companies should include CSR strategies that create value according to the requirements of each stakeholder group.
I would once again like to thank all those who have made this journal possible: members of the Advisory Board, the Editorial Board, Editors and Associate Editors, assessors, authors and, last but not least, the readers.

Editor in Chief

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CARTA DEL EDITOR IN CHIEF

Editor in Chief

En el primer artículo se trata de estimar el efecto que tuvo el anuncio "operación militar especial en Ucrania" realizado por el presidente de Rusia en el desempeño de los mercados accionarios emergentes. Para ello, Eduardo Sandoval Álamos (Universidad Tecnológica Metropolitana, Chile). contrasta el modelo de 5 factores de Fama y French utilizando 4 métodos econométricos diferentes. Los resultados indican que aquellos inversores globales que oportunamente se refugiaron en los mercados accionarios de China, Colombia, México y Malasia tuvieron un desempeño accionario superior en economías que en conjunto mostraron, durante los años 2022 y 2023, tasas de crecimiento económico positivas.

Luciana da Silva Moraes Sardeiro (Universidade de Brasília (UnB), Brasil); Paulo Vitor Souza de Souza (Universidade Federal do Pará (UFPA) , Brasil); Yara Consuelo Cintra (Universidade Federal do Rio de Janeiro (UFRJ) , Brasil); Raimunda Maria da Luz Silva (Universidade Federal Rural da Amazônia (UFRA) , Brasil) tratan de estudiar el uso de la contracontabilidad como medio de resistencia en cuestiones socioambientales durante las Operaciones Carne Fraca y Carne Fria en la industria cárnica brasileña. Para los autores, fundamentados en la contabilidad emancipadora pragmática crítica, los contrarrelatos de las ONGs revelaron estrategias desafiantes hacia el Estado y las corporaciones, monitoreando acuerdos, participando en trabajos técnicos y proponiendo soluciones para brechas institucionales. Concluyen, a través del análisis jerárquico descendente, cómo los discursos influyen en las arenas sociales y cómo el lenguaje sostiene el poder o genera resistencia.

Estados Unidos es el principal importador de tomate en el mundo, e importa grandes cantidades de México. Daniel Hernández-Soto y Mónica Elizabeth Alcalde-Jiménez (Tecnológico Nacional de México en Celaya) tratan de analizar si un aumento anual de 20% en la cantidad importada de tomate mexicano en el mercado estadounidense sería viable en el sentido económico. En este escenario simulado, la Relación Beneficio/Costo (R B/C) para los productores de Sinaloa, Jalisco, Sonora y Baja California sería 2.3434, 1.2886, 2.8524 y 3.5025 respectivamente. Así los autores pueden concluir que, ante un incremento de 20% en la cantidad exportada, producir tomate con destino a Estados Unidos en estos estados sigue siendo rentable.

Para Tiago Rabaço; Fábio Albuquerque y Paula Gomes dos Santos (Instituto Politécnico de Lisboa, Portugal) puede haber un intento por parte de entidades afectadas por las consecuencias de la guerra Rusia-Ucrania de ofuscar o enfatizar noticias positivas al divulgarlas, utilizando estrategias de gestión de impresión. Para ello los autores tratan de evaluar el uso de esas estrategias para 212 entidades europeas cotizadas, utilizando informes anuales consolidados de 2021. Concluyen que, en dos tercios de las entidades que divulgaron este evento, principalmente en fuentes voluntarias, se encontraron niveles reducidos de legibilidad. Además, aunque prevaleció la neutralidad, las entidades expresaron cierta incertidumbre relacionada con su afirmación de ser inmunes a los efectos de la guerra. Finalmente, y de manera ocasional, se identificaron diferencias por país e industria.

La imagen que las personas tienen de los robots/IA en muchas ocasiones no se corresponde con la realidad. Esto puede afectar a la implantación efectiva de estas

tecnologías en un país, generando un impacto negativo sobre su competitividad. Jose Luis Arroyo-Barrigüete (Universidad Pontificia Comillas), José Ignacio López-Sánchez, y Antonio J. Guillén (Universidad Complutense de Madrid, Spain) tratan de analizar si la idea que se tiene de un robot influye en la percepción del impacto de la robotización en el empleo. Los resultados confirman que: (i) cuanto más distorsionada es la imagen que un individuo tiene sobre lo que es un robot (Imagen errónea) mayor es su percepción de los robots/IA como amenaza para los empleos; y (ii) que en aquellos países donde la densidad de robots es mayor (robots operativos por cada 10.000 trabajadores), este nivel de amenaza percibida es menor.

La responsabilidad social corporativa (RSC) busca satisfacer las necesidades de los stakeholders. Pedro Severino-González; Yeison Morales-Mejias; Raimundo Pérez-Dolarea (Universidad Católica del Maule. Chile) y Giusseppe Sarmiento-Peralta (Universidad Nacional Mayor de San Marcos, Perú) tratan de describir la percepción de los estudiantes universitarios sobre la RSC desde la perspectiva de consumidores de servicios de transportes aéreos de pasajeros en la región del Maule (Chile). Los autores encuentran diferencias significativas de acuerdo al género, edad y ubicación. Y concluyen que las empresas deben incluir estrategias de RSC que permitan crear valor según los requerimientos de cada grupo de interés.

De nuevo queremos agradecer a todos aquellos que hacen posible el buen funcionamiento de la revista: miembros del Consejo Consultivo, Consejo Editorial, Editores y Editores Asociados de área, evaluadores, autores, y sobre todo de los lectores.

Editor in Chief

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CARTA EDITOR-CHEFE

Editor Chefe

O primeiro artigo visa estimar o efeito do anúncio da "operação militar especial na Ucrânia" feito pelo presidente da Rússia no desempenho dos mercados acionários emergentes. Para isso, Eduardo Sandoval Álamos (Universidade Tecnológica Metropolitana, Chile) contrasta o modelo de 5 fatores de Fama e French utilizando 4 métodos econométricos diferentes. Os resultados indicam que os investidores globais que oportunamente se refugiaram nos mercados acionários da China, Colômbia, México e Malásia tiveram um desempenho acionário superior em economias que, em conjunto, mostraram taxas de crescimento econômico positivas nos anos de 2022 e 2023.

Luciana da Silva Moraes Sardeiro (Universidade de Brasília, Brasil); Paulo Vitor Souza de Souza (Universidade Federal do Pará, Brasil); Yara Consuelo Cintra (Universidade Federal do Rio de Janeiro, Brasil); e Raimunda Maria da Luz Silva (Universidade Federal Rural da Amazônia, Brasil) estudam o uso da contracontabilidade como meio de resistência em questões socioambientais durante as operações Carne Fraca e Carne Fria na indústria de carne brasileira. Com base na contabilidade emancipatória crítica pragmática, os autores revelam que os contrarrelatos das ONGs desafiaram o Estado e as corporações, monitorando acordos, participando de trabalhos técnicos e propondo soluções para lacunas institucionais. Concluem, através da análise hierárquica descendente, como os discursos influenciam as arenas sociais e como a linguagem sustenta o poder ou gera resistência.

Os Estados Unidos são o maior importador de tomates do mundo, importando grandes quantidades do México. Daniel Hernández-Soto e Mónica Elizabeth Alcalde-Jiménez (Instituto Tecnológico Nacional do México em Celaya) analisam se um aumento anual de 20% na quantidade de tomate mexicano importado no mercado norte-americano seria viável economicamente. Nesse cenário simulado, a Relação Benefício/Custo (B/C) para os produtores de Sinaloa, Jalisco, Sonora e Baja California seria de 2,3434, 1,2886, 2,8524 e 3,5025, respectivamente. Os autores concluem que, diante de um aumento de 20% na quantidade exportada, produzir tomate com destino aos Estados Unidos nesses estados continua sendo rentável.

Para Tiago Rabaço, Fábio Albuquerque e Paula Gomes dos Santos (Instituto Politécnico de Lisboa, Portugal), pode haver uma tentativa por parte das entidades afetadas pelas consequências da guerra Rússia-Ucrânia de ofuscar ou enfatizar notícias positivas ao divulgá-las, utilizando estratégias de gestão de impressão. Os autores avaliam o uso dessas estratégias em 212 entidades europeias listadas, utilizando relatórios anuais consolidados de 2021. Concluem que, em dois terços das entidades que divulgaram este evento, principalmente em fontes voluntárias, foram encontrados níveis reduzidos de legibilidade. Além disso, embora tenha prevalecido a neutralidade, as entidades expressaram alguma incerteza relacionada à sua afirmação de serem imunes aos efeitos da guerra. Finalmente, e de maneira ocasional, foram identificadas diferenças por país e indústria.

A imagem que as pessoas têm dos robôs/IA muitas vezes não corresponde à realidade. Isso pode afetar a implantação efetiva dessas tecnologias em um país, gerando um impacto negativo sobre sua competitividade. Jose Luis Arroyo-Barrigüete (Universidade Pontifícia Comillas), José Ignacio López-Sánchez e Antonio J. Guillén (Universidade Complutense de Madrid, Espanha) analisam se a

ideia que se tem de um robô influencia a percepção do impacto da robotização no emprego. Os resultados confirmam que: (i) quanto mais distorcida é a imagem que um indivíduo tem sobre o que é um robô (imagem errônea), maior é a sua percepção dos robôs/IA como ameaça para os empregos; e (ii) que, naqueles países onde a densidade de robôs é maior (robôs operacionais por cada 10.000 trabalhadores), esse nível de ameaça percebida é menor.

A responsabilidade social corporativa (RSC) busca satisfazer as necessidades dos stakeholders. Pedro Severino-González; Yeison Morales-Mejias; Raimundo Pérez-Dolarea (Universidade Católica do Maule, Chile); e Giusseppe Sarmiento-Peralta (Universidade Nacional Maior de San Marcos, Peru) descrevem a percepção dos estudantes universitários sobre a RSC na perspectiva de consumidores de serviços de transporte aéreo de passageiros na região do Maule (Chile). Os autores encontram diferenças significativas de acordo com gênero, idade e localização. E concluem que as empresas devem incluir estratégias de RSC que permitam criar valor segundo os requisitos de cada grupo de interesse.

Queremos, mais uma vez, agradecer a todos os que tornam possível o bom funcionamento da revista: aos membros do Conselho Consultivo, ao Conselho Editorial, Editores e Editores Associados da área, avaliadores, autores e, principalmente, aos leitores.

Editor
Chefe

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SELECCIÓN | PROCEDURE | PROCEDIMENTO

INSTRUCCIONES PARA AUTORES Y PROCEDIMIENTO DE SELECCIÓN

La revista esta dirigida a quienes tienen la responsabilidad de gobernar empresas o dirigir organismos e instituciones públicas o privadas para proporcionarles ideas originales y propuestas innovadoras que contribuyan a la mejora de la competitividad y gobernabilidad de las empresas y los países iberoamericanos en un mundo globalizado. La revista también aspira a servir a la comunidad universitaria y científica de la región como publicación de referencia sobre nuevas ideas. Para ello facilitará la comunicación entre las distintas comunidades universitarias iberoamericanas, las acercará y las articulará alrededor del estudio de áreas concretas, debidamente analizadas mediante aportaciones teóricas, aplicaciones prácticas y estudio de casos reales.

Miembros del mundo universitario, empresarial e institucional podrán remitir sus trabajos originales, no postulados simultáneamente en otras publicaciones, para que sean evaluados y eventualmente publicados en la revista. Los autores que aspiren a la publicación de sus artículos deberán someterse a las siguientes normas:

- Los artículos deben ser inéditos.

- Los trabajos podrán escribirse en español, portugués o inglés. Su extensión será entre 4500 y 5000 palabras. Sin embargo, se admitirá cierta flexibilidad atendiendo a la naturaleza del tema abordado.

- Cada artículo deberá ir precedido de un resumen ejecutivo de no más de cien palabras en el idioma en que ha sido escrito originalmente. Adicionalmente se incluirá la categoría en las que se sitúa el artículo: una de las seis áreas (6) y perspectiva desde la cual se aborda el tema (Teoría, Aplicación y Casos). Además, se incorporará la clasificación del trabajo conforme a los descriptores utilizados por el Journal of Economic Literature.

- El nombre del autor/es no podrá aparecer en ninguna de las hojas del artículo. Ello facilita el proceso de evaluación, pues los datos se incorporarán en el formulario digital.

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- Las referencias bibliográficas se incluirán en el texto indicando el nombre del autor, fecha de publicación, letra y página. La letra, a continuación del año, sólo se utilizará en caso de que se citen obras de un autor pertenecientes a un mismo año. Se incluirán, al final del trabajo, las obras citadas en el texto atendiendo a la información requerida en las normas ISO 690/1987 y su equivalente UNE 50-104-94 que establecen los criterios a seguir para la elaboración de referencias bibliográficas:

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  Artículos: Campa, J.M.; Guillen, M. (1999), "The Internalization of Exports: Ownership and

Location-Specific Factors in a Middle-Income Country", Management Science, Vol. 45, Num. 11, pp. 1463-1478
Artículos con DOI's: Cuervo-Cazurra, A.; Un, C. A. (2007).- "Regional economic integration and R&D investment", Research Policy, Vol. 36, Num. 2, pp. 227-246. doi:10.1016/j.respol.2006.11.003

- La revista se reserva la facultad de editar formalmente los artículos, y de separar y recuadrar determinadas porciones del texto particularmente relevantes, aunque respetando siempre el espíritu del original. Los autores tendrán oportunidad de autorizar el formato final de los artículos antes de su publicación.

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- Corresponde al Editor en Jefe determinar si el artículo es admisible para su publicación. En caso de que así sea, lo enviará al director de área correspondiente, quien iniciará a su vez el proceso de evaluación.

- Cada artículo será sometido a consideración anónima de al menos 2 evaluadores, expertos externos a la entidad editora de la revista y a su consejo de editorial.

- La revista se compromete a responder a los autores con una decisión editorial en un plazo aproximado de tres meses (primera evaluación).

- La lista de evaluadores se hará pública anualmente.

INSTRUCTIONS FOR AUTHORS AND PROCEDURE

The journal is aimed at the people with responsibility for governing companies or managing public or private sectors and institutions. Its goal is to provide such people with original ideas and innovative proposals to help improve the competitiveness and governability of companies and the Ibro-American countries in a globalized world. The journal also aims to serve the region's academic and scientific communities by becoming the publication of reference for new ideas. It will do this by facilitating communication among the various Ibero-American academic communities, bringing them closer together and structuring them around the study of specific areas, duly analyzed by means of theoretical contributions, practical applications, and real case studies.

Original papers may be submitted for evaluation and potential publication in the journal by members of the academic, business and institutional spheres. Authors hoping to publish their articles must adhere to the following rules:

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- Each article must be preceded by an abstract of no more than one hundred words in the original language of the article. The category in which the article is ncluded must also be specified: area of knowledge (6) and perspective from which the subject is being addressed (theory, application, case study). You must also state how the work is classified according to the Journal of Economic Literature's descriptors.

- The author's or authors' name(s) may not appear anywhere in the article. This facilitates the evaluation process since the data will be included in the digital form.

- The title of the work must be included in the original. Originals must be presented in digital format – either in Word or in a Word-compatible format – and be sent electronically (*gcgjournal.georgetown.edu*). Authors must fill out their details on the electronic record, specifying the area under study. Authors will receive an acknowledgement of receipt of their work as soon as they have entered all the information in the article management form.

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> Books: Dornier, P.P.; Ernst, R.; Fendel, M.; Kouvelis, P; (1998), "Global Operations and Logistics: Text and Cases", John Wiley & Son, New Jersey.
> Papers: Campa, J.M.; Guillen, M. (1999), "The Internalization of Exports: Ownership and Location-Specific Factors in a Middle-Income Country", Management Science, Vol. 45, Num. 11, pp. 1463-1478
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- The journal reserves the right to formally edit the articles and to separate particularly relevant parts thereof and put them in boxes, always in accordance with the spirit of the original. Authors will be given the chance to authorize the final format of their articles prior to publication.

- Authors must be willing to assign all the benefits of their copyright to the journal.

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INSTRUÇÕES PARA AUTORES E PROCEDIMENTO DE SELECÇÃO

A revista é dirigida a quem tem a responsabilidade de administrar empresas ou dirigir organismos e instituições públicas ou privadas para lhes proporcionar ideias originais e propostas inovadoras que contribuam para a melhoria da competitividade e governabilidade das empresas e dos países ibero-americanos num mundo globalizado. A revista aspira igualmente a servir a comunidade universitária e científica da região, como publicação de referência sobre novas ideias. Para isso irá facilitar a comunicação entre as diferentes comunidades universitárias ibero-americanas, irá aproximá-las e articulá-las à volta do estudo de áreas concretas, devidamente analisadas através de contribuições teóricas, aplicações práticas e estudo de casos reais.

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- Cada artigo deverá ser precedido de um resumo com o máximo de cem palavras na língua em que tenha sido escrito originalmente. Adicionalmente será incluída a categoria na qual se situa o artigo: uma das seis (6) áreas e perspectiva a partir da qual o tema é abordado (Teoria, Aplicação e Casos). Será, além disso, incorporada a classificação do trabalho de acordo com as descrições utilizadas pelo Journal of Economic Literature.

- O nome do(s) autor(es) não poderá aparecer em nenhuma das páginas do artigo. Isso facilita o processo de avaliação, pois os dados serão introduzidos no formulário digital.

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- As referências bibliográficas serão incluídas no texto, indicando o nome do autor, a data da publicação, título e página. A letra, a seguir ao ano, só será utilizada caso sejam citadas obras de um autor pertencentes a um mesmo ano. Serão incluídas, no final do trabalho, as obras citadas no texto, considerando a informação requerida nas normas ISO 690/1987 e equivalente UNE 50-104-94, que estabelecem os critérios a seguir para a elaboração de referências bibliográficas:

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- A revista reserva-se a faculdade de editar formalmente os artigos, e de separar e reenquadrar determinadas porções do texto particularmente relevantes, embora respeitando sempre o espírito do original. Os autores terão oportunidade de autorizar o formato final dos artigos antes da respectiva publicação.

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- Incumbe ao Editor Chefe determinar se o artigo é admissível para publicação. Caso assim seja, irá enviá-lo ao director da área correspondente que, por sua vez, iniciará o processo de avaliação.

- Cada artigo será submetido a consideração anónima de pelo menos 2 avaliadores, especialistas exteriores à entidade editora da revista e ao seu conselho editorial.

- A revista compromete-se a responder aos autores com uma decisão editorial num prazo aproximado de três meses (primeira avaliação).

- A lista de avaliadores será tornada pública anualmente.

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"Russia's Special Military Operation in Ukraine", The Effect of this Announcement on the Performance of Emerging Stock Markets and its Relationship with Economic Growth. A Case for Event Study

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"Operación Militar Especial de Rusia en Ucrania", El Efecto de este Anuncio en el Desempeño de los Mercados Accionarios Emergentes y su Relación con el Crecimiento Económico. Un Caso para el Estudio de Eventos
"A Operação Militar Especial da Rússia na Ucrânia", O Efeito deste Anúncio no Desempenho dos Mercados Bolsistas Emergentes e a sua Relação com o Crescimento Económico. Um Caso para Estudo de Evento

This article estimates the effect that the announcement of a "special military operation in Ukraine" made by the President of Russia had on the performance of emerging stock markets. For the above, the Fama & French 5-factor model is contrasted using 4 different econometric methods. The results indicate that those global investors who opportunely took refuge in the stock markets of China, Colombia, Mexico and Malaysia had a superior stock market performance in economies that jointly showed, during the years 2022 and 2023, positive economic growth rates.

Este artículo estima el efecto que tuvo el anuncio "operación militar especial en Ucrania" realizado por el presidente de Rusia en el desempeño de los mercados accionarios emergentes. Para lo anterior, se contrasta el modelo de 5 factores de Fama y French utilizando 4 métodos econométricos diferentes. Los resultados indican que aquellos inversionistas globales que oportunamente se refugiaron en los mercados accionarios de China, Colombia, México y Malasia tuvieron un desempeño accionario superior en economías que en conjunto mostraron, durante los años 2022 y 2023, tasas de crecimiento económico positivas.

Este artigo estima o efeito que o anúncio de uma "operação militar especial na Ucrânia" feito pelo Presidente da Rússia teve no desempenho dos mercados bolsistas emergentes. Para o efeito, o modelo de 5 fatores de Fama & French é contrastado utilizando 4 métodos econométricos diferentes. Os resultados indicam que os investidores globais que oportunamente se refugiaram nos mercados bolsistas da China, Colômbia, México e Malásia tiveram um desempenho bolsista superior em economias que, em conjunto, apresentaram, durante os anos de 2022 e 2023, taxas de crescimento económico positivas.

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1. Introduction

Event studies and their implementation through dynamic econometric designs are increasingly used in empirical financial research. Its various applications in measuring the effects of corporate decision announcements, changes in regulations and macroeconomic shocks on stock prices and returns are of special interest to both local and global investors for different purposes. However, events that consider the effects of war conflict announcements on stock market performance are relatively scarce in the literature, especially in the case of stock markets involved in the conflict as well as in the world's emerging stock markets.

Keeping the above in mind, this article continues with the line of research reported in Sandoval (2023), which focused just on the case of developed stock markets. This article focuses on a different object of study since it investigates the effect that the announcement of a "special military operation" in Ukraine, made on February 24, 2022 by the president of Russia, Vladimir Putin, had on the performance of emerging stock markets, also including the stock markets that were protagonists of the war, Russia and Ukraine, respectively. The sample thus includes 24 emerging stock markets plus Russia and Ukraine, totaling 26 stock markets in accordance with the classification criteria of Morgan Stanley Capital International, MSCI.

The object of study in this case is interesting, because of emerging stock markets (also including the stock markets of Russia and Ukraine) are frequently more volatile and less integrated with each other, compared to the case of developed stock markets, and therefore the econometric methods applied may eventually yield different results.

As a hypothesis, it is proposed that this type of announcement produces negative abnormal returns (an inferior stock market performance, as a result of a fall in the stock price beyond normal) especially in those stock markets most exposed to the conflict, which in turn would reflect a punishment to the expected free cash flows generated by companies for their investors, due to an expected economic drop activity in the corresponding countries analyzed. This hypothesis is also consistent with the fact that, if some stock markets are relatively less exposed, and thus, relatively more benefited from the announcement, they would present positive abnormal returns (superior stock market performance), which would reflect a better expected performance in their corresponding economies.

In addition to what has already been indicated, in each of the countries in the sample, it is studied whether or not the effects of this announcement are related to their respective ex post economic growth, experienced in both 2022 and 2023 years, in an attempt to corroborate whether the stock market performance (superior/inferior) displayed on the day of the aforementioned announcement, constitutes a correct signal that anticipates or not the performance of the real economy of each country.

Whatever the situation, there would be a direct relationship between stock market performance as a result of the announcement and performance in the real sector of the economy, which is empirically examined in the development of this article.

KEYWORDS
Ukraine, Time-varying, Stock market performance, Economic growth.

PALABRAS CLAVE
Ucrania, Variable en el tiempo, Desempeño del mercado accionario, Crecimiento económico.

PALAVRAS-CHAVE
Ucrânia, Variação temporal, Desempenho do mercado bolsista, Crescimento económico.

JEL CODES
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The rest of the article is organized as indicated. The next section presents the literature review, then describes the sample and data, then presents the model and the econometric methods used. Finally, the results and conclusions of the article are shown.

2. Literature Review

A review of event studies in Finance is presented in El Ghoul et al., (2022) and briefly reported in Sandoval (2023). In this sense, the latter indicates that "less than 12% of the event studies reported in El Ghoul et al. (2022), only four (0.57%) are related to election events or political risks and practically none are related to announcements of any military intervention in any country.

A recent search (2023-2024) in alternative sources of academic articles yielded the following publications related to studies that account for the impact of the war between Russia and Ukraine on the returns of emerging stock markets.

Khan, T.; et al. (2023) examine the herd behavior of Indian stock market investors during the intense geopolitical tensions between Russia and Ukraine in 2022. Multifractal Trendless Fluctuation Analysis (MFDFA) was used to calculate the fifth-order Hurst exponent that detects herding behavior. The empirical results of their study revealed the presence of profound herding behavior during the escalation window of the geopolitical event between Russia and Ukraine, demonstrating the interconnection of global events and financial markets, highlighting the need for policymakers to consider the possible social and economic consequences of geopolitical events.

Keleş, E., (2023) examines the role that some financial factors played in the resilience of businesses in Turkey during the Russia-Ukraine war. The results of the event study show a significant negative reaction, which began before the official announcement of war and grew over time. Complementary analyzes reveal that the negative effect decreases for larger and more profitable companies, but increases for companies with a high market capitalization, high level of cash and debt. The author concludes that this study contributes to exploring Turkey as a unique emerging market environment due to its important geopolitical position, strategic trade, and trade partnership with the European Union and Russia.

Kwaku, S., (2023) examines the asymmetric interdependence between geopolitical risk (GPR) and the stock markets of the seven major emerging countries (E7) (Mexico, Russia, Turkey, India, China, Indonesia and Brazil) in the current geopolitical conflict between Russia and Ukraine. The results show heterogeneous and asymmetric responses offered by E7 stocks to geopolitical risk, allowing emerging market stocks to be suitable for diversification and downside hedging strategies against geopolitical risk-induced shocks.

Küçükçolak, R.; et al. (2024) examine, using event study methodology, the effect of the Russia-Ukraine crisis on energy companies listed on the stock exchanges of European and Asian countries that import oil and natural gas from Russia, as well as from the US. In the first window period, the analysis carried

out on a country-by-country basis, the conflict caused an extreme reaction in the European and Asian stock markets showing positive abnormal returns. However, energy companies in the U.S stock market maintained normal returns. In the second window period, due to Russia's prior announcement on natural gas sales in rubles, the stocks under study showed only normal returns, ensuring the efficiency of their stock markets.

These studies, among others, published in the last two years although they are related to the impacts of the Russia-Ukraine conflict in the indicated emerging stock markets, on the other hand, they do not consider a broad nor an exhaustive sample of emerging stock markets in the world, as well as a dynamic econometric methodology that captures how systematic risk coefficients can change over time or whether volatility clustering can be present with greater frequency around the announcement of a war conflict.

This article, on the contrary, contributes to the literature through the comparison of four types of econometric methods or specifications based on deviations from the five-factor model of Fama and French (2015) applied to an exhaustive sample of emerging stock markets, according to the MSCI criteria. The above with the objective of first validating whether the model by using methods that allow systematic risk coefficients that change over time and/or heteroscedastic in nature, fit the data better. The five-factor model of Fama and French is used since it has shown superiority in goodness of fit compared to alternative valuation models., Sandoval (2023). Secondly, this article aims to quantify the effect of the announcement of Russia's special military operation in Ukraine on the stock performance of emerging markets, also including the protagonists of the conflict. The first method (method 1) assumes fixed coefficients and homoscedastic residual variance, the second (method 2) assumes fixed coefficients and heteroscedastic residual variance, which is governed by a Garch (1,1) process. The third (method 3) assumes systematic risk coefficients (betas) that change in time through a process with mean reversion and homoscedastic residual variance and the fourth (method 4) assumes systematic risk coefficients (betas) that change in time through a process with mean reversion and heteroskedastic residual variance, governed by a Garch (1,1) process.

The time-varying specifications with heteroscedastic residual variance have recently been documented with significant advantages compared to those that consider parameters fixed over time, when using daily data, see Ortas et al., (2015) and Sandoval (2023). The above thanks to the fact that they allow leptokurtosis to be controlled, thus reducing the influence of atypical observations in the parameter estimation process. Furthermore, by conditioning the time varying models to the presence of residual heteroscedasticity, they allow for better control of the presence of the phenomenon of volatility clustering present in the financial series, especially in periods of crisis. These methods generally present better indicators of goodness of fit compared to conventional methods that assume fixed parameters and homoscedasticity, recurrently used in event studies.

3. Sample and Data

The sample in this article considers 26 stock markets in total, 24 of them emerging plus Russia and Ukraine, according to the classification and information of IMI stock indices that are available at MSCI (www.msci.com). From these, the corresponding daily stock returns, in USD, are obtained for the period from December 1, 2021 to May 19, 2022. This period covers sixty business days of stock returns before and sixty business days after the day of announcement on February 24, 2022. This window is wide enough so that models that consider time-varying and heteroscedastic parameters in their residual variance can converge adequately. The IMI stock indices of each country reflect the stock performance of a market portfolio representative of 99% of the adjusted free float market capitalization of large, medium and small companies in each stock market, respectively. The 26 stock markets plus the 2 IMI stock indices for developed and emerging markets (orthogonal in their returns to the previous one) used as benchmarking, respectively, are listed in **Table 2**. It is important to note that MSCI classifies emerging markets based on 3 criteria: Economic development, Size and liquidity requirements and Market accessibility criteria. Daily yields in USD on US Treasury bonds (with 1 month maturity) are used as the risk-free rate. In relation to the five risk factors of Fama and French (2015), these were obtained on a daily basis, along with the risk-free rate, for developed markets from the Keneth French website:

https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

Table 2. - Descriptive Statistics.

MSCI IMI Stock Indices	*Average*	*Standard Deviation*	*Skewness*	*Kurtosis*	*JB*	*ADF*
Brazil	0.14%	1.76%	-0.4350	2.96	3.82	-8.75***
Chile	0.10%	2.08%	-0.7793	6.02	58.13***	-9.98***
China	-0.21%	2.45%	1.6466	12.82	541.30***	-8.64***
Colombia	0.00%	1.66%	-0.5199	5.17	29.10***	-9.01***
Czech Rep	0.15%	1.99%	-0.8246	7.76	128.16***	-11.58***
Egypt	-0.22%	1.47%	-1.6491	9.35	258.04***	-10.25***
Greece	-0.03%	1.98%	-0.0467	6.27	53.80***	-12.56***
Hungary	-0.31%	3.56%	-0.8451	9.13	204.03***	-3.87***
India	-0.09%	1.47%	-0.7158	4.91	28.79***	-10.29***
Indonesia	0.02%	1.00%	-1.9202	12.52	531.26***	-13.12***
Korea	-0.15%	1.39%	0.0287	3.11	0.08	-10.76***
Kuwait	0.11%	0.75%	-0.5107	6.90	81.96***	-8.78***
Malaysia	-0.04%	0.78%	-0.3550	2.93	2.57	-9.90***
Mexico	0.09%	1.31%	0.1921	2.62	1.48	-9.56***
Peru	0.11%	2.08%	0.0579	3.88	3.93	-10.00***
Philippines	-0.06%	1.32%	-0.5647	3.85	10.07***	-12.03***
Poland	-0.21%	2.73%	-0.3954	12.56	464.21***	-11.62***
Qatar	0.06%	0.99%	-0.4638	8.91	180.69***	-10.90***
Saudi Arabia	0.11%	0.94%	-1.0974	6.58	88.90***	-9.46***

South Africa	0.00%	1.60%	-0.0536	3.42	0.94	-9.41***
Taiwan	-0.14%	1.24%	-0.2145	4.07	6.71**	-9.87***
Thailand	0.00%	1.00%	-0.5181	4.30	13.98***	-10.51***
Turkey	0.12%	3.92%	2.9576	28.68	3502.08***	-13.15***
United Arab Emirates	0.06%	1.40%	-0.1287	13.71	579.06***	-9.71***
Russia	-1.28%	7.86%	-1.4829	11.89	252.55***	-12.11***
Ukraine	-1.17%	7.80%	-0.4655	16.33	513.34***	-3.37**
Developed Markets	-0.14%	1.08%	0.2117	2.67	0.83	-10.01***
Emerging Markets	0.00%	0.93%	-1.3865	7.65	84.32***	-11.12***

**** Significant at 1%*
*** Significant at 5%*
** Significant at 10%*

Table 2 shows the descriptive statistics of the daily excess returns of the 28 stock indices. 24 of them are associated with IMI stock indices elaborated by MSCI for emerging stock markets, 2 for Russia and Ukraine, plus 2 for developed and emerging countries, as groups, respectively. Column JB reports the values associated with the Jarque-Bera normality test. The ADF column reports the values of the augmented Dickey-Fuller unit root test. The lags for this test were determined based on the Schwarz Criterion. Source: Own elaboration based on the outputs of EViews 12.0.

Table 2 shows the basic descriptive statistics for the daily excess returns of the 26 MSCI IMI stock indices under study, from December 2, 2021 to May 19, 2022 (121 data), that is, 60 data before and 60 data after the announcement day of February 24, 2022. The highest average daily excess return is achieved by the MSCI IMI index of Czechoslovakia (+0.15%) followed by Brazil (+0.14%). On the other hand, the worst excess daily average returns are achieved by Russia (-1.28%) and Ukraine (-1.17%), respectively. Regarding risk, measured by the standard deviation of daily excess returns, the lowest risk is achieved by the MSCI IMI index of Kuwait (0.75%) while the highest risk is captured by the MSCI IMI index of Russia (7.86%). Twenty-one of the twenty-six series (81%) of excess daily returns associated with the MSCI IMI indices reported in **Table 2** show a negative bias, while five (19%) present a positive bias, that is, they present a distribution which is concentrated on negative and positive excess returns, respectively. Furthermore, 23 of the 26 series exhibit leptokurtosis with more pointed distributions and thicker tails compared to the normal distribution. When examining the results of the Jarque-Bera test, the rejection of the null hypothesis of normality is confirmed in 20 of the 26 series under study. The ADF test, for its part, confirms at 5% of statistical significance the rejection of the null hypothesis of unit root, thus making all excess returns series stationary. Leptokurtosis and the high presence of non-normality in the excess returns of the 26 series analyzed, anticipate that the models with time-varying parameters, accompanied by those that assume heteroscedasticity in the residual variance, will eventually present better indicators for the criteria of information or in the data goodness of fit. This will be reported later in the results of this article.

4. Econometric Models and Methods

This section presents the model and the econometric methods to be used in the article. The model to be used has its foundations in the Fama and French (2015) five-factor model (hereinafter FF), which has typically been together with the CAPM of Sharpe (1964), used in the study of events, assuming parameters fixed and constant residual variance. This model, in its empirical version, is used to estimate deviations in market equilibrium excess returns, using daily frequency data. Four different econometric methods or specifications are applied as estimation methods; 2 of these are based on ordinary least squares with fixed parameters (assuming homoskedasticity and heteroskedasticity, respectively in the residual variance) and alternatively, as innovations, to compare goodness of fit, 2 state-space methods with systematic risk parameters that change in the time (time-varying) (assuming homoskedasticity and heteroskedasticity in the residual variance, respectively), the latter led by a general heteroskedastic conditional autoregressive process Garch (1,1). The four methods are detailed below:

Method 1: Based on FF model, it considers fixed parameters and homoscedastic residual variance, estimation method, ordinary least squares.

$$R_{jt} - R_{ft} = \alpha_{j1} d_1 + \alpha_{j2} d_2 + \beta_{j1}(R_{dmt} - R_{ft}) + \beta_{j2}(R_{emt} - R_{ft}) + \beta_{j3} SMB_t + \beta_{j4} HML_{t_t} + \beta_{j5} RMW_t + \beta_{j6} CMA_t + e_{jt} \quad (1)$$

Method 2: Based on the FF model, it considers fixed parameters and heteroskedastic residual variance, under a Garch (1,1) process, estimation method, ordinary least squares.

$$R_{jt} - R_{ft} = \alpha_{j1}' d_1 + \alpha_{j2}' d_2 + \beta_{j1}'(R_{dmt} - R_{ft}) + \beta_{j2}'(R_{emt} - R_{ft}) + \beta_{j3}' SMB_t + \beta_{j4}' HML_{t_t} + \beta_{j5}' RMW_t + \beta_{j6}' CMA_t + u_{jt} \quad (2)$$

$$\sigma^2_{ujt} = \omega_j + \chi_j \mu^2_{j,t-1} + \gamma_j \sigma^2_{ujt-1} \quad (3)$$

con $\omega_j,\ \chi_j, \gamma_j \geq 0$ y $(\chi_j + \gamma_j) < 1$

Method 3: Based on FF model, it considers parameters (time-varying for developed and emerging market betas, each of them following a process with mean reversion) and homoscedastic residual variance, estimation method, state-space.

$$R_{jt} - R_{ft} = \alpha_{j1}'' d_1 + \alpha_{j2}'' d_2 + \beta_{j1t}''(R_{dt} - R_{ft}) + \beta_{j2t}''(R_{emt} - R_{ft}) + \beta_{j3}'' SMB_t + \beta_{j4}'' HML_{t_t} + \beta_{j5}'' RMW_t + \beta_{j6}'' CMA_t + z_{jt} \quad (4)$$

$$\beta_{j1t''} = \bar{\beta}_{j1''} + \phi_{j1''}(\beta_{j1t-1''} - \bar{\beta}_{j1''}) + \tau_{j1t} \quad (5)$$

$$\beta_{j2t''} = \bar{\beta}_{j2''} + \phi_{j2''}(\beta_{j2t-1''} - \bar{\beta}_{j2''}) + k_{j2t} \quad (6)$$

Method 4: Based on FF model, it considers parameters (time-varying for developed and emerging market betas, each of them following a process with mean reversion) and heteroskedastic residual variance, following a Garch (1,1) process, estimation method, state -space.

$$R_{jt} - R_{ft} = \alpha_{j1}'''d_1 + \alpha_{j2}'''d_2 + \beta_{j1t}'''(R_{dmt} - R_{ft}) + \beta_{j2t}'''(R_{emt} - R_{ft}) + \beta_{j3}'''SMB_t + \beta_{j4}'''HML_{t_t} + \beta_{j5}'''RMW_t + \beta_{j6}'''CMA_t + r_{jt} \quad (7)$$

$$\beta_{j1t'''} = \bar{\beta}_{j1'''} + \phi_{j1'''}(\beta_{j1t-1'''} - \bar{\beta}_{j1'''}) + s_{j1t} \quad (8)$$

$$\beta_{j2t'''} = \bar{\beta}_{j2'''} + \phi_{j2'''}(\beta_{j2t-1'''} - \bar{\beta}_{j2'''}) + v_{j2t} \quad (9)$$

$$\sigma^2_{rjt} = \omega_{j'} + \chi_{j'}\mu^2_{j,t-1} + \gamma_{j'}\sigma^2_{ujt-1} \quad (10)$$

$$\text{con } \omega_{j'},\ \chi_{j'}, \gamma_j \geq 0 \text{ y } (\chi_{j'} + \gamma_{j'}) < 1$$

where;

R_{jt} - R_{ft} = Excess return R_{jt} relative to the risk-free rate R_{ft} for the emerging stock market j on day t. j = 1, ...,26. t = Covers the period from December 2, 2021 to May 19, 2022, with daily data, in methods 1, 2, 3 and 4, respectively.

α_{j1}, $\alpha_{j1'}$, $\alpha_{j1''}$, $\alpha_{j1'''}$ = Average abnormal return of the emerging stock market j considering the days before and after the announcement day (February 24, 2022) in methods 1, 2, 3 and 4, respectively.

d_1 = Binary variable, takes value 1 in the days before and after the day of the announcement (February 24, 2022) and 0 on the day of the announcement.

α_{j2}, $\alpha_{j2'}$, $\alpha_{j2''}$, $\alpha_{j2'''}$ = Abnormal return of emerging stock market j on the announcement day (February 24, 2022) in methods 1, 2, 3 and 4, respectively.

d_2 = Binary variable, takes value 1 on the day of the announcement (February 24, 2022) and 0 on the days before and after February 24, 2022.

β_{j1}, $\beta_{j1'}$ = Coefficient 1 of systematic risk for emerging stock market j. It captures the sensitivity of excess returns of emerging stock market j to excess returns of the MSCI IMI developed markets equity index, in methods 1 and 2, respectively.

β_{j2}, $\beta_{j2'}$ = Coefficient 2 of systematic risk for emerging stock market j. It captures the sensitivity of the excess returns of emerging stock market j to the excess returns of the MSCI Emerging Markets Equity Index IMI (excess returns which are orthogonal to the excess returns of the MSCI IMI Developed Markets Equity Index), in the methods 1 and 2, respectively.

$\beta_{j1t''}$, $\beta_{j1t'''}$ = Coefficient 1 of systematic risk for emerging stock market j on day t. It captures the sensitivity of the excess returns of emerging stock market j to the excess returns of the MSCI IMI developed markets equity index, on day t, in methods 3 and 4, respectively. $\beta_{j1t''}$, $\beta_{j1t'''}$ follow a process with mean reversion given by equation (5) and (8), respectively.

$\beta_{j2t''}$, $\beta_{j2t'''}$ = Coefficient 2 of systematic risk for emerging stock market j on day t. It captures the sensitivity of the excess returns of emerging stock market j to the excess returns of the MSCI Emerging Markets Equity Index IMI (excess returns orthogonal to the excess returns of the MSCI IMI Developed Markets Equity Index), on the day t, in methods 3 and 4, respectively. $\beta_{j2t''}$, $\beta_{j2t'''}$ follow a process with mean reversion given by equation (6) and (9), respectively.

$(R_{dmt} - R_{ft})$ = Excess return R_{dmt} relative to the free-risk rate R_{ft} of the MSCI IMI developed markets equity index on day t.

$(R_{emt} - R_{ft})$ = Excess return R_{emt} relative to the risk-free rate R_{ft} of the emerging market equity index, by construction orthogonal to the excess returns of the MSCI IMI developed market equity index on day t.

β_{j3}, $\beta_{j3'}$, $\beta_{j3''}$, $\beta_{j3'''}$ = Risk coefficient associated with the factor SMB_t, for the emerging stock market j. It captures the sensitivity of the excess returns of the emerging stock market j to the movements of the factor SMB_t. This factor is related to the difference between the returns of portfolios of small and large market capitalization companies, in methods 1, 2, 3 and 4, respectively.

β_{j4}, $\beta_{j4'}$, $\beta_{j4''}$, $\beta_{j4'''}$ = Risk coefficient associated with the factor HML_t, for the emerging stock market j. It captures the sensitivity of the excess returns of the emerging stock market j to the movements of the factor HML_t. This factor is related to the difference between the returns of portfolios of companies with a high and low book value/market value ratio of shares, in methods 1, 2, 3 and 4, respectively.

β_{j5}, $\beta_{j5'}$, $\beta_{j5''}$, $\beta_{j5'''}$ = Risk coefficient associated with the factor RMW_t, for the emerging stock market j. It captures the sensitivity of the excess returns of the emerging stock market j to the movements of the RMW_t. This factor is related to the difference between the returns of portfolios of companies that are robust and weak in profitability, in methods 1, 2, 3 and 4, respectively.

β_{j6}, $\beta_{j6'}$, $\beta_{j6''}$, $\beta_{j6'''}$ = Risk coefficient associated with the factor CMA_t, for the emerging stock market j. It captures the sensitivity of the excess returns of the emerging stock market j to the movements of the CMA_t factor. This factor is related to the difference between the portfolio returns of conservative and aggressive companies in their real investment policy, in methods 1, 2, 3 and 4, respectively.

ε_jt = Error term of method 1 for the emerging stock market j on day t. The errors are assumed to have a normal distribution, a mean value of zero and homoscedastic variance.

μ_{jt} = Error term of method 2 for the emerging stock market j on day t. The errors are assumed to have a normal distribution, a mean value of zero and heteroscedastic variance, which follows a GARCH (1,1) process described by equation (3).

z_{jt} = Error term of method 3 for the emerging stock market j on day t. The errors are assumed to have a normal distribution, a mean value of zero and homoscedastic variance.

r_{jt} = Error term of method 4 for the emerging stock market j on day t. The errors are assumed to have a normal distribution, a mean value of zero and heteroskedastic variance, which follows a GARCH (1,1) process described by equation (10).

τ_{j1t}, k_{j2t}, s_{j1t}, v_{j2t} = Error term in equations (5), (6), (8) and (9), respectively. The errors are assumed to have a normal distribution, a mean value of zero and homoscedastic variance.

The unknown parameters of method 3 and 4, respectively, are estimated by maximizing the following maximum likelihood function, Harvey (1990).

$$\log L_j\left(\theta_j\right) = -\frac{T}{2}\log(2\pi) - \frac{1}{2}\sum_{t=1}^{T}\log f_{j,t}\left(\theta_j\right) - \frac{1}{2}\sum_{t=1}^{T}\frac{v_{j,t}^2(\theta_j)}{f_{j,t}(\theta_j)} \quad (11)$$

where;

θ_j is the hyper parameter vector while $v_{j,t}(\theta_j)$ are the predictive residuals of each model, respectively, and the variance of these is estimated using a recursive Kalman filter algorithm. The initial values for the hyper parameter vector are set according to Wells (1996), in which the initial value of 0.1 stands out for the coefficients ϕ_{j1} y ϕ_{j2} ϕ_{j1} y ϕ_{j2}, respectively, which capture how quickly the market beta coefficients (time-varying) return to their mean. In addition, an initial value of e^{-1} is set for the variance of residuals in equations of methods 3 and 4, respectively. When it is performed a sensitivity analysis of these values, the results do not change significantly.

On the other hand, in the financial econometric literature, as described by Sandoval and Molina (2022), it is "well recognized that the daily series of returns on risky financial assets present the phenomenon of volatility clustering, which becomes more noticeable and significant in periods of crisis." These phenomena are adequately captured in GARCH models [Bollerslev et al., (1992)]. Given the above, unlike static models with homoscedasticity for the residual variance, it is more realistic to assume that the residuals of the observed equation, follow a conditionally heteroscedastic behavior in accordance with a GARCH (1,1) process. The parameters of the GARCH (1,1) processes contemplated in equation (10) are estimated under an iterative process that consists of first estimating the vector of hyper parameters assuming homoscedasticity (method 3), then it is required the generation of the predictive residuals, in order to model their conditional variance according to the GARCH process (1,1) in the observed equation (7), and finally the state-space system is re-estimated.

Our main parameter to analyze, after obtaining the results of the estimates, is α_{j2}, α_{j2}, α_{j2}, α_{j2} , which estimates the performance shown by a given emerging stock market *j* [superior (+), normal (0) or inferior (-)] on the announcement day (February 24, 2022), under the methods 1, 2, 3 and 4, respectively, and once the effects of Fama and French's 5 factors have been controlled along with some other abnormal return on average in the days before or after the day of the announcement. It is important to note that in all methods, in fact 6 factors were used because in addition to the excess returns of the MSCI IMI stock index for developed markets, the orthogonal excess returns (to the previous one) of the MSCI IMI stock index for emerging markets was also considered in order to capture the pure effect of both stock indices used as benchmarking in the econometric estimates.

5. Results

In this section, in **Table 3**, the results are presented in summary form, concentrating interest on the information criteria (goodness of fit) in addition to the parameter α_2 and its statistical significance, for methods 1, 2, 3 or 4 (the best among them in terms of information criteria) presented in the previous section and that were estimated based on the econometric methods already indicated.

Table 3. - Summary results with model estimation using ordinary least squares and state-space econometric methods.

Stock Emerging Market (Best Method)	*Variáveis dependentes*			*Quantity of IC over the second best method*	*Abnormal return on date of announcement* α_2
	Akaike	*Schwarz*	*Hannan-Quinn*		
1. Brazil (Method 1)	-5.6314	-5.4465	-5.5563	3/3 Method 2	-0.36%
2. Chile (Method 1)	-5.1662	-4.9813	-5.0911	3/3 Method 2	+0.94%
3. China (Method 3)	-6.5573	-6.2569	-6.4353	3/3 Method 2	+3.26% ***
4. Colombia (Method 2)	-5.5669	-5.3127	-5.4637	2/3 Method 4	+1.18% *
5. Czech Republic (Method 4)	-5.6313	-5.3541	-5.5187	2/3 Method 2	-5.39% ***
6. Egypt (Method 2)	-5.8778	-5.6326	-5.7745	3/3 Method 4	-2.66% ***
7. Greece (Method 2)	-5.8441	-5.5939	-5.7449	3/3 Method 4	-5.63% ***
8. Hungary (Método2)	-4.6866	-4.4324	-4.5834	3/3 Method 4	-15.73%+ ***
9. India (Method 1)	-6.4054	-6.2206	-6.3304	2/3 Method 3	-2.80% ***
10. Indonesia (Method 3)	-6.6590	-6.3586	-6.5370	3/3 Method 4	+0.31%
11. Korea (Method 1)	-6.6918	-6.5071	-6.6169	3/3 Method 2	+0.82%
12. Kuwait (Method 4)	-7.4565	-7.1792	-7.3437	3/3 Method 2	+0.75% *
13. Malaysia (Method 1)	-7.4025	-7.2177	-7.3275	3/3 Method 2	+0.71%
14. Mexico (Method 4)	-6.6669	-6.3897	-6.5543	3/3 Method 1	+1.13% ***
15. Peru (Method 4)	-5.7418	-5.4645	-5.6292	3/3 Method 2	-0.07%
16. Philippine (Method 4)	-6.0356	-5.7583	-5.9230	3/3 Method 1	-0.26%
17. Poland (Method 4)	-5.4234	-5.1461	-5.3108	3/3 Method 2	-10.54% ***
18. Qatar (Method 2)	-6.7338	-6.4796	-6.6305	3/3 Method 4	+1.92%
19. Saudi Arabia (Method 1)	-6.5667	-6.3818	-6.4917	2/3 Method 2	-0.35%
20. South Africa (Method 1)	-6.0383	-5.8535	-5.9632	3/3 Method 2	+0.29%
21. Taiwan (Method 4)	-6.8831	-6.6058	-6.7705	3/3 Method 2	+0.45%
22. Thailand (Method 1)	-6.9846	-6.7998	-6.9095	2/3 Method 4	-0.36%
23. Turkey (Method 2)	-4.4926	-4.2384	-4.3894	3/3 Method 4	-9.63% ***
24. United Arab Emirates (Method 2)	-6.0829	-5.8287	-5.9797	3/3 Method 4	-0.45%
25. Russia (Method 4)	-3.8864	-3.4978	-3.7322	3/3 Method 2	-31.74% ***
26. Ukraine (Method 2)	-3.7201	-3.4659	-3.6169	3/3 Method 4	-29.51% ***

*** Significant at 1%
** Significant at 5%
* Significant at 10%

Table 3 shows the summarized results after the estimation of the four methods indicated in section IV, using econometric specifications of least squares (methods 1 and 2) and state-space (methods 3 and 4) for the excess returns over the risk-free rate of each of the 26 stock indices under study. The Akaike, Schwarz and Hannan-Quinn column shows the resulting values of the information criteria (goodness of fit) of the best method estimated among them. The column, amount of IC over the second best estimated method, shows the number of information criteria, among the 3 criteria, that the best method, reported in the first column, exceeds the second best estimated method. The last column presents the abnormal return on the day of the announcement (February 24, 2022). This presents the value and statistical significance of the alpha 2 coefficient of the best method indicated in the first column of Table 3.

The first column of **Table 3** shows the 26 stock markets studied along with the best estimation method for each particular stock market among the four estimates that were presented in section IV. Method 1, 2, 3 and 4 outperform the rest of the methods in 8, 8, 2 and 8 stock markets, respectively. Thus, the most dynamic methods (methods 2, 3 and 4) that assume either heteroskedasticity or time varying systematic risk coefficients, are 18 times better than Method 1, which strictly assumes fixed coefficients and homoscedasticity.

These results align with recent findings in the financial literature [see Ortas et al., (2015), Santos et al., (2019), Sandoval and Molina (2022) and Sandoval (2023)] where models with time-varying parameters and/or with heteroscedastic residual variance fit the data better and more frequently than models with fixed and homoscedastic parameters, by allowing the former better control leptokurtosis and the volatility clustering phenomena present in financial series, especially significant during periods of crisis. However, some differences are detected from the results found by Sandoval (2023) for the case of developed stock markets. In these, method 4 turns out to be the best in the case of 20 out of 23 stock markets (87%) while method 1 turns out to be the best only in the case of the remaining 3 markets (13%). This evidence differs in the case of the emerging stock markets (also including Russia and Ukraine) studied in this article, where method 4 turns out to be the best in the case of 8 of 26 stock markets (31%), while method 1 also turns out to be the best, with the same frequency (31%). These results suggest that the behavior of developed stock markets adjusts relatively better, compared to emerging stock markets, to the dynamics of systematic risk parameters that change over time together with a heteroskedastic residual variance governed by a Garch process (1 ,1), during the estimation period of parameters based on Fama and French's model. This may be reflecting the greater degree of integration that the developed stock markets exhibit among themselves, which in this type of war events are infected in a similar dynamic way. On the other hand, this seems not to be the case of emerging stock markets, which, being more segmented, react differently.

Regarding the effects of the February 24, 2022 announcement, column 6 presents the abnormal return on the day of the announcement made by the President of Russia, Vladimir Putin. Fifteen of the twenty-six stock markets present a negative abnormal return (9 significant at the 1% level) and eleven present a positive abnormal return (4 significant at the 1% and 10% levels, respectively), thus totaling 13 stock markets significantly affected in statistical terms.

The above is clear evidence that the negative effects, resulting from the announcement of February 24, 2022, exceeded the positive ones, generally in emerging stock markets with the addition of Russia and Ukraine. Nine of the thirteen markets (70%) were negatively and statistically significantly affected and only four of the thirteen (30%) were positively affected. The four markets relatively most negatively affected were: Russia (-31.74%), Ukraine (-29.51%), Hungary (-15.73%) and Poland (-10.54%) and the four markets relatively most affected positively were: China (+3.26%), Colombia (+1.18%), Mexico (+1.13%) and Kuwait (+0.75%).

In a complementary manner, as indicated in section I of this article, it is interesting to analyze whether or not there is a direct relationship between the abnormal return associated with the announcement day of February 24, 2022 and the ex-post economic growth shown during the last two years after the announcement in each of the stock markets/emerging countries, plus Russia and Ukraine, included in the sample of this article. As shown in **Table 4**, the stock markets/countries where a direct relationship is exhibited during both 2022 and 2023 years, respectively, are: China, Colombia, Mexico and Malaysia with positive abnormal returns of 3.26%, 1.18%, 1.13% and 0.71% accompanied by also a positive economic growth during the 2022 year of 3.0%, 7.3%, 3.9% and 8.7%, respectively. During the year of 2023 these

countries kept their positive economic growth, showing rates of 5.0%, 1,4%, 3,2% and 4,0%, respectively. In these 4 markets/countries, the hypothesis is validated that the stock markets correctly anticipated the effects of the real economy in their stock performance, after the announcement on February 24, 2022. The other markets/countries do not exhibit a direct relationship after considering the last two years of economic performance. They show, instead, either an inverse or neutral relationship. The most striking cases are Poland and Turkey, which on the one hand show negative abnormal returns of -10.54% and -9.63% and on the other hand, economic growth rates of 4.6% and 5.1%, respectively, in 2022, and 0.6% and 4%, respectively, in 2023.

Table 4. - Abnormal return in % on February 24, 2022 and economic growth in 2022 and 2023, respectively, for the 26 emerging stock markets/countries (includes Russia and Ukraine).

Emerging Stock Market/ Country	*Abnormal return on the date of announcement % α_2*	*Economic growth rate In 2022*	*Economic growth rate In 2023*
1. Brazil	-0.36%	+2.9%	+3.10%
2. Chile	+0.94%	+2.4%	-0.50%
3. China	+3.26% ***	+3.0%	+5.00%
4. Colombia	+1.18% *	+7.3%	+1.40%
5. Czech Republic	-5.39% ***	+2.3%	+0.20%
6. Egypt	-2.66% ***	+6.7%	+4.20%
7. Greece	-5.63% ***	+5.9%	+2.50%
8. Hungary	-15.73% ***	+4.6%	-0.30%
9. India	-2.80% ***	+7.2%	+6.30%
10. Indonesia	+0.31%	+5.3%	+5.00%
11. Korea	+0.82%	+2.6%	+1.40%
12. Kuwait	+0.75% *	+8.9%	-0.60%
13. Malaysia	+0.71%	+8.7%	+4.00%
14. Mexico	+1.13% ***	+3.9%	+3.20%
15. Peru	-0.07%	+2.7%	+1.10%
16. Philippine	-0.26%	+7.6%	+5.30%
17. Poland	-10.54% ***	+5.1%	+0.60%
18. Qatar	+1.92%	+4.9%	+2.40%
19. Saudi Arabia	-0.35%	+8.7%	+0.80%
20. South Africa	+0.29%	+1.9%	+0.90%
21. Taiwan	+0.45%	+2.4%	+0.80%
22. Thailand	-0.36%	+2.6%	+2.70%
23. Turkey	-9.63% ***	+5.5%	+4.00%
24. United Arab Emirates	-0.45%	+7.9%	+3.40%
25. Russia	-31.74% ***	-2.1%	+2.20%
26. Ukraine	-29.51% ***	-29.1%	+2.00%

*** Significant at 1%
** Significant at 5%
* Significant at 10%

Table 4 shows in the first column the emerging stock markets/countries (also includes Russia and Ukraine) under study. The second column shows the abnormal return in %, with its respective statistical significance, on the day of the announcement (February 24, 2022). The third and fourth columns show the economic growth rate of each country in years 2022 and 2023, respectively, according to the source: IMF, October 2023 World Economic Outlook. Note: For India, data and forecasts are presented on a fiscal year basis, with FY 2022/23 (starting in April 2022) shown in the 2022 column. India's growth projections are 6.5 percent in 2023 and 5.7 percent in 2024 based on calendar year.

6. Conclusions

This article studies the effect of the announcement (made on February 24, 2022 by the president of Russia, Vladimir Putin, in which he communicates a "special military operation" in Ukraine) on the performance of the emerging stock markets of the world, also including the stock markets directly involved in the war conflict, Russia and Ukraine. In a complementary manner, it is studied whether or not the effects of this announcement on the performance of the aforementioned stock markets are related to the respective economic growth experienced in both 2022 and 2023 years on their respective countries in the sample.

As a hypothesis, a direct relationship is proposed between stock market performance as a result of the announcement and economic growth rate, which is empirically examined in the development of this article.

In methodological terms, the results show a predominance of models with time-varying parameters and/or with heteroscedastic residual variance, which fit better to the dynamics of the data, allowing better control of leptokurtosis and volatility clustering phenomena that occur in financial series, especially in periods of crisis.

Regarding the effects of the announcement on February 24, 2022, the results show clear evidence that the negative effects resulting from the announcement outweighed the positive ones in general in the performance of the stock markets examined. Nine of thirteen stock markets were negatively affected, in terms of statistical significance, and only four of thirteen were positively affected. The three markets relatively most negatively affected were Russia, Ukraine and Hungary and the three relatively most positively affected were China, Colombia and Mexico.

In addition, the results show that the stock markets/countries where a direct relationship is exhibited between stock market performance, around the announcement, and economic growth in both 2022 and 2023 years, are: China, Colombia, Mexico and Malaysia with positive abnormal returns and positive economic growth. In these four stock markets/countries, the hypothesis is validated that the stock markets correctly anticipated, in their stock performance, the effects on the real economy, after the announcement of February 24, 2022.

The results allow us to conclude that only some of the examined stock markets correctly anticipated, in their stock market performance (around the announcement of February 24, 2022), what really would occur in their respective economies in both 2022 and 2023 years. In others stock markets it didn't happen. This opens other channels of research to search for a possible answer.

The results finally indicate that those global investors who opportunely (before the announcement of Russia's special military operation in Ukraine) took refuge in the stock markets of China, Colombia, Mexico and Malaysia had a superior stock performance in economies with positive economic growth.

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A Farra do Boi e o Reporte Contábil: *Counter-Accounting* de Escândalos Ambientais e Sanitários na Amazônia Brasileira

ÁREA: 6
TIPO: Aplicação

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La Farra do Boi y el Reporte Contable: Counter-Accounting de los Escándalos Ambientales y Sanitarios en la Amazonia Brasileña

The Ox Spree and the Accounting Reporting: Counter-Accounting of Environmental and Sanitary Scandals in the Brazilian Amazon

A pesquisa investigou o uso da counter-accounting como meio de resistência em questões socioambientais durante as Operações Carne Fraca e Carne Fria na indústria brasileira de carne. Utilizando abordagem qualitativa e análise temática com suporte de software textual, coletamos dados de ONGs, demonstrações contábeis da JBS e relatórios de auditoria (2017-2019). Ancorados na contabilidade emancipatória pragmatista crítica, os contrarrelatos das ONGs revelaram estratégias desafiadoras ao Estado e corporações, monitorando acordos, envolvendo-se em trabalhos técnicos e propondo soluções para lacunas institucionais. A análise hierárquica descendente destacou como os discursos influenciam as arenas sociais e a linguagem sustenta o poder ou cria resistência.

La investigación examinó el uso de la contracontabilidad como medio de resistencia en cuestiones socioambientales durante las Operaciones Carne Fraca y Carne Fria en la industria cárnica brasileña. Utilizando un enfoque cualitativo y análisis temático con el respaldo de software de análisis textual, recopilamos datos de ONGs, estados financieros de JBS e informes de auditoría (2017-2019). Fundamentados en la contabilidad emancipadora pragmática crítica, los contrarrelatos de las ONGs revelaron estrategias desafiantes hacia el Estado y las corporaciones, monitoreando acuerdos, participando en trabajos técnicos y proponiendo soluciones para brechas institucionales. El análisis jerárquico descendente destacó cómo los discursos influyen en las arenas sociales y cómo el lenguaje sostiene el poder o genera resistencia.

The research investigated the use of counter-accounting as a means of resistance in socio-environmental issues during the Carne Fraca and Carne Fria Operations in the Brazilian meat industry. Employing a qualitative approach and thematic analysis with support from textual analysis software, data were collected from NGOs, JBS financial statements, and audit reports (2017-2019). Grounded in critical pragmatic emancipatory accounting, NGO counter-narratives revealed challenging strategies against the State and corporations, monitoring agreements, engaging in technical work, and proposing solutions to institutional gaps. Descendant hierarchical analysis highlighted how discourses influence social arenas and language either sustains power or creates resistance.

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1. Introdução

O desmatamento na Amazônia excedeu 11.235 km², de agosto de 2021 a junho de 2022, segundo dados do Projeto e Monitoramento do Desmatamento na Amazônia Legal por Satélite (PRODES) do Instituto Nacional de Pesquisas Espaciais (INPE, 2022). Adicionalmente, problemas sociais e territoriais como a invasão de territórios indígenas e a descontinuidade de políticas ambientais têm afetado negativamente a região (Fellows *et al.*, 2021).

A existência dos impactos ambientais e sociais em concomitância com as atividades empresariais faz surgir a necessidade de criar instrumentos capazes de promover um adequado e aceitável equilíbrio entre a produção das indústrias com menor impacto ao meio ambiente (Carli & Costa, 2016).

As mudanças climáticas imputam riscos sobre o sistema alimentar global, tanto no tocante à oferta quanto a demanda, bem como nos sistemas alimentares locais, revertendo ou desacelerando o progresso em direção a um mundo sem fome (IPCC, 2022). As perdas de biodiversidade, os impactos ambientais e as mudanças climáticas têm sido pautas recorrentes em convenções e acordos internacionais. Nos últimos dez anos, os diálogos concernentes a esses tópicos têm ganhado maior destaque em organizações políticas, econômicas e contábeis, impulsionados tanto pela dependência corporativa em relação à natureza, como pelas pressões sociais e pela urgência de questões globais. Nesse sentido, houve o aumento do interesse e de compromissos em torno da governança socioambiental entre países e empresas (ONU, 2015).

No Brasil a pecuária é historicamente associada ao desmatamento (França *et al.*, 2021), além de contribuir duplamente para o aumento das emissões de carbono na atmosfera via desmatamento e via criação de gado (Skidmore *et al.*, 2022). Desde meados de 2000, o Brasil vinha sendo reconhecido pela governança integrada de um conjunto de políticas e instituições que desaceleraram o desmatamento (Barreto *et al.*, 2017). Mais recentemente, porém, o descumprimento da legislação socioambiental doméstica tem gerado escândalos com impactos na cadeia produtiva e com repercussões transfronteiriças. Um dos exemplos ocorreu em 2009, quando o Greenpeace publicou o relatório "A Farra do Boi", despertando a atenção nacional e internacional para o descumprimento da legislação ambiental em razão da compra de gado de áreas de desmatamento ilegal (Greenpeace, 2009).

A seguir, o Instituto Nacional de Meio Ambiente (IBAMA) intensificou os processos de fiscalização, que resultaram em embargos de diversas propriedades e na Operação Carne Fria. Empresas e proprietários procederam a assinatura de Termos de Ajustamento de Conduta demandados pelo Ministério Público no estado do Pará (Barreto *et al.*, 2017). Outro exemplo foi a Operação Carne Fraca, um escândalo sanitário envolvendo a indústria da carne, que revelou uma rede de corrupção com sérios riscos à saúde humana. Tais infrações desencadearam riscos reputacionais, econômicos, operacionais e de saúde pública (Galuchi *et al.*, 2019).

Palavras-chave
Operação Carne Fraca; Operação Carne Fria; Desmatamento da Amazônia; Counter-Accounting.

Palabras clave
Operación Carne Fraca; Operación Carne Fria; Deforestación en la Amazonía; Contra-contabilidad.

Keywords
Carne Fraca Operation; Carne Fria Operation; Amazon Deforestation; Counter-Accounting.

Códigos JEL
M41; N10; Q01; Q56

Estudo sobre o *disclosure* socioambiental na indústria da carne apontou indícios de que pode estar ocorrendo *disclosure* reativo face aos escândalos do segmento e informações podem estar sendo ocultadas dos relatórios financeiros (Silva *et al.*, 2022). A JBS, maior processadora de carnes no mundo, é considerada uma das empresas em que os frigoríficos estão mais expostos aos riscos de compra de carne de áreas de desmatamento ilegal (Barreto *et al.*, 2017). A empresa esteva envolvida em escândalos de ordem sanitária, de saúde pública e ambiental (Silvestre *et al.*, 2018).

Neste ponto, situa-se o contexto da oportunidade de estudo, uma vez que a conjuntura dos escândalos é relatada, monitorada e questionada pelas Organizações Não Governamentais (ONG) e parece sinalizar uma atuação que estimula o processo de *accountability* por parte das empresas e do Estado.

A perspectiva teórica operacionalizada nesta pesquisa, está ancorada na contabilidade social emancipatória, afiliada ao ativismo social e ambiental (Gray, 2002). Embora a contabilidade social não seja um projeto homogêneo, Gray (2002) ressalta a relevância de abordagens com perspectiva crítica, que desafiem os modos de produção capitalista e prezem pelo engajamento, pelo pluralismo e pela mudança social. A *counter-accounting*, segmento teórico e metodológico contábil, alinhada à contabilidade emancipatória, propõe expor as relações de poder e as práticas que sustentam determinadas relações discursivas dominantes, além de incitar o engajamento (Gallhofer *et al.*, 2006).

Este estudo objetiva investigar como a *counter-accounting* foi utilizada para propor medidas alternativas e servir como linguagem de resistência em causas socioambientais, no contexto da Operação Carne Fraca e Operação Carne Fria na indústria brasileira da carne.

A justificativa do estudo se materializa em obter melhor compreensão de como as companhias reportam escândalos socioambientais e como as organizações da sociedade civil apresentam tais dados. A corrupção e os riscos à saúde pública e ao meio ambiente desafiam estratégias de desenvolvimento sustentável de países e empresas, portanto, busca-se entender o papel do relatório contábil como catalisador da prestação de contas na relação entre empresas e sociedade.

2. Fundamentação Teórica

2.1. A indústria da carne e as questões socioambientais na Amazônia brasileira

A indústria brasileira da carne possui expressividade econômica significativa, em termos nacionais e globais, considerada a segunda maior do mundo e representando 23,6% do Produto Interno Bruto (PIB) brasileiro (EMBRAPA, 2018). Nos últimos anos, vem ocorrendo uma expansão da pecuária bovina na região amazônica, acarretando intenso debate entre pecuaristas, frigoríficos, ambientalistas, governantes, dentre outros. Os aspectos ligados à sustentabilidade dessa produção estão no centro das controvérsias (Kuepper *et al.*, 2020).

Desde o Protocolo de Kyoto, as discussões sobre o clima se intensificaram, mas foi somente na COP 21 é que foram estabelecidas metas obrigatórias de limitação das emissões de Gases de Efeito Estufa

(GEE) com a proposição de um acordo mundial sobre a necessidade de limitar o aquecimento global em 1,5°C acima dos níveis pré-industriais. (ONU, 2015; IPCC, 2022).

As emissões de gás metano no rebanho bovino correspondem a 17% de todos os GEE do país, apontando desafios para o setor e para o Brasil (Kuepper *et al.*, 2020). O setor contribui com emissões diretas, oriundas da fisiologia animal, e indiretas, pelo uso da terra para a criação pecuária, incluindo o desmatamento, e como usuário de parcela substancial da produção da agricultura destinada à alimentação dos animais (Rojas-Downing *et al.*, 2017).

Nesse contexto, o controle na aquisição de gado de corte, excluindo fornecedores com áreas embargadas ou em situação de ilegalidade, foi requerido de empresas como JBS, Marfrig e Minerva, como parte das responsabilidades assumidas no Termo de Ajustamento de Conduta (TAC) com o Ministério Público (MP) em 2009 (Barreto *et al.*, 2017). Contudo, fraudes e desvios de conduta foram observados burlando as obrigações impostas pelos órgãos públicos. Fornecedores legalizados adquirem animais oriundos de áreas de desmatamento ilegal de propriedades não inscritas no Sistema de Inspeção Federal (SIF) ou no Sistema de Inspeção Estadual (SIE) (Gibbs *et al.*, 2016; Barreto, *et al.*, 2017). Na chamada "lavagem verde" há a transferência de animais vindos de áreas de desmatamento ilegal ou sem Cadastro Ambiental Rural (CAR) para uma propriedade regularizada. Pode ocorrer ainda o "vazamento", que é a transferência desses animais para abates irregulares (Gibbs *et al.*, 2016).

2.2. Operação Carne Fraca e Operação Carne Fria

A Operação Carne Fraca, iniciada pela Polícia Federal em 17 de março de 2017, teve como objetivo investigar um esquema de fraudes e corrupção na aprovação da comercialização de carne adulterada. Empresas como BRF (Sadia, Perdigão, Batavo e Elegê) e JBS (Seara, Swift, Friboi e Vigor) foram suspeitas de participação na venda ilegal de carne bovina, representando riscos à saúde pública (Heck *et al.*, 2018). A ação resultou na execução de 309 mandados judiciais em seis estados e no Distrito Federal, envolvendo mais de mil e cem policiais diretamente ligados à operação (Brasil, Senado Federal, 2017).

Diversas acusações foram apresentadas ao Senado Federal, incluindo o aproveitamento de animais mortos, adição de ingredientes não permitidos, obtenção irregular de certificado sanitário, conluio entre laboratório e fiscalizado para falsificação de documentos fiscais, e atuação de fiscal na defesa de interesses de empresa fiscalizada (MPCE, 2017). Ao todo, 63 pessoas foram processadas, e a investigação concluiu que as empresas autuadas cometeram diversos tipos de crime (Silvestre *et al.*, 2018).

Já a Operação "Carne Fria" foi deflagrada pelo IBAMA como estratégia para combater o desmatamento ilegal na Amazônia e teve como propósito localizar e aplicar as sanções cabíveis aos participantes da cadeia produtiva da carne bovina que comercializavam produtos pecuários de áreas com desmatamento ilegal e outras irregularidades. A JBS foi alvo de uma etapa da Operação Carne Fria, planejada em 2016 e que teve seu auge em março de 2017, ocasião em que 15 frigoríficos e 20 fazendas nos estados do Pará, Bahia e Tocantins estiveram envolvidos, além da constatação da comercialização de 58 mil cabeças de gado de áreas com restrições legais ambientais (Silvestre *et al.*, 2018; Kuepper *et al.*, 2020).

As cadeias de suprimentos enfrentam um risco significativo de corrupção, especialmente nas economias emergentes, onde as fortes conexões entre a pequena e a grande corrupção tornam as redes criminosas associadas mais difíceis de interromper. A corrupção impede que as cadeias de suprimentos atinjam um nível desejável de sustentabilidade (Silvestre *et al.*, 2018).

Levy et al (2023), sustenta que o desmatamento em territórios amazônicos se configura enquanto uma ameaça aos limites globais de emissões de carbono, à biodiversidade e aos modos de vida das populações indígenas. Os autores citam trabalhos realizados pelo Imazon enquanto ferramentas de monitoramento no combate ao desmatamento da Amazônia. (Levy *et al.*, 2023)

2.3. *Counter-Accounting*

A *counter-accounting*, prática emancipatória, alinha-se à democracia ao adotar princípios e práticas que promovem liberdade de expressão, inclusão, participação política e governança através de mecanismos de participação popular (Gallhofer *et al.*, 2006; Gallhofer & Haslam, 2019). Os contrarrelatos têm o potencial de desafiar discursos hegemônicos e instigar mudanças emancipatórias na sociedade. As diversas formas de *counter-accounting* criam representações alternativas de organizações, práticas ou regimes de governança específicos, comunicando informações sobre seus impactos sociais, econômicos e ambientais (Laine & Vinnari, 2017, Vinnari & Laine, 2017).

A estratégia política da *counter-accounting* visa quebrar o monopólio dos gestores na produção de discursos sobre o desempenho organizacional, permitindo que outros atores expressem visões distintas e, possivelmente, contestatórias do desempenho (Homero & Carrieri, 2020). Essa abordagem utiliza mecanismos de contradição aos relatos das organizações para revelar os sistemas de dominação que limitam os direitos e interesses sociais. A *counter-accounting* representa a linguagem contábil como agente de influência política, social e econômica em cenários de opressão e exploração (George *et al.*, 2021). Com base nessa estratégia, é possível empregar a linguagem contábil para disseminar propostas alternativas em contextos de mudança (Homero & Carrieri, 2020).

As ONG utilizam a *counter-accounting* para fomentar mudanças nas práticas corporativas, para reformar os sistemas de governança e na tentativa de resolver desequilíbrios de poder. Denedo *et al.* (2017) exploram como as ONG do delta do Niger utilizam a *counter-accounting* como estratégia de confrontação das informações relacionadas às empresas petrolíferas e evidenciam que o engajamento da população é potencializado pelas assimetrias de poder.

Tanto teórica como metodologicamente, a *counter-accounting* se predispõe a revelar as hegemonias e contradições dentro dos reportes contábeis em suas interações com a sociedade. (Boiral, 2013). A hegemonia é instanciada nos processos ideológicos e a ideologia opera enquanto mecanismo para sustentar, produzir e reproduzir a perpetuação da dominação hegemônica de certos tipos de poder, como informado por Thompson (1990).

Tweedie (2023), sustenta a que o enfrentamento da emergência climática que ameaça o futuro de toda a vida na Terra, aliado ao acirramento das desigualdades sociais no mundo (classe, raça, gênero, etc.) requerem investigações críticas para a criação de sociedades mais justas. Neste sentido, a *counter-accounting* se configura enquanto tecnologia contabilística emancipatória capaz catalisar as vozes marginalizadas se alinhando às lutas por maior justiça social e democracia, desafiando as estruturas de poder tidas como certas (George *et al.*, 2021; Tweendie *et al.*, 2023).

3. Aspectos Metodológicos

Orientados sob a perspectiva teórica da contabilidade emancipatória pragmatista crítica (Gallhofer & Haslam, 2019), informados pela abordagem qualitativa envolvendo um conjunto de práticas, representações e transformação da realidade social, deflagramos essa investigação. A contabilidade emancipatória é consistente com uma variedade de métodos e valoriza fontes diversas (Cintra *et al.*, 2022).

O método do estudo de caso (Yin, 2018), foi utilizado na pesquisa como estratégia para o cumprimento do objetivo, pois esta metodologia comparada a outras formas de pesquisa possibilita a explicação do "por que" e o "como" determinados fenômenos ocorrem (Adams *et al.*, 2018, p. 489).

A companhia selecionada para o estudo de caso foi a JBS. Dentre as motivações para a escolha da companhia estão os seguintes argumentos: a empresa possui um conjunto de operações sediadas na Amazônia Legal, área altamente exposta ao escrutínio internacional tanto do ponto de vista comercial quanto político (Levy *et al.*, 2023); a companhia é a maior processadora de carnes do mundo que, em 2017, respondia pelo abatimento de 30% do gado brasileiro, com expressivo volume de animais vindos da Amazônia, portanto possui as condições de representatividade requeridas para um estudo de caso (Yin, 2018); além disso, a JBS, na ocasião dos escândalos da Operação Carne Fraca e Carne Fria, estava classificada como a empresa como maior exposição aos riscos de desmatamento ilegal relacionados à pecuária (Barreto *et al.*, 2017). Dito isso, esclarecemos que as firmas de auditoria selecionadas, BDO e Grant Thornton, auditaram a JBS no período em análise. Já o Greenpeace e o IMAZON, foram selecionados pelos seguintes motivos: o relatório do Greenpeace (2009), congregou investigações de três anos com dados documentais incluindo jurídicos, com registros fotográficos e com entrevistas divulgado mundialmente, o que resultou em maiores restrições comerciais aos exportadores de *commodities* brasileiros (Gibs *et al.*, 2016; Levy *et al.*, 2023); já a escolha do IMAZON, dever ao fato de a organização publicar anual os reportes sobre os desdobramentos dos processos de desmatamento da Amazônia (Levy *et al.*, 2023), o que possibilita uma análise mais detalhada e consistente para o acompanhamento dos dados.

Ao abordar a importância do estudo de casos, é fundamental destacar que, conforme apontado por Silvestre *et al.* (2018) e Levy *et al.* (2023), as ações das empresas transcendem meramente a descrição ou ilustração de uma situação específica. Ao contrário, esses estudos oferecem uma oportunidade única de extrair conclusões válidas e aplicáveis não apenas para a organização em foco, mas também para outras empresas e organizações.

Para o alcance do objetivo, empregou-se a análise temática como estratégia de interpretação dos dados (Braun & Clarke, 2012) que admite mais de um tema no mesmo conjunto de análise (Camargo & Justo, 2013). Foi efetuada a triangulação de dados, processo de comparação dos dados coletados de diferentes fontes para demonstrar consistência das informações e fortalecer os resultados. Foram confrontados dados e informações das ONG com as informações reportadas pela empresa JBS e pela auditoria.

O corpus do estudo foi construído a partir da leitura aprofundada dos documentos citados na **Tabela 1**. Foram transcritos os relatos que se referiam aos temas: Operação Carne Fraca e Operação Carne Fria nas demonstrações financeiras da JBS de 2017 a 2019; nos relatórios e documentos das ONG; e nos relatórios de auditoria, no que diz respeito aos processos, litígios e afins.

O período de análise situado entre 2017 a 2019 foi definido com base na ocorrência dos escândalos, ambos ocorridos no ano de 2017. Adicionamos os anos de 2018 e 2019, para melhor avaliar os efeitos do fenômeno em estudo sobre as demonstrações, especialmente considerando que os desdobramentos das principais fases de julgamento na justiça ocorrem neste lapso temporal. (Silvestre *et al.* 2018; Kuepper *et al.* 2020; Ministério Público, 2019)

Tabela 1 - Amostra e Critérios para Inclusão e Bases Documentais

Organizações		*Critério de Inclusão*	*Documentos*
Empresa	JBS	Empresa diretamente envolvida, ações listadas na bolsa, maior facilidade de acesso aos dados internos.	Demonstrações Financeiras Padronizadas (DFP), Notas Explicativas e Formulário de Referência. Análises adicionais: Relatórios de Sustentabilidade, 2017 a 2019.
Sociedade Civil	Greenpeace (ONG internacional) e Imazon (ONG paraense).	Greenpeace elaborou relatório com dados de três anos de investigação sobre a cadeia da carne, vínculos com grandes marcas internacionais; Imazon é responsável por acompanhar os processos de auditoria nos frigoríficos.	Os frigoríficos vão ajudar a zerar o desmatamento da Amazônia. (Barreto *et al.* 2017); Sob a pata do boi-como a Amazônia vira pasto (Pegurier & Barreto, 2019); A Farra do Boi (Greenpeace, 2019).
Auditoria	BDO e Grant Thornton	BDO, responsável pelo relatório de auditoria de 2017; Grant Thornton, responsável pelos relatórios de 2018 e 2019, sem ressalvas.	Relatórios de Auditoria expedidos entre os anos de 2017 a 2019.

Fonte: Elaborado pelos Autores (2023)

Como ferramenta de apoio à análise dos dados, foi utilizado o software livre Iramuteq versão 0.7 alpha 2, de 2020, que vem sendo usado como instrumento de suporte em análises textuais. O uso de CAQDAS - *Computer Aided Qualitative Dada Analysis Software*, vem sendo legitimado por estudos científicos em áreas variadas, pois corroboram com a eficiência no gerenciamento e recuperação de dados qualitativos, especialmente em estudos que lidam com grande volume de textos (Camargo & Justo, 2013).

Para a análise temática, foi necessária a identificação de cada um dos conjuntos de dados e seus discursos, em consonância com a **Tabela 1**. Cada ator social da amostra (Empresa, ONG, Firmas de Auditoria) foi identificado separadamente e variáveis com características atreladas aos atores foram determinadas por tipo de ator social e ano. O texto do corpus propriamente dito, foi subdividido em Operação Carne Fraca e Operação Carne Fria, posteriormente processados no software.

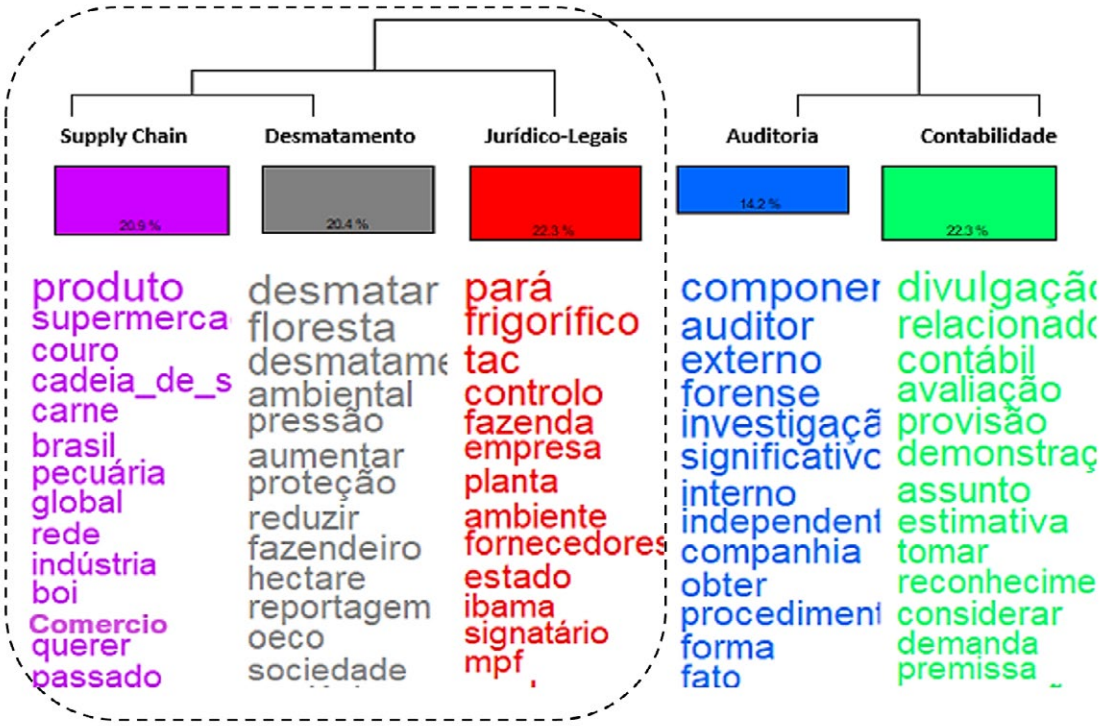
A análise utilizou o relatório da Classificação Hierárquica Decrescente (CHD) oriunda do software, na qual são realizados testes qui-quadrado (X^2) junto aos segmentos de textos, os quais revelam a força associativa entre os termos em relação às respectivas classes. Quando a força associativa se faz superior a 3,84 e com $p<0,000$, as palavras são agregadas aos clusters (Camargo & Justo, 2013). Posteriormente, os dados foram categorizados de modo indutivo, com base na teoria de sustentação da pesquisa.

A análise hierárquica descendente identificou três conjuntos de textos entre 2017 e 2019, totalizando 281 segmentos textuais, que consistem em frases curtas selecionadas pelo software. Esses textos contêm um total de 2.228 formas léxicas, das quais 1.482 são formas ativas de texto, como palavras, excluindo complementos verbais e outras classificações suplementares. Cinco clusters foram formados, abrangendo 75,2% dos segmentos de texto, atendendo à recomendação de Camargo e Justo (2013) de um aproveitamento mínimo de 75% das Unidades de Contexto Elementares (UCE), que são os segmentos de texto gerados pelo software.

4. Resultados e Discussão dos Resultados

A seguir, são apresentados os processos de descrição, interpretação e análise dos resultados, tendo como base os autores e a teoria. A CHD (**Figura 1**) corresponde aos anos 2017, 2018 e 2019.

Figura 1 - Classificação Hierárquica Descendente (2017, 2018, 2019)



Fonte: Elaborado pelos autores com base no software Iramuteq (2023)

As cinco classes de associações estatísticas estão correlacionadas com os seus respectivos títulos construídos a partir da categorização indutiva. Podemos observar dois conjuntos de clusters:

i) formado pela contabilidade e auditoria em que as correlações são mais fortes, possivelmente pela linguagem técnica contábil do ambiente da auditoria e da contabilidade;

ii) outro cluster (pontilhado) formado pelas classes: *Supply chain* (cadeia de suprimentos), Desmatamento e Jurídico Legal.

Os clusters relativos às classes *Supply Chain*, Desmatamento e Jurídico Legal, caracterizados como contrarelatos (*counter-accounting*), estão em oposição discursiva às narrativas relativas aos escândalos nas classes Auditoria e Contabilidade. As enunciações deste cluster rompem com as hegemonias discursivas do coeso cluster oposto informado pela Contabilidade e Auditoria (Homero & Carrieri, 2020).

Na classe Contabilidade, as palavras mais correlacionadas vinculam-se aos procedimentos forenses dos órgãos judiciais e aos procedimentos de auditoria. O discurso enunciado declara brevemente tais acompanhamentos. A classe Auditoria envolve procedimentos externos em auditorias, incluindo confirmação e consulta a instituições jurídicas, processos e advogados. Destaca-se o *disclosure* contábil e a avaliação aprimorada das provisões dos passivos socioambientais judiciais. Essa classe tem a maior representação, com fortes associações estatísticas (22,3%), principalmente relacionadas ao gênero textual DFPs e relatório de auditoria.

Adicionalmente, consultamos relatórios de sustentabilidade para confirmar se a estratégia discursiva é influenciada pelo formato de comunicação, que regula o que é dito e não dito no documento. Após examinar 537 páginas, constatamos a ausência de referência direta às operações Carne Fraca ou Fria. A Carne Fria é mencionada indiretamente, citando conformidade ou ações articuladas com o IBAMA e MP em trechos específicos, totalizando oito citações desses órgãos de 2017 a 2019 (JBS, 2017b, 2018b, 2019b). Pode-se argumentar que as narrativas não são exclusivamente resultado do disciplinamento do gênero textual. O domínio das narrativas gerenciais (relatório de sustentabilidade) e contábeis (DFP e Relatório de Auditoria) permanece coerente.

As classes opostas, marcadas em pontilhado, têm associações estatísticas significativas com as ONG. Na classe *Supply chain*, observa-se elementos relacionados à cadeia produtiva do boi, conectada ao alcance potencial de diversos atores sociais e institucionais, desde fazendas amazônicas até grandes marcas. Palavras relacionadas a negócios são estrategicamente usadas para envolver o Estado, empresas e opinião pública (produto, supermercado, cadeia de suprimentos). As ONG, por sua vez, utilizam relatórios científicos, relatos jornalísticos e literários (livros narrativos) para destacar os desafios na cadeia produtiva da carne e o envolvimento de vários atores. Boiral (2013) discute que os relatos sobre sustentabilidade e *counter-accounting* abordam questões econômicas, ambientais e sociais, sendo influenciados por diversas fontes e gêneros textuais.

A classe Desmatamento inclui palavras associadas ao desmatamento ilegal e pressões sociais por medidas mais rigorosas contra o desmatamento, com ativa cobrança de conformidade (desmatar, floresta, ambiental, pressão). O posicionamento do contradiscurso adota formas discursivas democráticas, em linha com as descobertas de Gallhofer *et al.* (2006) e Denedo *et al.* (2017).

A classe Jurídico Legal está ligada a processos judiciais, embargos, ao TAC assinado pelas empresas, e aos autos de infrações e multas, detalhados nos relatórios científicos, técnicos e narrativos (Imazon,

2017, 2018, 2019). A primeira palavra é "Pará", entendida por dois motivos: primeiro, o estado concentra o desmatamento na Amazônia e, segundo, pela presença de grandes fazendas. O Ministério Público, em diálogo com diversas instituições, parece ter sido mais eficaz no estado, embora os desdobramentos atinjam várias regiões na Amazônia. Nesta classe, surgem compromissos, acordos e documentos vinculantes entre empresas e órgãos públicos.

De maneira geral, os contrarrelatos das ONG, por meio de investigações, pesquisas anuais e acompanhamento das relações com MP, IBAMA, frigoríficos e proprietários, contestam pontos nos relatórios contábeis (Barreto *et al.*, 2017; Silvestre *et al.*, 2018; Gibbs *et al.*, 2016; Skidmore *et al.*, 2022). Destacam o cumprimento parcial do acordo por parte dos frigoríficos, a recusa de alguns frigoríficos e fazendas em aderir ao acordo contra o desmatamento (Levy *et al.*, 2023), a contradição de grandes redes de supermercados que afirmam compromisso contra o desmatamento, mas compram de frigoríficos sem controle de origem do gado, o apoio financeiro de bancos e gestores de fundos ao desmatamento, apesar das declarações de responsabilidade socioambiental. O BNDES, com compromisso ambiental declarado, não cumpre suas diretrizes de rastreamento do gado em áreas de financiamento. Limitações de atuação do MPF incluem a ordem ao IBAMA para fiscalizar frigoríficos, impedida por órgãos estaduais. Auditorias sobre a execução dos TAC indicam indulgência do MPF do Pará com frigoríficos que não cumpriram adequadamente o acordo. Além disso, apontam configurações criminosas para o *greenwashing* da cadeia produtiva. As ONG participam ativamente na elaboração de soluções contra desmatamento e crimes associados, como irregularidade fundiária, trabalho análogo ao escravo, ocupação de terras indígenas, ocupação ilegal de Unidades de Conservação e violação dos direitos humanos.

Diante da análise temática e análise léxica realizada, pode-se sustentar que o *counter-accounting* empreendido pelas ONG propõe medidas alternativas e serve como linguagem de resistência em causas socioambientais no contexto da Operação Carne Fraca e Operação Carne Fria ao mobilizar um conjunto de ações que:

- Desafiam as hegemonias do Estado e das corporações ao incitar o potencial democratizante (George *et al.*, 2021), utilizando investigações, coleta de dados, ferramentas de geoprocessamento, mapeamento de cadeias de suprimentos e redes de financiamento, identificação de órgãos públicos, além do emprego de novas tecnologias. Isso resulta em campanhas públicas, articulações com atores sociais e entrega de relatórios governamentais.

- Monitoram governo e empresas com engajamento científico ambiental, publicando relatórios que apontam problemas e sugerem soluções, contribuindo para reformas nos processos de governança e novas configurações institucionais (Vinnari & Laine, 2017; Silvestre, 2015).

- Verificam o cumprimento de acordos ao realizar auditorias ambientais e produzir relatórios, alinhando-se às investigações de Gallhofer *et al.* (2006) sobre as possibilidades de transformação emancipatória pela atuação ativa de atores sociais, conforme postulado por Denedo *et al.* (2017), que posicionam a *counter-accounting* como mecanismo para efetivar a *accountability*;

- Reportam resultados dos estudos e ações, construindo peças literárias e relatos que sustentam sistematicamente as posições assumidas e referenciadas em pesquisa, relatórios e outros registros sociais; e

- Transformam a realidade, conforme as mudanças emancipatórias em Denedo *et al.* (2017), ao apresentar relatórios anuais de monitoramento com dados técnicos, científicos e propostas de mudanças. (Levy *et al.*, 2023). Esses relatórios identificam lacunas institucionais com efeitos organizacionais e jurídico-legais, propondo novas formas de estruturar os processos de combate ao desmatamento, exemplificado pelo trabalho do Imazon (2017, 2018, 2019). Essa ação representa uma mobilização para a responsabilidade ativa (George *et al.*, 2021).

Na **Tabela 2**, são elencadas algumas das iniciativas do IMAZON em interação com instituições públicas e outras organizações para a promoção de projetos e ações as quais ilustram como a ONG colabora com as políticas públicas ambientais. Os fatos destacados e a descrição das ações na **Tabela 2**, materializam exemplificações de como a ONG desafia, reporta, monitora, verifica e subsidia as ações voltadas para a redução do desmatamento ilegal na Amazônia e às irregularidades associadas.

Tabela 2 - Ilustração de ações de atuação do IMAZON

Fatos em destaque	*Descrição das ações*
Conselho Nacional do Ministério Público(CNMP), assinou um Acordo de Resultados em Defesa da Amazônia com diversos Ministérios Públicos dos estados da Amazônia Legal.(Conselho Nacional de Justiça, 2020)	Documento que institui as Diretrizes de Orientação para os Ministérios Públicos Brasileiros quanto ao Cadastro Ambiental Rural (CAR). Elaborado pelos Grupo de Estudos de membros do Conselho Nacional de Justiça e IMAZON. (CNMP, 2022).
Realização de cooperações técnicas entre o IMAZON E MPPA. Iniciado em 2007 e renovado e ampliado em 2021, ver Ministério Público do Pará (2021, 2023).	Apoios técnicos, acesso a informações qualificadas como dados de mapeamentos, treinamentos, oficinas e atuações conjuntas como as auditorias.
Parceria do município de Paragominas (PA) e IMAZON para instituição do Projeto Município Verde. (Martins Piedade, 2019)	Guia de orientações para adequação ambiental dirigido os gestores públicos e lideranças produtivas.
Parceria do IMAZON com a ONG O Eco institui o monitoramento do comprometimento do Termos de Ajustamento de Conduta firmados entre frigoríficos e Ministério Público na Amazônia Legal.	Plataforma independente que monitora o comprometimento dos frigoríficos ao disponibilizar relatório com o ranking de empresas mais expostas aos riscos de desmatamento ilegal. (Monitac, 2023)
Termo de Cooperação Técnica entre Ministério Público do Mato Grosso (MPE/MT) e o IMAZON. (MPE/MT, 2014)	Monitoramento de unidades de conservação auxiliadas pelo uso da ferramenta de ImazonGeo.

Fonte: Elaborado pelos autores (2023).

Como descrito na **Tabela 2**, as parcerias, projetos e ações realizadas abrangem na breve descrição, a elaboração de diretrizes norteadoras para atuação dos Ministérios Públicos brasileiros (CNMP, 2022); a realização de parcerias com municípios para instituição de políticas ambientais (Martins Piedade *et al.*, 2019); o desenvolvimento e disponibilização de ferramentas para o consumidor com propósito de monitorar a origem da carne consumida por meio da plataforma Monitac. (Monitac, 2023); a parceria com os diversos Ministérios Públicos, dentre os quais estão o do Pará que atualmente trabalha com o monitoramento do desmatamento com uso de inteligência artificial desenvolvida pelo IMAZON (MPPA, 2023).

Apesar da ampla divulgação nacional e internacional da Operação Carne Fraca, observou-se uma subnotificação do escândalo e suas implicações no âmbito empresarial (DFP e relatórios de sustentabilidade). Destaca-se a ausência total de informações contábeis sobre as operações Carne

Fraca e Fria nas empresas Marfrig e Minerva, indicando um sério descumprimento das responsabilidades de reporte por parte dessas empresas. Posteriormente, foram confirmados sofisticados esquemas de corrupção, falsificação documental, adulteração de produtos alimentícios e uso de substâncias não permitidas (Ministério Público Federal, 2019).

Quanto à Operação Carne Fria, pode existir uma subnotificação jornalística e científica, uma área que pode ser explorada em estudos futuros. Recomenda-se que a vigilância sistemática das ONGs tenha manifestado formas de resistência ao desencadear contestações sistemáticas por meio de tecnologias, inteligência estratégica e cooperações ao longo do tempo, ampliando assim as oportunidades para reivindicações democráticas sobre o tema.

Resumindo, a análise contábil no estudo, quando combinada com análises de outras fontes, revela um distanciamento e uma falta de engajamento com questões-chave nos relatórios corporativos, mesmo quando envolvem riscos e implicações econômicas. Ao adotar essa abordagem, as organizações sustentam formas de poder que contribuem para a produção, reprodução e perpetuação da dominação hegemônica, conforme destacado por Thompson (1990). A ocultação de informações, a repetição de dados em exercícios sociais diferentes e a desconexão entre relatórios contábeis e relatórios de sustentabilidade são indicativos desse padrão.

5. Considerações Finais

O objetivo da pesquisa foi investigar como o *counter-accounting* foi utilizado para propor medidas alternativas e servir como linguagem de resistência em causas socioambientais no contexto da Operação Carne Fraca e Operação Carne Fria na indústria brasileira da carne.

Os achados possibilitaram evidenciar as formas de engajamento representadas a partir da linguagem em que identificaram-se estratégias que desafiam o Estado e as corporações, ao apresentarem situações que sinalizam os *gaps* institucionais com contribuições na redução das assimetrias de poder; monitoram o cumprimento dos compromissos voluntários e acordos vinculados juridicamente; verificam, ao se envolver na realização de trabalhos técnicos baseados em evidências que sustentam os seus discursos, como auditorias ambientais reportam à sociedade e produzem outras fontes de informações; e transformam, ao realizar proposições para melhoria dos hiatos institucionais. Os dados extraídos da análise hierárquica descendente deram suporte à compreensão de como os discursos se posicionam nas arenas sociais discursivas e como sustentam certos tipos de poder (posições) ou criam resistências para a transformação.

As potencialidades emancipatórias reveladas a partir desta investigação possibilitaram realizar reflexões que se configuram como contribuições do estudo, repensando a ampliação do papel dos contadores, dos pesquisadores, da pesquisa contábil e da teoria contábil em sua interface com o esforço de operacionalização da *accountability* e da justiça social. A observação do ativismo das ONG, pautado em dados científicos e cidadania ativa, é capaz de colaborar com a construção de políticas

e intervenções sociais significativas reforça a proposição de que nós, contadores, podemos criar instâncias de monitoramento, reporte e pesquisa que congreguem informações genuinamente úteis para o bem-estar social.

A observação de casos como instrumento de aprendizado não se limita a uma compreensão superficial da realidade empresarial. No contexto delineado por Silvestre et al. (2018) e Levy et al. (2023), a complexidade das interações entre as ações das empresas, a cadeia de abastecimento do setor, as vendas internacionais e as relações políticas transcendem fronteiras e impactam não apenas a empresa em questão, mas também o cenário global. Portanto, a análise das organizações deste estudo visa contribuir e colaborar em âmbito internacional dada a relevância das organizações e do setor brasileiro para o mundo.

Pode-se desenvolver ações em torno da criação de observatórios contábeis socioambientais que monitorem o reporte de empresas e governos acerca dos avanços e retrocessos em torno das metas climáticas; dos Objetivos do Desenvolvimento Sustentável; de inclusão étnica, etária de gênero; implicações de saúde, entre outros. Novos relatórios produzidos por ONG, outras fontes empresariais ou governamentais, bem como informações contábeis à luz de novas normas abrangendo sustentabilidade e mudanças climáticas podem ser objeto de pesquisas futuras com enfoque emancipatório.

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Un Análisis de la Competitividad del Tomate Mexicano en el Mercado de Estados Unidos[1]

ÁREA: 1
TIPO: Aplicación

An Analysis of the Competitiveness of Mexican Tomato in the US Market
Uma Análise da Competitividade do Tomate Mexicano no Mercado dos Estados Unidos da America

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Estados Unidos es el principal importador de tomate en el mundo, e importa grandes cantidades de México. Los resultados muestran que un aumento anual de 20% en la cantidad importada de tomate mexicano en el mercado estadounidense sería viable en el sentido económico. En este escenario simulado, la Relación Beneficio/Costo (R B/C) para los productores de Sinaloa, Jalisco, Sonora y Baja California sería 2.3434, 1.2886, 2.8524 y 3.5025 respectivamente. Es decir, que ante un incremento de 20% en la cantidad exportada, producir tomate con destino a Estados Unidos en estos estados sigue siendo rentable.

United States of America (USA) is the main importer of tomatoes in the world, and it imports large quantities of Mexican tomato. The results show that a 20% annual increase in the imported quantity of Mexican tomato to the US market would be economically viable. In this simulated scenario, the Benefit/Cost Ratio (B/C R) for producers in Sinaloa, Jalisco, Sonora and Baja California would be 2.3434, 1.2886, 2.8524 and 3.5025 respectively. In other words, in the face of a 20% increase in the exported quantity, producing tomatoes destined for the US market in these states continues to be profitable.

Os Estados Unidos da América (EUA) são o principal importador de tomate do mundo e importam grandes quantidades do México. Os resultados mostram que um aumento anual de 20% na quantidade importada de tomate mexicano para o mercado dos EUA seria economicamente viável. Neste cenário simulado, a Relação Benefício/Custo (R B/C) para os produtores de Sinaloa, Jalisco, Sonora e Baja California seria 2,3434, 1,2886, 2,8524 e 3,5025, respectivamente. Ou seja, dado o aumento de 20% na quantidade exportada, a produção de tomates destinado aos Estados Unidos da América nestes estados continua a ser rentável.

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1. Introducción

El tomate (*solanum lycopersicum*) es un vegetal de color rojo cuyo origen botánico se encuentra en los bajos Andes, región ubicada en Perú y Ecuador. Sin embargo, su domesticación y cultivo se desarrolló en México. Actualmente, es el vegetal más comercializado en el mundo. Información de FAO (2023) muestra que en el año 2021 se produjeron 189.13 millones de t de tomate en el mundo. El principal productor y consumidor de tomate es China, que en 2021 cultivó 67.63 millones de t (35.76%), Estados Unidos fue cuarto con 10.47 millones de t (5.54%), mientras que México ocupó el séptimo lugar al producir 4.15 millones de t (2.19%), como puede observarse en la **Tabla 1**.

Palabras clave
Tomate, producción, rentabilidad, exportación.

Keywords
Tomato, production, profitability, export.

Palavras-chave
Tomate, produção, rentabilidade, exportação.

Tabla 1 - Producción mundial de tomate en 2021

País	*Toneladas*	*%*
1 China	67,636,725	35.76
2 India	21,181,000	11.20
3 Turquía	13,095,258	6.92
4 Estados Unidos	10,475,265	5.54
5 Italia	6,644,790	3.51
6 Egipto	6,245,787	3.30
7 México	4,149,240	2.19
8 Brasil	3,679,160	1.95
Otros	56,026,729	29.62
Total	189,133,955.04	100.00

Fuente: Elaborado con información de FAO (2023)

En ese mismo año, México ocupó el primer lugar como exportador de tomate, ya que destinó al mercado exterior 1.90 millones de t que representaron 23.13% del total mundial exportado. Asimismo, esta cantidad representó 45.88% de la producción nacional en México.

Tabla 2 - Exportación mundial de tomate en 2021

País	*Toneladas*	*%*
1 México	1,903,779	23.13
2 Países Bajos	954,518	11.60
3 España	660,093	8.02
4 Marruecos	629,510	7.65
5 Turquía	606,583	7.37
6 Afganistán	312,104	3.79

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7 China	306,693	3.73
8 Irán	298,126	3.62
9 Francia	268,035	3.25
10 Bélgica	227,820	2.77
11 Estados Unidos	198,639	2.41
12 Canadá	198,192	2.41
Otros	1,665,807	20.24
Total	8,230,170	100.00

Fuente: Elaborado con información de FAO (2023)

De acuerdo con FAO (2023), en el año 2021, Estados Unidos fue el principal importador de tomate en el mundo, ya que compró 1.94 millones de toneladas en el mercado internacional. Éstas representaron el 23.56% de las importaciones totales realizadas a nivel mundial, como puede observarse en la **Tabla 3**.

Ahora, información de USDA (2023) muestra que en 1989 Estados Unidos importó 393.70 mil t de tomate, mientras que en 2022 compró en el mercado internacional 1.98 millones de t de tomate. Es decir, que entre 1989 y 2022, las importaciones de tomate en el mercado estadounidense crecieron a una tasa promedio anual de 5.02%.

Tabla 3 - Importación mundial de tomate en 2021

País	*Toneladas*	*%*
1 Estados Unidos	1,939,754	23.56
2 Alemania	749,187	9.10
3 Rusia	427,003	5.19
4 Pakistán	404,308	4.91
5 Arabia Saudita	351,625	4.27
Otros	4,361,147	52.97
Total	8,233,025	100.00

Fuente: Elaborado con información de FAO (2023)

Asimismo, las importaciones de tomate mexicano en ese mismo mercado ascendieron a 385.94 mil t en 1989, mientras que en 2022 fueron 1.80 millones de t. Es decir, las importaciones de tomate de origen mexicano en el mercado de Estados Unidos crecieron a una tasa promedio anual de 4.79%, como se observa en la **Tabla 4**.

En el mismo sentido, Estados Unidos importó, en 1989, 2,327.80 t de tomate canadiense; mientras que en 2022 importó 158.17 mil t. Es decir que, entre 1989 y 2022, las importaciones de tomate de origen canadiense en Estados Unidos crecieron a una tasa promedio anual de 13.64%, lo que provocó que su participación de mercado aumentara de 0.59% en 1989 a 7.98 en 2022.

Tabla 4 - Tasa de crecimiento de las importaciones de tomate en Estados Unidos 1989-2023

Año	*Total*	*%*	*México*	*%*	*Canadá*	*%*	*Otros*	*%*
1989	393,702.50		385,941.00		2,327.80		5,433.70	
1990	360,994.90	-8.31	352,312.20	-8.71	3,075.20	32.11	5,607.50	3.20
1991	360,829.30	-0.04	353,577.00	0.36	2,672.00	-13.11	4,580.30	-18.32
1992	196,070.60	-45.66	183,161.20	-48.20	5,213.70	95.12	7,695.70	68.02
1993	418,354.00	113.37	400,449.40	118.63	4,733.50	-9.21	13,171.10	71.15
1994	396,045.60	-5.33	376,033.40	-6.10	7,673.40	62.11	12,338.80	-6.32
1995	620,908.20	56.78	593,052.60	57.71	11,655.10	51.89	16,200.50	31.30
1996	737,185.50	18.73	685,712.40	15.62	21,769.30	86.78	29,703.80	83.35
1997	742,529.80	0.72	660,651.00	-3.65	37,516.40	72.34	44,362.40	49.35
1998	847,068.80	14.08	733,807.10	11.07	61,728.70	64,54	51,533.00	16.16
1999	740,741.60	-12.55	615,145.40	-16.17	79,553.50	28.88	46.042.70	-10.65
2000	730,005.90	-1.45	589,882.00	-4.11	101,390.30	27.45	38,733.60	-15.87
2001	823,561.50	12.82	679,218.70	15.14	105,680.20	4.23	38,662.60	-0.18
2002	859,501.70	4.36	723,424.60	6.51	100,499.10	-4.90	35,578.00	-7.98
2003	939,456.60	9.30	785,170.30	8.53	130,153.80	29.51	24,132.50	-32.17
2004	931,771.40	-0.82	778,712.70	-0.82	133,651.50	2.69	19,407.20	-19.58
2005	951,689.80	2.14	801,362.40	2.91	141,633.50	5.97	8,693.90	-55.20
2006	992,405.40	4.28	844,358.50	5.36	135,172.70	-4.56	12,874.20	48.08
2007	1,070,966.20	7.91	949,694.70	12.47	111,696.60	-17.37	9,574.90	-25.63
2008	1,116,098.20	4.21	987,685.00	4.00	119,376.10	6.87	9,037.10	-5.62
2009	1,189,600.70	6.58	1,046,868.30	5.99	130,310.10	9.16	12,422.30	37.46
2010	1,532,489.10	28.82	1,380,111.20	31.83	142,590.40	9.42	9,787.50	-21.21
2011	1,491,014.40	-2.71	1,327,308.90	-3.82	141,349.10	-0.87	22,356.40	128.42
2012	1,532,162.30	2.76	1,379,518.60	3.93	139,311.10	-1.44	13,332.60	-40.36
2013	1,537,471.60	0.35	1,381,305.50	0.13	140,240.30	0.67	15,925.80	19.45
2014	1,558,449.80	1.36	1,397,284.30	1.16	146,545.40	4.49	14,620.10	-8.20
2015	1,573,219.30	0.95	1,427,924.50	2.19	134,913.80	-7.94	10,381.00	-28.99
2016	1,786,348.20	13.55	1,619,729.10	13.43	154,273.30	14.35	12,345.80	18.93
2017	1,788,815.40	0.14	1,612,337.60	-0.45	165,368.60	7.19	11,109.20	-10.02
2018	1,855,381.20	3.72	1,691,118.40	4.88	149,947.40	-9.32	14,315.40	28.86
2019	1,824,624.40	-1.66	1,660,961.20	-1.78	149,887.40	-0.04	13,775.80	-3.77
2020	1,838,329.80	0.75	1,668,564.20	0.46	151,282.00	0.93	18,483.60	34.17
2021	1,939,716.30	5.51	1,753,998.20	5.12	166,865.50	10.30	18,862.60	2.05
2022	1,982,036.40	2.18	1,806,493.70	2.99	158,167.10	-5.21	17,375.60	-7.88
	Promedio	5.02		4.79		13.64		3.58

Fuente: Elaborado con información de USDA (2023)

Asimismo, la participación de mercado del tomate mexicano en el mercado estadounidense disminuyó de 98.03% en 1989 a 91.14% en 2022, como se observa en la **Tabla 5**.

Tabla 5 - Participación de mercado del tomate mexicano y el tomate canadiense en Estados Unidos en 1989 y 2022

País	*1989*		*2022*	
	Toneladas	*%*	*Toneladas*	*%*
1 México	385,941.00	98.03	1,806,493.70	91.14
2 Canadá	2,327.80	0.59	158,167.10	7.98
Otros	5,433.70	1.38	17,375.60	0.88
Total	393,702.50	100.00	1,982,036.40	100.00

Fuente: Elaborado con información de USDA (2023)

Es necesario mencionar que esta disminución en las importaciones de tomate mexicano en Estados Unidos es contraria a las intenciones del vigente Tratado Comercial entre México, Estados Unidos y Canadá (T-MEC 2020), así como del Tratado de Libre Comercio de América del Norte (TLCAN 1994-2020). En este contexto se esperaría mejorar la competitividad de las tres naciones, aprovechando tasas preferenciales de importación y exportación, incentivando así el aumento de las cantidades comercializadas.

La caída en las exportaciones muestra una disminución en la competitividad del tomate mexicano en el mercado estadounidense y contraviene las expectativas en el acuerdo T-MEC entre México y Estados Unidos. Asimismo, los esfuerzos naturales de los productores en México por incrementar la oferta exportable a Estados Unidos no son suficientes; por lo que es necesario que el gobierno implemente acciones para incentivarla (Emam, Leibrecht y Chen, 2023).

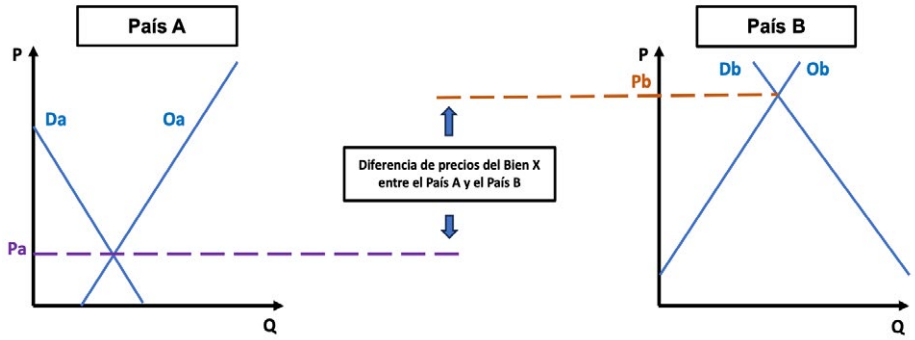
En este contexto, la pregunta de investigación se orienta a cuestionar si es viable, en el sentido económico, incentivar las exportaciones de tomate en México con destino a Estados Unidos en una magnitud que represente una tasa anual de 20%, con el propósito de aprovechar las oportunidades que el mercado ofrece.

2. Marco Teórico

El comercio de bienes se fundamenta sobre la base de que cada país tiene diferencias en las condiciones físicas respecto a los demás (Torres, 2011). Estas características particulares provocan que cada país posea condiciones propicias para la producción de determinados bienes, y dificultades en la producción de otros. Para Krugman, Obstfeld y Melitz (2012) las diferencias entre los países causan que cada uno desarrolle ventajas particulares para la producción, que se reflejan en diferencias en los costos. De esta forma, cada país es capaz de producir determinados bienes con costos más bajos que los demás

países, y producir determinados bienes con costos más altos que otros países que son más eficientes (Carbaugh, 2009).

Figura 1 - Precios en el mercado de un bien X entre el País A y el País B

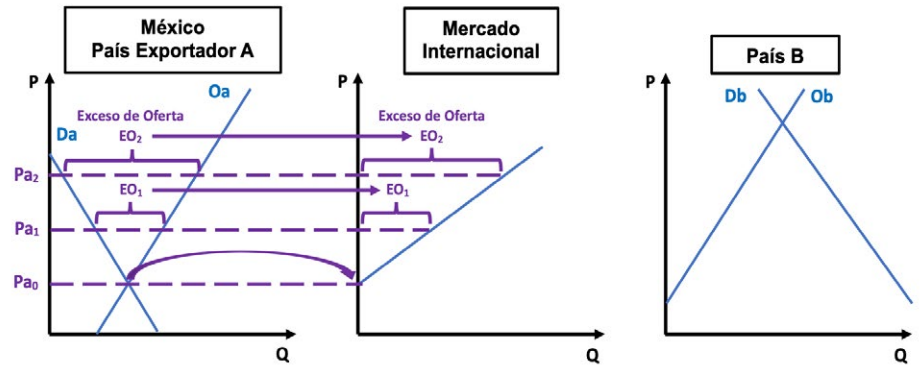


Fuente. Elaborado con información de Krugman, Obstfeld y Melitz (2012)

De acuerdo con Williams (2023), en autarquía cada país produce un bien X con unos costos que le permiten ofrecerlo en su mercado doméstico a un precio determinado, como puede observarse en la **Figura 1**. Sin embargo, estas diferencias son el fundamento del comercio internacional de un bien entre los países economías, y puede explicarse a través de un análisis de equilibrio parcial, en el que hay un país exportador A y un país importador B,

Este modelo puede explicarse, en primera instancia, a través de la gráfica del país exportador A, que posee una ventaja comparativa en la producción del bien X respecto al país B. Si se toma como base el precio de equilibrio Pa_0 en el país A, es posible imaginar que, si a partir de este el precio subiera hasta Pa_1, la diferencia entre la Demanda Da y la Oferta Oa del bien X tendería a aumentar, como se observa en la **Figura 2**. Si este Exceso de Oferta EO_1 que se genera al precio Pa_1 se traslada a un tercer escenario que representa el mercado internacional, y se dibuja una línea recta a partir de Pa_0, esta línea representa las diferentes cantidades del bien X disponibles en el mercado internacional para cada precio Pa. Asimismo, si el precio subiera hasta Pa_2, se generaría un Exceso de Oferta EO_2, mayor que el anterior (EO_1), que representa la cantidad disponible del bien X en el mercado internacional para este precio Pa_2, como puede observarse en la **Figura 2**.

Figura 2 - Exceso de Oferta de un bien X en el mercado internacional

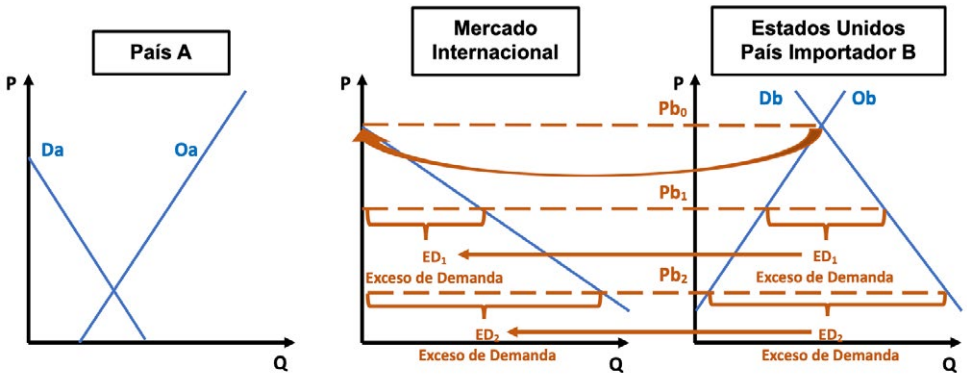


Fuente: Elaborado con información de Williams, 2023

Ahora, en relación al país importador B, éste se encuentra en desventaja comparativa en la producción del bien X frente al país B. Si se toma como base el precio de equilibrio Pb_0 en el país B, es posible imaginar que, si a partir de este el precio bajara hasta Pb_1, la diferencia entre la Oferta Ob y la Demanda Db del bien X tendería a aumentar, como puede observarse en la **Figura 3**.

Si este Exceso de Demanda ED_1 que se genera al precio Pb_1 se traslada al escenario que representa el mercado internacional, trazando una línea recta a partir de Pb_0, esta línea representa las diferentes cantidades del bien X que se demandan en el mercado internacional para cada precio Pb. De la misma forma, si el precio bajara hasta Pb_2, se generaría un Exceso de Demanda ED_2, mayor que el anterior (ED_1), que representa la cantidad que se requiere del bien X en el mercado internacional para este precio Pb_2, como se observa en la **Figura 3**.

Figura 3 - Exceso de Demanda de un bien X en el mercado internacional

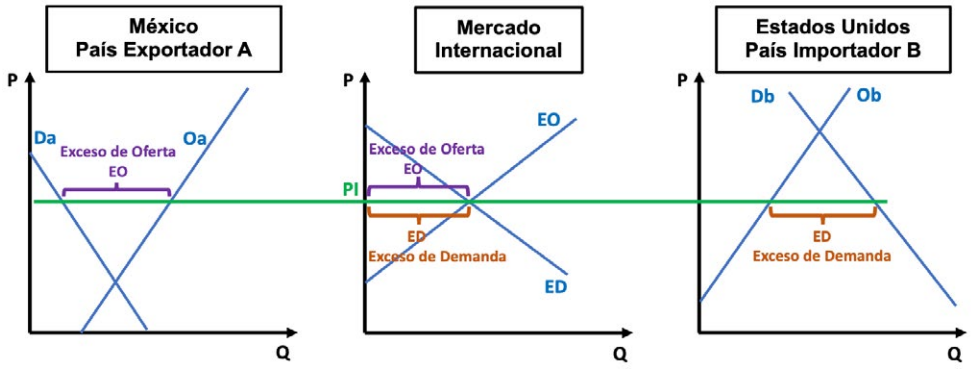


Fuente: Elaborado con información de Williams, 2023

Ahora, si concentramos el Exceso de Oferta y el Exceso de Demanda del bien x en el escenario intermedio del mercado internacional, es posible observar en la **Figura 4** que existe un punto en el que ambas curvas se intersectan, y en el que las condiciones de equilibrio del mercado se cumplen, ya que OE y DE son equivalentes. Es decir, en este punto el precio internacional PI provoca un exceso de oferta EO observable en el escenario del país exportador A y un exceso de demanda DE observable también en el escenario del país importador B. Asimismo, en el nivel del precio internacional PI, el exceso de oferta EO (Oa-Da) en el país exportador A es equivalente al exceso de demanda ED (Db-Ob) en el país importador B, como se observa en la **Figura 4**.

Cabe mencionar que si la curva de exceso de oferta EO se desplazara a la derecha como resultado de un incremento del excedente del bien X al mercado internacional (ver **Figura 6**), ello provocaría una disminución en el precio internacional desde PI_0 hasta PI_1. Hernández y Martínez (2009) afirman que la dimensión de dicho decremento está determinada por la flexibilidad precio. Mencionan que la flexibilidad precio de la demanda es un cambio porcentual en el precio de un bien cuando la cantidad demandada cambia en una magnitud que representa un 1%.

Figura 4 - Precio Internacional del bien X en el mercado internacional



Fuente: Elaborado con información de Williams, 2023

En este sentido, Hernández, López y Casique (2020) calculan que la flexibilidad precio de la demanda de las importaciones de mango mexicano en Estados Unidos es igual a -0.506%. Con esta estimación, en un escenario de simulación calculan que un aumento de 59.95 miles de t en 2017 respecto a 2016 (20% de aumento) provocaría una disminución de US$ 90.10 por t en el precio. En este contexto, estiman que el efecto final combinado de ambos impactos sería un incremento de US$ 20,955,114.75. Con este resultado, argumentan que incentivar la producción de mango para exportar a Estados Unidos en una magnitud de 20% en un año es viable en el sentido económico.

Cuando una nación tiene una demanda creciente (país importador) y no es capaz de producir la cantidad necesaria de un bien para satisfacer su consumo interno, debe importar y asegurar estas importaciones a un precio que sea conveniente para los consumidores. Es decir, al país no le resulta demasiado caro pagar estas compras en el mercado internacional (Abdalla, Stellmacher y Becker, 2023). La globalización influye en varios procesos económicos, incluido el intercambio de bienes en el mercado internacional. Por lo tanto, un país importador tiene la oportunidad de encontrar proveedores extranjeros que puedan vender productos cuyo comercio sea mutuamente beneficioso para ambos países. Tanto los exportadores como los importadores se benefician del mercado internacional; la disminución de aranceles, la reducción de costos logísticos, así como la reducción de barreras al comercio internacional, ofrecen una oportunidad para los productores que tienen una eficiencia técnica a tal nivel que les permite exportar, obteniendo importantes beneficios para recuperar la inversión (Ohana-Levi y Netzer, 2023).

Un análisis de equilibrio parcial de las exportaciones de mango mexicano a Estados Unidos fue realizado por el autor principal de este artículo en 2009. En esa investigación los autores consideraron que un aumento en las exportaciones de mango causaba dos efectos simultáneos sobre el valor de la cantidad comercializada: aumento del valor debido al aumento de la cantidad, y disminución del valor debido a la disminución del precio. Asimismo, fue necesario determinar si el valor final de estos dos efectos es positivo, es decir, si el aumento en la cantidad comercializada provocó un aumento en el valor, a pesar de la disminución del precio (Hernandez y Martinez, 2009). Si ocurriera, entonces el crecimiento del comercio internacional entre los dos países causaría que los beneficios para los productores del país exportador y los beneficios para los consumidores del país importador crecieran cuando aumentara la cantidad comercializada.

Por otro lado, el aumento en la cantidad comercializada podría hacer que el valor final combinado de ambos efectos disminuya, lo que provocaría que disminuyeran los beneficios para los productores del país exportador y los beneficios para los consumidores del país importador. En este caso, la cantidad comercializada no debería crecer, es decir, el aumento de cantidad no sería viable. Es por ello que se debe realizar el análisis de equilibrio parcial de un bien entre ambos países, ya que la toma de decisiones en política agrícola para incentivar las exportaciones requiere determinar su viabilidad en el mercado internacional (Hernandez y Martinez, 2009).

Este análisis también puede interpretarse como una previsión de las cantidades y precios en el mercado internacional para entender su funcionamiento. Desde esta perspectiva, es posible simular un escenario bajo ciertas condiciones para identificar las repercusiones, oportunidades, así como las consecuencias de aplicar una política agrícola para incrementar la cantidad exportada de un bien a un mercado específico (Mili y Bouhaddane, 2021). Así, Zhang, Onel y Seale Jr. (2021) simularon un aumento del 25% en los tipos arancelarios para los vinos franceses y españoles con destino al mercado estadounidense. Identificaron los efectos negativos sobre la cantidad demandada. Sin embargo, hubo efectos positivos sobre los vinos alemanes debido a una demanda inelástica de importaciones de estos.

Es importante mencionar que el aumento simulado de las tasas arancelarias provocaría una disminución en el bienestar de los consumidores estadounidenses. Un escenario simulado mostró las repercusiones en el comercio internacional de un bien entre dos economías, y permitió determinar si sería viable incrementar la cantidad comercializada.

Hernández y González (2022) realizaron un análisis de equilibrio parcial de las exportaciones de aguacate mexicano con destino a Estados Unidos para el autor principal de este trabajo. Se desarrolló un escenario hipotético con un aumento en la cantidad exportada que representó una tasa de crecimiento anual del 30%. En esa investigación se determinó la viabilidad de incentivar un aumento en las exportaciones de aguacate al mercado estadounidense.

Asimismo, Ahmad, Khalid, Karim y Zainuddin (2022) afirmaron que la eficiencia técnica en la producción de un bien determina el potencial exportador. Al respecto, dicen que la exportación potencial es la cantidad máxima que se puede exportar en ausencia de resistencia comercial. Desde una perspectiva longitudinal, esta estimación permite visualizar el desempeño de un país en el mercado internacional. En el sentido de eficiencia técnica, este análisis permite determinar el uso de sus capacidades productivas para exportar un bien.

Con la referencia de estos análisis, y con el antecedente de que el tomate mexicano ha perdido competitividad con las importaciones de tomate proveniente de Canadá en el mercado de Estados Unidos, se estableció como objetivo determinar la viabilidad de incentivar la producción de tomate en México para exportar a Estados Unidos en una magnitud que incremente la cantidad exportada 20% en un año con el propósito de mejorar la competitividad.

Para la realización de la investigación, la hipótesis propone que un incremento en la cantidad importada de tomate mexicano en Estados Unidos a una tasa anual de 20%, aumenta el valor de la cantidad comercializada debido a un incremento en el volumen provocando al mismo tiempo un decremento en el valor debido a disminución en el precio, con un efecto final positivo; es decir, que un aumento en las importaciones de tomate mexicano en Estados Unidos a una tasa anual de 20% es viable en el sentido económico.

En este punto, debe mencionarse que, en el escenario simulado, el supuesto es que las importaciones de tomate de origen mexicano en el mercado estadounidense sean 2,077,467.75 t en el año 2023; es decir, un aumento de 270,974.06 t respecto a 2022. En el mismo sentido, datos de SADER (2023) muestran que, en el año 2018, la producción de tomate en México alcanzó 3,780,950.01 t; es decir, 319,183.58 t más que las producidas en 2022 (3,461,766.43). La información anterior muestra que en México existe la capacidad productiva para incrementar la producción es una magnitud mayor al incremento simulado en el presente trabajo.

3. Materiales y Métodos

Con el propósito de llevar a cabo la presente investigación, se desarrolló un estudio descriptivo, ya que se realizó un relato para mostrar el efecto económico de un aumento en las importaciones de tomate mexicano en el mercado de Estados Unidos. El estudio es causal ya que, para llevar a cabo el análisis es necesario determinar el efecto de un incremento en la cantidad importada de tomate mexicano en el mercado estadounidense sobre el precio. Asimismo, el estudio también es cuantitativo, ya que el modelo tiene como base la relación entre las variables; es decir, que se construyó un modelo econométrico de ecuaciones simultáneas representando las relaciones de la demanda y la oferta en el mercado internacional del tomate entre México y Estados Unidos.

3.1. El modelo econométrico

El modelo está construido con dos ecuaciones principales:

ec. 1 $$PITM_t = \beta_{10} + \beta_{11}\, QITM_t + \beta_{12}\, GDPRUSAPC_t + \varepsilon_{1t}$$

ec. 2 $$PITM_t = \beta_{20} + \beta_{21}\, QETM_t + \beta_{22}\, PPTM_t + \varepsilon_{2t}$$

El modelo econométrico representa el mercado internacional del tomate entre dos economías: México y Estados Unidos. Es decir, está construido con una ecuación de demanda de importaciones de tomate en Estados Unidos y una ecuación de oferta de exportaciones de tomate en México.

La primera (**ec. 1**) es una ecuación de demanda de las importaciones de tomate mexicano en el mercado estadounidense. En ésta, la variable dependiente es el precio real de las importaciones de tomate originario de México $PITM_t$, que está determinada por una relación inversa con la cantidad importada de tomate mexicano $QITM_t$, denotada por el signo negativo (Hernandez y Martínez, 2009). Debe mencionarse que el precio del tomate mexicano en Estados Unidos también está determinado por $GDPRUSAPC_t$, que es el ingreso de los consumidores estadounidenses medido a través del Producto Interno Bruto real per-cápita.

La segunda (**ec. 2**) es una ecuación de la oferta de las exportaciones de tomate en México con destino a Estados Unidos. En ésta, la variable dependiente es el precio real de las exportaciones de tomate en

México $PETM_t$, que está determinada por la cantidad exportada de tomate en México $QETM_t$, y por el precio real del tomate al productor en México $PPTM_t$.

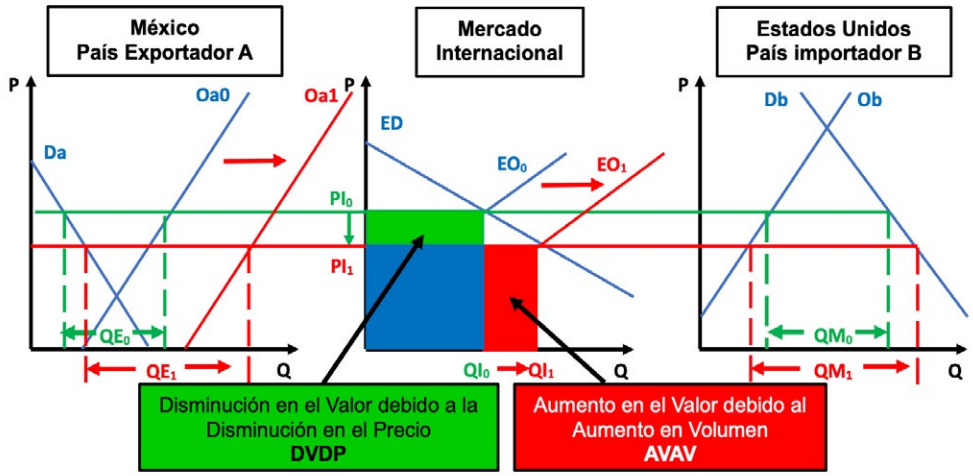
Cabe mencionar que las variables $PITM_t$ y $QITM_t$ fueron construidas con datos de USDA (2023), mientras que la variable GDPRUSAPCt fue construida con información del Bureau of Economic Analysis (BEA, 2023) y el US Census Bureau (2023). Las variables $PETM_t$ y $QETM_t$ fueron construidas con información del Food Agriculture Organization (FAO, 2023). Asimismo, la variable $PPTM_t$ fue construida con información del Servicio de Información Agroalimentaria y Pesquera (SIAP) de la Secretaría de Agricultura y Desarrollo Rural (SADER, 2023).

Una vez construido el modelo econométrico de ecuaciones simultáneas (la ecuación de demanda **ec. 1** y la ecuación de oferta **ec. 2**), se aplicó Mínimos Cuadrados Tres Etapas (MC3E) con el propósito de estimar los coeficientes β_{10}-β_{22} de las variables. Estos coeficientes se determinan simultáneamente en base a la relación de las variables en el mercado internacional representado en el modelo econométrico.

3.2. El análisis de equilibrio parcial

Con el propósito de realizar el análisis de equilibrio parcial, es necesario mencionar que cuando oferta de tomate para la exportación aumenta desde QE_0 hasta QE_1, ello puede observarse como un desplazamiento de la curva de oferta en el país exportador A desde Oa_0 hasta Oa_1, causando el desplazamiento de la curva de exceso de oferta EO en el mercado internacional desde EO_0 a EO_1, como puede observarse en la **Figura 5**.

Figura 5 - Mercado internacional del tomate entre México y Estados Unidos



Fuente: Elaborado con información de Williams, 2023

Esta situación causa además una disminución en el precio internacional desde PI_0 hasta PI_1, y a su vez, un aumento en la cantidad comercializada en el mercado internacional desde QI_0 hasta QI_1, que se refleja también como un incremento en el Exceso de Demanda de tomate en el mercado de Estados Unidos de QM_0 hasta QM_1.

Con los resultados de MC3E al modelo econométrico se calculó la flexibilidad precio de la demanda como se muestra a continuación:

ec. 3 $$F_{QIJM}^{PIJM} = \left(\frac{dPIJM}{dQIJM}\right)\left(\frac{QIJM}{PIJM}\right)$$

Como se mencionó anteriormente, a través de la flexibilidad precio de la demanda es posible conocer la disminución porcentual en el precio internacional cuando la cantidad aumenta 1%. Entonces, con el propósito de aterrizar el impacto en el valor de la cantidad comercializada, se calculó el Aumento en el Valor debido al Aumento en el Volumen AVAV (**ec. 4**) y la Disminución en el Valor debido a la Disminución en el Precio DVDP (**ec. 5**).

ec. 4 $VAV = (Q_1 - Q_0) * P_1$

ec. 5 $DVDP = (P_0 - P_1) * Q_0$

La diferencia entre el aumento y la disminución en el valor de la cantidad comercializada permite conocer el valor del impacto final combinado, como puede observarse en la **ecuación 6**.

ec. 6 $Valor\ final = AVAV - DVDP$

a) En el caso de que el *IVIV* sea mayor que el *DVDP*, el Valor final tendrá signo positivo, provocando un aumento en el valor total de la cantidad comercializada.

b) En el caso de que el *IVIV* sea menor que el *DVDP*, el Valor final tendrá signo negativo, provocando una disminución en el valor total de la cantidad comercializada.

4. Resultados y Discusión

La aplicación de MC3E al modelo econométrico de ecuaciones simultáneas muestra los valores de los coeficientes βt como se muestra en la **Tabla 6**.

Tabla 6 - Valor de los coeficientes β_t de la ecuación de demanda

Variable	*Coeficiente*	*Valor*	*Error estándar*	*t - Valor*	*Pr > | t |*
Intercepto	β_{10}	56.432740	2.338244	24.13	0.0001 ***
$QITM_t$	β_{11}	-0.00000322	0.0000008857	-3.64	0.0010 ***
$GDPRUSAPC_t$	β_{12}	-0.00038000	0.0000000000398	-7.41	0.0001 ***

Pr > | t | => 0.1 * Pr > | t | => 0.05 ** Pr > | t | => 0.01 ***
Fuente: Elaborado con los resultados de la aplicación de MC3E

Ahora, con un nivel de significancia de 0.01, en la distribución estadística de la prueba t de student con 33 grados de libertad, los valores críticos son iguales a -1.3077 y 1.3077. Con esta referencia, el valor de t para los coeficientes β_{11} y β_{12} son iguales a -3.64, -7.41, es decir, menores a -1.3077 (valor crítico de t), por lo que las probabilidades de t correspondientes a cada observación (0.0010 y 0.0001) son menores a 0.01.

Asimismo, el valor de t para el coeficiente β_{10} es igual a 24.13, es decir mayor a 1.3077 (valor crítico de t), por lo que las probabilidades de la t correspondiente (0.0001) es menor a 0.01 como puede observarse en la **Tabla 6**.

Estos resultados permiten aseverar que los valores estimados de β_{10}, β_{11} y β_{12} son estadísticamente significativos al interior del modelo econométrico. Además, las estimaciones de los coeficientes β permiten construir la ecuación de demanda específica de la siguiente forma:

ec. 7 $$PITM_t = 56.43274 - 0.00000322\,\beta_{11} + 0.00038\,\beta_{12} + \varepsilon_1$$

Con el propósito de estimar la flexibilidad precio de la demanda, se estimó la derivada parcial de la ecuación de demanda (**ec. 8**) respecto a la cantidad $QITM_t$, resultando:

ec. 8 $$\left(\frac{dPITM}{dQITM}\right) = -0.00000322$$

Entonces, con el propósito de realizar el cálculo de la flexibilidad precio de la demanda, la derivada parcial se multiplicó por el cociente de los valores promedio de $QITM_t$ entre $PITM_t$ de la siguiente forma:

ec. 9 $$F_{QITM}^{PITM} = \left(\frac{dPITM}{dQITM}\right)\left(\frac{QITM}{PITM}\right) = (-0.00000322)\left(\frac{989201.92}{9.92044468}\right) = -0.35707078$$

Al respecto, es posible afirmar que, cuando la cantidad importada aumenta 1%, el precio disminuye 0.35707078%. Entonces, con esta respuesta porcentual, es posible calcular la disminución en el precio ante un incremento en la cantidad importada de 20% para el escenario simulado 2023, que tendría un decremento de -7.14141570%, respecto al precio de 2022, como se observa en la **Tabla 7**.

Tabla 7 - Flexibilidad precio de las importaciones de tomate mexicano en Estados Unidos (Valores en dólares)

Aumento en la cantidad importada de tomate mexicano en Estados Unidos	*Disminución en el precio de las Importaciones de tomate mexicano en Estados Unidos*
1 %	- 0.35707078 %
20 %	- 7.14141570%

Fuente: Elaborado con los resultados de la aplicación de MC3E

En la **Figura 5**, es posible observar que al aumentar la cantidad importada de tomate mexicano en Estados Unidos desde Q_0 hasta Q_1, se genera un aumento en el valor provocado por el volumen comercializado, y a la vez se genera una disminución en el precio desde P_0 hasta P_1.

El impacto combinado final en el ingreso total es un incremento de US$ 168,137,279.00, como puede observarse en la **Tabla 8**.

Tabla 8 - Valores calculados cuando la cantidad importada aumenta 20%. (Valores en dólares y cantidades en toneladas)

Cantidad	*Precio*	*Valor P * Q*
Q_{2022} = 1,806,493.70	P_{2022} = 1,371.28	2,477,207,389.00
Q_{2023} = 2,077,467.76	P_{2023} = 1,273.35	2,645,344,668.45
Incremento		168,137,279.45

Fuente: Elaborado con los resultados de la aplicación de MC3E

Ahora, es posible calcular el aumento en el valor de la cantidad comercializada debido al incremento en volumen, así como la disminución en el valor debido al decremento en el precio, ambas áreas referidas en la **Figura 5**, lo que da como resultado un impacto final de US$ 168,137,279.45, como puede observarse en la **Tabla 9**.

Tabla 9 - Aumento en el valor de las importaciones de tomate mexicano en Estados Unidos

Incremento en el Valor debido al Incremento en Volumen IVIV	$(Q_{2023} - Q_{2022}) * P_{2023}$	345,044,957.75
Decremento en el Valor debido al Decremento en Precio DVDP	$(P_{2022} - P_{2023}) * Q_{2022}$	176,907,677.30
	Valor del incremento final	168,137,279.45

Fuente: Elaborado con los resultados de la aplicación de MC3E

Entonces, ambos impactos en cantidad y precio se trasladaron al ámbito de la producción en México. En este sentido, se calculó la R B/C para los productores de Sinaloa, Jalisco, Sonora y Baja California. Cabe mencionar que en el año 2022 México exportó 1.8 millones de t de tomate al mercado de Estados Unidos.

De este total, 38.8% correspondió a Sinaloa, 10.25% a Jalisco, 9.53% a Sonora, 7.71% a Baja California, 7.22% a Guanajuato, 5.56% a Puebla, 4.62% a Michoacán y 3.8% a Querétaro. Es decir, de la producción total de tomate mexicano exportada a Estados Unidos en el año 2022, 66.29% fueron producidas en Sinaloa (700,919.55 t), Jalisco (184,262.36 t), Sonora (172,158.84 t) y Baja California (139,280.66 t), como puede observarse en la **Tabla 10**.

Tabla 10 - Relación Beneficio/Costo en la producción de tomate 2022

Estado	*Cantidad t*	*Precio $/t*	*Costo $/t*	*Ingreso Total $*	*Costo Total $*	*R B/C*
Sinaloa	700,919.56	5,248.41	1,993.54	3,678,713,204.81	1,397,311,170.87	2.6327
Jalisco	184,262.36	10,788.12	7,452.00	1,987,844,423.11	1,373,123,087.34	1.4477
Sonora	172,158.85	6,868.37	2,143.33	1,182,450,677.90	368,993,227.13	3.2045
Baja California	139,280.66	31,237.84	7,938.72	4,350,827,105.56	1,105,710,195.05	3.9349

Fuente: Elaborado con información de USDA (2023), SADER (2023) y FIRA (2023)

Ahora, de acuerdo con información de USDA (2023) y SADER (2023), la R B/C calculada para el productor de tomate en Sinaloa, Jalisco, Sonora y Baja California para el año 2022 resultó igual a 2.6327, 1.4477, 3.2045 y 3.9349 respectivamente. Los resultados muestran que, en el año 2022, producir tomate para exportar a Estados Unidos en estos estados fue rentable, como puede observarse en la **Tabla 10**.

Entonces, el escenario hipotético 2023 plantea la importación de 2.16 millones de t de tomate mexicano en el mercado de Estados Unidos; es decir, un incremento simulado de 20% respecto a la cantidad importada en 2022, con el respectivo decremento en el precio de 7.14141570%. En este sentido, se asignaron 841,103.46 t (38.8%) a Sinaloa, 221,114.83 t (10.2%) a Jalisco, 206,590.62 t (9.53%) a Sonora y 167,136.80 t (7.71%) a Baja California.

Tabla 11 - Relación Beneficio/Costo en la producción de tomate para el escenario simulado 2023

Estado	*Cantidad t*	*Precio $/t*	*Costo $/t*	*Ingreso Total $*	*Costo Total $*	*R B/C*
Sinaloa	841,103.47	4,873.60	2,079.66	4,099,201,203.10	1,749,210,016.14	2.3434
Jalisco	221,114.83	10,017.69	7,773.93	2,215,061,027.36	1,718,930,405.66	1.2886
Sonora	206,590.62	6,377.87	2,235.92	1,317,608,351.50	461,920,481.46	2.8524
Baja California	167,136.80	29,007.01	8,281.67	4,848,139,746.88	1,384,172,250.58	3.5025

Fuente: Elaborado con información de USDA (2023), SADER (2023) y FIRA (2023)

Los resultados muestran que, para el escenario hipotético 2023, la R B/C en la producción de tomate para Sinaloa, Jalisco, Sonora y Baja California serían 2.3434, 1.2886, 2.8524 y 3.5025 respectivamente; por lo que es posible afirmar que, si las exportaciones aumentaran 20% en un año, la producción de tomate para Estados Unidos en estos estados seguiría siendo rentable, como puede observarse en la **Tabla 11**.

5. Conclusiones

México es el mayor exportador de tomate, mientras que Estados Unidos es el principal importador en el mundo. Para abastecer su consumo interno Estados Unidos importa grandes cantidades de tomate, principalmente de origen mexicano. No obstante, el tomate mexicano ha perdido competitividad frente al producto canadiense.

Los resultados muestran que un incremento de 20% anual en las importaciones de tomate mexicano en Estados Unidos provoca una disminución de 7.14% en su precio. Es decir, en un escenario hipotético, el impacto final de ambos efectos sobre el valor de la cantidad comercializada sería un incremento de US$ 168,137,279.45. Entonces, los resultados muestran que incentivar las exportaciones de tomate mexicano en el mercado estadunidense a una tasa promedio anual de 20% anual es viable en el sentido económico, confirmándose de esta forma la hipótesis planteada.

En este mismo escenario, la R B/C en la producción de tomate en Sinaloa, Jalisco, Sonora y Baja California para la exportación a Estados Unidos sería 2.3434, 1.2886, 2.8524 y 3.5025 respectivamente. Con estos resultados puede afirmarse que, con un incremento en la producción de tomate para exportar al mercado estadounidense a una tasa promedio anual de 20%, sigue siendo rentable para el productor de Sinaloa, Jalisco, Sonora y Baja California.

Asimismo, la aplicación de acciones que incentiven la producción de tomate en México con destino al mercado de exportación debe acompañarse con mecanismos para aumentar la oferta exportable en las zonas productoras que ya cuentan con la vocación productiva para la exportación. Es decir, con el propósito de producir un bien con la calidad, las características organolépticas y de inocuidad que representen las mejores condiciones de consumo, se requieren los mejores sistemas tecnológicos para la producción y los procesos post-producción.

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Notas

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Do the European Entities Use Impression Management Strategies in their Messages on the Russia-Ukraine War?[1]

AREA: 2
TYPE: Application

As Entidades Europeias Utilizam Estratégias de Gestão de Impressão nas suas Mensagens Sobre a Guerra Rússia-Ucrânia?

¿Utilizan las Entidades Europeas Estrategias de Gestión de Impresión en sus Mensajes Sobre la Guerra Entre Rusia y Ucrania?

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There may be an attempt by entities affected by the consequences of the Russia-Ukraine war to obfuscate or emphasize positive news when disclosing it, using impression management strategies. This paper aims to assess the use of those strategies for 212 listed European entities, using 2021 annual consolidated reports. The findings indicate that, within two-thirds of entities that disclosed this event, mainly in voluntary sources, reduced levels of readability were found. Furthermore, although neutrality prevailed, the entities expressed some uncertainty linked to their claim of being immune to the war's effects. Finally, differences by country and industry were occasionally identified.

Pode haver uma tentativa por parte de entidades afetadas pelas consequências da guerra Rússia-Ucrânia de ofuscar ou enfatizar notícias positivas ao divulgá-las, utilizando estratégias de gestão de impressão. Este artigo visa avaliar a utilização dessas estratégias para 212 entidades europeias cotadas, utilizando relatórios anuais consolidados de 2021. As conclusões indicam que, em dois terços das entidades que divulgaram este evento, principalmente em fontes voluntárias, foram encontrados níveis reduzidos de legibilidade. Além disso, embora a neutralidade tenha prevalecido, as entidades expressaram alguma incerteza associada à sua pretensão de serem imunes aos efeitos da guerra. Finalmente, foram ocasionalmente identificadas diferenças por país e indústria.

Puede haber un intento por parte de entidades afectadas por las consecuencias de la guerra Rusia-Ucrania de ofuscar o enfatizar noticias positivas al divulgarlas, utilizando estrategias de gestión de impresión. Este documento tiene como objetivo evaluar el uso de esas estrategias para 212 entidades europeas cotizadas, utilizando informes anuales consolidados de 2021. Los hallazgos indican que, en dos tercios de las entidades que divulgaron este evento, principalmente en fuentes voluntarias, se encontraron niveles reducidos de legibilidad. Además, aunque prevaleció la neutralidad, las entidades expresaron cierta incertidumbre relacionada con su afirmación de ser inmunes a los efectos de la guerra. Finalmente, ocasionalmente se identificaron diferencias por país e industria.

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1. Introduction

The Russia-Ukraine war has had, since 4 February 2022, global economic and social consequences that have led to changes such as an increase in energy prices and inflation rates worldwide (Prohorovs, 2022). Those negative effects should be disclosed in the entity's annual reports for the year ending in December 2021.

Rather than neutral, the entities' disclosures of this event may be biased (Abrams, 2022). The literature has been usually assessing their annual reports from the perspective of the possible use of impression management (IM) strategies, such as readability and thematic manipulation (Melloni et al., 2017; Khanna & Irvine, 2018; Cadorin & Theiss, 2020; Hossain et al., 2021) since concealment strategies are commonly associated with negative events (Hossain et al., 2022; Childs et al., 2022; Rahmanto et al., 2022), such as the Russia-Ukraine war.

This paper aims to identify if there is evidence of the possible use of readability and thematic manipulation as IM strategies in the entities' annual reports, using disclosures on the Russia-Ukraine war as the object. Entities listed on the Euronext index comprise the population, with the analysis providing a breakdown by their industry and the country they are listed, given their potential different dependency on the war actors.

The findings indicate that only two-thirds of those entities disclosed this event, mainly in voluntary sources, with reduced levels of readability. Furthermore, although neutrality prevailed, the entities expressed some uncertainty linked to their claim of being immune to the war's effects. Finally, differences by country and industry were occasionally identified.

Despite the relevant social and economic effects of the war in Ukraine, there is a literature gap on how entities disclose such an event (Mbah & Wasum, 2022), namely in what concerns their assessment through IM strategies. It was only possible to find a study on the use of those strategies in their annual accounts and reports in the context of this topic but restricted to the European entities from the energy-related industries (Albuquerque & Santos, 2023).

Then, this paper contributes to the literature on the use of IM strategies in the entities' annual reports by assessing a theme that is still little explored. Also, for identifying readability and thematic manipulation strategies in the context of the Russia-Ukraine war considering relevant analysis factors such as the entities' country and industry. Regulatory bodies, supervisors, standard-setters, and stakeholders may also benefit from this study, given that disclosure transparency and neutrality are essential to its usefulness for decision-making purposes by the different stakeholders.

This paper is divided into five sections, in addition to this introduction. The second presents the literature review that supports the research questions and sub-questions. The third provides the methods, followed by the results and discussion section. The last one presents the conclusions.

Keywords
disclosure, impression management, readability manipulation, Russia-Ukraine war, thematic manipulation.

Palavras-chave
divulgações, gestão de impressões, guerra Rússia-Ucrânia, manipulação da legibilidade, manipulação temática.

Palabras clave
divulgaciones, gestión de impresiones, guerra Rusia-Ucrania, manipulación de la legibilidad, manipulación temática.

JEL Codes
F59, G15, M41, N40

2. Literature Review

Entities are globally compelled to disclose events arising from external factors that are relevant to stakeholders, such as the Russia-Ukraine war, which has had significant economic impacts worldwide, such as the increased inflation rates and the changes in commercial transactions, which should lead to the entities' disclosure of this event and its potential consequences.

This communication may be influenced by several factors, including the industries and the country where the entities are based, namely for being potentially more dependent on the war actors, such as the food and energy industries, and countries that are politically closer to the Russian Federation, such as China, unlike most Western countries. For instance, regarding the media discourse towards the Russa-Ukraine war, literature has found that China suppresses certain facts and has a biased attitude towards the USA and European countries (Asadchykh et al., 2024; Ran & Liu, 2024).

Although this disclosure can be carried out in different types of reports, the annual report is one of the most important vehicles for the entities' communication with their stakeholders (Falschlunger, et al., 2015). Events such as this one may be disclosed in different sources of the annual reports, including in a specific note on the events after the reporting period. The International Accounting Standard (IAS) 10 – Events after the reporting period, issued by the International Accounting Standards Board (IASB), was adopted in the European Union (EU) following the European Commission Regulation (EC) No. 2023/1803 and is applied by listed EU entities in their consolidated accounts (EC No. 2002/1606). Given its potential framing in the scope of IAS 10, it is expected that the Russia-Ukraine war will only be mandatorily disclosed.

Additionally, other sources of the annual report may be used to disclose this event. The IASB issued the International Financial Reporting Standards (IFRS) Practice Statement 1: Management Commentary, which states that management's comments should provide information about the financial position and performance of entities, also addressing business prospects and risks, focusing not only on the present but also on the future (IASB, 2023). Such disclosures may be considered voluntary given they do not integrate the complete set of mandatory financial statements.

This disclosure is important for entities' transparency, especially when resulting from adverse events (Rahmawati, 2012; Khanna & Irvine, 2018; Gagné et al., 2022). However, entities may be tempted to avoid its disclosure. For instance, when communicating the impact of the global financial crisis, Australian non-governmental organizations lacked transparency, through concealment or reduced levels of disclosures on the crisis impact (Khanna & Irvine, 2018). This lack of transparency was also found in the disclosure of the Covid-19 pandemic impacts (Childs et al. 2022; Rahmanto et al., 2022). On the Russia-Ukraine war, Albuquerque and Santos (2023) also found a reduced level of disclosure of that event in the annual reports of several European entities from the energy-related industries, as well as unclear and vague information on its likely future impacts.

The lack of transparency can influence the usefulness of financial statements to stakeholders, according to the IASB's conceptual framework (EC No. 2023/1803). This can occur through the manipulation of information, namely using IM strategies (Godfrey et al., 2003; Merkl-Davies & Brennan, 2007). IM is a conscious or subconscious process in which entities try to influence stakeholders' perceptions of the entity's current and future performance (Clatworthy & Jones, 2001; Godfrey et al., 2003).

Regarding the disclosure of adverse events, the literature has identified the use of readability manipulation and thematic manipulation strategies (Melloni et al., 2017; Cadorin & Theiss, 2020; Corazza et al., 2020; Hossain et al., 2022), both concealment strategies (Merkl-Davies & Brennan, 2007) used to obfuscate negative news or emphasize positive ones (Clatworthy & Jones, 2001).

Readability manipulation consists of the manipulation of texts by using complex language to reduce their clarity, or even by the omission of facts (Cadorin & Theiss, 2020; Caliskan et al., 2021), and is used as a way of distancing entities from negative events, such as financial crises, natural disasters, and pandemics (Merkl-Davies & Brennan, 2007). Thus, those who most suffer from these events tend to reduce the readability of the information, often through lengthy reports, as a way of manipulating the stakeholders' perception (Merkl-Davies & Brennan, 2007; Melloni et al., 2017; Cadorin & Theiss, 2020; Corazza et al., 2020; Caliskan et al., 2021).

For instance, when facing the Costa Concordia sinking in 2012, the entity's sustainability reports presented a low level of readability, through lengthy and confusing texts (Corazza et al., 2020). Entities such as BP and Shell also used this strategy in their reports on the crisis of the oil industry market in the 50s of the 20th century (Abdelrehim et al., 2015). The use of such a strategy may be an attempt to influence the public perception of the event or to erase memories of adverse events (Corazza et al., 2020; Caliskan et al., 2021). Regarding the Russia-Ukraine war disclosures, Albuquerque and Santos (2023) found that the entities' annual reports had a low level of readability.

Consequently, as the strategy of readability manipulation can be used by entities when disclosing adverse events, as stressed by the literature, and also considering the potential differences from the impacts of the Russia-Ukraine war by the entities' countries and industries, the first research question (Q1) and its sub-questions Q1.1 and Q1.2 were formulated as follows:

Q1: What is the level of readability of the disclosures made in the European entities' annual reports on the Russia-Ukraine war?
Q1.1. Are there any differences in Q1 by entities' countries?
Q1.2. Are there any differences in Q1 by entities' industries?

The thematic manipulation strategy can also be used to manipulate information about the Russia-Ukraine war, by using positive words to reinforce good news aiming to convince stakeholders of the entity's ability to face adverse events (Rahmawati, 2012; Melloni et al., 2017; Khanna & Irvine, 2018; Childs et al. 2022; Rahmanto et al., 2022).

The use of this strategy was verified by Khanna and Irvine (2018) through an overly positive discourse regarding the global financial crisis of the years 2008 and 2009, similar to the study by Childs et al. (2022) in the context of the Covid-19 pandemic. The analysis of this strategy has evolved with the development of new software and technological tools, which has allowed for a more in-depth analysis of the tone and sentiment behind those disclosures (Richard et al., 2015; Hossain et al., 2021). Richard et al. (2015) concluded that one of the ways for entities to gain the trust of stakeholders is by using words that convey a positive sentiment, such as 'favorable', 'good', and 'strong' instead of negative words such as 'confrontational', 'fail' and 'damaging'. Recent studies such as the one by Hossain et al. (2021), also verify this prevalence of using positive words such as 'win', 'freedom', and 'support' rather than negative ones, such as 'death', 'crisis', and 'attack'. Regarding the Russia-Ukraine war, it was identified a different pattern in the positivity, neutrality, and negativity of disclosures (Albuquerque & Santos, 2023). Nonetheless, there were more evident positive words within the CEO's messages, compared to those

found in the notes on subsequent events, evidencing strategies of thematic manipulation to hide the risks and uncertainties (Albuquerque & Santos, 2023).

Thus, and considering the potential differences from the impacts of the Russia-Ukraine war by the entities' countries and industries, the second research question (Q2) and its sub-questions Q2.1 and Q2.2 were formulated as follows:

Q2: What is the tone and sentiment of the disclosures made in the European entities' annual report on the Russia-Ukraine war?
Q2.1. Are there any differences in Q2 by entities' countries?
Q2.2. Are there any differences in Q2 by the entities' industries?

The next section presents the methods.

3. Methods

The study is based on an exploratory approach, due to the scarce literature on the use of IM strategies whenever entities disclose events of a similar nature to the Russia-Ukraine war. To firstly study whether this topic is disclosed by the entities listed on the Euronext index, the annual reports were searched for words such as 'Ukraine', 'Russian Federation', 'conflict', and 'war'. The following assessments were based on the sub-sample of entities that disclosed this event.

This event can be disclosed in several sources of the annual report, being classified as voluntary (i to v), whenever disclosed in the management report, and mandatory (vi), if included in the note, as follows:

i) message from the CEO;
ii) chairperson's message;
iii) macroeconomic analysis;
iv) risk analysis;
v) subsequent events;
vi) note on the events after the reporting period.

Following, the ***readability manipulation*** strategy (Q1) is assessed using the Flesch index, which measures the text readability. This index was calculated using Grammarly, and its use follows the literature on this topic (e.g., Abdelrehim et al., 2015; Cadorin & Theiss, 2020).

The classification used for the readability level can be seen in **Table 1**, following the literature on this topic.

Table 1 - Readability level rating

Readability Score	*Categories*
90 to 100	Very easy
80 to 89	Easy
70 to 79	Pretty easy
60 to 69	Common
50 to 59	Pretty hard
30 to 49	Difficult
0 to 29	Very difficult

Source: Adapted from Cadorin and Theiss (2020)

Finally, to address *Q2*, the ***thematic manipulation*** strategy is considered through tone and sentiment analysis, based on studies that also addressed this strategy (e.g., Albuquerque & Santos, 2023; Melloni et al., 2017).

For the tone of the messages, the tex2data platform is used which classifies the message on a scale from -1 to 1, and then as positive, neutral, or negative as follows:

i) Positive, greater than 0.1;
ii) Neutral, between -0.1 and 0.1; or
iii) Negative, less than -0.1.

In turn, the sentiment is gauged through Grammarly. This software has been little explored in the context of IM (Albuquerque & Santos, 2023), but it enables the sentiment analysis of messages through the Application Programming Interface, which identifies it by using concepts such as ´confident´, ´assertive´, ´cheerful´, ´optimistic´, and ´skeptical´.

The analysis provides a breakdown of entities based on their countries and industries. Therefore, this study includes 212 entities listed on the Euronext index, representing seven countries and eleven different industries.

The classification by country was based on the index where each entity is listed. **Table 2** presents the entities' classification according to the seven European national regulated securities markets that are part of the Euronext index, which, for simplification purposes, is presented following the country code of the International Organization for Standardization (ISO).

Table 2 - Sample by country

Country Code (ISO)	*Country*	*Euronext Index*	*Entities (number)*	*Entities (percentage)*
BEL	Belgium	BEL 20	18	9
FR	France	CAC 40	34	16
IRL	Ireland	ISEQ 20	18	9

IT	Italy	MIB ESG	38	18
NLD	The Netherlands	AEX	24	11
NOR	Norway	OBX GR	67	31
PRT	Portugal	PSI 20	13	6
Total			*212*	*100*

Table 3 presents the classification of the entities in terms of the eleven industries, based on the two-digit Industry Classification Benchmark (ICB) classification.

Table 3 - Sample by industries

ICB code	*Industries*	*Entities (number)*	*Entities (percentage)*
10	Technology	13	6
15	Telecommunications	6	3
20	Healthcare	16	8
30	Financial Services	37	17
35	Real estate	7	3
40	Consumer Services	21	10
45	Consumer Goods	22	10
50	Industrial Products	42	20
55	Basic Materials	15	7
60	Energy	15	7
65	Utilities	18	9
Total		*212*	*100*

The next section presents the results and discussion of this study.

4. Results and Discussion

This section is subdivided into two subsections. The first presents the results regarding the research questions, and the second discusses the main findings.

4.1. Results

Table 4 shows the number of entities that disclose the Russia-Ukraine war event in their annual report. The information is detailed by country to identify possible differences among them.

Table 4 - Entities that disclose the event by country

Country Code	*In number*	*As a percentage by country*
BEL	11	61
FR	25	74
IRL	9	50
IT	36	95
NLD	11	46
NOR	48	72
PRT	11	85
Total	151	71

Based on **Table 4**, it is possible to verify that 151 of the 212 entities (71%) address this event in the annual report. The analysis by country highlights differences, since entities from southern European countries, such as Italy (95%) and Portugal (85%), mostly disclose this event.

Table 5 identifies, in turn, the number of entities by industries that refer to the event of the Russia-Ukraine war in the annual report, to assess potential differences among them.

Table 5 - Entities that disclose the event by industry

ICB Code	*In number*	*As a percentage by industry*
10	7	54
15	3	50
20	7	44
30	30	81
35	3	43
40	16	76
45	14	64
50	30	71
55	13	87
60	14	93
65	14	78
Total	*151*	*71*

Table 5 also identifies the existence of differences among the eleven industries. Entities in the energy (60) and basic materials (55) industries, with 93% and 87%, respectively, stand out for their high disclosure.

Following, **Table 6** presents the sources of the annual reports in which the disclosure about the Russia-Ukraine war (Q1) can be identified.

Table 6 - Source used by the entities to disclose the event.

Source	*In number*	*As a percentage*
Message from the CEO	53	35
Message from the chairperson	27	18
Macroeconomic analysis	73	48
Risk analysis	74	49
Subsequent events	38	25
Note on the events after the reporting period	58	38

Table 6 shows that the risk analysis source is the most used (49%), followed by macroeconomic analysis (48%). The note on the events after the reporting period (mandatory disclosure), is only used by 38% of entities. Overall, the voluntary disclosure sources are most used by entities, since at least one voluntary source of disclosure is used by the 151 entities that mentioned this event.

Table 7 shows the readability level (Q1) based on the score for the Flesh Index by country, to assess potential differences among them (Q1.1), providing the average, and standard deviation for this measure.

Table 7 - Readability level score by country

Flesch Index			
Country code	*Average*	*Standard Deviation*	*Classification according to average*
BEL	34	8	Difficult
FR	35	8	Difficult
IRL	38	11	Difficult
IT	23	7	Very difficult
NLD	30	12	Difficult
NOR	38	8	Difficult
PRT	28	9	Very difficult
Total	*32*	*7*	*Difficult*

Table 7 shows that the Russia-Ukraine war event presents, on average, less readability in the annual reports of Italian and Portuguese entities, which are countries that are part of southern Europe, being classified as very difficult to read. For the entities from the remaining five countries, disclosures are classified, in turn, as difficult or very difficult to read, with no meaningful differences among them. Even so, from the analysis of the standard deviation, the dispersion by country is still expressive, evidencing that, in a country's border, entities present different levels of readability. Italian and Portuguese entities, which are the ones that most disclose this event, are also, on the other hand, the ones that present the lowest levels of readability in providing this information.

Following, **Table 8** provides a similar analysis by industry (Q1.2).

Table 8 - Reading readability level score by industry

Flesch Index			
ICB code	*Average*	*Standard Deviation*	*Classification according to average*
10	34	7	Difficult
15	28	17	Very difficult
20	29	9	Very difficult
30	29	10	Very difficult
35	33	5	Difficult
40	39	6	Difficult
45	41	8	Difficult
50	31	6	Difficult
55	30	11	Difficult
60	33	8	Difficult
65	27	6	Very difficult
Total	*32*	*7*	*Difficult*

Table 8 shows that the Russia-Ukraine war event presents, on average, less readability in the reports of entities in the telecommunications (15), health care (20), financial services (30), and public utilities (65) industries. The disclosure for the remaining industries is classified, in turn, as difficult to read. Thus, no industry stands out for the ease of reading the information disclosed. As per country, there are no expressive differences between the average values, but there is also a high standard deviation, which indicates potential meaningful differences among entities in the same industry. Telecommunications industry (15) can be highlighted with the highest value for this statistic. By industry, it is not possible to see the same pattern by country, since the entities in the industries that most disclose this event in their annual reports are not necessarily those that present lower levels of readability.

Regarding the thematic manipulation (Q2), **Table 9** shows the score on the tone of the disclosures by country (Q2.1).

Table 9 - Tone of disclosures by country

Tone of disclosures			
Country Code	*Average*	*Standard Deviation*	*Grading according to average*
BEL	0.05	0.36	Neutral
FR	0.25	0.27	Positive
IRL	0.14	0.7	Positive
IT	0.04	0.26	Neutral
NLD	-0.14	0.42	Negative
NOR	-0.06	0.07	Neutral
PRT	-0.16	0.32	Negative
Total	*0.07*	*0.19*	*Neutral*

Based on **Table 9**, the messages have, on average, a neutral tone. The country-by-country analysis enables to identification of differences that can be highlighted, since, on average, the French and Irish entities present a positive tone in their disclosures, conversely to the Dutch and Portuguese entities. Finally, the disclosures by entities in Belgium, Italy, and Norway are neutral. There are no meaningful differences between the average tone present in the entities' disclosures. From the standard deviation analysis, however, there is again a high dispersion in almost all countries, except for Norway. Irish entities, on the other hand, present the highest value for this statistic.

Table 10 provides a similar analysis by industry (Q2.2).

Table 10 - Tone of disclosures by industry

Tone of disclosures			
ICB Code	*Average*	*Standard Deviation*	*Grading according to average*
10	0.45	0.41	Positive
15	-0.09	0.66	Neutral
20	0.33	0.43	Positive
30	0.08	0.28	Neutral
35	-0.06	0.4	Neutral
40	0.25	0.28	Positive
45	-0.21	0.45	Negative
50	-0.09	0.3	Neutral
55	0.21	0.25	Positive
60	-0.15	0.22	Negative
65	0.03	0.25	Neutral
Total	*0.07*	*0.19*	*Neutral*

By industry, it is possible to see a positive tone of the disclosure of entities in the industries of technology (10), health care (20), basic materials (55), and consumer services (40), conversely to the industries of consumer goods (45) and energy (60). The remaining industries show neutrality underlying the tone of their disclosures. There are meaningful differences between the average values in some industries, such as consumer goods (45), health care (20), technology (10), and telecommunications (15). The standard deviation, however, identifies high values for most of them, especially in the telecommunications industry (15), indicating a high dispersion in the tone of disclosures among entities in the same industry. It can also be seen that the standard deviation indicator is high, both by country and by industry, indicating a high dispersion in the tone of disclosures among entities.

The sentiment analysis identified six concepts in the context of the Russia-Ukraine war. They may have the meaning identified below and proposed by the authors since Grammarly does not present a specific definition of such terms:

i) ***Happy***: attempt to demonstrate that the entity was not affected by this event;
ii) ***Assertive***: attempt to communicate the difficulties inherent to this event and to demonstrate a high transparency in the information disclosed, through an attitude of trust and authority.

iii) *Skeptical*: a sentiment that conveys doubt about the possible consequences of the event.
iv) *Confident*: attempt to demonstrate that the entity can be resilient to this event.
v) *Optimistic*: attempt to demonstrate hope that this event has not significantly affected the entities; and
vi) *Concerned*: demonstration that this event has an impact on the entity and that it may be detrimental to the future, through an apprehensive speech.

Table 11 presents, in percentage, the frequencies for those six sentiments found in the entities' messages by country (Q2.1).

Table 11 - Percentage of the sentiments by country

Country code	*Sentiments*					
	Happy	*Assertive*	*Skeptic*	*Confident*	*Optimistic*	*Concerned*
BEL	33	24	24	7	7	5
FR	22	13	25	30	10	0
IRL	20	0	50	30	0	0
IT	19	6	50	20	5	0
NLD	0	0	50	13	12	25
NOR	30	18	35	13	4	0
PRT	26	26	48	0	0	0
Total	*24*	*14*	*40*	*18*	*3*	*1*

Table 11 shows that the most present sentiment in this event disclosures is skepticism, which occurs in 40% of the disclosures, expressing the uncertainties about the possible consequences of the Russia-Ukraine war. The Dutch entities do not present sentiments of happiness and assertiveness in their disclosures, while a quarter of them are concerned. Although less frequently, the Belgian entities are the only ones that also demonstrate concern with the event. Concern and optimism are the least frequent sentiments, contrasting with happiness and confidence, which are the second and third most frequent ones. Thus, there are differences, which are still relevant, in the sentiments found among the seven countries. Overall, there is a greater attempt to demonstrate some uncertainty combined, however, with the need to show that they are relatively immune to the impacts of the war (except for the Dutch entities).

Table 12 presents a similar analysis by industry (Q2.2).

Table 12 - Percentage of the sentiments by industry

ICB code	*Sentiments*					
	Happy	*Assertive*	*Skeptic*	*Confident*	*Optimistic*	*Concerned*
10	31	8	20	14	27	0
15	23	19	14	32	12	0
20	14	5	5	65	11	0
30	26	11	33	0	30	0
35	34	0	50	12	4	0

40	20	14	54	12	0	0
45	8	20	42	18	0	12
50	28	11	16	23	17	5
55	22	21	20	17	12	8
60	32	17	27	22	0	2
65	25	17	46	12	0	0
Total	*24*	*14*	*40*	*18*	*3*	*1*

Table 12 shows that there are differences across industries. The sentiment of skepticism underlies the entities' disclosures within the eleven industries, with entities in the healthcare industry (20) standing out for the low use of this sentiment. Entities in this industry are also among those that least present the sentiment of happiness in their disclosures, with 14%, together with entities in the consumer goods industry (45), with 8%. The sentiment of assertiveness is used by entities in ten industries, with the real estate industry (35) as the only exception. On the other hand, entities in these industries are the ones that most show confidence in their disclosures, with 65%, which is not identified in the financial services industry (30). The sentiments of optimism and concern are the least used by the entities in general, also presenting some relevant differences among the eleven industries. In the first case, entities in the technology (10) and financial services (30) industries stand out for their high use, with 27% and 30%, respectively. On the other hand, it is not observed in the consumer services (40), consumer goods (45), energy (60) and utilities (65) industries. The second one is only observed for entities in four industries, namely those in consumer goods (45), with 12%, basic materials (55), with 8%, industrial products (50), with 5%, and energy (60), with 2%. Consequently, the analysis by industry also reflects, globally, the sentiments identified in the analysis by country. Nevertheless, some differentiated profiles can be found, notably for some entities in the consumer goods industry (45), with higher levels of concern and lower levels of optimism.

The next subsection presents the discussion.

4.2. Discussion

Regarding the analysis of the level of this event disclosure, about two-thirds (71%) of the entities disclosed information about the event. Differences by country were found, where entities from southern European countries (Portugal and Italy) stand out for the higher frequency of disclosure, conversely to the low frequency identified for the Irish and Dutch entities. By industry, there is a high frequency of disclosure by entities in the energy and basic materials industries (potentially most affected by the event, e.g., Prohorovs, 2022), in contrast to the healthcare and real estate ones. Thus, these findings are partially aligned with the literature on the disclosure of adverse events, which argues that entities tend to omit information when facing events of this nature (Clatworthy & Jones, 2001; Merkl-Davies & Brennan, 2007; Rahmawati, 2012; Melloni et al., 2017; Cadorin & Theiss, 2020; Corazza et al., 2020; Albuquerque & Santos, 2023).

This event was disclosed in all the six sources assessed, mainly in the risk analysis and macroeconomic analysis sources. Given that the information about the Russia-Ukraine war is dispersed among the six sources assessed, having a low disclosure in mandatory sources, it can be argued that there is a low level

of compliance with the IAS 10 disclosure requirements. This noncompliance with IFRS has been seen by literature as an attitude of less transparency (Khanna & Irvine, 2018; Childs et al. 2022; Rahmanto et al., 2022; Albuquerque & Santos, 2023).

The findings on the readability manipulation (Q1) show that, when facing adverse events, entities make it difficult to read the information disclosed to the stakeholders (Merkl-Davies & Brennan, 2007; Melloni et al., 2017; Cadorin & Theiss, 2020; Corazza et al., 2020; Albuquerque & Santos, 2023). Although there are no differences across countries and industries in this matter, there is a high standard deviation for the levels of disclosure readability, which indicates some diversity among entities. It should be noted that, by country, the entities that most disclosed this event were also those that present less readability in communicating it.

Finally, regarding thematic manipulation (Q2), it was considered the tone and the sentiment analysis underlying the disclosures in the annual reports. Regarding the first, the assessment finds it globally neutral, oppositely to the literature that argues the use of a more positive language (Rahmawati, 2012; Melloni et al., 2017; Khanna & Irvine, 2018; Childs et al. 2022; Rahmanto et al., 2022). However, the high standard deviation in both the analysis by country and by industries leads to a high dispersion in the tone of disclosures among entities across countries and industries. This dispersion is aligned with the findings by Albuquerque and Santos (2023).

By country, there are meaningful differences, as the French and Irish entities present a positive tone in their disclosures, conversely to the Dutch and Portuguese entities. By industry, the tone of disclosure of the technology, health care, basic materials, and consumer services was positive, conversely to what is globally found for the consumer goods and energy industries presented. The findings for these industries, potentially most affected by this event, are not aligned, with the use of the thematic manipulation strategy, which contradicts the findings by Albuquerque and Santos (2023). However, it is worth mentioning that this latter study assessed the tone of the message with a breakdown by sources since it was only focused on a single industry in Europe.

Considering the sentiment, the findings are globally aligned with the literature on adverse events, since it has been found that the entities tended to express confidence (Richard et al., 2015; Hossain et al., 2021). Optimism and concern are the least frequent sentiments, contrasting, however, with happiness and confidence (the second and third most frequent). Additionally, it was possible to verify that the most frequently identified sentiment is skepticism, conveying some sentiment of doubt about the possible consequences of the Russia-Ukraine war for the entities.

Thus, there is a greater attempt on the part of the entities to demonstrate some uncertainty combined, however, with the need to demonstrate the ability to overcome or reduce future impacts resulting from the war. The exception in this context is the entities in the Netherlands and those in the consumer goods industry, which are mostly concerned. It should also be noted that for entities in the energy and consumer goods industries, which generally presented a negative tone in their disclosures, the sentiment of optimism was not identified. On the other hand, by country, for those countries that also stood out for the high frequency of disclosure (Italian and Portuguese entities) the sentiment of concern in their disclosures was not identified.

Despite the literature pointing out a generalised impact of the Russia-Ukraine conflict across entities in Europe, due to their exposure level to this conflict, data have revealed one year after that they did not suffer a similar effect, standing out countries such as Italy, France, Belgium, and Ireland in the set of

those with the highest level of losses (Biermann & Leromain, 2023). Furthermore, the latest data on the capital market performance from 2021 to 2022 also indicates different patterns by country and industry.

More specifically, Euronext (2024) data report that, by country, only Portugal (with 2.8%) and Norway (with 2%) stand out as the market indices that had a positive, although slight, performance in 2022. All the remaining European countries in this research sample have had a negative growth in their indices, with about or even higher than 10%.

In this context, it may be highlighted, however, the data from the Portuguese securities market supervisor, which provides a further indication of the reasons behind the positive PSI evolution over this period (CMVM, 2023). Specifically, those figures indicate that the Portuguese stock market outperformed other European countries mainly from the greatest weight of industries such as the energy and utilities within the Portuguese index, which have been among the least penalized industries by the economic environment in that context, conversely to what was initially expected. Therefore, since the economic environment mainly affected industries other than those across European countries, such as technology, industrial products, healthcare, and consumer goods (Euronext, 2023), their worse performance provides a deeper analysis of national indices of Euronext that had the highest decreases, namely the Ireland and The Netherlands, since they are within the top industries comprising those indices.

Therefore, the sentiment of happiness and confidence reported by the Belgian and French entities, respectively, as well as the tone of the messages of French and Irish entities (both positive) are not aligned with their indices' performance. The same can be mentioned as regards those feelings and tones found within the messages provided by entities from the technology, industrial, and healthcare industries.

These controversial findings stress the relevance of conducting investigations on topics of this nature, based on discourse analysis, by highlighting the need for stakeholders to be cautious when reading the entities' reporting, considering the potential they have, as not being neutral, to influence their perceptions about the impacts, or even the entities' capabilities to face their negative economic consequences, of significant events such as the Russia-Ukraine conflict.

The next section provides the conclusions.

5. Conclusions

The findings identified that only two-thirds of entities disclosed the event, especially in sources classified as voluntary disclosures. Low levels of readability were usually found. The use of the thematic manipulation strategy, on the other hand, was only partially verified, given that, although it prevailed the neutral tone of the messages, the feelings express some uncertainty combined with the attempt to demonstrate immunity to the impacts of the war. Differences by country and industry were also identified, namely for the southern European countries (Portugal and Italy) and the consumer goods and energy industries.

The main limitation of this study is related to the subjectivity associated with the process of collecting and assessing information, which includes the use of tools based on assumptions that cannot be controlled by the researchers. The differences in the composition of each country's indices and the reduced representation of entities from some industries in those indices must also be considered by readers when assessing the findings from this study.

Future studies may include countries on other continents given the war's global impact, and may also explore new explanatory factors, namely the political liaisons of the countries to Ukraine and the Russian Federation, characteristics of the entities' corporate governance, namely the board of directors structure, as well as economic and financial factors such as the entities size, liquidity, indebtedness, and profitability. It is also suggested that future studies qualitatively explore specific excerpts from the disclosures, in the light of different scientific theories from different areas, such as sociology, psychology, and communication, which can be solely assessed or combined with IM strategies.

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Does the Image that the Population Has of Robots Influence the Perception of the Impact of Automatization on Employment?

ÁREA: 1
TIPO: Aplicación

¿Influye la Imagen que la Población Tiene de los Robots en la Percepción del Impacto de la Automatización en el Empleo?
A Imagem que a População Tem dos Robôs Influencia a Percepção do Impacto da Automatização no Emprego?

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The image that people have of robots/AI often does not correspond to reality. This can have effects on the effective implementation of these technologies in a country, generating a negative impact on its competitiveness. The objective of this article is to analyze whether the idea one has of a robot influences the perception of the impact of robotization on employment. To do this, partially based on the research of Shoss and Ciarlante (2022), it is employed a multilevel model with variables at the individual and country levels, incorporating to study, as a contribution, the density of robots per country as an independent variable into the study. The results confirm that: (i) the more distorted the image an individual has of what a robot is (Wrong image), the greater their perception that robots/AI pose a threat to jobs; and (ii) that in those countries where the density of robots is higher (operating robots per 10.000 workers), this perceived threat level is lower.

La imagen que las personas tienen de los robots/IA en muchas ocasiones no se corresponde con la realidad. Esto puede afectar a la implantación efectiva de estas tecnologías en un país, generando un impacto negativo sobre su competitividad. El objetivo del presente artículo es analizar si la idea que se tiene de un robot influye en la percepción del impacto de la robotización en el empleo. Para ello, partiendo parcialmente en la investigación de Shoss y Ciarlante (2022), se utiliza un modelo multinivel con variables a nivel individual y de país, incorporando al estudio, como aportación, la densidad de robots por país como variable independiente. Los resultados confirman que: (i) cuanto más distorsionada es la imagen que un individuo tiene sobre lo que es un robot (Imagen errónea) mayor es su percepción de los robots/IA como amenaza para los empleos; y (ii) que en aquellos países donde la densidad de robots es mayor (robots operativos por cada 10.000 trabajadores), este nivel de amenaza percibida es menor.

A imagem que as pessoas têm dos robôs/IA muitas vezes não corresponde à realidade. Isso pode ter efeitos na implementação eficaz dessas tecnologias em um país, gerando um impacto negativo em sua competitividade. O objetivo deste artigo é analisar se a ideia que se tem de um robô influencia na percepção do impacto da robotização no emprego. Para isso, baseando-se parcialmente na pesquisa de Shoss e Ciarlante (2022), utiliza-se um modelo multinível com variáveis individuais e de país, incorporando ao estudo, como contribuição, a densidade de robôs por país como variável independente. Os resultados confirmam que: (i) quanto mais distorcida é a imagem que um indivíduo tem do que é um robô (Imagem errônea), maior é sua percepção dos robôs/IA como uma ameaça aos empregos; e (ii) que nos países onde a densidade de robôs é maior (Robôs operacionais por cada 10000 trabalhadores), este nível de ameaça percebida é menor.

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1. Introduction

There is currently a debate about how the growth of automation based on robots/AI affects employment and the competitiveness of countries and companies. While initial contributions highlighted adverse effects on employment, the increase in the use of these technologies in terms of quantity and capabilities brings new results, making it necessary to contrast these conclusions. In any case, the fear of being replaced by a robot in the workplace, known as automation anxiety, is real; and far from being exclusive to our time, it is a cyclical phenomenon (Bassett and Roberts 2019) that periodically emerges in public debate, impacting the transformation process linked to the implementation of these technologies. From this perspective, it becomes relevant to study how society perceives automation, particularly robots, and how it perceives the risk (threat) to employment.

The literature includes various studies on the impact of automation on employment. The traditional view presents it as a threat. Frey and Osborne (2017) study the probability of computerization for 702 occupations and the expected impacts in the US, identifying the number of jobs at risk and the relationship between the probability of computerization of an occupation, wages, and the educational level. Acemoglu and Restrepo (2020a) corroborate these results and highlight the strong negative effects of robots on employment and wages in the areas where this substitution occurs. More recently, considering the advent of generative AI, Felten et al. (2023) studied the effect of this disruptive technology on more than 800 occupations, identifying a greater threat in "white-collar" jobs (high education and good wages).

In contrast, studies are beginning to find a significant positive relationship (opportunity or positive risk) between automation and employment (Klenert et al., 2023). Both in this work and in Antón et al (2022 and 2023), the positive effect of high automation in countries across Europe is concluded; and unlike some previous studies, they do not find evidence of a reduction in the proportion of low-skilled workers. On the other hand, it is necessary to incorporate practical considerations of industrial reality that condition automation and, therefore, necessarily limit its effects. Fernández-Macias et al. (2021) argue that contrary to popular belief, the types of robots used in manufacturing today do not imply a discontinuity in terms of automation and labor replacement possibilities, practically limiting the current potential impact of robotization on employment.

Greater proactivity in adapting to automation can leverage this opportunity, generating a net increase in employment that compensates for possible losses due to substituting human tasks. Countries and companies must face this challenge and continue to grow in competitiveness sustainably. Arntz et al. (2016) note that although automation will replace certain workers, they can adapt by changing tasks, thus avoiding technological unemployment. Furthermore, the promoted development will generate jobs through demand linked to new technologies and the positive effect of increased competitiveness itself. López-Sánchez et al. (2019) delve into job creation and the need to train and re-skill workers, observing greater job creation than destruction and how countries with high automation present higher levels of competitiveness. Acemoglu and Restrepo (2022a) analyze productivity improvement linked to the growth of automation in four countries with the highest robot density per worker (Japan, Germany, South Korea, and the US) as a response to the aging problem leading to a shortage of middle-aged specialized workers.

Keywords
Robotization, Artificial Intelligence, threat perception; Image of the robots. Eurobarometer.

Palabras clave
Robotización; Inteligencia artificial; percepción de amenaza; Imagen de los robots. Eurobarómetro.

Palavras-chave
Robotização; Inteligência artificial; percepção de ameaça; Imagem de robôs. Eurobarómetro.

JEL Codes
O14, O33, Q55

The perception of technology, positive or negative, in general terms, plays a relevant role in this transformation process driven by automation, which is not only industrial but fundamentally social. In this perception, two elements can be distinguished: (i) the image people have of robots/AI and (ii) the perceived level of risk (threat). These are two different but linked elements: if the image changes, a modification of the threat level is expected. The perception, thus understood, is linked to individuals' behavior and the acceptance or rejection of technology. Thus, for Carradore (2022), only individual (sociodemographic) factors and the technology acceptance model (TAM) influence attitudes toward robots for their acceptance by end users. For Turja and Oksanen (2019), personal experiences with robots at work or elsewhere are associated with greater acceptance, with a greater effect at the individual level than at the country level. Budeanu et al (2023) identify the specificity of national structures and cultures, that shape individual thoughts, as the most significant factors in the perception of AI's future impact on people, giving less relevance to sociodemographic variables. Shoss and Ciarlante (2022) incorporate the reference to a country's inequality into their analysis of the perception of robots/AI. Taking the Gini index as a measure, they find that the perception of employment threat is greater in countries with higher inequality.

Interaction or exposure to technology necessarily affects people's perception of it. Therefore, it is relevant to introduce variables in studies and models that provide information about the penetration of technologies in the studied areas or countries. Specifically, in the present work, "robot density" in each country, calculated as the number of robots per 10,000 workers, has been incorporated as a variable to characterize the level of robot implementation. In this formulation, it is of great interest to the research since it is a variable that relates robots and employment. Additionally, it contributes to the analysis of perception as an objective, quantifiable variable widely used in the literature that studies robots and their impact at the country level. The use of this variable is a contribution of this work since it has not been previously used in similar studies.

The present research aims to delve into the study of the perception of robots as a threat to employment, considering its relationship with the image of robots and the level of their implementation in a country. The following section details the theoretical framework that underpins the two hypotheses structuring the work. Next, the research methodology is identified, defining the materials and methods, followed by a discussion of the results. Finally, the conclusions, limitations, and future lines of research are addressed.

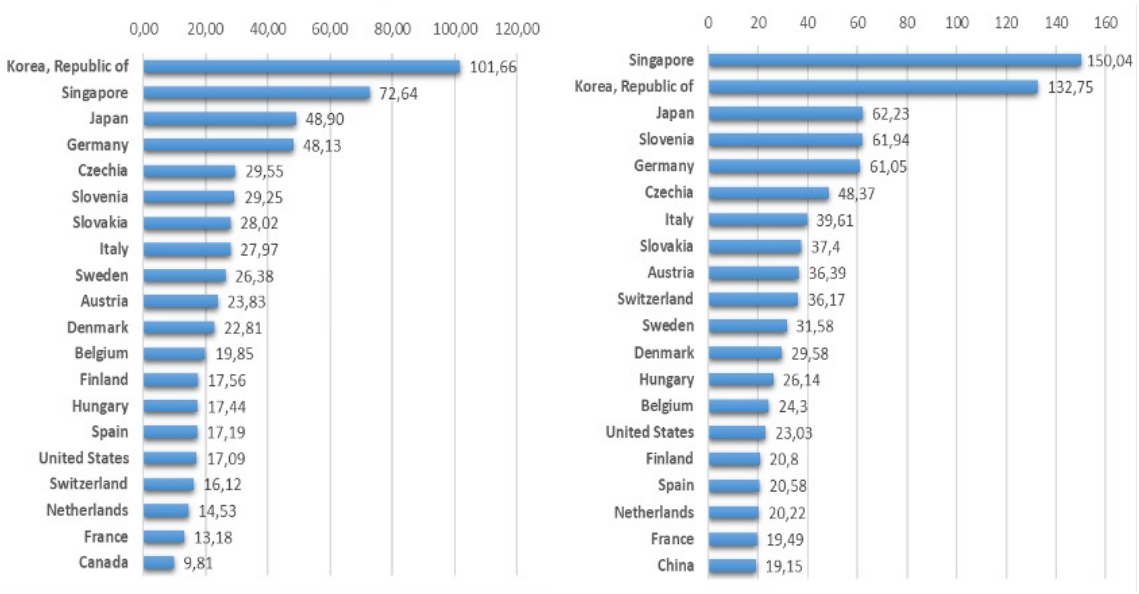
2. Theoretical Framework

2.1. Robot Density and Its Effects. Hypothesis 1

The number of robots is clearly a point of interest not only for measuring automation but also as a measure of AI implementation (Liu et al. 2020; Li et al. 2023; Shen and Zhang 2024; Wang et al. 2024). The adoption of robots in the most developed countries is ongoing and evident. **Figure 1** shows the significant increase in robot density between 2017 and 2022 for the 20 countries with the highest density, considering the total employed population (Source: International Labour Organization, ILO, 2024). These

20 countries present high levels of welfare and competitiveness, as well as human development, allowing for a preliminary deduction that the intensity of automation is not at odds with competitiveness and does not necessarily imply job loss.

Figure 1 - Ranking of 20 countries with the highest robot density per 10,000 workers in: a) 2017 and b) 2022.



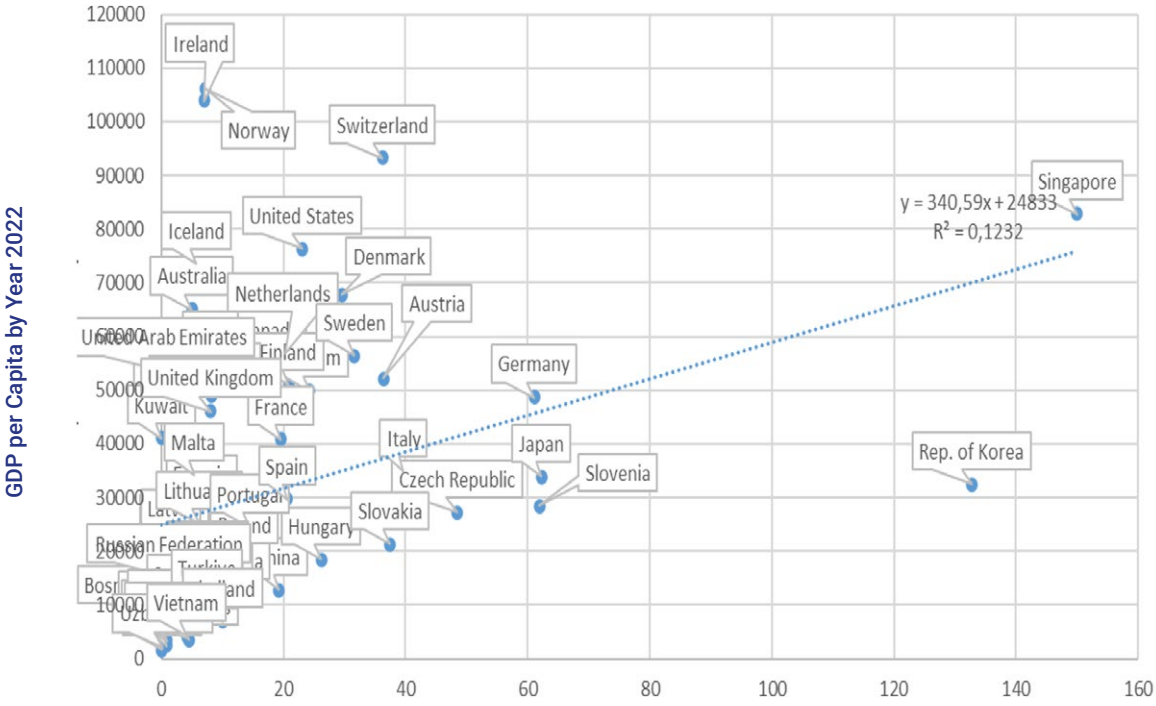
a) 2017 b) 2022

To complete the description of the global scenario, the relationship between the reference variable (robot density) and global country indices, in this case, GDP per capita, has been analyzed. In **Figure 2**, based on data from the International Labour Organization (ILO, 2024) and economic data from the World Bank, it can be observed that robot density (number per 10,000 workers) is positively correlated with GDP per capita (current US$ prices).

However, analyzing variables associated with the number of robots, such as density or stock, is also very useful in highlighting the positive externalities of robotization on employment, technological innovation, sustainability, and export performance.

In relation to employment, various studies have explored the impact of robotization on aspects such as employment, wages, and labor productivity. Battisti and Gravina (2021) observed greater complementarity between robots and older workers (hours worked by employees aged 50 and over), and greater substitutability with younger workers. On the other hand, Compagnucci et al. (2019) indicated that a 1% increase in the number of robots reduces the number of hours worked by 0.16%, also affecting sale prices and real wages. Klenner et al. (2023) investigated the relationship between robot adoption and employment in Europe, using industry-level data, concluding that the use of robots is linked to an increase in aggregate employment. Additionally, Shen and Zhang (2024) noted that incorporating artificial intelligence (AI) through industrial robots in Chinese companies has increased the number of jobs. These authors argue that the increase in labor productivity and the evolution in the division of labor due to robotics have compensated for the potential negative impacts of this technology on employment.

Figure 2 - GDP per Capita by Year and Robot Density in 2022. Own elaboration based on World Bank, IFR, and ILO data.



From the perspective of innovation, Liu et al. (2020) examined how AI fosters technological innovation in 14 manufacturing sectors in China, highlighting that AI enhances the creation and dissemination of knowledge, improves learning and absorption capabilities, and increases investment in R&D and talent. This effect is more pronounced in low-tech sectors and intensifies with higher levels of AI. On the other hand, Wang et al. (2024) suggest that AI transforms human capital, innovation patterns, and the market environment, improving innovation efficiency. Luo and Qiao (2023) add that adopting industrial robots can boost high-quality innovation, indicating that an increase of one robot per 100 employees is associated with a 13.52% increase in invention patent applications the following year. In summary, there seems to be empirical evidence that industrial robots promote business innovation by attracting more educated workers and dedicating more employees to R&D activities.

Regarding sustainability, research advancements highlight how this development contributes to its improvement. Yu et al. (2023) explore the effect of industrial robots on carbon emissions using city-level data. Their findings show that implementing industrial robots has significantly reduced city carbon emissions, aiding decarbonization by improving energy efficiency and adopting green technology. Similarly, Li et al. (2023) provide empirical evidence of the positive impact of artificial intelligence on improving energy efficiency and resource use in Chinese companies.

Finally, regarding the export capacity of companies, Zhang et al. (2023) highlight how the implementation of robots in companies leads to improvements in export capacity. These authors observe that companies

not only increase the likelihood of exporting but also improve their export performance due to the reduction of variable production costs and access to a broader international customer base. However, they identify significant differences between large companies and SMEs. While for large corporations, the integration of robots translates into a competitive advantage in exports and an increase in market share, SMEs do not seem to obtain these benefits, suggesting that the effects of robotization can vary considerably depending on the company's size.

Therefore, there seems to be some empirical evidence that increasing robot density generates benefits at various levels (employment, technological innovation, sustainability, and export behavior). It thus seems reasonable to expect that in countries with high robot density, the perception of robots will be more positive. This leads us to formulate the first research hypothesis:

> *Hypothesis 1: The higher the robot density in a country, the more positive the perception of robots will be (perception of less employment threat or lower perceived risk level).*

2.2. Robots/AI and Perception. Hypothesis 2

Personal behavior, whether acceptance or rejection (non-acceptance), is key to the success of technologies. In this sense, acceptance goes hand in hand with perception, implying that the extent to which technologies can benefit society depends on how they are perceived. A key aspect of the perception of robots seems to be the experience with this technology at work. Turja and Oksanen (2019), analyzing robot acceptance at work (RAW) with individual and national attributes in the EU 27 (Eurobarometer), find that experiences with robots at work or elsewhere are associated with higher acceptance. The physical form of robots also seems to influence perception (Geiselmann et al., 2023; Bhuiyan et al., 2024), although some studies suggest that the effect depends on the type of activity the robot performs (Della Corte et al., 2023). Similarly, the congruence between function and appearance also plays an important role in acceptance: Kim et al. (2023) conclude that consumers are more inclined to use a robot designed to provide hedonic benefits when it resembles real-life objects, and more inclined to use a robot/AI designed for utilitarian benefits when it has a machine-like appearance.

In conclusion, it can be inferred that the image one has of robots can play an important role in their acceptance, which is reflected in the second research hypothesis of this work:

> *Hypothesis 2: The more distorted and unrealistic the idea of a robot, the more negative the perception of them (perception of greater employment threat or higher perceived risk level).*

3. Materials and Methods

This work partially replicates the research of Shoss and Ciarlante (2022), opting to use the same database utilized by these authors, the Eurobarometer 87.1 (2017), as well as their methodological approach, a multilevel model with individual-level and country-level variables. The data from Eurobarometer 87.1 were collected through interviews conducted in early 2017, considering a representative sample of European citizens aged 15 and over.

The dependent variable defined by Shoss and Ciarlante (2022) is the perception of robots/AI as a threat to employment (PRb_AEm). This variable is calculated as the average value obtained from two Eurobarometer questions, with higher scores indicating a greater PRb_AEm:

To what extent you agree or disagree with each of the following statements:

1) *Due to the use of robots and artificial intelligence, more jobs will disappear than new jobs will be created; and*
2) *Robots and artificial intelligence steal people's jobs.*

Regarding the individual-level variables (**Table 1**), those used by Shoss and Ciarlante (2022, p. 10) have been considered, using the same measurement scale for all of them, and additionally incorporating the variable " Incorrect image of robots."

Table 1. - Individual-level variables

Variable	*Description*
Gender	Dichotomous, "Female" is the base level in the model
Age	Numeric, age of the individual.
Community	Categorical: 1 (rural area or village), 2 (small or middle-sized town), 3 (large town).
Education	Numeric, age at which the individual stopped full-time education.
Political orientation	Numeric, individual's ideological orientation on a scale from 1 (left) to 10 (right).
Technological skills	Numeric, self-perception of skills in using digital technologies on a scale from 1 to 4.
Future technological skills	Numeric, self-perception of skills in using digital technologies in a future job on a scale from 1 to 4.
Job performed by robots in the future	Numeric, opinion on whether a robot or AI could perform the respondent's current job in the future, on a scale from 1 to 4.
Reading	Dichotomous, YES/NO the respondent has read, seen, or heard anything about artificial intelligence in the last 12 months. "NO" is the base level in the model.
Use of robots (work)	Dichotomous, YES/NO the respondent currently uses any type of robot at work. "NO" is the base level in the model.
Future social inequality	Numeric, respondent's opinion on whether social inequality in their country will be less or more than at present, on a scale from 1 to 5.
Incorrect image of robots	Numeric, match between the shown image and the respondent's image of what a robot is, on a decreasing scale from 1 to 4.

Regarding the variable "Incorrect image of robots," a question from the Eurobarometer was used that, when presented with the image of an industrial robot (**Figure 3**), asked respondents to indicate whether this image corresponded little (high scores) or much (low scores) with their image of what a robot is.

Figure 3 - Image of a robot associated with question QD7_1 of Eurobarometer 87.1

Source: TNS Opinion & Social: Special Eurobarometer 460 / Wave 87.1

However, at the country level, instead of using the GINI index, the human inequality coefficient, or the logarithm of GDP per capita, as the aforementioned authors do, robot density (operational robots per 10,000 active population) has been used. The data for calculating this variable were obtained from the International Federation of Robotics, IFR (2023) (robot stock in 2016) and the World Bank (active population in 2016). In this regard, it should be noted that there is no information on robot density for Luxembourg and Cyprus, so only 26 countries were considered, instead of the 28 used in the original work of Shoss and Ciarlante (2022).

Thus, after removing incomplete records from the various databases used, the final sample used in the model consists of 8,778 individuals, of whom 49.5% are women.

All the analysis was carried out in R (R Core Team, 2013), using the packages "haven" (Wickham et al., 2023), "dplyr" (Wickham et al., 2021), "lmerTest" (Kuznetsova et al., 2017) and "lme4" (Bates et al., 2015).

4. Results and Discussion

The results of the multilevel model are shown in **Table 2**. Even though the sample is not exactly the same as that used by Shoss and Ciarlante (2022, p. 10) for the aforementioned reasons, it is observed that the results for the common variables in both studies are virtually identical.

Since the dependent variable considered, PRb_AEm, represents the level of agreement that AI/robots threaten jobs, positive signs in the coefficients imply an effect of increasing the perception of threat. Based on the results obtained, it is observed that men consider the threat to jobs lower than women (Gender). As the size of the habitat (Community) and the years of education (Education) increase, the perception of threat decreases. As noted by Torrent-Sellens et al. (2021) regarding trust in surgical robots, it is confirmed that the perception is more positive in individuals with higher educational levels.

Similarly, higher current and future perceived technological skills reduce the fear of the threat posed by robotization. This is consistent with the results of Novozhilova et al. (2024), who concluded that individuals with a higher perception of technological competence felt more comfortable with AI. Having read, heard, or seen something about AI in the last 12 months (Reading) and using robots at work (Use of robots - work) also reduce the fear of robotization. This result is consistent with that of Turja and Oksanen (2019), whose conclusions pointed out that experiences with robots at work or elsewhere are associated with higher acceptance levels. Conversely, as the assessment of whether a robot or AI could perform the respondent's current job in the future increases, so does the perception of risk. The same happens with the opinion on future social inequality: the greater the predicted inequality, the higher the risk perception. Finally, neither age nor political orientation seems to affect the dependent variable.

Regarding the two variables of interest in this study, both are significant and have the expected sign. On the one hand, it is confirmed that the more distorted an individual's image of what a robot is (incorrect image), the greater their perception that robots/AI pose a threat to jobs. Thus, hypothesis 2 is confirmed. The fact that two other variables closely related to the real knowledge of what a robot is (Reading and Use of robots - work) are also significant and have a negative sign reinforces this conclusion. It seems that those individuals with a lower understanding of what a real robot is are precisely the ones who perceive a greater threat. On the contrary, those who are better informed because they have read, heard, or seen something about AI in the last 12 months, work with robots, and/or know what they really look like, perceive a lower threat level.

Regarding hypothesis 1, it is apparently confirmed: the higher the robot density in a country (stock of operational robots), the more positive the perception of them is (less employment threat). However, it is necessary to clarify that the p-value associated with this variable is 0.024. Although the variable is significant at 5%, a standard in social sciences, we consider it insufficient to unequivocally affirm the hypothesis. Benjamin et al. (2018, p. 6), in their well-known work on statistical significance, recommended "to change the default P-value threshold for statistical significance for claims of new discoveries from 0.05 to 0.005," to improve the replicability of academic research. Following this recommendation, we will therefore limit ourselves to stating that there are certain indications of this possible relationship, and further studies are necessary to confirm or refute it.

Table 2. - Results of the multilevel model.

Variables	*Coefficient*	*SD*	*P-value*
Level 1			
Intercept	3,43	0,10	0,000 ***
Gender (Male)	-0,08	0,02	0,000 ***
Age	0,00	0,00	0,889
Community	-0,04	0,01	0,000 ***
Education	-0,01	0,00	0,000 ***
Political orientation	0,00	0,00	0,307
Technological skills	-0,03	0,01	0,039 *
Technological skills (future job)	-0,04	0,01	0,004 **
Job performed by robots in the future	0,04	0,01	0,000 ***
Reading	-0,13	0,02	0,000 ***
Use of robots (work)	-0,10	0,03	0,001
Future social inequality	0,06	0,01	0,000 ***
Incorrect image	0,04	0,01	0,000 ***
Level 2			
Stock of operational robots	-0,01	0,00	0,024 *
Variance of the intercept	0,037		

Source: Own elaboration.
* P-value < .05. ** P-value < .01. *** P-value < .001.

5. Conclusions, Limitations, and Future Research Lines

People's perception of automation based on robots/AI emerges as key to understanding and modulating the social impact induced by this technology, especially in terms of job creation. Increasing its social acceptance involves reducing the perceived threat, which should enhance the willingness to implement active national policies aimed at leveraging the opportunities presented by the technology, exploiting the scenarios of increased competitiveness and employment that, according to the data, are emerging.

From this point of view, it is worth asking whether, to preserve net employment in the medium term, there really is an alternative to investing in advanced automation technologies. Such investment, in any case, must include the effort to retrain people, not only to work in new positions but to create them. In light of the data, it is not dismissible that a conservative attitude—refraining from implementing technology to avoid short-term job losses—could ultimately lead to net employment losses as a result of a significant reduction in competitiveness compared to countries and companies that do choose to invest.

The line of work presented in this article delves into the use of relevant variables for controlling the impact of automation on employment, which, combined with the proposed methodology, can be very useful as support for the work of policymakers. Having ways to independently measure the two elements that make up perception (the accurate image of technology and the perception of employment threat) facilitates the design of more precise policies aimed at improving each of these elements. With the proposed variables, it is possible to define measurable objectives and monitor the evolution of the impact accordingly. Especially interesting could be the development of public plans to bring robots/AI closer to society.

This work presents several limitations, which in turn open up possible future lines of research. Firstly, it shares the limitations of the work by Shoss and Ciarlante (2022): Eurobarometer countries, currently employed individuals (in order to use the variable of technological skill in the current job), and the inability to confirm specific causality of the different variables. In this regard, it has already been indicated that hypothesis 2 is not considered fully proven. In the future, it would be possible to delve deeper into the research by expanding the sample of countries considered to further test the obtained result.

It is also relevant to qualify the consideration of the timing when the data were obtained. The results should be interpreted in the context prior to the advent of Large Language Models (LLMs) like ChatGPT. The emergence of this technology at the end of 2022 marks a turning point, also in the perception of AI and automation. While this work, like previous studies, seems to confirm that workers with lower educational levels are the ones who show the greatest fear of robotization, the appearance of LLMs represents a disruptive change. In this new scenario, "white-collar" jobs are likely to face greater uncertainty. For this reason, it would not be surprising if this same study conducted with 2024 data yielded very different results in some of the variables considered. In this sense, we believe that the present work can serve as a comparison for future research, making it possible to evaluate how the perception of robotization/AI has changed following the advent of LLMs.

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Responsabilidad Social Corporativa y Transporte Aéreo. Explorando la Percepción de Consumidores Universitarios en Chile

ÁREA: 6
TIPO: Aplicación

Corporate Social Responsibility and Air Transport. Exploring the Perception of University Consumers in Chile

Responsabilidade Social Corporativa e Transporte Aéreo. Explorando a Percepção dos Consumidores Universitários no Chile

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La responsabilidad social corporativa (RSC) es un modelo estratégico que busca satisfacer las necesidades de los stakeholders. Lo antes señalado, ha sido incluido en la administración estratégica de diversas compañías de transporte aéreo de pasajeros. El objetivo de esta investigación es describir la percepción de los estudiantes universitarios sobre la RSC desde la perspectiva de consumidores de servicios de transportes aéreos de pasajeros en la región del Maule (Chile). Se encuentran diferencias significativas de acuerdo al género, edad y ubicación. Finalmente, las empresas deben incluir estrategias de RSC que permitan crear valor según los requerimientos de cada grupo de interés.

Corporate social responsibility (CSR) is a strategic model that seeks to satisfy the needs of stakeholders. The aforementioned has been included in the strategic administration of various passenger air transport companies. The objective of this research is to describe the perception of university students about CSR from the perspective of consumers of air passenger transport services in the Maule region (Chile). Significant differences are found according to gender, age and location. Finally, companies must include CSR strategies that allow them to create value according to the requirements of each interest group.

A responsabilidade social corporativa (RSE) é um modelo estratégico que busca satisfazer as necessidades das partes interessadas. O referido foi incluído na administração estratégica de diversas empresas de transporte aéreo de passageiros. O objetivo desta pesquisa é descrever a percepção de estudantes universitários sobre RSE na perspectiva dos consumidores de serviços de transporte aéreo de passageiros na região de Maule (Chile). Diferenças significativas são encontradas de acordo com sexo, idade e localização. Por último, as empresas devem incluir estratégias de RSC que lhes permitam criar valor de acordo com as necessidades de cada grupo de interesse.

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1. Introducción

En los últimos años la RSC es usada como estrategia, modelo y filosofía empresarial que puede ser considerada como un factor clave de éxito organizacional (Masoud, 2017; Saz-Gil *et al.*, 2020; Licandro, 2023), motivando un comportamiento ético, justo y transparente entre cada uno de los actores que integran una empresa (Lillo-Viedma et al, 2022; Zhang *et al.*, 2023). Lo mencionado incluye desafíos que están presente en los distintos niveles estratégicos de las organizaciones, pudiendo ser identificados según las características de los territorios y las particularidades del comportamiento colectivo (Úbeda *et al.*, 2021). Lo que está en correspondencia con los principios valorados por los consumidores (Beaudoin *et al.*, 2019; Valverde-Mendoza *et al.*, 2022).

La implementación de las RSC contribuye al crecimiento empresarial y, en el largo plazo, a la disposición de espacios, que conducen a la instalación de una imagen corporativa favorable en la sociedad (Araiza Garza *et al.*, 2018; Severino-González *et al.*, 2019), motivando a relaciones basadas en principios y valores vinculadas con la RSC, como la confianza, lealtad y compromiso social (Boccia y Sarnacchiaro, 2018). Lo antes señalado, se evidencia en las entidades que ejecutan acciones de RSC a través de los múltiples y diversos aportes al bienestar social, lo que tributa a la calidad de vida de la sociedad en general (Ferrell *et al.*, 2019; Hooda y Yadav, 2023).

La gestión de los stakeholders es importante para el adecuado diseño estratégico de RSC, ya que es considerado significativo para el éxito corporativo, siendo trascendental la identificación y clasificación de cada grupo de interés (Ling, 2019). Es por ello que, es relevante individualización de las expectativas de todas las partes estratégicas, ya que influye en sus motivaciones y, en la correspondiente, materialización de sus funciones, desempeños y responsabilidades (Rokhayati *et al.*, 2022). Entre ellos se encuentran: accionista, trabajadores, posibles inversionistas, proveedores, clientes, administrativos, y sociedad en general (Pilgrim y Bohnet-Joschko, 2022).

Los estudios de la RSC desde el comportamiento y decisiones de los consumidores evidencian la relevancia que posee la exploración de las percepciones en diversos sectores industriales (González-Rodríguez *et al.*, 2019). Lo antes señalado, es debido a los cambios en las preferencias y actitudes de los clientes, configurando un comportamiento que tiene su asidero en la experiencia y, también, en la disposición de información vinculada con los procesos de fabricación y comercialización de bienes y servicios (Gutiérrez Rodríguez *et al.*, 2017). En este sentido, es preciso manifestar que los clientes valoran las estrategias de RSC debido a la capacidad que poseen las estrategias socialmente responsables en la satisfacción de necesidades de los stakeholders (Araiza Garza *et al.*, 2018).

La RSC es investigada en la industria de la construcción, turismo, vino, aerolíneas y alimentación (Streimikiene *et al.*, 2021; Wut *et al.*, 2022; Severino-González *et al.*, 2022a). Con relación a este estudio, el análisis de la RSC deja en evidencia que, en los últimos años, una cantidad importante de empresas que prestan servicios de transporte aéreo han comenzado a informar sus resultados vinculados con la RSC, lo que demuestra la importancia que otorgan los tomadores de decisión a las acciones que buscan crear valor para los todos stakeholders (Sulik-Górecka *et al.*, 2022;

Palabras clave
Responsabilidad Social Corporativa, Transporte Aéreo, Consumidor, Stakeholders, Gestión estratégica.

Keywords
Corporate Social Responsibility, Air Transport, Consumer, Stakeholders, Strategic Management.

Palavras-chave
Responsabilidade Social Corporativa, Transporte Aéreo, Consumidor, Stakeholders, Gestão Estratégica.

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Rüger y Maertens, 2022). En su mayoría, dichos informes describen el impacto positivo que tiene la RSC en la reputación de la empresa, confianza por parte de los empleados, satisfacción de los clientes y rentabilidad de la empresa (Martínez *et al.*, 2015; Park, 2019).

Los nuevos retos de los servicios de transporte de pasajeros desde la perspectiva de la RSC han motivado su constante reinvención -sobre todo en los últimos años- (Paraschi, 2022; Phan Thanh y Hoang Anh, 2023). Lo que ha conducido a la incorporación de nuevas tecnologías, y, al mismo tiempo, a incluir mejores servicios para sus clientes, tales como: incremento de conexiones, operaciones más eficientes y procesos más eficaces (Mula *et al.*, 2021; Akpa *et al.*, 2022). Lo que influye en las decisiones de los grupos de interés, sobre todo cuando considera elementos de sustentabilidad (Xu *et al.*, 2022; Heyes *et al.*, 2023).

El presente trabajo declara la siguiente pregunta de investigación ¿Cuál es la percepción de los estudiantes universitarios sobre la RSC de la región del Maule desde la perspectiva de consumidores de servicios de transportes aéreos de pasajeros? En tal sentido, el objetivo de investigación es describir la percepción de los estudiantes universitarios sobre la RSC desde la perspectiva de consumidores de servicios de transportes aéreos de pasajeros en la región del Maule.

Los resultados del estudio contribuyen a la industria aérea debido a que los hallazgos pueden ser usados como insumo para el diseño de estrategias de RSC. En tal sentido, dichas estrategias aportan a la satisfacción de expectativas de los estudiantes universitarios que declaran ser consumidores de servicios ofrecidos por empresas aéreas. Todo lo cual, podría ser empleado por las compañías de aerolíneas para la implementación de innovaciones empresariales basadas en las características sociodemográficas de los pasajeros de aerolíneas.

2. Marco Teórico

2.1. Responsabilidad Social Corporativa

La conceptualización de la RSC ha instalado un debate controversial en la academia, debido a las características que poseen las múltiples acciones socialmente responsables y, al mismo tiempo, producto de las peculiaridades de los grupos de interés (Úbeda *et al.*, 2021; Severino-González *et al.*, 2023). Todo lo cual, ha propiciado la construcción de definiciones de RSC que son polisémicos, multidimensionales y transversales (Nova-Reyes *et al.*, 2020; Carroll, 2021). En tal sentido, un aspecto que ha trascendido es la consideración de la RSC como una estrategia que busca responder a las necesidades, percepciones y expectativas de los grupos estratégicos (Chen y Khuangga, 2021; Licandro, 2023).

Las diversas investigaciones sobre RSC han evidenciado las contribuciones de las estrategias socialmente responsables al bienestar colectivo, debido a su relación con el desarrollo social, económico y medioambiental (Savina, 2016; Lillo-Viedma *et al.*, 2023). Lo que se vincula con la identidad empresarial, debido a la búsqueda de innovaciones organizacionales que intentan otorgar respuestas a

problemáticas de una sociedad cada vez más globalizada y, por lo tanto, más informada de los retos y tensiones que enfrenta la población humana.

La RSC se vinculan con el comportamiento socialmente responsable en un sentido ético (Navarro *et al.*, 2012) y, para otro lado, algunos estudios relacionan la RSC con acciones caritativas y filantrópicas (Gardberg *et al.*, 2019). Lo antes señalado, ha mayormente visibilizado en los últimos años por elementos que instalan en la discusión académica y empresarial, temas tales como: sustentabilidad, justicia social, prosocialidad, rehumanización, consumo responsable, entre otros (Jain *et al.*, 2020; Melean Romero *et al.*, 2022; Zhao *et al.*, 2023).

Ahora bien, el adecuado diagnóstico de expectativas de RSC permite el levantamiento de preocupaciones sociales y ambientales de las partes interesadas (Joo *et al.*, 2019), lo que podría aportar al diseño de innovaciones estratégicas que procuren la adecuada satisfacción de los grupos de interés y, a su vez, a la reputación e imagen corporativa (Lloyd-Smith y An, 2019). Dichas satisfacciones son consecuencias de políticas socialmente responsables que se encuentran sustentadas en respuestas pertinentes y oportunas a las necesidades sentidas y compartidas por los stakeholders (González-Rodríguez *et al.*, 2019).

2.2. Teorías de los Stakeholders

Los stakeholders o grupos de interés son todas las personas naturales o jurídicas que puedan influenciar las diversas actividades de una compañía y, a la vez, pueden ser afectados por alguna de las actividades de estas (Martínez *et al.*, 2015; Acuña-Moraga *et al.*, 2019). Con relación a lo antes señalado, es preciso reconocer que cada stakeholders posee un valor intrínseco que se constituye en un factor estratégico de éxito en el funcionamiento y sustentabilidad de la empresa (Yadav *et al.*, 2022). Es por ello que, es imperativa una relación más estrecha que permita a la organización responder a sus legítimos intereses y demandas. En este sentido, en la literatura se encuentran algunos insumos que tributan a su comprensión, los cuales son principalmente agrupados en grupos de interés primarios y grupos de interés secundarios (Ivašković, 2022).

Los consumidores de servicios de aerolíneas son algunos de los grupos de interés que se podrían encontrar influenciados por las estrategias de RSC (Phan Thanh y Hoang Anh, 2023). Lo antes señalado, ha motivado a aerolíneas a implementar políticas y programas benéficos que incluyen iniciativas vinculadas con la salud, medioambiente, seguridad, entre otros; todo lo cual contribuye a mejor la competitividad e imagen corporativa (Streimikiene *et al.*, 2021; Li *et al.*, 2023). Todo lo cual incluye factores ambientales, sociales y de gobierno corporativo, lo que pretender responder a los nuevos retos de sociedades modernas y organizaciones contemporáneas (Moehl y Friedman, 2021).

Ahora bien, es preciso señalar que las características sociodemográficas inciden en la valoraciones, requerimientos y percepciones de los stakeholders con respecto a las estrategias relacionadas con la RSC (Viana *et al.*, 2019; Liberato *et al.*, 2021). Lo cual motiva al diagnóstico socialmente responsable y, al mismo tiempo, al diseño de prácticas según las características de los grupos de interés y las particularidades de los sectores industriales (Abreu *et al.*, 2022).

En relación a todo lo antes señalado, se formulan las siguientes hipótesis que considera la percepción de la RSC en correspondencia con las características sociodemográficas de los sujetos de investigación:

Hipótesis nula (H0): No existen diferencias estadísticamente significativas según característica sociodemográfica de acuerdo a la percepción de la RSC de los consumidores de servicios de transportes aéreos de pasajeros en la región del Maule (Chile).

Hipótesis alterna (H1): Existen diferencias estadísticamente significativas según característica sociodemográfica de acuerdo a la percepción de la RSC de los consumidores de servicios de transportes aéreos de pasajeros en la región del Maule (Chile).

3. Materiales y Método

3.1. Diseño

La presente investigación cuantitativa posee un diseño descriptivo de corte seccional (Hernández *et al.*, 2010), puesto que los datos se recolectaron en un solo momento a través de la utilización de una escala cuantitativa. Los sujetos de investigación son estudiantes universitarios consumidores de transportes aéreos en la ciudad de Talca.

3.2. Participantes

La población se encuentra compuesta por estudiantes universitarios matriculados en instituciones de educación superior en la ciudad de Talca. La muestra es no probabilística compuesta por 366 sujetos de investigación, es representativa de la población debido a que considera la participación de manera voluntaria y libre de todos los estudiantes universitarios que han consumido en los últimos tres años algún servicio de transportes aéreo de pasajeros (ver **tabla 1**).

Tabla 1. - Características de los participantes

Categoría	*Criterio*	*Valores (porcentajes)*
Género	Masculino	50%
	Femenino	50%
Edad (años)	Entre 18 y 21	35%
	Entre 22 y 25	56%
	Mayores de 25	9%
Zona (procedencia)	Urbana	83%
	Rural	17%
Integrantes del grupo familiar (personas)	2 a 3	38%
	4 a 5	56%
	6 o más	6%

Fuente: Elaboración propia

3.3. Instrumento

El instrumento se encuentra compuesto por tres secciones: la primera sección, presenta las preguntas filtro que permite asegurar la correcta aplicación de los criterios de inclusión y exclusión según las características de los sujetos de investigación; la segunda sección considera las características sociodemográficas de los sujetos de investigación: género, edad y zona de procedencia y; finalmente, la tercera sección, considera la escala de RSC (Wendlandt Amezaga *et al.*, 2016).

La escala de RSC fue diseñada por Maignan (2001) y publicada en español por Wendlandt Amezaga *et al.* (2016). Dicha escala se sustenta en la teoría de RSC propuesta por Carroll (1979), la cual fue ampliada en Carroll (1991), presentando en todo momento indicadores de confiabilidad y validez elevados y satisfactorios. La mencionada escala posee 16 variables que son expectativas/afirmaciones agrupadas en cuatro dimensiones, tal como se presenta en la **tabla 2**. Las respuestas se desarrollan a través de una escala de tipo Likert, donde 1= muy en desacuerdo, 2= en desacuerdo, 3= ligeramente en desacuerdo, 4= ligeramente de acuerdo, 5= de acuerdo y, 6= muy de acuerdo.

Tabla 2. - Escala de RSC

Dimensiones	*Variables*	*Expectativas/afirmaciones*
Económica	V1	Maximizar las ganancias.
	V2	Controlar estrictamente sus costos de producción.
	V3	Planear el éxito a largo plazo.
	V4	Mejorar siempre los resultados económicos.
Legal	V5	Asegurarse de que sus empleados actúan dentro de los estándares definidos por la ley.
	V6	Cumplir con sus obligaciones contractuales.
	V7	Evitar infringir la ley, incluso si esto ayuda a mejorar el rendimiento.
	V8	Respetar siempre los principios definidos por el sistema regulatorio.
Ética	V9	Cumplir con los aspectos éticos, aunque afecten negativamente el desempeño económico.
	V10	Asegurar el respeto a los principios éticos tiene prioridad sobre el desempeño económico.
	V11	Estar comprometidas con principios éticos bien definidos.
	V12	Evitar comprometer los estándares éticos a fin de lograr los objetivos corporativos.
Filantrópica	V13	Ayudar a resolver problemas sociales.
	V14	Participar en la gestión de los asuntos públicos.
	V15	Destinar parte de sus recursos a las actividades filantrópicas.
	V16	Desempeñar un papel importante en nuestra sociedad más allá de la pura generación de beneficios.

Fuente: Wendlandt Amezaga et al. (2016).

3.4. Procedimiento y Estrategia de Análisis

El instrumento fue digitalizado y dispuesto a través de un enlace en Google Forms®, dicho enlace fue difundido a través de redes sociales entre septiembre y octubre del 2022. Los sujetos participan de manera voluntaria, libre y anónima. Luego los datos son exportados a través de Microsoft Excel para su posterior análisis.

Se aplica un análisis factorial exploratorio (AFE), utilizando como método de extracción de componentes principales la solución rotada gracias a la metodología Varimax, ya que esta *"busca redistribuir la varianza a lo largo de todos los componentes en la matriz de carga. Con esto se simplifica el modelo y se obtienen resultados más claros"* (Montoya Suárez, 2007).

Posteriormente, se da paso a la construcción de dimensiones para lo cual se consideraron valores de saturación asociados al vector propio a 1.0. En cuanto a la determinación del valor de corte, se empleó las discriminantes relacionadas con los percentiles, para luego dar el paso a la estimación de las inferencias estableciendo una confianza de 95%.

Luego, se desarrolla un análisis de consistencia interna a través de coeficiente Alfa de Cronbach. Se aplicaron pruebas de normalidad para establecer la distribución de los datos, lo que permite identificar las pruebas necesarias para el análisis inferencial. En relación a este último, se evalúan las diferencias significativas de medias según las características sociodemográficas de los sujetos de investigación.

4. Resultados

En esta sección se presentan los principales resultados según el objetivo de investigación. Se exponen los resultados asociados al AFE y luego se desarrolla un análisis inferencial según las características sociodemográficas de los sujetos de investigación. Esto último, permite analizar los resultados en correspondencia con las hipótesis que declara esta investigación.

4.1. Análisis Factorial Exploratorio

En la **tabla 3** se presentan los resultados del AFE. Se determinó el Kaiser-Meyer-Olkin (KMO) y la prueba de esfericidad de Bartlett. En el caso del KMO= 0.856 y, en cuanto a la prueba de esfericidad de Bartlett los valores son x^2 = 1,799.050; gl=120; p < 0.000. Luego se aplicó el método de extracción de componentes principales considerando la solución rotada Varimax. La solución, permitió determinar que la RSC está compuesta por cuatro dimensiones y las 16 variables que propone la escala diseñada por Maignan (2001) y aplicada en su versión en español por Wendlandt Amezaga *et al.* (2016). En cuanto al alfa de Cronbach en cada uno de los casos resultó ser mayor a 0.7 siendo considerados elevados y satisfactorios. Finalmente, en cuanto a la variabilidad de los datos, la varianza explicada total es 67.05%.

Tabla 3. - Matriz de componentes rotados de la escala de RSC

Variables	*Dimensiones*			
	Legal	*Filantrópica*	*Ética*	*Económica*
V5	0.773			
V6	0.755			
V7	0.701			
V8	0.673			
V13		0.778		
V14		0.671		
V15		0.663		
V16		0.621		
V9			0.736	
V10			0.667	
V11			0.597	
V12			0.566	
V1				0.733
v2				0.686
V3				0.662
V4				0.611
Alfa de Cronbach	0.882	0.819	0.806	0.784
Varianza Explicada	36.96%	13.28%	9.02%	7.79%

Fuente: Elaboración propia.

4.2. Análisis Inferencial

El análisis inferencial se desarrolló usando las pruebas de U Mann Whitney y H de Kruskal-Wallis, debido a la distribución no normal de los datos. En tal sentido y de acuerdo con las hipótesis que declara esta investigación, solo encontraron diferencias estadísticamente significas según las características sociodemográficas: género, edad y zona de procedencia.

En la **tabla 4**, se puede observar la media, mediana, desviación estándar (DE) y p-valor según género. En este caso, las diferencias estadísticamente significativas se encuentran la dimensión Económica (V1, V3 y V4). En relación con lo antes señalado, en todos los casos los mayores valores son manifestados por el grupo masculino. En cuanto a la V1, los valores de la media=4.463, mediana=5 y DE=1.297. De acuerdo con la V3, los resultados según la media=4.926, mediana=5 y DE=1.266. En cuanto a la V4 los valores de la media=4.926, mediana=5 y DE=1.266. Todo lo cual permite señalar que el grupo masculino valora la planeación de las compañías que integran el sector industrial de transporte aéreo en cuanto a la búsqueda del éxito empresarial, maximización de ganancias y los esfuerzos vinculados a resultados económicos.

Tabla 4. - Media, mediana, desviación estándar (DE) y p-valor según género

Dimensión	*Variable*	*Género*	*Media*	*Mediana*	*DE*	*P-valor*	*Nivel de significatividad*
Legal	V5	Masculino	5.405	6	1.029	0.803	
		Femenino	5.347	6	1.202		
	V6	Masculino	5.339	6	1.208	0.684	
		Femenino	5.438	6	1.064		
	V7	Masculino	5.446	6	1.056	0.873	
		Femenino	5.38	6	1.149		
	V8	Masculino	5.545	6	0.957	0.691	
		Femenino	5.504	6	1.009		
Filantrópica	V13	Masculino	5.215	6	1.074	0.588	
		Femenino	5.157	5	1.057		
	V14	Masculino	5.091	5	1.08	0.117	
		Femenino	4.901	5	1.099		
	V15	Masculino	4.934	5	1.223	0.977	
		Femenino	4.959	5	1.186		
	V16	Masculino	5.496	6	0.976	0.094	
		Femenino	5.306	6	1.117		
Ética	V9	Masculino	4.802	5	1.174	0.532	
		Femenino	4.893	5	1.131		
	V10	Masculino	4.711	5	1.151	0.647	
		Femenino	4.793	5	1.102		
	V11	Masculino	4.843	5	1.133	0.771	
		Femenino	4.802	5	1.327		
	V12	Masculino	4.959	5	1.248	0.534	
		Femenino	4.909	5	1.197		
Económica	V1	Masculino	4.463	5	1.297	0.023	**
		Femenino	4.083	4	1.326		
	V2	Masculino	4.628	5	1.336	0.16	
		Femenino	4.397	5	1.363		
	V3	Masculino	4.926	5	1.266	0.019	**
		Femenino	4.603	5	1.241		
	V4	Masculino	4.802	5	1.32	0.016	**
		Femenino	4.446	5	1.297		

*Nota: * = p<0.10; ** = p<0.05; *** = p<0.01.*
Fuente: Elaboración propia.

En la **tabla 5**, se puede observar la media, la mediana, desviación estándar (DE) y p-valor según edad. En este caso, se encuentran diferencias estadísticamente significativas en la dimensión Legal (V5 y V8), Filantrópica (V14 y V16) y Económica (V4). En cuanto a la dimensión Legal, el mayor valor se

encuentra en la V5, siendo expresado por el grupo de consumidores que poseen entre 18 y 21 años (media=5.471; mediana=6; DE=1.130. Con relación a la V8, la mayor valoración se encuentra asociada a los consumidores que poseen entre 22 y 25 años (media=5.596; mediana=6; DE=0.881). Ahora bien, en cuanto a la dimensión Filantrópica, particularmente en la V14, el mayor valor se encuentra en el grupo que poseen entre 22 y 25 años (media=5.176; mediana=5; DE=0.973), en cambio, con relación a la V16 los que poseen entre 18 y 21 años son los que expresan una mayor valoración (media=5.624; mediana=6; DE=0.913). Finalmente, en cuanto a la dimensión Económica, solo se encuentran diferencia estadísticamente significativa en una sola variable, el cual se encuentra en la V4, particularmente dicho valor es expresado por el grupo que posee entre 18 y 21 años (media=4,871; mediana=5; DE=1,270).

Tabla 5. - Media, mediana, desviación estándar (DE) y p-valor según edad

Dimensión	*Variable*	*Edad*	*Media*	*Mediana*	*DE*	*P-valor*	*Nivel de significatividad*
Legal	V5	Entre 18 y 21 años	5.471	6	1.13	0.030	**
		Entre 22 y 25 años	5.368	6	1.108		
		Mayores de 25 años	5.048	5	1.117		
	V6	Entre 18 y 21 años	5.271	6	1.418	0.323	
		Entre 22 y 25 años	5.485	6	0.943		
		Mayores de 25 años	5.238	6	0.995		
	V7	Entre 18 y 21 años	5.388	6	1.292	0.157	
		Entre 22 y 25 años	5.434	6	1.023		
		Mayores de 25 años	5.381	5	0.74		
	V8	Entre 18 y 21 años	5.506	6	1.13	0.005	***
		Entre 22 y 25 años	5.596	6	0.881		
		Mayores de 25 años	5.143	5	0.91		
Filantrópica	V13	Entre 18 y 21 años	5.188	6	1.18	0.312	
		Entre 22 y 25 años	5.250	5	0.901		
		Mayores de 25 años	4.762	5	1.446		
	V14	Entre 18 y 21 años	4.765	5	1.202	0.028	**
		Entre 22 y 25 años	5.176	5	0.973		
		Mayores de 25 años	4.762	5	1.179		
	V15	Entre 18 y 21 años	4.847	5	1.2	0.095	
		Entre 22 y 25 años	5.081	6	1.136		
		Mayores de 25 años	4.476	5	1.504		
	V16	Entre 18 y 21 años	5.624	6	0.913	0.003	***
		Entre 22 y 25 años	5.346	6	1.043		
		Mayores de 25 años	4.857	5	1.389		

Ética	V9	Entre 18 y 21 años	4.612	5	1.319	0.161	
		Entre 22 y 25 años	4.963	5	1.036		
		Mayores de 25 años	5.048	5	1.024		
	V10	Entre 18 y 21 años	4.753	5	1.154	0.965	
		Entre 22 y 25 años	4.757	5	1.119		
		Mayores de 25 años	4.714	5	1.102		
	V11	Entre 18 y 21 años	4.894	6	1.186	0.36	
		Entre 22 y 25 años	4.846	5	1.216		
		Mayores de 25 años	4.381	5	1.466		
	V12	Entre 18 y 21 años	4.918	5	1.302	0.957	
		Entre 22 y 25 años	4.956	5	1.16		
		Mayores de 25 años	4.857	5	1.315		
Económica	V1	Entre 18 y 21 años	4.259	5	1.449	0.176	
		Entre 22 y 25 años	4.346	5	1.279		
		Mayores de 25 años	3.857	4	1.014		
	V2	Entre 18 y 21 años	4.635	5	1.421	0.061	
		Entre 22 y 25 años	4.522	5	1.311		
		Mayores de 25 años	3.952	4	1.244		
	V3	Entre 18 y 21 años	4.929	5	1.183	0.079	
		Entre 22 y 25 años	4.743	5	1.277		
		Mayores de 25 años	4.238	4	1.375		
	V4	Entre 18 y 21 años	4.871	5	1.270	0.006	
		Entre 22 y 25 años	4.581	5	1.308		***
		Mayores de 25 años	3.905	4	1.338		

*Nota: * = p<0.10; ** = p<0.05; *** = p<0.01.*
Fuente: Elaboración propia.

En la **tabla 6**, se puede observar la media, la mediana, desviación estándar (DE) y p-valor según zona de procedencia. En este caso, se pueden observar diferencia estadísticamente significativa en V2 y V4 de la dimensión Económica. Con relación a la V4, la mayor valoración es expresada por los consumidores de servicios aéreos que provienen de zonas urbanas (media=4.74; mediana=5; DE=1.2769). En cuanto a la V2, los consumidores provienen de zonas urbanas son lo que expresan una mayor valoración (media=4.6; mediana=5; DE=1.353). Todo lo antes señalado, permite indicar que los consumidores expresan que las empresas de aerolíneas deben gestionar sus costos de producción, y al mismo tiempo, deben procurar la maximización de los resultados económicos.

Tabla 6. - Media, mediana. Desviación estándar (DE) y p-valor según zona

Dimensión	*Variable*	*Zona*	*Media*	*Mediana*	*DE*	*P-valor*	*Nivel de significatividad*
Legal	V5	Zona Urbana	5.365	6	1.153	0.684	
		Zona Rural	5.429	6	0.941		
	V6	Zona Urbana	5.425	6	1.136	0.078	
		Zona Rural	5.214	6	1.138		
	V7	Zona Urbana	5.400	6	1.130	0.994	
		Zona Rural	5.476	6	0.969		
	V8	Zona Urbana	5.540	6	0.987	0.252	
		Zona Rural	5.452	6	0.968		
Filantrópica	V13	Zona Urbana	5.190	6	1.068	0.804	
		Zona Rural	5.167	5	1.057		
	V14	Zona Urbana	4.950	5	1.115	0.178	
		Zona Rural	5.214	6	0.951		
	V15	Zona Urbana	4.930	5	1.201	0.603	
		Zona Rural	5.024	5	1.22		
	V16	Zona Urbana	5.440	6	1.03	0.246	
		Zona Rural	5.214	6	1.138		
Ética	V9	Zona Urbana	4.815	5	1.157	0.270	
		Zona Rural	5.000	5	1.126		
	V10	Zona Urbana	4.815	5	1.099	0.066	
		Zona Rural	4.452	4	1.214		
	V11	Zona Urbana	4.875	5	1.190	0.252	
		Zona Rural	4.571	5	1.399		
	V12	Zona Urbana	4.965	5	1.233	0.194	
		Zona Rural	4.786	5	1.159		
Económica	V1	Zona Urbana	4.330	5	1.323	0.130	
		Zona Rural	4.000	4	1.307		
	V2	Zona Urbana	4.600	5	1.353	0.013	**
		Zona Rural	4.095	4	1.284		
	V3	Zona Urbana	4.820	5	1.259	0.930	
		Zona Rural	4.500	5	1.254		
	V4	Zona Urbana	4.740	5	1.277	0.003	***
		Zona Rural	4.071	4	1.386		

*Nota: * = p<0.10; ** = p<0.05; *** = p<0.01.*

Fuente: Elaboración propia.

5. Discusión y Conclusiones

El presente artículo tiene como propósito describir la percepción de los estudiantes universitarios sobre la RSC desde la perspectiva de consumidores de servicios de transportes aéreos de pasajeros en la región del Maule. Los resultados de este estudio son similares en cuanto a la estructura factorial propuesta en Maignan (2001), Wendlandt Amezaga *et al.* (2016) y Carroll (2021). Dicha estructura factorial ha demostrado en todo momento confiabilidad y validez, permitiendo su utilización en diversas investigaciones académicas y empresariales que buscan responder a las necesidades de los grupos de interés.

Ahora bien, de acuerdo a las hipótesis que declara esta investigación, se encuentran diferencias estadísticamente significativas en género, edad, y zona. En cuanto al género, tanto en Almutawa y Hewaidy (2020) y López-Salazar *et al.* (2017) se encuentran diferencias significativas, pero no coinciden del todo ya que difieren en ocasiones en cuanto a valores y en las variables en correspondencia con las dimensiones que constituyen la RSC. En tal sentido, es preciso señalar que los estudiantes están reconociendo el aporte que tienen las acciones que se caracterizan por ser altruistas y solidarias.

Por otro lado, se encuentran diferencias según la edad que poseen los consumidores de servicios aéreos. En tal sentido, de acuerdo con Larrán *et al.* (2018) según el nivel de progresión de los estudiantes incide en la valoración de elementos que constituyen la RSC. Es por ello que es transcendental la ejecución de planes de estudios que consideren el desarrollo metodologías de enseñanza y aprendizaje que incluyan los valores que sustentan la RSC, ética empresarial y la gestión basada en las personas.

En cuanto a la procedencia, se encuentran diferencias significativas en algunas de las variables que constituyen la dimensión económica de la RSC. En tal sentido, se encuentran diferencias estadísticas en Severino-González *et al.* (2022b) según territorio. Lo antes señalado, debería motivar al desarrollo de estrategias de RSC que consideren el origen de los grupos de interés, ya que las valoraciones de las acciones socialmente responsables diferencian según zona urbana y rural.

De acuerdo con los resultados, se puede señalar que es importante la formación académica vinculadas con las estrategias que constituyen las particularidades de la RSC, como a su vez, en ética empresarial. Todo lo cual, podría permitir el desarrollo natural de procesos estratégicos que procuren el bienestar de todos los grupos de interés, gracias a decisiones basadas en valores como la empatía, solidaridad, transparencia y altruismo.

Por otro lado, los resultados evidencian que los consumidores esperan que las empresas aéreas implementen acciones que se encuentren bajo estándares dispuestos por la ley y, al mismo tiempo, dichas acciones tengan la capacidad en responder a los mecanismos que integran las entidades regulatorias. Además, dichos consumidores esperan que las aerolíneas apliquen esfuerzos vinculados con el aumento de los resultados económicos, lo cual puede tributar al desarrollo de una ventaja competitiva en el sector industrial de servicios aéreos de pasajeros.

Los resultados de esta indagación pueden ser utilizados por las casas de estudios superiores y, su vez, por las empresas que ofrecen servicios aéreos de pasajeros. En tal sentido, las prácticas de RSC que se pueden surgir a partir de este estudio, podrían ayudar a los directivos a orientar sus planes y programas de RSC, los cuales se ajusten adecuadamente a las necesidades de los consumidores. Por otro lado, las

instituciones de educación superior pueden usar estos hallazgos para el diseño de estudios de casos para la formación de profesionales competentes y socialmente responsables.

Es preciso señalar que el uso de los hallazgos de este trabajo debe ser complementado con los resultados de investigaciones que pueden coincidir según el objeto o sujeto de investigación, lo que podría conducir a la determinación de decisiones más acertadas y contextualizadas. Finalmente, futuras investigaciones tienen el desafío de profundizar en la explicación de las percepciones de consumidores de servicios aéreos, considerando diversas estrategias metodológicas que permitan una mayor comprensión del objeto de estudio.

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