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Effects of covid-19 and strategies employed by entrepreneurs in the Peruvian gastronomic sector during the pandemic

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ABSTRACT
This study investigates the impact of the coronavirus disease of 2019 (COVID-19) pandemic on the gastronomic sector in Lima, Peru. The theory of dynamic capabilities an appropriate theoretical framework for analyzing how Peruvian gastronomic entrepreneurs have adapted and responded effectively to the challenges imposed by the COVID-19 pandemic.Through questionnaires and in-depth interviews, the study examines response strategies these businesses adopted to mitigate pandemic consequences. The findings reveal a significant sales reduction as the pandemic's primary effect, attributed to reduced customer traffic due to government-imposed quarantines. Marketing strategies, operational shifts, and cost reductions were common survival tactics. Despite challenges, the study underscores the gastronomy sector's adaptability, creativity, and preparedness in navigating the crisis. Practical implications include the importance of crisis management planning.

Keywords: COVID-19, pandemic, Peru, gastronomic, strategies, dynamic capabilities

Efectos del covid-19 y estrategias empleadas por empresarios del sector gastronómico peruano durante la pandemia

RESUMEN

Este estudio investiga el impacto de la pandemia de la enfermedad por coronavirus de 2019 (covid-19) en el sector gastronómico en Lima, Perú. La teoría de las capacidades dinámicas se presenta como un marco teórico apropiado para analizar cómo los emprendedores gastronómicos peruanos han logrado adaptarse y responder eficazmente a los desafíos impuestos por la pandemia del covid-19. A través de cuestionarios y entrevistas en profundidad, el estudio examina las estrategias de respuesta adoptadas por estas empresas para mitigar las consecuencias de la pandemia. Los hallazgos revelan una reducción significativa en las ventas como efecto principal de la pandemia, atribuida a la reducción del tráfico de clientes debido a las cuarentenas impuestas por el gobierno. Las estrategias de *marketing*, los cambios operativos y las reducciones de costos fueron tácticas de supervivencia comunes. A pesar de los desafíos, el estudio subraya la adaptabilidad, la creatividad y la preparación del sector de la gastronomía para afrontar la crisis. Las implicaciones prácticas incluyen la importancia de la planificación de la gestión de crisis.

Palabras clave: covid-19, pandemia, Perú, gastronomía, estrategias, capacidades dinámicas

Introduction

The COVID-19 pandemic has profoundly and widely impacted businesses of all sizes, from large corporations to Micro, Small, and Medium-sized Enterprises (MSMEs) (Bartik et al., 2020; Fairlie, 2020). Studies have shown that the pandemic has led to significant disruptions in supply chains, reduced consumer demand, and financial strain across various industries (Gourinchas, 2020; Shen, 2020). Larger businesses have faced challenges such as navigating complex global operations, while MSMEs have often been more vulnerable due to limited resources and access to capital (Kuckertz et al., 2020).

According to an Organisation for Economy Co-operation and Development (OECD) report (2020), the pandemic has caused a 3.5% drop in global GDP, particularly severely impacting micro, small, and medium-sized enterprises, which account for 99% of businesses worldwide. Research in Latin America has indicated

that microenterprises and and Small and Medium–sized enterprises (SMEs) have been the hardest hit, with massive closures and difficulties adapting to the new market conditions. In Peru, for example, an Economic Commission for Latin America and the Caribbean study (2020) found that 60% of microenterprises and 40% of SMEs have closed their doors during the pandemic.

The pandemic has left a profound impact globally, causing a series of devastating consequences across various economic and social sectors. Among the hardest-hit, the gastronomic industry has faced considerable challenges. For example, many small restaurants and eateries have struggled to survive due to lockdowns and reduced consumer spending, whereas larger chains have had more resilience due to diversified revenue streams and stronger financial backing (Fairlie, 2020; OECD, 2020). In the gastronomy sector, these effects have been particularly acute, with numerous establishments closing temporarily or permanently due to mobility restrictions and changes in consumer behavior (Food and Agriculture Organization, 2020). The combination of these factors has tested the resilience and adaptive capacity of businesses in the sector, highlighting the need for effective crisis management strategies and diverse business strategies to mitigate the effects of the pandemic.

The gastronomic sector, crucial in Peru's culture, economy, and employment, has suffered significant setbacks. Peru's internationally acclaimed cuisine, known for its diversity and excellence, has driven growth and is a major tourist attraction. However, lockdowns, movement restrictions, and fears of contagion have dramatically altered the sector's dynamics. The enforcement of quarantines, social distancing mandates, and border closures have severely affected numerous economic activities, with tourism, gastronomy, and related sectors bearing the brunt due to their reliance on physical mobility (Wiantara et al., 2022).

Predictions regarding the pandemic's impact on the tourism industry highlight unprecedented global economic consequences (Sigala, 2020). According to estimates from the International Labor Organization (ILO), the international tourism movement

decreased by 20 to 30%, resulting in a staggering loss of USD 300 to USD 400 billion in tourism export revenues and the direct shedding of 100 to 120 million jobs within the sector. These repercussions stand as the most significant decline in history, surpassing even the aftermath of September 11 (ILO, 2020).

In Peru, the domain of tourism services encompasses four subsectors: tourism, domestic tourism, cultural heritage, hospitality, and gastronomy. The gastronomic sector has flourished over the past fifteen years as one of the country's fastest-growing industries. This sector contributes, on average, 6.20% to the GDP (Instituto Nacional de Estadística e Informática [INEI], 2022a), encompassing the food and beverage industries (3.2%) along with accommodation and restaurants (3%).

In recent years, the country's gastronomic sector has emerged as a vibrant and promising force in Latin America. The official Peru Travel portal (2015) affirms that their cuisine ranks among the world's most esteemed. This was confirmed in 2023 when Peru was again recognized as the "World's Leading Culinary Destination" at the World Travel Awards, cementing its status as a global gastronomic hub. This accolade builds on Peru's consistent recognition in this category since 2012, excluding 2020 due to the pandemic. Moreover, the Peruvian capital of Lima was named the "Best Gastronomic City in Latin America" in 2023 by the World Culinary Awards. This recognition highlights the city's vibrant and innovative culinary scene, which features diverse restaurants, from traditional *cevicherías* to cutting-edge fine dining establishments. Its culinary fusion is a testament to centuries of cultural exchange, incorporating influences from Spanish, African, Chinese, Japanese, and Italian culinary traditions. Recognizing its significance, the Peruvian government elevated the country's gastronomy to the status of National Heritage in 2007.

Peru's tourism and gastronomy sectors have shown significant resilience and adaptation in the face of the COVID-19 pandemic. As of 2023, the tourism sector has begun to recover, with international arrivals increasing by 40% compared to 2021 (Ministerio de Comercio Exterior y Turismo, 2023).

The gastronomy sector, a crucial part of Peru's cultural identity and tourism appeal, has also seen a revival. In 2023, the gastronomy sector contributed approximately 3.5% to the national GDP, up from 2.8% in 2020 (INEI, 2023). The combined tourism and gastronomy sectors account for around 9% of Peru's GDP, highlighting their importance in the country's economic landscape (World Travel & Tourism Council, 2022). Additionally, this sector triggers multiplier effects than other sectors, interconnecting with agriculture, livestock, industry, education and training, transportation, and communication (ComexPerú, 2022). Moreover, this industry fosters economic ties and social bonds, nurturing a culture of identity and respect for tradition.

The strong performance of Peru's tourism and gastronomy sectors has significantly impacted the country's overall economy. In 2022, the foodservice industry in Peru accounted for an estimated 15-20% of total foreign tourist revenue (United States Department of Agriculture [USDA], 2023). Also, the agriculture sector, which includes food production, contributed around 5% of Peru's GDP while employing nearly 28% of the population (USDA, 2023). These industries' continued growth and development are expected to play a crucial role in Peru's economic recovery and long-term prosperity. During the first half of 2023 compared with 2022, the hotel and restaurant sector grew by 5.3% but was still lower than in 2019.

However, the dynamics of restaurants, food stalls, and other gastronomic establishments underwent a dramatic transformation with the onset of COVID-19. Lockdowns and social distancing measures, imposed to curb the virus's spread, forced many restaurants to temporarily close or adapt to delivery and takeout models. Furthermore, the decrease in tourism and capacity restrictions within venues significantly impacted the revenues of gastronomic businesses, posing a threat to their survival. It is estimated that in 2020, there was a 50% drop in sales due to the pandemic, amounting to USD 4.43 billion, with a partial recovery of nearly 30% in 2021 (Monge, 2021). SMEs play a pivotal role in these sectors, employing a significant portion of

the workforce and driving innovation and cultural preservation (Asociación Peruana de Gastronomía [APEGA], 2023). As the country continues to navigate post-pandemic recovery, updated data underscores the critical contributions of these sectors to Peru's economy.

A notable obstacle that affected the gastronomic sector was the health measures and mandatory lockdowns approved by the government, twice in 2020 and again in February 2021. In Peru's case, it marked one of the world's lengthiest lockdowns, limiting freedom of assembly and movement across Peruvian territory while restricting economic activities, thus adversely affecting restaurant and eatery consumption. To prevent massive virus transmission, the government enacted border closures, interprovincial movement restrictions, daily curfews, and a mandatory period of national isolation, a measure extended several times that became one of the world's longest (Pajuelo, 2021).

The impact of the COVID-19 pandemic was intricate, involving not just a loss of life but also presenting a dire scenario for businesses, especially for economies characterized by a predominantly smaller business universe, as seen with micro and small businesses in Latin America and Peru (Flores-Goycochea, 2022). The effects of this health emergency translated not only into Peru experiencing the highest number of daily deaths per million inhabitants but also marked an unprecedented impact on businesses. Informal employment in Peru remained high, constituting 70% of the economically active population before the pandemic, surging to 76.80% by the end of 2021 (Instituto Peruano de Economía, 2021).

Before the COVID-19 pandemic, Peru boasted 200,000 restaurants that employed nearly one million individuals. However, a year into the pandemic crisis, approximately 40% of food establishments were shuttered, leading to half a million direct job losses, resulting in a 50% reduction in the workforce.

To mitigate the effects of the COVID-19 pandemic, the government implemented various programs to bolster gastronomy's re-

covery. One notable initiative is the National Government Guarantees Program "Reactiva Perú," which accounted for 8% of the GDP. Its objective was to ensure the continuity of payment chains by providing guarantees to micro, small, medium, and large companies to access working capital loans, facilitating the fulfillment of short-term financial commitments. Additionally, the government allowed for the deferment of tax payments and instituted other measures for economic and financial sustainability. However, it is presumed that these measures fell short.

Given this contextual backdrop and recognizing the significance of the Peruvian gastronomic sector, delving into the pandemic's impact on Peru's gastronomy becomes essential. This exploration should encompass aspects such as the adaptation strategies undertaken by restaurants and the sector's resilience in the face of these challenges to mitigate the far-reaching consequences of the global COVID-19 pandemic. The use of a mixed-method approach, incorporating both surveys and interviews, is essential for this study to comprehensively capture the multifaceted impact of the COVID-19 pandemic on the gastronomy sector in Peru. The quantitative analysis, derived from survey data, enables the systematic collection of structured information on the operational and financial impacts experienced by restaurants. We seamlessly integrate qualitative insights from entrepreneurs, enabling us to elaborate on specific effects and adaptation strategies mentioned in their survey responses. The combination of these approaches will allow: a) obtain a generalizable diagnosis of the crisis management strategies implemented by gastronomic entrepreneurs, and b) deepen the understanding of the processes, motivations, and factors that have influenced the development of dynamic capabilities to cope with the crisis.

We anchor the theory of dynamic capability (Teece et al., 1997) to provide a robust conceptual foundation for this study. This framework is particularly relevant for the quantitative analysis to diagnose the pandemic's impact on the gastronomy sector in Peru. To this end, we posed a first research question: How did the pandemic affect the Peruvian gastronomic sector? On the other

hand, the theory of dynamic capability emphasizes the ability of organizations to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments. This theory is instrumental for the qualitative analysis of Peruvian restaurants' adaptive strategies and resilience. It allows us to explore how these businesses have leveraged their resources and capabilities to innovate, transform, and sustain themselves amidst the pandemic-induced disruptions. In summary, what strategies were implemented to mitigate the effects of the pandemic? This framework provides a comprehensive theoretical basis for examining the adaptation and resilience of the gastronomy sector in Peru during the COVID-19 pandemic. Specifically, based on the results obtained, the DC theory capabilities suggests that Lima's gastronomic entrepreneurs were able to identify and seize emerging opportunities, such as the growing demand for home delivery services and online sales, and reconfigure their internal resources and processes, transforming their physical spaces and developing new product lines.

This study contributes valuable insights into the management of gastronomic enterprises during a crisis context and paves the way for fresh perspectives in future research. The analysis provides evidence from a developing country based on a combination of questionnaires and interviews. Thus it provides new insights for the current literature on crisis management and adaptation of entrepreneurial capabilities. Another contribution of integrating both quantitative and qualitative methods is that this study offers a holistic and robust analysis of the multifaceted effects of the COVID-19 crisis on the Peruvian gastronomic industry. Furthermore, the findings can play a pivotal role in shaping policies and programs designed to aid recovery and fortify strategies within the sector.

The COVID-19 pandemic has deeply impacted Peru's gastronomy, a cornerstone of its cultural identity and economic fabric. Research in this domain unveils the present-day ramifications and lays the groundwork for revitalizing and rejuvenating the gastronomic industry in the post-pandemic era.

The article is structured into four parts: next, we present the literature review on the subject, proceed with the study's methodology, follow the presentation of findings, and culminate in discussions, conclusions, implications, limitations, and a delineation of future research directions.

Theoretical Framework and Literature Review

The Theory of Dynamic Capabilities

Developed by Teece et al. (1997), the theory of dynamic capabilities focuses on an organization's ability to integrate, build, and reconfigure internal and external competencies in response to rapid changes in the environment and to maintain its competitive advantage. Eisenhardt and Martin (2000) define DC as the organizational and strategic routines through which firms acquire new combinations of resources based on how markets emerge, evolve, and perish.

As an enhancement of the resource-based view (Barney, 2001), DC emerged as an approach to understanding strategic changes (Teece et al., 1997), aiming to provide a framework for how firms develop and sustain competitive advantages in turbulent environments (Alves & Galina, 2021). In practice, this theory manifests through the adaptation of the organization's resources. The ability to react correctly, adequately, and timely to environmental changes requires a combination of multiple organizational capabilities. Hence, this perspective argues that organizations need multiple capabilities to survive in times of crisis (Chudziński et al., 2023).

Dynamic capabilities allow for prospecting new opportunities in business environments and transforming organizational resources into assets, as well as tangible and intangible capabilities (Lucianetti et al., 2018). The dynamic resources of organizations reflect their abilities to create, expand, and modify their existing resource base. Thus, these resources facilitate change and renewal, fostering innovation that achieves better adaptation to the environment (Dabić et al., 2013).

The economic and social constraints applied to contain global crises inevitably caused significant business disruptions, especially in MSMEs. In such a complex environment, developing dynamic capabilities becomes crucial (Fainshmidt et al., 2017). Therefore, deploying DC increases the organization's chances of success in the current context (Bailey & Breslin, 2021). This theory is particularly relevant for analyzing the gastronomy sector in Peru, given the significant and disruptive impact that the COVID-19 pandemic has had on this industry.

The DC theory has been widely used in strategy and business management research, but its application in the gastronomy sector remains limited. Nevertheless, some studies have explored the potential of this approach to understand the adaptation and survival of gastronomic businesses in changing competitive environments. Sánchez-Gutiérrez et al. (2018) found that dynamic capabilities in learning, integration, and reconfiguration were key determinants of innovative performance in restaurants in Mexico. Ottenbacher and Harrington (2013) studied how dynamic capabilities in marketing, operations, and talent management influence the success of new restaurants in Germany. These studies suggest that developing key dynamic capabilities, such as innovation, marketing, and resource management, may be crucial for gastronomic enterprises to adapt and thrive in turbulent and competitive environments.

The COVID-19 Pandemic Crisis in the Gastronomic Sector

Globally, empirical evidence demonstrates that extended lockdown periods, monetary policy decisions, and international travel restrictions during the COVID-19 pandemic severely affected economic activities and caused fluctuations in opening, closing, and minimum and maximum prices of major stock market indices. The rising COVID-19 cases and deaths also significantly increased global inflation, unemployment, and energy prices (Ozili & Arun, 2020). The pandemic's impact was felt across all economies and industry sectors, with tourism (encom-

passing the hotel and restaurant industry, culture, entertainment, cinema, education, and health) being among the hardest hit (Albulescu, 2020).

The COVID-19 pandemic brought about a growing trend of avoiding in-person dining at food establishments (Kim et al., 2020). Therefore, it is reasonable to assume that restaurants offering in-person dining services experienced a significant decrease in their revenues, which, at the worst moments, were only 10-15% of their pre-pandemic levels. Estimates have been made to explain why small restaurants quickly collapsed due to the COVID-19 pandemic, including: a) new costs arising from health authority requirements to control the effects of the COVID-19 outbreak (such as providing safety equipment and implementing social distancing); b) a reduction in customer traffic due to health restrictions implemented for social distancing; and c) closures and government regulations limiting business hours (Dube et al., 2020; Kim et al., 2020).

Peru was not an exception; the health crisis affected its development, leading to increased poverty levels, extreme poverty, and social inequality (Huamán, 2021). In terms of sectors, the Peruvian gastronomic sector was also one of the hardest hit by the health crisis (Gaud et al., 2022). According to the Peruvian Gastronomy Association (APEGA, 2021), the sector contributed up to 10% of Peru's GDP in 2016. This includes not only restaurants but the entire ecosystem: small-scale agriculture and artisanal fishing. Gastronomic tourism affects over 6 million individuals in the country (INEI, 2022a; INEI, 2022b). Data shows that more than 80,000 restaurants officially closed in Peru due to the pandemic, a quarter of them in Lima. This represents around 40% of the country's establishments (ComexPerú, 2022). Similar situations have occurred in other regions and countries.

According to Plzáková & Smeral (2022), after several weeks of bars and restaurants being closed or operating with limited activities in Europe, a difficult recovery is anticipated due to reduced consumption and the lack of tourists. In Mexico, 95% of

restaurants closed during the mandatory quarantine. According to Mendoza (2020), many of these small and medium-sized enterprises will not have the conditions to resume activities after this period, as their sales dropped by 126% in May 2020. Amid the pandemic, restaurants worldwide had to make drastic adaptations, focusing on offering takeout and delivery services, while traditionally, the venue, ambiance, and service were part of the experience that customers were willing to pay for (Martínez, 2020). In other countries like Paraguay, managers of micro, small, and medium-sized enterprises in the trade, construction, industry, and hotel and restaurant services sectors highlighted that their sales had suffered significant declines between February and April 2021 (Sánchez-Báez et al., 2022). In the case of Bali, Indonesia, over 1,000 restaurants and hotel businesses closed due to the pandemic (Wiantara et al., 2022), while those that remained open began implementing different strategies to increase sales. The most common strategy was implementing delivery systems within a certain range. Others offered special discounts for specific menu items and allowed only pick-up orders, not allowing on-site dining to avoid the risk of contagion. Additionally, they devised measures to reduce costs, anticipating the routine costs incurred by restaurants, among other strategies. Concern for employees was also evident, with some managers enrolling them in pre-employment programs launched by the government to alleviate unemployment in that sector.

In Colombia, the study by Zapata-Cuervo et al. (2021) yielded results similar to those of the Indonesian case. The majority of restaurants in their sample that reopened after the lockdown transformed their services into delivery and implemented heightened sanitary measures. They adhered to protocols mandated by their government and aligned with World Health Organization recommendations to prevent contagion. Additionally, in order to retain their employees, they repositioned them to be part of the delivery service. This strategy aimed to maintain a close and per-

sonalized customer relationship while reducing delivery costs associated with third-party delivery companies like Rappy and Uber Eats. Innovative marketing strategies were adopted for those unable to transition to the delivery system due to the complexity of their menus. These included virtual cooking classes, pre-cooked menu offerings, and expanding their premises to include terraces and gardens and negotiating with suppliers.

Similarly, the study by Lai et al. (2020) focusing on micro, small, and medium-sized restaurants in Malaysia illustrated the adaptations made by managers or owners during the pandemic. These adaptations revolved around fostering creativity, upholding reputation, and sustaining profitability. For instance, many restaurants creatively modified the concept of takeout and delivery. One noteworthy approach was providing customers with ingredients to prepare a burger at home, aligning with the "home cooking" concept, among other innovative strategies.

On the other hand, the study conducted by Tse et al. (2006) regarding how restaurants in Hong Kong responded to the 2003 SARS crisis showed that restaurant managers and owners efficiently addressed the crisis through a combination of cost reduction and increased sales strategies. This was supplemented by a range of additional measures, such as assigning an employee to offer wipes and hand sanitizer to customers, frequent disinfection of dining tables, and sterilization of food utensils and conveyor belts using ultraviolet rays or hot water. Cost reduction was achieved through workforce reduction or temporarily closing certain parts of the business (Tew et al., 2008). However, the study showed that the SARS crisis exposed the lack of crisis management plans among most Hong Kong restaurants.

Implemented Measures Following COVID-19 in Peru

With the outbreak of the COVID-19 pandemic, the demand for restaurant services plummeted by around 50% (Salas, 2020).

On March 15, 2020, the Peruvian government imposed a prohibition on dine-in services at restaurants, except for home delivery orders. Four key measures were implemented within this industry: (a) the declaration of a State of Emergency, (b) initiation of the first quarantine period (90 days), (c) reduction of seating capacity to an average of 30% after the conclusion of the first quarantine, and (d) financial support measures. These measures were intended to avoid disruptions in the restaurant's short- and medium-term payment chain and related sectors (Salas, 2020).

In 2020, the first quarantine in Peru started from March 15 to June 30, including curfews in 18 out of 25 regions. Subsequently, from July 1 to October 30, a partial quarantine was enforced across 18 regions, including Lima. Notably, Lima presented the highest number of infections. Following October 2020, the quarantine measures were lifted. However, in 2021, due to a surge in infections, health restrictions were reintroduced from January 31 to February 15, followed by successive lockdowns aimed at sustaining the decline in infections and preventing further economic contraction.

To counteract the economic contraction caused by COVID-19, the government implemented the "Fondo al Apoyo Empresarial" (FAE – MYPE) program through Urgent Decree No. 029-2020. This initiative aimed to allocate state resources to ensure working capital financing for Mypes, with funding ranging from USD 1 to USD 1,824,000, addressing economic challenges. In this context, the "FAE-Turismo" program was implemented with a budget of 500 million soles (equivalent in USD), created by Urgent Decree No. 076-2020. The program aimed to provide working capital credit to Mypes within the tourism sector, including restaurants (Flores-Goycochea, 2022). The goal was to extend these resources to 20,000 companies operating within the gastronomic sector. However, disbursements were limited despite allowing for credits equivalent to four months of sales or three months of average debt.

Materials and Methods

This study aims to analyze the impact of the COVID-19 pandemic and the strategies employed by entrepreneurs in the gastronomic sector in Lima, Peru, utilizing a mixed-methods approach. The use of this research approach, combining quantitative and qualitative methods, is justified by the multidimensional nature of the phenomenon studied and the need to address different theoretical perspectives in a complementary manner (Hernández-Sampieri & Mendoza, 2018).

On the one hand, the quantitative approach will allow a generalizable diagnosis of the effects identified by Peruvian gastronomic entrepreneurs during the COVID-19 pandemic. The numerical and statistical data obtained through this approach will provide an overview of the magnitude, frequency, and trends of entrepreneurial responses to the crisis. Conversely, the qualitative approach is justified to deepen the understanding of the phenomenon from the dynamic capabilities theory. Through this approach, it is possible to obtain more detailed and contextualized information on how entrepreneurs have developed and deployed fundamental capabilities, such as marketing and innovation, to adapt and respond effectively to the challenges imposed by the pandemic. In summary, the mixed approach is justified by the complementarity of the quantitative and qualitative approaches to address the different theoretical aspects of the study, providing both an overview and a deeper understanding of the business strategies adopted by Peruvian gastronomic entrepreneurs during the COVID-19 pandemic.

Data Source

The dataset used in this study comprises 111 complete records collected through a specifically tailored questionnaire administered between September 21 and October 13, 2022. The participants included restaurant owners and managers located in Lima, Peru. Additionally, six semi-structured interviews were conduct-

ed with entrepreneurs who had completed the questionnaire, enriching the data with supplementary insights into the existing situation of restaurants in Lima and the challenges they confront.

Questionnaire Description

The questionnaire used in this study comprised 18 questions. The general restaurant information (restaurant name, year founded, type of cuisine offered) and respondent profiles (gender, age, education level, position, ownership of another restaurant) were filled out by the entrepreneurs. The restaurant's pre-pandemic and pandemic status (employment, sales, and revenues) and magnitude (percentage of change) were single-choice questions. The pandemic's effects on restaurants were a multiple-choice question. The proposed alternatives were obtained from the literature related to the effects of COVID-19 worldwide in the context of the global crisis (Alonso et al., 2020; Bartik et al., 2020; Gashi et al., 2021; Lu et al., 2020b; Shafi et al., 2020). For example, we considered decrease in sales, lack of customer traffic, liquidity problems, and difficulty hiring personnel. Respondents were also allowed to provide additional comments and participate in virtual interviews.

Notably, including an open-ended question in the survey enables entrepreneurs to provide additional qualitative insights and contextual information regarding the impact of the pandemic and their responses. These free-form comments complement the structured survey data and provide a richer, more nuanced understanding of the challenges and resilience factors within the sector. By adding an open-ended question for free comments, we seamlessly integrate qualitative insights from entrepreneurs, allowing us to elaborate on specific effects and strategies for adaptation noted in their responses. This linkage ensures a richer, more nuanced analysis that combines statistical trends with personal experiences and perspectives.

The interviews were conducted using three basic questions, which are indicated below. However, being a semi-structured interview, there were instances to complement these questions and better understand the aspects the sector's business people

pointed out. The questions aim to encourage entrepreneurs to elaborate on their use of business capabilities and resources to confront the effects of the pandemic. Specifically, as indicated by the theory of dynamic capabilities, the goal is to explore how entrepreneurs in the sector developed the ability to adapt, integrate, and reconfigure their internal (e.g., business model) and external (e.g., government support) resources and competencies to address changing environments and maintain their presence in this vulnerable sector. The essential questions were: (a) What measures have you implemented in your company to face the crisis derived from the pandemic by COVID-19?, (b) Have you had to adapt your business model due to the pandemic? Why yes? Why not?, (c) Have you applied for or participated in any assistance or benefits provided by the government? Why yes? Why not?, and (d) How do you see the expectations for the sector in the next six months?

Notably, the questionnaire received ethical approval from the university's Ethics Committee overseeing the study (Report No. 008b/2021; Protocol No. 008/2021, dated July 22, 2021).

Sample Description

The weighted average age of the participants stands at approximately 36 years old, calculated from the midpoints and the number of individuals in each age group. The survey sample exhibits a gender distribution of 49% women and 51% men. Regarding age distribution, 43% of the participants were under 30 years old; 25% were between 31 and 40 years old; 17% were between 41 and 50 years old; 7% were between 51 and 60 years old; 6% were between 61 and 70 years old; and a small percentage (less than 1%) were 71 years or older. Concerning educational attainment, 39% had completed secondary education, 32% had completed university studies, and 29% had completed technical studies. Additionally, 22% of participants had prior experience in managing other restaurants.

Before the pandemic, the derived weighted average of dollar sales among surveyed restaurants prior to the pandemic approx-

imates USD 984,397. The culinary offerings of these restaurants encompass diverse cuisines, ranging from traditional "Comida criolla" to exotic "Comida de la selva." The distribution of restaurants based on their culinary focus is presented in Table 1. Under the "Mariscos" category, all restaurants specializing in seafood dishes are included.

Table 1

Distribution of Restaurants According to the Type of Cuisine They Offer

Type of cuisine	Distribution
Creole Cuisine	39 (35%)
Meats	20 (18%)
Seafood	16 (14%)
Asian Cuisine	9 (8.1%)
Bakery and Café	9 (8.1%)
Fast Food	7 (6.3%)
Others	6 (5.4%)
Italian Cuisine	5 (4.5%)
General Total	111

Note. Others: Gourmet Food (1), Vegetarian Food (2), Jungle Cuisine (1), and Restaurant/Hostel (2).

Techniques and Software Used

In the quantitative part of the study, the programming language R (R Core Team, 2023) was used to calculate descriptive statistics and apply the Kendall-Tau association test (Kendall, 1938). This statistical coefficient measures the strength and direction of the association between variables; however, it does not imply causality. The choice of the Kendall-Tau test is justified by the categorical and nominal nature of the variables, coupled with their non-normal distribution, as indicated by the Shapiro-Wilk normality test. With a significance level of 0.05, all p-values calculated for the Shapiro-Wilk statistic are below the cut-off value. Therefore, the null hypothesis that the data conforms to a normal distribution is rejected.

In the qualitative part, content analysis was employed to examine the data derived from the questionnaire (72 free-comment questions) and semi-structured interviews. This analytical methodology focuses on identifying recurring patterns and themes within participants' discourse, thereby providing a more profound and intricate comprehension of the responses in the questionnaire and during the semi-structured interviews.

A cross-validation of results was carried out through the triangulation of the quantitative and qualitative findings. According to Hernández-Sampieri and Mendoza (2018), this allows greater validity and reliability of the results by contrasting and complementing the perspectives obtained through different sources and data collection techniques.

Results and Discussion

The total number of responses reached 315, exceeding the 111 participating restaurants in the study. This occurrence arises due to some restaurants encountering multiple issues. The problems are presented in order of frequency, with a decrease in sales emerging as the most common problem, reported by 71.17% of the surveyed restaurants. The primary issues identified by the respondents are detailed in Table 2.

Table 2

Hierarchy of Effects on Enterprises in the Lima Gastronomic Sector

Effects	Number of restaurants (%)
Decrease in sales	79 (71.17%)
Lack of customer traffic	61 (54.95%)
Liquidity issue	50 (45.04%)
Difficulty in hiring personnel	36 (32.43%)
Compliance with sanitary regulations	31 (27.92%)
Need to modify the business model	29 (26.12%)
Supply chain difficulties	28 (25.22%)
Coordination issues	1 (0.009%)

Effects on Sales and Employment

Among the primary consequences arising from the COVID-19 pandemic on gastronomic establishments in Lima, a significant decrease in sales emerges as a prominent feature. It is worth noting that many food establishments, regardless of their size, have experienced a decline in their sales. Table 3 provides information regarding the decline in sales across different types of gastronomic establishments, categorized based on their culinary offerings. Among the 111 surveyed establishments, the majority experienced a decrease in sales.

Notably, establishments offering Creole cuisine were the most affected, with 72% (28 out of 39) reporting a reduction in sales. Similarly, establishments serving meat and seafood experienced substantial effects, with 70% (14 out of 20) and 69% (11 out of 16), respectively, reporting decreased sales. Other establishments, such as those offering Italian, Oriental, fast food, pastry, and café options, also experienced reduced sales, although to a lesser extent. Based on the findings, the main effect of the pandemic mentioned by 71% of the study participants was the decrease in sales impacting various establishment categories, attributed to reduced customer traffic (55% of establishments). This reduction resulted from various periods of government-imposed quarantine measures. These findings align with studies conducted by Dube et al. (2020), Kim et al. (2020), and Mendoza (2020). A third issue stemming from the sales decline was the liquidity issue, which almost half of the food establishments (45%) mentioned. The following table, Table 3, presents numerical and percentage data indicating the businesses that witnessed decreased sales due to the COVID-19 pandemic.

Table 3

Decrease in Sales Based on Gastronomic Offer

	NO	YES	Total
Creole Cuisine	11 (28%)	28 (72%)	39
Meats	6 (30%)	14 (70%)	20
Seafood	5 (31%)	11 (69%)	16
Bakery and Coffee Shop	5 (56%)	4 (44%)	9
Oriental Cuisine	2 (22%)	7 (78%)	9
Fast Food	0 (0%)	7 (100%)	7
Others	2 (33%)	4 (67%)	6
Italian Cuisine	1 (20%)	4 (80%)	5
Total	32 (29%)	79 (71%)	111

It can be determined that establishments in the seafood and traditional cuisine sectors, especially micro or small establishments, might have faced more significant challenges. Larger businesses generally have more resources to cope with crises due to better access to credit and collateral.

Additionally, the pandemic significantly impacted employment generation. At the commencement of the pandemic, the total number of employees across all studied restaurants stood at 999. However, this number decreased by nearly 40% during the pandemic to 604 employees. A consistent result of any crisis and declining sales in any sector is the reduction in hiring new workers (Lu et al., 2020a). If establishment revenues continue to decline, hiring is expected to decrease. Notably, the study's labor variable indicated a 40% decline in the workforce, representing a significant reduction. It is important to acknowledge that behind each worker is a family, and approximately 400 individuals lost their jobs. Some workers also opted not to work due to the risk of infection, particularly at the pandemic's outset when the disease was poorly understood and lacked effective treatment.

Prominent Issues

In addition to the impact on sales and employment, the COVID-19 pandemic catalyzed four primary issues faced by owners of

Lima's gastronomic establishments: (a) lack of customer flow, (b) liquidity problem, (c) personnel hiring challenges, and (d) compliance with sanitary regulations. The frequencies of these issues, categorized by establishment type, are shown in Table 4.

The first issue expressed was the lack of customer influx. This fact was reported 61 times, representing 55% of the 111 analyzed cases. Table 4 shows that the problem of lack of customer influx is common across most culinary offerings, with Creole Cuisine presenting the highest number of cases (23 restaurants). Remarkably, all the participating bakeries and coffee shops conveyed no challenges pertaining to customer influx (8% of the sample).

Regarding liquidity problems, out of the 111 businesses included in the table, 50 experienced liquidity issues, accounting for 45% of the businesses. These findings suggest that liquidity was a common problem in the gastronomic sector. Restaurants offering Creole Cuisine (20 cases, 51% of their sector) and Seafood (13 cases, 81%) were the most affected by liquidity problems.

Regarding hiring difficulties, it can be observed that the culinary offering with the highest number of businesses experiencing hiring difficulties is Creole Cuisine, with ten businesses facing challenges. Out of the 111 businesses listed in Table 4, 36 encountered challenges in hiring personnel, accounting for 32% of the total businesses. These results suggest that personnel recruitment was also a common challenge in the gastronomic sector.

Lastly, Table 4 shows that difficulty complying with sanitary regulations is less common than the lack of customer influx issue, but it remains relevant in some gastronomic establishments. Only 28% of the analyzed gastronomic establishments have faced difficulties complying with sanitary regulations. In this case, Creole Cuisine restaurants also top the list with the most cases (11 cases), followed by establishments dedicated to bakery and coffee shop services (7 cases). Evidently, a majority of various culinary offerings in the city of Lima did not encounter significant challenges in adhering to sanitary regulations.

The results indicate that the necessity to modify the business model is less common compared to the issue of inadequate

Table 4

Frequency of problems by culinary offering

Culinary 0ffering	Lack of customer flow		Liquidity issue		Difficulty in hiring personnel		Compliance with sanitary regulations		Total
	NO	YES	NO	YES	NO	YES	NO	YES	
Creole Cuisine	16 (41%)	23 (59%)	19 (49%)	20 (51%)	29 (74%)	10 (26%)	28 (72%)	11 (28%)	39
Meat	8 (40%)	12 (60%)	14 (70%)	6 (30%)	16 (80%)	4 (20%)	17 (85%)	3 (15%)	20
Seafood	4 (25%)	12 (75%)	3 (19%)	13 (81%)	11 (69%)	5 (31%)	13 (81%)	3 (19%)	16
Oriental Cuisine	4 (44%)	5 (56%)	7 (78%)	2 (22%)	7 (78%)	2 (22%)	7 (78%)	2 (22%)	9
Pastry & Coffee Shop	9 (100%)	0 (0%)	6 (67%)	3 (33%)	2 (22%)	7 (78%)	2 (22%)	7 (78%)	9
Fast Food	4 (57%)	3 (43%)	5 (71%)	2 (29%)	6 (86%)	1 (14%)	4 (57%)	3 (43%)	7
Others	2 (36%)	4 (64%)	3 (50%)	3 (50%)	1 (17%)	5 (83%)	4 (67%)	2 (33%)	6
Italian Cuisine	3 (60%)	2 (40%)	4 (80%)	1 (20%)	3 (60%)	2 (40%)	5 (100%)	0 (0%)	5
Total	50 (45%)	61 (55%)	61 (55%)	50 (45%)	75 (68%)	36 (32%)	80 (72%)	31 (28%)	111

customer flow, though it remains relevant in some gastronomic establishments. As shown in Table 5, it can be observed that 74% of the analyzed gastronomic establishments (82 out of the sample) did not experience the need to modify their business model. Conversely, the cuisine category "Comida Criolla" demonstrated the highest occurrence of this requirement, with 12 cases (30%). Moreover, 37.5% of the seafood-focused establishments, called "Mariscos" (6 out of 16), experienced this necessity. The qualitative analysis delves into the strategies followed by entrepreneurs within the gastronomic sector due to the adaptations necessitated by their usual operations.

Table 5

Frequency of Need to Modify Business Model by Cuisine Offering

	NO	YES	Total
Creole Cuisine	27 (69%)	12 (31%)	39
Meats	18 (90%)	2 (10%)	20
Seafood	10 (63%)	6 (38%)	16
Oriental Cuisine	7 (78%)	2 (22%)	9
Pastry and Coffee Shop	7 (78%)	2 (22%)	9
Fast Food	6 (86%)	1 (14%)	7
Others	3 (50%)	3 (50%)	6
Italian Cuisine	4 (80%)	1 (20%)	5
Total	82 (76%)	29 (24%)	111

Correlations between Variables

Table 6 shows the associations between eight variables, representing the challenges Peruvian gastronomic companies faced during the COVID-19 pandemic (detailed in Table 2). These associations are calculated using the Kendall-Tau methodology, a non-parametric correlation measure.

The Kendall-Tau correlation varies between -1 and 1 in continuous values. A value close to 1 indicates a strong positive correla-

tion, which means that if one variable increases, the other tends to do the same. A value near -1 indicates a strong negative correlation (i.e., if one variable increases, the other tends to decrease). A value near 0 suggests that there is not much correlation between the two variables.

The identified correlation results align with those found in other studies, such as Lai et al. (2020), where owners or managers took creative actions to address the crisis. For instance, the negative correlation between lack of inputs and modification of business models suggests that the scarcity of raw materials for food establishments may encourage owners to innovate in terms of the dishes offered, focusing on those with available ingredients. This may lead to a greater adaptation of business models in the face of input shortages.

The positive correlation between hiring staff and compliance with government-mandated health measures is unexpected, as many restaurants reassigned tasks to existing staff rather than hiring new employees to meet these requirements. However, this result is consistent with a study conducted by Tse et al. (2006) on how Hong Kong restaurants responded to the 2003 SARS crisis. Unlike the COVID-19 pandemic, the SARS crisis did not involve lockdowns but did intensify health measures, requiring many restaurants to hire staff to ensure compliance. For example, additional personnel were needed to manage entry control, temperature checks, and sanitization.

Table 6

Kendall's Tau Correlations Between the Identified Problems

Variable	Lack of customer traffic	Liquidity problems	Decrease in sales	Need to modify the business model	Difficulty in hiring personnel	Compliance with sanitary regulations	Supply chain difficulties	Coordination issues
1. Lack of customer traffic	—							
	—							
2. Liquidity problem	0.201 *	—						
	(0.035)	—						
3. Decrease in sales	0.303 **	-0.023	—					
	(0.001)	(0.806)	—					
4. Need to modify the business model	0.250 **	0.245 *	0.016	—				
	(0.009)	(0.010)	(0.864)	—				
5. Difficulty in hiring personnel	0.008	-0.008	-0.281 **	0.201 *	—			
	(0.930)	(0.930)	(0.003)	(0.035)	—			
6. Compliance with sanitary regulations	-0.082	-0.039	-0.224 *	-0.005	0.341 ***	—		
	(0.389)	(0.683)	(0.019)	(0.962)	(< .001)	—		
7. Supply chain difficulties	-0.183	0.100	-0.042	-0.204 *	-0.137	-0.130	—	
	(0.055)	(0.297)	(0.656)	(0.033)	(0.152)	(0.171)	—	
8. Coordination issues	-0.105	-0.086	0.061	-0.057	-0.066	-0.059	0.164	—
	(0.269)	(0.365)	(0.524)	(0.552)	(0.488)	(0.534)	(0.085)	—

Note. In parentheses p-value
* p < .05, ** p < .01, *** p < .001

Qualitative Analysis

Below is the analysis of the comments made by 54 entrepreneurs in the open-ended questionnaire and the six semi-structured interviews conducted with participating entrepreneurs in the study.

The qualitative analysis considered 42 primary codes, subsequently grouped into five categories, as shown in Table 7. The highest number of primary codes is observed in the categories of strategies followed by entrepreneurs and pandemic effects, with a total of 17 and 12 codes, respectively. Among the strategies, a change in the business model towards delivery stands out, as well as negotiations regarding lease agreements for rented locations and the activation of social media. In the case of effects, there is an agreement with the aspects analyzed in the quantitative section, such as reduced sales, decreased workforce, customer issues, logistical problems, and more. Table 7 presents the definitions of code groups or categories used to analyze the survey data, which refers to the themes or concepts that emerged from the content analysis of respondents' answers.

Table 7

Definitions of Categories

Categories	Definition
Public Sector Support (4)	Set of government-initiated initiatives to support the operation of businesses in the context of the COVID-19 pandemic.
Pandemic Effects (12)	Diversity of areas linked to the management of gastronomic businesses where considerable modifications were observed due to the COVID-19 pandemic.
Expectations (6)	Set of aspects describing the future based on the context of the COVID-19 pandemic. There is a greater focus on negative aspects than positive ones.
Sanitary Safety Regulatory (3)	Range of areas related to the various mechanisms established by the government to prevent COVID-19 virus transmission and enable a return to normalcy in the business environment.
Strategies (17)	Series of diverse actions implemented to overcome the effects caused by the COVID-19 pandemic crisis.

Note. In parentheses, the number of first-order codes is mentioned.

Triangulation of the Pandemic Effects

To link the quantitative results with the qualitative results, a triangulation of the effects caused by the pandemic was carried out. The multiple-choice question about the effects of the pandemic was compared with the coding of the open question of the survey, referring to providing free comments about the pandemic, as seen in Table 8. It can be seen that the eight effects included in the survey were explicitly pointed out in the complementary comments. Therefore, it can be considered that these effects have been transversal at a global level. Two statements (lack of traffic of clients and difficulty in hiring personnel) were not mentioned in the same way, but when coded, they were related to those themes. Therefore, they were included as similarities.

Besides the similarities, we also have some disagreements. First of all, there was a discrepancy in relation to the increase in operating costs. This did not appear explicitly in the survey and was mentioned in the open question. The coordination item was the biggest surprise. This was the last in the ranking (see Table 2) and did not show any significant correlation with some of the other seven items analyzed quantitatively (see Table 6). However, two first-order codes linked to transversal competencies, such as teamwork and work empathy, can be included in the qualitative analysis.

Table 8

Triangulation of Quantitative and Qualitative Analysis

Hierarchy effect of pandemic		Quantitative analysis								Qualitative analysis	
		Correlations								Effects of pandemic mentioned	
		DS	CT	LP	HP	SR	BM	SC	CI		
1	Decrease in sales (DS)		*		*	*				1	Decrease in sales
2	Lack of customer traffic (CT)									2	Problems with clients
		*		*			*			3	Difficulty in customer relations
3	Liquidity problems (LP)		*				*			4	Liquidity problems
4	Difficulty in hiring personnel (HP)									5	Increase in personnel due to delivery
										6	Personal movement
		*				*	*			7	Staff reduction
5	Compliance with sanitary regulations (SR)									8	Quarantines
		*			*					9	Security protocols
6	Need to modify the business model (BM)		*	*	*			*		10	Business model change (delivery)
7	Supply chain difficulties (SC)						*			11	Logistical problem
8	Coordination issues (CI)									12	Teamwork
										13	Work empathy

Below is a more detailed analysis of the adaptation strategies implemented by entrepreneurs in the gastronomic sector to face the crisis caused by the COVID-19 pandemic. Some excerpts from study participants are provided to delve deeper into the analysed comments.

Public Sector Support

There is a constant concern about the lack of support from the public sector (government, ministries, and municipalities), both at the central and local levels, in addressing the economic crisis generated by the pandemic. The lack of governmental organization has exacerbated the COVID-19 crisis, resulting in financial instability. Entrepreneurs expressed their discontent with the government's lack of measures and subsidies. For example: "Well, in my opinion, I would have liked the government to provide support, whether for small or large companies, because here there's practically total discrimination" (E004) and "So, there was this 'reactiva' [government program], but it was for large companies, so we as individuals with a business didn't get it..." (E005).

However, some gastronomic entrepreneurs were able to participate in government programs, although scarce in the sector: "There was a law that the government passed, which provided loan facilities, the program was called 'Reactiva Peru,' so we accessed it. I don't remember the exact amount now, but the interest rate was minimal" (E005).

Pandemic Effects

The topic of reduced sales is the most recurrent. The pandemic has significantly decreased business revenue, adversely affecting their financial stability. Government-enforced quarantines and restrictions have played a pivotal role in this sales decline. According to the study participants, "Income has significantly decreased during the pandemic" (E023); "Quarantines affected business income" (E064); "...encouraging sales was tough, no, no, it's not like sales were happening, it was difficult" (E038).

Another relevant theme observed in the narratives and comments pertains to personnel, highlighting empathy, collaborative efforts, and resilience in overcoming challenges. It was universally understood that the entire team needed to work cohesively, as the business was the source of income for all. This sentiment is echoed in the following statements: "The staff understands the pandemic's challenges and the situation of the sector" (E036); "It was the

circumstances when I saw my staff, they wanted it, their needs were heard, they said we want to earn, even if it's just to eat" (E003); and "Everything was, as I say, thanks to the people who worked. To my team from 'El Rey de Mares,' we supported each other. They've always been with me through thick and thin" (E091).

Based on this prevailing reality, there is an empowerment of entrepreneurs who express remarkable resilience, motivation, and dedication to moving their businesses forward. Some examples include: "We need to make use of all our energy, our good life, and continue moving forward. We have to keep moving forward" (E003); "I took on a lot of responsibility for managing social media, administration, and sometimes even taking orders. So, I was multitasking and working long hours each day" (E002); and "The pandemic forced us to, in one way or another, be creative. To keep producing" (E003).

Expectations

There exists a negative perception regarding expectations, with comments reflecting concern about the country's political stability and the sustainability of businesses. However, amid these apprehensions, optimistic projections also emerge. These include the revival of the gastronomy sector, the establishment of new locations, the recognition of teamwork's significance in surmounting the pandemic's effects, and achieving business recovery.

The fear of customers acquiring products during the pandemic and economic revival limited to certain companies is also mentioned: "After COVID returned, it was very difficult, because customers hardly wanted to buy, well, let me explain, they were quite afraid, clearly, they didn't want to buy the product..." (E005).

Within the positive expectations towards the future, albeit scarce, one can mention the following:

> Today, this year, the restaurant has been doing better. Hopefully, we will continue to grow in the future. My customers order my dishes. I have customers who... And the best advertisement that makes you a customer is WhatsApp and Facebook. (E001)

Safety Measures

Entrepreneurs emphasize rigor in complying with health and safety measures. One said, "We had to implement everything. We had to buy machines for entry, for disinfection, we had to stock up on gel, soap, liquids, all staff had to be checked" (E091); another commented that "Over time, we gradually introduced biosecurity protocols to protect consumers, and this helped us return to the expected level of sales" (E014).

Adaptation Business Strategies

Among the most recurring strategies, the implementation of delivery stands out, involving a shift from waitstaff to delivery coordinators. Other strategies implemented include, among others, a) application of discounts and promotions, b) mini markets, c) advertising, d) reinauguration, e) renting the premises, and f) new products/businesses. To illustrate, changing the restaurant's name as a strategy for reinvention: "So, during the pandemic, throughout the pandemic, my brain was working at a hundred miles per hour, I had to give it a name that would have an impact, that would stick, that would resonate" (E001).

Another strategy for adapting to the pandemic was implementing new services, such as establishing a mini-market. This initiative was facilitated through licenses and permits issued by the government. This participant describes it as follows: "Provisional licenses were granted to various types of businesses, not just restaurants, right? But also other types of businesses that were allowed. So, if you weren't engaged in that sector, you could apply" (E002).

Diversified advertising endeavours were widely undertaken to attract customers, serving as a lifeline for revenue preservation and crisis survival. These initiatives encompassed the acquisition of WhatsApp lists, motivating customers to share food dishes on their social media, and utilizing platforms like Facebook, Instagram, and TikTok. As described in the following statement:

> We had to activate our social media. In fact, we have Facebook,

> Instagram, and now even TikTok. We had to activate social media, we had to give more importance to Google Maps, activate our photos and everything. So, being active on social media allowed us to reach more places through deliveries as well. (E002)

The reduction of rental costs was a highlighted topic in the interviews. To address this aspect, entrepreneurs mentioned negotiating rental payments with the owners of the premises, who, in certain cases, were family members, as detailed here: "My brother, as family, gave me a year to work and generate my customers and everything else" (E001), and "My intention was to close, as I mentioned, and go bankrupt, but I talked to the owner and they provided me with a payment arrangement" (E091).

One noteworthy result was the recurring adoption of a new business model, shifting from in-person dining to delivery services. This transition was a nearly universal phenomenon worldwide (Elshaer, 2021; Vig & Agarwal, 2021). A role shift occurred in Lima, as in other Latin American places like Colombia (Zapata-Cuervo et al., 2021). Servers became delivery personnel, and there was an explosive growth in food delivery services. Similar situations occurred in other regions and continents, such as Bali, Indonesia (Wiantara et al., 2022), and Malaysia (Lai et al., 2020). Surviving restaurants changed their sales strategies, pivoting to delivery services. Associated with this change were leasing premises for celebrations following the lockdown, temporary shifts in business models toward mini-markets, and cost reduction strategies. This was facilitated by the food and supply networks established by food establishments. These results are also similar to the ones detected by Reardon and Vos (2023), who found the use of business operations (e-commerce, e-logistics, e-payment, and e-procurement platforms to link to suppliers and buyers) to adjust the shocks provoked by the pandemic in Asia and Africa.

Despite the various changes implemented, only 29% of the establishments recognized changing their business models, indicating a survival-oriented strategy that eventually impacted their overall business model.

Customer scarcity persisted despite quarantines, with many clients avoiding purchases during the pandemic. Economic recovery was slow to manifest in the sector, requiring a concerted effort to restore customer confidence. The in-depth interviews emphasized the importance of creativity and social media advertising in driving business success, including establishing a social media presence.

Finally, the responsibility assumed by Lima's gastronomy entrepreneurs stood out, demonstrating concern for family and employee safety. Employees also exhibited significant dedication to the business's success. Restaurant owners displayed resilience and creativity, acting as a cohesive team committed to navigating the crisis.

Conclusion

This study has yielded valuable evidence on the effects of the COVID-19 pandemic on the gastronomic sector in Lima, Peru. The foremost challenge identified because of that enormous crisis was a decrease in sales, coupled with reduced customer traffic and liquidity problems. This, in turn, triggered a contraction in hiring, with a 40% decline in the establishments studied.

In line with the theory of dynamic capabilities, the interviews have highlighted the importance of adaptability and creativity as crucial internal organizational factors to overcome the economic challenges stemming from the pandemic-induced recession. One of the central dynamic capabilities is the ability to innovate and adopt entrepreneurial strategies. Nearly all surviving establishments adopted diverse marketing strategies to counteract decreased customer traffic (using social media, discounts/promotions, reopening, etc.), operational strategies (delivery services, renting space, and mini markets), and cost-cutting measures (negotiating fixed costs like rent). Likewise, this theory provides valuable insights into how the gastronomy sector in Peru cannot only recover from the current crisis but also build greater capacity to face future crises and contribute to sustainable development. This includes adopting responsible and sustainable business prac-

tices to enhance the sector's long-term resilience. Teece (2018) emphasizes that dynamic capabilities not only help firms survive in the short term but also develop a foundation for sustainable long-term growth.

The study has also highlighted the importance of family support, teamwork, motivation, resilience, and creativity in navigating this crisis.

Practical Implications

The study's findings offer practical implications, emphasizing the necessity of formulating robust crisis management plans within the gastronomy sector to facilitate effective responses to future emergencies. Remarkably, the responses from interviewees indicated a lack of crisis management plans tailored to this specific scenario despite a previous, albeit less severe, crisis experienced in 2003 without mobility constraints (Tse et al., 2006). Managers and owners predominantly reacted based on instinct and prior experience; while some adeptly adapted to the new pandemic circumstances, others experienced delays in decision-making. To mitigate unfavorable outcomes such as staff layoffs or business closures, it is recommended that business owners, particularly within the gastronomy sector, develop comprehensive risk management manuals outlining protocols for addressing future crises.

Additionally, the study suggests the imperative of enhancing the dissemination of government support initiatives during health emergencies. Numerous business owners failed to access available support programs due to inadequate information and awareness or because they learned about them too late. Two crucial steps are proposed to address this: evaluating the efficacy of various support programs and refining the marketing channels to ensure timely information distribution during future crises.

Future Research Directions

Based on the results obtained, the theory of dynamic capabilities suggests that Lima's gastronomic entrepreneurs were able to identify and seize emerging opportunities, such as the growing

demand for home delivery services and online sales, and reconfigure their internal resources and processes by modifying their business models and transforming their physical spaces to comply with the new health regulations resulting from the pandemic. However, much remains to be explored regarding applying this theoretical approach in the global gastronomy industry. Future research could delve deeper into how dynamic capabilities manifest and are explicitly managed in this sector. Another future line of research is related to detecting how important information technologies are for companies to manage and survive crises.

A significant recurring theme pertains to financial support, with many establishments unable to benefit from government subsidies due to their informal status, as most assistance was directed toward formal businesses. Additionally, some interviewees noted that subsidies were often inaccessible due to delays. A potential avenue for future research could involve a comprehensive assessment of the coverage and impacts of the provided subsidies.

Study Limitations

One of the study's limitations lies in its exclusive focus on restaurants within Lima. Given the gastronomic sector's national significance, a more comprehensive representation from establishments nationwide would have enhanced the study's robustness.

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Using the Bernoulli model to analyze the distribution of course withdrawals at UPR-Bayamón

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ABSTRACT
Using a rich panel data comprising 39,337 courses offered in the UPR-Bayamón during forty-one consecutive terms, this paper analyses the distribution of course withdrawals, estimating four parameters per course: the proportion of withdrawals and its variance, as well as the coefficients of skewness and kurtosis. Evidence suggests that the characteristics of courses, students, and, particularly, unobservable faculty heterogeneity exert a strong and statistically significant effect on these parameters over time and within academic fields. Faculty members and students engage in a *shopping-around* process where both parties improve their well-being at the expense of the academic standards and the quality of the education provided.

Keywords: course withdrawals, Bernoulli model, moment-generating function, skewness, kurtosis

Uso del modelo de Bernoulli para analizar la distribución de bajas parciales por curso en la UPR-Bayamón

RESUMEN
Usando un archivo longitudinal de los 39,337 cursos ofrecidos en la UPR-Bayamón durante 41 semestres consecutivos, se analiza la distribución de bajas parciales por curso a través de los primeros cuatro momentos: media, varianza, asimetría, y curtosis. Las características de los cursos, de los estudiantes, y muy particularmente, la heterogeneidad inobservable de los profesores, ejercen una fuerte y significativa influencia sobre el comportamiento de los momentos a través del tiempo. Parecería, que profesores y estudiantes están involucrados

en un proceso de *ir de compras* que les beneficia mutuamente a expensas de los estándares académicos y de la calidad de la educación provista.

Palabras clave: bajas parciales por curso, modelo de Bernoulli, función generatriz de momentos, asimetrías, curtosis

Introduction

One of the most significant challenges that institutions of higher education face is the establishment of a selective admission policy which allows them to identify and admit, from a total pool of applicants, the candidates most able and likely to academically succeed: the greater the institutional economic shortage, the greater the urgency. Suppose that, to reach such an objective, the university administrators consider designing an ideal standardized test. According to Rothstein (2004), the *ideal test* should be able to predict as accurately as possible which applicants would be most successful if admitted. That is, all applicants whose performance in the test exceeds a determinate threshold after admission would be likely to (a) succeed academically and (b) fulfill all academic requisites during the allotted time. Should this be the case, the institutional admission policy would be quite simple and efficient. However, designing and implementing such a test is extremely difficult, if not impossible. Many diverse factors influence student academic achievement, which are difficult to identify and measure, and most are beyond student and institutional control.

Since the academic year 1979-80, the University of Puerto Rico (UPR) —the country's public university system composed of eleven campuses across the Island— has adopted as its official admission policy a standardized test administered by the Puerto Rico (PR) and Latin America Office of the College Entrance Examination Board (CEEB), named the General Admission Index (GAI).[1] Every

[1] The GAI is the weighted mean of the high school GPA (HS-GPA) (50%) and the scores in the verbal aptitude (25%) and mathematics aptitude (25%) sections of the CEEB test.

year, each of the UPR's eleven campuses establishes the minimum GAI required by its different academic programs in response to trends in enrollment demand and the program's capacity.[2] The fact that the GAI required for each program is made public every year has led from its inception to a self-inclusion/exclusion process by which students themselves decide whether to apply to the UPR (and to a particular program), based on their GAI and the minimum established by the program. Students' admissions to each academic program follow a strict order entirely defined by their GAI. It is expected that these students will be able to sort themselves in such a way that more (less) academically able are admitted to the highest (lowest) selective programs with more (less) inherent difficult content.

Thus, the role of the *ideal test* described earlier has been ascribed to the GAI. The issue to be settled is whether the GAI satisfies conditions (a) and (b) previously mentioned. Of course, the answer is no. Because of the inaccuracies of GAI, there are several endemic academic problems whose incidence varies among and within the eleven UPR campuses. For instance, to be admitted to the UPR at Bayamón (UPR-Bayamón), many students whose GAI is below the minimum apply to non-desired programs for which they qualify, looking for an eventual possible transfer to their desired program. The strategy consists of enrolling in courses in their desired program even though they are officially admitted to a different one. Because the academic requirements and contents of the programs could differ significantly, the likelihood of course failures and withdrawals increases. Moreover, such a strategy lengthens time until graduation, increasing the opportunity cost of schooling. Eventually, many such students withdraw from the institution because of failure to be admitted to their desired programs. Furthermore, it should be mentioned that

[2] For instance, by the academic year 2015-16, at the UPR-Bayamón, the minimum GAI required to be admitted to the bachelor programs of Accounting, Biology and Natural Sciences, as well as Mechanical Engineering transfer program, was 280, 305, 315 and 335, respectively. For programs such as Engineering Technologies, Physical Education and Education the minimum GAI was 240, 270 and 270, respectively.

these endemic problems are also prevalent even among students who were admitted to their desired programs from the beginning. Therefore, the official admission policy generates undesirable by-products like academic failures, too many applications for program transfers, as well as total and partial withdrawals. Among these problems, this study seeks to analyze the distribution of withdrawals (*W*) observed in the 39,337 courses offered during 41 consecutive terms (including summer sessions) at UPR-Bayamón from fall 1995-96 to fall 2015-16. To the best of my knowledge, the extant literature lacks studies devoted to analyzing the implications and consequences of the proportion of course withdrawals on the education process; this paper seeks to fill such a gap.

To this end, this paper adopts the Bernoulli probability model and derives the moment-generating functions around its origin and mean. For each course, the objective is to calculate the following four parameters: first, the proportion of withdrawals, which equals the first moment around the origin; second, the variance of its distribution, which is equal to the second moment around the mean; third, the coefficient of skewness, using the third moment around the mean; and fourth, the coefficient of kurtosis, using the fourth moment around the mean. Using different econometric specifications, including random- and fixed-effects models, allows the modeling of these four parameters. This paper uses a rich and detailed panel data containing time-varying variables describing faculty, student, and course characteristics to fulfill this objective.

This study contributes to the extant literature by (a) being the first to analyze in detail the distribution of withdrawals and its key moments at the course level, (b) using a rich panel data comprising all courses offered at UPR-Bayamón during 41 consecutive terms, (c) including time-varying variables describing in detail the faculty characteristics, and showing that courses, faculty and students characteristics exert strong and significant effects on the estimated models, and (d) presenting empirical evidence pointing to the conclusion that faculty and students engage in a sym-

biotic relationship where both parties improve their well-being at the expense of diminishing academic standards.

The remainder of the paper is organized as follows. Section 2 justifies adopting the Bernoulli model based on its simplicity and statistical properties. Section 3 describes the nature of the data and the specification of the statistical models to be estimated. Section 4 discusses the empirical results, as well as their policy implications. Finally, Section 5 closes the study with a summary and conclusions.

Motivating the Adoption of the Bernoulli Probability Model

When and why do students decide to withdraw from a course? Although the answer to this question has dramatic policy implications for students and universities since withdrawals entail significant cost consequences, the research published on this topic is limited. Wollman and Lawrence (1984), Adams and Becker (1990), Dunwoody and Frank (1995), and Miller (1997) constitute notable exceptions. However, inspired by the original work of Spady (1970, 1971) and Tinto (1975), there is an extensive and diverse body of published research related to the withdrawals of students from college. This is the first research to analyze the determinants of the distribution of withdrawals and their key moments at the course level.

The study of the distribution of course withdrawals among and within academic programs and across time is relevant for several reasons. Withdrawals can increase student time until graduation and the total cost of the degree. Moreover, they could predict or signal total withdrawals and attrition from college, decreasing college graduation rates. At one time, Dunwoody and Frank (1995) raised the issue that individual course withdrawal could have the highest impact on overall retention, attrition, and institutional success. For some researchers (e.g., Zwick & Sklar, 2005), the best criterion to measure an institution's academic success is, precisely, the proportion of students who complete their degrees in the allotted time. In this context, low graduation rates nega-

tively impact institutional rankings and, consequently, their ability to attract students with more significant academic potential. Moreover, student attrition represents a fiscal cost to institutions in terms of lost revenues from tuition, room and board, and alum donations (Raisman, 2013; Schuh, 2005). Attrition also constitutes a problem for society in general by reducing the availability of college-educated workers in the labor market (Bound et al., 2007). It also negatively impacts lower tax receipts for federal and state governments (Schneider & Yin, 2011). Although these considerations are beyond the scope of this research, they illustrate how important it is to model the determinants of the distribution of withdrawals at the course level.

From Adams and Becker (1990), it will be hypothesized that students want to maximize their utility function subject to the constraints imposed by their economic and academic environment. Students derive utility from their present and future stream of consumption of the goods and services they will be able to buy in the market as a product of their investment in human capital through education. Education is costly in terms of money and opportunity cost. Therefore, withdrawing from courses would entail a waste of money and increase the opportunity cost of schooling by lengthening the time until graduation. It seems reasonable to posit that the disutility derived by students directly varies with the intrinsic course difficulty level. However, such a concept is relative and unobservable. Thus, it will be assumed that a student will withdraw whenever the disutility (dissatisfaction) derived from the course is greater than the disutility induced by the cost of withdrawing it.[3] While student disutility or dissatisfaction is not observable, their actions of withdrawing or remaining in the course are. The indicator variable defined in (5) allows us to consider these actions.

[3] In such a decision-making process, the five top reasons students give for withdrawing from courses (Dunwoody & Frank, 1995) can be considered aggravating circumstances. These top reasons are: (a) I was not happy with my grade, (b) I did not understand the material, (c) I did not like the course, (d) I did not like the professor, and (e) the subject did not interest me.

Usually, the determination of the number of total courses offered by academic fields (AFs) and the number of students enrolled in each one occurs at the beginning of each term. Likewise, by the end of the term, each academic department head knows with certainty the number of students who withdraw from each course and those who remain in it. Suppose each academic unit adopts a coding system such that code "1" represents the students who withdraw and code "0" represents those who do not withdraw. Thus, expression (1) defines the random variable *W*.

$$(1) \quad W = \begin{cases} 1, \text{ if student } i \text{ withdraws from course } j \\ 0, \text{ otherwise} \end{cases}$$

Let N_j and W_j be the total enrollment and the number of students who withdraw from course *j* after the deadline to add or drop a course, respectively.[4] For this study, the outcomes "success" and "failures" represent students who withdraw and those who do not withdraw from a course, respectively.[5] Thus, (2) defines the proportion of withdrawals observed in course *j*, which is the same as its relative frequency.

$$(2) \quad \pi_j = \frac{W_j}{N_j}$$

Given that the purpose of this study is to model π observed in each course offered at UPR-Bayamón over 41 consecutive terms, the selection of the accurate probability model is of crucial impor-

[4] A student who partially or totally withdraws prior to the last day to drop/add courses will be refunded 100% of the tuition paid. If the student withdraws after the deadline of the drop/add period but before certain established period (typically 8-11 days after it) will be refunded 50% of the tuition paid. After such a period, there will be no refund. The deadline for total withdrawal is the last day of classes, while the deadline for partial withdrawal is approximately two weeks before the last day of classes.

[5] In statistics terminology, a favorable or successful outcome does not necessarily imply an outcome that is desirable in practice (Chow, 1989). Whenever the outcome we are interested in occurs, it is classified as a success; otherwise, it is classified as a failure.

tance. The Bernoulli model describes the behavior of a random discrete variable that takes on only two values, arbitrarily designated as 0 (failure) or 1 (success). The probability of (1) is equal to the proportion of success in the universe, while the probability of (0) is its complement.

$$(3) \quad P(W=1)=f(1)=\pi_j=\frac{W_j}{N_j}\Rightarrow f(0)=\frac{N_j-W_j}{N_j}=1-\pi_j$$

Therefore, (4) defines the probability mass function of a Bernoulli random variable.

$$(4) \quad P(W=w)=f(w)=\begin{cases}\pi^w(1-\pi)^{1-w}, \text{ if } w=0 \text{ or } w=1\\ 0, \text{ otherwise}\end{cases}$$

Following the nomenclature adopted by Rice (1995), if W constitutes the event that student i withdraws from course j, then the indicator random variable I_w takes on the value 1 if W occurs and the value 0 if W does not occur. Hence, the indicator I_w is a Bernoulli random variable.

$$(5) \quad I_W(w)=\begin{cases}1, \text{ if } w\in W\\ 0, \text{ otherwise}\end{cases}$$

It follows that each course offered at UPR-Bayamón analyzed in this study constitutes a unique and nonreplicable Bernoulli academic experiment whose results can be classified into two mutually exclusive and collectively exhaustive outcomes: failure (0) or success (1); with probabilities equal to $(1-\pi)$ and π, respectively. Expression (6) defines the expected value ($E(W)$) and the variance ($\sigma^2(W)$) of the Bernoulli experiment conducted in course j.

$$(6) \quad E(W)=1\cdot\pi+0\cdot(1-\pi)=\pi_j=\frac{W_j}{N_j} \text{ and } \sigma^2(W)=\pi_j(1-\pi_j)$$

Therefore, modeling the proportion of withdrawals (π_j) observed in course j is identical to model a Bernoulli variable's probability of success (withdrawing from course j). The advantage of such an approach resides in the fact that the Bernoulli model is entirely determined by π, its single parameter.

The Moment-Generating Functions: Interesting Analytical Results

The first moment around the origin is equal to π. This calculation requires taking the first derivative with respect to t (evaluated at $t = 0$) from the corresponding moment-generating function.[6] The superior moments around the origin are all equal to π. However, moments around the mean are more interesting. Let μ_1, μ_2, μ_3, and μ_4 be the first four moments around the mean. To find them, it is necessary to take the first, second, third, and fourth derivatives with respect to t and to evaluate each one at $t = 0$; Table 1 reports their values, as well as the coefficients of skewness (C_S) and kurtosis (C_K). The units of measurement of μ_3 and μ_4 influence their respective size. Therefore, considered alone, they are poor measures of skewness and kurtosis, respectively. Such dimensionality disappears, defining each coefficient as a relative measure, as done in (7).[7]

$$(7) \quad \begin{cases} C_S = \dfrac{\mu_3}{\left[\sigma(W)\right]^3} \\ C_K = \dfrac{\mu_4}{\left[\sigma(W)\right]^4} \end{cases}$$

As expected, $\mu_1 = 0$. The second moment is equal to the variance. It is an open downward parabola, which reaches its absolute maximum (0.25) at $\pi = 0.5$. Obviously, it is zero in the extremes, at

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[6] The respective moment-generating functions around the origin and the mean are: $m_W(t) = (1 - \pi) + \pi e^t$ and $m_W(t) = (1 - \pi)\, e^{-\pi t} + \pi e^{(1-\pi)t}$.

[7] For details, refer to Chow (1989).

Table 1

Key Parameters of the Bernoulli Probability Model

1. $\mu_1' = 0$

2. $\mu_2 = \pi(1-\pi) = \sigma^2(W) \Rightarrow \dfrac{d\mu_2}{d\pi} = (1-2\pi) = 0 \Rightarrow \pi = 0.5$

3. $\mu_3 = \pi(1-\pi)(1-2\pi) \Rightarrow C_S = \dfrac{\mu_3}{\left[\sigma(W)\right]^3} = \dfrac{1-2\pi}{\sqrt{\pi(1-\pi)}} \Rightarrow \begin{cases} C_S > 0, \text{ if } \pi \in (0;\ 0.5) \\ C_S = 0, \text{ if } \pi = 0.5 \\ C_S < 0, \text{ if } \pi \in (0.5;\ 1) \end{cases}$

4. Coefficient of skewness (C_S): if $\begin{cases} C_S = \pm 1 \Rightarrow \text{ the distribution is highly skewed} \\ 0.5 < |C_S| < 1 \Rightarrow \text{ the distribution is moderately skewed} \\ 0 < |C_S| < 0.5 \Rightarrow \text{ the distribution is nearly symmetric} \end{cases}$

$$\frac{dC_S}{d\pi} = C_S' = \frac{-1}{2\left[\pi(1-\pi)\right]^3} < 0 \ \forall\ \pi \in (0;\ 1)$$

$$\frac{d^2C_S}{d\pi^2} = C_S'' = \frac{3(1-2\pi)}{4\left[\pi(1-\pi)\right]^5} \Rightarrow \begin{cases} C_S'' > 0, \text{ if } \pi \in (0;\ 0.5) \\ C_S'' = 0, \text{ if } \pi = 0.5 \\ C_S'' < 0, \text{ if } \pi \in (0.5;\ 1) \end{cases}$$

5. $\mu_4 = \pi(1-\pi)\left[1-3\pi(1-\pi)\right] \Rightarrow C_K = \mu_4 \Big/ \left[\sigma(W)\right]^4 = -3 + \dfrac{1}{\pi(1-\pi)}$

6. Coefficient of kurtosis (C_K): if $\begin{cases} C_K = 3 \Rightarrow \text{ the distribution is said to be } \textit{mesokurtic} \\ C_K < 3 \Rightarrow \text{ the distribution is classified as } \textit{platykurtic} \\ C_K > 3 \Rightarrow \text{ the distribution is said to be } \textit{leptokurtic} \end{cases}$

$$\frac{dC_K}{d\pi} = C_K' = \frac{-1+2\pi}{\left[\pi(1-\pi)\right]^2} \Rightarrow \begin{cases} C_K' < 0, \text{ if } \pi \in (0;\ 0.5) \\ C_K' = 0, \text{ if } \pi = 0.5 \\ C_K' > 0, \text{ if } \pi \in (0.5;\ 1) \end{cases}$$

$$\frac{d^2C_K}{d\pi^2} = C_K'' = \frac{2\left[1-3\pi(1-\pi)\right]}{\left[\pi(1-\pi)\right]^3} > 0 \ \forall\ \pi \in (0;\ 1)$$

$\pi = 0$ or $\pi = 1$. The third moment (μ_3) measures skewness because it preserves the sign of the deviance with respect to the mean. The coefficient of skewness (C_S) is undefined either at $\pi = 0$ $(\rightarrow -\infty)$

or at $\pi = 1$ ($\rightarrow -\infty$). It is a positive decreasing convex function ($C"_S > 0$) on $\pi \in (0; 0.5)$, reaches its inflection point at $\pi = 0.5$, and continues decreasing as a negative concave function ($C"_S < 0$) on $\pi \in (0.5; 1)$. The coefficient of kurtosis (C_K) is a positive U-shaped convex function symmetric with respect to the line $\pi = 0.5$. The coefficient, as well as its first and second derivatives are undefined at points $\pi = 0$ and $\pi = 1$. The coefficient decreases on $\pi \in (0; 0.5)$, reaches its absolute minimum equal to 1 on $\pi = 0.5$, and increases unbounded on $\pi \in (0.5; 1)$.

As mentioned earlier, π determines, completely and uniquely, the four parameters of interest for this study. Three different points are of key interest in the range of π: $\pi = 0$, $\pi = 0.5$ and $\pi = 1$. There are 11,206 (28.49%) courses where $\pi = 0$, and none where $\pi = 1$ (see Section 4). For all courses where $\pi = 0$, $\sigma^2(W) = 0$; however, C_S and C_K are undefined. In all courses where $\pi = 0.5$, $C_S = 0$, implying a symmetric distribution of withdrawals, while $\sigma^2(W)$ and C_K reach their maximum and minimum values (0.25 and 1, respectively). On the other hand, the distribution of withdrawals is skewed to the left in all courses, where $\pi > 0.5$, since $C_S < 0$.

Thus, once π_j is known, it is straightforward to characterize the degrees of skewness and kurtosis prevailing in course j according to these analytical results. Moreover, the mean and variance of C_S and C_K distributed by specific courses or AFs can be computed and depicted over the 41 terms considered in this study for analytical comparison. Therefore, the simplicity of the Bernoulli model allows us to easily analyze the distribution of course withdrawals looking for policy measures that improve the academic process.

Data Description

The UPR-Bayamón is an autonomous unit of the UPR system. Accredited by the Middle States Association of Colleges and Secondary Schools, it offers associate and bachelor's degrees, as well as articulated transfer programs to the Río Piedras, Mayagüez, and Medical Sciences campuses. In the fall of 2024, total enrollment at UPR-Bayamón was 2,852, including 2,520 full-time students.

For each one of the 39,337 courses offered in UPR-Bayamón from 1995 to 2015, the following variables are available: enrollment; instructor who taught the course; letter grade distribution (*As*, *Bs*, *Cs*, *Ds*, *Fs*, and *W*); GPA; variance of the GPA, and AFs (21 dummies). As proxies to account for student quality at the course level, this research uses the mean and variance of the following variables: high school graduation GPA (HS-GPA), GAI, and the score on each of the five sections of the CEEB.[8] Furthermore, the proportions of students by gender and type of high school (public or private) are available for each offered course. Dummies control for academic schedules (weekdays and hours) and for summer terms. For each faculty member in the sample, the following time-varying variables are available: age, rank, degree, and tenure status. Dummies account for the instructor's gender and the presence of courses subject to student evaluations of teaching (SET). The inclusion of a set of forty-one dummies, identifying term/year, allows for capturing time effects.[9] Table 2 describes the variables used.

Models for Estimation

The preceding discussion suggests that the model specified in (8) is appropriate to estimate the equations that predict the proportion of withdrawals and the distribution variance, as well as the coefficients of skewness and kurtosis observed in course *j*, taught by professor *f*. The matrices $\mathbf{X}_j$, $\mathbf{Z}_f$, and $\mathbf{M}_s$, consist of course (*j*), faculty (*f*), and student's (*s*) characteristics, respectively. The vectors β, Φ, and ψ represent parameters to be estimated and ε_{jf} is the composite error term. The inclusion of random- and fixed-effects models allows to account for unobservable faculty heterogeneity (UFH = γ_f).

$$(8)\quad Y_{jf} = \gamma_0 + \gamma_f + \mathbf{X}_j^T\beta + \mathbf{Z}_f^T\Phi + \mathbf{M}_s^T\psi + \varepsilon_{jf}$$

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[8] The CEEB test includes five sections: verbal and mathematical aptitude, and achievement in Spanish, English, and mathematics.

[9] Fall sessions include courses offered during summers.

Table 2

Sample Statistics

Dummy variables					
Variable	Mean	Variable	Mean	Variable	Mean
Accounting	0.0539 (0.2259)	Marketing	0.0125 (0.111)	Probation	0.0854 (0.2794)
Biology	0.0515 (0.221)	Materials Management	0.0075 (0.0863)	Tenure	0.6155 (0.4865)
Chemistry	0.0349 (0.1836)	Mathematics	0.1301 (0.3364)	Class size 1	0.0598 (0.2372)
Computer Sciences	0.0633 (0.2436)	Physical Education	0.0375 (0.19)	Class size 3	0.2773 (0.4477)
Economics & Statistics	0.0277 (0.164)	Physics	0.0294 (0.1689)	Morning	0.541 (0.4983)
Education	0.0595 (0.2366)	Office Systems	0.0381 (0.1914)	Night	0.0927 (0.29)
Electronic	0.0587 (0.2351)	Social Sciences	0.0615 (0.2403)	Summer	0.0156 (0.1241)
Engineering Technologies	0.0285 (0.1663)	Spanish	0.0682 (0.2521)	SET	0.1465 (0.3536)
Engineering Transfers	0.01 (0.0994)	Female faculty	0.5285 (0.4992)	Monday to Friday	0.017 (0.1292)
English	0.0994 (0.2992)	Doctorate	0.2545 (0.4356)	Monday & Wednesday	0.3181 (0.4658)
Finance	0.0183 (0.1341)	Assistant	0.2256 (0.418)	Tuesday & Thursday	0.3671 (0.482)
Humanities	0.0758 (0.2647)	Associate	0.2149 (0.4107)	M/T/W	0.1625 (0.3689)
Management	0.0337 (0.1804)	Professor	0.2269 (0.4188)	M/T/W/Th	0.01 (0.0777)

Table 2 (continued)

Semi-continuous variables					
Variable	Description	*M*	*SD*	Min	Max
π	Proportion of *W*	10.89	12.72	0	92.86
σ^2 (*W*)	Variance of *W*	7.89	7.47	0	25
C_S	Coefficient of skewness	2.68	1.52	-3.33	7.88
C_K	Coefficient of kurtosis	10.5	8.78	1	63.02
Age	Professor's age (years)	47.63	9.64	23	76
GAI	General Application Index	285	23.03	174	372
GAI Var	GAI distribution variance	795.2	686	0	20,031
FSP	Female students' proportion	0.5329	0.2662	0	1
PHSP	Private HS proportion	0.4722	0.1622	0	1

Note: For all dummies, standard deviations are in parentheses, Max. = 1 and Min. = 0.

Results and Discussion

Stylized Facts of the Parameters Across Time

Table 3 reports the mean values of the four parameters computed over the 41 terms analyzed in this study distributed by AFs: π, σ^2 (W) C_S, and C_K. AFs are ordered using the values of π, from smallest to largest, as reference. The parameters π and $\sigma^2(W)$ move in the same direction until $\pi = 0.5$, and the former is always greater than the latter. The values of π are not randomly distributed by AFs. For instance, for all courses offered by the Marketing and Physical Education departments, the respective figures are the lowest: 2.69% and 4.6%. However, for the Economics & Statistics and Mathematics courses, the figures are the highest: 18.31% and 29.22%, respectively. To the extent that π values were directly related to the inherent difficulty of the course, evidence points to the conclusion that Chemistry (14.93%), Economics & Statistics (18.31%), and Mathematics (29.22%) are the most challenging courses. Likewise, Marketing (2.69%), Physical Education (4.6%), and Management (5.42%) are the easiest ones.

A cautionary note is in order here. Higher π values would signal increased course inherent difficulty levels to the extent that academic standards do not decrease over time. According to the leniency hypothesis (Gump, 2007), faculty members can buy higher SET ratings, recruit more students, improve their teaching schedules, or even become more popular by relaxing their academic standards through leniency grading. If so, GPA will increase (implying grade inflation), and withdrawals will decrease among and within courses across time. To test for such a conjecture, all the econometric models include a dummy variable that takes on the value 1 if SET were conducted in the course and 0 otherwise.

The coefficients of skewness and kurtosis move in opposite directions to the course's inherent difficulty level. Marketing exhibits the highest figures: $C_S = 4.24$ and $C_K = 20.14$; while Mathematics exhibits the lowest: 1.21 and 4.08, respectively. Over the period covered in the study, on average, all AFs exhibit skewed

Table 3

Parameters of the Distribution of Withdrawals by AFs

AFs	π	$\sigma^2(W)$	C_S	C_K
Marketing	2.69 (738)	2.49 (738)	4.24 (351)	20.14 (351)
Physical Education	4.6 (1,970)	4.04 (1,970)	3.41 (1,055)	14.01 (1,055)
Spanish	5.27 (2,948)	4.58 (2,948)	3.67 (1,919)	16.16 (1,919)
Management	5.42 (1,423)	4.72 (1,423)	3.67 (947)	16.3 (947)
Social Sciences	5.98 (2,551)	5.15 (2,551)	3.5 (1,731)	15.09 (1,731)
Education	6.18 (2,714)	5.23 (2,714)	3.22 (1,674)	13.04 (1,674)
Finance	6.72 (791)	5.67 (791)	3.21 (515)	13.22 (515)
Humanities	7.42 (2,903)	6.2 (2,903)	3.3 (2,132)	13.95 (2,132)
English	7.56 (3,922)	6.34 (3,922)	3.12 (2,787)	12.46 (2,787)
Materials Management	8.0 (309)	6.55 (309)	2.96 (211)	11.56 (211)
Office Systems	8.09 (1,780)	6.56 (1,780)	2.54 (1,071)	8.59 (1,071)
Engineering Technologies	10.66 (1,203)	8.16 (1,203)	2.29 (801)	7.59 (801)
Physics	10.79 (1,321)	7.8 (1,321)	2.31 (827)	8.24 (827)
Engineering Transfers	10.88 (405)	8.28 (405)	2.38 (281)	8.16 (281)
Computer Sciences	11.22 (2,496)	8.57 (2,496)	2.38 (1,782)	8.25 (1,782)
Biology	11.43 (1,806)	8.91 (1,806)	2.62 (1,449)	9.78 (1,449)
Electronics	12.16 (2,471)	8.89 (2,471)	2.09 (1,652)	6.81 (1,652)
Accounting	14.83 (1,843)	10.78 (1,843)	2.21 (1,517)	7.8 (1,517)
Chemistry	14.93 (1,084)	11.49 (1,084)	2.26 (982)	7.73 (982)
Economics & Statistics	18.31 (875)	12.21 (875)	2.12 (778)	8.14 (778)
Mathematics	29.22 (3,784)	17.5 (3,784)	1.21 (3,659)	4.08 (3,659)
All AFs	10.89 (39,337)	7.89 (39,337)	2.68 (28,131)	10.5 (28,131)

Note. The values of π and $\sigma^2(W)$ are multiplied by 100. Total courses are in parentheses.

to the right and *leptokurtic* distributions. However, there are 194 courses where $0.49 \leq \pi \leq 0.51$. For all of them, $\sigma^2(W)$ reaches its absolute maximum (0.25). Furthermore, C_S tends to zero, implying symmetric distributions; while C_K tends to one, implying *platykurtic* distributions. A total of 106 ($\approx$ 55%) of those courses belongs to Mathematics. Thus, to the extent that π tends to zero, C_S and C_K increase unbounded implying distributions exhibiting higher skewed to the right and greater *leptokurtosis* degrees, respectively. Finally, there are 686 courses where $\pi > 0.5$; out of this number, 465 ($\approx$ 68%)belong to Mathematics. On the other hand, there are 11,206 courses where $\pi = 0$, but only 125 (1%) belong to Mathematics. Thus, according to student withdrawal decisions, Mathematics courses are the most difficult, independent of the criteria used to measure difficulty.

Figures 1 and 2 clearly depict the growth path of the student quality proxies and the four parameters under study. Four proxies account for student quality at the course level: GAI (see footnote 1), HS-GPA, mathematics, and verbal aptitude. Although GAI tends to increase over time, it should be mentioned that such a tendency is pushed by the self-sustained growth path of HS-GPA, which tends to increase over time (implying grade inflation). However, according to mathematics and verbal aptitude figures, student quality decreases over time. It should be mentioned that this decreasing tendency is consistent with empirical evidence documented at the international level, particularly evidence from Norway.[10] Given that, on average, students are academically less able each term, two results should be expected by course: diminishing GPA and increasing π.

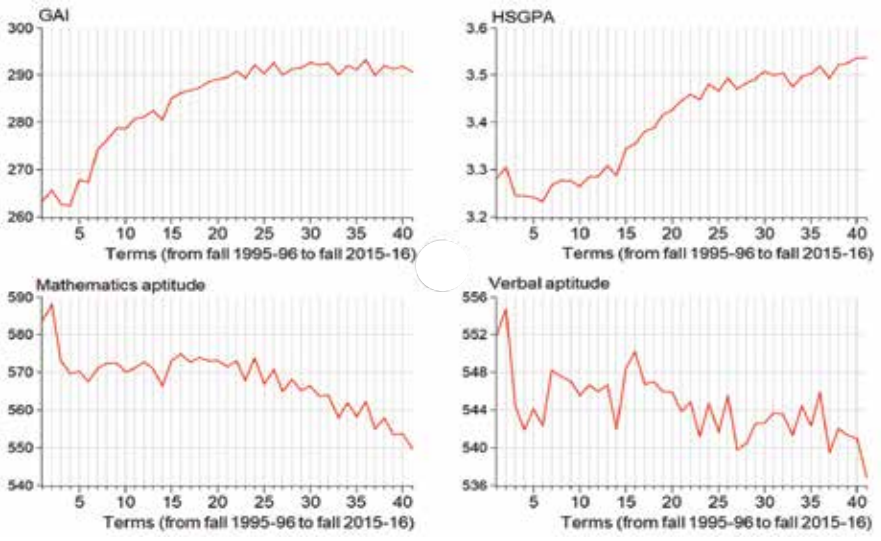
The last two columns of Table 4 report the GPAs for the full sample (39,337 courses), as well as the GPAs for the subsample where $W \geq 1$ (28,131 courses) distributed by terms. Each GPA in the first column is greater than its counterpart in the second one, and both series increase over time, implying grade inflation

[10] Refer to Bratsberg and Rogeberg (2018), and the references cited therein. Professor Bratsberg kindly brought to my attention and provided me a copy of his paper. For his generosity, I am grateful.

since simultaneously, student quality is diminishing. On the other hand, during the forty-one terms studied, the overall π is 10.89%. As shown in the sixth column of Table 4 and clearly depicted in the first graph of Figure 1, π decreased over time, from 13.21% in the fall 1995 term to 9.88% in the fall 2015 term. Therefore, contrary to what should be expected, evidence points to increasing GPAs and decreasing π.[11]

Figure 1

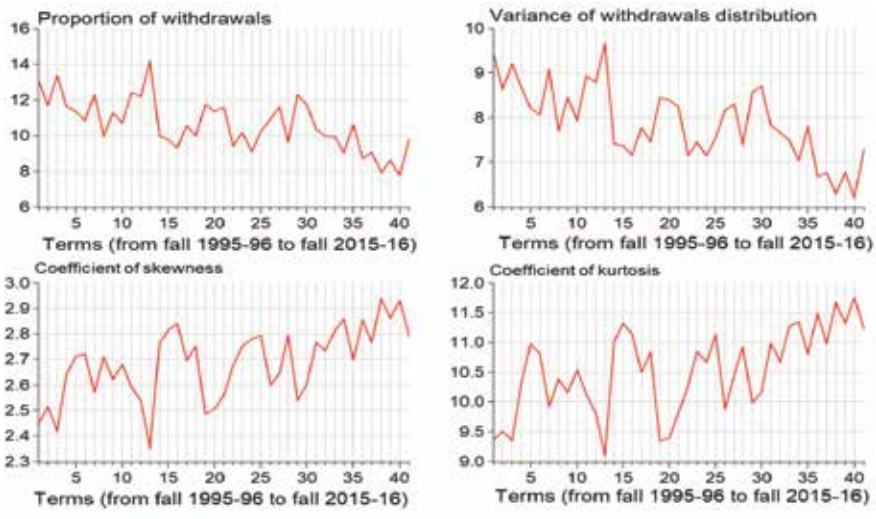
Students Quality Proxies' Growth-Path



[11] These results are consistent with an academic environment characterized by diminishing standards and grade inflation. Several recent studies conducted in the institution have documented such a problematic. For details, refer to Matos-Díaz (2012, 2014, 2018) and Matos-Díaz & García-Vázquez (2014).

Figure 2

Growth-Path of the Key Parameters of the Distribution of Withdrawals



It should be emphasized that this inverse relationship between GPA and π documented across time is a robust one observed among and within AFs. Table 5 reports the evidence. Once again, AFs are ordered using the values of π, from smallest to largest, as reference. Conversely, the respective GPAs reported in the three columns run from largest to smallest. Moreover, for each academic field, the GPAs observed in courses where $W \geq 1$ is lower than the respective one observed in the full sample, where $W \geq 0$, which in turn is lower than the one observed in courses where $W = 0$. Therefore, either over time or between and within AFs, GPA and π move in opposite directions. This result is at odds with that reported in the extant literature (Matos-Díaz, 2018).

Figure 2 also depicts the growth-paths of σ^2 (W) C_S, and C_K. Like π, σ^2 (W) decreases over time. Conversely, C_S and C_K exhibit an increasing tendency over time. Thus, the distributions of course withdrawals become more skewed to the right and more *leptokurtic*, implying greater academic homogeneity among and within courses over time.

Table 4

Stylized Facts of Withdrawals by Terms

Academic Year	Enrollment (A)	Courses (B)	C. Size (A/B)	*W* (C)	% *W* (C/A)	GPA (*W* > 0)	GPA (*W* = 0)
95/96: F	21,534	914	24	2,845	13.21	2.54	2.42
95/96: S	19,720	869	23	2,348	11.91	2.66	2.51
96/97: F	25,010	1037	24	3,440	13.75	2.51	2.36
96/97: S	21,948	902	24	2,611	11.9	2.64	2.5
97/98: F	25,193	1024	25	2,936	11.65	2.53	2.4
97/98: S	23,906	1010	24	2,601	10.88	2.62	2.48
98/99: F	25,541	1040	25	3,167	12.4	2.52	2.41
98/99: S	24,433	1044	23	2,491	10.2	2.65	2.48
99/00: F	25,191	1022	25	2,846	11.3	2.57	2.43
99/00: S	24,064	1004	24	2,603	10.82	2.68	2.53
00/01: F	24,797	1051	24	3,094	12.48	2.69	2.57
00/01: S	23,745	1024	23	2,945	12.4	2.75	2.63
01/02: F	24,808	1038	24	3,606	14.54	2.73	2.59
01/02: S	24,134	1035	23	2,426	10.05	2.78	2.59
02/03: F	23,116	973	24	2,311	19	2.72	2.56
02/03: S	21,606	933	23	2,046	9.5	2.79	2.64
03/04: F	22,279	946	24	2,427	10.9	2.71	2.55
03/04: S	20,462	900	23	2,058	10.06	2.73	2.56
04/05: F	20,977	941	22	2,555	12.18	2.67	2.51

04/05: S	18,964	875	22	2,227	11.74	2.77	2.63
05/06: F	19,909	902	22	2,391	12.1	2.73	2.58
05/06: S	17,929	835	21	1,705	9.6	2.79	2.59
06/07: F	20,015	909	22	2,171	10.85	2.75	2.6
06/07: S	18,014	830	22	1,680	9.326	2.79	2.62
07/08: F	21,369	937	23	2,304	10.78	2.74	2.6
07/08: S	20,400	925	22	2,280	11.18	2.77	2.63
08/09: F	22,232	959	23	2,676	12.04	2.74	2.59
08/09: S	19,866	887	22	1,947	9.8	2.79	2.0
09/10: F	23,329	999	23	2,921	12.52	2.74	2.58
09/10: S	21,329	922	23	2,518	11.81	2.8	2.67
10/11: F	22,516	961	23	2,399	10.65	2.69	2.5
10/11: S	20,818	927	22	2,100	10.09	2.82	2.65
11/12: F	22,764	977	23	2,321	10.2	2.83	2.67
11/12: S	21,490	970	22	1,924	8.95	2.78	2.61
12/13: F	23,106	1000	23	2,499	10.82	2.79	2.63
12/13: S	21,583	957	23	1,858	8.61	2.79	2.6
13/14: F	22,716	1003	23	2,104	9.26	2.83	2.61
13/14: S	21,049	973	22	1,712	8.13	2.81	2.62
14/15: F	22,531	981	23	1,987	8.82	2.8	2.57
14/15: S	21,199	934	23	1,639	7.73	2.79	2.58
15/16: F	22,486	967	23	2,221	9.88	2.84	2.66
Total	908,078	39,337	23	98,940	10.89%		

Note. "F" and "S" stand for fall and spring semesters, respectively.

Table 5
Means of GPA, π, and GAI by AFs

AFs	GPA1	GPA2	GPA3	$\pi 1$	$\pi 2$	GAI1	GAI3
Marketing	3.1	3.19	3.27	2.69	5.65	283	281
Physical Education	3.25	3.35	3.45	4.6	8.58	266	265
Spanish	2.7	2.78	2.93	5.27	8.09	283	282
Management	2.87	2.95	3.1	5.42	8.15	285	285
Social Sciences	2.86	2.97	3.2	5.98	8.81	287	286
Education	3.06	3.21	3.45	6.18	10.02	273	273
Finance	2.69	2.89	3.22	6.72	10.32	290	289
Humanities	2.87	2.93	3.11	7.42	10.1	285	286
English	2.81	2.95	3.28	7.56	10.61	285	284
Materials Management	2.5	2.56	2.7	7.8	11.71	276	275
Office Systems	2.62	2.75	2.96	8.09	13.45	259	259
Engineering Technologies	2.31	2.48	2.81	10.66	16	262	265
Physics	2.31	2.56	3.02	10.79	17.23	296	301
Engineering Transfers	2.78	2.92	3.24	10.88	15.68	327	329
Computer Sciences	2.63	2.76	3.07	11.22	15.71	291	293
Biology	2.33	2.45	2.93	11.43	14.25	295	302
Electronics	2.61	2.76	3.06	12.16	18.19	283	280
Accounting	2.52	2.61	3.02	14.83	18.01	291	293
Chemistry	2.17	2.21	2.64	14.93	16.48	301	306
Economics & Statistics	2.22	2.28	2.83	18.31	20.59	291	285
Mathematics	1.71	1.73	2.16	29.22	29.89	291	293

Note. Figures under GPA1, GPA2 and GPA3 correspond to subsample where $W \geq 1$, the full sample, and the subsample where $W = 0$, respectively. $\pi 1$ comes from the full sample while $\pi 2$ comes from the subsample of courses with at least one *W*. Finally, GAI1 and GAI3 come from the full sample and the subsample without *W*, respectively.

Table 6 reports several key facts of π by AFs. The service departments responsible for offering the highest number of courses were English (3,922), Mathematics (3,784), Spanish (2,948), and Humanities (2,903). The value in Mathematics was the greatest (29.22%), while the respective figures in the English, Humanities, and Spanish courses were 7.57%, 7.08%, and 5.19%. Two other service programs exhibiting high π values were Economics & Statistics (17.38%) and Chemistry (15.14%). The last column of Table 6 transforms withdrawals (W) into equivalent courses by AFs. The exercise requires dividing each value of W by the average course size of the respective AFs. The total W (98,940) observed during the period would require offering 4,239 equivalent courses to satisfy future demand.

Estimating the costs will be necessary to gauge withdrawals' economic and academic consequences. The approach suggested by Matos-Díaz (2018), assuming that equivalent courses were offered by part-time faculty, paid through the mechanism of additional compensation ($2,000 per course), allows estimating the lower-bound monetary cost of the total withdrawals of around $8.48 million (4,239 x $2,000 = $8,478,000). However, their actual cost might be significantly higher. The 4,239 equivalent courses are more than the total courses offered by service departments such as English (3,922) and Mathematics (3,784) and more than all the courses offered jointly by six different programs.[12] That is, withdrawals entail a waste of resources greater than the whole budget assigned to and spent by such programs during 20.5 consecutive academic years. This is, indeed, a significant waste of scarce resources.

Predicting π, σ^2 (W) C_S, and C_S,

Thus far, the discussion has centered on the characteristics of the parameters distributed by AFs and over time. This section is devoted to discussing the results of the estimated models and their policy implications. It was shown that π and σ^2 (W) move

[12] The programs are Material Management (309), Engineering Transfers (405), Marketing (738), Finance (791), Economics & Statistics (875) and Chemistry (1,084), for a total of 4,202 courses.

Table 6

Stylized Facts of Withdrawals by AFs

AFs	Enrollment (A)	Courses (B)	Course Size (C = A/B)	*W* (D)	% *W* (D/A)100	Equivalent Courses (D/C)
Marketing	19,696	738	27	523	2.66	19 (0.45%)
Physical Education	40,195	1,970	20	1,859	4.62	93 (2.19%)
Spanish	79,305	2,948	27	4,118	5.19	153 (3.61%)
Management	38,849	1,423	27	2,102	5.41	78 (1.84%)
Social Sciences	68,435	2,551	27	4,085	5.97	151 (3.55%)
Education	60,090	2,714	22	3,850	6.41	175 (4.13%)
Finance	20,112	791	25	1,403	6.98	56 (1.32%)
Humanities	77,191	2,903	27	5,462	7.08	202 (4.77%)
English Materials	95,682	3,922	24	7,242	7.57	302 (7.12%)
Management	7,038	309	23	564	8.01	25 (0.59%)
Office Systems	27,710	1,780	16	2,311	8.34	144 (3.4%)
Engineering Transfers	6,568	405	16	697	10.61	44 (1.04%)
Engineering Technologies	18,418	1,203	15	2,068	11.23	138 (3.26%)
Physics	25,178	1,321	19	2,880	11.44	152 (3.59%)
Computers	45,741	2,496	18	5,305	11.6	295 (6.96%)
Biology	43,332	1,806	24	5,123	11.82	213 (5.02%)
Electronics	38,599	2,471	16	5,187	13.44	324 (7.64%)
Accounting	41,669	1,843	23	5,973	14.33	260 (6.13%)
Chemistry	28,845	1,084	27	4,367	15.14	162 (3.82%)
Economics & Statistics	23,895	875	27	4,153	17.38	154 (3.63%)
Mathematics	101,530	3,784	27	29,668	29.22	1,099 (25.93%)
Total	908,078	39,337		98,940	10.89%	4,239 (100%)

in the same direction until $\pi = 0.5$; then, σ^2 (W) decreases for all $\pi > 0.5$. Likewise, C_S is an entirely decreasing function of π, while C_K decreases until $\pi = 0.5$, and then increases unboundedly. Based on these analytical results, the coefficients of Models 1 and 2 in Table 7 should be expected to share the same pattern of signs. Likewise, the coefficients of Models 3 and 4 should also share the same signs. However, the pattern of signs of Models 1 and 2 should be the opposite of Models 3 and 4, and vice versa, except for values of $\pi > 0.5$ in the two mentioned cases. All semi-continuous covariates, as well as almost all the dummies, satisfy this condition of consistency in the pattern of signs.

The baseline model estimates the equation described in (8) as a first approximation, using the following covariates: summer, SET, GAI, the variance of GAI, the proportion of private high school students, the proportion of female students, and the constant term.[13] The adjusted *R*-squared for the four models were 0.03, 0.03, 0.05, and 0.04, respectively. When the models were re-estimated accounting for UFH,[14] through fixed-effects models, the coefficients increased to 0.44, 0.41, 0.41, and 0.34, respectively. That is, the total variation around the means explained by the models increased by a factor of 14.67, 13.67, 8.2, and 8.5 times, respectively (results are available upon request). Thus, UFH plays a significant role in the student's decision process related to course withdrawal.

Later, the four models were estimated using all the covariates in Table 7 without accounting for UFH. Almost all AFs' covariates are statistically significant and exhibit the expected pattern of

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[13] In order to simplify the discussion of the coefficients in Table 7, hereafter the results belonging to the dependent variables π, σ^2 (W), C_S and C_K will be referred to as Model 1 through Model 4, respectively.

[14] UFH was modeled as both random- and fixed-effects. However, according to the Hausman test, the fixed-effects model is preferable to that of random-effects. The assumption of no correlation between the error term (ε_{jf}) and the explanatory variables is rejected at the 0.0000 significant level. Thus, the random-effect estimates are omitted, but they are available on request. It should be mentioned that the fixed-effects model is unable to provide estimates of time-invariant covariates, such as female.

Table 7

Predicting the Parameters of the Distribution of Withdrawals

Variables	π	σ^2 (W)	C_S	C_K
Constant	11.562**	8.4462**	2.2733**	7.4762**
	(1.7311)	(1.0384)	(0.2656)	(1.771)
Assistant Professor	0.0673	0.1678	-0.0047	-0.0364
	(0.2584)	(0.1531)	(0.035)	(0.2064)
Associate Professor	0.5005	0.3891†	-0.0248	-0.0608
	(0.3465)	(0.2011)	(0.0457)	(0.2656)
Professor	1.4391**	1.0245**	-0.1145*	-0.4648
	(0.4423)	(0.2506)	(0.0567)	(0.3291)
Doctorate	0.58*	0.2379	-0.0872*	-0.4489
	(0.2746)	(0.1685)	(0.0442)	(0.2795)
Probation	0.3533	0.122	-0.0193	0.0466
	(0.2642)	(0.1637)	(0.0412)	(0.2512)
Tenured	0.039	-0.0913	0.0273	0.2682
	(0.2983)	(0.1812)	(0.0443)	(0.27)
Class Size 1	-2.1446**	-1.7906**	-0.4454**	-2.7868**
	(0.2113)	(0.1304)	(0.0324)	(0.1739)
Class Size 3	-0.1748	-0.1732*	0.2598**	2.2112**
	(0.1265)	(0.0734)	(0.0189)	(0.1199)
Morning	-0.0631	-0.0233	0.0352*	0.1891†
	(0.1168)	(0.0698)	(0.0167)	(0.1004)
Night	-0.8093**	-0.0673	0.0825*	0.1719
	(0.2341)	(0.1371)	(0.0335)	(0.1997)
Summer	-8.8047**	-4.0522**	1.5309**	7.6149**
	(0.6902)	(0.4181)	(0.1984)	(1.1182)
SET	-0.5178**	-0.3282**	0.1082**	0.6304**
	(0.1523)	(0.095)	(0.0239)	(0.148)
Professor's age (Z)	2.3225*	1.4234*	-0.3832**	-2.2538**
	(1.1316)	(0.6031)	(0.1313)	(0.8173)
GAI (Z)	-1.5565**	-0.8608**	0.1702**	0.8515**
	(0.08)	(0.0455)	(0.0105)	(0.0614)
GAI Variance (Z)	-0.184**	-0.0881**	0.0183*	0.0788†
	(0.0526)	(0.0314)	(0.0078)	(0.0477)
Proportion of private school students (Z)	-0.1364*	-0.016	0.023**	0.0849†
	(0.0556)	(0.0342)	(0.008)	(0.048)
Proportion of female students (Z)	-1.5736**	-0.8913**	0.1759**	0.8213**
	(0.0875)	(0.0496)	(0.0115)	(0.067)
Adjusted *R*-square	0.46	0.43	0.43	0.37
Sample size	39,143	39,143	28,046	28,046

Note. †, *, ** Statistically significant at the 10, 5, and 1 percent levels, respectively. Z = standardized variable. Standard errors (in parentheses) are corrected for heteroskedasticity and contemporaneous correlation. Models also control for weekdays (5 dummies), terms (40 dummies), AFs (20 dummies), and UFH through fixed-effects models.

signs previously discussed. Nonetheless, the adjusted *R*-squared coefficients are 0.34, 0.31, 0.32, and 0.26, respectively. These coefficients are even smaller than those reported for the baseline models after accounting for UFH (0.44, 0.41, 0.41, and 0.34, respectively). However, the process of re-estimation of the models accounting for UFH gives rise to the statistical insignificance of a great proportion of the AFs' estimated coefficients. As Table 7 reports, the adjusted *R*-squared coefficients were 0.46, 0.43, 0.43, and 0.36, respectively. This result illustrates the superiority of UFH over AFs covariates.[15] Table 7 reports (in parentheses) the standard errors, corrected for heteroscedasticity and contemporaneous correlation, of all models; however, for space limitations, the table does not report the AFs' coefficients, even though they were included in the four models.[16]

Among the dummies controlling for faculty characteristics, the associate professor exhibits the correct pattern of signs, but it is marginally significant and positive only in Model 2. Professor covariate shares the correct pattern of signs (positive in Models 1 and 2 and negative in Models 3 and 4) in all estimated models. It is significant in Models 1, 2, and 3 but insignificant in Model 4. On the other hand, assistant professor, probation, and tenure are insignificant in all models; while doctorate exhibits the appropriate pattern of signs in all models, it is significant only in Models 1 and 3.

The professor's age covariate could capture the effects of two different scenarios. On the one hand, the course withdrawals may be significant and directly related to the young faculty's lack of teaching skills. If so, they should tend to diminish to the extent that faculty members improve their teaching skills over their academic career life cycle. On the other hand, it might be the case that withdrawals were significant and directly related to intrin-

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[15] The null hypothesis stating that the fixed-effects are redundant in all estimated models should be rejected. The estimated cross-section F and Chi-square statistics are highly significant at conventional levels. For technical details, refer to *EViews* (Quantitative Micro Software, 2009).

[16] See *EViews* (Quantitative Micro Software, 2009) for details.

sic course difficulty level rather than to a lack of faculty teaching skills. Under such a scenario, it should be expected that during their first years of teaching, new faculty members were subject to pressure from students (through SET) and administrators to grade more leniently. However, such pressure tends to diminish to the extent that faculty get tenure and promotions to higher ranks. If so, course withdrawals and the professor's age will be expected to move in the same direction. Evidence points to the conclusion that the second scenario prevails at UPR-Bayamón because the covariate is significant and exhibits the correct pattern of signs in all models (positive in Models 1 and 2 and negative in Models 3 and 4). Increases of one standard deviation in this covariate will induce increases of 2.32 and 1.42 points in π and σ^2 (W), as well as decreases of 0.38 and 2.25 points in C_S and C_K, respectively.

Almost all the covariates that define the section characteristics, such as course size, hour, and weekdays, as well as summer and SET, are statistically significant. Compared to the reference group (13 to 29 students per course), π and σ^2 (W) decrease by 2.14 and 1.79 points, while C_S and C_K decrease by 0.45 and 2.79 points in smaller courses, respectively. This result is at odds with the expected pattern of signs since the signs of C_S and C_K should be the opposite. One plausible explanation is that the smallest courses have been designed to accommodate students with special academic needs. There are 3,939 courses with enrollment less than or equal to 12 students. Among them, there are 2,256 where π = 0, and 1,683 where average π = 18.24%. If the first set consists of academically lagging students enrolled in remedial courses, while the second set is composed primarily of advanced students placed in small groups of the most difficult or advanced courses, then it will be very unlikely that the models could disentangle the relationship between course size and academic achievement.

On the other hand, in bigger courses (30 or more students), the pattern of signs is consistent (positive in Models 1 and 2 and negative in Models 3 and 4), and the covariate is statistically insignificant only in Model 1. Furthermore, compared to the refer-

ence group, σ^2 (W) tends to decrease by 0.17 points, while C_S and C_K tend to increase by 0.26 and 2.21 points, respectively. Therefore, π and course size move in opposite directions. This result has policy implications since the institution would be able to design strategies to identify in advance students with high probabilities to withdraw from determinate courses and try to place them in smaller courses with academic support.

Compared to courses offered in the afternoon C_S and C_K tend to increase by 0.04 and 0.19 points in morning courses, respectively. Meantime, π and σ^2 (W) move in the opposite direction, but their coefficients are statistically insignificant. On the other hand, in the evening courses, π decreases by 0.81 points and C_S increases by 0.08 points; however, the covariate was insignificant in the case of Model 2 (σ^2 (W)) and Model 4 (C_K). One possible explanation for such results could be the traffic congestion confronted by students enrolled in courses scheduled early in the morning or the lack of sufficient parking spaces. Both situations could increase late arrivals to classes and absenteeism among students, which in turn would increase π. If such problems have occurred, their frequency seems to be significantly smaller for evening courses. If so, the problem could be mitigated by improving the schedule of the academic offering according to students' needs.

A great proportion (14/20 = 70%) of the weekday dummy covariates is statistically significant. Nonetheless, the pattern of signs of the estimated coefficients is inconsistent. To shed more light on this issue, it would be convenient to increase the specificity level of the analysis considering interactions among hours, weekdays, and level of courses by AFs. Such a task will require further research.

The summer covariate exhibits the expected pattern of signs and is highly significant in all estimated models. After accounting for UFH, π and σ^2 (W) decrease by 8.8 and 4.05 points; meantime, C_S and C_K increase by 1.53 and 7.61 points if the course was offered during the summer. Other things being equal, π diminishes dramatically in summer sessions. This result becomes more

pertinent when considering that Mathematics courses (346) represented 79% of all summer courses (440). According to student performance, Mathematics courses are the most difficult. Their overall GPA and π in fall and spring terms are 1.71 and 29.22%, respectively. However, the respective figures for summer sessions are 2.10 and 14%. Thus, GPA increases by 23% and π decreases by 52% if the course is taught in summer. These numbers explain succinctly why Mathematics summer courses are so popular among students and why the Mathematics Department's market share of the summer offer is as high as 79%. Given that course inherent difficulty remains equal, no matter the session, there are only two possible explanations: (a) students take fewer courses in the summer and, therefore, can concentrate on a course more intensively, and (b) faculty members grade more leniently, relaxing academic standards possibly to prevent competition for teaching assignments. Both explanations have important policy implications that would require further research.

To empirically test the leniency hypothesis, attention is placed on the SET estimated coefficients. According to this conjecture, faculty members will get better SET ratings if they reduce academic standards and course difficulty levels through leniency grading. Such a symbiotic relationship between students and faculty has been proposed in the literature for a long time without direct statistical testing.[17] If so, it should be expected that in courses where SET = 1, the difficulty level diminishes, the GPA increases, and π decreases.

The SET estimated coefficients are statistically significant and exhibit the expected pattern of signs in all models. For instance, π and σ^2 (W) decrease by 0.52 and 0.33 points; meantime, C_S and C_K increase by 0.11 and 0.63 points if SET were conducted in the course. Other things being equal, π significantly diminishes whenever SET = 1. Therefore, according to students' criteria, inherent difficulty significantly decreases just for the simple reason

[17] For some relevant studies in the field, refer to Dilts (1980), Isely and Singh (2005), Krautmann and Sander (1999), McPherson (2006), Nelson and Lynch (1984), Seiver (1983), and Zangenehzadeh (1988).

that the course is under SET. This result is consistent with the symbiotic relationship conjectured in the leniency hypothesis.

Among the available student quality proxies, GAI is the most relevant because it constitutes the institution's admission policy criterion. Therefore, it should be expected that both GAI and GAI variance exert a significant effect on the four dependent variables under study. Table 7 reports the estimated coefficients showing that such is the case. For example, the estimated coefficients of the GAI covariate are highly significant (with the correct pattern of signs) in the four estimated models. Other things being equal, increases of one standard deviation in student quality (GAI) will induce decreases of 1.56 and 0.86 points in π and $\sigma^2(W)$, respectively. However, C_S and C_K are expected to increase by 0.17 and 0.85 points, respectively. On the other hand, increases of one standard deviation on the GAI variance covariate will induce reductions of 0.18 and 0.09 points in π and $\sigma^2(W)$, respectively. Contrariwise, C_S and C_K are expected to increase by 0.02 and 0.08 points, respectively.

The observed inverse relationship between GAI and π is what should be expected under normal academic circumstances. Notwithstanding, the pattern of signs exhibited by the estimated coefficients of GAI variance covariate needs some further explanations. The heterogeneity of student quality, proxied by this covariate, might have different effects on the dependent variables under study depending on the professor's attitude toward risk. For instance, faced with courses of highly heterogeneous students, a risk-averse professor would relax the academic standards to allow students belonging to the lower bound of the quality distribution to exceed threshold GPA values that induce them to not withdraw from the course. Thus, relaxing academic standards would improve the distribution of grades, reduce π, which, in turn, would increase the probability of better SET ratings for the professor teaching the course. Under such scenario, π and GAI variance should move in opposite directions. Evidence points to the conclusion that this is the case prevailing at UPR-Bayamón. Thus, both variables behave as expected. However, their policy

implications are difficult to achieve. For example, other things being equal, to induce a reduction of 3.12 points in π observed in Mathematics courses, it would be necessary to admit new entrance students with GAI two standard deviations above the mean. That is, it would require recruiting students with a GAI of about 333 points. Usually, students with such credentials apply and obtain admission to programs more competitively offered by other campuses of the UPR system or by U.S. universities. In the case of GAI variance covariate, it will be difficult, if not impossible, to control it. Hence, given the institutional official admission policy (GAI), the increases in student quality required to partially offset the observed π by AFs are unfeasible. However, other things being equal, π is expected to diminish by 8.68 points just for the simple reason that the course will be during the summer session. Therefore, the structure of incentive mechanisms prevailing among faculty members and students during summer sessions deserves further research.

Two other student characteristics that could contribute to explaining the variance around the dependent variables of the models are the private high school and female student proportions. Both proportions significantly vary among programs. For the full sample, they are equal to 47% and 53%, respectively. However, for Office Systems, the figures are 32% and 94%, respectively. On the other hand, the respective female proportion in programs such as Education and Biology are 85% and 71%, but in Electronics, it is only 7%. Therefore, students are not randomly distributed among programs.

The female proportion covariate is highly significant in all the models. Other things being equal, increases of one standard deviation on it will be associated with reductions of 1.57 and 0.89 points in π and σ^2 (W), respectively. Meanwhile, it is expected that C_S and C_K increase by 0.18 and 0.82 points, respectively. On the other hand, increases of the same magnitude in the proportion of private high school students will induce a decrease of 0.14 points in π, as well as increases of 0.02 and 0.08 points in C_S and C_K, respectively. The coefficient is statistically insignificant in the case

of Model 2 (σ^2 (W)). Thus, to the extent that both proportions tend to increase, π decreases significantly. Given that the control of both variables is beyond institutional reach, there is no space to use them as a policy mechanism design.

The inclusion of a set of forty time-varying dummies, which uses the first term as the reference group, allows us to capture the effect of time on the dependent variables of the models. The purpose was to evaluate whether the estimated models might mimic the growth path exhibited by the key parameters depicted in Figure 2. Although Table 7 does not report the estimated coefficients, a significant proportion is statistically significant and exhibits the expected pattern of signs in all models. For instance, nineteen out of 40 (48%) of the estimated coefficients of Model 1 and 25 out of 40 (62.5%) of Model 2 were significant, and their pattern of signs is the expected one (negative), according to Figure 2. On the other hand, the respective proportion for Models 3 and 4 is 65% for each one (26/40), and the pattern of signs is the expected one (positive), according to Figure 1. Thus, the time-varying coefficients of the four estimated models mimicked the exhibited growth path of the dependent variables very well.

Summary and Conclusions

Using a rich panel containing detailed information on the 39,337 courses offered during forty-one consecutive terms, this study analyzed the distribution of course withdrawals and its key moments at the UPR-Bayamón. Overall, the fit of the estimated models is very good. Evidence shows that courses, faculty, and students' characteristics exert a strong and significant influence on π, σ^2 (W), C_S and C_K. UFH, captured through random- and fixed-effects models, explains a significant proportion of the variation observed around the dependent variable of each estimated model. Empirical evidence does not allow rejection of the symbiotic relationship between faculty members and students, conjectured in the literature, since the estimated coefficients of the SET covariate were highly significant and exhibited the correct pattern

of signs in all models. That is, π and σ^2 (W) tend to decrease, while C_S and C_K tend to increase for the simple reason that the SET was conducted in the course.

A similar result was observed in the case of summer covariate. Its estimated coefficients were highly significant in all estimated models. As discussed previously, π is expected to diminish by 8.8 points if the course is offered during the summer session. However, under the unlikely scenario that the institution would be able to recruit new entrant students with a GAI two standard deviations above the mean (GAI about 333 points), π would decrease by only 3.1 points. Hence, offering a Mathematics course during the summer session would have an expected effect on π equivalent to admitting new entrant students with GAI 5.64 standard deviations above the mean, which is impossible. Therefore, the signs and significance of the coefficients of GAI, SET, summer covariates, and UFH have important implications for the institution's academic policy mechanism design. Empirical evidence points to the conclusion that at UPR-Bayamón, there exists an environment where faculty members and students engage in a *shopping-around* process where both parties improve their well-being at the expense of reductions in academic standards and the quality of the education provided. Under such a scenario, it might be possible to explain the contradictions observed in the institution where, even though the indicators of student quality are consistently decreasing over time, the GPAs are increasing and π is decreasing simultaneously.

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Convergence or divergence? An econometric analysis of the role of culture on consumer purchase patterns

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ABSTRACT
The study aims to analyze the influence of national culture on purchasing patterns. We use footwear sales and compare the results with those of apparel gathered in another study. We perform a multiple regression analysis using national retail sales data from Puerto Rico and the United States, paying particular attention to the effects of seasonality. The results confirm that culture influences purchase and that special occasions can predict variations in sales. By comparing the results with those of apparel, we identify common behaviors and differences between categories. Our study contributes to the limited amount of empirical research available about the influence of national culture on consumer behavior, offering helpful information to retailers interested in entering these markets.

Keywords: convergence, divergence**,** culture**,** consumer behavior, purchase patterns

¿Convergencia o divergencia?
Análisis econométrico del rol de la cultura en los patrones de compra

RESUMEN
El propósito de este estudio es analizar la influencia de la cultura nacional en patrones de compra. Utilizamos las ventas de calzado, y comparamos los re-

sultados con los de ropa, recopilados en otro estudio. Realizamos un análisis de regresión múltiple con datos nacionales de ventas al detal de Puerto Rico y Estados Unidos, prestando particular atención al efecto de la estacionalidad. Los resultados confirman que la cultura influye en la compra, y que ocasiones especiales pueden predecir variaciones en ventas. Comparando los resultados con ropa, identificamos tanto conductas en común como diferencias entre categorías. Nuestro estudio contribuye a la limitada cantidad de investigaciones empíricas disponibles sobre la influencia de la cultura nacional en conductas del consumidor, ofreciendo información útil a minoristas con interés en ingresar en estos mercados.

Palabras clave: convergencia, divergencia**,** cultura**,** conducta del consumidor, patrones de compra

Introduction

The influence of culture on consumer behavior has been an important topic in the international marketing literature. Levitt's (1983) argument about the globalization of markets suggests the standardization of marketing strategies. Other authors support the notion that technological advances will result in the convergence of consumer preferences (Assael, 1998; Bullmore, 2000; Czinkota & Ronkainen, 1998; Jain, 1990). The idea of consumer convergence has evolved into the concept known as the Global Consumer Culture (GCC), and according to Magnusson & Westjohn (2019), the literature on GCC assumes that there is a homogenizing global consumer segment.

De Mooij (2003, 2015, 2019) questions this idea as it seems to put consumers in a cultural void. It does not consider the effect of national culture and institutional and social structures on consumer behavior (Melnyk et al., 2022; Sandikci & Ger, 2010). While cultural practices may be found in the global marketplace, the underlying reasons for the purchases are not global (De Mooij, 2015). This notion is reinforced by Bashar et al. (2023), who argue that culture has a vital role in consumers' buying behavior, particularly impulse purchases. Most notably, little empirical evidence supports cultural convergence (De Mooij, 2019; Usunier, 1997).

To address this issue, Nieves Rodríguez et al. (2017) analyzed culture and gender's influence on the United States and Puerto Rico apparel purchases, considering seasonality's varying impact. Using Samli's (2013) international consumer behavior model as the theoretical framework, the authors developed a consumer behavior model for the apparel industries in Puerto Rico and the United States. The study considered seasonality as a purchase pattern factor.

Puerto Rico and the United States are examples of two countries with a strong political and economic relationship and an interwoven history and cultural landscape. Puerto Rico functions as an American state in many ways while remaining an unincorporated U.S. territory (Gómez, 2017). Based on this relationship, convergence in consumer behavior would be expected.

Following Samli's (2013) theoretical framework and the methodology used by Nieves Rodríguez et al. (2017), in the present study, we analyze the influence of culture on the purchase patterns of shoes in Puerto Rico and in the United States (see Figure 1). Our purpose is to compare the results of apparel and shoes and provide empirical evidence of national culture's influence[1] on consumer behavior. As has been emphasized by Khan et al. (2024), apparel and accessories are a major sector of the global economy, and according to Hockey et al. (2013), shoes are not only an everyday practical item but also a status and identity marker.

The shoe market in the United States has experienced growth in recent years and is the largest globally, partly due to the number of buyers and consumers' purchasing habits (MarketLine, 2021a). Puerto Rico's consumer base is just a fraction of that of the United States due to its population size. However, Doug Hayes, vice president and general manager of Americas for Crocs, says, "Puerto Rico is a great market for Crocs and a very strong footwear market" (Kantrow Vázquez, 2010, párr. 2).

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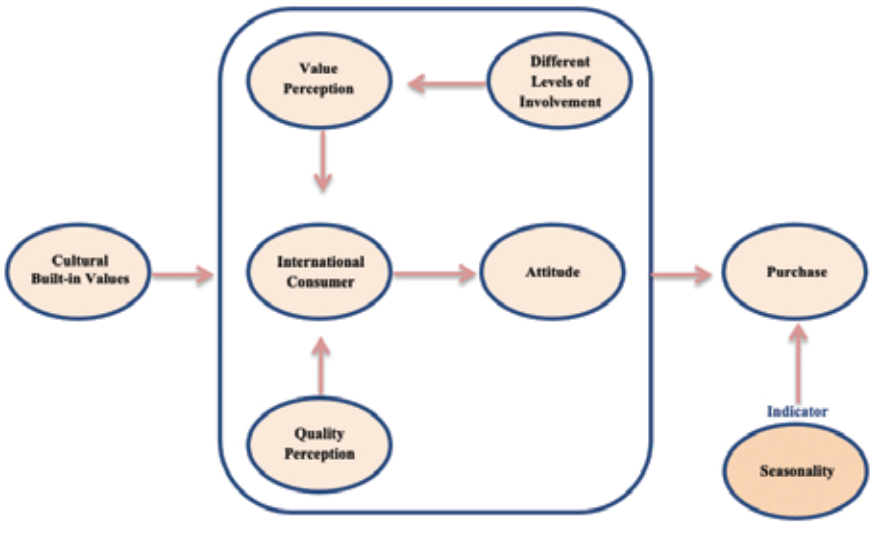
[1] Hereafter we will use the term culture to refer to the cultural built-in values of a nation, following Samli's terminology as cited in the text.

This study is pertinent because several other countries have relationships like Puerto Rico and the United States in North America, such as Hong Kong and China in Asia, and the British Virgin Islands and the UK in Europe.

The following section examines the literature review related on culture and consumer behavior research. Subsequently, we describe the methodology, including the data, variable operationalization, and modeling equations. This is followed by the presentation of the results, discussion of the findings, and conclusions.

Figure 1

International Consumer Behavior Model



Source: Samli's (2013) International Consumer Behavior Model, adapted by Nieves Rodríguez et al. (2017).

Literature Review

Cleveland & Bartsch (2019) support the idea of a global consumer culture and believe that the importance of the nation in international marketing segmentation and research is declining.

De Mooij (2019) argues that international marketers usually rely on national consumer behavior and consumption statistics. While the global media, the Internet, and the increase in travel and the use of the English language are said to be the drivers of the global consumer culture, statistics show that the use, interpretation, frequency, and fluency vary across countries.

Other scholars agree that it is beneficial to adapt to cultural values for an effective international marketing strategy (Kongsompong, 2006; Luna & Gupta, 2001; Nicholls et al., 2003; Samli, 2013), and Steenkamp (2019) suggests that globalization might be hindering, leading to a renewed interest in local consumer culture. De Mooij (2019) states that most nations share a dominant language, mass media, a national education system, and national product markets.

Consumer behavior has been empirically analyzed across different countries using behavioral intention models, but researchers recognize the need to separate and understand the effect of culture on consumer behavior (Malhotra & McCort, 2001).

Empirical Research of Culture's Effect on Consumer Behavior

A correlation analysis using as independent variables the national wealth from 15 European countries and Hofstede's cultural dimensions, as well as product consumption and ownership of mineral water, cars, and the Internet as dependent variables, was carried out by De Mooij (2000). The results indicated that when countries converge in terms of national wealth, consumer behavior is better explained by cultural variables. Subsequently, De Mooij and Hofstede (2002) expanded this previous study by using additional product categories and obtained the same results.

Using Hofstede's cultural dimensions, de Bellis et al. (2015) conducted a study that analyzed the effect of the uncertainty avoidance dimension on consumer behavior as potential buyers customized their car of preference. Japan, Taiwan, China, and Singapore were considered for this purpose. A second part of the study tested the effect of the same cultural dimension on

conversion rates and social sharing behavior in Japan and China. The findings showed that ignoring the differences between the two countries in uncertainty avoidance puts consumers at risk of having a more difficult customization experience and a lower conversion for the businesses.

Similarly, Sheldon et al. (2017) compared the motives for Instagram usage among participants from Croatia, a highly collectivistic culture according to Hofstede's' cultural dimension score, and the United States, a highly individualistic culture. The results showed that the motivations for using Instagram do not vary across countries but that culture moderates the behavioral outcome, as reflected in the time spent on Instagram, the number of followers, and the frequency of *hashtagging*.

Likewise, Bombaij et al. (2022) conducted a comparative study to analyze the effect of temporary loyalty programs on redemption rates, using data from 45 countries, considering several retailer and country characteristics, including Hofstede's individualism and long-term orientation dimensions. Some of their findings indicate that retailer characteristics are more relevant for temporary loyalty programs. Additionally, permanent and temporary loyalty programs are more effective in individualistic countries, while long-term orientation is only significant for permanent loyalty programs.

Other studies have also analyzed the effect of culture on consumer behavior using alternative approaches. For example, in a comparative study, Nicholls et al. (2003) analyzed consumers' shopping behavior at large-scale shopping centers in Chile and the United States. The study focused on location selection and shopping motivation. The results indicated that while some behaviors may be considered universal, others seem driven by cultural factors. Another study by Spiers et al. (2014) examined the influence of culture on consumer behavior. The study compared how and why Trinidad and Tobago and Jamaica consumers buy products. The authors conducted a multiple regression analysis, and the results revealed differences in consumers' buying behav-

ior due to cultural factors, such as family structure, language, and values and beliefs.

More recently, Melnyk et al. (2022) implemented a meta-analysis to study the influence of social norms on consumer behavior in a comparison between 22 countries. Target behavior characteristics, communication factors, consumer costs, environmental factors, and methodological controls were used as moderators. The results indicated that while the effect of social norms on approved behaviors, such as fruit consumption and donations, is more stable across time and cultures, their effect on disapproved behaviors, such as smoking and gambling, has increased over time and is stronger in traditional cultures.

Empirical Research of Culture's Effect on Apparel Consumer Behavior

Previous empirical studies indicate that culture influences apparel consumer behavior. In one such study, Millan et al. (2013) tested for cultural variations in apparel-related consumer behavior in a comparison between the Czech Republic and Bulgaria. The findings showed differences in consumer interest due to the meanings of the apparel artifacts, preference for well-known brands, brand loyalty, and the perceived importance of the apparel attributes. Separately, Nieves Rodríguez et al. (2017) analyzed the influence of culture and gender on apparel purchases in Puerto Rico and the United States. The results demonstrated that culture influences purchase behavior, and gender has a moderating role. Additionally, the results showed that the annual seasons and special occasions are good predictors of apparel purchases.

In another study, Rahman et al. (2017) analyzed culture's effect on the importance of product-evaluative cues in apparel purchases. The study considered participants from China and Canada. The results indicated that for Canadian consumers, style is a more influential cue when evaluating an apparel product, while for Chinese consumers, comfort plays a more significant role. More recently, Rahman et al. (2021) used the same approach as

the previous study in comparing India and Canada. The results revealed that comfort and fit are the two most important cues for consumers from both countries when evaluating apparel. However, Indians seem to rely more than Canadians on no child labor and no animal skin cues.

Recently, employing data from Italy and Russia, Khan et al. (2024) studied the effect of culture on consumers' willingness to pay more for sustainable fashion using five Hofstede dimensions. The findings suggest that the cultural dimension that drives sustainable fashion purchasing in Italy is collectivism, while in Russia, it is a long-term orientation. Additionally, Hofstede power distance belief, masculinity, and uncertainty avoidance dimensions negatively influence the willingness to pay more for sustainable fashion of the Italian consumer but do not influence the Russian consumer.

Table 1 summarizes the empirical research on culture's effect on consumer behavior.

Table 1

Empirical Research of Culture's Effect on Consumer Behavior

Authors	Countries	Variables	Product category	Methodology approach	Main findings
De Mooij (2000)	15 European Countries	National Wealth Hofstede Cultural Dimensions Consumption and Ownership	Mineral Water Cars Internet	Correlation and Regression Analysis	Cultural variables better explain consumer behavior.
De Mooij & Hofstede (2002)	15 European Countries	National Wealth Hofstede Cultural Dimensions Consumption and Purchase Behaviors	Various Product and Service Categories	Correlation and Regression Analysis	Cultural factors are better predictors of consumer behavior.
Nicholls et al. (2003)	Chile United States	National Culture Location (Shopping Mall / Shopping Plaza) Shopping Motivation	Not Specified Out of the Scope of the Study	Survey (Interviews)	Some shopping behaviors are driven by cultural factors.

Spiers et al. (2014)	Trinidad & Tobago Jamaica	Family Structure Language Values and Beliefs Buying Behavior	Not Specified	Regression Analysis	Influenced by their cultural identities, consumers exhibit different buying behavior.
de Bellis et al. (2015)	Japan Taiwan China Singapore	Hofstede Uncertainty Avoidance Dimension Configuration Duration and Completion Consequences of Configuration Duration Conversion Rates Social Sharing Behavior	Cars	Field Study	Ignoring the differences between countries puts consumers at risk of having a more difficult experience and a lower conversion for the business.
Sheldon et al. (2017)	Croatia United States	National Culture Motives for Instagram Use	Instagram	Survey (Questionnaire)	Culture moderates the behavioral outcome (time spent on Instagram, number of followers, and frequency of hashtagging).

Bombaij et al. (2022)	45 Countries	Temporary Loyalty Programs (Duration, Discount Offered, Spending Requirement, Reward Depth) Retailer Characteristics (Permanent Loyalty Program, Price Strategy, Market Share) [Moderator] Country Characteristics (Retail Concentration, Temporary Loyalty Program Competition, Hofstede Individualism and Long-term Orientation Dimensions) [Moderator] Redemption Rate	Grocery Retailers	Two-Way Cluster-Robust Standard Errors	Retailer characteristics are more relevant for temporary loyalty programs. Permanent and temporary loyalty programs are more effective in individualistic countries. Long-term orientation is only significant for permanent loyalty programs. Permanent programs may harm the success of temporary programs. Temporary programs are more successful when retail competition is high. The temporary program design impacts its success when program competition is high.

Melnyk et al. (2022)	22 Countries	Social Norms Target Behavior Characteristics (Moderator) Communication Factors (Moderator) Consumer Costs (Moderator) Environmental Factors (Moderator) Methodological Controls (Moderator) Consumer Behavior (Socially Approved and Disapproved)	Several Product Categories	Meta-Analysis	Differences in social norms influence consumer behavior, and the effect is stronger on disapproved behaviors and traditional cultures.

Millan et al. (2013)	Czech Republic Bulgaria	National Culture Interest in Apparel Susceptibility to Normative Social Influence Preference for Apparel Symbolic and Hedonic Meanings Preference for Well-Known Apparel Brands Brand Loyalty and Brand Switching Apparel Attribute's Importance	Apparel	Survey (Interviews)	There are differences between countries among all the dependent variables.
Nieves Rodríguez et al. (2017)	Puerto Rico United States	National Culture Gender (Moderator) Purchase	Apparel	Regression Analysis	Culture influences purchase behavior, and gender is a moderator. Annual seasons and special occasions are good predictors of apparel purchase.
Rahman et al. (2017)	China Canada	National Culture Importance of Product-Evaluative Cues	Apparel	Survey (Questionnaire)	Style is more influential for Canadians and comfort for the Chinese.

Rahman et al. (2021)	India Canada	National Culture Importance of Product-Evaluative Cues	Apparel	Survey (Questionnaire)	Comfort and fit are the most important cues for Indians and Canadians. Indians rely more than Canadians on no child labor and no animal skin cues.
Khan et al. (2024)	Italy Russia	Hofstede Power Distant Belief, Collectivism, Masculinity, Uncertainty Avoidance and Long-Term Orientation Dimensions. Willingness to Pay More for Sustainable Fashion.	Sustainable Fashion (Apparel and Accessories)	Survey (Questionnaire)	The cultural dimension that drives sustainable fashion purchasing in Italy is collectivism. In Russia, the cultural dimension driving sustainable fashion purchasing is long-term orientation. Power distant belief, masculinity and uncertainty avoidance negatively influence the willingness to pay more for sustainable fashion of the Italian consumer, but do not influence the Russian consumer.

Source: elaborated by the authors.

The Shoe Category

The shoe category is considered a part of the broader apparel subsector in Puerto Rico and the United States.[2] Shoes are a product category of vast economic importance (Cruz Cárdenas et al., 2018); they not only provide protection to the feet but also have aesthetic and symbolic functions (Seferin & van der Linden, 2012). According to Hockey et al. (2013), shoes have a salient role in the formation of the identity of an individual. Their use is considered part of a social code (Seferin & van der Linden, 2012).

As mentioned earlier, the United States shoe market is globally the largest. Although it experienced a decline during 2020 due to the COVID-19 pandemic, it is expected to recover and continue its stable growth (MarketLine, 2021a). For JC Penney, a department store in Puerto Rico and the United States, shoes and handbags accounted for 11% of its net sales in 2019 (MarketLine, 2021b). Novus, a Puerto Rico-based shoe retailer with 65 stores throughout Puerto Rico and the Dominican Republic, is growing its presence in the United States by opening its second store (Shopping Centers Today, 2018). These are some examples of the economic importance of the shoe category for Puerto Rico and the United States and the commercial relationship between these two countries.

Based on the results of the empirical research on culture's effect on apparel consumer behavior and the relationship between apparel and shoes as part of the broader apparel subsector, the first null hypothesis to test is:

H1: Culture influences the purchase of shoes

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[2] The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing data related to the U.S. business economy. The NAICS code are 448, 4481, and 4482 for Clothing and Clothing Accessories Stores, Clothing Stores and Shoe Stores, respectively (U.S. Census Bureau, n.d.).

Seasonality as an Indicator of Purchase Patterns

According to Tong et al. (2012), shoes are considered a seasonal product, where "Seasonality" means yearly patterns in consumption (Wagner & Mokhtari, 2000). Some factors can cause seasonal patterns, such as holidays, government actions, industry traditions, climate, social phenomena, and summer and school years (Radas & Shugan, 1998). Therefore, it is fundamental to model seasonality when analyzing consumption patterns (Osborn, 1988).

While some studies, such as Kirk et al. (2005), show that climate influences seasonality, Scott (1995) found that besides climate variations, seasonal consumption can be influenced by other factors, such as income and interest rates. Meanwhile, according to Swilley & Goldsmith (2013), sociocultural occasions explain the seasonality effect better. The results of Nieves Rodríguez et al. (2017) showed that the annual seasons and special occasions are good predictors of apparel purchases in Puerto Rico and the United States.

Considering the previous findings, the second and third null hypotheses of this study are:

H2: The annual seasons predict the purchase of shoes

H3: The special occasions predict the purchase of shoes

Methodology

Literature

A systematic literature review was done to identify the empirical research about the effect of culture on consumer behavior. The search was done using the databases available at the Library System of the University of Puerto Rico – Río Piedras (ABI – Inform, Emerald Insight, Science Direct, and Business Insights Global) and, additionally, Google Scholar. The keywords used were "culture," "cultural influence," and "consumer behavior," and in some instances, accompanied by "shopping," "clothes," "apparel," and "shoes." The selection parameters were the following:

a) Articles published in peer-reviewed journals
b) Empirical research
c) Analysis centered on the influence of culture on consumer behavior
d) Comparison between two or more countries
e) Full text available

A total of 13 articles were selected and discussed in the Literature Review.

Data

To test the hypotheses of the present paper, we follow the methodology used by Nieves Rodríguez et al. (2017) to analyze the influence of culture on apparel purchases, taking into consideration seasonality's impact.

This study uses national data on the retail sales of shoes in Puerto Rico and the United States. The data for Puerto Rico is from the Export and Trade Company of Puerto Rico; meanwhile, the data for the United States is from the U.S. Census Bureau. The currency is the USD. The data is of monthly frequency and spans from January 2006 to December 2015. In these ten years, the methodology used by both agencies to collect retail sales data has been consistent. After 2016, a new method was implemented by the Export and Trade Company of Puerto Rico, and to date, there are less than ten years of data available. Additionally, Puerto Rico suffered a major hurricane in 2017 and earthquakes in 2020, and both countries were impacted by the COVID-19 pandemic. Significant events have marked the past few years, and combining this data with that of more stable years could provide inaccurate results. For example, Lobato et al. (2022) indicate that the impact of the COVID-19 pandemic was very pronounced in Puerto Rico, causing business closures and a reduction in household incomes.

According to De Mooij (2003), countries are more likely to converge when the economic conditions are similar, while countries with different economic circumstances are expected to diverge. Some variations in consumer behavior can only be perceived af-

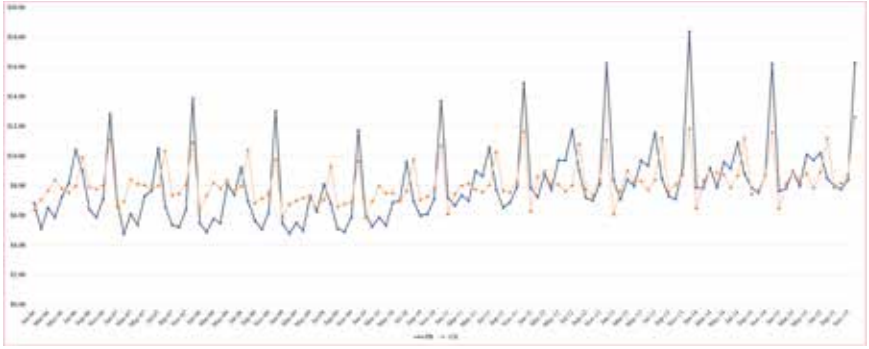
ter income differences have disappeared. To isolate the effect of socio-economic factors, this study uses the gross domestic product (GDP) and consumer price index (CPI) for control of the wealth and inflation, and it additionally uses a per capita measure for control of the population.

The GDP data for Puerto Rico and the United States is from the World Bank. The data is of annual frequency and spans from 2006 to 2015. The CPI data for Puerto Rico is from the Department of Labor and Human Resources of Puerto Rico, and the CPI data for the United States is from the U.S. Bureau of Labor Statistics. The CPI for shoes, used for control of the inflation in retail sales, is of monthly frequency and spans from January 2006 to December 2015. The CPI for all articles and services, which is used for control of the inflation in GDP, is of annual frequency and spans from 2006 to 2015. The population data for Puerto Rico and the United States is from the U.S. Census Bureau. The data is of annual frequency and spans from 2006 to 2015.

Isolating the effect of these socio-economic factors gives us a dataset that can be compared. Figure 2 illustrates the real sales per capita of shoes (hereafter denominated as Sales) in both countries.

Figure 2

Real Sales per Capita of Shoes in Puerto Rico and the United States



Source: elaborated by the authors.

Operationalization of Variables

To determine the relationship between culture and the purchase patterns of shoes in Puerto Rico and the United States, we perform an OLS regression analysis. This method has been used in previous works for carrying out similar studies (De Mooij, 2000; De Mooij & Hofstede, 2002; Nieves Rodríguez et al., 2017; Spiers et al., 2014). Seasonality is being considered as a factor in the purchase patterns. Following the literature on seasonality and the results of Nieves Rodríguez et al. (2017) for apparel, the annual seasons and certain special occasions are included in the analysis to represent seasonality in the data. Figure 2 shows peaks around July, August, and December; therefore, the two special occasions considered are Back to School and Christmas.

Dummy variables are introduced in model equations: $\{D_{Spring}, D_{Summer}, D_{Fall}, D_{Winter}\}$, $\{D_{Back\ to\ School}, D_{Xmas}\}$, *and* $\{D_{Puerto\ Rico}, D_{United\ States}\}$, to represent the annual seasons, the occasions of Back to School and Christmas, and the country as a proxy for culture, respectively.

Modeling Equations

We consider two modeling environments: 1) Model A, where the annual seasons are used to control for the seasonal component in the retail sales data, and 2) Model B, where the occasions of Back to School and Christmas are regressors representing seasonality in the data. Looking at Figure 2, the months corresponding to the fall season seem more stable. Therefore, the benchmark scenario for Model A consists of the fall season. The benchmark scenario for Model B consists of all calendar months except those representing the occasions of Back to School and Christmas. Back to School is represented by July in Puerto Rico and by August in the United States, and Christmas is represented by December in both countries. Considering the analysis and the results of Nieves Rodríguez et al. (2017), the months' sales data representing these occasions are removed from Model A, as they may be outliers.

The country dummy variables are introduced as regressors in the two modeling environments (Model A and Model B), as well

as the interactions with the annual seasons and special occasions. The benchmark scenarios additionally consist of Puerto Rico. The estimation attribute of the benchmark scenario is included in the constant regressor of the model equation. Equations (A) and (B) represent the two modeling environments, henceforth denominated as the Annual Seasons Model (Model A) and the Special Occasions Model (Model B).

$$Y_t = \beta_1^A + \beta_2^A D_{Spring,t} + \beta_3^A D_{Summer,t} + \beta_4^A D_{Winter,t} + \beta_5^A D_{United\ States,t} + \beta_6^A D_{Spring}\, D_{United\ States,t} \quad (A)$$
$$+\beta_7^A D_{Summer}\, D_{United\ States,t} + \beta_8^A D_{Winter} D_{United\ States,t} + \varepsilon_t^A$$

$$Y_t = \beta_1^B + \beta_2^B D_{Back\ to\ School,t} + \beta_3^B D_{Xmas,t} + \beta_4^B D_{United\ States,t} + \beta_5^B D_{Back\ to\ School}\, D_{United\ States,t} \quad (B)$$
$$+\beta_6^B D_{Xmas} D_{United\ States,t} + \varepsilon_t^B$$

Results

Table 2 summarizes the least squares coefficient estimates of Equations (A) and (B), and specifies in parentheses the absolute value of the t-statistics of the coefficient estimates. It also provides the R^2, the adjusted R^2, and the degrees of freedom of each model.

The results of Model A show an R^2 of 24 percent, whereas Model B shows an R^2 of 71 percent, with 5 out of the 6 coefficient estimates having 1 percent significance. These results suggest that the Special Occasions Model is a much better predictor of the retail sales of shoes in Puerto Rico and in the United States when compared to the Annual Seasons Model. Therefore, we center the discussion on the Special Occasions Model.

The results show that the country (culture) dummy variable is statistically significant ($p<0.01$). This indicates that, when controlling for the effect of the special occasions, culture can be considered a good predictor of the retail sales of shoes. Monthly Sales are, on average, $7.20 and $7.68 for Puerto Rico and the United States, respectively.

Table 2

Estimation Results for Equations A and B

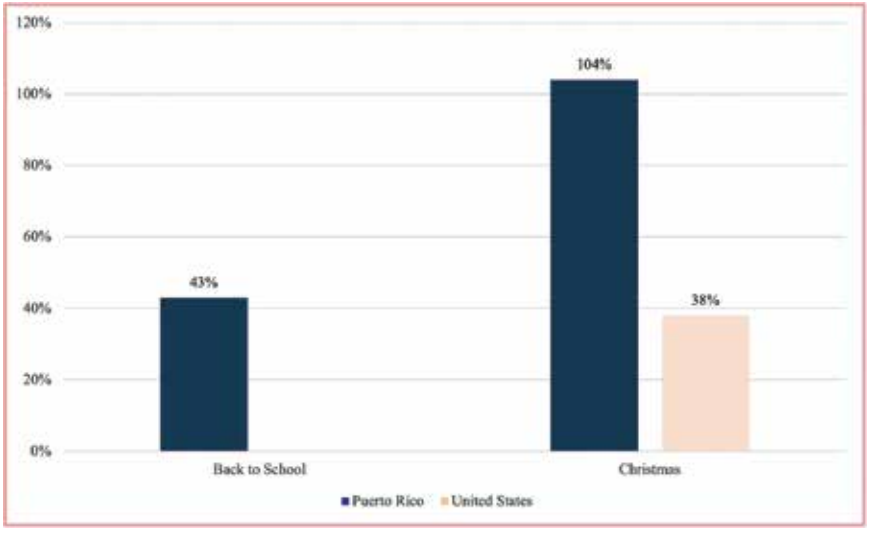
	Model A	Model B
Intercept	**6.80** (37.16)***	**7.20** (63.31)***
DSpring	**0.64** (2.48)**	
DSummer	**1.30** (4.49)***	
DWinter	**-0.24** (0.81)	
DBack to School		**3.08** (8.17)***
DXmas		**7.51** (19.91)***
DUnited States	**0.89** (3.42)***	**0.48** (3.00)***
D*Spring*DUnited States	**-0.17** (0.46)	
D*Summer*DUnited States	**-1.20** (2.92)***	
D*Winter*DUnited States	**-0.56** (1.38)	
D*Back to School*DUnited States		**-0.33** (0.62)
D*Xmas*DUnited States		**-4.09** (7.67)***
R^2	**0.24**	**0.71**
Adj-R^2	**0.22**	**0.70**
df	**192**	**234**

Note. ***: 1% significance; **: 5% significance
Source: elaborated by the authors.

The dummy variables representing the special occasions are statistically significant ($p<0.01$) for Puerto Rico. The results indicate that, on average, sales increase by $3.08 (43%) and $7.51 (104%) during the Back to School and Christmas, respectively. The interaction between the dummy variables representing the United States and Christmas is statistically significant ($p<0.01$). The results show that, on average, sales in the United States are $4.09 lower than in Puerto Rico during the occasion of Christmas (Puerto Rico: $14.71; USA: $10.62). This also means that when compared to its own average, sales in the United States increased by $2.94 (38%) during this special occasion. Figure 3 summarizes the most significant results.

Figure 3

Percent Change in Real Sales per Capita of Shoes



Source: elaborated by the authors.

Discussion

Nieves Rodríguez et al. (2017) results showed that both, the Annual Seasons Model and the Special Occasions Model, are good predictors of the retail sales of apparel in Puerto Rico and

the United States. The results are not the same for the shoe category. The Special Occasions Model better explains variations in sales. The results of this study additionally confirmed that culture influences purchase. Therefore, H1 and H3 are accepted, and H2 is rejected.

Looking at specific similarities and differences between the two countries, it is interesting to note that while the results indicate that, on average, the American consumer spends more on shoes than the Puerto Rican consumer does, Puerto Ricans seem more influenced by special occasions. The special occasions of Back to School and Christmas have an impact on the purchase patterns of shoes in Puerto Rico, whereas, in the United States, it is only Christmas. The results also indicate that while consumers in both countries spend more during Christmas, sales in Puerto Rico surpass those in the United States during this special occasion. This suggests that Puerto Ricans are more festive and might use shoes to express themselves. This would be aligned with Hockey et al. (2013), who mentions that shoes can act as an autobiographical device.

The results for both product categories, apparel and shoes, suggest that culture influences purchase. Additionally, the results indicate that special occasions are good predictors of the retail sales of apparel and shoes in Puerto Rico and the United States. However, a notable difference is that the annual seasons are also good predictors of the retail sales of apparel in Puerto Rico and the United States. However, this is not the case with the shoe category.

Christmas is a special occasion that influences the retail sales of apparel and shoes. Apparel is additionally influenced by Mother's Day and Father's Day special occasions. Shoe sales are additionally influenced by the special occasion of Back to School, but not Mother's Day or Father's Day. However, a fundamental difference between the two countries is that Father's Day and Back to School are only significant in Puerto Rico. Furthermore, even during Mother's Day and Christmas, when spending increases in both countries, the percent change is more substantial in Puerto Rico than in the United States. Table 3 presents the significant benchmark results for Puerto Rico and the United States apparel and shoes.

Table 3

Convergence and Divergence Results for Apparel and Shoes in Puerto Rico and in the United States

	Puerto Rico	United States
Apparel	The Annual Seasons are good predictors of the purchase patterns. These Special Occasions are good predictors of the purchase patterns: • Mother's Day (*) • Christmas (*) • Father's Day	The Annual Seasons are good predictors of the purchase patterns. These Special Occasions are good predictors of the purchase patterns: • Mother's Day • Christmas
Shoes	These Special Occasions are good predictors of the purchase patterns: • Christmas (*) • Back to School	These Special Occasions are good predictors of the purchase patterns: • Christmas

Note. The asterisk (*) indicates that the percent change in sales during that special occasion is more substantial for that country when compared to the other.
Source: elaborated by the authors.

The results of this study, when compared to those of apparel, indicate that while Puerto Rico and the United States are two countries that converge in many aspects, they still show divergence in consumer behavior due to cultural factors. In the United States, the winter effect on shoes might be captured during Christmas. Meanwhile, in Puerto Rico, most schools require uniforms, which could explain the increase in shoes sales but not apparel during that special occasion. It seems that Puerto Ricans are more influenced by special occasions and could be using shoes in place of apparel to express themselves. This would be aligned with Hockey et al. (2013), who indicate that shoes have a salient role in the formation of the identity of an individual, and with Seferin and van der Linden (2012), who indicate that their use is part of a social code. On the other hand, shoes might not be relevant during Mother's Day and Father's Day because these occasions are related to gifting, and shoes are probably an item consumers want to try on before purchasing due to fitting and comfort preferences.

Theoretical Contributions and Implications

Our study contributes to the few empirical research available about the influence of culture on consumer behavior, offering some insights into the international marketing literature. Second, it validates the utility of the econometric models developed by Nieves Rodríguez et al. (2017) to analyze apparel purchase patterns in Puerto Rico and the United States, suggesting that they could be effective for analyzing other product categories as well as retail sales data from other countries. Finally, it compares the results for two different but related product categories in two countries with many commonalities, including a strong commercial relationship. Therefore, it provides pertinent information to apparel and shoe retailers in Puerto Rico and the United States and those interested in entering these two markets.

Managerial Implications

The implications would mainly be for the business consumer, benefiting store managers in the estimation of sales, managing inventory and scheduling salespeople, and, additionally, in developing a promotion strategy that allows the company to manage and take advantage of the variations in sales in each product category and country. This is even more relevant for retailers that sell both apparel and shoes and have a commercial presence in Puerto Rico and the United States, as the marketing strategy should consider the similarities and differences between product categories and countries.

Limitations and Future Research Directions

One limitation of our study is that the analysis is centered on two product categories and two countries. Additionally, a limitation from a methodological standpoint is the use of linear regression and dummy variables. Further research could address these issues by extending the analysis to include other product categories and countries and using other statistical methods. Efforts are encouraged to broaden research to test the theories of convergence/divergence in other countries with similar relationships or among countries that have formed trade blocks. Additionally, further research could analyze and compare the results of the purchasing patterns during different periods, such as those that are more stable, against those marked by significant events.

Conclusions

In this study, we have analyzed the effect of culture on the purchase of shoes and compared the results to those of apparel gathered from another study. Both studies use Puerto Rico and the United States as examples of two countries that share an economic, political, and even cultural landscape, where Puerto Rico functions mainly as an American state but remains an unincorporated U.S. territory (Gómez, 2017).

Using Samli's (2013) international consumer behavior model as a theoretical framework, we have carried out a multiple regression analysis using national data of the retail sales of shoes from Puerto Rico and the United States, with particular attention to the effects of seasonality on the purchase. The results confirm that culture influences the purchase of shoes and that special occasions are strong predictors of variations in sales.

When the results are compared to those of apparel, commonalities in consumer behavior can be identified. However, there are crucial differences between product categories and between countries. This is an example of two nations that share many aspects but still show divergence in consumer behavior due to cultural factors.

The results of the present work contribute to the limited amount of empirical research available on the influence of culture on consumer behavior, which, on the one hand, can offer helpful information to retailers interested in entering these two markets and, on the other, pave the way for further research along similar lines in other contexts.

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Puerto Rico: el salario mínimo de $10.50 y la Ley 47 del 2021

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RESUMEN
El Gobierno de Puerto Rico aprobó la Ley de Salario Mínimo de Puerto Rico en el 2021. La misma establece como política pública adecuar el salario mínimo al costo de vida basándose en el principio de que las personas que trabajan generen ingresos suficientes para no vivir en pobreza. Para ejecutar esa política pública, la ley creó la Comisión Evaluadora del Salario Mínimo (CESM) y

aumentó el salario mínimo de $7.25 a $10.50 por hora entre el 2022 y 2024. Como miembro de la CESM en la posición de economista en representación de los trabajadores, estuve de acuerdo en que entrara en vigor el aumento a $10.50 en el 2024, según fue establecido en la ley. En el presente artículo expongo algunos de los fundamentos principales que sostienen la necesidad y viabilidad de tal aumento.

Palabras clave: Ley de Salario Mínimo de Puerto Rico, Comisión Evaluadora del Salario Mínimo, salario mínimo

Puerto Rico: the minimum wage of $10.50 and Act 47 of 2021

ABSTRACT

The Government of Puerto Rico approved the Puerto Rico Minimum Wage Act in 2021. It establishes a public policy to adapt the minimum wage to the cost of living based on the principle that working people generate sufficient income to avoid poverty. To implement this public policy, the law created the Minimum Wage Evaluation Commission (MWEC) and increased the minimum wage from $7.25 to $10.50 per hour between 2022 and 2024. As a member of the MWEC in the position of economist representing the workers, I agreed that the increase in the minimum wage to $10.50 in 2024 should come into force, as was established in the law. In this article, I expose some of the main arguments that support the need for and viability of such an increase in the minimum wage.

Keywords: Puerto Rico Minimum Wage Act, Minimum Wage Evaluation Commission, minimum wage

Introducción

Las autoridades gubernamentales aprobaron la Ley 47 de 2021, conocida como Ley de Salario Mínimo de Puerto Rico. Según la Exposición de Motivos, su propósito principal es "asegurar el bienestar y la calidad de vida de los trabajadores y trabajadoras a través de una recompensa justa por su jornada laboral" (Ley de Salario Mínimo de Puerto Rico, 2021, párr. 2). Con ese objetivo, creó la Comisión Evaluadora del Salario Mínimo (CESM) en quien delega la facultad de ejecutar la política pública con respecto al salario mínimo para trabajadores en general, así como para los trabajadores exentos, trabajadores agrícolas y trabajadores por propina.

La Sección 1.02 de la Ley 47 de 2021 establece como política pública:

> Se declara política pública del Estado Libre Asociado de Puerto Rico, a través de la Comisión Evaluadora de Salario Mínimo, el adecuar el salario mínimo al costo de vida de los trabajadores y las trabajadoras, amparándose en el principio de que ningún trabajador o trabajadora esté bajo el nivel de pobreza, que todo(a) trabajador(a) cuente con suficiente ingreso como para cubrir sus necesidades básicas, y asegurar el progreso y mejoramiento de los niveles de vida. El salario mínimo estatal deberá ser revisado periódicamente y ajustado al aumento en el costo de vida de los(as) trabajadores(as) asegurando el progreso y mejoramiento de los niveles de vida. Esta será la métrica objetiva que regirá las determinaciones de la Comisión sobre el salario mínimo.

Por tanto, dos criterios medulares fijados por ley para la ejecución de política pública por la CESM son el ingreso mínimo requerido para superar el umbral de la pobreza y el costo de vida. Otros elementos para tomar en consideración, según esta legislación, son: (a) el efecto en los negocios, (b) la interacción con programas de asistencia social y programas de recompensa y crédito al trabajo e (c) indicadores sobre el mercado laboral, la actividad productiva y el desarrollo económico. Para llevar a cabo sus funciones, la ley establece que la CESM realice o comisione un informe anual sobre el salario mínimo que dote los elementos de juicios para tomar decisiones tras un proceso de estudio empírico y razonado.

La Ley 47 de 2021 dispuso, además, paulatinos y escalonados aumentos del salario mínimo entre los años 2022 a 2024 para trabajadores cobijados por la Ley de Normas Razonables del Trabajo de los Estados Unidos (EE. UU.). El Gobierno de Puerto Rico determinó que entrarían en vigor automáticamente aumentos salariales a $8.50 en el 2022 y $9.50 en el 2023. Para el 2024, dictó que el incremento sería a $10.50 por hora, a menos que fuera variado mediante decreto por la CESM, la cual no emitió decreto con tal

fin. De esta manera, se observó la intención del gobierno fijada en ley de aumentar el salario mínimo a $10.50. Esa fue la primera evaluación que llevó a cabo la CESM tras nombrarse por el Gobernador de Puerto Rico la cantidad mínima de miembros requeridos por la ley para constituirse oficialmente e iniciar funciones en julio 2023, casi dos años luego de aprobada la legislación.

Como miembro de la CESM en la posición de economista en representación de los trabajadores, estuve de acuerdo en que entrara en vigor el aumento del salario mínimo a $10.50 en el 2024, según fue establecido en la Ley 47-2021. En el presente artículo expondré algunos de los fundamentos principales que sostienen la necesidad y viabilidad de tal aumento.

El artículo se divide en cinco partes. En la primera se discute de forma breve antecedentes históricos de la elaboración de política pública sobre salario mínimo en Puerto Rico, los referentes teóricos tradicionales que han dominado la discusión en torno a dicho tema, así como algunas investigaciones recientes sobre los impactos de aumentos del salario mínimo en el país. En la segunda, se abordan argumentos que apoyan la necesidad y viabilidad de aumentar el salario mínimo a $10.50 por hora. En la tercera, se presentan los argumentos de las asociaciones empresariales contra el aumento y la evidencia provista por informes gubernamentales que demuestran que dichas posiciones no se sostienen empíricamente. En la cuarta parte, se discuten estudios de asociaciones empresariales que se opusieron al incremento salarial en los cuales, paradójicamente, se provee información sobre la necesidad del aumento. Finalmente, se presentan las conclusiones y las recomendaciones de política pública.

Antecedentes históricos, referentes teóricos e investigaciones recientes en Puerto Rico

El salario mínimo es tema de política pública a nivel internacional desde, al menos, el siglo XX. En EE. UU, por ejemplo, la Ley de Normas Razonables del Trabajo de 1938 fue la primera

legislación federal para regular el empleo. La misma estableció un salario mínimo para todos los trabajadores no-agrícolas empleados en actividades vinculadas al comercio interestatal e incluía cualquier territorio o posesión de EE. UU. Como resultado, en Puerto Rico se beneficiaron más de 100,000 trabajadores por las disposiciones contenidas en dicha ley (Macpherson, 2017).

Tres años después, se aprobó la primera ley de salario mínimo que tuvo un alcance nacional para Puerto Rico. La Ley 8 de 1941 creó la Junta de Salario Mínimo cuyo deber era estudiar las condiciones de trabajo que prevalecían en los diferentes sectores económicos para fijar periódicamente un salario mínimo por ocupaciones e industrias. Dicho cuerpo también tendría jurisdicción sobre la extensión de la jornada de trabajo en las distintas actividades productivas y tenía el deber de observar por la salud, seguridad y el bienestar de los trabajadores.

La Junta de Salario Mínimo existió con modificaciones en la composición y deberes hasta 1998, año en que se eliminó mediante la Ley 180. Sin embargo, tres años antes, con la Ley 84 de 1995 había dejado de ejercer las funciones de establecer los salarios mínimos en el país ya que el Gobierno de Puerto Rico promovió como política pública en ese momento que el salario mínimo fuera igual al vigente a nivel federal en EE. UU. Durante el poco tiempo de vida que le quedaba a la junta, sus tareas habían sido limitadas básicamente a fijar y revisar la acumulación de licencia por vacaciones y enfermedad para empleados de diferentes industrias.

Una de las razones principales para el giro en la política pública sobre el salario mínimo a fines de la década de 1990 fue el progresivo abandono a nivel internacional de políticas keynesianas. Estas promovían mayor participación de las autoridades públicas en la planificación económica para la construcción de un estado de bienestar interesado en promover la satisfacción de las necesidades básicas de la población; mientras, cumplía las funciones de regulador del mercado. Sin embargo, a partir de la década de 1970, las políticas neoliberales –o de libre mercado– asumieron

mayor fuerza y presencia en la elaboración de política pública alrededor del mundo. Esta corriente de pensamiento que está vinculada a la teoría económica neoclásica impulsa una mayor participación del sector privado en la economía, limitando la función del gobierno a crear el marco institucional para promover el derecho a la propiedad privada y la libertad de empresa. En este nuevo entorno, el aparato estatal no tendría las mismas funciones que en décadas previas. El mercado se convertiría en la institución principal para regir el uso y distribución de los recursos en la economía (Harvey, 2007).

Desde tal perspectiva, la teoría dominante con respecto a la política pública de salario mínimo se ha orientado en priorizar los efectos que tendrían en las operaciones de las empresas y el empleo. En los modelos presentados en la mayor parte de los libros introductorios de economía se plantea que la determinación del nivel salarial de los trabajadores debe establecerse a través del mercado. Por tanto, según esta corriente de pensamiento, si las autoridades gubernamentales intervienen para aumentar el salario mínimo crearían unas distorsiones en el mercado e impactaría adversamente al sector empresarial reduciendo el empleo y afectando la economía.

Tal discusión teórica en torno al salario mínimo se ha observado recientemente en Puerto Rico. Santiago (1986), Castillo y Freeman (1992) y Omberg (2021), entre otros, sostienen que equiparar el salario mínimo del país al prevaleciente a nivel federal en EE. UU. tiene un impacto negativo en la actividad económica, así como también en el nivel de empleo. Argumentan que, para Puerto Rico, el salario mínimo federal es muy alto debido a las diferencias que existen con respecto a la estructura productiva y el nivel de desarrollo que presenta EE. UU. Incluso, algunos como Krueger et al. (2015) recomiendan como política pública que el Gobierno de Puerto Rico solicite al Gobierno de EE. UU. que lo exima del salario mínimo federal.

Por otra parte, investigación más reciente sobre el impacto del salario mínimo en Puerto Rico por Caraballo-Cueto (2016), Hernández et al. (2018) y Padró y Rodríguez (2023) señalan que su

aumento puede tener un impacto positivo en el nivel de empleo y la economía. Caraballo-Cueto (2016) sostiene que cambios en la producción tienen mayor efecto en el empleo que variaciones en el salario mínimo. Mientras, Padró y Rodríguez (2023) argumentan que el impacto de las políticas de salario mínimo sobre el desempleo no se manifiesta de manera uniforme y que varía según el contexto y las características específicas del mercado laboral y la economía. Por otra parte, Hernández et al. (2018) recomiendan que como política pública se restituya la Junta de Salario Mínimo en Puerto Rico.

En el 2021 las autoridades gubernamentales crearon la Ley de Salario Mínimo de Puerto Rico para subir el mismo y crear la Comisión Evaluadora del Salario Mínimo (CESM). La CESM ejecutaría la política pública sobre salario mínimo establecida en esa legislación, realizando, por tanto, funciones similares a las que estuvo efectuando la Junta de Salario Mínimo por más de 50 años previa a su eliminación en 1998.

El mismo año de la aprobación de la Ley del Salario Mínimo de Puerto Rico, David Card, director del Centro de Economía Laboral de la Universidad de California en Berkeley, ganó el Premio Nobel en Economía por las aportaciones que realizó a la evaluación del impacto de políticas públicas sobre salario mínimo en EE. UU. utilizando métodos empíricos innovadores que desafiaron ideas convencionales. A través de sus investigaciones, Card demostró que los incrementos de salario mínimo no necesariamente tienen como resultado la reducción del empleo. Además, encontró que aumentos en el salario mínimo han disminuido la disparidad salarial, contribuyendo a revertir las tendencias al aumento de ese factor en el mercado laboral. Así mismo, halló que tal política beneficia principalmente a aquellas familias de bajos ingresos. Estos resultados contribuyeron a retar ideas dominantes con respecto al salario mínimo vinculadas a la escuela de pensamiento neoclásica que habían prevalecido en la disciplina por mucho tiempo y adoptar enfoques distintos en política pública (Card & Krueger, 2015).

Modelos teóricos apuntan a diversos factores que inciden en las decisiones que toman los forjadores de políticas públicas con respecto el salario mínimo. Un determinante importante es la relación de fuerza en un momento histórico determinado entre grupos particulares cuyos intereses pueden verse potencialmente afectados de forma positiva o negativa (Neumark & Wascher, 2008). Con el auge de las políticas neoliberales, las autoridades impulsaron activamente en Puerto Rico una creciente desreglamentación de los mercados, incluyendo, entre ellos, el mercado de trabajo. Como resultado, la tasa de trabajadores unionados ha bajado desde, al menos, la década de 2000 (Negociado de Estadísticas del Trabajo, 2005, 2008, 2014). Tal situación ha facilitado la aprobación de medidas que han afectado las condiciones laborales de trabajadores asalariados, incluyendo, la Ley 7 de 2009, la Ley 66 del 2014 y la Ley 4 de 2017.

No obstante, el aumento del costo de vida, la pérdida de poder adquisitivo, la crisis económica, las protestas de la población exigiendo aumentos en la compensación que reciben por su trabajo, una mayor representación de los intereses laborales en la Asamblea Legislativa, así como unos nuevos acercamientos teóricos y metodológicos en las investigaciones sobre el salario mínimo son factores que deben tomarse en consideración para explicar la aprobación de la Ley 47 de 2021 y el cambio de política pública sobre el salario mínimo en Puerto Rico.

Argumentos que apoyan la necesidad y viabilidad de aumentar el salario mínimo a $10.50

Para cumplir su mandato, la CESM publicó una solicitud para que consultores sometieran propuestas para realizar el estudio y producir el informe del salario mínimo requerido por ley. Además, divulgó una convocatoria para que sectores interesados en el tema emitieran comentarios. Como resultado de estas gestiones, la CESM contrató a la firma de consultaría Abexus Analytics y recibió más de 50 comentarios de trabajadores y patronos.

El análisis que voy a realizar a continuación se fundamenta en el informe comisionado a Abexus Analytics que se titula *Minimum*

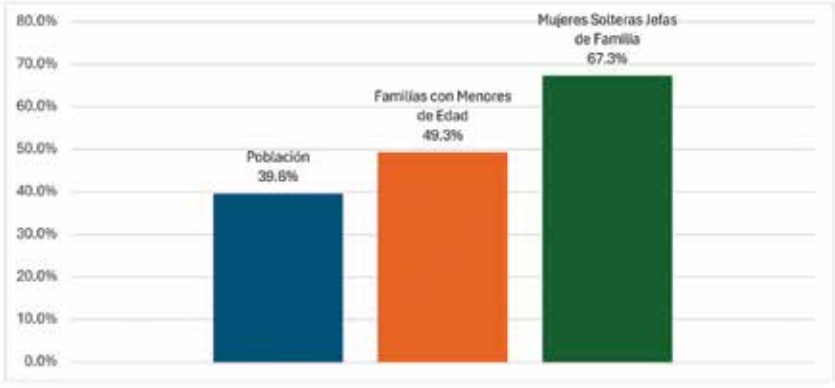
wage analysis: Puerto Rico general minimum wage (2024) e informes económicos oficiales producidos por el Gobierno de Puerto Rico y de los EE. UU. Además, consideré la política pública y los criterios establecidos en la Ley 47 de 2021, tales como, el nivel de pobreza, el costo de vida, el mercado de trabajo, la actividad productiva y las operaciones de los negocios.

Nivel de pobreza

Según los datos de la Oficina del Censo de EE. UU. presentados en la Figura 1, el 39.6% de la población en Puerto Rico vivió bajo nivel de pobreza en el 2023. Esa cifra alcanzó 49.3% en familias con niños y 67.3% entre mujeres solteras jefas de familia (U.S. Census Bureau, 2023a, 2023b). El salario mínimo de $9.50 vigente antes del aumento a $10.50 que fija la Ley 47 de 2021 equivale a un ingreso anual bruto de $19,760 para una persona que trabaja a tiempo completo todo el año. Este ingreso estaba por debajo del ingreso necesario para superar el umbral de la pobreza que debía tener una persona menor de 65 años a cargo de un dependiente en el 2023. Esa cifra era $21,002 (U.S. Census Bureau, 2023c). Para alcanzar ese ingreso, una persona que trabajara por 40 horas cada semana, las 52 semanas del año, debía haber recibido un salario de $10.10 por hora como compensación por su trabajo.

Figura 1

Tasas de pobreza en Puerto Rico, 2023



Fuente: U.S. Census Bureau, 2023a y 2023b.

Aunque al momento de producir este artículo, la Oficina del Censo de EE. UU. no ha determinado el ingreso mínimo que esa persona debía generar para superar el umbral de pobreza en el 2024, podemos partir de la premisa que, cuando menos, será ajustado en función del aumento en costo de vida, según sea cuantificado por el Índice de Precios al Consumidor (IPC) de EE. UU. De acuerdo con el Departamento del Trabajo de EE. UU., el IPC de EE. UU. ha tenido hasta el momento una variación interanual que osciló de enero a septiembre de este año entre 2.4% y 3.5% (Bureau of Labor Statistics, 2024). Un ajuste de esa magnitud al salario mínimo de $10.10 (que hubiese sido necesario en el 2023 para que una persona menor de 65 años con un dependiente superara el umbral de la pobreza) equivaldría a un salario mínimo entre $10.34 y $10.45 en el 2024. De hecho, en el informe que comisionó la CESM, se señala que para que una persona conserve el poder de compra que tenía con el salario mínimo de $7.25 en el 2009, tendría que pagársele $10.54 en el 2024 (Abexus Analytics, 2024). De esta manera, el salario mínimo de $10.50 establecido por el Gobierno de Puerto Rico en la Ley 47 de 2021 permite conservar casi todo el poder de compra que tenía una persona que debe sostener un menor hace 15 años atrás; mientras, se espera genere justo los ingresos para superar el nivel de pobreza estimado previamente (suponiendo que la tasa de inflación en los meses que han transcurrido prevalece el resto del 2024). Si la inflación creciera para este año a una tasa mayor a la observada hasta este momento, entonces $10.50 sería aún una cantidad insuficiente para que esa persona pueda satisfacer sus necesidades.[1]

Costo de vida

El salario mínimo se revisó en una sola ocasión en Puerto Rico en un periodo de casi 25 años, desde que se eliminó la Junta del

[1] El informe comisionado por la CESM dedica una sección al análisis del efecto del aumento del salario mínimo a $10.50 sobre la elegibilidad en programas de asistencia social. En términos generales, se estima que es muy reducido (Abexus Analytics, 2024). Por tal razón, no tuvo un impacto mayor en el proceso de evaluación.

Salario Mínimo en 1998 hasta que se aprobó la Ley 47 de 2021. Ese ajuste ocurrió entre el 2007 y 2009 al Gobierno de EE. UU. aumentar el salario mínimo federal de $5.15 a $7.25. Desde entonces, pasaron más de 10 años sin que subiera el salario mínimo; mientras, simultáneamente, aumentaba el costo de vida. Ese periodo terminó con la aprobación de la Ley 47 del 2021 y el incremento del salario mínimo a $8.50 que estableció para el año 2022. Esa fue la mayor cantidad de tiempo que ha transcurrido sin que se revise el salario mínimo en el país desde, al menos, 1974.

De acuerdo con el informe comisionado por la CESM, los salarios mínimos han estado perdiendo poder adquisitivo a través del tiempo. El poder adquisitivo significa la capacidad que tiene una persona o familia de comprar bienes y servicios con los ingresos que tiene disponibles. En la medida que aumentan los precios de los artículos que consumimos y los ingresos no varían, nuestro poder adquisitivo o capacidad para comprar los mismos se reduce.

Los salarios mínimos que estaban vigentes en las décadas de 1970 y 1980 representan en el 2024 un salario que oscilaría entre los $12.00 y $13.20 por hora. Mientras, los salarios mínimos durante las décadas de 1990 y 2000 no llegan a los $11.00 por hora. El salario mínimo de $10.50 que establece la Ley 47 de 2021 retiene casi la totalidad del poder adquisitivo que tenían las personas que trabajaban a $7.25 en el 2009. Esto significa que un aumento inferior a $10.50 en el 2024 hubiese significado un deterioro en la capacidad de compra de los trabajadores para satisfacer necesidades (Abexus Analytics, 2024).

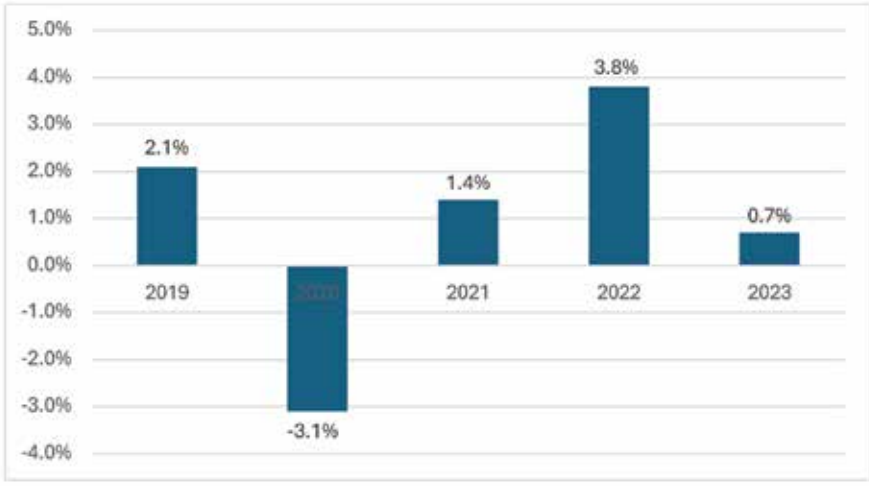
Actividad económica

Puerto Rico se encuentra en un periodo de crecimiento en la producción tras más de una década de depresión económica. Esa recuperación ha sido posible por la inyección de fondos públicos provenientes en su mayoría del Gobierno de EE. UU. por los huracanes, los terremotos y la pandemia. Como resultado, la Junta de Planificación de Puerto Rico reportó en

el Apéndice Estadístico del Informe Económico al Gobernador aumentos en la producción en cuatro de los pasados cinco años (véase Figura 2). El único año en ese periodo que no hubo crecimiento económico fue en el 2020 por la pandemia. De hecho, a partir del 2021 (momento que se aprobó la Ley del Salario Mínimo de Puerto Rico) hasta el 2023 (último año para el cual hay datos disponibles), el Producto Nacional Bruto incrementó 6.0% y el gasto de consumo personal 10.0% (Junta de Planificación, 2023c).

Figura 2

Tasa de crecimiento del PNB real en Puerto Rico, 2019-2023



Fuente: Junta de Planificación, 2023c.

En el mercado de trabajo se observa también un repunte para los principales indicadores. Puerto Rico ha alcanzado las mayores tasas de participación laboral[2] en más de una década, el mayor nivel de empleo en casi 15 años y las tasas de desempleo

[2] La tasa de participación laboral representa la proporción de personas que se encuentran en una edad productiva y que están activas en el mercado de trabajo. En términos económicos, una persona activa en el mercado de trabajo significa: (a) una persona que tiene empleo o (b) una persona que no tiene empleo, pero busca activamente uno.

más bajas en la historia reciente (Junta de Planificación, 2014, 2023c). Dicho escenario económico ha contribuido a revertir, o al menos detener, la tendencia decreciente en la productividad de trabajadores y su participación en la distribución del Ingreso Nacional Neto (Junta de Planificación, 2023c). De acuerdo con el plan fiscal más reciente aprobado por la Junta de Supervisión Fiscal, impuesta por el Gobierno de EE. UU. a través de la Ley P.R.O.M.E.S.A., se proyecta que el país va a recibir más de $50,000 millones adicionales en el periodo entre 2025 y 2035 (Financial Oversight and Management Board for Puerto Rico, 2024). Razonablemente se puede anticipar que el potencial desembolso de dichos fondos durante la próxima década podría servir para continuar incentivando la actividad productiva y el empleo en el país.

De hecho, en el informe *Proyecciones económicas a largo plazo, años fiscales, 2023-2033* (2023d), la Junta de Planificación usa su modelo econométrico dinámico de la economía de Puerto Rico mediante el cual proyecta que la producción crecerá de forma sostenida los próximos años a una tasa anual promedio de 1.8%. Las razones principales para tal comportamiento económico son la inyección de fondos públicos del Gobierno de EE. UU., el crecimiento en los recaudos públicos (en especial, mediante el impuesto sobre los ingresos y el impuesto sobre la venta y el uso) y el reajuste positivo del mercado laboral para el cual anticipa tasas de desempleo inferiores al 7.0% (Junta de Planificación, 2023d).

La Junta de Planificación proyecta, además, que el crecimiento agregado de la producción será 8.3% durante el periodo 2024-2028; mientras, la Junta de Supervisión Fiscal lo estima en 1.7% (Financial Oversight and Management Board for Puerto Rico, 2024; Junta de Planificación 2023d). El comportamiento positivo de estos indicadores relacionados a la actividad económica representa un escenario ideal para aumentar el salario mínimo en el país.

Argumentos de asociaciones empresariales contra el aumento del salario mínimo a $10.50

Algunos sectores –vinculados principalmente a grupos empresariales– expresaron públicamente su preocupación por el aumento en el salario mínimo a $10.50 por hora en el 2024. Los señalamientos más frecuentes fueron que tal incremento causaría el cierre masivo de negocios, dejaría sin trabajo a miles de personas e incrementaría la inflación de una manera significativa. Dichos planteamientos no se sostienen cuando se analiza la evidencia empírica que está disponible en el estudio que comisionó la CESM a la firma Abexus Analytics para orientar la ejecución de la política pública en torno el salario mínimo en Puerto Rico de acuerdo con la Ley 47 del 2021, ni en informes oficiales producidos por el Gobierno de Puerto Rico y el Gobierno de EEUU. Veamos.

Cierre de negocios

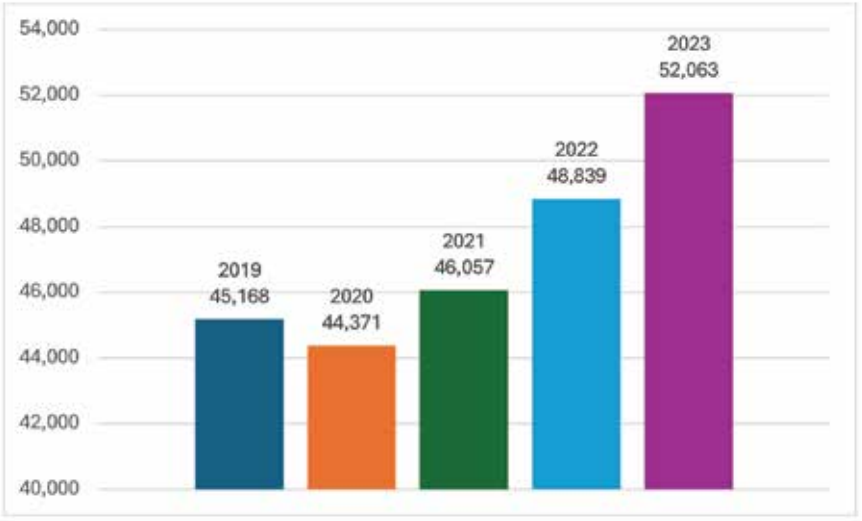
Se ha señalado por sectores económicos que el aumento del salario mínimo a $10.50 por hora tendría un impacto negativo en el país pues causaría el cierre masivo de operaciones comerciales. El informe que fue comisionado por la CESM proyecta que el incremento en el salario mínimo a $10.50 en el 2024 tendrá un impacto menor en el cierre de negocios que cuando dicho salario subió a $9.50 en el 2023. Entonces hubo 2,927 que cerraron operaciones. Con el aumento a $10.50 se estima que cierren 2,197 negocios; es decir, 25% menos de lo observado cuando subió a $9.50 (Abexus Analytics, 2024).

De hecho, en la Figura 3 se muestra cómo, en términos generales, la cantidad de negocios en el país ha crecido ininterrumpidamente desde el 2021. En el 2019 había 45,168 establecimientos en Puerto Rico. Para el 2020 bajó a 44,371 debido a la crisis salubrista causada por la pandemia. En el 2021 aumentó a 46,057, cifra que es superior a la observada para el año previo a la pandemia. En el 2022 la cantidad de negocios creció hasta 48,839. Mientras, que en el 2023 alcanzó 52,063. Es decir, según el in-

forme que fue comisionado por la CESM, con los incrementos que hubo en el salario mínimo a $8.50 en el 2022 y a $9.50 en el 2023, cerraron 5,029 negocios. Sin embargo, 11,035 establecimientos nuevos comenzaron operaciones, más del doble del cierre de negocios asociados a los aumentos al salario mínimo antes señalados. Esto significa que, en términos netos, hubo 6,006 negocios más el 2023 que con relación al 2021. Ese aumento en la cantidad de establecimientos es cónsono con el crecimiento en la producción y el comportamiento positivo que han tenido durante ese periodo múltiples indicadores económicos (Abexus Analytics, 2024).

Figura 3

Total de negocios privados en Puerto Rico, 2019-2023



Fuente: Abexus Analytics, 2024.

Aumento en el desempleo

Algunos sectores en el país han argumentado que el incremento del salario mínimo a $10.50 tendría un impacto negativo porque dejaría sin trabajo a miles de personas en Puerto Rico. No obstante, el informe que fue comisionado por la CESM proyecta

que el aumento del salario mínimo a $10.50 en el 2024 tendría un impacto inferior en la cantidad de personas desempleadas que cuando el salario subió a $9.50 en el 2023. Entonces, 16,113 personas se quedaron sin trabajo. Con el aumento a $10.50 se estima que esa cifra será 12,267; es decir, 24% menos de lo observado cuando subió a $9.50 (Abexus Analytics, 2024).

Este posible efecto adverso se atenúa debido a la presencia de un mercado laboral fortalecido. Tal fortalecimiento ocurre cuando existe un comportamiento positivo en sus indicadores principales, entre los cuales se incluye, el nivel de empleo, la tasa de desempleo y la participación laboral. Esta situación, combinada con el incremento durante los últimos años en la cantidad de negocios privados y la cantidad de empleados contratados en esos establecimientos, permite proyectar que el desempleo de estas personas será uno temporero o de corta duración pues es muy probable que hallen un nuevo empleo en un periodo de tiempo relativamente rápido.

Actualmente, Puerto Rico presenta las tasas de desempleo más bajas en su historia reciente, los mayores niveles de empleo en 15 años y la tasa de participación laboral más alta en 10 años (Junta de Planificación, 2014, 2023c). Este efecto positivo neto en el empleo, en años donde ha aumentado el salario mínimo en el país, es cónsono con el crecimiento en la producción y el desempeño positivo que han tenido durante ese periodo múltiples indicadores económicos debido a, como señalé antes, la transferencia de fondos públicos provenientes del Gobierno de EE. UU. por los huracanes, terremotos y pandemia (Junta de Planificación, 2023c).

Inflación

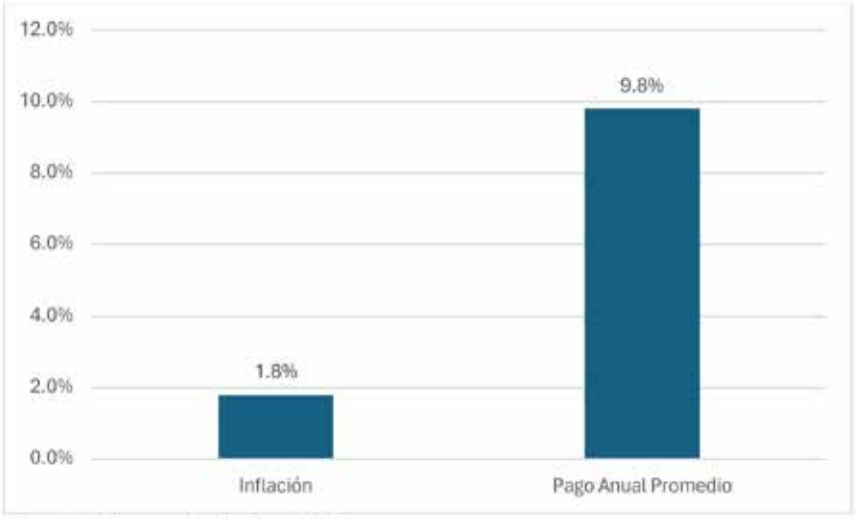
Se ha planteado también que como resultado del incremento del salario mínimo a $10.50 ocurriría un incremento significativo de la inflación. Se decía subiría casi 5.0 puntos porcentuales. El informe producido para la comisión asume como parte del análisis una inflación subyacente de 3.0%. Por lo tanto, proyecta que con el aumento del salario mínimo establecido para el 2024 a

través de la Ley 47 del 2021 habrá un incremento de la inflación de 1.8 puntos porcentuales (Abexus Analytics, 2024).

Además, estima que el pago anual promedio a trabajadores que devenguen el salario mínimo de $10.50 subirá en una proporción mayor al crecimiento en la inflación que provoque ese aumento (véase Figura 4) permitiendo recuperar –junto a los incrementos salariales previos como parte de la Ley 47-2021– casi en su totalidad el poder de compra que había cuando el salario mínimo era $7.25 en el 2009.

Figura 4

Aumento estimado de la inflación y del pago anual promedio a los trabajadores por el aumento del salario mínimo a $10.50



Fuente: Abexus Analytics, 2024.

Durante el referido periodo (2009-2021), la inflación estuvo creciendo a pesar de que el salario mínimo no aumentó. Por tanto, la inflación no ocurre solamente por aumentos de salarios ya que existen otros factores de producción que impactan a las empresas, incluyendo, entre ellos, costos de materiales, de transportación y de utilidades como energía eléctrica. Tampoco implica necesariamente que aumentos de precio en alguno de los insu-

mos de producción conlleve a un incremento significativo en los costos operacionales totales de los negocios pues dependerá en parte de las acciones que tomen los dueños de las empresas.

Estudios de asociaciones empresariales sobre la economía y el trabajo en Puerto Rico

Un grupo de siete asociaciones empresariales acudió a los tribunales para anular el aumento del salario mínimo a $10.50 que fue dispuesto por la Ley 47 de 2021 para el 1 de julio de 2024. Ellos fueron la Cámara de Comercio de Puerto Rico; la Cámara de Mercadeo, Industria y Distribución de Alimentos; la Asociación de Comercio al Detal; la Asociación de Restaurantes de Puerto Rico; la Asociación de Hoteles y Turismo de Puerto Rico; la Asociación de Industriales de Puerto Rico y Hecho en Puerto Rico.

En términos económicos, argumentaron que el aumento del salario mínimo no es beneficioso para la economía porque causará el cierre de negocios, el despido de miles de trabajadores y un espiral inflacionario significativo en la economía del país. Como señalé en la sección anterior, estos argumentos de las asociaciones empresariales no tan solo no se sostienen empíricamente, sino que se refutan en el informe económico que fue comisionado por la CESM, así como por informes oficiales del Gobierno de Puerto Rico y del Gobierno de EE. UU.

Incluso, informes comisionados por esas mismas organizaciones empresariales apuntan a la necesidad de aumentar los ingresos de las familias y mejorar las condiciones laborales.

Por ejemplo, la Cámara de Mercadeo, Industria y Distribución de Alimentos (MIDA) publicó el estudio *Radiografía del consumidor 2024* (2024) comisionado a la firma Lighthouse Strategies. El informe, que se divulgó un mes antes de la entrada en vigor del aumento del salario mínimo a $10.50, señala que el aumento en el costo de la vida y un presupuesto familiar más ajustado son los factores que tienen un mayor peso en las personas al momento de efectuar sus compras. Señala que alrededor del 60% del presupuesto de las familias se dirige para el pago de vivienda, transportación y alimentos. El 41% de las personas encuestadas

indicó que le "preocupa mucho" su capacidad para tener suficiente comida en su hogar los próximos meses. Según Manuel Reyes, vicepresidente ejecutivo de MIDA, el estudio muestra "un consumidor muy preocupado que continúa con el dinero contado [y que está] […] "cuadrando el presupuesto con el crédito" (Primera Hora, 2024). Ante tal realidad, ha crecido la proporción de personas que preparan alimentos y cocinan con más frecuencia en la casa. El 92% de los encuestados en el estudio señaló estar llevando a cabo esta práctica en la actualidad. Dicha cifra es casi el doble de la cantidad observada en 1996, hace casi 30 años (Candelaria, 2024).

Por otra parte, la Asociación de Restaurantes de Puerto Rico (ASORE) divulgó el informe *Proyecciones 2024* (2024) que comisionó a la firma de consultoría Inteligencia Económica. Su presentación se realizó dos días antes de entrar en vigor el aumento del salario mínimo a $10.50. Cerca de dos semanas antes, el Departamento del Trabajo y Recursos Humanos (2024) había informado al país que la CESM acordó no emitir decreto para variar el aumento del salario mínimo a $10.50, según establecido en la Ley 47 del 2021. El estudio que fue comisionado por ASORE indica que, en términos generales, las ventas tuvieron un comportamiento positivo en el 2023 y que el margen de ganancia para la mayoría de los restaurantes del país oscila entre el 8% y 12%. Señala, además, que se proyecta una mejoría moderada para este sector de la economía en el 2024, donde el 76% de los encuestados tiene una perspectiva positiva para sus negocios para ese año. Sin embargo, identifica retos, incluyendo, entre ellos, el aumento en los costos de energía eléctrica. El estudio revela que más de la mitad de los restaurantes tuvieron incrementos significativos en ese renglón oscilando, usualmente, entre 10%-20%. También se identifica como un reto importante el reclutamiento y retención de empleados pues había en la industria más de 2,600 plazas vacantes. El estudio destaca la necesidad de adoptar estrategias efectivas para atender dicha necesidad (Noticel, 2024).

La Cámara de Comercio de Puerto Rico (CCPR) comisionó también un informe que se titula *Estudio sobre el desafío demográfi-*

co en Puerto Rico (2024), realizado por la firma Ipsos PR. En este analizan las razones por las cuales las familias puertorriqueñas han emigrado en los pasados años a EE. UU. Los entrevistados señalan la economía como el mayor problema del país. En tal contexto, afirman que entre las razones de mayor peso para marcharse de Puerto Rico se destaca el interés por mejorar su calidad de vida y sus condiciones de trabajo. Específicamente, señalan que las limitadas oportunidades de empleo y los bajos salarios, junto al deterioro de la educación y el limitado acceso a servicios de salud, son factores que incidieron fuertemente en su decisión de mudarse a EE. UU. (Núñez Lamboy, 2024).

Estos estudios comisionados por las asociaciones empresariales apuntan a la necesidad de impulsar políticas para crear empleos en buenas condiciones y con buenos salarios, de manera tal que las personas puedan tener acceso a bienes y servicios básicos –incluyendo alimentos– que le permitan mejorar su calidad de vida y no se vean forzados a emigrar. De igual forma, en la medida que mejoren las condiciones laborales y salarios de los trabajadores, las empresas tendrán menos dificultades reclutando y reteniendo empleados.

En el ecosistema empresarial, quienes podrían enfrentar mayores retos y estar más vulnerables con el aumento del salario mínimo son las pequeñas y medianas empresas (pymes). Particularmente en dicha situación están aquellas ubicadas en la zona central-occidental del país. En esta región se encuentra la mayor proporción de empleos a salario mínimo con relación al empleo total del sector privado. Además, más del 60% de los negocios emplea cuanto menos a una persona por salario mínimo en los municipios de Adjuntas, Añasco, Cabo Rojo, Ciales, Hormigueros, Jayuya, Lares, Las Marías, Maricao, Sabana Grande, San Germán y San Sebastián. En tal contexto, debe señalarse que el Gobierno de Puerto Rico dispone de varios programas para apoyar a las pymes a través del Departamento de Desarrollo Económico y Comercio (DDEC). Entre estos programas, se encuentran iniciativas para promover la innovación empresarial mediante talleres de capacitación y mentoría; apoyar la adquisición de maquina-

ria y equipo necesarios; otorgar un pareo en capital semilla en aquellas empresas que son de nueva o reciente creación; brindar asistencia energética y promover la utilización de fuentes de energía renovable; y ayudar a crear planes de exportaciones y ofrecer capacitación técnica para su ejecución (DDEC, 2024).

Otras medidas adoptadas por parte del Gobierno de Puerto Rico para apoyar a las pymes son:

(a) agilizar el proceso para que negocios elegibles puedan obtener un permiso de uso condicionado para comenzar operaciones solamente en un día laborable sujeto a completar el proceso de entrega de documentos en 6 meses;

(b) establecer un programa de renta preferencial que brinda a empresarios la oportunidad de obtener una renta mínima en propiedades de la Compañía de Fomento Industrial de Puerto Rico;

(c) asignar el 40% de la reserva de compras del gobierno para las empresas pequeñas y medianas; y

(d) asignar el 60% del Fondo para el Fomento de Oportunidades de Trabajo y Adiestramiento que se usen para beneficio del sector privado para propuestas que sean presentadas por las pymes (DDEC, 2024).

Además, el Gobierno de Puerto Rico aprobó la Ley 52 del 2023 que enmienda, entre otras leyes, a la Ley de Incentivos para la Generación y Retención de Empleos en PyMes, de manera tal que las pymes nuevas, en expansión o con pérdidas operacionales puedan solicitar un reembolso equivalente al 50% del salario mínimo pagado por la ejecución de una jornada regular de trabajo, sujeto al cumplimiento de varios requisitos establecidos en la ley.

La mayoría de estas iniciativas están contenidas en el informe anual sobre el estado de situación de las microempresas, pequeñas y medianas empresas en Puerto Rico que presentó en el 2024 el secretario del DDEC, al gobernador de Puerto Rico y la Asam-

blea Legislativa de Puerto Rico (DDEC, 2024). En caso de que sean necesarias medidas adicionales, corresponde a las autoridades concernientes implementar las mismas.

Desde esta perspectiva, es importante destacar que la política sobre el salario mínimo constituye un componente de un conjunto más amplio de políticas públicas que permita trazar un proyecto económico de amplio alcance y larga duración para el país. La Ley 47-2021 representa un paso en la dirección correcta para alcanzar esos fines al fijar un aumento escalonado y paulatino del salario mínimo de $7.25 a $10.50 y crear la CESM para que revise periódicamente el mismo.

Recomendaciones de política pública

La política pública adoptada por el Gobierno de Puerto Rico a través de la Ley 47 de 2021, mediante la cual aumenta el salario mínimo de manera escalonada y paulatina, ha contribuido a la economía acompañando la recuperación que se ha observado en años recientes en diferentes indicadores que están asociados a la producción y al mercado de trabajo, como resultado, principalmente, de los fondos públicos recibidos del Gobierno de EE. UU.

La contribución a la economía del aumento del salario mínimo es esperada por las siguientes razones:

(a) Un aumento del salario mínimo representa mayores ingresos para miles de personas en el país, lo que provoca un incremento en la demanda agregada de bienes y de servicios en Puerto Rico. Una mayor demanda estimula la producción, la creación de empleos y los recaudos fiscales.

(b) Un aumento del salario mínimo puede ayudar a incentivar la participación de las personas en el mercado laboral. Los bajos salarios son una de las principales causas de la emigración en Puerto Rico, de acuerdo con los hallazgos del estudio comisionado por la CCPR. Las personas quie-

ren trabajar, pero quieren hacerlo con condiciones laborales adecuadas.

(c) Un aumento del salario mínimo no necesariamente representa un incremento en costos totales de las empresas o procesos inflacionarios. Tampoco tiene que significar merma en las ganancias u otros beneficios que devenga la empresa. Dependerá del proceder de los agentes económicos.

(d) Mejores condiciones laborales conducen a mayor satisfacción de las personas con su trabajo, implicando potencialmente para las empresas una mayor retención de empleados y de peritaje, así como un aumento en la productividad, entre otros beneficios. Por tanto, para las empresas podría representar ahorros en gastos de reclutamiento, adiestramiento y retención de empleados.

En julio del 2024, el Sistema de la Reserva Federal de EE. UU. emitió un comentario positivo de la economía de Puerto Rico destacando la recuperación de la producción en los pasados años. Sin embargo, reconoció que los salarios en el país tienden a ser la mitad de lo que son en EE. UU. y la desigualdad de ingresos es considerablemente mayor (Gómez, 2024). Incluso, meses antes, el presidente de la Junta de Planificación señaló al presentar los hallazgos del estudio titulado *Aumento al salario mínimo a $9.50: análisis de impacto económico en Puerto Rico*:

> El aumento en el salario mínimo tuvo efectos positivos en la economía […], mejora aún más la compensación y los beneficios ofrecidos a los empleados. Además, contribuye a reducir la desigualdad de ingresos y, por ende, mejorar la calidad de vida general de los empleados y sus familias. (Junta de Planificación, 2023b)

Desde esta perspectiva, el aumento salarial que establece la Ley 47 de 2021 para el 2024 es necesario para que las personas que trabajan por el salario mínimo tengan mayores ingresos para

satisfacer necesidades en un contexto en el cual los precios suben y el poder de compra se reduce.

Ese aumento salarial es además viable porque la economía crece y el mercado de trabajo se fortalece permitiendo absorber efectos no deseados, según ocurrió con el aumento a $8.50 y $9.50. Así lo reconoció el propio presidente de la Asociación de Industriales de Puerto Rico quien, después de la sentencia del Tribunal de Primera Instancia desestimando la demanda para anular el salario mínimo de $10.50, decidió –junto a la Asociación de Comercio al Detal y la Asociación de Hoteles y Turismo de Puerto Rico– no apelar el dictamen en tribunales superiores, distanciándose de esta manera de CCPR, MIDA, ASORE y Hecho en Puerto Rico. Al explicar tal decisión dijo a la prensa:

> Continuar el pleito podría ser contraproducente. Puede fomentar una grieta profunda en la relación obrero-patronal. Los empleados nos van a ver como empleadores no justos. […] [L]a mayoría de los socios, por no decir todos, se fueron preparando para el aumento de $10.50. No creemos que esto debió tomar por sorpresa a nadie. […] [S]eamos honestos, $10.50 no supera los niveles de pobreza para una familia trabajadora. Eso lo reconocemos y lo entendemos. […] [N]o queremos un país de pobreza. Queremos un país próspero. (Díaz, 2024)

Los recursos presentados por la CCPR, MIDA, ASORE y Hecho en Puerto Rico apelando la determinación del Tribunal de Primera Instancia no tuvieron éxito en el Tribunal de Apelaciones y el Tribunal Supremo de Puerto Rico (Díaz, 2024; Vera Rosado y López, 2024).

Los análisis económicos y las investigaciones realizadas indican que es necesario y viable elevar el salario mínimo a $10.50 por hora, conforme a lo estipulado por la Ley 47 de 2021 del Gobierno de Puerto Rico. Esta acción impacta a aproximadamente a 250,000 personas que representan el 33% del empleo en el sector privado (Abexus Analytics, 2024).

A partir del análisis, pueden efectuarse algunas recomendaciones de política pública:

(a) La Ley 47 de 2021 establece que tras el aumento a $10.50 en el 2024, la CESM será responsable de establecer el salario mínimo conforme a la política pública establecida aprobando decretos mandatorios al menos una vez cada dos años. Para ejercer tales facultades, la Organización Internacional del Trabajo publicó en el 2016 un documento titulado *Guía sobre políticas en materia de salario mínimo* donde sugiere que las decisiones se fundamenten en unos criterios claramente definidos y se basen en evidencia empírica. Como parte del análisis, discute los mecanismos de fijación y ajustes del salario mínimo en diferentes países. Desde esta perspectiva, es recomendable que la CESM establezca un mecanismo de ajuste salarial que pueda ejecutarse de forma automática y periódica integrando tanto criterios bases como criterios discrecionales, según dictan algunas de esas experiencias.

(b) La ejecución de la política pública sobre el salario mínimo establecida en la Ley 47 del 2021 debe estar acompañada de iniciativas y medidas que estén destinadas a ofrecer apoyo a las pymes. Para dichos propósitos, se encuentran los programas que han sido previamente mencionados del Departamento de Desarrollo Económico y Comercio. Iniciativas adicionales podrían adoptarse de ser necesario por las agencias concernientes.

Promover condiciones laborales más favorables para los trabajadores y las trabajadoras no es incompatible con medidas dirigidas a ampliar la base y capacidad productiva de Puerto Rico. Los esfuerzos para desarrollar un proyecto económico nacional deben orientarse en esa dirección.

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Creando una Junta de Salario Mínimo en el Departamento del Trabajo; definiendo sus facultades; estableciendo el procedimiento para determinar el salario mínimo que debe pagarse en las distintas ocupaciones, las horas máximas de labor y las condiciones de trabajo requeridas para la conservación de la salud, la seguridad y el bienestar de los trabajadores; dándole carácter mandatorio a los decretos sobre salario mínimo, horas de labor y condiciones de trabajo que dicha Junta promulgare en cumplimiento de sus deberes; estableciendo el procedimiento de apelación de las distintas disposiciones de la Junta; fijando penalidades por la violación de las disposiciones de esta ley, y para otros fines, Ley Núm. 8 de 5 de abril de 1941. https://bvirtualogp.pr.gov/ogp/Bvirtual/leyesreferencia/PDF/2/0008-1941.pdf

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Como parte del proceso de envío, los autores/as están obligados a comprobar que su envío cumpla todos los elementos que se muestran a continuación. Se devolverán a los autores/as aquellos envíos que no cumplan estas directrices.

1. Todas las colaboraciones deben ser originales y estar escritas en español o en inglés.
2. Los escritos deben ser inéditos. Someterlos a la consideración de la Junta Editora de *Fórum Empresarial* supone el compromiso por parte del autor de no enviarlo simultáneamente a otras publicaciones.
3. Un escrito que llene todos los requisitos de excelencia, pero que sea solo una repetición de las ideas que el autor haya expuesto en otros trabajos, no se someterá al proceso de evaluación por pares, a menos que constituya una nueva síntesis del pensamiento del autor o una revisión de sus concepciones anteriores.
4. La portada deberá incluir el título del escrito, el nombre del autor, su filiación, su dirección, sus números de teléfono y su dirección electrónica. El título se escribirá nuevamente en la parte superior de la primera página del manuscrito. Las páginas restantes no deben llevar ninguna identificación.
5. La extensión de los artículos no debe exceder de 20 páginas a espacio sencillo (tamaño 8.5" x 11.5"), por un solo lado, incluyendo tablas y referencias. La letra debe ser Times New Roman, tamaño 12.

6. El título del artículo no debe exceder de 15 palabras.
7. Los artículos deberán estar precedidos de un resumen en español e inglés (de un máximo de 125 palabras cada uno). Tras el resumen debe incluir un máximo de cinco palabras clave en ambos idiomas.
8. Las notas deben ser breves y limitarse a hacer aclaraciones marginales al texto; no deben utilizarse solo para indicar referencias bibliográficas. Las notas deben estar enumeradas consecutivamente a lo largo del texto y aparecer al final de cada página.
9. Los artículos se deben redactar siguiendo consistentemente las normas de estilo del *Manual de publicaciones de la American Psychological Association*, 7ma edición.
10. Todas las tablas, gráficas y figuras deben ser enviadas en un formato editable.
11. Las reseñas críticas de libros deben incluir lo siguiente:
    - Tipo de libro (e.g. texto académico, manual, biografía)
    - Título del libro y número de páginas
    - Apellidos y nombre del autor
    - Nombre del traductor (si lo tiene)
    - Editorial, ciudad y fecha de publicación
    - ISBN
    - El texto debe ser de 750 a 1000 palabras.
    - En la reseña deberá resumir el libro, con énfasis en sus temas y tesis principales; analizar las fortalezas y debilidades del libro con ejemplos; evaluar el libro, tal vez en comparación con otras grandes obras en el mismo campo; e incluir una conclusión sobre los principales puntos de la revisión, que no sea una recapitulación de lo dicho.
12. Los artículos de investigación y las reseñas se deben enviar como Microsoft Word Document por medio del siguiente enlace: http://www.formstack.com/forms/?1045911-qRDvLDw0KZ.
    Los artículos técnicos-profesionales se deben enviar como Microsoft Word Document por medio del siguiente enlace: http://www.formstack.com/forms/?1232637-qRDvLDw0KZ.

- En todos los envíos nuevos y las revisiones, la primera página del manuscrito debe contener solo el título del trabajo sin los nombres de los autores.
- Incluya un archivo separado con el título del manuscrito y el nombre, la afiliación y la dirección electrónica de todos los autores. Se debe incluir también el ORCID ID de los autores académicos.

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Una vez se reciben los escritos, estos son revisados por la Junta Editora para determinar si cumplen con el objetivo y las normas de la revista; los que cumplen con lo anterior son seleccionados y enviados a tres pares evaluadores para su consideración y dictamen; los que no cumplen son devueltos a los autores con las observaciones correspondientes.

POLÍTICA DE ACCESO ABIERTO

Fórum Empresarial respalda el acceso abierto al trabajo académico. Todos los artículos y reseñas de la revista están disponibles libremente desde la fecha de publicación. *Fórum Empresarial* permite a los lectores buscar, leer, copiar, descargar, imprimir, distribuir o hacer enlaces a los textos completos de los artículos, así como usarlos para cualquier propósito legal. *Fórum Empresarial* depende del apoyo financiero de la Facultad de Administración de Empresas, de la Universidad de Puerto Rico, Recinto de Río Piedras, así como de la buena voluntad de su Junta Editora y el continuo apoyo de su red internacional de pares revisores.

SUBMISSIONS AND PEER REVIEW PROCESS GUIDELINES

Fórum Empresarial has an International Advisory Board and the support of a large group of external evaluators with expertise in different areas of the field of Business Administration and its related disciplines. The external evaluators come from academic institutions in Puerto Rico, Latin America, United States of America, and Africa.

As part of the submission process, authors are required to check off their submission's compliance with all of the following items, and submissions that do not adhere to these guidelines may be returned to the authors.

1. All submissions must be written in English or Spanish, and should represent the original work of the authors.
2. The Editorial Board will not recommend an already published article unless there is evidence that it represents a new synthesis of the author's ideas.
3. The cover page must include the title of the article, author's name, job title, address, work and home telephone numbers, and email address. The title should appear at the top of the first page of the manuscript. Subsequent pages should not have any identification.
4. Submissions should be no longer than 20 pages, single spaced (8.5" x 11.5"), written on one side of the paper, including tables and references. The font should be Times New Roman size 12.
5. The article title must not exceed 15 words.
6. Articles must be preceded by an abstract drafted in both English and Spanish (125 words maximum each). The abstract should be followed by a maximum of five keywords in both languages.
7. Notes should be brief and be limited to marginal clarifications to the text; they should not be used to indicate bibliographical

entries. Notes must be consecutively numbered in the text and should appear at the bottom of the page.

8. Submissions should be written consistently following the style and format of the *Publication Manual of the American Psychological Association*, 7th edition.
9. All tables, graphs, and figures must be submitted in an editable format.
10. Critical book reviews must include the following:
    - Type of book (i.e. textbook, manual, biography)
    - Title of book and number of pages
    - Last name, first name of the author
    - Translator's name (if any)
    - Publisher, city, and date of publication
    - ISBN
    - The review should be about 750-1000 words.
    - You should succinctly summarize the book, noting especially its main topics and theses. Analyze the book's strengths and weaknesses with examples of each. You may also evaluate the book, perhaps in comparison to other major works in the field. Finally, include a conclusion that brings together the main points of the review, but is more than a recapitulation of what has been said.
11. Research articles and book reviews must be submitted as a Microsoft Word Document, using the following link: http://www.formstack.com/forms/?1045911-qRDvLDw0KZ.
    Technical professional articles must be submitted as a Microsoft Word Document, using the following link: http://www.formstack.com/forms/?1232637-qRDvLDw0KZ.
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    - Include a separate file with the title of the manuscript and the name, affiliation, and email of all the authors. The ORCID ID of academic authors should also be included.

Once the articles are received, they are reviewed by the Editorial Board to determine if they comply with the focus, objective, and standards of the journal. If the submitted work meets these expectations it will be selected and sent to three peer reviewers for their consideration. Typescripts that do not meet the scope and guidelines of the journal will be rejected.

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