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Cultural Catalysts of FinTech: Baring Long-Term Orientation and Indulgent Cultures in OECD Countries.

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Cultural Catalysts of FinTech: Baring Long-Term Orientation and Indulgent Cultures in OECD Countries

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Abstract

The widespread adoption of financial technology (FinTech) has played a pivotal role in enhancing financial inclusion, particularly in regions where conventional banking services were once as elusive as solving the Riemann Hypothesis. Traditional financial systems, especially in developing countries, have struggled to meet customer demands for cost-efficient transactions, transparency, security, speed, convenience, and accessibility. This research aims to control the supply-side determinants that influence the appetite of FinTech within societies and then scrutinizes the impact of long-term and indulgent cultural orientations on this phenomenon. Over the course of nine years spanning from 2012 to 2020, comprehensive data was methodically collected from 43 OECD member countries. The chosen analytical approach was the employment of the Random Effects model, with time-specific effects and robust standard errors. The findings reveal that countries with higher long-term orientations and a penchant for indulgence exhibit a greater propensity for embracing FinTech innovations, in contrast to their counterparts with opposing cultural traits. This research highlights the necessity for industry practitioners and FinTech entrepreneurs to consider the cultural dynamics of a given market before initiating FinTech-related ventures and recommends further exploration of cultural dimensions from various frameworks to enhance the generalizability of these findings. It emphasizes the pivotal role of culture in shaping FinTech adoption, offering valuable insights for both academia and industry.

Key Terms: National Culture, Long – Term Orientation, Indulgence, FinTech Appetite

1. Introduction

In the rapidly evolving landscape of financial technology (FinTech), understanding the factors that shape consumer attitudes and behaviors towards these innovative solutions is of paramount importance (Kowalewski *et al.,* 2021). One intriguing aspect that warrants investigation is the influence of cultural orientations on individuals' appetite for FinTech. This research is focused on investigating the impact of cultures characterized by long-term orientation and indulgence on the adoption and utilization of FinTech services within the context of the most economically developed and advanced nations globally, namely, the member states of the Organization for Economic Co-operation and Development (OECD).

FinTech has revolutionized traditional financial services, offering convenience, efficiency, and personalized experiences to users. However, its widespread adoption varies across countries, and cultural factors have been recognized as key drivers behind these disparities (Glavina *et al.,* 2021). National culture, with its diverse dimensions and values, can significantly shape individuals' perceptions, preferences, and behaviors in various domains. In particular, the cultural dimensions of long-term orientation and indulgence provide an intriguing lens through which to examine the FinTech appetite of individuals in different countries.

The conventional financial system has failed, especially in developing countries, to accommodate customers in the following arena; cost-efficient ways of performing financial obligations, ensuring transparency, secured systems, speed and convenience, and last but not least, accessibility (Schmidt and Hryckiewicz, 2006; Shimada and Yang, 2010; Cherchye, Rock, Ferrando Mulier, and Vershelde, 2020). On the contrary, the new emerging financial phenomenon introduced in 1990, namely 'FinTech'', has successfully solved the above concerns. Academics and practitioners have identified FinTech as critical for ensuring financial inclusion and long-term financial sustainability (Boratynska, 2019). Apart from different micro and macro factors affecting FinTech appetite, cultural elements are ranked significant in the empirical literature for the cause of nurturing FinTech adoption.

The intention to adopt FinTech is shaped by how customers perceive the risk they are exposed to while exercising FinTech options (Tang *et al.*, 2020). Several studies have found perceived usefulness, trust, perceived ease of use, self–efficacy, and social influence as crucial influencers in molding consumer's perceptions toward FinTech adoption (Kim *et al.*, 2016; Dapp, 2017; Singh and Srivastava, 2018; Koksal, 2016; Makanyeza, 2017; and Wentzel *et al.*, 2013). This study focuses on long-term orientation and indulgence, which group the aforementioned and several other individual-centric traits within a country to see as a mainstream influencer in molding FinTech appetite across borders. Following these individual-centric characteristics, a plethora of macro-level variables is listed in the research as determining FinTech heed. Technology diffusion, inequality, economic growth, optimism in the future financial outlook, economic freedom, and human capital are a few examples (Comin and Hobjin, 2003; Malisuwan *et al.*, 2016; Asongu and Le Roux, 2017; Comin and Mestieri, 2018; and Kuperberg, 2019).

Long-term orientation refers to a cultural mindset that emphasizes persistence, perseverance, and planning for the future. It reflects a society's inclination toward long-term goals, delayed gratification, and sustainable growth (Darsono *et al.*, 2021). On the other hand, indulgent cultures prioritize immediate gratification, personal enjoyment, and fulfilling desires in the present moment (Anyangwe *et al.*, 2022). These cultural

orientations can influence individuals' attitudes towards new technologies, including FinTech, which often require a degree of trust, willingness to experiment, and long-term commitment.

Within the context of OECD countries, there exists a rich diversity of cultural orientations, ranging from countries with strong long-term orientation such as Japan and South Korea to more indulgent cultures like Spain and Italy. By exploring the relationship between these cultural dimensions and FinTech appetite, we can gain valuable insights into the underlying factors that shape consumers' attitudes, adoption patterns, and usage behaviors across different OECD countries.

National culture in shaping FinTech appetite is a complex yet momentous dilemma. Some studies have examined the influence of national culture in crafting FinTech appetite (Salcedo and Gupta, 2021; Cristofaro *et al.*, 2022). However, the role of indulgence vs. restraints and long–term orientation vs. short–term orientation has received less interest than other national cultural dimensions (Guo *et al.*, 2018). This manuscript follows Steers *et al.*, (2008), who examine a simple, yet crucial dilemma: To what extent national culture influences the adoption of emerging technologies across the nations? There is a lack of grounded modeling that could assist in establishing the role of long-term orientation and indulgence in shaping FinTech heed, as well as a dearth of case studies discovering the impact.

The objectives of this study are twofold. Firstly, it aims to investigate whether a significant relationship exists between long-term orientation and individuals' inclination to adopt and utilize FinTech services. Secondly, it seeks to explore whether cultures characterized by indulgence exhibit distinctive patterns of FinTech adoption in comparison to societies with a stronger emphasis on long-term orientation. By examining these cultural influences on FinTech appetite, policymakers, financial institutions, and FinTech providers can gain a better understanding of the cultural dynamics that shape consumer behaviors, enabling them to tailor their strategies accordingly. To achieve these objectives, this study draws on data for national cultural dimensions of long-term orientation and indulgence from the Hofstede National Culture Index published by Greet Hofstede. Additionally, data on FinTech appetite is sourced from Google Trends, which measures the frequency of searches for FinTech-related terms during the investigation period.

Utilizing random effect regression with time effect and robust standard errors, this study reveals significant positive effects of cultures characterized by high long-term orientation and indulgence on FinTech appetite in OECD countries during the examined period. Specifically, upon controlling for supply-side factors, the study demonstrates that societies with a strong long-term orientation prioritize future planning and sustainable growth, which aligns harmoniously with the innovative and forward-thinking nature of FinTech solutions. Individuals in such cultures are more inclined to embrace technologies that offer long-term benefits and aid them in achieving their future financial goals. Similarly, cultures with a high level of indulgence prioritize immediate gratification and personal enjoyment, making them receptive to the convenience and user-friendly nature of FinTech services. These cultures exhibit a greater openness to experimentation with novel digital platforms and services, including FinTech, in order to enrich their lifestyle and satisfy their desires. The captivating and cutting-edge features of FinTech appeal to the innate curiosity and quest for new experiences often observed in indulgent cultures.

The following organization is adopted for this paper: Section 2 delves into multiple theoretical considerations and empirical literature that furnish proof of a causal connection between national culture

and entrepreneurial intention. Section 3 presents an overview of the data, empirical models, summary statistics, and estimation approach employed in this study. The impact of national culture on entrepreneurial intention is examined in Section 4, where the study's findings are discussed. Ultimately, concluding remarks are provided in Section 5.

2. Literature Review

The rapid growth of financial technology (FinTech) has transformed the global financial landscape, offering innovative solutions that disrupt traditional financial services. Understanding the factors that shape individuals' attitudes and behaviors towards FinTech is essential for policymakers, financial institutions, and FinTech providers. One intriguing aspect is the influence of cultural orientations, particularly long-term orientation and indulgence, on individuals' appetite for FinTech. This literature review examines existing research to explore how long-term oriented and indulgent cultures shape FinTech appetite in OECD countries.

In our initial examination, we engaged in a critical analysis of several prominent theories, frameworks, and models pertaining to national culture, including Hofstede's National Culture Dimensions, Trompenaars' National Culture Framework, Hall and Hall's National Culture Model, and Lewis' Model of National Culture. While these models provide valuable perspectives on comprehending cultural disparities and their implications for human conduct, they are not without their constraints. This deliberation has enabled us to discern the pertinent cultural dimensions that play a significant role in fostering the adoption of FinTech.

Hofstede's national culture dimensions are widely recognized and frequently referenced when it comes to comprehending cultural differences among countries. Hofstede identified six cultural dimensions: power distance, individualism-collectivism, masculinity-femininity, uncertainty avoidance, long-term orientation, and indulgence versus restraint (Hofstede, 2011). These dimensions have been extensively employed to compare cultural disparities across nations and gain insights into how cultural values influence various facets of human behavior. Nevertheless, some scholars criticize Hofstede's approach for oversimplifying complex cultural phenomena and categorizing national cultures into rigid classifications. Furthermore, researchers argue that Hofstede's model has limited relevance in today's globalized and interconnected world, where cultural boundaries are increasingly blurred (Shaiq *et al*., 2011).

Trompenaars' national culture framework is another well-regarded model utilized to comprehend cultural differences across countries. This framework places emphasis on cultural values and norms that shape individual behavior and organizational practices. Trompenaars identified seven cultural dimensions, including universalism-particularism, individualism-communitarianism, specific-diffuse, neutral-affective, achievement-ascription, sequential-synchronic, and internal-external control (Moore, 2020). However, some scholars argue that Trompenaars' approach is too static and deterministic, failing to account for the dynamic and fluid nature of cultural change. Additionally, researchers note that Trompenaars' model primarily focuses on Western cultures and may not adequately apply to non-Western contexts (Larceda, 2011).

Hall and Hall's national culture model underscores the significance of context and nonverbal communication in comprehending cultural disparities among countries. This model emphasizes how

different cultures interpret and respond to nonverbal cues, such as gestures, facial expressions, and tone of voice. Hall and Hall identified three cultural dimensions: high-context versus low-context communication, monochronic versus polychronic time, and high versus low-contact cultures (Gillian, 2013). However, some scholars criticize Hall and Hall's approach for focusing excessively on surface-level behaviors while overlooking deeper cultural values and beliefs. Additionally, researchers suggest that Hall and Hall's model may only be applicable to certain cultures and may oversimplify complex cultural phenomena (Cardon, 2008).

Lewis' model of national culture highlights the role of communication styles and patterns in shaping cultural differences among countries. This model categorizes cultures into three main groups: linear-active, multi-active, and reactive. Linear-active cultures prioritize schedules, deadlines, and task-oriented communication, whereas multi-active cultures emphasize interpersonal relationships and social interaction, and reactive cultures value harmony, respect, and conflict avoidance (Dunkel and Meierewert, 2004). However, some scholars criticize Lewis' model for oversimplifying intricate cultural phenomena and relying heavily on stereotypes and generalizations. Additionally, researchers note that Lewis' model may not be universally applicable and may overlook the diversity and complexity of cultural values and beliefs (Niemi, 2019).

In conclusion, national culture theories, frameworks, and models provide valuable frameworks for comprehending cultural differences among countries. However, it is crucial to approach these models with a critical and nuanced perspective. National culture models should serve as a starting point for cross-cultural research rather than definitive and rigid frameworks for understanding cultural disparities. Researchers should be aware of the limitations and biases inherent in these models and strive to incorporate diverse perspectives and approaches to gain a comprehensive understanding of the complex and dynamic nature of cultural differences. Ultimately, adopting a holistic and nuanced approach to cross-cultural research can lead to a more accurate and comprehensive understanding of how cultural values and norms shape human behavior, including entrepreneurial activities, management practices, and decision-making.

Furthermore, this literature review explores the influence of long-term oriented and indulgent cultures on FinTech appetite in OECD countries. Long-term oriented cultures, characterized by a focus on future planning and sustainable growth, exhibit a positive relationship with FinTech adoption. These cultures prioritize efficiency and embrace technological advancements, making FinTech services appealing for their long-term benefits (Ozbilen, 2017). Indulgent cultures, on the other hand, value immediate gratification and personal enjoyment, aligning well with the convenience and user-friendly nature of FinTech. They exhibit a higher propensity for experimentation and openness to new experiences, driving their adoption of FinTech solutions (Khan and Cox, 2017). However, it is important to consider contextual factors, such as regulatory frameworks, institutional support, and demographic characteristics, that may mediate or moderate these relationships. By understanding the cultural dynamics shaping FinTech appetite, policymakers, financial institutions, and FinTech providers can tailor their strategies to effectively engage with individuals in different cultural contexts.

Long–Term Orientation and FinTech Appetite

In the contemporary literature, Long-Term Orientation refers to the inclination to focus on the long-term implications and consequences of decisions and actions that materialize over an extended period (Lumpkin, Brigham, and Moss, 2010). Research suggests that societies with lower scores on this dimension tend to uphold longstanding traditions and societal norms, while those with higher long-term orientation exhibit a more pragmatic approach (Ozbilen, 2017). Due to their pragmatic nature and greater adaptability to new customs and changing dynamics, nations with a higher long-term orientation are more inclined to embrace new technologies, including FinTech.

However, when examining the impact of long-term orientation in the empirical literature, contradictory findings have been reported. For instance, Rees and Althakhri (2008) contradicted the findings of Harzing and Hofstede (1996) by identifying a positive causal relationship between long-term orientation and resistance to diffuse change. In contrast, the latter characterized societies with long-term orientation as highly adaptive, suggesting a negative relationship between long-term orientation and the acceptance of technological change. Empirical research has also revealed that long-term-oriented cultures tend to be more innovative compared to their short-term counterparts (Van Everdingen and Waarts, 2003). Another distinctive characteristic of long-term-oriented societies is their ability to persist in their intentions despite opposition (Hofstede, Minkov, and Hofstede, 2010). Therefore, transitioning from a well-established financial paradigm to an unprecedented technology-based financial system would require unwavering persistence, a prominent trait of long-term-oriented societies.

Considering these findings, it can be reasoned that cultures with high long-term orientation are more likely to adopt and embrace FinTech due to their pragmatic nature, adaptability to change, innovation propensity, and persistence in pursuing their goals. The forward-thinking and future-oriented nature of FinTech aligns well with the values and mindset of long-term-oriented societies, as they prioritize planning for the future and sustainable growth. In the context of financial services, individuals in long-term-oriented cultures are more inclined to embrace technology that offers long-term benefits and helps them achieve their future financial goals. Thus, the positive and significant relationship between long-term orientation and FinTech appetite can be attributed to the cultural values and tendencies inherent in long-term-oriented societies.

Indulgence and FinTech Appetite

Indulgent cultures are characterized by their inclination to prioritize the gratification of basic human desires and the enjoyment of life (Hofstede *et al.*, 2010). Such cultures, including those observed in Anglo-American countries, Denmark, and Sweden, exhibit a higher level of adaptability to technology-driven commerce (Mandler *et al.*, 2018). Prim *et al.* (2017) argue that indulgent societies are more open to new ideas and willing to experiment with the latest trends, resulting in a higher level of innovation. In contrast, Khan and Cox (2017) suggest that cultures with low indulgence tend to be more pessimistic and skeptical. Optimistic societies, which are often associated with high indulgence, display a greater willingness to try new technologies due to their belief in the future efficacy of technology (Salcedo and Gupta, 2021). On the other hand, skeptical and pessimistic cultures are more reluctant to adopt FinTech, as they harbor concerns about potential losses associated with technology-based investments. These cultures tend to exhibit cautious behavior and await empirical evidence of the technology's effectiveness before embracing it (Handoyo, 2018).

Considering the research findings, it can be argued that high-indulgence cultures are more likely to adopt and embrace FinTech due to their optimistic outlook, willingness to explore new technologies, and openness to innovation. The convenience and user-friendly nature of FinTech services align well with the values and desires of indulgent cultures, which prioritize immediate gratification and personal enjoyment. Individuals in such cultures are more open to experimenting with new digital platforms and services, including FinTech, as they seek to enhance their lifestyles and fulfill their desires (Stamolampros *et al.*, 2020). Moreover, the novel and cutting-edge features of FinTech appeal to the curiosity and desire for novel experiences often found in indulgent cultures. Thus, the inclination of indulgent cultures to adopt FinTech can be attributed to their cultural inclination toward embracing new trends, their optimism about technology's future potential, and their desire for immediate gratification and enhanced experiences.

It is worth noting that Jaiswal and Zane (2022) found indulgence to be the only cultural dimension with a consistent effect on technology adoption, further supporting the notion that FinTech adoption is likely influenced by the level of indulgence in a given culture.

Table I: Summary of Empirical Literature on National Culture and FinTech Appetite

Author(s)	Methodology			Measures	Findings	Control Variables
	Sample Size	Sample Period	Country			
Urus et al. (2022)	176 Individuals	2022	Malaysia	Performance Expectancy Effort Expectancy Social Influence Consumer's Trust National Culture (Long – Term Orientation) FinTech Adoption	The findings suggest that the cultural dimension of long–term orientation has no significant impact in shaping FinTech adoption in the graduate students of Malaysia.	-
Özbilen (2017)	31 Countries	2013 - 2014	31 Countries	Hofstede National Culture Dimensions (Except Indulgence) Technology Adoption	This study demonstrates that long-term orientation has a substantial positive influence on the adoption of new technologies.	Education Income
AbdelRahim (2021)	53 Developed and Developing Countries	2010	53 Developed and Developing Countries	Indulgence Long – Term Orientation Risk Aversion	The findings indicate a significant positive relationship between indulgence and a country's risk aversion, while long-term orientation shows a	Per Capita Income Religiosity

					positive but non-significant impact on risk aversion.	
Abbasi et al. (2021)	1617 SMEs	2011 - 2018	22 OECD Countries	SME Efficiency FinTechs National Culture (long-term orientation and indulgence)	The findings indicate that cultures characterized by long-term orientation negatively impact the relationship between FinTechs and SME efficiency. However, it did not observe any significant moderating effect of indulgence cultures on the association between FinTechs and SME efficiency.	ROIC ROE Firm Size Leverage Firm Growth Cash Holdings
Kowalewski et al. (2021)	94 Countries	2013 - 2019	94 Countries	Easy Availability of Credit Information High Level of Privacy Protection Growth of Paytech Services Institutional Quality National Culture (Long – Term Orientation and Indulgence). FinTech and Bigtech Credit	The study revealed that long-term orientation has a notable positive effect on FinTech and Bigtech credit, whereas indulgence has a significant negative impact.	Gross Domestic Product Global Financial Crises Average Interest Rates Level of Domestic Credit Traditional and Alternative Financial Information
Picoto and Pinto (2021)	208 Individuals.	2019 –2020	USA, India, UK, and Brazil.	Hofstede National Culture Dimensions (Except Indulgence) Intention to use Mobile Banking Actual Usage of Mobile Banking	The results of the analysis indicate that long-term orientation is a significant cultural factor that impacts the connection between the intention to use mobile banking and its actual utilization.	Gender Age Education

3. Data and Estimation Strategy

In this section, we cover various aspects including data description, defining the empirical model, presenting summary statistics, and explaining the rationale behind the chosen estimation approach.

3.1 Data

This research undertook an extensive data compilation from 43 OECD countries, spanning a duration of nine years, encompassing the years 2012 to 2020. The rationale behind focusing on OECD nations lies in the presumption that, notwithstanding their overarching uniformity in terms of economic growth and development, these countries still exhibit a rich tapestry of distinct cultural attributes. For instance, certain countries within this cohort, such as Denmark, Sweden, and the United Kingdom, tend to display pronounced tendencies toward indulgence, coupled with a lesser inclination towards long-term orientation. Conversely, countries like Japan, China, and South Korea tend to manifest contrasting characteristics along these dimensions, as elucidated by Hofstede (2021).

The essential independent variables of interest, encompassing long-term orientation and indulgence, were drawn from the Hofstede National Culture Index, an esteemed resource created by the renowned Dutch scholar Greet Hofstede. The dependent variable, representing the level of engagement with FinTech, was operationalized through an analysis of the frequency of online searches for FinTech-related terms, including but not limited to "Crypto Currency Exchange," "DeFi," "NFTs," "Blockchain," and "Financial Technology." These search frequency data were procured from Google Trends.

3.1.1 Descriptive Statistics

Table II presents the descriptive statistics for the variables under investigation. The findings reveal that the sample's average *gross domestic product* (GDP) growth rate is 1.2% per fiscal year, indicating a modest but consistent economic expansion. The *Human Development Index,* a measure of overall human well-being, remains relatively high among the OECD countries included in the study, with an average value of 0.860. Moreover, with an average of 1.028, the *regulatory index* suggests that the surveyed governments are perceived to have effectively established regulatory frameworks for developing the public sector. The *Gini inequality index,* reflecting income distribution, demonstrates a relatively satisfactory level of income equality within the sample, with an average mean of 35.07. With regard to the Financial Development Index, it reveals that 60% of the countries in the sample exhibit a well-established, comprehensive, and effective network of financial institutions and markets. When considering *corruption perception* in the public sector, the average mean score of 62.11 suggests a relatively low level of corruption, with proximity to Denmark, which has the lowest corruption perception score of 90.

Furthermore, approximately 76% of individuals in the sample countries have *access to the internet* through various devices such as computers, mobile phones, PDAs, or digital TVs. The average mean of 66.58 on the Financial Freedom Index signifies a commendable level of financial freedom concerning government regulation, state ownership in financial institutions, market development, credit allocation, and openness to foreign competition across the chosen OECD nations. The population residing in these countries displays considerable confidence in their respective economies' future outlooks. Regarding cultural orientation, the sample societies exhibit a long-term orientation of 52.33% and a solid connection to their cultures while simultaneously satisfying their desires, as indicated by a level of indulgence of 47.07%. Lastly, an average of 102.201 searches per minute related to FinTech terms were conducted in the sample countries during the study period, highlighting the significance and interest in this domain.

Table II: Summary Statistics

	Observations	Mean	Standard Deviation	Min	Max
GDP	378	1.220	3.255	-11.253	23.999
HDI	378	.860	.078	.6	.962
REGIDX	378	1.028	.684	-.56	2.09
INEQUAL	378	35.075	7.576	0	63
FDI	378	.600	.205	.204	.978
CPI	378	62.113	17.686	27	92
INT	378	76.036	17.534	11.1	98.82
FINFREE	378	66.587	14.503	20	90
CCI	378	100.090	2.056	88.84	105.1
LTO	378	52.333	23.502	0	100
INDU	378	47.047	22.985	0	97
FINAPP	378	102.201	89.409	0	576

FINAPP is referred to the FinTech appetite prevailing within a society; *GDP* is labelled as gross domestic product per capita growth published by World Bank; *HDI* is termed the human development index developed by United Nations Development Program (UNDP); *REGIDX* represents Regulatory Index which denotes the perception about the ability of the government in formulating and implementing polices to support private sector published by World Bank Group; *INEQUAL* refers to the Gini Index published by World Bank; *FDI* is termed as the financial development index published by International Monetary Fund; *CPI* is labelled as the corruption perception index which is an indicator of perceptions of public sector corruption published by Transparency International; *INT* represents the average number of internet subscribers published by International Telecommunication Union; *FINFREE* refers to the financial freedom index published by the Heritage Foundation; *CCI* denotes consumer confidence indicator that provides an indication of future developments of household's consumption and saving based on their perception about future economic outlook developed by OECD Index; *LTO* represents the national culture dimension of long – term orientation; and *INDU* refers to the cultural dimension of indulgence.

3.2 Empirical Model

To analyze the phenomena, the following empirical model was used in this study.

$$FINAPP_{it} = \alpha 0 + \alpha 1 GDP_{it} + \alpha 2 HDI_{it} + \alpha 3 REGIDX_{it} + \alpha 4 INEQUAL_{it} + \alpha 5 FDI_{it} + \alpha 6 CPI_{it} + \alpha 7 INT_{it} + \alpha 8 FINFREE_{it} + \alpha 9 CCI_{it} + \alpha 10 LTO_i + \alpha 11 INDU_i + \varepsilon_{it}$$

"*FINAPP*" refers to the measurement of FinTech adoption within a society, "*GDP*" is the gross domestic product per capita growth reported by the World Bank, "*HDI*" stands for the human development index developed by the United Nations Development Program (UNDP), "*REGIDX*" represents the Regulatory Index, reflecting the perception of a government's ability to create and implement policies to support the private sector, published by the World Bank Group, "*INEQUAL*" refers to the Gini Index published by the World Bank, "*FDI*" is a ranking of countries based on the depth, access, and efficiency of their financial institutions and financial markets, as published by the International Monetary Fund, "*CPI*" denotes the corruption perception index, an indicator of public sector corruption perceptions published by Transparency International, "*INT*" represents the average number of internet subscribers as reported by the International Telecommunication Union, "*FINFREE*" stands for the Financial Freedom Index, evaluating government regulation, state ownership in financial institutions, market development, credit allocation, and the openness to foreign competition within the financial sector, as published by the Heritage Foundation. "*CCI*" denotes the consumer confidence indicator, which offers insights into future household consumption and saving based on perceptions of the future economic outlook, developed by the OECD. "*LTO*" represents the national culture dimension of long-term orientation, and "*INDU*" refers to the cultural dimension of

indulgence. The symbol "ε" represents the random error term, assumed to follow a typical and independent distribution.

After regulating the supply side components required for developing a fertile environment for FinTech appetite inside a society, this study scrutinizes the role national culture can play in shaping it. Therefore, a wide range of control variables, including political, economic, social, and technological development indicators, are included in the research model to control supply aspects required for proliferating FinTech in the studied context.

3.3 Estimation Strategy

Prior to conducting the empirical analysis aimed at evaluating the influence of the independent variables on the dependent variable, this study executed a series of diagnostic tests to select the appropriate estimation model. Specifically, we performed the Breusch Pagan Multiplier Test and the Hausman Test to discern the most appropriate statistical methodology for our analysis. The results indicated that the Fixed Effects estimator was the most pertinent approach to adopt. Nevertheless, the inherent time-invariance of the key independent variables, namely Long-Term Orientation and Indulgence, imposed constraints on the applicability of the Fixed Effects technique. Consequently, we chose to employ the Random Effects technique, while introducing time-specific effects to accommodate the dynamics of the 2017-2018 cryptocurrency boom. Additionally, robust standard errors were introduced to address issues such as heteroskedasticity and autocorrelation, while time-effects were used to mitigate cross-serial dependence.

3.3.1 Robustness

In order to bolster the resilience and legitimacy of our formulated model, we performed a robustness test by introducing additional control variables into our model. Specifically, we incorporated the Economic Freedom Index, Government Effectiveness Index, Talent Flight and Brain Drainage, and Mobile Subscribers per 100 as supplementary controls within our empirical framework. This deliberate refinement of the model serves the purpose of corroborating the dependability of our conclusions derived from the primary model.

$$FINAPP_{it} = \alpha 0 + \alpha 1 GDP_{it} + \alpha 2 HDI_{it} + \alpha 3 REGIDX_{it} + \alpha 4 INEQUAL_{it} + \alpha 5 FDI_{it} + \alpha 6 CPI_{it} + \alpha 7 INT_{it} + \alpha 8 FINFREE_{it} + \alpha 9 CCI_{it} + a10 EFI_{it} + a11 GEI_{it} + a12 TFI_{it} + a13 MSI_{it} + \alpha 14 LTO_i + \alpha 15 INDU_i + \varepsilon_{it}$$

Robustness Check Equation

Whereas the additional controls included are: *EFI* (Economic Freedom Index) comprises ten components organized into four overarching categories: Rule of Law, Limited Government, Regulatory Efficiency, and Open Markets. This comprehensive economic freedom measure is rated on a scale from 0 to 100, where a score of 100 signifies maximum freedom. *GEI* gauges perceptions of the quality of public services, the competence and autonomy of the civil service, the effectiveness of policy development and execution, and the government's commitment to its policies. *TFI* assesses the economic ramifications of human displacement, whether due to economic or political reasons, and examines its potential impact on a country's development. A higher index value corresponds to a more significant level of human displacement. *MSI*

encompass subscriptions to a public mobile telephone service offering access to the Public Switched Telephone Network (PSTN) through cellular technology.

The inclusion of these additional controls in our robustness test represents a crucial step in affirming the consistency and credibility of our model's outcomes concerning the focal independent variables, further solidifying the reliability of our research findings.

4. Results and Discussion

Table III provides a comprehensive summary of the results obtained from the estimated equations, encompassing both the main model and the robustness check. In order to address the substantial variations in sample size among the observations under investigation, this study employed a random effect regression with time effects and robust techniques, taking into account issues such as heteroscedasticity, autocorrelation, and cross-sectional dependence. Additionally, we introduced supplementary control variables into the estimated model to enhance the robustness and reliability of our research findings.

The results highlight a significant positive influence of long-term orientation and indulgence on the adoption of FinTech within OECD countries. Importantly, this effect remains robust even after incorporating additional control variables as part of our verification process. Additionally, the inclusion of time-specific year effects enables us to account for the impact of the cryptocurrency boom that occurred in 2017-2018.

Table III: Random Effect Regression with Time Effects and Robust Standard Errors and Robustness Equation Results

	Random Effect Regression with Time Effects and Robust standard errors		Robustness Results with Additional Control Variables	
FINAPP	Coefficient	P>|t|	Coefficient	P>|t|
Control Variable(s)				
GDP	.005	0.759	.005	0.591
HDI	-4.412	0.133	-4.657	0.492
REGIDX	.805	0.053	.674	0.453
INEQUAL	-.037	0.030	-.035	0.007
FDI	-.919	0.201	.095	0.053
CPI	-.036	0.018	-.033	0.122
INT	.489	0.228	.317	0.051
FINFREE	-.001	0.909	-.002	0.176
CCI	-.013	0.772	-.013	0.777
Additional Control(s) For Robustness				
EFI	-	-	.011	0.369
GEI	-	-	-.088	0.846
TFI	-	-	.061	0.657
MSI	-	-	-.120	0.239
Focus Variable(s)				
LTO	.019	0.007	.020	0.004
INDU	.024	0.001	.023	0.001
Year Effect				
2013	-.055	0.753	-.030	0.863
2014	-.002	0.991	.005	0.979

2015	.201	0.459	.246	0.345
2016	.109	0.676	.170	0.499
2017	1.245	0.000	1.291	0.000
2018	1.107	0.000	1.179	0.000
2019	.454	0.163	.533	0.115
2020	.214	0.505	.267	0.410
Constant	8.015	0.136	9.424	0.154
Observations	268		268	
R^2	0.327		0.342	

FINAPP is referred to the FinTech appetite prevailing within a society; GDP is labelled as gross domestic product per capita growth published by World Bank; *HDI* is termed the human development index developed by United Nations Development Program (UNDP); *REGIDX* represents Regulatory Index which denotes the perception about the ability of the government in formulating and implementing polices to support private sector published by World Bank Group; *INEQUAL* refers to the Gini Index published by World Bank; *FDI* is termed as the financial development index published by International Monetary Fund; *CPI* is labelled as the corruption perception index which is an indicator of perceptions of public sector corruption published by Transparency International; *INT* represents the average number of internet subscribers published by International Telecommunication Union; *FINFREE* refers to the financial freedom index published by the Heritage Foundation; EFI encapsulates the composite score of four indexes including: Rule of Law, Limited Government Intervention, Regulatory Efficiency, and Open Markets; *GEI* measures perceptions related to the quality of public services, the civil service's quality and independence from political influences, the effectiveness of policy development and implementation, and the government's credibility in upholding its policies; *TFI* considers the economic impact of human displacement and the consequences this may have on a country's development; *MSI* represents the mobile subscriber per 100 in the population; *CCI* denotes consumer confidence indicator that provides an indication of future developments of household's consumption and saving based on their perception about future economic outlook developed by OECD Index; *LTO* represents the national culture dimension of long – term orientation; and *INDU* refers to the cultural dimension of indulgence.

The results of this study substantiate that after controlling the supply side factors, long–term orientation and indulgence play a significant role in shaping FinTech appetite amongst the studied nations. The findings confirm the outcomes of Ozbilen (2017), who suggests that long–term oriented cultures are believed to be blended well into pragmatism and are more open to embracing the technological change introduced.

Nations characterized by a strong Long-Term Orientation (LTO) culture tend to exhibit a more pronounced appetite for FinTech due to their inherent focus on stability, future planning, and perseverance. In these societies, individuals are inclined to prioritize long-term financial goals, fostering a greater openness to innovative financial technologies. Such cultures place an emphasis on savings, investments, and education, aligning well with the value proposition of FinTech platforms that offer automated savings, investment opportunities, and financial literacy tools (Darsono *et al.*, 2021). The risk-averse nature of LTO cultures also positions them as receptive to FinTech solutions that provide secure and stable ways to manage and grow their wealth over time (Picoto and Pinto, 2021). Moreover, the mindset of patiently working towards future gains resonates with the efficiency and long-term benefits often associated with FinTech offerings. In sum, the compatibility between the traits of Long-Term Orientation cultures and the foundational principles of FinTech platforms creates a natural synergy, nurturing a stronger appetite for FinTech adoption in these nations (Tajul Urus *et al.*, 2022; Hardin and Twengström, 2022).

There are contradictory viewpoints in the literature on the significance long – term orientation in determining adaptability towards technological change. For instance, Srite and Karahanna (2006) did not include long – term orientation in their research while examining national culture and technology adoption. Similarly, Gupta, Esmaeilzadeh, and Tennant (2019) skip the inclusion of long–term orientation as looking at the adaptability of online renting services. While on the contrary, Hoehle, Zhang, and Venkatesh (2015) and Gupta, Dogra, and George (2018) underline the significance of long-term orientation in their work on information systems containing national culture. Long-term cultural values allow questioning current norms, customs, and rituals to develop and innovate for a more sustainable future (Hofstede, 2011). Moving from present payment methods to a blockchain-based financial system would necessitate a fundamental paradigm shift that will necessitate a long-term, forward-thinking approach. The results of this study

confirm our hypothesis that long-term oriented cultural values would increase users' willingness to adopt blockchain-based currency and other FinTech offerings.

Moreover, the results about the second studied cultural dimension indulgence supports the argument that highly indulgent cultures tend to have a robust FinTech appetite compared to highly restrained societies. Countries with prevalent indulgent cultural tendencies display a heightened inclination towards FinTech, stemming from the harmonization between their cultural ethos and the progressive attributes inherent in financial technology. In such societies, where personal gratification, novelty, and risk-taking are embraced, FinTech resonates well. The inherent desire for immediate satisfaction and novel experiences makes individuals more receptive to the convenience, speed, and personalized services offered by FinTech solutions (Anyangwe *et al.*, 2022). These cultures often prioritize individual autonomy and exploration, fostering a climate conducive to adopting new technologies that empower consumers in their financial decision-making. Furthermore, the willingness to embrace risk and experiment aligns with the dynamic and evolving nature of FinTech, which frequently introduces disruptive innovations (Kurniasari *et al.*, 2022). Consequently, high indulgence cultures view FinTech not only as a pragmatic tool but also as an avenue for personal expression and novel experiences, leading to a robust demand and a strong embrace of FinTech innovations.

Furthermore, indulgent cultures exhibit a robust appetite for FinTech due to a confluence of factors. Their openness to experimentation and tech-savviness align seamlessly with FinTech's innovative nature, making them more inclined to explore novel financial technologies. The personalized experiences offered by FinTech cater to their individualistic values, while the instant gratification provided by quick online transactions resonates with their desire for immediate rewards (Kowalewski *et al.*, 2021). Moreover, their cultural willingness to embrace risk mirrors the calculated risks inherent in FinTech adoption. With strong digital connectivity and changing norms valuing experiences, these cultures find FinTech's offerings of personalized, novel, and dynamic financial experiences particularly appealing (Abbasi *et al.*, 2021). Consequently, the compatibility between high indulgence cultural traits and FinTech's innovative landscape creates a fertile ground for the enthusiastic embrace of financial technology.

Prior studies have established a causal relationship between indulgence cultures and FinTech appetite, but they have yet to use national-level data from a cluster of countries (Prim *et al.*, 2017; Khan and Cox, 2017). Indulgent societies are expected to be more inclined toward modern FinTech offerings due to their belief that it significantly contributes to improving life (Khan and Cox, 2017). Furthermore, societies with higher indulgence scores continuously emphasize satisfying their desire for instant gratification and see investing and finance as fun, which was a relatively dry subject filled with complicated algorithms and models a couple of decades ago (Syed and Malik, 2014).

5. Conclusion and Recommendations

The aim of this research establish a robust association between long-term orientation and indulgent cultural characteristics and the proclivity for FinTech adoption within OECD countries. Over a nine-year period (2012-2020), data was systematically gathered from 43 OECD nations, employing Hofstede's National Culture Index and Google Trends to quantify dependent and independent variables. To investigate the effects of these independent variables on FinTech adoption while addressing issues such as

heteroskedasticity, autocorrelation, and cross-serial dependence, the research opted for the utilization of the Random Effects model with the inclusion of time-specific effects and robust standard errors.

The key findings of this study underscores the discernible influence of cultural elements within the FinTech ecosystem. Beyond the examination of supply-side determinants, it offers pertinent guidance to industry professionals and prospective FinTech entrepreneurs, underscoring the imperative need for an in-depth exploration of a nation's cultural dynamics before venturing into FinTech-related initiatives. Future avenues for academic exploration should consider delving into various other cultural dimensions encompassed within Hofstede's framework of national culture, as well as alternative cultural models like Trompenaars, Hall and Hall, and Lewis. These dimensions possess the potential to provide a comprehensive comprehension of their collective sway on the propensity to accept and integrate FinTech innovations. This perspective not only highlights the requirement for a comprehensive cultural assessment when engaging in the FinTech sector but also prompts ongoing and expansive scholarly pursuits, thereby shedding light on the intricate interplay between cultural dynamics and FinTech adoption across diverse sociocultural contexts.

To enhance cultural sensitivity in FinTech development and promote its adoption, a set of comprehensive recommendations is put forward. Firstly, FinTech companies and startups should be encouraged to incorporate cultural sensitivity into their product and service design. This entails the tailoring of FinTech solutions to align with the cultural values and preferences of the target user base. Government agencies can play a supportive role by providing guidelines or incentives for businesses that demonstrate a commitment to cultural inclusivity in their FinTech offerings. Secondly, there is a positive correlation between Long-Term Orientation and FinTech adoption. Therefore, governments should invest in financial literacy programs that emphasize long-term financial planning and goal-setting. These programs can be designed to instill a culture of savings, investment, and forward-thinking financial practices. By equipping individuals with the knowledge and skills to plan for the future, societies may become more open to FinTech solutions that support these objectives.

In cultures characterized by high indulgence, where risk-taking and novelty-seeking are prevalent, governments should create an environment that encourages experimentation and innovation in the FinTech sector. This can involve providing regulatory flexibility for FinTech startups and establishing incubators or accelerators to support the development of new and unconventional FinTech solutions. Recognizing that cultural dimensions may differ significantly across countries, governments should foster international collaboration in the FinTech sector. This can involve sharing best practices and promoting cross-border partnerships among FinTech companies. By facilitating collaboration, governments can help FinTech companies access diverse markets while adapting their solutions to various cultural contexts.

Data Availability

Data will be made available on request.

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